

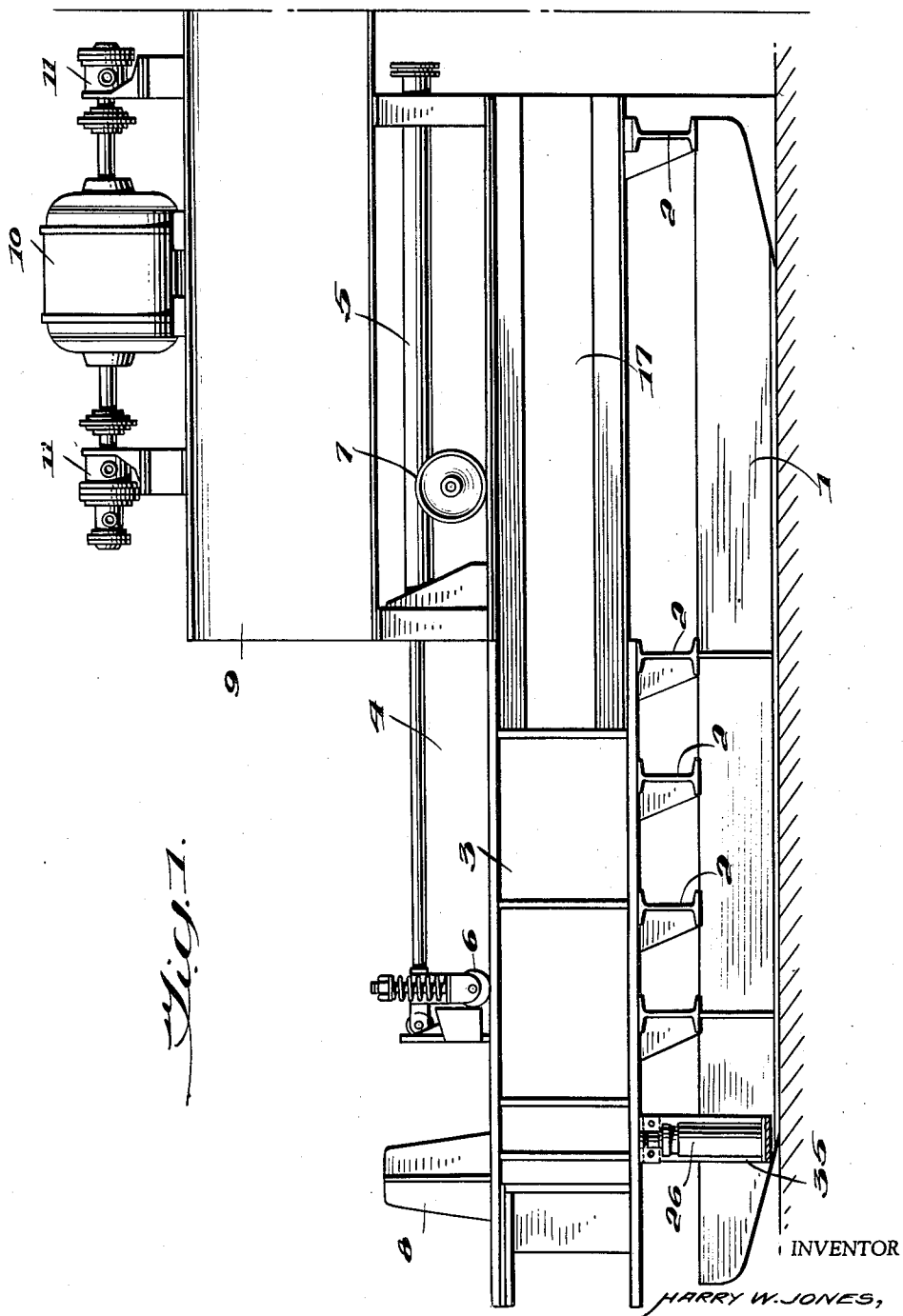
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BALING PRESSES

2,923,231

Filed July 15, 1955

2 Sheets-Sheet 1



BY

Amesbury & Martin

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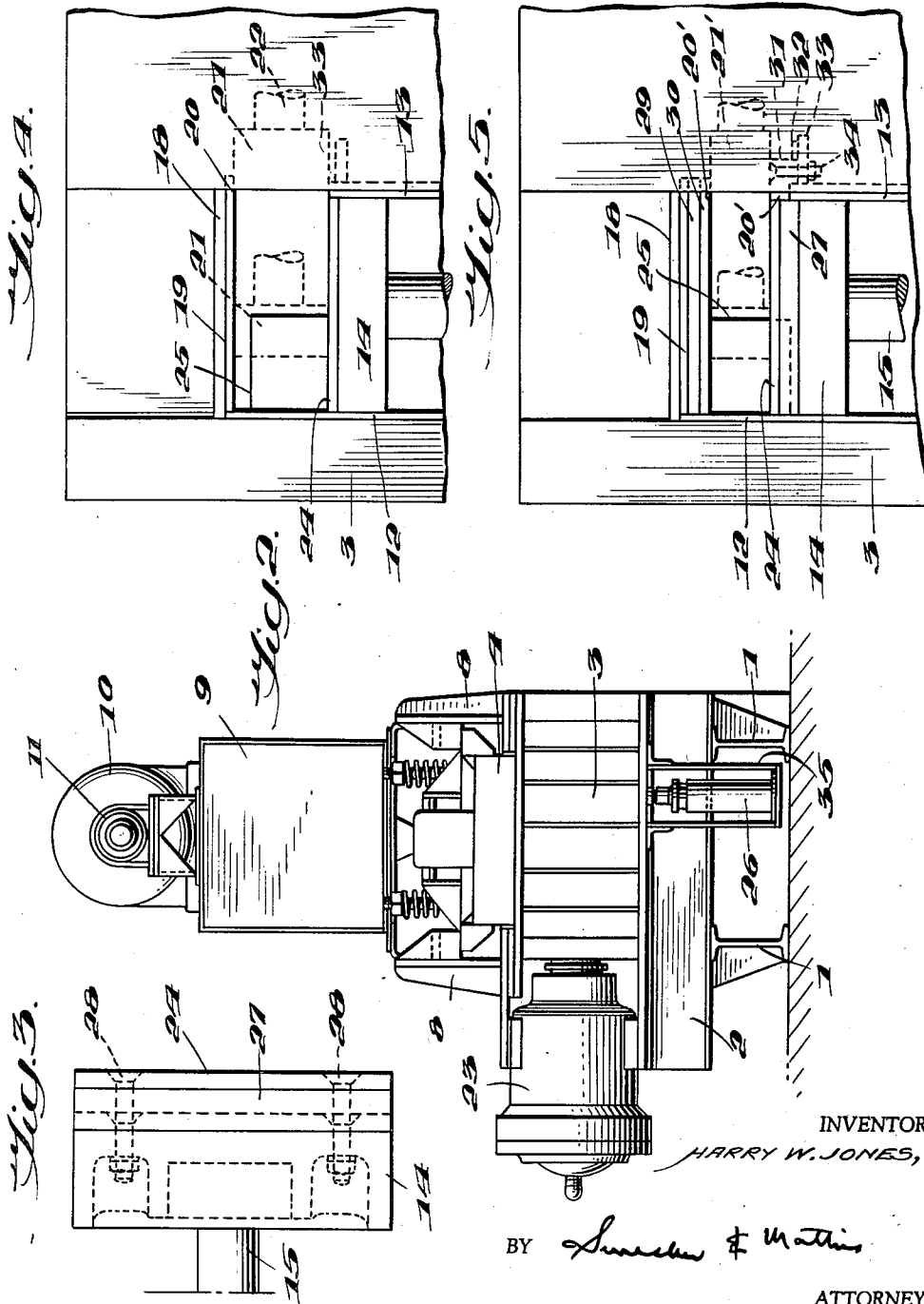
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BALING PRESSES

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Application July 15, 1955, Serial No. 522,319

3 Claims. (Cl. 100—232)

This invention relates to improvements in baling presses, and more particularly to such presses as are used for baling scrap metal of the general character set forth in my prior Patent No. Re. 23,737, granted November 17, 1953.

Baling presses of the character described and referred to in the aforesaid patent have heretofore been constructed of very heavy material and have been mounted permanently in an installation, frequently in a pit in the ground. Such presses are subject to very great pressures to accomplish the compressions necessary for compacting scrap metal and metallic devices and therefore have required such heavy and rigid construction.

Frequently it is desirable to make the baling presses capable of portability, to be moved from place to place. This has not been possible heretofore except at sacrifice of some of the important elements of the press. For example, it has been necessary to remove the ejector if the machine is to be moved, or to omit it entirely in order to make the press portable.

One object of the invention is to improve the construction of baling presses to provide an effectively portable press which may be moved from place to place, when desired, without sacrificing either the sturdy, rigid structure of the press, or the provision of an ejector thereon, which ejector, nevertheless, always remains as a unitary part of the press, without requiring its omission or removal, in the event that the press is to be moved from place to place.

A baling press, as constructed heretofore, has had provision for compressing the material into a bale of predetermined size and dimensions. Frequently, it is desirable, however, to supply the baled scrap material in bales of smaller dimensions. This has not been possible with presses heretofore constructed, without materially reconstructing the compression chamber thereof.

Another object of the invention is to improve the construction of the baling press by providing for the compressing of the material into variable sized bales which may be either large or small, as selectively determined by the provisions in the press for such variation.

Still another object of the invention is to provide for an adjustment or variation of the compression chamber and/or the plunger heads to vary the size of the bale formed in the press as, for instance, to provide a bale having the dimensions 6" x 6" x 16", or approximately the dimensions of 10" x 12" x 16", which adjustment can be accomplished quickly and readily whenever required. The 12" is variable anyway.

In accomplishing these objects, the invention may be constructed with a charging box having main and side plunger heads operatively mounted therein in the usual manner. Where the maximum size of bale is to be formed, these plunger heads and charging box may be operated without variation. However, if it be desired to reduce the size of the bale, the side plunger head is preferably removed. The main plunger head and the end face of the charging box have incorporated therein,

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or mounted thereon, spacer plates to reduce the overall width of the charging chamber upon advancement of the main pusher head to the limit of its forward stroke. The side pusher head is replaced with one of smaller dimensions to operate between the face plate on the main pusher head and the liner plate on the end wall, in the adjusted positions of these elements, whereby to compress the material into smaller dimensions.

If portability be desired, the press preferably is formed and mounted on skids so as to be moved thereon from place to place. The ejector cylinder is located entirely above the bottom of the skids, preferably suspended on a hanger, and being of a construction of the two-sleeve double-acting type whereby it will operate through a sufficient stroke to push the bale out of the chamber of the box to the top thereof, so that the formed bale may be pushed by the door off the rear ledge.

This embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation of a baling press embodying this invention;

Fig. 2 is an end elevation thereof;

Fig. 3 is a side elevation of the main pusher head provided with a spacer plate for forming a bale of reduced size;

Fig. 4 is a diagrammatic top plan view of the charging box for maximum sized bales; and

Fig. 5 is a similar view in which the variations have been made for providing a bale of reduced size.

In this embodiment of the invention, the baling press is illustrated as mounted on supporting beams or skids, generally designated by the numeral 1, having cross beams 2 connected therewith for supporting the charging box 3. The latter is closed at the sides and ends in a manner well understood in the art, an example of which is set forth in my aforesaid Patent No. Re. 23,737.

The open top of the charging box 3 is adapted to receive the material therein to be compressed and to be closed by a sliding door 4 which is reciprocated by a hydraulic power device, the cylinder of which is indicated at 5. The door 4 is mounted on rollers 6 and 7 for reciprocating movement back and forth over the top of the charging box 3 under the operation of the hydraulic cylinder 5, and when moved forward to its advanced position, the door 4 is held closed by wedging brackets 8.

The press is shown as provided with an oil reservoir 9 upon which is mounted an electric motor 10 for driving hydraulic pumps 11 to supply fluid under pressure to the power operated cylinders of the press.

The foregoing structure is described in its operation more in detail in my aforesaid Patent No. Re. 23,737.

The charging box 3 is adapted to receive the scrap material therein through the open top thereof upon withdrawal of the door 4. The inner walls of the charging box are provided with liner plates 12 and 13 extending along opposite sides thereof and between which a main pusher head 14 operates, being reciprocated by a shaft 15 connected therewith, connected with a suitable double-acting hydraulic cylinder, indicated generally at 17 in Fig. 1.

The liner plate 12 extends to the end wall of the charging box, which end wall is shown at 18 in Figs. 4 and 5. A liner plate 19 is secured over the face of the end wall 18 and extends transversely of the end of the charging box, throughout the area thereof.

The liner plate 13 does not extend entirely to the end of the charging box 3, but terminates short thereof at a point spaced appreciably from the liner plate 19, thus providing an opening through the side wall, which is generally indicated at 20, through which a side pusher head 21 may operate. The side pusher head 21 is connected with a shaft 22 that extends to a piston in a

double-acting hydraulic cylinder 23 (Fig. 2) mounted at a side of the charging box 3.

When the material is dumped into the charging box 3, the pusher heads 14 and 21 are retracted the full strokes of the hydraulic cylinders 17 and 23. Then, when the desired quantity of desired scrap material has been so introduced in the usual way of operating such presses, the main pusher head 14 is moved forward in the charging box for the initial compression of the material. This main pusher head is provided with a face plate 24 directed toward the material in the charging box to apply the pressure thereto. The main pusher head 14 moves forward in such position with respect to the opening 20 that the outer face of the face plate 24 will be in direct alignment with the inner edge of said opening, as shown in Fig. 4. Then, while holding the main pusher head 14 in this position, the side pusher head 21 is operated and moved from the position beside the charging box 3 to the position indicated by dotted lines within the charging box for the final compression of the bale.

If it be desired to eject the bale from within the charging box, an opening 25 is formed in the bottom thereof within which an ejector head is mounted, which preferably is hydraulically operated, as, for instance, by the hydraulic cylinder shown at 26 in Fig. 2.

The parts are shown in Fig. 4 in the relation whereby the maximum sized bale will be formed. If it be desired to form a bale of smaller size, the necessary adjustments or variations in the construction can be accomplished very quickly and easily, as, for instance, within one to two hours, to enable the same machine to be used to form bales of appreciably smaller size. An example of variation in the size of bale to be formed may be mentioned as a change from a bale having the dimensions of 10" x 12" x 16", which can be varied to a size of bale of 6" x 6" x 16".

To accomplish this change, the side pusher head 21 should be withdrawn and removed and an adjustment can be made easily and quickly at the ends of the charging box 3 and at the end face of the main pusher head, as shown in Fig. 5.

The face plate 24 of the main pusher head 14 is removed and a spacer plate 27 is inserted between the face plate 24 and the main pusher head 14. These parts are secured rigidly together, as, for example, by means of bolts shown at 28 in Fig. 3. It will be apparent that the same face plate 24 is used, but is applied over the spacer plate 27.

At the end wall 18, the liner plate 19 remains in the same position, but is covered by a spacer plate 29, and the latter in turn is supplemented by an additional liner plate 30. These parts are properly aligned with each other and secured rigidly in tight relation, as, for example, by bolts like those shown at 28 in Fig. 3.

With the addition of the plates 27, 29 and 30, it will be apparent that the transverse width of the final compression chamber is materially reduced. A side pusher head of smaller dimensions is therefore accommodated in this reduced compression chamber, as indicated at 21' in Fig. 5. The smaller side pusher head 21' will be operated, however, by the same hydraulic cylinder 23 and through the same stroke as the side pusher head 21, but the axial length thereof may be varied as desired. Thus, the operation of the modified pusher heads 14 and 21' will produce a bale of reduced dimensions in the two directions illustrated in Fig. 5, but remaining of the same depth, since no adjustment of the depth of the charging box has been indicated.

Inasmuch as the side pusher head 21' does not fill the entire opening 20' between the inner face of the liner plate 30 and the adjacent edge of the liner plate 13, a fill block is introduced, as indicated at 31. This fill block 31 is held in place by a stop block 32 welded or otherwise secured to a plate 33 on the adjacent side wall

of the charging box 3. Bolts 34 are used for securing the fill block 31 to the plate 33. The fill block 31 should be of a size so as to register with the inner face of the face plate 24 when the main pusher head 14 is in its forward position, as will be apparent from Fig. 5.

These parts may be removed and replaced to provide for the larger or smaller sized bales very simply and readily, with few additional parts and with very little labor. Thus, it is possible with the same baling press to provide bales of either maximum or minimum dimensions, as desired.

Where it is desired that the baling press be portable or movable from place to place, the sills or beams 1 preferably should be in the form of skids, as shown in Fig. 1. In that event, to avoid the necessity for removal of the ejecting cylinder 26, the latter is preferably made of a smaller dimension than the space between the bottom of the charging box 3 and the bottom faces of the skids 1. A telescoped two-sleeve ejector cylinder may be used for this purpose, supported by a hanger 35 that is suspended from the bottom of the charging box 3 in the relation illustrated in Figs. 1 and 2. The cylinder 26 will have sufficient stroke in the telescoped cylinder thereof, to push the bale to the top elevation of the rear of the charging box 3 where the door 4 can push the bale off the rear ledge. By using a cylinder of the character mentioned, mounted on the bottom of the charging box, with its lower end entirely above the bottom faces of the skids 1, the press may be completely portable with the ejector intact, without requiring either the omission of the ejector plunger or the removal thereof for portability.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

I claim:

1. A baling press comprising a charging chamber having an open top, a continuous flat bottom wall, an end wall, and opposite side walls, a pusher head operatively mounted in the chamber in opposed relation to said end wall, a face plate coextensive in area with and covering the end of the head toward said end wall, a spacer plate interposed between said face plate and the head, means detachably connecting the face plate and spacer plate directly with the head for separation and removal of the spacer plate therefrom and attachment of the face plate directly to the head, a second face plate covering the end wall, a second spacer plate overlapping said second face plate, a third face plate coextensive in area with said end wall and extending over said second spacer plate, means detachably securing the last-mentioned face plate and spacer plate directly to the end wall for separation of the spacer plate and last-mentioned face plate therefrom, a compression plunger movable through an opening in a side of the chamber adjacent the end wall between the pusher head and end wall and removable for replacement with a different sized plunger upon removal of the spacer plates and third face plate, a fill block interposed between the compression plunger and one side of said opening remote from said end wall, and means detachably securing said fill block in place for removal upon replacement of the compression plunger.

2. A baling press comprising a charging chamber having an open top, a continuous flat bottom wall, and end wall, and opposite side walls, a pusher head operatively mounted in the chamber in opposed relation to said end wall, a face plate coextensive in area with and covering the end of the head toward said end wall, a spacer plate interposed between said face plate and the head, means detachably connecting the face plate and spacer plate directly with the head for separation and removal of the spacer plate therefrom and attachment of the face plate directly to the head, a second face plate covering the end wall, a second spacer plate overlapping said sec-

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ond face plate, a third face plate coextensive in area with said end wall and extending over said second space plate, means detachably securing the last-mentioned face plate and spacer plate directly to the end wall for separation of the spacer plate and last-mentioned face plate therefrom, a compression plunger movable through an opening in a side of the chamber adjacent the end wall between the pusher head and end wall and removable for replacement with a different sized plunger upon removal of the spacer plates and third face plate, a fill block interposed between the compression plunger and one side of said opening remote from said end wall, means detachably securing said fill block in place for removal upon replacement of the compression plunger, skids supporting the charging chamber for portable movement, means for ejecting the bale to be compressed from the chamber, and means supporting the ejecting means on the chamber entirely below the chamber and above the bottoms of the skids.

3. A baling press comprising a charging chamber having a continuous flat bottom wall, an end wall and opposite side walls, a pusher head operatively mounted

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in the chamber in opposed relation to said end wall, adjustable covering means secured to the end wall and to the end of the head toward said end wall to vary the transverse dimension of the bale to be compressed, and a compression plunger movable through an opening in a side wall of the chamber adjacent the end wall between the pusher head and end wall and removable for replacement with a different sized plunger upon adjustment of said covering means, a fill block interposed between the compression plunger and one side of said opening remote from said end wall, and means detachably securing said fill block in place for removal upon replacement of the compression plunger.

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