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E. J. RICHMOND.

AUTOMATIC HAY PRESS FEEDER.

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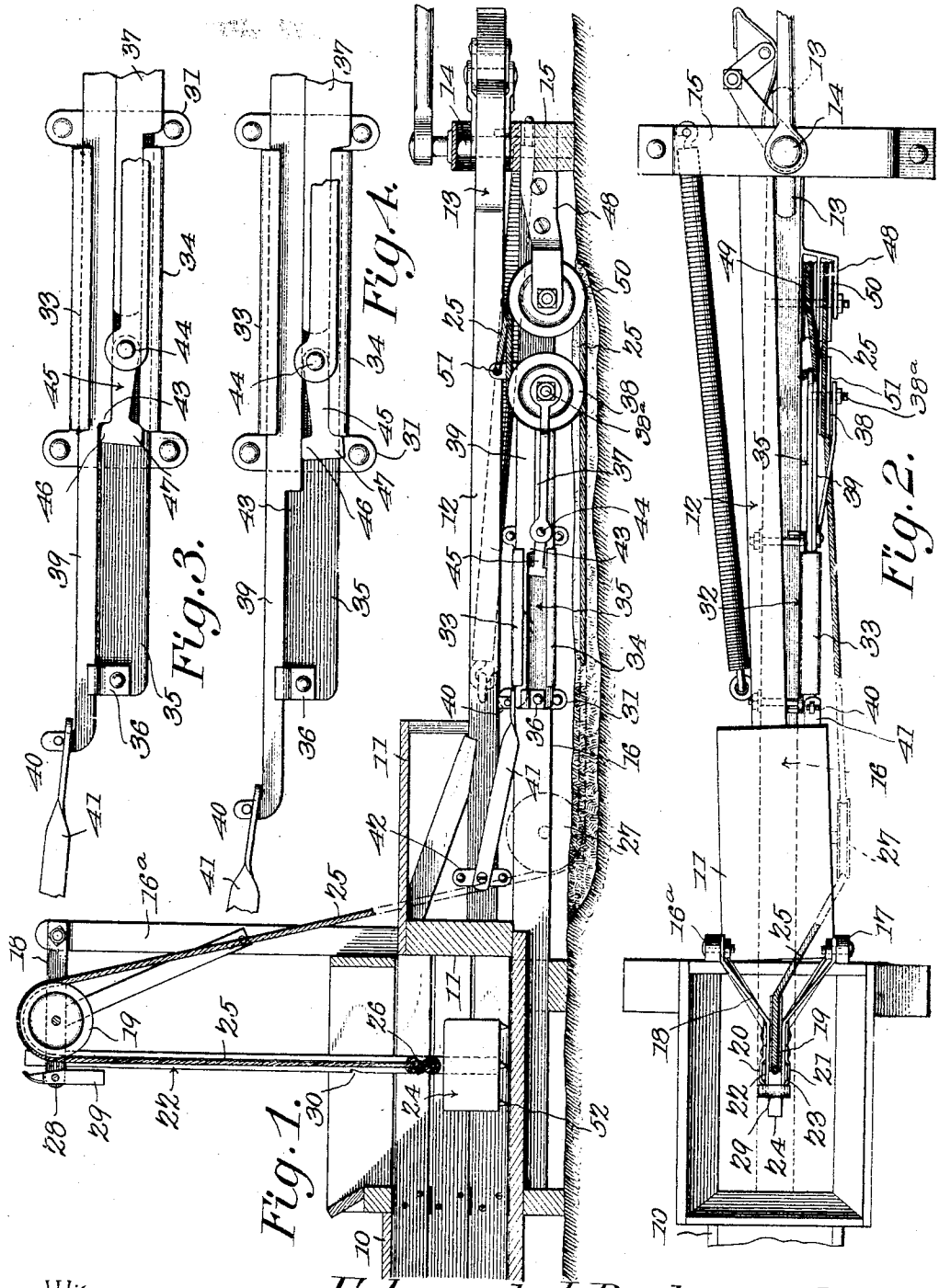

Fig. 1.

Fig. 4.

Fig. 3.

Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

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AUTOMATIC HAY-PRESS FEEDER.

SPECIFICATION forming part of Letters Patent No. 779,736, dated January 10, 1905.

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To all whom it may concern:

Be it known that I, EDWARD JAMES RICHMOND, a citizen of the United States, residing at Lamar, in the county of Barton and State of Missouri, have invented a new and useful Automatic Hay-Press Feeder, of which the following is a specification.

This invention relates to baling-presses, more particularly to presses employed for baling hay and similar products or material, and has for its object to produce a simply-constructed device whereby the charge of material may be automatically tamped into the press in advance of the action of the plunger therein.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in certain novel features of construction, as hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which corresponding parts are denoted by like designating characters, is illustrated the preferred form of the embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as various changes in the shape, proportions, and general assemblage of the parts may be resorted to without departing from the principle of the invention or sacrificing any of its advantages, and the right is therefore reserved of making all the changes and modifications which fall within the scope of the invention and the claims made therefor.

In the drawings thus employed, Figure 1 is a side elevation, partially in section, of a hay-press with the improvement applied. Fig. 2 is a plan view of the same. Figs. 3 and 4 are enlarged details of the tripping mechanism.

The improved device may be applied to any of the various forms of hay and similar presses as ordinarily constructed by making slight and immaterial modifications therein, and I do not, therefore, wish to be limited in the application of the device to any specific form or construction of the press. Apparatus of this character comprise generally a press-box 10, in which a plunger 11 on one end of a plunger beam or bar 12 is reciprocated by the action of an arm 13 on a shaft 14 upon the other end, the shaft being mounted for rotation in a frame 15, connected to the press-box by a sill-timber 16. The shaft 14 will be operated by any suitable power. (Not shown, as it forms no part of the present invention.)

Extending upwardly from the press-box are standards 16^a 17, supporting a framework 18, in which a cable-pulley 19 is rotatively mounted, and also provided with guide-keepers 20 21 for receiving spaced guide members 22 23, the latter connected at their lower ends to a weighted tamping-head 24.

A cable 25 of suitable texture, preferably steel wire, is connected by one end 26 to the guide members 22 23 and leads over the cable-pulley 19 and thence down around a guide-pulley 27 and thence to the operating mechanism to be presently described.

Pivoted at 28 in the frame 18, in advance of the guide members 22 23, is a gravity-pawl 29 for engagement with notches 30 in the guide members when they are at their highest point to retain them in that position when desired.

Attached by clips 31 to the sill-timber 16 is a frame 32, having spaced guides 33 34 at its opposite sides, between which guides a plate 35 is longitudinally movable.

The plate 35 is provided at one end with a guide-bracket 36 and at the other end with a guide-rib 37 and is also provided at the end opposite to the bracket with a cable-pulley 38.

Slidably supported upon the bracket 36 and guide-rib 37 and also operating within the upper guide member 33 of the plate 32 is a bar 39, having one end 40 turned upward and connected by a rod 41 to the plunger-beam 12 near the plunger 11, as by a clip 42.

The bar 39 is wider at one end than the other, the wider end operating upon the guide-rib 37, and by this construction a shoulder 43 is formed intermediately of the bar.

Pivoted at 44 upon the plate 35 is a pawl 45,

having lugs 46 47 projecting from opposite sides of its free end, the lugs fitting into the space between the upper edge of the lower guide member 34 of the frame 35 and the lower face of the narrower portion of the bar 39, with the upper lug in position to be engaged by the shoulder 43 thereon when the parts are in one position and the lug 47 for engaging the end of the guide member 34 when the parts are in another position, as hereinafter explained.

Connected for rotation upon the sill-timber 16, as by a bracket 48, and spaced from the pulley 38 are two cable-pulleys 49 50, the cable 25 passing around the pulley 50 from the guide-gulley 27, thence around the pulley 38 on the plate 35, thence around the pulley 49, and thence to a lug 51 on the plate 35, to which it is attached, as shown. By this simple means a comparatively short longitudinal movement of the plate 35, with its attached pulley 38, will effect a comparatively long movement of the tamping-head 24, as hereinafter more fully described.

The lower surface of the tamping-head 24 will be provided with spaced spikes or spurs 52 to increase the grip upon the charge or gavel of hay or other product in the press-box.

It will be noted that when the plunger rod or beam 12 is in its withdrawn position the shoulder 43 will be spaced from the lug 46 on the pawl 45, so that the plunger will move for some distance before the bar 39 picks up the plate 35 by engaging the lug 47 to partially compress the charge before the tamping-head is elevated out of the path of the plunger.

With an apparatus thus constructed and assembled the operation is as follows: The guide members 22 23, carrying the tamping-head 24, are elevated and engaged by the pawl 29 until the first follower-block is positioned in the press-box and the first charge of hay or other material placed in the receiver-hopper. The pawl 29 is then released and the tamping-head permitted to fall upon the charge and pressing it into the press-box in advance of the plunger 11 and holding it therein until the plunger and its beam have moved forward far enough to cause the shoulder 43 on the bar 39 to engage the lug 46 of the pawl 45, and thus pick up the plate 35 and move it forward with the plunger-beam and quickly elevate the tamping-head out of the path of the advancing plunger. As soon as the forward movement of the plunger-beam has carried the pawl 45 to the forward end of the guide member 34 the shoulder 47 will drop in advance of the end of the guide member, thus withdrawing the lug 46 out of the path of the shoulder 43 and permitting the wider portion of the bar 39 to continue the forward movement, but releasing the plate 35 and stopping its further movement and likewise stopping any further movement of the pulleys and hoisting-cable, as will be obvious. The tapering head is thus maintained in its elevated position while the wider portion of the bar 39 is traveling above the depressed pawl 45, which will give ample time for the attendant to place another charge of the material or product in the receiver. When the plunger and its beam are released at the end of the forward stroke, they are quickly returned to their former position or execute the return stroke, carrying the bar 39 with them, as will be obvious. As the shoulder 43 passes from the lug 46 during the return stroke, the strain constantly exerted upon the cable 25 by the weighted tamping-head will cause the lug 47 of the pawl 45 to quickly mount the upper edge of the guide member 34 and release the plate 35 and its attached cable-pulley 38 and permit the tamping-head to fall upon the loosely-placed charge and tamp it into the press-box in advance of the plunger. To facilitate the releasing of the pawl 45 when the shoulder 43 passes from the lug 46 during the return stroke, the forward end of the guide member 34 and the inner face of the lug 47 will be reversely inclined, as shown. Then at the next action of the plunger the forward movement will be continued for a short time to partially compress the charge before the tamping-head is elevated and then the latter quickly elevated out of the way and held suspended long enough to permit the next charge to be introduced. When a sufficient number of the strokes have been imparted to produce a bale of the proper size, the tamping-head is held suspended in its upper position until a follower-plate is introduced and a fresh charge inserted into the receiver.

The improved apparatus may be readily adapted to various sizes and forms of presses without material change of structure and by means of which the changes will be automatically tamped into the press-box in advance of the action of the plunger.

Having thus described the invention, what is claimed is—

1. In a device of the class described, a press-box, a plunger for reciprocation in said press-box, a tamping member for operation in said press-box, means for removing said tamping member from the path of the plunger after the plunger has moved through a portion of its forward stroke, and a gravity-pawl connected to support said tamping member in its withdrawn position.

2. In a device of the class described, a press-box, a plunger for reciprocation in said press-box, a supporting-frame extending from said press-box, a tamping member consisting of spaced bars movably connected to said frame and carrying a tamping-head at their extremities and operative in said press-box, and provided with transverse stop-recesses, means

for removing said tamping member from the path of said plunger, and a pawl carried by said frame for engaging said recesses and supporting the tamping member in its withdrawn position.

3. In a device of the class described, a press-box, a plunger for reciprocation in said press-box, a tamping member for operation in said press-box, a plate slidably disposed and carrying a cable-pulley, one or more cable-pulleys supported in a stationary bracket, a cable connected by its ends to said tamping member and to said plate and leading around said pulleys, and means connected to said plunger-actuating mechanism for operating said plate, whereby said tamping member is moved from the path of the plunger at a greater speed than the speed of the plunger.

4. In a device of the class described, a press-box, a plunger for reciprocation in the press-box, means for actuating said plunger, a supporting-frame for the plunger-actuating mechanism, a tamping member for operation in said press-box, a plate slidably connected to said supporting-frame and carrying a cable-pulley, a bracket connected to said supporting-frame and carrying one or more cable-pulleys, a cable connected by its ends respectively to said tamping member and to said slidable plate and intermediately carried around said cable-pulleys, and connecting means between said plate and plunger-actuating mechanism.

5. In a device of the class described, a press-box, a plunger for reciprocation in said press-box and having a plunger-beam extending therefrom, mechanism for actuating said plunger-beam and plunger, a frame supporting said plunger-actuating mechanism, a sill-beam connecting said press-box and supporting-frame, a frame having spaced guide members and connected to said sill-beam, a plate slidable between said guide members and carrying a cable-pulley and connected for reciprocation with said plunger, a bracket connected to said sill-beam and carrying one or more cable-pulleys, a tamping member for operation in said press-box, and a cable connected by its ends respectively to said tamping member and to said plate and intermediately carried around said cable-pulleys.

6. In a device of the class described, a press-box having a longitudinal supporting-frame, a plunger for reciprocation in said press-box, mechanism for actuating said plunger, a tamping member for operation transversely of the path of said plunger, a carrier-frame having spaced guides and connected to said supporting-frame, a plate slidably disposed between said guide members and carrying a cable-pulley, a bracket carrying one or more cable-pulleys and connected to said supporting-frame, a cable connected by its ends respectively to said slidable plate and to said tamping member and intermediately carried around said cable-pulleys, a bar having an intermediate shoulder and movably disposed upon said slidable plate and connected for reciprocation with said plunger, a pawl having oppositely-disposed lugs and pivoted upon said slidable plate with one of said lugs in the path of the shoulder on said bar and the other supported movably upon one of said guides upon said carrier-frame and adapted to engage the end of said guide members and release said shoulder at a predetermined point in the stroke to permit the continued forward movement of the plunger while holding the tamping member stationary.

7. In a device of the class described, a press-box having a longitudinal supporting-frame, a plunger for reciprocation in said press-box, mechanism for actuating said plunger, a tamping member for operation transversely of the path of said plunger, a carrier-frame having spaced guides and connected to said supporting-frame, a plate slidably disposed between said guide members and carrying a cable-pulley, a bracket carrying one or more cable-pulleys and connected to said supporting-frame, a cable connected by its ends respectively to said slidable plate and to said tamping member and intermediately carried around said cable-pulleys, a bar having an intermediate shoulder and movably disposed upon said slidable plate and connected for reciprocation with said plunger, a pawl having oppositely-disposed lugs and pivoted upon said slidable plate with one of said lugs in the path of the shoulder on said bar and spaced therefrom when the plunger is in its withdrawn position and the other lug supported movably upon one of the guides on said carrier-plate and adapted to engage the end of said guide and release said shoulder when said plunger has arrived at a certain predetermined point in its forward stroke, whereby the tamping member is held in the path of the plunger during the first period of its forward stroke, quickly removed from the path of the plunger at an intermediate point in the stroke and held stationary in its withdrawn position during the last portion of the forward stroke and released when the plunger recedes a certain predetermined position during the return stroke.

8. In a device of the class described, a press-box, a plunger for reciprocation in said press-box, a tamping member for operation in said press-box, means for removing said tamping member from the path of the plunger after the plunger has moved through a portion of its forward stroke, means for maintaining said tamping member in its withdrawn position during the remainder of said forward stroke and until a certain predetermined point is reached in the return stroke, and means for releasing said tamping member when said point is reached during said return stroke.

9. In a device of the class described, a press-

box, a plunger for reciprocation in the press-box, means for actuating said plunger, a supporting-frame for the plunger-actuating mechanism, a tamping member for operation in said press-box, means carried by said frame and operative therefrom for maintaining said tamping member in the path of the plunger during the first portion of its forward stroke then removing it from the path of the plunger and maintaining it withdrawn during the remainder of the forward stroke and a portion of the return stroke and then releasing it to permit it to again fall into the path of the plunger.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD JAMES RICHMOND.

Witnesses:
PAUL TUCKER,
W. G. WARNER.