(No Model.) 3 Sheets—Sheet 1.

R. E. & R. W. DOTY.

BALING PRESS.

No. 553,396. Patented Jan. 21, 1896.

Fig. 1.

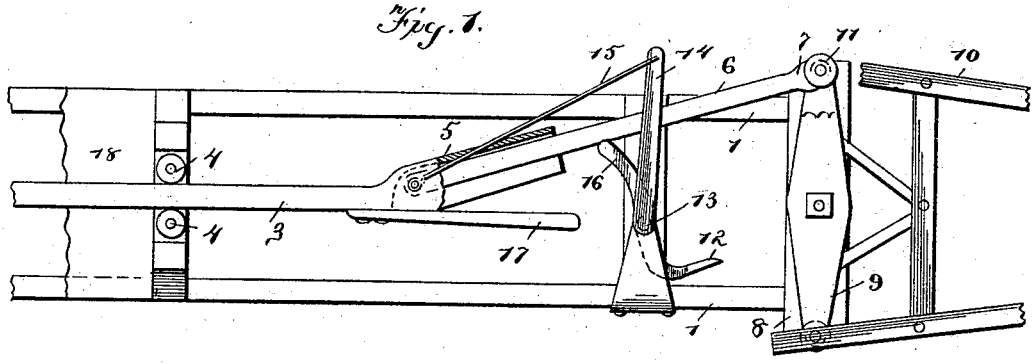


Fig. 2.

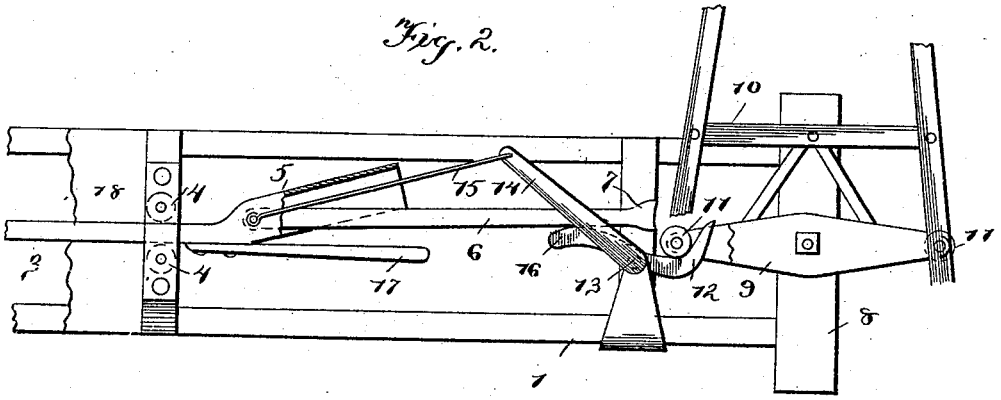
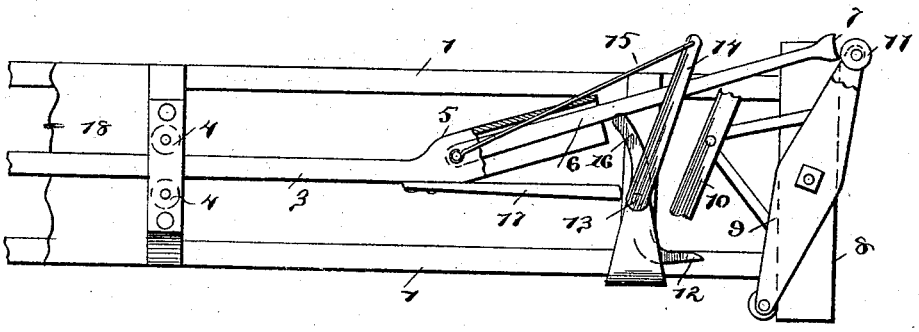


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

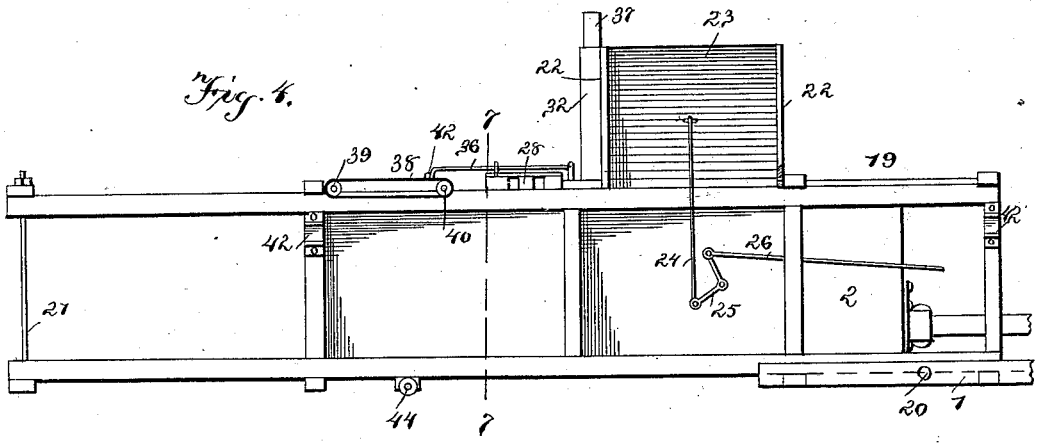


Fig. 5.

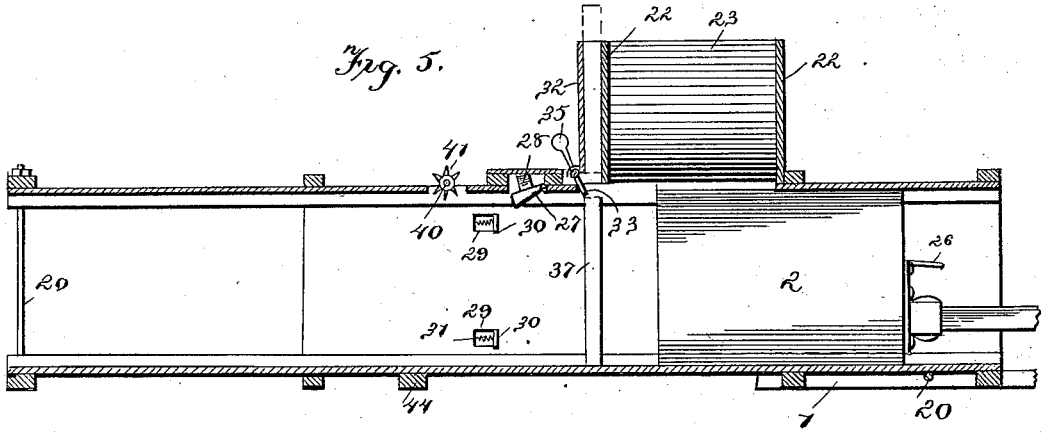
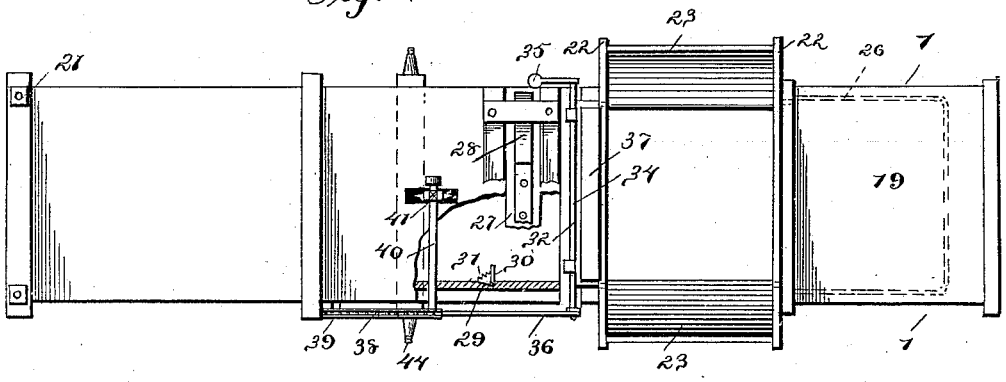


Fig. 6.



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(No Model.) 3 Sheets—Sheet 3.

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BALING PRESS.

No. 553,396. Patented Jan. 21, 1896.

Fig. 7.

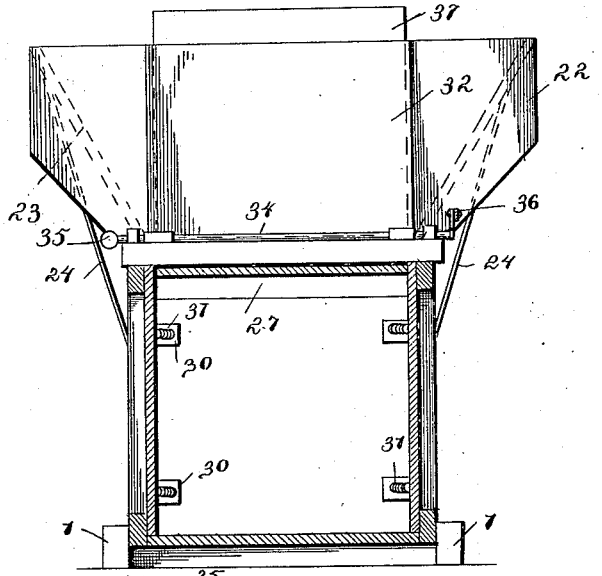


Fig. 9.

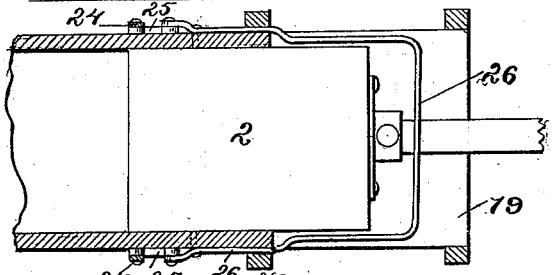
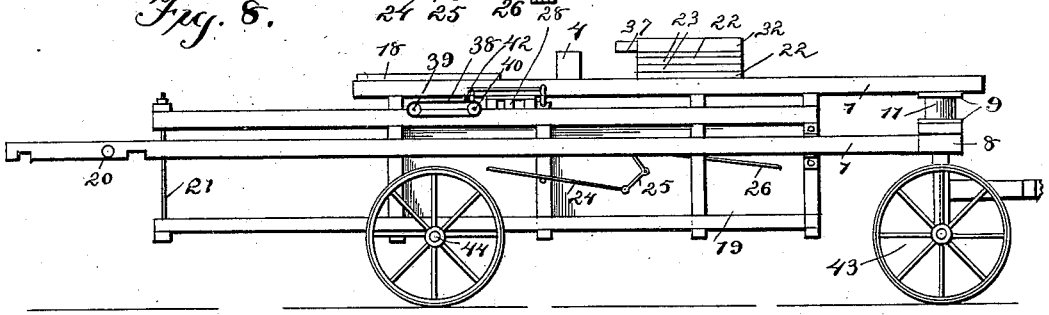


Fig. 8.



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UNITED STATES PATENT OFFICE.

ROBERT E. DOTY AND RICHARD W. DOTY, OF VERGENNES, ILLINOIS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 553,393, dated January 21, 1896.

Application filed April 19, 1895. Serial No. 546,417. (No model.)

To all whom it may concern:

Be it known that we, ROBERT E. DOTY and RICHARD W. DOTY, citizens of the United States, residing at Vergennes, in the county of Jackson and State of Illinois, have invented certain new and useful Improvements in Baling-Presses; and we 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.

Our invention relates to improvements in baling-presses.

The objects of our invention are to provide an improved plunger-actuating mechanism; to provide an improved tucker mechanism; to provide means for separating or dividing automatically the bales; to provide an improved packing-chamber and an improved hopper therefor, and, finally, to so arrange the press-frame that it may be conveniently mounted upon trucks in a folded condition for moving from place to place.

With these and other objects in view, which will presently appear, our invention consists in the novel features of construction hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figures 1, 2, and 3 are plan views of the plunger-operating mechanism in different positions. Fig. 4 is a side elevation of the press. Fig. 5 is a longitudinal sectional view. Fig. 6 is a sectional plan view. Fig. 7 is a vertical cross-sectional view on line 7 7 of Fig. 4. Fig. 8 is a side elevation of the press mounted upon trucks, the same being folded for conveniently moving it from place to place. Fig. 9 is a sectional plan view of the forward portion of the press.

1 are the longitudinal beams of the forward portion of the frame; 2, the plunger; 3, the plunger-rod, and 4 the guide-rollers supported by beam A, between which the plunger-rod extends. A boxing 5 is secured at an angle to the forward end of rod 3, and pivoted at its rear end in the boxing is arm 6, enlarged and grooved inward at its outer extremity, as indicated at 7.

The ends of beam 1 are connected by cross-bar 8, and adapted to turn centrally thereon is a frame consisting of the parallel separated but rigidly-connected plates 9, to which the bifurcated draft-pole 10 is secured for turning the same, as shown. Between the extremities of plates 9 are the friction-rollers 11 for engaging end 7 of arm 6.

12 is an arm hooked at one end and secured between its ends to the vertical turning bolt 13, and rigidly secured to and extending from said bolt is arm 14, which is connected by rod 15 to boxing 5. Arms 12 and 14 being fixed to the turning bolt constitute a lever for drawing the plunger-rod forward through the medium of rod 15, when the hooked arm is engaged by one of rollers 11. The end 16 of arm 12 is extended toward arm or push-bar 6 and serves to position said push-bar laterally during the forward movement of the plunger-rod so as to be engaged by roller 11 and thus give to the plunger and rod their backward movement.

In operation plates 9 are turned by the draft-pole 10, causing one of rollers 11 to push backward bar 6 to the position indicated in Fig. 2, when said rollers engage arm 12 at its hooked end, causing the latter to turn and thus drawing forward the plunger-rod in the manner before described, and at the same time pushing, by the extremity of arm 12, bar 6 to the proper lateral position for being again engaged by roller 11 for the return movement. A forwardly-extending guard 17 opposite boxing 5 holds bar 6 from movement in that direction. Thus it will be seen that by turning the pole continuously a reciprocal movement is given the plunger, the horse traveling in a circle, as will be understood, and in the path of travel across beams 1 is the tread-board 18.

Beams 1 overlap baling-chamber 19, extending outside thereof and secured permanently thereto by the tie-rod 20. The roof and floor, as well as the longitudinal timbers of the chamber, are extended rearward to form a discharge, but are provided with no other vertical connection than the bolts 21, which are for the purpose of contracting or drawing together the upper and lower portions, thus reducing the size of the discharge and thus preventing the bales from passing outward from the chamber too easily.

Over the entrance to the baling-chamber is arranged a hopper consisting of the end sec-

tions 22 removably secured by bolts to the baling-chamber, and the swinging sides 23 are hinged at their lower edges to ends 22. The said sides when opened out have an upward divergence, but are adapted to be closed inward or toward each other for the purpose of compressing the hay into the baling-chamber by the following-described mechanism: Rods 24 are loosely secured to and depend from said sides and are connected at their lower ends to bell-cranks 25 supported on the outer side of the baling-chamber. The other ends of these bell-cranks are connected by the U-shaped connection 26, which is provided with sufficient slack to extend considerably forward and across the path of plunger 2, as indicated in Figs. 4 and 6, and in dotted lines in Fig. 5. When the hopper is full of hay the plunger on its outward stroke engages U-shaped connection 26, which exerts a forward pull on the bell-crank and causes rods 24 to be moved vertically, which in effect raises the normally-outward-sloping hopper sides 23 to substantially vertical position, which contracts or compresses the hay in the hopper, so that it more readily passes into the baling-chamber.

A wedge-shaped tucker 27 is hinged at its forward edge to the baling-chamber roof and is held normally depressed into the chamber, as shown by springs 28, thus permitting an easy passage of hay into the rear portion of the baling-chamber when pushed forward by the plunger, but serving to hold down the portion of the hay riding on the top of the plunger into the main body of the bale and preventing the same from moving backward in the baling-chamber. In depressions 29 in the opposite sides of baling-chamber are vertical outwardly-swinging tuckers 30, which are held normally in a forwardly and outwardly projected position by coiled springs 31, so that while said tuckers compress the springs and are confined in cavities 29 when the hay is passing into the baling-chamber, the same extend outward and engage the hay as soon as the pressure is removed and prevent the same from moving backward, as in the case of the tucker in the upper side of the chamber before described.

Behind the hopper is a pocket 32, and extended across the bottom thereof is the support or shelf 33, secured to transverse shaft 34, the latter having a crank formed on one end carrying weight 35 and at its opposite end provided with a crank to which is connected the longitudinally-movable push-rod 36. The transversely-slotted bale-separating heads 37 are adapted to be supported one at a time by shelf 33 in pocket 32, weight 35 being sufficient to counterbalance the head and hold it within the pocket. For tilting the shelf and permitting the head to drop into the baling-chamber, we provide the endless sprocket-chain 38, running over the idler 39, and the sprocket on short shaft 40, extending inward over the top of the baling-chamber. The toothed wheel 41 is carried by the inner end of this shaft and depends through a slot into the baling-chamber and is engaged by the hay as it is moved therein. To chain 38 is secured stop 42, which at each complete revolution of the chain is brought into engagement with and moves longitudinally rod 36, thus turning down shelf 33 and permitting the head 37 to drop into baling-chamber, thus separating the packed hay into bales of the desired size. Chain 38 may be of different lengths or more than one stop may be mounted thereon, so as to vary the size of the bale as desired.

The accuracy of measuring the size of bales in the manner described will be appreciated when it is considered that the hay engages the toothed wheel at each forward movement in the baling-chamber, so that the quantity of hay passing said wheel to cause a complete rotation thereof is always the same. After the head has been dropped into the baling-chamber, weight 35 will restore shaft 34 and shelf 33, as well as rod 36, to their normal positions, at which time another head may be rested thereon ready to be dropped into the chamber automatically as soon as the predetermined amount of hay has been packed thereinto by the plunger. Thus it will be seen that no watching is necessary at the hand of the operator, as the operation is entirely automatic. The heads are slotted in the usual manner, as indicated, for the passage of the wire in tying or wiring the bales.

When the press is folded for moving, as indicated in Fig. 8, tie-rod 20 is removed and the tread-board 18, as well as bar-supporting rollers 4, is removed from beams 1, when the said beams are free to be elevated into brackets 42′ on the outer sides of the press and there securely held. A truck 43 is placed beneath forward cross-bar 8, while the wheels are mounted on the rear axle 44. Rods 24 are then disconnected from the hopper sides, and the latter, together with the ends of the hopper, are detached and removed, and the pole 10 is turned backward over the baling-chamber, as shown, with the hopper and the several detached parts loaded thereon ready for removing.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the plunger rod, an arm pivoted thereto, the power mechanism adapted to engage said arm, the hooked lever arm 12 fixed between its ends to a turning bolt, arm 14 also secured to said turning bolt, the rod connecting said last named arm with the plunger rod, the hook on one end of arm 12 adapted to be engaged by the power mechanism, the other extremity of said arm being extended to guide the arm pivoted to the plunger to its proper position for being engaged by the power mechanism, substantially as shown and described.

2. The combination of the baling chamber, the brackets arranged on said chamber, the

longitudinal beams, the mechanism mounted thereon for reciprocating the plunger rod of the press, said beams being adapted to be moved rearward and supported in the said brackets when the press is moved, and a trunk adapted to be inserted beneath the forward end of said beams, substantially as shown and described.

3. The combination of a baling chamber, a hopper therefor having vertically swinging sides, said sides being normally at an outward incline, the bell-crank levers pivoted to the chamber beneath the hopper sides, the rods connecting said levers and hopper sides, the reciprocating plunger, and the U-shaped connection extended across the plunger path and at its ends connected to the said levers, substantially as shown and described.

4. The combination of the baling chamber and operating mechanism, a division block, a support therefor, a shaft to which said support is secured, a weight carried by the shaft for holding the support in an operative position, and a mechanism actuated by the hay moving in the baling chamber for overcoming said weight and tripping the shaft so as to permit the head to drop into the baling chamber, substantially as shown and described.

5. The combination of a baling chamber, an operating mechanism, a division block adapted to be supported above the chamber, a transverse shaft, a support fixed to the shaft for supporting the division block in an elevated position, a weighted crank carried by the shaft for maintaining the position of the support, a longitudinally movable rod connected to a second crank on said transverse shaft, an endless chain provided with a stop for actuating said push rod, the short shaft provided with the sprocket over which said chain runs, and the toothed wheel on said short shaft depending and turning in the baling chamber, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT E. DOTY.
RICHARD W. DOTY.

Witnesses:
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E. C. LOVEJOY.