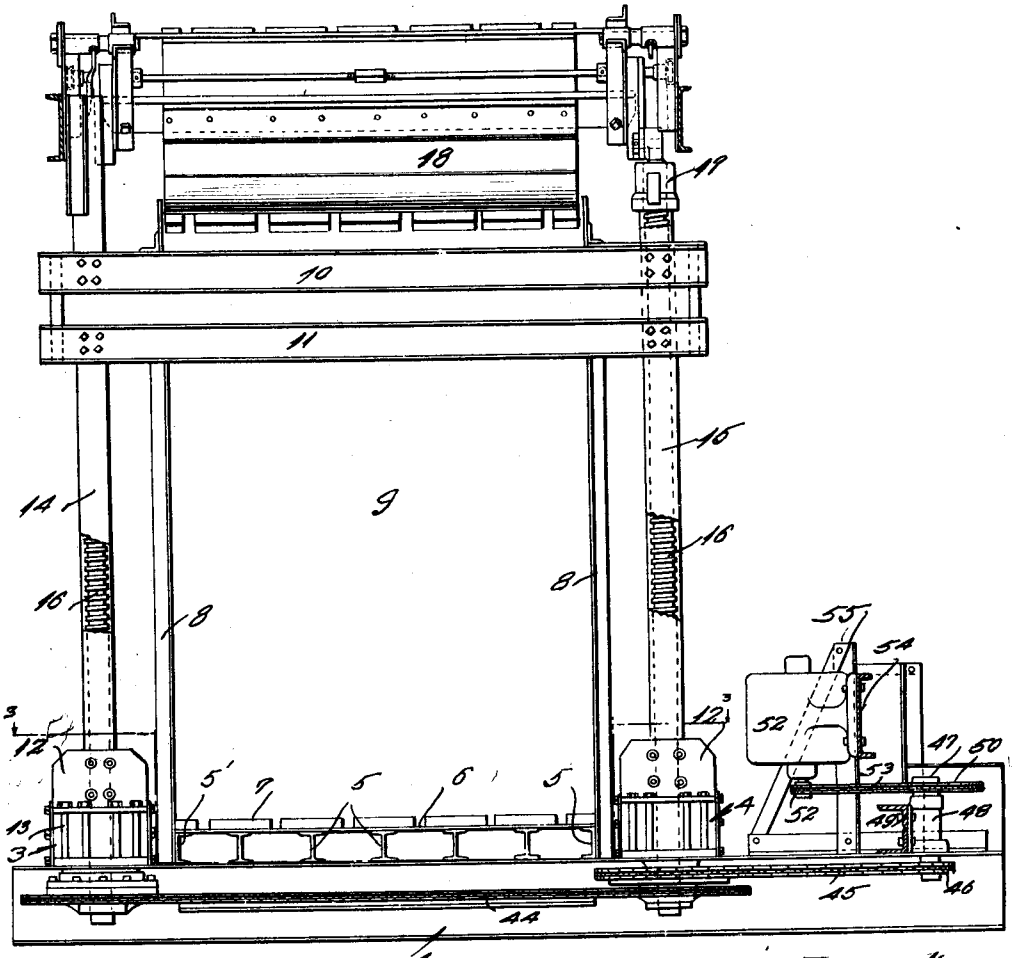
June 12, 1928. 1,673,243

H. HILL

BALING PRESS

Filed June 5, 1925 3 Sheets-Sheet 1

Fig. 1.



Inventor:
Hermann Hill

By Percy H. Moore
Atty.

June 12, 1928. 1,673,243

H. HILL

BALING PRESS

Filed June 5, 1925 3 Sheets-Sheet 2

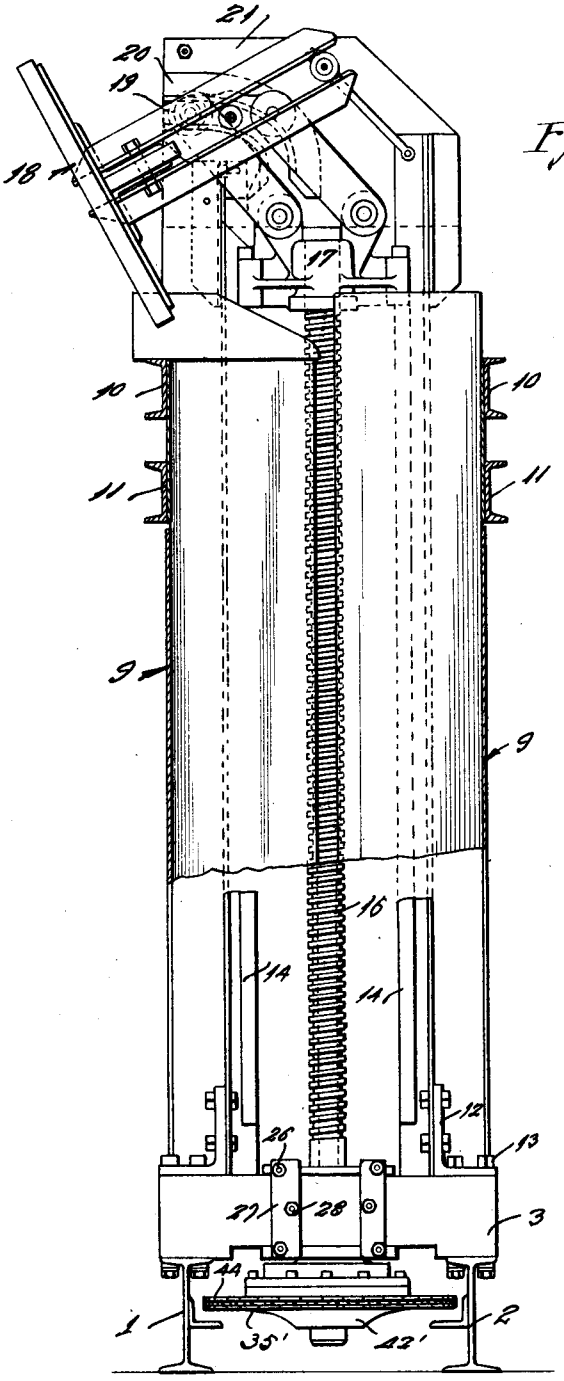


Fig. 2.

Inventor:
Hermann Hill.
By Parry & Moon
Atty.

June 12, 1928. 1,673,243

H. HILL

BALING PRESS

Filed June 5, 1925 3 Sheets-Sheet 3

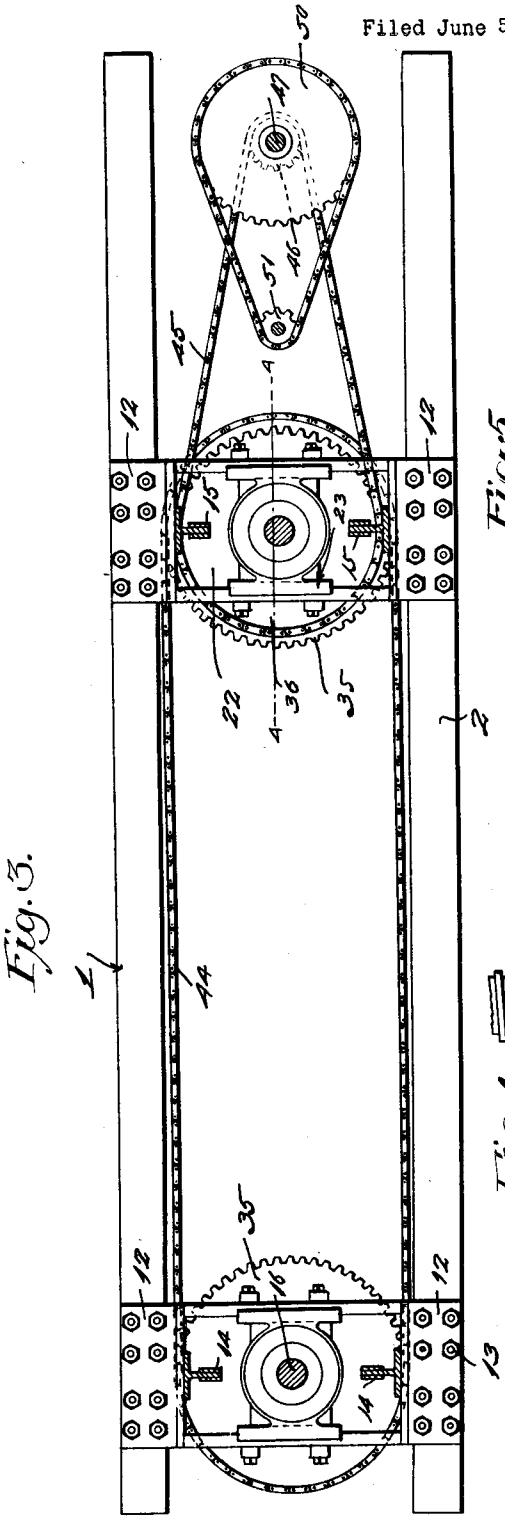


Fig. 3.

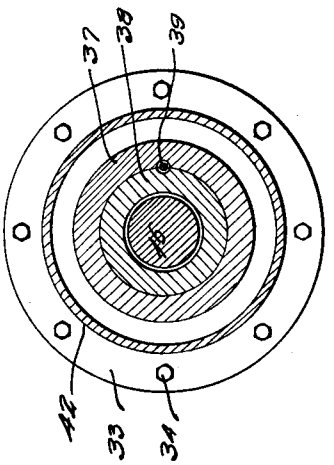


Fig. 5.

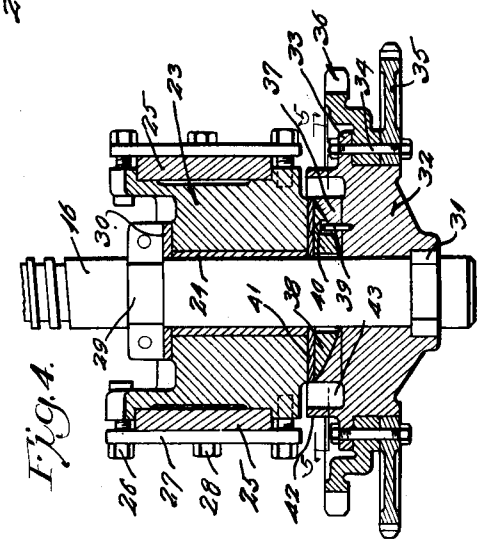


Fig. 4.

Inventor
Hermann Hill

By Percy H. Moore
Atty.

Patented June 12, 1928. 1,673,243

UNITED STATES PATENT OFFICE.

HERMANN HILL, OF FREDONIA, NEW YORK, ASSIGNOR TO REX ENGINEERING CORPORATION, OF DUNKIRK, NEW YORK.

BALING PRESS.

Application filed June 5, 1925. Serial No. 35,082.

My invention relates to improvements in baling presses and is more particularly directed to that type employing power driving means.

The particular object of my invention is to provide suitable bearings for the main operating shafts of the plunger, the same being so arranged in its construction that the shafts are at all times held in alinement with the receptacle and its power driving source.

Other and further objects and advantages of the invention will be clearly apparent as the accompanying specification is read in connection with the drawings.

In the accompanying drawings:

Figure 1 is a side elevation of my improved machine certain portions thereof being shown partly in section and one supporting beam, hereinafter referred to, removed so as to disclose clearly the power driving means;

Fig. 2 is an end elevation showing the upper portion of the baler in section;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3; and

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Heretofore in presses of this character, and as such disclosed in my copending applications, it has been the custom to provide a suitable base having positioned thereon a vertical hopper in which is a movable plunger, the ends of which are connected to spirally threaded shafts positioned one at each end of the hopper and operated by suitable power driving means carried by the base. Furthermore, it has been the custom to provide means for swinging the plunger out of the hopper as it approaches the limit of its upper movement.

The present invention is particularly directed to the manner in which the shafts are mounted and the struture of which will be clearly apparent as the description proceeds.

Referring to the accompanying drawings in detail, wherein like reference characters denote corresponding parts throughout, the numerals 1 and 2 designate a pair of spaced I-beams upon which the baler proper is mounted.

The beams 1 and 2 are held in spaced relation by a pair of transversely arranged channel beams 3 and 4, one of which is positioned adjacent to corresponding ends of the beams 1 and 2, while the other is secured somewhat remote from the opposite ends of said beam. Each of the beams 3 and 4 are rigidly secured to the beams 1 and 2 by means hereinafter set forth.

That portion of the beams 1 and 2 interposed between the beams 3 and 4 has secured thereto a plurality of transversely arranged I-beams 4, upon which rests a metal plate 6, the latter in turn supporting a plurality of wooden slabs 7, the whole constituting in general a suitable bed for the baling hopper.

The end beams of the bed are formed of channel irons 5′ and each has secured thereto a plurality of vertically extending angle irons 8 which support and reinforce the side walls of a fixed vertically extending hopper 9, the upper end of which is opened to receive therein the material to be compressed. The upper end of the hopper 9 is reinforced at intervals by side beams 10 and 11 which are in turn connected to suitable end beams, not shown in the drawings.

Each beam 3 and 4 has resting upon the edges of its side walls, and at each end, an angle plate 12, the same being secured thereto by bolts 13 which likewise serve to secure the beams 3 and 4 to the base beams 1 and 2.

The angle plates 12 have secured thereto upwardly extending T-shaped beams 14 and 15, which are connected adjacent their upper ends to the side beams 10 and 11, hereinabove referred to.

Each beam 3 and 4 has mounted therein a suitable bearing, which will be more fully described hereinafter, the same having mounted for rotation therein a vertical shaft 16, the major portion of which is spirally threaded as indicated in the drawings and has movable thereon a cross head 17 to which the plunger 18 is connected.

As referred to in Fig. 2 it will be noted that the plunger has reached the limit of its upward movement and has been caused to swing clear of the hopper mouth, thereby giving free access to the same. The means for accomplishing this movement of the plunger 18 consists of a roller 19 movable

within curved tracks 20 carried by side plates 21 which are secured to the upper ends of the beams 14 and 15. So much discloses a structure that is common in the art and the present invention is directed to the means for supporting the spiral shafts 16.

I will now describe fully the structure of the bearing block carried by the beam 4, as that carried by the beam 3 is of a similar nature.

The base of the channel beam 4 is cut out in its intermediate portion as indicated at 22 and receives therein a bearing block 23 the intermediate portion of which is provided with a bore and receives therein a bearing sleeve 24, the latter having passing therethrough the lower end portion of the shaft 16.

The block 23 has its side portions, adjacent the side walls of the beam 4, channeled to receive therein the side walls 25 of the beam 4. The overhanging portions of the block 23 receive therein bolts 26, which pass through clamping strips 27, interchangeable with the outer faces of the walls 25. In order to retain the bearing block 23 in fixed relation with respect to the side walls 25 the clamping strips 27 have passing therethrough bolts 28 which are in threaded engagement with the side falls 25.

To prevent the shaft 16 from dropping through the block 23 the shaft is provided with a reduced portion, adjacent the termination of its threaded portion, which receives therein a clamping collar 29, the bottom face of which bears upon a plate 30 resting upon the upper face of the bearing block 23. The lower portion of the shaft 16 is provided with a second reduced portion, adjacent its end which receives therein a split collar 31 upon which rests a hub 32 keyed to the shaft 16. From the foregoing description it will be noted that the collars 30 and 31 serve as thrust bearings for the shaft 16 and any strain in a vertical axis imparted to the shaft 16 will be taken care of by these collars and the overhanging walls of the block 23 engageable with the side walls 25 of the beam 4.

The periphery of the hub 32 has formed integral therewith a flange 33 to which is bolted, by bolts 34, sprocket gears 35 and 36. The upper face of the hub 32 receives thereon a concaved bearing plate 37, the latter in turn receiving therein the convexed face of a bearing plate 38, the latter being formed of suitable antifriction metal, preferably bronze. In order to insure the rotation of the plates 37 and 38 with the hub 32 the latter has fixed therein a peripherally extending pin 39 which passes through the plate 37 and has its protruding end received within a socket 40 formed in the convexed face of the disk 38. The upper face of the disk 38 is flat and bears against a non-rotating bearing plate 41 fixed to the under face of the hub 23. The upper face of the hub 32 is further provided with a vertically extending flange 42, which serves as a retaining wall for suitable lubricating liquid deposited within the bore 43, thus forming an oil bath in which the plates 37 and 38 are positioned.

As is apparent in Fig. 4, the plate 38 has its central opening, through which the shaft 16 passes, of a diameter larger than that of the shaft and the socket 40 is larger than the protruding end of the pin 39. This structure permits the plate 38 to move within the concaved face of the bolt 37, thus at all times insuring full engagement between the bottom face of the plate 41 and the upper face of the plate 38.

From this description it will be clearly apparent that in the event the bearing 24 becomes worn, or the shaft 16 works out of its true vertical alinement, any movement of the lower end of the shaft out of its true vertical axis will cause the plate 38 to move within the plate 37 and thus form a positive bearing face with the block 23.

The second shaft 16 carried by a block in the beam 3 has its lower end provided with a sprocket gear 35′ and which is connected to the sprocket gear 35 by a sprocket chain 44. The sprocket 36 has passing therearound a sprocket chain 45 which connects with a gear 46 secured to the lower end of a vertically arranged shaft 47, the same being mounted for rotation and suitable bearings 48 carried by a cross beam 49, the end portions of which are secured to the beams 1 and 2. The upper end of the shaft 47 has keyed thereto a larger gear 50 which in turn is connected to a sprocket gear 51 secured to the shaft of a motor 52 by a chain 53. The motor 52 is mounted upon a base 54 fixed to vertically disposed bracket members 55 carried by the beams 1 and 2.

From the foregoing description it will be clearly apparent that when motion is imparted to the shaft 16 through the various sprocket chains the plunger 18 will be caused to move down upon the material within the hopper 9 and as pressure is applied to the material a lifting action will be imparted to the shafts 16 which in turn is distributed to the beams 3 and 4. Thus it will be observed that by this structure it is possible to have the shafts 16 of very small diameters as a pulling strain is not as effective as a pushing strain and therefore the shafts 16 may be of any intermediate grade.

From the foregoing it is thought that the construction and operation of the herein described invention will be clearly apparent to those versed in the art and other advantages and objects not herein stated will be fully apparent when taken in consideration with the accompanying drawings.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In a baling press, the combination of a hopper and a plunger therefor, vertically disposed shafts to which said plunger is connected for movement within said hopper, a bearing for the lower end of each shaft, driving means for each shaft below the bearing, said driving means adapted to bear against said bearing, and means interposed between the bearing and driving means for insuring positive engagement of the two in the event the shaft moves out of its vertical axis.

2. In a baling press, the combination of a hopper and a plunger therefor, vertically arranged threaded shafts to which said plunger is connected for movement within said hopper, a bearing secured to the base of the press and receiving therein the lower end of the shafts, driving means for each shaft positioned below said bearing, a movable plate between said bearing and driving means, and said plate adapted to insure positive engagement between the two in the event the shaft moves out of its true vertical axis.

3. In a baling press, the combination of a hopper and a plunger therefor, vertically disposed shafts to which said plunger is connected for movement within said hopper, a bearing for the lower end of each shaft, said bearing being connected to the main frame of the press to relieve strain applied thereto during the compressing action of the plunger, driving means for each shaft positioned below the bearing, and a pair of plates interposed between said bearing and driving means to insure positive engagement between the two in the event the shaft moves from its vertical axis.

4. In a baling press, the combination of a hopper and a plunger therefor, vertically disposed shafts to which said plunger is connected for movement within said hopper, a bearing for the lower end of each shaft, a gear hub keyed to said shaft below said bearing to which movement is imparted for rotating said shaft, a concaved face formed upon said hub and receiving therein a convexed plate the upper face of which abuts against said bearing, and said concaved face and convexed plate insuring positive connection between said hub and bearing in the event the shaft moves from its true vertical axis.

5. In a baling press, the combination of a hopper and a plunger therefor, vertically disposed shafts to which said plunger is connected for movement within said hopper, a bearing for the lower end of each shaft, driving means for each shaft secured below said bearing and adapted to abut thereagainst during the compression action of said plunger, said driving means having a concaved bearing secured thereto, a convexed plate movable within said concaved bearing and having a flat upper face engageable with said first bearing, and said convexed and concaved elements adapted to insure positive engagement of the driving means with the bearing during the compressing action of the plunger.

In testimony whereof I affix my signature.

HERMANN HILL.