

Aug. 15, 1961

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BALING PRESS

2,995,999

Filed March 5, 1958

3 Sheets-Sheet 1

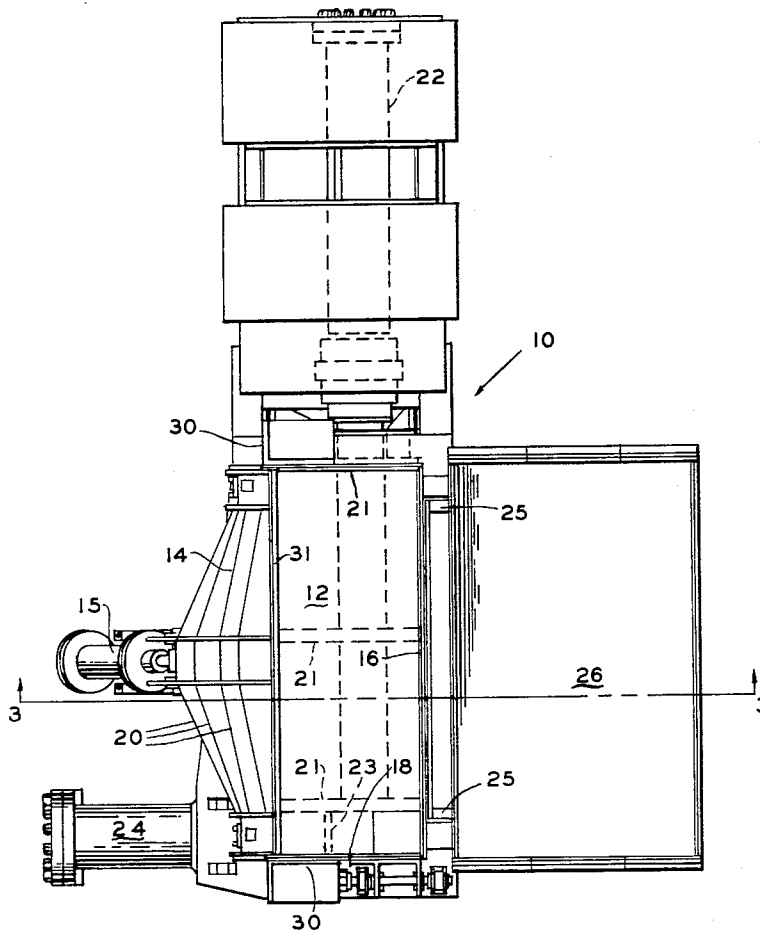


FIG. 1.

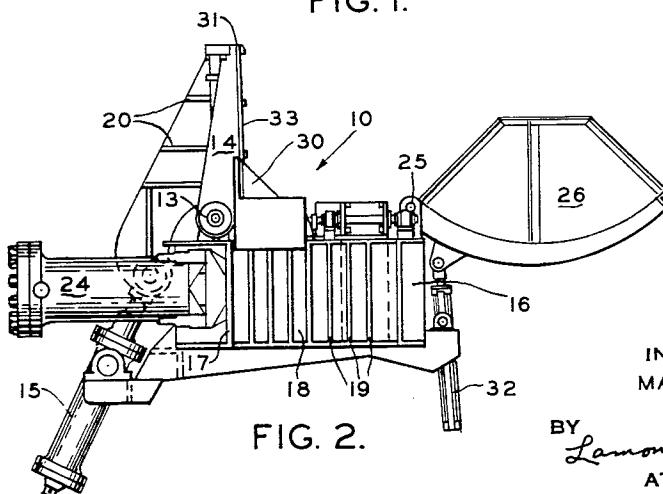


FIG. 2.

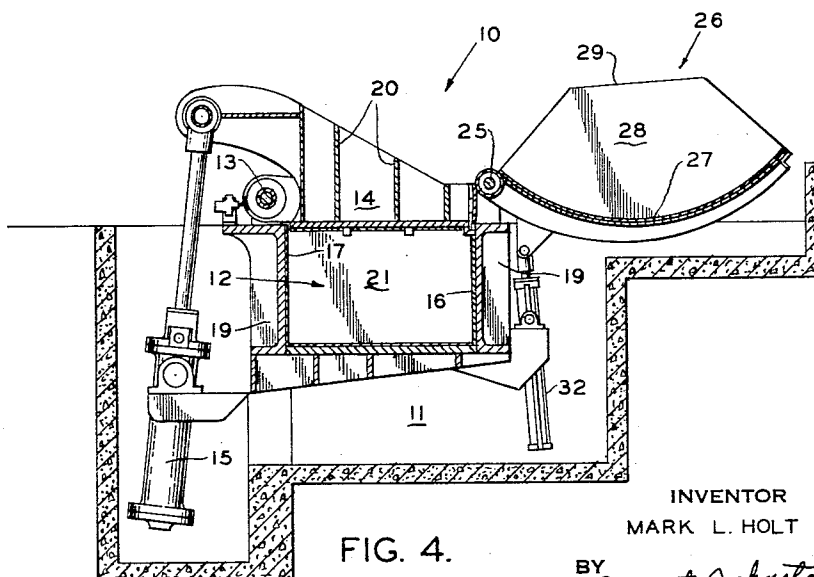
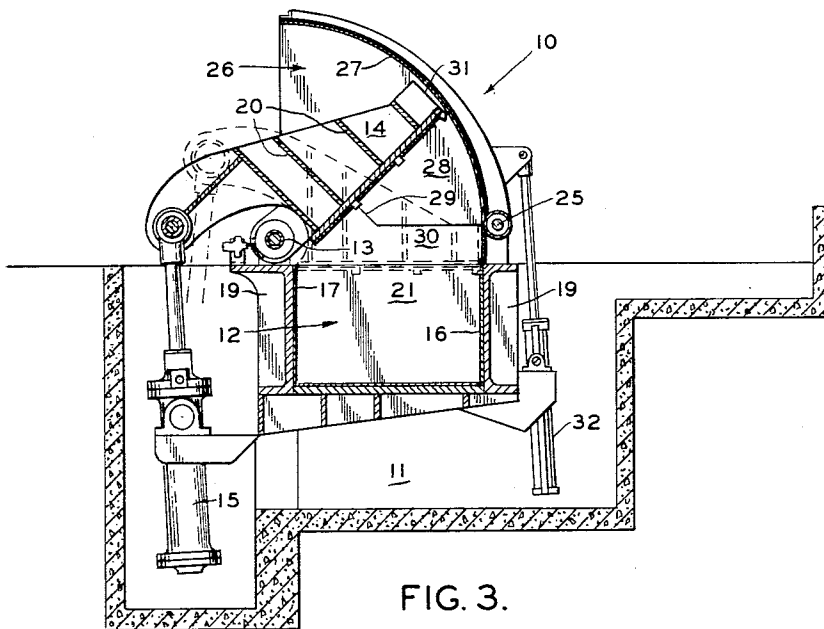
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3 Sheets-Sheet 3

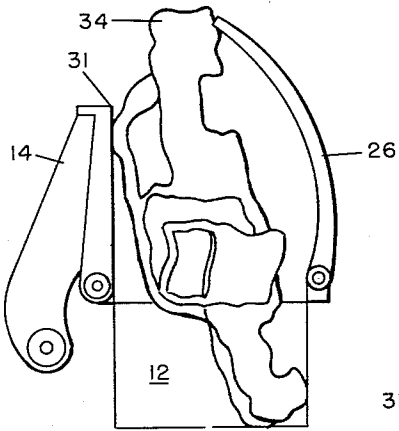


FIG. 5

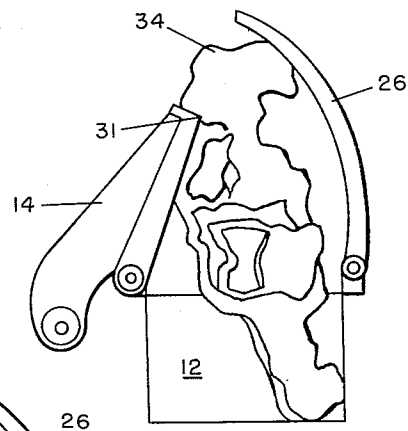


FIG. 6

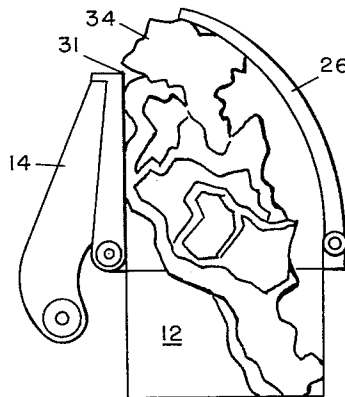


FIG. 7

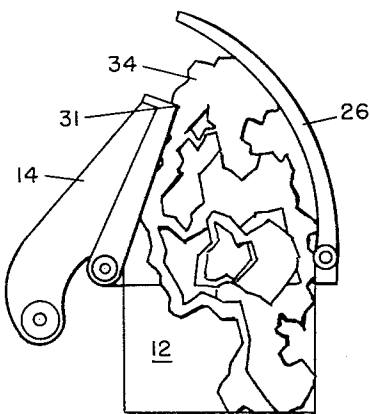


FIG. 8

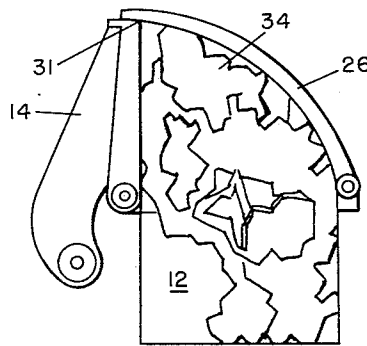


FIG. 9

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1

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3 Claims. (Cl. 100-232)

This invention relates to a scrap metal baling press and more particularly to the combination of a contoured hopper and a door on the press which cooperate to load the press with the greatest possible bulk and weight of scrap metal. This application is a continuation-in-part of my application Serial No. 618,212 filed October 25, 1956, entitled "Baling Press," now U.S. Patent No. 2,934,002.

The baling of scrap metal is a highly competitive business in which it is essential to keep costs low and bale production in tonnage high through the use of efficient machinery. For normal baling operations, a press having a certain size is most efficient. On the other hand, a press of any given size cannot ordinarily handle articles which are larger than the size of its compression chamber. For example, a press having a compression chamber 9 feet long, 4 feet wide and 3 feet high would be satisfactory for compressing into bales most articles of scrap metal which are available. Such a press would not be large enough, however, to receive an automobile body or other larger article occasionally available as scrap.

One object of this invention is to provide a means for loading into a baling press and reducing to a size which can be forced into its compression chamber articles which are initially larger than that chamber.

Another object is to provide a baling press having a power-actuated compression chamber door and a power-actuated hopper so shaped as to fit closely about the door and to cooperate therewith to reduce large articles of scrap metal to a size which can be forced into the compression chamber of the press.

Other objects and advantages of the invention will be apparent from the following description, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a top plan view of a press embodying my invention with the hopper in loading position and the tamping door in open position;

FIG. 2 is an end elevation of the press disclosed in FIG. 1;

FIG. 3 is a section taken along the line 3-3 of FIG. 1 with the hopper in dumping position and the tamping door in an intermediate position in solid lines and in closed position in broken lines;

FIG. 4 is a view similar to FIG. 3 with the hopper in loading position and the tamping door pivoted to closed position;

FIG. 5 is a diagrammatic vertical section showing a large article such as an automobile body with one end resting on the bottom of the compression chamber and the other end projecting out of the press, the door being opened all the way and the hopper being closed as far as it will go against the body;

FIG. 6 is a diagrammatic view similar to FIG. 5 with the hopper in the same position and the door closed partially to bend the body;

FIG. 7 is a diagrammatic view similar to FIG. 6 with the door opened all the way and the hopper closed as far as it will go against the partially bent body;

FIG. 8 is a diagrammatic view similar to FIG. 7 with the hopper in the same position and the door closed partially to bend the body further; and

FIG. 9 is a diagrammatic view similar to FIG. 8 with the door opened all the way and the hopper closed all the way, completely enclosing the bent body.

2

Referring now to the drawings in more detail, a baling press 10 may be mounted in an open pit 11, as best disclosed in FIGS. 3 and 4, or in any other suitable manner. The baling press 10 is provided with a compression chamber 12 of a generally rectangular shape having an open top. Pivoted along one side of the compression chamber 12 by hinges 13 is a tamping door or cover 14 also of a generally rectangular shape and adapted to pivot to close the opening in the top of the compression chamber 12.

The tamping door 14 is provided with a fluid pressure cylinder 15 to pivot the door 14 to open and closed position with respect to the compression chamber 12. In order to withstand the tremendous pressure built up within the compression chamber 12, the front wall 16, the rear wall 17 and the end wall 18 of the compression chamber 12, are heavily reinforced with ribs 19, and the tamping door 14 is also reinforced with ribs 20.

Comprising one end of the compression chamber 12 is a ram platen 21, adapted to be moved longitudinally of the compression chamber 12 by means of fluid-operated ram cylinder 22 as indicated by the dashed lines in FIG. 1. Comprising a portion of the rear wall 17 adjacent the end wall 18 is a ram platen 23 adapted to be moved by means of fluid-operated cylinder 24 transversely across the face of the ram platen 21 when fully extended as indicated by the dashed lines in FIG. 1.

Pivoted by means of hinges 25 to the top of the front wall 16, is a hopper 26 for receiving a charge of material, such as scrap metal, to be compressed by the baling press 10. The hopper 26 has the shape of a cylindrical segment having an arcuate bottom 27 and side plates 28. The side plates 28 are beveled at 29 to abut against the inclined stops 30 mounted on top of and at the rear corners of the compression chamber 12, when the hopper 26 has been pivoted to dumping position, as disclosed in FIG. 3. The radius of curvature of the arcuate bottom 27 is substantially equal to the distance between the pivotal axis of the tamping door hinges 13 and the front edge 31 of the door 14. The pivotal axes of the hinges 13 and the hinges 25 are parallel and spaced in such a manner that when the hopper 26 is pivoted to its dumping position by means such as fluid cylinder 32, the front edge 31 of the tamping door 14 will continuously engage the cylindrical bottom 27 and the end edges 33 of the door will also be in constant engagement with the side plates 28 when the door 14 is pivoted from open to closed position. Such a construction provides means for scraping the hopper 26 clean of any residual scrap material which might remain after the hopper is moved from loading to dumping position.

The operation of the press in reducing a large article 34 of scrap metal, such as an automobile body, to a size which can be forced into the compression chamber of the press, as illustrated in FIGS. 5 through 9, is as follows:

The body 34 is placed in the hopper 26 in its open position, as shown in FIGS. 1 and 2. While keeping the door 14 in its open position, as shown in FIGS. 1 and 2, the hopper is pivoted upward toward its closed position, as shown in FIG. 3. This movement of the hopper dumps the body 34 into the press, with one end resting on the bottom of the compression chamber 12 and the other end projecting out of the chamber beyond the edge of the open door 14 and beyond the free edge of the open door. The hopper 26 is then closed as far as it will go against the body, as in FIG. 5. With the hopper held in that position, the door is then closed partially against the body 34, partially compressing and bending or breaking it, as shown in FIG. 6. Next, the door is opened all the way and the hopper is closed farther until it abuts against the reduced portion of the body, as in FIG. 7. With the hopper held in that position, the door is again closed partially, as in FIG. 8, to bend or break the body 34 still

3

more. The two bending steps just outlined are usually sufficient to reduce the dimensions of the body enough for it to be completely enclosed between the fully opened door and the fully closed hopper, as shown in FIG. 9, from which position the door is closed to force the body completely into the compression chamber 12. If necessary, of course, one or more additional bending steps may be used.

By this invention, there is provided a press for baling heavy, bulky scrap metal, such as automobile bodies, without requiring a press of excessive dimensions which would be inefficient for normal baling operations. The door and hopper act against each other in such a way as to reduce to a smaller size articles of scrap metal which are larger than the compression chamber and to force the articles into the chamber for compression into bales. This action enables the formation of bales of greater density and makes the press more efficient than presses heretofore available.

It will be apparent to those skilled in the art that various changes may be made in the invention, without departing from the spirit and scope thereof, and therefore the invention is not limited by that which is shown in the drawings and described in the specification, but only as indicated in the appended claims.

I claim:

1. In a press including an open compression chamber having a fixed bottom for forming into bales articles of scrap metal, a power-actuated tamping door pivoted on one side thereof and a power-actuated hopper having a bottom and side walls for receiving articles of scrap metal pivoted on the opposite side of said chamber, said door and said hopper being movable independently one in opposition to the other and both in opposition to the bottom of the chamber to partially crush a unitary article of scrap metal having one dimension greater than any dimension of the chamber to a size which is enclosed within the space bounded by the chamber, hopper and door and to force said article into said chamber.

2. In a press including an open compression chamber

4

having a fixed bottom for forming into bales articles of scrap metal, a power-actuated compression door pivoted on one side thereof and a power-actuated hopper having a bottom and side walls for receiving articles of scrap metal pivoted on the opposite side of said chamber, said door and said hopper being movable independently one in opposition to the other while the other is held in a fixed position and both in opposition to the bottom of the chamber to partially crush an integrated article of scrap metal having one dimension greater than the combined depth and width of the chamber to a size which is enclosed within the space bounded by the chamber, hopper and door and to force said article into said chamber.

3. In a press including an open compression chamber having a fixed bottom for forming into bales articles of scrap metal, a tamping door pivoted on one side thereof, a hopper having a bottom and side walls for receiving articles of scrap metal pivoted on the opposite side of said chamber and power means for actuating said door and said hopper independently in alternate succession one in opposition to the other and both in opposition to the bottom of the chamber to partially crush a unitary article of scrap metal having one dimension taken transverse to the opening of the chamber greater than the combined depth and width of the chamber to a size which is enclosed within the space bounded by the chamber, hopper and door and to force said article into said chamber.

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