

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 OR 15(d) of The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported) **December 14, 2004**

Appliance Recycling Centers of America, Inc.

(Exact name of registrant as specified in its charter)

Minnesota
(State or other jurisdiction
of incorporation)

000-19621
(Commission
File Number)

41-1454591
(IRS Employer
Identification No.)

7400 Excelsior Blvd., Minneapolis, MN
(Address of principal executive offices)

55426-4517
(Zip Code)

Registrant's telephone number, including area code **(952) 930-9000**

(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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ITEM 2.02: RESULTS OF OPERATIONS AND FINANCIAL CONDITION

The following information is furnished pursuant to Item 12, "Disclosure of Results of Operations and Financial Condition."

On December 14, 2004, Appliance Recycling Centers of America, Inc. issued a press release announcing that it and its California subsidiary, ARCA-California, have filed suit in the U.S. District Court for the Central District of California alleging that JACO Environmental, Inc. fraudulently obtained a patent (U.S. Patent No. 6,732,416) in May 2004 covering appliance recycling methods and systems originally developed by ARCA beginning in 1987 and used in serving more than 40 electric utility appliance recycling programs since that time.

ITEM 9.01: FINANCIAL STATEMENTS, PRO FORMA FINANCIAL INFORMATION AND EXHIBITS

(c) Exhibits

| <u>Exhibit Number</u> | <u>Description</u> |
|---------------------------|---------------------------------------|
| 99.1 | Press Release dated December 14, 2004 |
| 99.2 | Complaint |

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: December 14, 2004

/s/ Linda Koenig
Linda Koenig, Vice President of Finance

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Exhibit Index

| Exhibit Number | Description |
|---------------------------|---------------------------------------|
| 99.1 | Press Release dated December 14, 2004 |
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Appliance Recycling Centers of America, Inc.
7400 Excelsior Boulevard, Minneapolis MN 55426 (952) 930-9000

FOR IMMEDIATE RELEASE

FOR MORE INFORMATION CONTACT:

Edward R. (Jack) Cameron
President and Chief Executive Officer
(952) 930-9000 or (800) 452-8680

Richard G. Cinquina
Equity Market Partners
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Appliance Recycling Centers of America (ARCA) Files Suit to Invalidate JACO Environmental, Inc.'s Patent Which Claims Method and System Developed and Commercially Used by ARCA Since 1987

Minneapolis, MN—December 14, 2004—Appliance Recycling Centers of America, Inc. (OTC BB: ARCI), the nation's largest recycler of major household appliances for the energy conservation programs of electric utilities, and its California subsidiary, ARCA-California, have filed suit in the U.S. District Court for the Central District of California alleging that JACO Environmental, Inc. fraudulently obtained a patent (U.S. Patent No. 6,732,416) in May 2004 covering appliance recycling methods and systems originally developed by ARCA beginning in 1987 and used in serving more than 40 electric utility appliance recycling programs since that time.

Edward R. (Jack) Cameron, ARCA's president and chief executive officer, commented: "ARCA has been engaged in recycling appliances and disposing of hazardous components for nearly 20 years, and has developed and implemented many recycling methods and processes. Over the years we have made many presentations to industry symposia, published numerous articles in trade publications and provided information to the general news media about our recycling processes. We believe that the JACO patent is based on methods and processes that we developed."

ARCA is seeking a declaratory judgment that the JACO patent is invalid and unenforceable, since it is almost entirely based on methods and processes developed and used by ARCA. The Company is also asking the court for unspecified damages related to charges that JACO, in using a fraudulently based patent, has engaged in unfair competition under federal and California statutes, false and misleading advertising under California statutes, and interference with ARCA's prospective customer relationships. ARCA expects recycling operations to continue without interruption during the period of litigation.

The Company intends to file a Form 8-K with the Securities and Exchange Commission that will include a copy of the Complaint.

About ARCA

ARCA is the nation's largest recycler of major household appliances for the energy conservation programs of electric utilities. Through its ApplianceSmart (www.ApplianceSmart.com) operation, ARCA is also one of the nation's leading retailers of special-buy household appliances, primarily those manufactured by Maytag, GE, Frigidaire, and Whirlpool. These special-buy appliances, which include close-outs, factory overruns and scratch-and-dent units, typically are not integrated into the manufacturer's normal distribution channel. ApplianceSmart sells these virtually new appliances at a discount to full retail, offers a 100% money-back guarantee and provides warranties on parts and labor. As of December 2004, ApplianceSmart was operating eleven factory outlets: four in the Minneapolis/St. Paul market; three in the Columbus, Ohio market; two in the Atlanta market; one in the Los Angeles market; and one in the San Antonio, Texas market.

Statements about ARCA's outlook are forward-looking and involve risks and uncertainties, including but not limited to: the strength of recycling programs, the growth of appliance retail sales, the speed at which individual retail stores reach profitability, and other factors discussed in the Company's filings with the Securities and Exchange Commission.

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Visit our web site at www.arcainc.com

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 AMERICA, INC. and APPLIANCE
 RECYCLING CENTERS OF AMERICA-
 CALIFORNIA, INC.

UNITED STATES DISTRICT COURT
 CENTRAL DISTRICT OF CALIFORNIA

APPLIANCE RECYCLING
 CENTERS OF AMERICA, INC., a
 Minnesota corporation, and
 APPLIANCE RECYCLING
 CENTERS OF AMERICA-
 CALIFORNIA, INC., a California
 corporation,

Plaintiffs,

v.

JACO ENVIRONMENTAL, INC., a
 Washington corporation, TERRY
 JACOBSEN, an individual,
 MICHAEL DUNHAM, an
 individual, and DOES 1 through 10,

Defendants.

CASE NO. SACV 04-1371 AHS (VBKx)

VERIFIED COMPLAINT FOR DAMAGES AND INJUNCTIVE RELIEF FOR:

1. Declaratory Judgment of Invalidity and Unenforceability;
2. Federal Unfair Competition and False Advertising in Violation of the Lanham Act;
3. Unfair Competition under California Business and Professions Code § 17200, et seq.;
4. False and Misleading Advertising under California Business and Professions Code § 17500, et seq.;
5. Intentional Interference With Prospective Economic Relations; and
6. Negligent Interference With Prospective Economic Relations.

[DEMAND FOR JURY TRIAL]

PLAINTIFFS APPLIANCE RECYCLING CENTERS OF
 AMERICA, INC. AND APPLIANCE RECYCLING CENTERS OF
 AMERICA-CALIFORNIA, INC.'S COMPLAINT

Plaintiffs Appliance Recycling Centers of America, Inc. ("ARCA") and Appliance Recycling Centers of America-California, Inc. ("ARCA-CA") allege:

JURISDICTION AND VENUE

1. This is a civil action for claims arising under the patent and copyright laws of the United States, 15 U.S.C. §§ 1051, *et seq.*, 17 U.S.C. §§ 101, *et seq.*, and 35 U.S.C. §§ 101, *et seq.*, under California Business and Professions Code §§ 17200, *et seq.* and 17500, *et seq.*, and under the common law of California.
2. Jurisdiction is conferred on this Court by 28 U.S.C. §§ 2201 and 2202 (declaratory relief), 28 U.S.C. § 1331 (federal question), 15 U.S.C. § 1121 (action arising under the Lanham Act), 28 U.S.C. § 1338(a) (any Act of Congress relating to patents or copyrights), and 28 U.S.C. § 1338(b) (action asserting a claim of unfair competition joined with a substantial and related claim under the patent or copyright laws).
3. This Court has jurisdiction over the supplemental claims arising under state law pursuant to 28 U.S.C. § 1367(a).
4. Venue is proper in this judicial district under 28 U.S.C. §§ 1391(b) and (c), and 1400.

THE PARTIES

5. Plaintiff ARCA is a corporation incorporated under the laws of the State of Minnesota having its principal place of business at 7400 Excelsior Boulevard, Minneapolis, Minnesota 55426. Since 1976 ARCA has been in the business of recycling unwanted refrigerators and other household appliances across the United States. In 1993, the Department of Water and Power of the City of Los Angeles and Southern California Edison Company selected ARCA to provide services for the refrigerator recycling programs.
6. Plaintiff ARCA-CA is a corporation incorporated under the laws of the State of California having its principal place of business at 1920 South Acacia

7. Defendant JACO Environmental, Inc. ("JACO") is, upon information and belief, a corporation incorporated under the laws of the State of Washington having a business address in Snohomish, Washington and maintaining a facility at 2354 East Walnut Avenue, Fullerton, California, 92831.

8. Defendant Terry Jacobsen ("Jacobsen") is, upon information and belief, an individual residing in Snohomish, Washington, having a last known address of 13106 63rd Avenue SE, Snohomish, Washington 98296.

9. Defendant Michael Dunham ("Dunham") is, upon information and belief, an individual residing in Lake Forest, California having a last known address of 24001 Muirlands, Apartment No. 300, Lake Forest, California 92630.

10. Plaintiffs are ignorant of the true names and capacities of defendants sued herein as DOES 1-10, inclusive, and therefore sue these defendants by such fictitious names. Plaintiffs will amend this complaint to allege their true names and capacities when ascertained.

FACTUAL BACKGROUND

ARCA'S APPLIANCE RECYCLING METHOD AND SYSTEM

11. Plaintiff ARCA is a world leader in developing and providing environmentally responsible recycling services.

12. As early as 1976, ARCA collected, recycled and resold refrigerators and other household appliances through contracts with local government entities, appliance retailers, and appliance manufacturers across the United States. ARCA reconditioned and resold the appliances suitable for reuse, and delivered the remainder to local metal processing companies for shredding and metal recycling. This procedure continued until 1987.

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ARCA's method and system: removing hazardous components

13. In or about June 1987, ARCA developed and implemented unique and proprietary methods of identifying and removing all hazardous components from appliances before taking them to the metals processing facility. ARCA's technicians were trained to locate and remove capacitors, ballasts, mercury switches, and batteries from all makes and models of appliances, and place them into separate, clearly marked, impermeable containers at each component removal station.

14. Further, the technicians were trained to empty such containers into 55-gallon storage/transport drums approved by the U.S. Department of Transportation. The drums were stored in a separate, secure area, clearly marked and posted for PCBs and mercury, as required by the Environmental Protection Agency and the Occupational Safety and Health Administration. The storage area floor was constructed of leak-proof materials and surrounded by a six-inch barrier. The collected components were then transported to a federally licensed hazardous waste incinerator for destruction.

ARCA's method and system: removing refrigerants

15. In 1988, ARCA engaged in research and development for recovering CFC (chlorofluorocarbon) refrigerant (FreonTM or CFC-12). In evaluating a number of commercially available refrigerant recovery machines, ARCA determined the need for a system that can recover CFCs on a large scale, while reducing the amount of air, moisture and oils that are mixed with the CFCs, enabling the refrigerant to be recycled.

16. Rich Christensen, ARCA's Technical Services Manager, began to design a proprietary CFC recovery unit for ARCA. A prototype was completed later in 1988. ARCA's CFC recovery unit and manifold worked together to create and maintain a 10-inch vacuum during the recovery process, while evacuating CFCs from 10 refrigerators at a time. ARCA also designed a hand tool used to tap the coolant lines, releasing additional refrigerant for capture.

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17. Through late 1988 and into 1989, Christensen modified the CFC recovery equipment as he tested the efficiency and capture rate of the system. The tests demonstrated that the invention could recover 92-95 percent of the CFC fluids and gases found in a refrigerator and would remove the majority of the air and moisture found in sealed refrigeration systems.

ARCA's method and system: shredding metal shells

18. In February 1989, the Metropolitan Council of the Twin Cities area awarded ARCA a \$150,000 grant to design an integrated appliance recycling system that would include a step of shredding appliance shells. ARCA's plan incorporated the company's existing processes developed thus far, i.e., removing hazardous components and refrigerants, and added the final step of shredding appliance shells before taking them to the metals processor.

ARCA's method and system: installing conveyors

19. In April 1989, ARCA opened its Milwaukee processing and recycling center to provide service for Wisconsin Electric Power Company's recycling program. This was the first large-scale facility in the United States where refrigerators, freezers, and air conditioners were processed and recycled.

20. ARCA installed conveyors at this Milwaukee facility upon which appliances were placed and carried through a number of spaced stations. The conveyors allowed the appliances to be easily carried at a comfortable working height for the technicians.

21. ARCA also installed its new multi-unit CFC recovery system at the Milwaukee center.

ARCA's continuing research and development: reclaiming refrigerants

22. In July 1990, ARCA established a complete analytical laboratory in Dresser, Wisconsin to test the CFC refrigerants that were recovered at ARCA's processing and recycling centers. The laboratory successfully reclaimed the recovered refrigerants to meet ARI (Air-Conditioning and Refrigeration Institute)

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Standard 700-88 for purity. The test results enabled ARCA to sell purified FreonTM.

23. In October 1990, ARCA conducted tests to determine the maximum amount of compressor oil that can be extracted from appliances containing CFC and

HCFC (hydrochlorofluorocarbon) refrigerants. ARCA's CFC recovery system was found to be highly effective, removing between 81 and 97 percent of the compressor oil in the tested appliances.

ARCA's method and system: using slip-sheets as platforms

24. In October 1990, ARCA opened its Hartford, Connecticut processing and recycling center to support the first turnkey appliance recycling program sponsored by an electric utility company. In the Hartford facility, ARCA introduced a system designed by Dan Chuhna, ARCA's Special Projects Manager, to move appliances through the recycling center. Slip-sheets (plywood platforms approximately 3-feet square and ½-inch thick) were placed on elevated conveyors to provide a more stable surface for the appliances, as they were carried through different processing stations in a vertical, upright position.

25. During the summer of 1991, ARCA opened three new recycling centers. The new centers in Green Bay, Wisconsin; Columbus, Ohio; and Vancouver, British Columbia incorporated the method and system that ARCA had developed to date as described above, including adding slip-sheets as platforms.

ARCA's method and system: removing CFC-11 from polyurethane foam

26. Further in the summer of 1991, the founder, president and CEO of ARCA, Edward R. (Jack) Cameron, began investigating different methods of managing polyurethane insulating foam found in refrigeration appliances. He visited five facilities in Europe and compared the technologies in recovering and recycling the CFC-11 used as a blowing agent in polyurethane foam.

27. In January 1992, ARCA designed a mobile facility to manage sulfur dioxide, the refrigerant in certain old refrigerators. ARCA's Technical Services

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Department developed a process of mixing sulfur dioxide with a certain solution to form a product that can be used to de-chlorinate wastewater in water treatment process.

28. In February 1992, Adelmann AG of Karlstadt, Germany selected ARCA to be the U.S. manufacturer of the Adelmann A-55 system. Adelmann A-55 equipment is used to recover CFC-11 in a liquid form, separated from polyurethane insulating foam.

29. ARCA installed the equipment at its Hartford, Connecticut facility in the autumn of 1992.

ARCA's method and system: fully integrated processing and recycling

30. In November 1992, ARCA began a national demonstration project with Northeast Utilities at its Hartford, Connecticut facility, where a fully integrated refrigerator recycling system was implemented, the first of its kind in the United States.

31. The system included processes of removing all hazardous components, refrigerants, and oil from appliances, disassembling them by removing glass and steel shelves, plastic drawers, wiring, and compressors, sawing the appliances into panels, separating the plastic liner materials from the underlying polyurethane insulating foam, and processing the polyurethane foam through the ARCA/Adelmann A-55 system to recover CFC-11 from the foam.

32. ARCA employed a practice of placing unprocessed polyurethane foam in large plastic bags to ship it from other facilities to the Hartford, Connecticut facility where the ARCA/Adelmann A-55 was located.

33. ARCA also used large plastic bags to store polyurethane foam therein when the ARCA/Adelmann A-55 system was unavailable due to maintenance or repair.

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34. At the March 1992 Refrigerator Recycling & CFC-11 Recovery Symposium, sponsored by Southern California Edison Company, ARCA described the recycling process used at its Hartford, Connecticut facility:

Appliances containing CFC-11 will first be processed to remove and manage hazardous and environmentally-harmful components such as capacitors, ballasts, mercury switches, and batteries. The R-12 refrigerant will be recovered and reclaimed and the compressor oil will be extracted. Next, these appliances will be dismantled by removing glass and steel shelves and plastic drawers, and then stripping out the wiring. The compressor will be removed and technicians will separate the plastic liner material and the underlying polyurethane foam insulation.

ARCA's method and system: tipping table to drain compressor oil

35. In 1993, Rich Christensen developed a unique system to reduce the concentration of CFCs entrained in compressor oil to the level that allowed the oil to be recycled and reused.

36. ARCA adopted a step of drilling a hole into a refrigerator's compressor and draining the compressor oil by using a tipping table that holds three refrigerators at a time. The tipping table tilted the appliances to a horizontal level so that the oil inside the compressors would drain.

37. Once the oil is collected, it is degassed through an ARCA-designed piece of equipment that recovers CFCs from the oil.

OPENING OF ARCA'S COMPTON FACILITY

38. In 1993, the Department of Water and Power of the City of Los Angeles ("LADWP") and Southern California Edison Company ("SCE") selected ARCA to provide turnkey services for the utilities' refrigerator recycling programs, which were a part of the Rebuild L.A. program to develop areas that had recently experienced civil unrest. To better serve the utilities' programs, ARCA designed and opened a new recycling center, ARCA-CA in Compton, California in 1993. ARCA-CA has processed over 400,000 refrigerators since the programs began.

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39. The equipment and processes used at the Compton center were similar to those used in ARCA's existing recycling centers to date, with the addition of equipment and processes to shred plastics; manage sulfur dioxide refrigerant in a stationary setting; drain compressor oil and remove CFCs from the oil; bale the appliance shells; recover glass for recycling; and monitor the energy usage of designated appliances.

40. The detailed layout of ARCA's appliance processing system was documented in blueprints approved by the City of Compton, Building Department on November 22, 1993. The blueprints depict a system by which an appliance is delivered to the facility, loaded onto an elevated, roller conveyor system on a platform, transported by conveyor to a number of stations, where hazardous components and CFCs are removed, a hole is drilled in the compressor of the appliance, the oil is drained, degassed, and stored for recycling, interior parts are removed, the appliance is sawed into at least two pieces, the foam is separated from the interior and doors, and the removed metal, glass, plastic, and polyurethane foam are separated for further handling.

41. In 1993, ARCA moved the ARCA/Adelmann A-55 system from its Hartford, Connecticut facility to ARCA's new Compton facility.

42. ARCA and ARCA-CA continued the practice of placing unprocessed polyurethane foam in large plastic bags to ship it from other facilities to the Compton facility where the ARCA/Adelmann A-55 was located.

43. ARCA also continued the practice of storing unprocessed polyurethane foam in large plastic bags when the ARCA/Adelmann A-55 system was unavailable due to maintenance or repair.

44. ARCA's March 1993 Prospectus described its methods and system:

When appliances are received at the Company's processing Centers, they are inspected and categorized according to the types of hazardous materials they may contain. At most Centers, the appliances are moved through the processing area on a conveyor system which eases the handling of heavy and

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bulky items and promotes employee safety. After the appliances are moved to the processing area, the Company's employees remove electrical capacitors and fluorescent light ballasts that may contain PCB dielectric fluid, and switches and batteries that may contain mercury. This procedure is conducted at a specially constructed and controlled component removal area.

The Company's processing technicians are trained to locate and remove such components from all makes and models of appliances. The technicians place the components in separate, clearly marked containers in the component removal area. Throughout the day, the containers are regularly emptied into United States Department of Transportation approved drums for storage and subsequent shipment to qualified hazardous waste disposal facilities.

The next step is to recover refrigerants from the appliances. Several different types of refrigerant fluids and gases are commonly used in household appliances and are recovered and reclaimed at the Company's processing Centers. Refrigerators, freezers, dehumidifiers and water coolers typically contain R-12 (dichlorodifluoromethane) or R-114 (dichlorotetrafluoroethane) CFC refrigerants. A small percentage of refrigerators may contain R-717 (ammonia) or R-764 (sulfur dioxide) as a refrigerant. Room air conditioners most frequently contain R-22 (chlorodifluoromethane) HCFC refrigerant, although some room air conditioners may contain R-12 refrigerant. Each type of refrigerant must be kept separate during the processing operation to ensure the recyclability of the refrigerants. The Company's technicians are trained to identify each type of refrigerant and to separate appliances according to the specific type of refrigerant used in a particular appliance.

The Company is currently implementing a metals processing system to more effectively separate ferrous and nonferrous metals found in appliances. The first installation of this system is at its Center in Minneapolis, Minnesota. After removal of capacitors, ballasts, mercury switches, batteries and refrigerants, the refrigerators are cut into panels and the foam or other insulation is removed. The panels are then fed into a shredding mill built to the Company's specifications. The shredded metal is then magnetically processed to separate ferrous metals, aluminum and copper...

ARCA's method and system: further developments

45. In the autumn of 1995, ARCA installed a pre-shredder at its Minnesota recycling center. After all hazardous components, compressors, refrigerants and other recyclable materials are removed, the appliances are shredded and the ferrous and nonferrous metals are separated and sold.

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46. ARCA also developed a process to manage appliances that contain ammonia as the refrigerant whereby ammonia is removed and sodium chromate is recovered and sent to a treatment facility for further processing.

47. In April 1995, ARCA prepared a written operations procedure manual which prescribes the method by which it recycles appliances.

48. In or about 1995, ARCA prepared training videos which prescribe the method by which it recycles appliances.

49. In December 1995, ARCA entered into a collaborative research and development agreement with Argonne National Laboratories to develop a process for separation and recovery of acrylonitrile butadiene styrene (ABS) and high-impact polystyrene (HIPS) from the mixed-plastics wastes generated when recycling old appliances. The project began in August 1996 at ARCA's Minneapolis recycling center.

50. In or about October 2002, ARCA updated the plastics shredding system at its Compton center.

PUBLICATIONS DISCLOSING ARCA'S RECYCLING METHOD AND SYSTEM

51. ARCA's processes and methods have been presented to industry conferences such as the 1990 International Conference on CFC and Halon Alternatives, the 1991 National Utility Workshop on Very High Efficiency Refrigerator Programs, the 30th Annual Conference of Metallurgists in or about 1991, and the 1992 Refrigerator Recycling & CFC- 11 Recovery Symposium.

52. ARCA's processes and methods have been widely described in newspaper articles in the Columbus (Ohio) Dispatch (1991), the Green Bay (Wisconsin) News Chronicle (1991), the Los Angeles Times (1993), the Press-Telegram (November 1993), the Alameda Times-Star (January 1995), the Oakland Tribune (January 1995), and the Star-Ledger (January 1996). For example, the January 1996 Star-Ledger article described ARCA's process as follows:

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ARCA collects appliances from owners and transports them to its plant, where they are reduced to a pile of steel, aluminum and foam in 24 hours. After it is categorized, the appliance is put on rollers and sent to a station in the warehouse, where its hazardous components are removed.

At another work station, the refrigerants are removed and stored in containers, which are transported to ARCA's laboratory in Minnesota, where they are

brought back to industrial standards and resold, [Bruce] Wall [ARCA's national account manager] said.

The refrigerators are sliced in sections for the removal of the polyurethane foam insulation.... The metal is put into a shredder and sold to recycling operations.

53. ARCA's process has been described in numerous industry magazines and publications, such as Waste Alternatives (September 1989), Appliance Manufacturer (July 1990, August 1990, January 1992), Recycling Today (October 1990), Appliance (June 1991), Resource Recycling (August 1991), Garbage (November/December 1991), Popular Science (April 1992), Home Energy (January/February 1993, January/February 1995), and BioCycle (July 1992, February 1995). An article in Corporate Environmental Strategy from Summer 1995 describes ARCA's process as follows:

Say you are a spare, working Los Angeles refrigerator. This is what it would be like going through ARCA's facility in Compton.

The first sensation would be a sharp blow on your side from a guy wielding what looks like a hammer with a sharp spike on one end. He uses a CFC leak detector to check the wound to determine if you are one of the seven million fridges manufactured each year that contain CFC-11 in the insulation foam. You do.

Once that determination is made, you are shifted on a track where the conveyor allows you to coast to the first work station. The employee here determines what type of refrigerant pulses through your copper tubes and what type is embedded, like bubbles, in the insulation foam. Since ARCA does not mix refrigerants, in order to allow them to be recycled, you are again sorted, this time heading for the 'R-12' station. But before you are given a shove, the fellow in goggles inspects you and finds a capacitor. Even though this one does not contain PCBs, a substance regulated as hazardous waste, it does contain DEHP, a substance that is not regulated but may prove to be harmful.

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ARCA, however, still treats your capacitor as hazardous waste for public safety reasons.

Next you are gently pushed into a line with nine other refrigerators that are hooked up to a CFC recovery unit by long tubes. You feel like a cow in a fancy milking parlor. In a process designed by ARCA in 1988, the tubes lead to a series of filters where moisture, acid and air are filtered out, which enhances the purity of the CFCs and their value for recycling.

You now join two other fridges to have a hole drilled in each of your respective compressors. Then, all three refrigerators are tipped allowing the compressor oil to drain. While the majority of CFCs were captured earlier, two to five percent ends up in the oil. Yet another device devised by ARCA captures these CFCs for recycling.

Next, it's time to recapture that nasty CFC-11. Big saws start to buzz through you. Folks start ripping you apart as the foam is pulled off your steel skeleton... After all these hazards are removed, you are baled into a cube and shipped off to a scrap yard where you are shredded and separated. The ferrous metals then become raw material for steel mills. You are reborn as steel rods and end up in a new skyscraper in downtown Tokyo.

ARCA HIRES DEFENDANT DUNHAM AS A CONSULTANT

54. In 2000, ARCA hired Dunham as a retail marketing consultant for \$750 a week, plus expenses.

55. Prior to his association with ARCA, Dunham had been a concert and theater producer and promoter, and operated a business based in Austin, Texas, which collected and resold used household appliances.

56. Upon information and belief, Dunham was exposed to and learned ARCA's proprietary process for recycling household appliances through his association with ARCA. Dunham visited ARCA's facilities in Minneapolis, Minnesota and Oakland, California. Dunham also underwent personal, guided tours of ARCA's Compton, California facility where ARCA provided to Dunham more detailed information of each recycling process and station.

57. In late November 2000, ARCA terminated Dunham's services.

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DUNHAM'S ASSOCIATION WITH DEFENDANT JACO

58. In or about February 2001, within weeks of his termination from ARCA, Dunham started working on behalf of Defendant JACO.

59. Before Dunham's association with JACO, JACO was in the business of collecting used appliances for resale. Specifically, JACO was in the business of repairing and reselling or wholesaling the appliances, and sending the remaining to scrap yard.

60. Upon information and belief, before February 2001, JACO had no conveyor system for recycling used appliances, was not evacuating CFCs, or cutting the appliances into panels.

61. Just a few months thereafter, in or about July 2001, JACO submitted a proposal to the Sacramento Municipal Utility District (SMUD) for SMUD's appliance recycling program. JACO represented that SMUD's requirement to handle CFC-containing insulating foam led JACO to design its proposed process.

62. In August 2001, JACO was awarded the contract for SMUD's program.

DUNHAM AND JACOBSEN'S MISREPRESENTATION TO THE U.S. PATENT AND TRADEMARK OFFICE

63. On or about February 19, 2002, Dunham and Jacobsen filed a patent application, serial number 10/080,153, (the '153 application) with the United States Patent and Trademark Office ("USPTO") entitled "Refrigerator Recycling Method and System."

64. Dunham and Jacobsen represented to the USPTO, under penalty of perjury, that they were the inventors of the method and system claimed in the patent application.

65. Dunham and Jacobsen acknowledged their duty to disclose to the USPTO information material to patentability.

66. Notwithstanding, the recycling method and system Dunham and Jacobsen claimed as their invention is the recycling method and system that ARCA

had developed over the course of years, and ARCA and ARCA-CA had used for years, including during the time in which Defendant Dunham was working for ARCA.

67. In breach of their duty of candor toward the USPTO, Dunham and Jacobsen willfully and knowingly concealed from the USPTO ARCA and ARCA-CA's method and system of recycling refrigerators, despite their actual knowledge of such method and system.

68. In early 2004, Vice President of ARCA, Bruce Wall conversed with Defendant Dunham during which conversation Dunham claimed "I have patented what you [ARCA] do."

69. In or about the fall of 2004, Dennis Flack of CSGServices ("CSGS") in Syracuse, New York received a phone call from Dunham. Dunham was seeking CSGS's support for an appliance recycling policy that would require the incineration of polyurethane foam in order to destroy CFC-11. During the conversation, Mr. Flack asked Dunham why he had chosen to seek a patent "on things that we appliance recyclers have been doing for years?" Dunham replied to the effect of "because nobody else did."

THREAT OF PATENT INFRINGEMENT ACTION AGAINST ARCA AND ARCA-CA

70. A few months after filing the '153 application in February 2002, in July 2002, Defendant Dunham wrote to ARCA: "There is still a great amount of animosity that needs to be addressed at some point. Believe me, I have other avenues to channel my energies and intend to pursue all of them."

71. Two months after on or about September 24, 2002, ARCA received a "cease and desist" letter from counsel for JACO, advising ARCA that ARCA's process is "covered by the claims of [JACO's] pending application" and its intent to "vigorously enforce its patent rights upon issuance of a patent on its process."

72. On May 11, 2004, the '153 application was issued as United States Letters Patent No. 6,732,416 (the '416 patent). Dunham and Jacobsen have assigned the '416 patent to Defendant JACO.

PLAINTIFFS' CONTRACTUAL RELATIONS

73. Upon information and belief, JACO represented to electric utilities and local government entities that it had developed a highly sophisticated method of processing and recycling appliances, when in fact the method was developed by ARCA over the course of years.

74. Upon information and belief, JACO misrepresented the nature of the subject matter claimed in the '416 patent to the electric utilities and local government entities, including, but not limited to, the LADWP and SCE who have maintained contractual relations with ARCA and ARCA-CA since 1993.

LADWP

75. On or about September 21, 1993, the LADWP awarded a three-year contract to ARCA-CA. Under the contract, ARCA-CA provided necessary services for the LADWP to implement energy efficiency programs.

76. In or about February 1999, the LADWP awarded another contract to ARCA-CA. Under the contract, ARCA-CA provided necessary services for the LADWP to implement a Low Income Super Efficient Refrigerator Program. The contract was effective until June 30, 2000.

77. On or about May 23, 2000, the LADWP extended the contract until June 30, 2001.

78. On May 22, 2002, ARCA-CA submitted a bid to the LADWP for its Low Income Refrigerator Exchange Program and Refrigerator Turn-In and Recycling Program.

79. In or about May 2002, JACO also submitted a bid to the LADWP for the same programs.

80. On or about September 16, 2002, JACO learned that ARCA had been awarded the contract for LADWP's programs. JACO also learned that ARCA had offered three options to manage CFC-11, including incineration.

81. On or about September 24, 2002, JACO provided to the LADWP a copy of their "cease and desist" letter addressed to ARCA.

82. On or about September 25, 2002, JACO requested that the Board of Water and Power Commissioners (the "Board") hear JACO's 40-minute presentation during the November 5, 2002 hearing, in which the Board would approve the agreement between the LADWP and ARCA-CA for LADWP's programs. JACO was told that members of the public who wish to comment on pending items are typically given 3-5 minutes to make their statements.

83. On September 26, 2002, ARCA-CA signed the contract for LADWP's programs.

84. On September 30, 2002, JACO sent a letter to the LADWP requesting all communications between ARCA-CA or ARCA and LADWP under the Freedom of Information Act.

85. On October 8, 2002, the LADWP countersigned the contract for LADWP's programs. The agreement would become effective, subject to approval by the Board during the hearing scheduled for November 5, 2002.

86. On November 5, 2002, the Board approved the contract. JACO failed to appear before the Board to comment.

SCE

87. On or about August 19, 1993, ARCA-CA and SCE entered into a long-term contractual relationship for an energy efficiency program. SCE renewed the contract at the end of the original term in 1994, and at the end of the renewed terms until August 2002.

88. In May 2002, SCE submitted an implementation plan to the California Public Utilities Commission indicating that SCE intended to award the next

Statewide Residential Appliance Recycling Program contract, which would be administered by SCE, to the current vendor, ARCA-CA.

89. On or about January 15, 2002, JACO submitted an unsolicited proposal to the California Public Utilities Commission (CPUC) for a residential appliance recycling program in the geographic areas served by Pacific Gas & Electric Company, SCE, and San Diego Gas & Electric Company. JACO represented to the CPUC that it had developed an extremely sophisticated refrigerator recycling system.

90. Upon information and belief, JACO claimed it owned exclusive rights to a highly sophisticated method of recycling appliances, which in fact was developed by ARCA.

91. On or about May 24, 2002, JACO sent a letter to Governor Gray Davis requesting an executive review of SCE's intent to award the next Statewide Residential Appliance Recycling Program contract to ARCA-CA.

92. On or about May 27, 2002, JACO sent a complaint to the State of California Legislature pleading that they had been denied an opportunity to participate in the next Statewide Residential Appliance Recycling Program.

93. On or about November 21, 2002, JACO "request[ed] that the CPUC direct SCE to solicit competitive bids in an expedited manner for appliance collection and recycling services for the 2003 Statewide Residential Appliance Recycling Program." (Response by JACO Environmental Regarding SCE 11/15/02 Comments on 2003 IOU Energy Efficiency Program Plans, page 4).

94. On or about September 30, 2002, JACO sent a letter to John Nall at SCE requesting that JACO be sent information on bidding for the next Statewide Residential Appliance Recycling Program.

95. In or about September 2003, SCE awarded ARCA-CA the contract covering the geographic areas served by SCE and the San Diego Gas & Electric

Company, but awarded JACO the contract covering the geographic areas served by the Pacific Gas & Electric Company.

COUNT I

Declaratory Judgment of Invalidity and Unenforceability of U.S. Patent No. 6,732,416

96. Plaintiffs restate and reallege the allegations set forth in paragraphs 1 through 95, as set forth fully herein.

97. A real and justiciable controversy now exists between JACO and Plaintiffs because JACO has asserted that the '416 patent is infringed by Plaintiffs' appliance recycling process. JACO has also threatened Plaintiffs with imminent legal action based on the alleged infringement, giving Plaintiffs a reasonable apprehension of impending litigation.

98. The '416 patent is invalid for failure to meet the conditions of patentability specified in 35 U.S.C. §§ 1, *et seq.*, including but not limited, to 35 U.S.C. §§ 102 and/or 103, for one or more of the following reasons:

- (a) the alleged invention claimed in the '416 patent was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the alleged invention thereof by the applicants for the '416 patent;
- (b) the alleged invention claimed in the '416 patent was patented or described in a printed publication in this or a foreign county, or in public use or on sale in this country more than one year prior to the date of the application for the '416 patent;
- (c) the individuals identified as the inventors for the '416 patent did not invent the subject matter claimed in the '416 patent;
- (d) before the alleged invention claimed in the '416 patent, the alleged invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it; and/or

(e) the differences between the claimed subject matter in the '416 patent and the prior art are such that the claimed subject matter of the '416 patent as a whole would have been obvious at the time the alleged invention was made to a person having ordinary skill in the art to which said subject matter pertains.

99. Upon information and belief, Defendants, their patent attorney(s), and/or other persons involved in the prosecution of the application leading to the issuance of the '416 patent committed inequitable conduct by concealing and failing to disclose to the USPTO information known to them to be material to patentability. Defendants' inequitable conduct was carried out with an intent to deceive the USPTO. As a result, Defendants violated their duty of good faith and candor to the USPTO in connection with the prosecution of the '416 patent, which is therefore unenforceable.

100. Upon information and belief, Defendants' inequitable conducts include, without limitation, failure to disclose known and material prior art and misrepresentation of true inventor(s) of the subject matter of the '416 patent.

101. A judgment should be made declaring that the '416 patent is invalid and unenforceable.

102. Defendants' inequitable conduct in prosecuting the '416 patent makes this an exceptional case within the meaning of 35 U.S.C. § 285 such that Plaintiffs should be awarded its attorneys' fees.

COUNT II

Federal Unfair Competition and False Advertising in Violation of § 43(a) of the Lanham Act

15 U.S.C. 1125(a)

103. Plaintiffs restate and reallege the allegations set forth in paragraphs 1 through 102, as set forth fully herein.

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104. Defendants have engaged in unfair business acts or practices by (a) obtaining the '416 patent through inequitable conduct with the specific intent to eliminate Plaintiffs and other competitors from the appliance recycling business, (b) misrepresenting to potential customers as set forth above with false or misleading descriptions or representations of fact regarding the nature, characteristics, origin of the subject matter of the '416 patent, and (c) threatening Plaintiffs with litigation on a patent that Defendants know to be invalid and unenforceable.

105. Upon information and belief, these misrepresentations actually misled or deceived potential customers, including those who were already contemplating negotiating with Plaintiffs, and have the tendency to mislead or deceive a substantial number of other potential customers for appliance recycling method and system.

106. Upon information and belief, the deception caused by Defendants' misrepresentations is material. This deception has already influenced and is likely to influence the purchasing decisions of potential customers for appliance recycling method and system.

107. Defendants' conduct is, and has been, malicious, fraudulent, deliberate, willful, intentional and/or oppressive, and constitutes unfair and unlawful business practices within the meaning of § 43(a) of the Lanham Act, 15 U.S.C. §1125(a).

108. Defendants' acts of unfair competition have injured and will continue to injure and harm Plaintiffs, unless Defendants' acts are restrained by this Court. Unless Defendants are enjoined from engaging in their wrongful conduct, Plaintiffs will suffer further irreparable injury and harm, for which they have no adequate remedy at law.

109. Upon information and belief, Defendants acted intentionally in conscious and deliberate disregard of the rights of Plaintiffs, with malice and oppression, in that Defendants knew that their aforementioned conduct was

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unjustified and would result in severe financial and economic injury to Plaintiffs. Defendants' acts of unfair competition have resulted in substantial profits for Defendants in an amount as yet unascertained. Defendants' acts of unfair competition have also resulted in damages to Plaintiffs caused by diversion of appliance recycling projects to Defendants and other damages resulting from irreparable harm to Plaintiffs' goodwill. Plaintiffs are entitled to an award of damages in an amount not less than three times Defendants' profits or Plaintiffs' damages, whichever is greater, and reasonable attorneys' fees.

COUNT III

Unfair Competition in Violation of California Business & Professions Code § 17200, et seq.

110. Plaintiffs restate and reallege the allegations set forth in paragraphs 1 through 109, as set forth fully herein.

111. The aforementioned acts of Defendants as alleged herein constitute unfair and unlawful business practices within the meaning of California Business and Professions Code §17200, *et seq.*

112. Upon information and belief, Defendants have used these unfair and unlawful business practices to deceive the consuming public, and therefore constitute unfair and fraudulent business practices in violation of California Business Professions Code §17200, *et seq.*

113. Defendants' acts of unfair competition have and will continue to injure and harm Plaintiffs, unless Defendants' conduct is restrained by this Court. Unless Defendants are enjoined from engaging in their wrongful conduct, Plaintiffs will suffer further irreparable injury and harm, for which they have no adequate remedy at law.

114. Plaintiffs are entitled to injunctive relief prohibiting Defendants from further engaging in such conduct, as well as restitutionary relief, and whatever other actions are necessary to prevent the use by Defendants of any unfair or unlawful

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business practices, and to restore to any person in interest any property acquired by means of such conduct.

COUNT IV

False and Misleading Advertising in Violation of California Business & Professions Code § 17500, et seq.

115. Plaintiffs restate and reallege the allegations set forth in paragraphs 1 through 114, as set forth fully herein.

116. Defendants have engaged in false and misleading advertising and promotion by presenting to potential customers as set forth above false descriptions of facts regarding the nature, characteristics, origin of the subject matter of the '416 patent.

117. On information and belief, Defendants' advertising and promotion actually misled or deceived potential customers, including those who were already contemplating negotiating with Plaintiffs, and have the tendency to mislead or deceive a substantial number of other potential customers for appliance recycling method and system.

118. On information and belief, the deception caused by Defendants' false advertising and promotion is material. This deception has already influenced and is likely to influence the purchasing decisions of potential customers for appliance recycling method and systems.

119. Defendants' acts of false and misleading advertising have injured and will continue to injure and harm Plaintiffs, unless Defendants' acts are restrained by this Court. Unless Defendants are enjoined from engaging in their wrongful conduct, Plaintiffs will suffer further irreparable injury and harm, for which they have no adequate remedy at law.

120. Plaintiffs are entitled to injunctive relief prohibiting Defendants from further engaging in such conduct, as well as restitutionary relief, and whatever other actions are necessary to prevent the use by Defendants of any false and misleading

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advertising, and to restore to any person in interest any property acquired by means of such conduct.

COUNT V

Intentional Interference With Prospective Economic Advantage

121. Plaintiffs restate and reallege the allegations set forth in paragraphs 1 through 120, as set forth fully herein.

122. An economic relationship existed between Plaintiffs and purchasers of their appliance recycling services, which contained a probable future economic benefit or advantage to Plaintiffs.

123. Defendants, and each of them, knew of Plaintiffs' current and prospective business relations with purchasers of their appliance recycling services, and intentionally engaged in wrongful conduct designed to interfere with and disrupt this relationship.

124. As a result of Defendants' wrongful conduct, Plaintiffs' economic relationship with their customers was actually interfered with or disrupted causing substantial injury and harm to Plaintiffs in terms of lost profits, increased costs and other damages.

125. Defendants have acted knowingly, willfully, wantonly and recklessly, with the unlawful purpose of interfering with Plaintiffs' economic relationship with their customers for Defendants' own profit.

126. An award of punitive damages of sufficient size to punish Defendants and to set an example in order to deter others who might be inclined to so act is fully warranted.

COUNT VI

Negligent Interference With Prospective Economic Relations

127. Plaintiffs restate and reallege the allegations set forth in paragraphs 1 through 126, as set forth fully herein.

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128. An economic relationship existed between Plaintiffs and purchasers of their appliance recycling services, which contained a probable future economic benefit or advantage to Plaintiffs.

129. Defendants, and each of them, knew or should have known of Plaintiffs' current and prospective business relations with purchasers of their appliance recycling services.

130. Defendants failed to use reasonable care by engaging in anticompetitive behavior, and other unlawful activities, that interfered with and disrupted this relationship.

131. Defendants knew or should have known that by engaging in such anticompetitive behavior, and other unlawful activities, that this relationship would be disrupted.

132. As a result of Defendants' wrongful conduct, Plaintiffs' economic relationship with their customers was actually interfered with or disrupted causing substantial injury and harm to Plaintiffs in terms of lost profits, increased costs and other damages.

WHEREFORE, Plaintiffs ARCA and ARCA-CA seek judgment of this Court as follows:

FOR COUNT ONE

1. A declaratory judgment that the '416 patent is invalid and unenforceable;

2. Declaring that it is Plaintiffs' right to continue to use its method and system of recycling household appliances without any threat or other interference whatsoever against Plaintiffs by Defendants, based on or arising out of the ownership of the '416 patent or any interest in such patent;

3. Declaring the '416 patent and all other patents and patent applications owned by Defendants, or any of them, relating to methods or systems of recycling used household appliances are unenforceable against Plaintiffs;

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4. Enjoining Defendants, pending the final adjudication of this action and permanently thereafter, from prosecuting, bringing, or threatening to bring any action against any buyers, sellers, or users of Plaintiffs' method and system of recycling household appliances for alleged infringement of Defendants' patent rights in the '416 patent; and

5. Such other and further relief as this Court may deem appropriate.

FOR COUNT TWO

1. For a judgment that Defendants have competed unfairly with Plaintiffs in violation of 15 U.S.C. §1125(a);

2. That Defendants be enjoined from continuing to engage in the unfair and unlawful business practices alleged in this claim;

VERIFICATION

I, Edward R. (Jack) Cameron, declare:

I am the President and CEO of Appliance Recycling Centers of America, Inc. ("ARCA") and Appliance Recycling Centers of America-California, Inc. ("ARCA-CA"), plaintiffs in the above-entitled action, and am authorized to make this verification for and on behalf of ARCA and ARCA-CA. I have read the foregoing Verified Complaint and know its contents. The same is true of my own knowledge, except as to those matters which are therein alleged on information and belief, and as to these matters, I believe it to be true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed at Minneapolis, Minnesota, on this 24th day of November, 2004.

Dated: November 24, 2004

/s/ Edward R. Cameron

Edward R. (Jack) Cameron

(12) **United States Patent Jacobsen et al.**

(10) **Patent No.: US 6,732,416 B1**

(45) **Date of Patent: May 11, 2004**

(54) **REFRIGERATOR RECYCLING METHOD AND SYSTEM**

(75) Inventors: **Terry Jacobsen**, Snohomish, WA (US); **Michael Dunham**, Lake Forest, CA (US)

(73) Assignee: **Jaco Environmental, Inc.**, Snohomish, WA (US)

(* Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/080.153**

(22) Filed: **Feb. 19, 2002**

(51) Int. Cl.⁷ **B23P 19/04; B23P 17/04; B23P 21/00**

(52) U.S. Cl. 29/403.3; 29/403.1; 29/711

(58) Field of Search 29/403.3, 403.1, 29/403.4, 426.3, 426.5, 426.6, 711; 62/298, 149, 292

(56) **References Cited**

U.S. PATENT DOCUMENTS
6,074,477 A * 12/1991 Welter et al. 241/18

* cited by examiner

Primary Examiner—John C. Hong

(74) *Attorney, Agent, or Firm*—James G. O'Neill; Klein O'Neill & Singh, LLP

(57) **ABSTRACT**

A system and method for recycling materials from appliances, such as refrigerators and freezers, including a conveyor system having a number of stations to remove material from the appliance, and a band saw to cut the appliance into at least two pieces. The cut pieces of the appliance are taken apart to separate a metal shell and plastic interior from polyurethane foam. The polyurethane foam is placed in sealed bags, palletized, shrink-wrapped and shipped to an incinerator for burning to eliminate outgassing of CFC-11 in the atmosphere.

20 claims, 1 Drawing Sheet

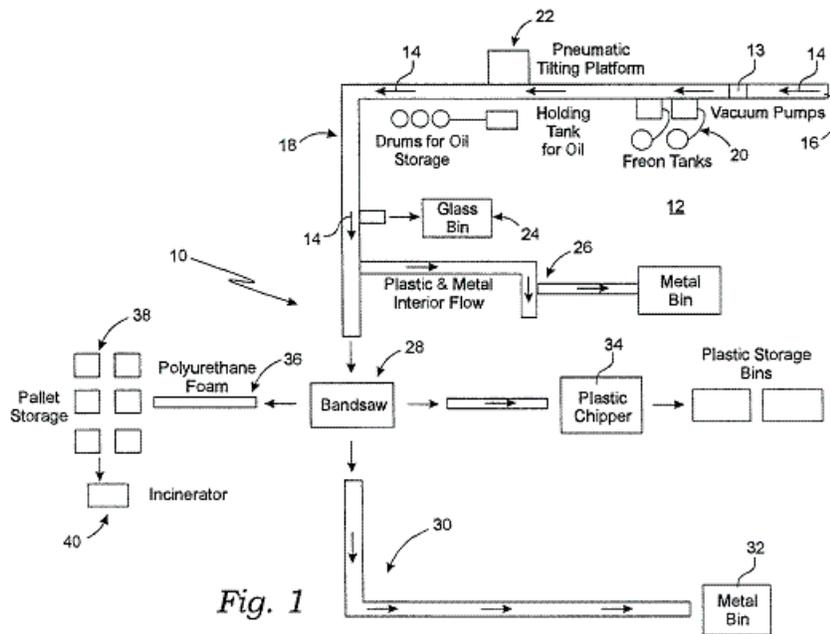


Fig. 1

US 6,732,416 B1

REFRIGERATOR RECYCLING METHOD AND SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention generally relates to recycling systems, and more particularly, to an improved and more efficient method and system for separating and recycling the materials in freezers and refrigerators.

2. Description of the Prior Art

It is well known that many household appliances, such as freezers and refrigerators, contain toxic materials that must be separated and removed and recycled or destroyed. Various techniques and processes have heretofore been employed in order to recycle portions of freezers and refrigerators. However, none of the known techniques or processes are successful in recycling or destroying R-11.

Large quantities of CFC-11 are stored in rigid cell foams, notably polyurethane foam or R-11 used for insulation of refrigerators, freezers and the like. The CFC-11 is used as a foam-blowing agent in the manufacture of polyurethane. The CFC-11 slowly outgases from polyurethane, with an estimated half-life of 100-300 years and is a known contributor to ozone depletion. Heretofore, in an attempt to prevent the outgassing of CFC-11, the R-11 was pulverized. However, since the remaining CFC-11 in the R-11 is so strongly bonded to the foam, pulverization leaves two waste streams containing CFC-11 and pulverized foam with CFC-11 still attached. If sent to a landfill, this pulverized foam will eventually release the ozone depleting CFC-11 into the atmosphere as it decomposes. Therefore, the existing systems do not remove sufficient amounts of CFC-11 from R-11, nor are they applicable to a refrigerator and freezer recycling program.

The present invention provides improvements in destroying CFC-11 contained in R-11 and recycling and recovering other materials from refrigerators and freezers in an efficient and cost-effective manner. This is accomplished by utilizing a system that achieves a 90% material recovery rate and packages the R-11 for transport to an incinerator where it is destroyed. The refrigerators and/or freezers to be recycled are placed on a platform and the platform is loaded on a conveyor or roller transport system. The refrigerator or freezer is then moved through a plurality of stations in the system where various materials therein are removed or drained. The refrigerator or freezer is then placed horizontally on a platform and sent to a large band saw where the remaining housing is cut into a number of pieces to allow the metal shell and interior plastic pieces to be stripped away. The contaminated polyurethane foam is then removed and packaged for shipment to an incinerator for proper disposal of the R-11.

Therefore, it can be seen that the present invention meets an existing need in the art for an improved and more efficient method and system for eliminating CFC-11 held in R-11 and more effectively recycling appliances, such as refrigerators and freezers.

SUMMARY OF THE INVENTION

Accordingly, it is a general object of the present invention to provide an improved system for recycling appliances. It is a particular object of the present invention to provide an improved system for more efficiently recycling the materials in refrigerators or freezers. It is another particular object of the present invention to provide an improved method for removing polyurethane foam from refrigerators and freezers and packaging the foam for shipping to an incinerator. It is yet another particular object of the present invention to provide an improved method for achieving substantially improved recycling of approximately 90% of the materials in a refrigerator or freezer.

These and other objects and advantages of the present invention are achieved by providing a method and system for recycling appliances comprising a conveyor system, a plurality of stations to remove materials from the platform 13, preferably in a vertical or upright position, and the holder or platform placed on the conveyor system 10 for movement in the direction of the arrows 14. The conveyor, system 10 may be of any desired width, such as approximately two feet, to accommodate the platform 13 and refrigerator loaded thereon. The platform 13 is preferably about 2 feet square and may be of any desired thickness, such as approximately 1/2 inch thick plywood or plastic, so as to be easily carried along the system 10 as the refrigerator or other appliance thereon is moved through the system to remove and recover the materials therein.

The platform 13 and refrigerator are placed on the system 10 at a starting point or end 16 in a first portion or section 18. The platform 13 and refrigerator or other appliance are moved to a first station 20 where refrigerant, such as freon, is evacuated from the refrigerator in any acceptable or known manner and pumped into tanks for shipping to a recycling/cleaning facility.

A compressor in the refrigerator or other appliance has a hole formed therein, as by drilling. The hole is of sufficient size to enable the compressor to be drained, and the platform 13 and refrigerator are moved to a second station 22 having a pneumatic tilting platform to tilt the platform 13 and refrigerator to an angle of approximately 20 degrees. A tube, or the like, is inserted into the drilled hole and the oil in the compressor pumped out into a holding tank and placed in EPA approved drums, preferably 55

gallon, for shipping to an environmental recycler.

Any capacitors or other devices containing PCB's are removed from the refrigerator or appliance and placed in UN/EPA approved containers for shipment to a waste incinerator.

Interior parts are removed from the refrigerator and sent to a glass bin at **24** or a plastic and metal interior flow conveyor portion **26** for appropriate storage and/or processing. The interior, parts removal may be done on the conveyor portion **18**, elevated from the supporting surface **12**, or the platform **13** and refrigerator thereon may be lowered to ground level for convenience.

After the interior parts are removed and the platform and refrigerator are at ground level, the refrigerator is moved so as to lay or rest horizontally on the platform **13**. The platform **13** and refrigerator are then moved to device **28**, such as a large band saw, to break or form the refrigerator into several pieces. The large band saw **28** is sized and dimensioned to enable a large refrigerator or freezer to be easily held therein and be cut into a plurality of pieces or sections. The band saw **28** includes a specifically designed set of pneumatic clamps for securely holding a refrigerator, or the like, during cutting. This clamping device also tilts the refrigerator to approximately 10° from horizontal to allow a saw blade in the band saw to more easily cut the refrigerator into pieces or sections. This tilting also preserves blade life.

The band saw **28** preferably cuts the refrigerator into 3 pieces by making 2 cuts spaced 18" to 24" from both the top and bottom of the refrigerator.

After being cut into 2 or more pieces or sections, each piece or section is taken apart, by machine or manually, by stripping away the metal shell and any interior plastic liner and pulling or scraping the polyurethane foam from the metal and/or plastic.

The metal is sent to a further portion or section **30** of the conveyor to system, where it may be compacted and then collected at **32**, for forwarding to a recycler.

The interior plastic liner, together with any other plastic taken from the interior is sent to a plastic chipper **34**, where it is shredded into manageable size pieces for sorting, storing, packaging and shipment to a plastic recycler.

The polyurethane foam is packaged at **36** into sealed plastic bags to prevent any further release of CFC-11. The sealed bags are then palletized and shrink wrapped for storage at **38** and eventual shipment to an approved incinerator **40** where the entire pallet and its contents are incinerated at 900° centigrade (Celsius) so that no harmful by-products are produced.

Those skilled in the art will appreciate that various adaptations and modifications of the just-described preferred embodiments may be configured without departing from the scope and spirit of the invention. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than is specifically described herein.

What is claimed is:

1. A method of recycling, substantially all materials in an appliance, comprising the steps of:

placing the appliance on a platform in a facility at atmospheric pressure;

placing the platform and the appliance on and transporting the platform and the appliance along a conveyor system through a plurality of spaced stations, where various materials are removed from the appliance and stored for recycling; and

Wherein the plurality of stations include a station to remove refrigerant, a station to remove oil, at least one station to remove interior parts, and a station having a band saw to saw the appliance into a plurality of pieces.

2. The method of claim 1, including the further steps of stripping a metal shell and interior plastic from the plurality of pieces and removing polyurethane foam.

3. The method of claim 2, including the further steps of placing the removed polyurethane foam into plastic bags, sealing the plastic bags against leakage of CFC-11, and incinerating the plastic bags and the polyurethane foam.

4. The method of claim 2, including the further steps of placing the removed polyurethane foam in sealed plastic bags, placing a plurality of the sealed plastic bags of polyurethane foam on a pallet, and shrink wrapping the pallet and the plurality of the sealed plastic bags of polyurethane foam.

5. The method of claim 4, including the further steps of transporting a plurality of shrink wrapped pallets and sealed plastic bags of polyurethane foam to an incinerator and incinerating each of the shrink wrapped pallets and sealed plastic bags at 900° C.

6. A process to recycle substantially all materials in a refrigerator or freezer, comprising the steps of:

placing the refrigerator or freezer on a platform in an upright or vertical position in a facility at atmospheric pressure;

placing the platform and the refrigerator or freezer on and transporting the platform and the refrigerator or freezer along a conveyor system to a plurality of stations;

removing any Freon from the refrigerator or freezer at a first station;

drilling a hole in a compressor in the refrigerator or freezer;

draining any oil from the compressor through the drilled hole at a second station by tilting the platform;

removing any capacitors from the refrigerator freezer;

removing any interior parts from the refrigerator or freezer;

laying the refrigerator or freezer horizontally on the platform;

using a band saw to saw the refrigerator or freezer into at least two pieces at a further station; and

breaking the at least two pieces apart so as to separate any metal, plastic and polyurethane foam.

7. The process of claim 6, including the further steps of placing the separated polyurethane foam in plastic bags, sealing the plastic bags to prevent the leakage of CFC-11, and incinerating the polyurethane foam and the plastic bags.

8. The process of claim 6, including the further steps of placing the removed polyurethane foam in sealed plastic bags, placing a plurality of the sealed plastic bags of polyurethane foam on a pallet, and shrink-wrapping the pallet and the plurality of the sealed plastic bags of polyurethane foam.

9. The process of claim 8, including the further steps of transporting a plurality of shrink-wrapped pallets and sealed plastic bags of polyurethane foam to an incinerator and incinerating each of the shrink wrapped pallets and sealed plastic bags at 900° C.

10. The process of claim 9, including the further steps of placing the removed Freon and drained oil into containers for shipment to recyclers.

11. The process of claim 9, including the further steps of transporting the removed capacitors, removed interior parts, the separated metal and plastic to storage for further handling.

12. A system to recycle substantially all materials in an appliance, such as a refrigerator or freezer comprising:

a facility for receiving the appliance; the facility being at atmospheric pressure,

a platform for supporting the appliance in an upright or vertical position;

a conveyor system for transporting the platform and appliance in the facility;

a first station in the facility for removing any Freon from the appliance;

means in the facility for draining any oil from the compressor through the drilled hole and storing the oil for shipment;

means in the facility for removing any interior parts from the appliance and transporting to storage;

means in the facility for cutting the appliance into at least two pieces;

means in the facility for tearing the at least two pieces apart so as to separate any metal, plastic and polyurethane foam; and

means in the facility for transporting the separated metal, plastic and polyurethane foam to separate areas for further handling.

13. The system of claim 12, further including means in the facility for placing the separated polyurethane foam in

plastic bags and sealing the plastic bags to prevent leakage of CFC-11 and incinerating the sealed plastic bags of polyurethane foam.

14. The system of claim 12, further including shrink wrapping a plurality of the sealed plastic bags on a pallet and providing an incinerator for incinerating each pallet and plurality of the sealed plastic bags at 900° C.

15. The system of claim 12 wherein the means in the facility for cutting the appliance into at least two pieces is a band saw, sized and dimensioned to receive, hold and saw the appliance into at the least two pieces.

16. The system of claim 13 wherein the means in the facility for draining the oil from the compressor includes a tilting platform that tilts the platform and the appliance thereon.

17. The system of claim 16 wherein the tilting platform is movable approximately 20 degrees.

18. The system of claim 17, further including means in the facility for placing the separated polyurethane foam in plastic bags to prevent leakage of CFC-11.

19. The system of claim 18, further including means in the facility for placing a plurality of the sealed plastic bags on pallets and shrink-wrapping the pallets and the plurality of the sealed plastic bags for shipping.

20. The system of claim 15 wherein the band saw includes a set of pneumatic clamps for securely holding the appliance at an angle of approximately 10° from horizontal.

* * * * *
