W. W. STOPPLE.

BALING PRESS.

APPLICATION FILED NOV. 9, 1912.

1,106,251.

Patented Aug. 4, 1914.

2 SHEETS—SHEET 1.

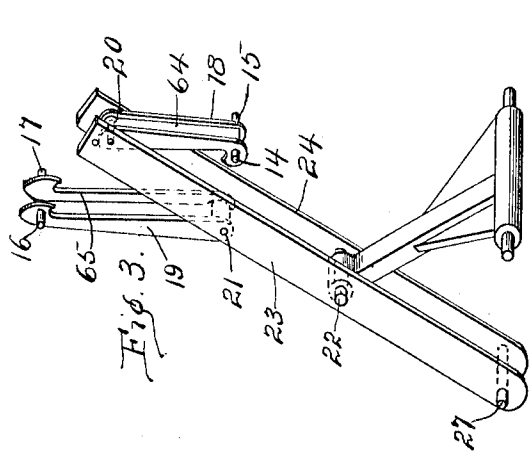


Fig. 3.

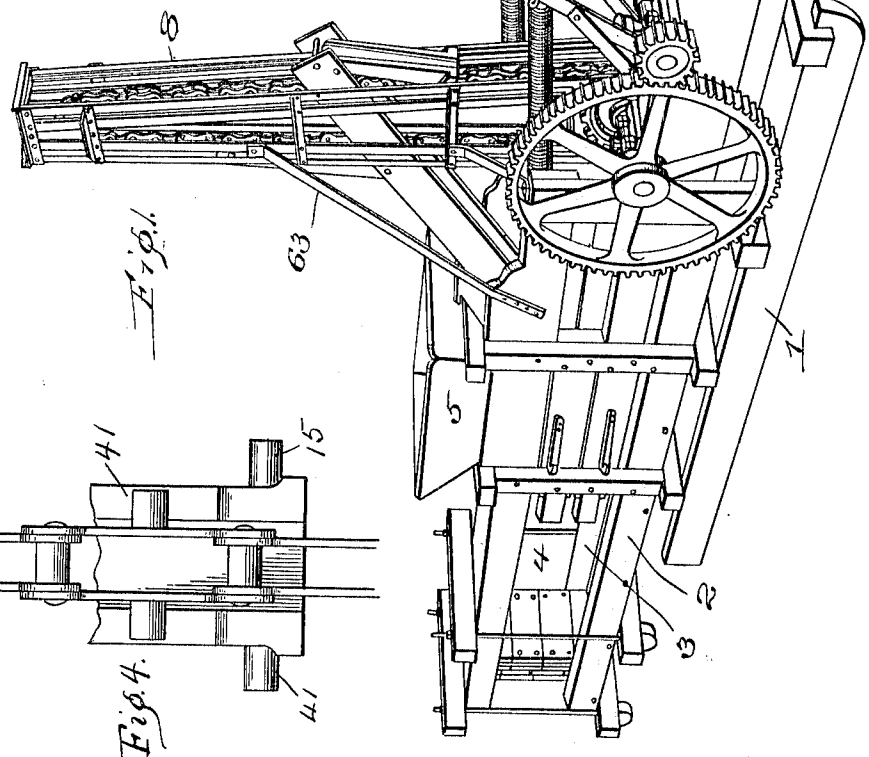


Fig. 1.

Fig. 4.

Witnesses:

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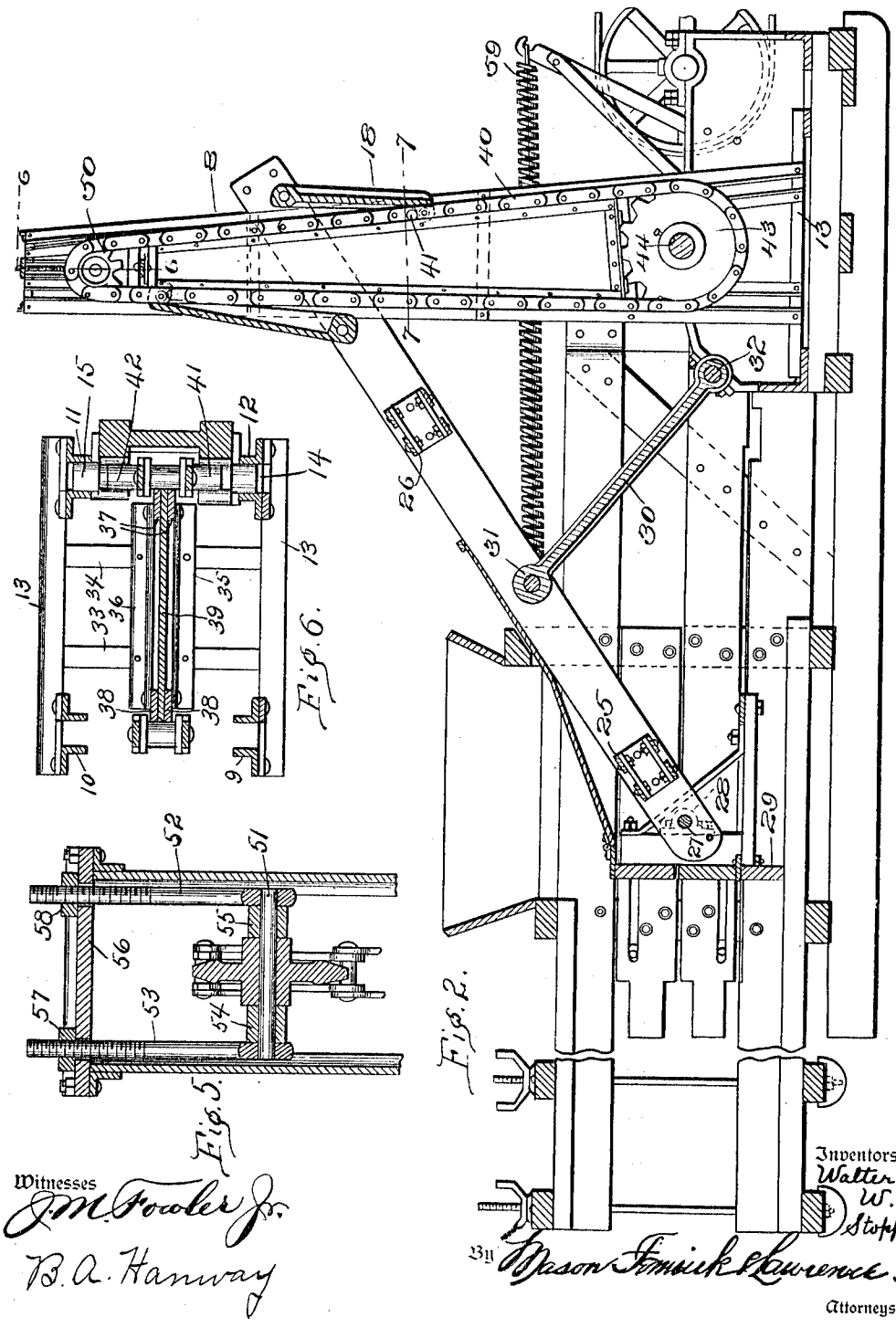


Fig. 2.

Fig. 6.

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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BALING-PRESS.

1,106,251. Specification of Letters Patent. Patented Aug. 4, 1914.

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To all whom it may concern:

Be it known that I, WALTER W. STOPPLE, a citizen of the United States, residing at Alma, in the county of Gratiot and State of Michigan, have invented certain new and useful Improvements in Baling-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to baling presses, and has for an object the provision of improved means for forcing the compression plunger against the matter being baled or compressed.

Another object of the invention is the arrangement in a baling press, of a tower structure co-acting with an endless chain and a plunger rod for properly conveying power to the plunger head, the chain mounted in the tower structure being associated with power means which continuously rotate the same for moving the plunger forward in successive cycles.

A further object of the invention is the arrangement in a baling press, of a plunger or presser bar formed with an improved pivotally mounted fulcrum and a pair of pivotally mounted hook members, the hook members being guided in their movement by a suitable tower, and caused to move in one direction by the operation of a power chain, and in the opposite direction by one or more retractile springs.

A still further object is the arrangement in a baling press, of a power wheel having connected therewith a comparatively small pinion meshing with a comparatively large driving gear wheel which coöperates with a chain, tower and plunger for causing the operation of the chain and plunger.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a perspective view of an embodiment of the invention. Fig. 2 is a longitudinal vertical section through an embodiment of the invention. Fig. 3 is a detail perspective view of the plunger and associated parts. Fig. 4 is a fragmentary plan view of one of the hooks and part of the power chain, the same embodying certain features of the invention. Fig. 5 is a section through Fig. 2 on line 6—6. Fig. 6 is a section through Fig. 2 on line 7—7.

In constructing a baling press embodying the invention, the body or compression chamber structure may be of any desired or preferred kind, but preferably arranged with corner members which form partial side, and top, and bottom members. In one end of the compression chamber is arranged an end or stop held in place by suitable clamping members, and against which the presser or plunger head forces the matter being baled. At the end opposite the compression chamber is arranged the operating mechanism for properly moving the presser or plunger head. This consists principally in the tower structure having an endless chain supported thereby, a plunger or presser pivotally mounted and provided with hook members for engaging the chain, springs for returning the presser head to its original retracted position, and gears, together with a power wheel, for setting in motion the respective moving parts. The power wheel is rotated continuously by any desired power (not shown), which moves the respective gears and moves continuously the chain. The chain is arranged with lugs or projections for engaging the hooks pivotally mounted on the presser or plunger so that upon each downward trip of the lugs on the chain the plunger will be moved down once, and the presser head moved into the compression chamber once. As soon as the lugs on the chain have reached near their lowermost point of movement the same will leave the hooks connected with the plunger so that the springs connected with the plunger may quickly and automatically return the presser head to its former position, and the rear end of the plunger to its raised position. This is done quickly in order that the operator may fill the hopper with the matter to be compressed before the lugs on the power chain have reached their uppermost position and commenced their downward journey for again moving the presser or plunger. By this arrangement the engine or other power means is permitted to continuously operate, and yet there is a period of rest for the presser head which provides ample time for forcing into the hopper a proper charge.

In order that the invention may be more

clearly understood an embodiment of the same is shown in the accompanying drawings in which 1 indicates a sled structure or other suitable support. Mounted upon the sled structure are a pair of beams 2 and 3 which define at the rear of the machine part of the compression chamber 4, in the center of the machine, part of the hopper 5, and at the front, a base 6, upon which is mounted a mechanism supporting foundation 7. Foundation 7 may be made of any desired kind of material, but preferably is made from metal, and supports the tower 8, and practically all of the power mechanism. The tower is formed with a plurality of uprights 9, 10, 11 and 12. The uprights are constructed preferably of angle irons which are secured to bottom members 13 for holding the tower properly in position. The bottom members are rigidly secured to the bottom of the foundation 7, and the foundation 7 is rigidly secured to the base 6, so that the tower is held rigidly in position for resisting any pressure brought thereon, either vertically or horizontally. The angle irons forming the uprights are spaced apart so as to form ways for accommodating guiding lugs or pins 14, 15, 16 and 17 of hooks 18 and 19. The respective lugs are formed at the engaging end of the hook so that the engaging end of the hook may be moved up and down parallel with the respective uprights, while the opposite ends of the hooks are pivoted at 20 and 21 respectively to the presser beam 22. The presser beam 22 is preferably formed from metallic bars 23 and 24, joined by suitable bracing members 25 and 26 (Fig. 2). The front and lower end of the presser beam 22 carries a pivotal bar 27 which engages bearings 28 rigidly secured to the presser head 29. In order to properly guide and act as a fulcrum for the presser beam 22, a pivotally mounted fulcrum 30 is provided pivoted at 31 to beam 22, and at 32 to foundation 7. By this structure whenever the hooks 18 and 19 are raised and lowered the rear end of beam 22 is forced in and out, and consequently the presser head 29 is forced in and out. Auxiliary connecting members 13′—13′ are connected by bracing and supporting members 33 and 34, to which are secured binding members 35 and 36. The binding members 35 and 36 have connected therewith a pair of uprights 37, and a second pair of uprights 38, which are connected by a suitable blade or fin 39. By the arrangement of the uprights 37 and 38, and the blade or fin 39, a stiffening device is provided for the uprights, and also acts as a guiding means for the power chain 40. The respective links of the power chain 40 are formed so as to straddle the uprights 37 and 38, and are guided thereby, the pins or pintles of the chain resting upon the uprights 37 and 38, so that the lugs 41 and 42 secured to one of the links of the chain will properly engage the hooks 18 and 19 respectively as the chain is moved. As will be noted the lugs 14, 15, 16 and 17 are arranged to slide in the ways formed by the respective angle irons of the uprights 9, 10, 11 and 12, while lugs 41 and 42 are designed to fit into the hook portion of the respective hooks 18 and 19. Arranged below the members 37 and 38 and the fin 39 is a sprocket wheel 43 which is rigidly connected with a shaft 44, the shaft being in turn journaled in suitable bearings in foundation 7. The shaft 44 extends beyond its bearings on one side of the machine, and has rigidly secured to said extended end a gear wheel 45. The gear wheel 45 meshes with a pinion 48 which is rigidly secured to a shaft 49. Shaft 49 is journaled in suitable journal members on foundation 7, and extends beyond the foundation 7 on each side thereof, one end carrying pinion 48, and the other end carrying a power wheel 46, which is preferably a pulley wheel for accommodating a belt 47. Belt 47 receives power from an engine, or other suitable source, and is designed to be continuously moved while the machine is in operation.

By the arrangement of the shaft 49, pulley 46, pinion 48, and gear wheel 45, the machine is geared up sufficiently to provide a comparatively large amount of power for sprocket wheel 43 when the power applied through belt 47 is comparatively small, so that the machine will compress anything placed therein to the desired extent, without necessitating the use of a powerful engine or other prime mover. The power chain 40 is mounted so as to be moved by sprocket wheel 43, and passes over an upper sprocket 50 near the upper end of the tower 8. The sprocket wheel 50 is mounted on a suitable shaft 51 which is carried by adjustable eye-bolts 52 and 53 held properly spaced from the sprocket wheel by spacing rings 54 and 55. The eye-bolts 52 and 53 are threaded at their upper ends and pass through apertures in a suitable bar 56, so that when the nuts 57 and 58 are moved one way or the other the shaft 51 will be adjusted up and down as the case may be for maintaining the proper tension on power chain 40. When the link of 40 which carries the lugs 41 and 42 passes over sprocket wheel 50 the lugs engage hook 18 and move the same down until the link carrying the lugs 41 and 42 begins to pass around sprocket wheel 43. As hook 18 is guided in a certain path by the lugs 14 and 15 the same will not follow lugs 41 and 42, but lugs 41 and 42 will move away from the hook, and the hook, together with the presser beam 22, will rise until the forward end thereof has moved to its uppermost position, the same moving under the action of

springs 59 and 60. Springs 59 and 60 are connected to the ends of the journal member of shaft 31 and to suitable stops 61 and 62 rigidly secured to the foundation 7. The springs 59 and 60 are arranged to give an almost direct horizontal pull on the springs for the entire travel of the presser beam 22 so as to quickly move the presser beam 22 back to its original position, and the presser head 29 to its original position, before the lugs 41 and 42 can move up to sprocket 50 after the same have moved off of hook 18. The time taken for the lugs 41 and 42 to move up from sprocket 43 to sprocket 50 will be sufficient for the operator to place in the hopper 5 a new charge to be compressed. It will be observed that the presser head 29 is stationary at this time, so that the new charge may be easily placed in position, but the power parts of the mechanism are still operating. This permits the proper feeding of the machine with matter to be compressed, without shutting off the power at any time.

In connection with the construction of the tower 8, the same may be provided with any desired number of braces, as 13′—13′, and the braces may be arranged at any desired distance apart, so as to firmly brace the tower in position. Also suitable braces, as 63, may be added for assisting the tower in resisting any horizontal strain thereon. The hooks 18 and 19, which are guided in their movement by the tower, are arranged so that one hook extends upward, and the other downward, and are formed preferably with a web or fin 64 and 65 respectively for stiffening the hook portion. The springs 59 and 60 will ordinarily return the presser head 29 and the presser beam 22 to their normal positions, but in case the springs should become broken or not accomplish thoroughly this function, the lugs 41 and 42 will engage the hook portion of hook 19, and will positively raise the forward end of the presser beam to its proper height.

What I claim is:

1. In a baling press, the combination with a compression chamber, and presser head, of a fulcrumed presser beam actuating said presser head, an endless chain formed with lugs extending therefrom, means pivotally connected with said presser beam engaging said lugs for causing said chain to actuate said presser beam, and means for moving said chain.

2. In a baling press, a compression chamber, a presser head adapted to move within said chamber and compress the matter therein, a presser beam pivotally mounted to said presser head and arranged to move the same, a foundation member, a fulcrum member pivoted at one end to said foundation member and at the other end to said presser beam, a tower structure rigidly secured to said foundation, an endless chain arranged in said tower structure, means for transmitting motion from said chain to the end of said presser beam opposite the end engaging the presser head, and means for moving said chain.

3. In a baling press, a compression chamber, a presser head arranged to move in said compression chamber, a presser beam pivotally mounted at one end on said presser head, a pivotally mounted fulcrum pivotally engaging said presser beam for causing the presser beam to force said presser head into the compression chamber when the end of the presser beam opposite the presser head is lowered, an endless chain formed with lugs thereon, a hook engaging said lugs pivotally mounted on said presser beam for lowering the presser beam, and means for moving said chain.

4. In a baling press, a compression chamber, a presser head arranged to move into said compression chamber, a presser beam arranged to actuate said presser head, a pair of hooks pivotally secured to one end of said presser beam, an endless chain, lugs projecting from one link of said chain and designed to successively engage said hooks for raising and lowering the hooks and the presser beam, a tower extending substantially at right angles to the movement of the presser head for supporting said chain, and means for moving said chain.

5. In a baling press, a compression chamber, a presser head, a presser beam pivotally connected with said presser head and actuating the head, a pivotally mounted link associated with the presser beam and acting as a fulcrum therefor, a pair of hooks pivotally mounted to the presser beam at the end opposite the presser head, said hooks extending in opposite directions, an endless power chain, a lug extending from one of the links of said power chain and arranged to engage intermittently said hooks for raising and lowering the presser beam, and continuously operating means for moving said power chain.

6. The combination with a baling press having a presser head, and a presser beam, of a tower formed with guideways, a pair of hooks pivotally connected with said beam and engaging said guideways, an endless chain supported by said tower and mounted so as to follow said guideways, a lug projecting from one of the links of said chain for intermittently engaging the respective hooks, whereby the hooks are raised and lowered and motion is transmitted therethrough to the presser beam for raising and lowering the same, and means for moving said chain.

7. The combination with a baling press having a compression chamber, a presser head, and presser beam for actuating the

presser head, of pivotally mounted hooks connected with the presser beam for actuating the same, a pair of lugs for successively engaging said hooks for actuating the hooks, a chain connected with said lugs for actuating the lugs, a pair of sprocket wheels for guiding the chain in its movement, one of said sprocket wheels acting as a power member, a shaft for supporting said power sprocket wheel, and means for moving said shaft continuously.

8. The combination with a baling press formed with a presser beam, of an endless chain, a plurality of means for connecting said endless chain with one end of said presser beam, whereby said presser beam is raised and lowered as said chain is moved, power means for actuating said chain, and a tower for supporting and guiding said chain, said tower being formed with a plurality of uprights, and a substantially central guiding fin structure for guiding the chain in its movement for causing the same to properly transmit power to the presser beam.

9. In a baling press, a compression chamber, a presser head arranged to move in said compression chamber, a presser beam arranged to actuate said presser head, an endless chain, means for connecting said endless chain and said presser beam for causing power to be transmitted from the chain to the presser beam, means for actuating said chain, a tower for supporting and guiding said chain, and means for regulating the tension of the chain, said means comprising a sprocket wheel over which the chain passes, a shaft for supporting said sprocket wheel, a plurality of bolts for supporting said shaft, and means for adjusting longitudinally said bolts.

10. The combination with a baling press formed with a presser head, of a tower, an endless chain mounted upon the tower, a plunger head, a beam pivotally connected to the plunger head, means pivotally connected to the plunger head adapted to engage the endless chain intermittently, said means being located upon opposite sides of the chain, and means for driving the chain.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER W. STOPPLE.

Witnesses:
RENA M. BRONSON,
O. W. HAYES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."