United States Patent

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[72] Inventor **Roy M. Eidal**
Albuquerque, N. Mex.

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[73] Assignee **Eidal International Corporation**
Albuquerque, N. Mex.
Subsidiary of Southwest Factories, Inc.

[54] **METAL-PROCESSING UNIT**
3 Claims, 5 Drawing Figs.

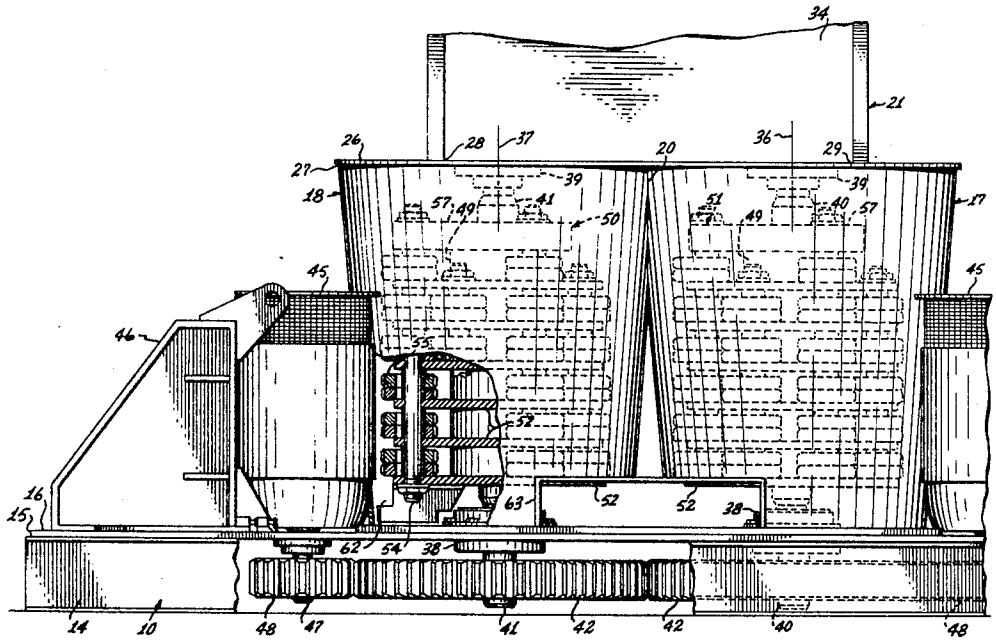
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[51] **Int. Cl.** **B02c 13/20,** B02c 13/14, B02c 18/12
[50] **Field of Search** ..... 241/138, 141, 146, 193, 196, (DIG. 22)

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Primary Examiner—Donald G. Kelly
Attorney—Willard L. Groene

ABSTRACT: A processing unit particularly for automobile bodies, sheet metal scrap, and other solid waste, utilizing a pair of rotary compactors placed side-by-side and to open the outer surrounding shell between the two allowing the material passing through the machine access between the two rotors of the compactors.



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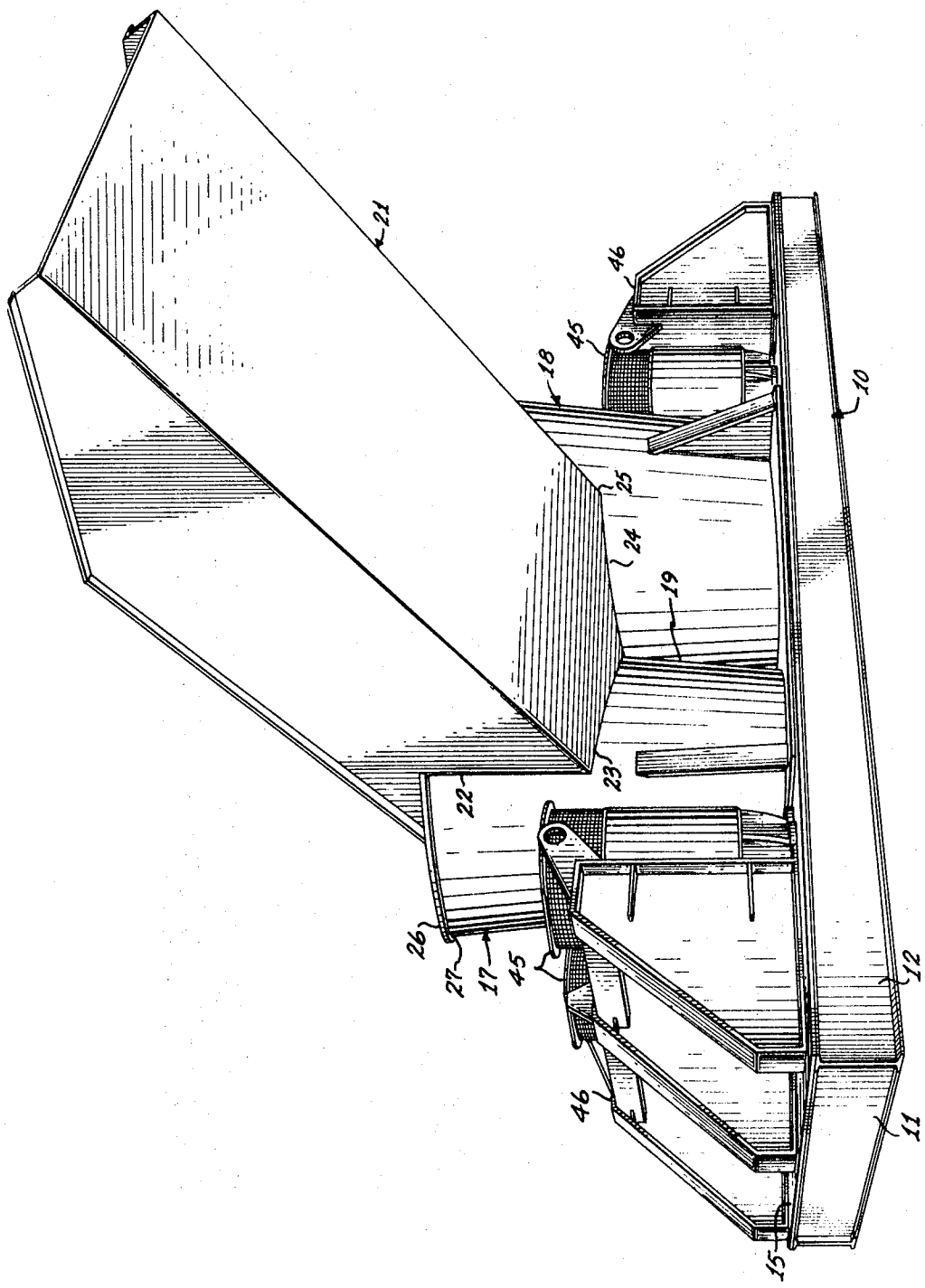


FIG-1

INVENTOR.
ROY M. EIDAL
BY
Willard S. Grant
ATTORNEY

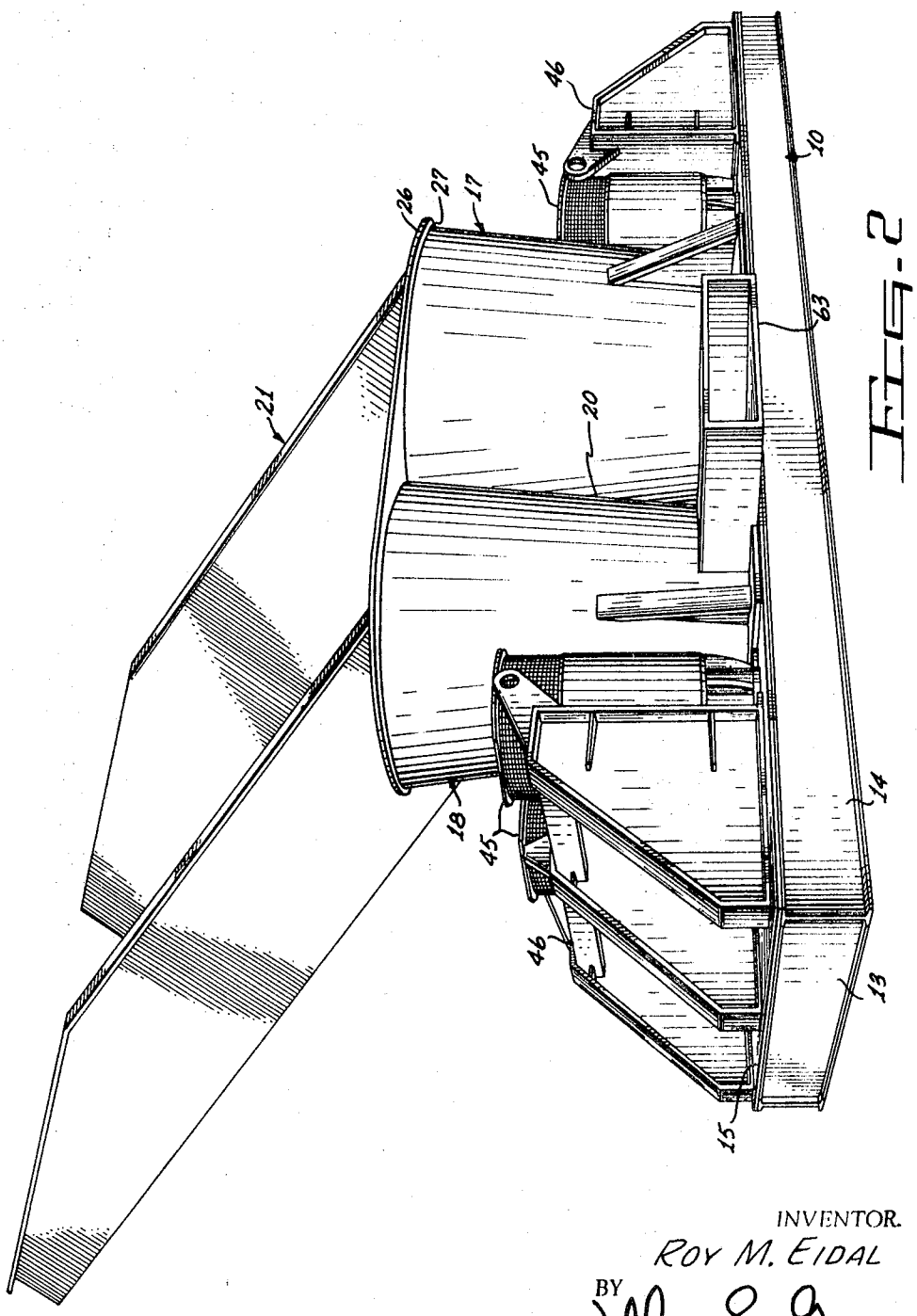


FIG. 2

INVENTOR.
ROY M. EIDAL
BY
Willard S. Grove
ATTORNEY

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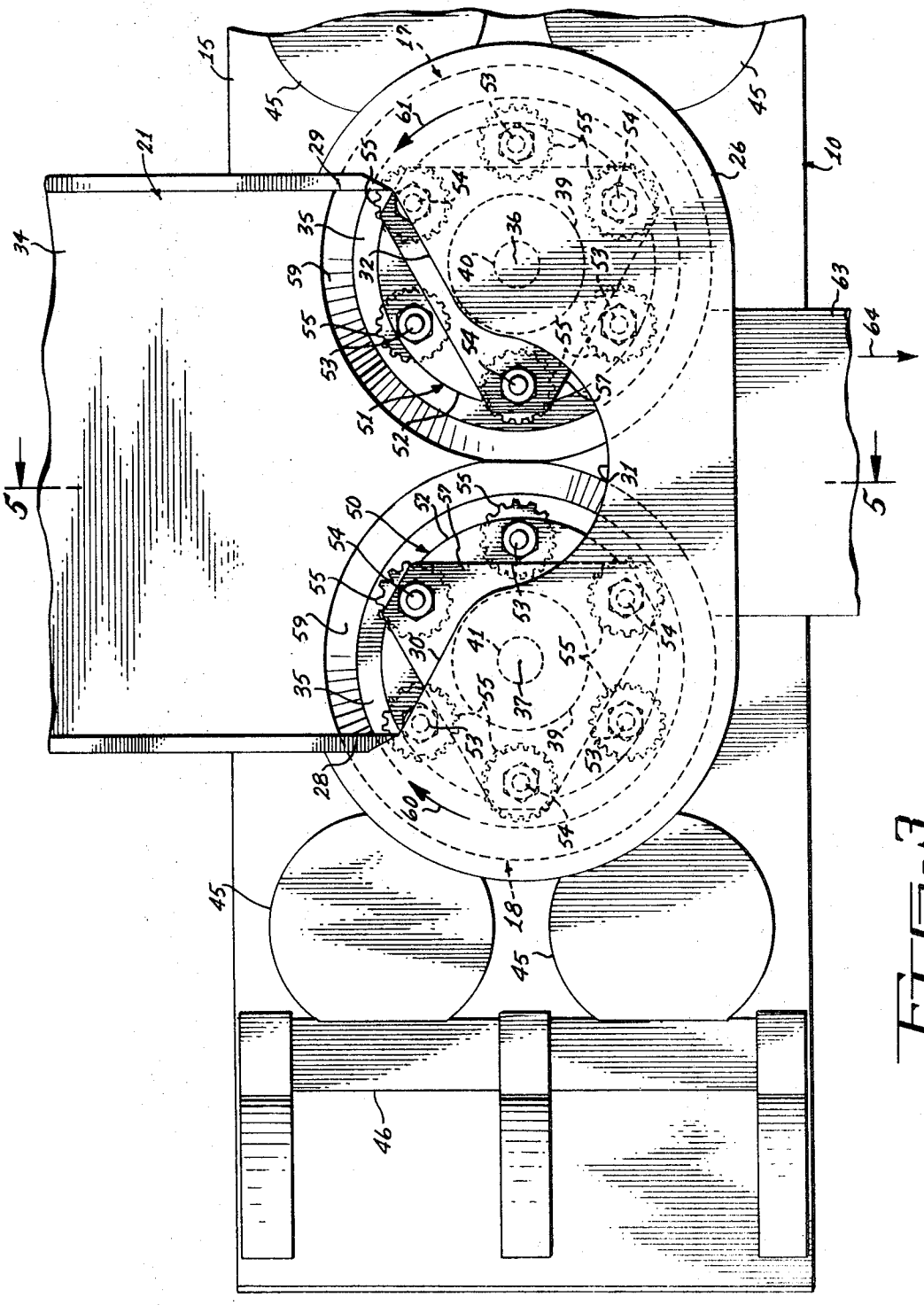


FIG-3

INVENTOR.
ROY M. EIDAL
BY
Willard S. Grove
ATTORNEY

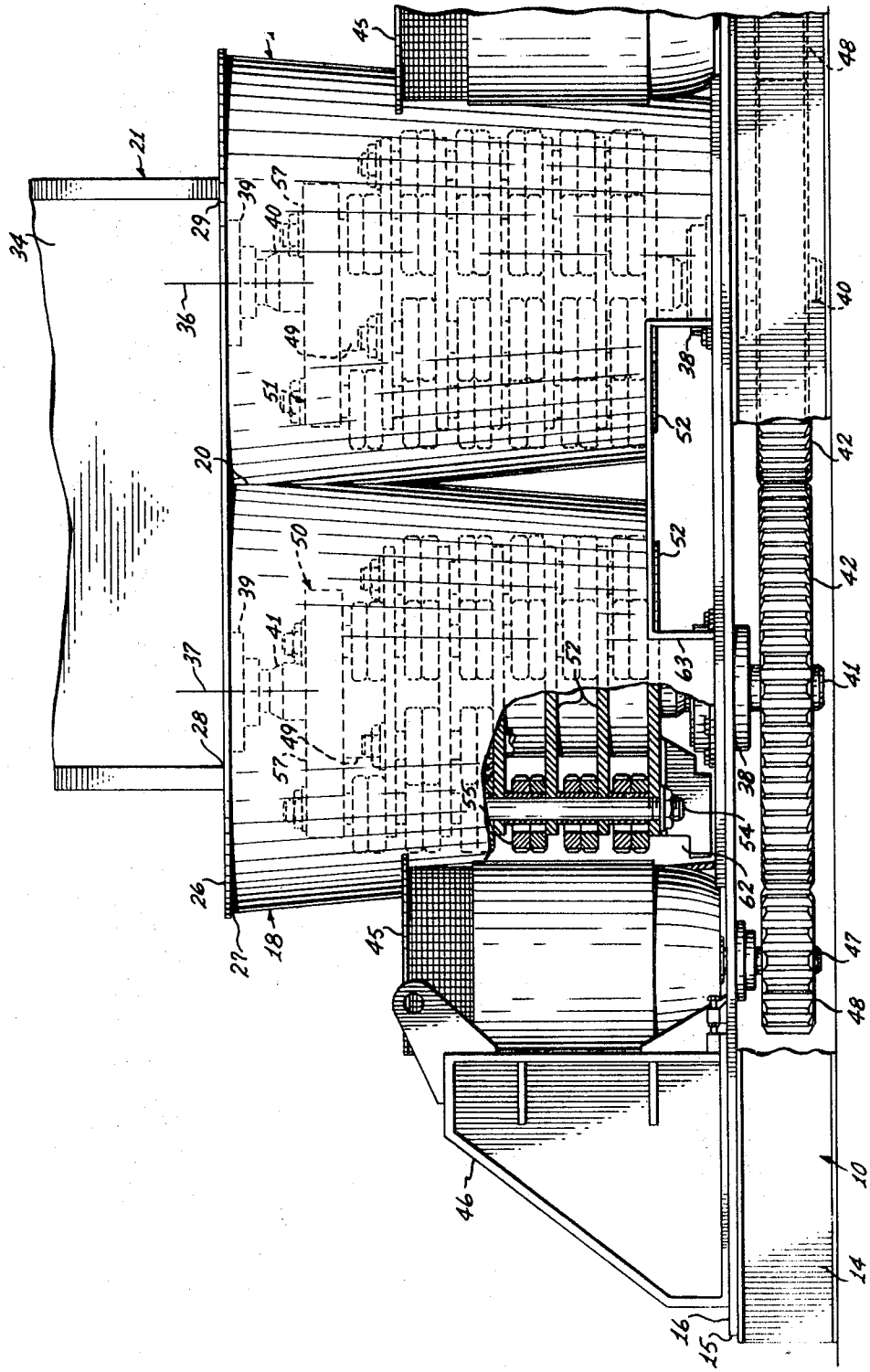


Fig-4

INVENTOR.
ROY M. EIDAL
BY Willard S. Goewey
ATTORNEY

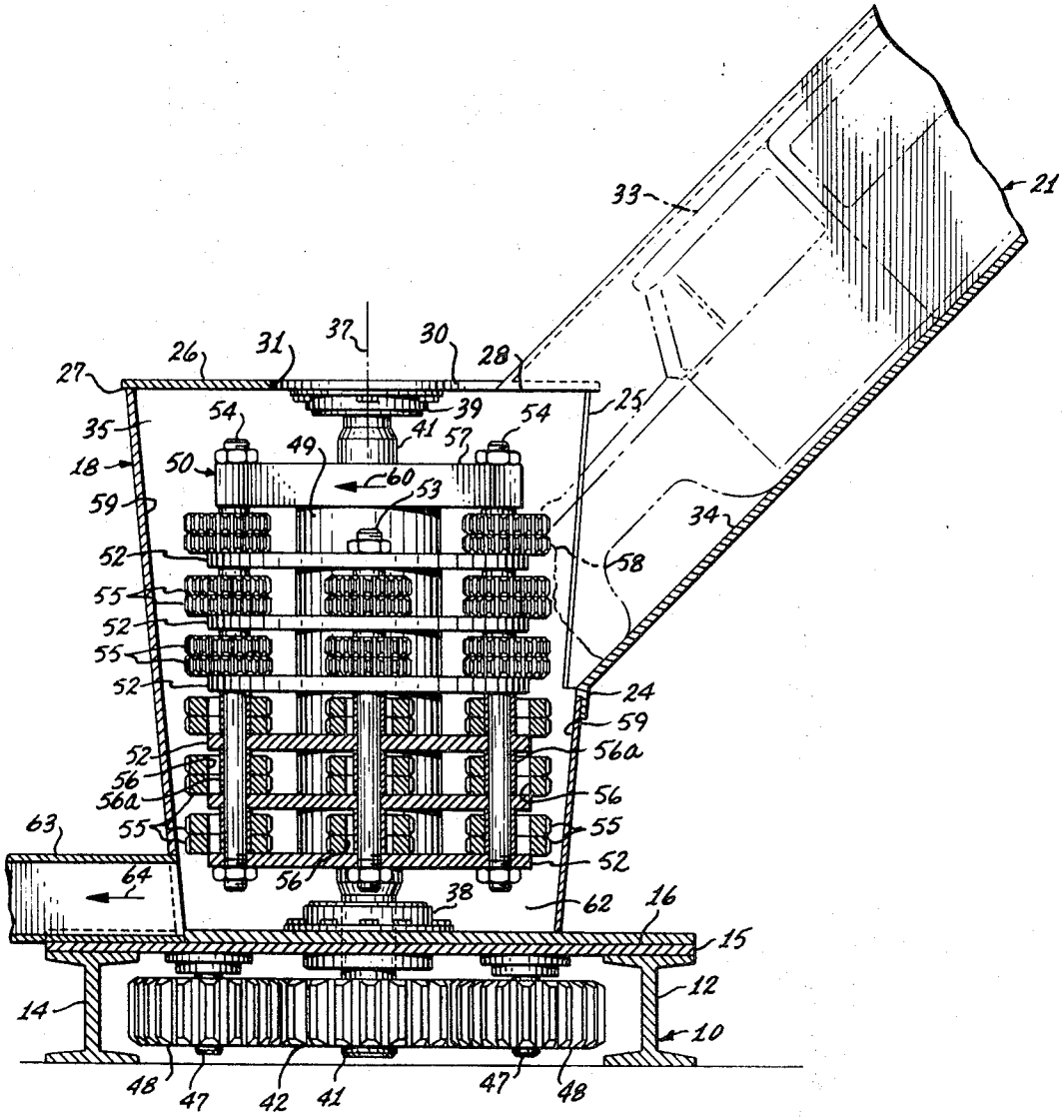


Fig. 5

INVENTOR.
ROY M. EIDAL

BY
Willard S. Grove

ATTORNEY

METAL-PROCESSING UNIT

CROSS-REFERENCE TO RELATED PATENTS

This application is related to U.S. Pat. No. 3,356,016 issued Dec. 5, 1967.

BACKGROUND OF THE INVENTION

1. This invention pertains to metal processing units, and is particularly directed to automobile body disposal apparatus. 2. Heretofore, to accomplish the compaction of an automobile body, it is necessary to use a shear, a flattener and a chopper to get the material properly sized and to present it to a single spindle compactor, a series of costly machines and time consuming steps being thus required.

SUMMARY OF THE INVENTION

One of the objects of this invention is to use a single compactor without any other auxiliary machines, such as flatteners, shears and choppers, to accomplish the complete processing of automobiles and the other materials to acceptable scrap, such as stoves, refrigerators or refuse including wood, paper, cardboard, etc.

Another object is to construct a compactor with the above capability by utilizing a pair of radially spaced spindles and rotors in the compactor placed side by side and provide an opening in the shell fed from a hopper adapted to receive the complete auto body and other bulky material which is thus fed between the two rotors allowing the material passing through the compactor access between the two rotors to effect the complete processing of the material.

Still another object is to provide a specially constructed double spindle rotary compactor capable in itself to receive a complete automobile body and reduce it to acceptable scrap size in a single passage of the material through the compactor unit.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front perspective view of the dual spindle rotary compactor incorporation the features of this invention.

FIG. 2 is a rear perspective view of the compactor shown in FIG. 1.

FIG. 3 is an enlarged fragmentary plan view of the apparatus shown in FIGS. 1 and 2.

FIG. 4 is an enlarged fragmentary rear elevation, partly broken away to show the rotor structure.

FIG. 5 is an enlarged vertical section on the line 5–5 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As an example of one embodiment of this invention, there is shown a dual spindle rotary compactor having a base **10** formed of heavy eyebeams **11**, **12**, **13** and **14** to which is rigidly fixed the top plate **15**. Fixed on the top surface **16** of the plate **15** are the pair of downwardly converging conical shells **17** and **18** which merge with each other along the lines **19** and **20** so that the inner chambers of the shells are in communication with each other.

A body supply hopper **21** is connected to one side of the upper portion of the shells at an opening defined by the lines **22**, **23**, **24** and **25**, and also to the top cover **26** fixed to the top edges **27** of the shells **17** and **18** at the lines **28** and **29**. An opening defined by the edges **30**, **31** and **32** cut in the top provide access for the automobile bodies **33** to slide and feed

down the sloping surface **34** of the hopper **21** into the inner chamber **35** of the shells **17** and **18**.

Journaled to revolve on vertical axes **36** and **37** within the shells on suitable bearings **38** and **39** supported on the top plate **15** of the base **10** and the top cover **26** of the tapered shells, are the rotor shafts **40** and **41**, to the lower ends of which are fixed the main driving gears **42**. Pairs of driving motors **45** are rigidly mounted on suitable brackets **46** fixed to the base **10**, each of the pairs of motors **45** having drive shafts **47** on which are fixed drive pinions **48** in mesh with the respective gears **42**, there being four motors and two rotors all geared together.

Each rotor **50** and **51** comprises a cylindrical hub **49** fixed to a rotor shaft **40** and **41** and having a series of vertically spaced radially disposed discs **52** and near the outer perimeters thereof a fixed series of circumferentially spaced vertical shafts **53** and **54**. Between the discs **52** are work-engaging serrated or toothed cutters **55** loosely journaled with enlarged bores **56** around the spacer bushings **56***a* on the shafts **53** and **54**.

A lesser number of circumferentially spaced cutters are used between the top rotor disc **52** and a heavy triangular-shaped radially spaced member **57** fixed to the top of the cylindrical hub **49** receives the upper ends only of the shafts **54**. This arrangement initially engages the leading portion **58** of the auto bodies **33** to draw the work in between the rotor cutters and to lop off chunks of the work suitable to start feeding down between the conical inner surface **59** of the shells **17** and **18** and the periphery of the cutters **55** while the rotors are revolving, in the direction indicated by the arrows **60** and **61**, FIG. 3.

As the compacted material feeds down the sides **59** of the shells it finally arrives properly sized in the base cavity **62** from which it is discharged, by the centrifugal force of the rotation of the rotors, out through the discharge chute **63** as indicated by the arrow **64**.

I claim:

1. A metal-processing unit comprising in combination:

A. a base,

B. dual merging conical downwardly converging shells mounted on the base,

C. a downwardly and inwardly sloping hopper connected to and discharging into the upper portion of a merging side and top of the shells,

D. oppositely rotating rotors journaled on the base having their peripheries rotating inwardly and toward each other at the area of discharge of the hopper into the shells, said rotors being positioned from each other a predetermined distance,

E. power means on the base for rotating the rotors,

F. cutters loosely journaled and circumferentially positioned in a cylindrical array around the periphery of the rotor, said cutters on one rotor being positioned from cutters on the other rotor a predetermined distance to avoid intermeshing,

G. and a discharge chute on the base connected into the bottom of the shells at their opposite merging side from the merging side first above mentioned.

2. A metal processing unit as set forth in claim **1** wherein fewer cutters are circumferentially positioned around the periphery of the rotor at their top portions where they rotate in front of the area of discharge of the hopper into the shells.

3. A metal processing unit as set forth in claim **1** wherein the shells include a top plate and the rotors are journaled on the base and on the top plate.