(No Model.) 3 Sheets—Sheet 1.

C. A. ERICKSON.

PRESS.

No. 414,028. Patented Oct. 29, 1889.

Fig. 1.

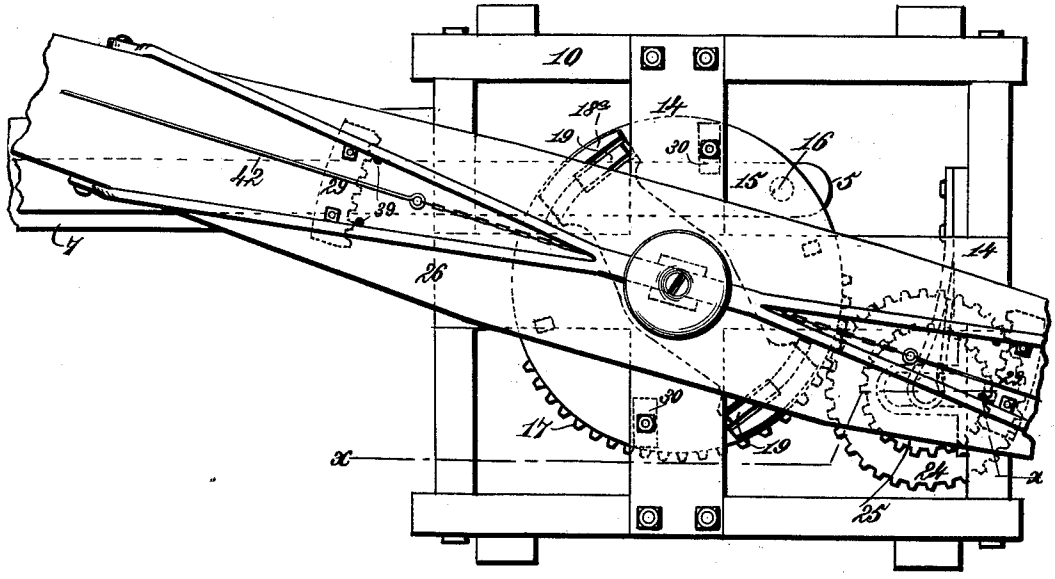
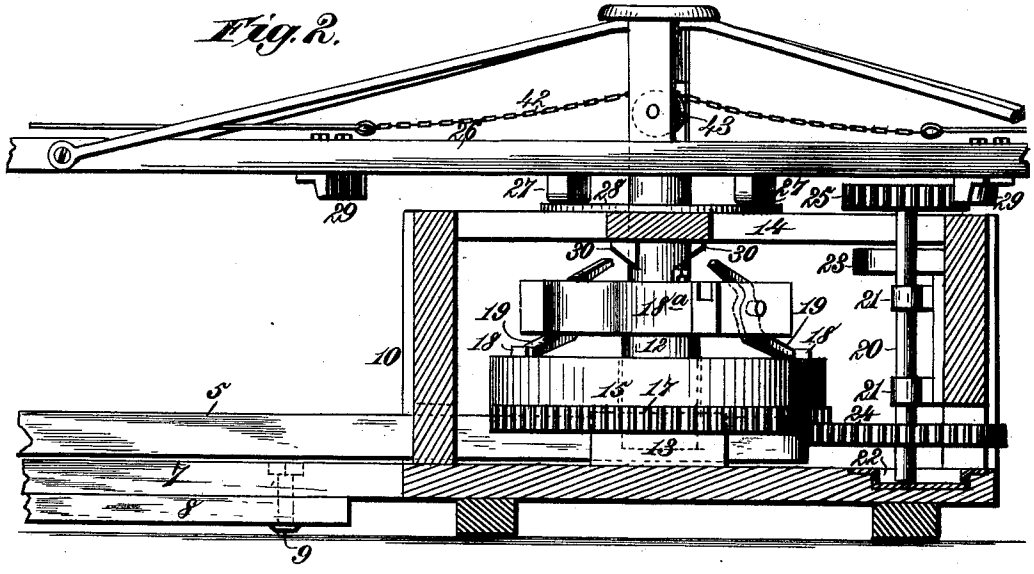


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

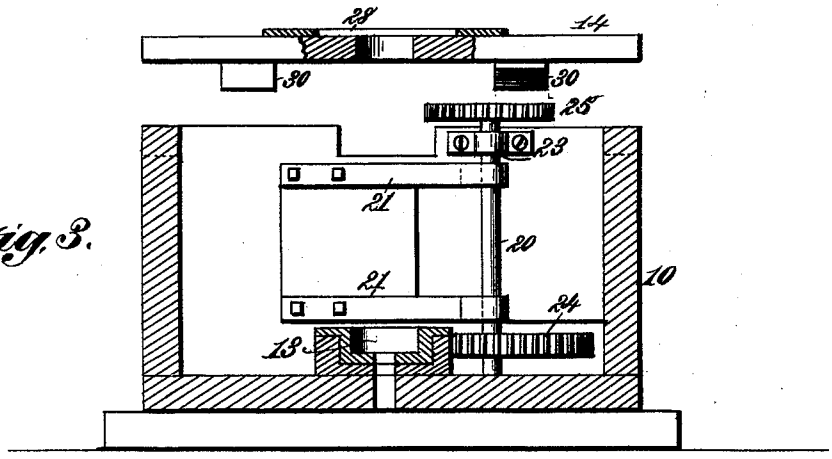


Fig. 4.

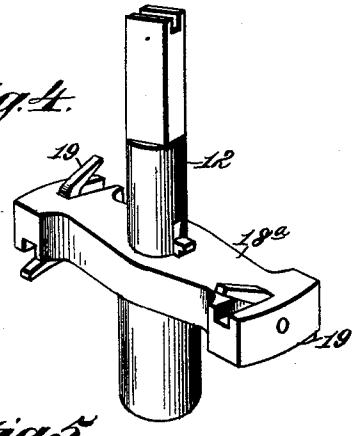


Fig. 6.

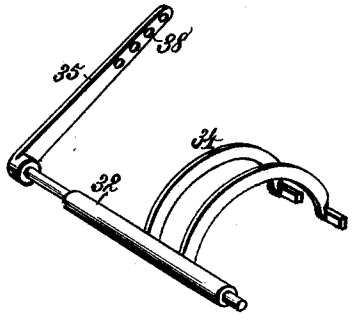
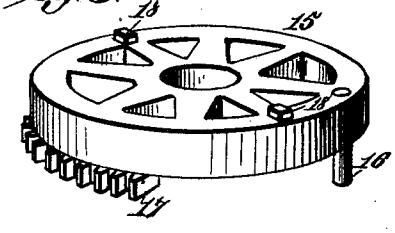


Fig. 5.



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(No Model.) 3 Sheets—Sheet 3.

C. A. ERICKSON.

PRESS.

No. 414,028. Patented Oct. 29, 1889.

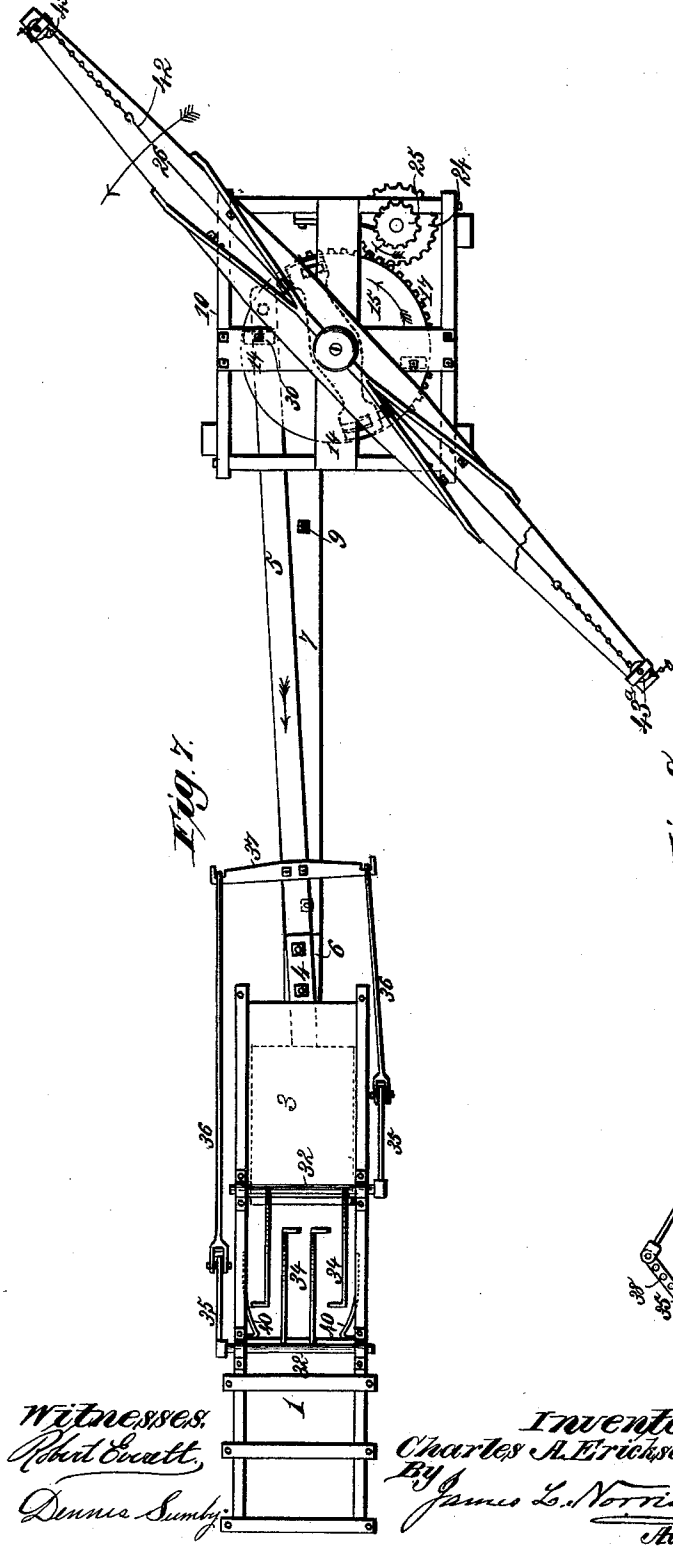


Fig. 7.

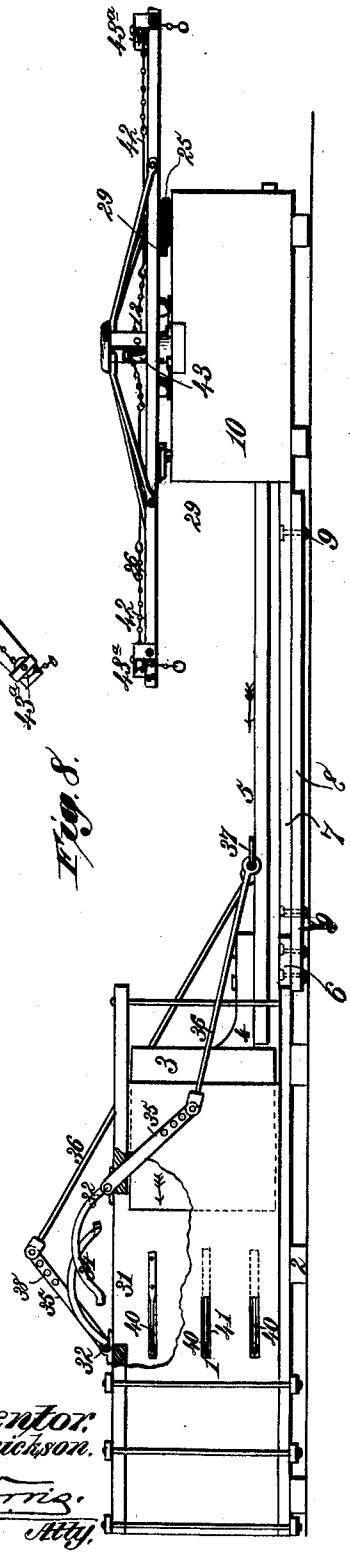


Fig. 8.

Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES A. ERICKSON, OF RED WING, MINNESOTA.

PRESS.

SPECIFICATION forming part of Letters Patent No. 414,028, dated October 29, 1889.

Application filed December 19, 1888. Serial No. 294,056. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. ERICKSON, a citizen of the United States, residing at Red Wing, in the county of Goodhue and State of Minnesota, have invented new and useful Improvements in Presses, of which the following is a specification.

My invention relates to hay, cotton, and other presses, and the purpose thereof is to provide a simple press mechanism and combine the same with a horse-power having continuous rotary action, whereby a reciprocatory movement of the plunger of the press is produced at stated intervals.

It is my purpose also to combine with the pressing mechanism automatic packing-arms, alternating in action with the plunger, whereby the hay, cotton, or other material is forced into the press-box.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 is a partial plan view showing the actuating mechanism or horse-power. Fig. 2 is a vertical section of the parts shown in Fig. 1 upon the line *x x*. Fig. 3 is a vertical section of the horse-power mechanism, the main shaft and its gearing being removed. Fig. 4 is a detail perspective of the main shaft of the horse-power, showing its cross-head and dogs. Fig. 5 is a similar view of the main gear of the horse-power. Fig. 6 is a similar view of one of the packer-shafts with its arms. Fig. 7 is a plan view of the entire mechanism. Fig. 8 is a side elevation of the mechanism shown in Fig. 7, part of the press-box being broken away.

In the said drawings, the reference-numeral 1 designates the press-box, which may be of any similar construction. It is preferably laid upon one side and supported by skids 2. Within the open end of the box lies the plunger 3, provided with a pivotally-connected bracket 4, to which is attached the plunger-bar 5. At the open end of the box the floor or planking is prolonged or extended to form a tongue 6, which abuts against a strong beam or plank 7, forming part of or connected with the frame of the horse-power. Underlying this beam and the tongue 6 is a strip of planking 8, connected to each by bolts 9, whereby the press-box and the frame 10 of the horse-power are rigidly united.

Within the frame 10 of the horse-power mechanism is arranged a vertical shaft 12, stepped in a bearing 13 on the flooring and having support in the strong cross-braces 14 at the top of the frame 10. Upon this shaft is loosely mounted the main actuating-wheel 15, having a crank-pin 16, which engages an opening in the end of the plunger-bar 5. Upon one side of the wheel 15 is mounted the segment of gear-teeth 17, extending over somewhat less than ninety degrees of arc, and upon the upper side of the wheel near its periphery are mounted two opposite lugs 18. Upon the shaft 12, a little above the wheel 15, is keyed a cross-head 18, in the ends of which are pivotally mounted dogs 19, their points dropping by gravity below the lower surface of the cross-head, while the tails of said dogs project above the upper surface, as shown in Fig. 4. These dogs normally engage the lugs 18 on the wheel below the cross-head, and as the shaft 12 is turned they carry the wheel 15 with it.

Journaled within the frame 10 is a second vertical shaft 20, supported by elastic arms 21, the lower end of said shaft resting in a slot or chamber 22, and the upper end in an inclosing-bracket 23, whereby the yield of the elastic arms 21 may allow the shaft to move in the direction of the channel 22. This shaft carries a gear 24, capable of meshing with the segment of gear-teeth 17 on the wheel 15, and at its upper end it is provided with a pinion 25, which lies above the cross-braces 14.

The shaft 12 is rotated by a cross-head 26, having lugs 27, which rest and move upon a circular plate 28 on the braces 14. Mounted upon the under face of this cross-head are segmental racks 29, so arranged that at each half-revolution of the shaft they will engage the pinion 25 upon the shaft 20 and operate the latter. Upon one of the cross-braces 14 are secured cam-lugs or tripping-blocks 30, so arranged that as the shaft 12 revolves the tails of the dogs 19 will be brought into contact with said lugs or blocks and the said dogs released from engagement with the tripping-lugs 18 on the wheel 15. This disengagement takes place at or an instant before one of the

segmental racks 29 on the cross-head 26 meshes with the pinion 25 on the shaft 20, and the wheel 15, to which the plunger-bar 5 is connected, being then free to rotate independently of the said shaft, it is, by the revolution of the gear 24 through the segmental racks 29, carried back through part of a revolution, thereby retracting the plunger-bar 5 and withdrawing the plunger. An instant after the segmental rack leaves the pinion 25 the dogs 19 again engage the lugs 18 on the wheel 15, carrying it forward and throwing the plunger a second time into the press-box. The operation is continued as long as the cross-head is turned.

The elastic supports 21 are provided in the event of the interference of the teeth of the segment 17 and those of the gear 24, or of the similar interference of the racks 29 with the pinion 25. The yield of these elastic arms permits the shaft to spring to one side and bring the teeth into mesh without breaking or otherwise injuring them.

The press-box is supplied or fed through an opening 31 in its upper wall. Upon opposite sides of this opening are mounted rock-shafts 32, upon which are packer-arms 34, which are preferably curved. Upon opposite ends of said shaft are mounted actuating-levers 35, to which connecting-bars 36 are pivotally attached. These bars are operated by a cross-head 37, carried by the plunger-bar 5. The ends of the packer-arms are usually bent in opposite directions to act more effectually upon the material supplied to the press. The levers 35 are provided with several apertures 38, to permit the pivotal attachment of the connecting-bars 36 at different points, whereby the throw of the packer-arms may be somewhat varied.

Inasmuch as it may be desirable to provide in some cases for a greater or more extended reciprocation of the plunger, I make the pinion 25 interchangeable, and provide the cross-head 26 with bolt-openings 39, whereby the segmental racks 29 may be adjusted to compensate for the lesser diameter of the substituted pinion.

It is evident that other power may be substituted for the horse-power without change in any essential feature of that which constitutes my invention.

In the walls of the press-box I form slots 41, and upon said walls are mounted elastic metal strips 40, having one end attached to the press-box and the free ends curved inward and bent at substantially right angles to the wall of said press-box to form shoulders looking toward the rear of the box, as shown in Figs. 7 and 8. The free ends of these strips play in the slots 41, and as the press-plunger is thrown in and out they recede into the slots; but as the plunger is withdrawn they are thrown out and tend to hold and prevent the packed hay from following the withdrawing plunger. I also attach to the cross-head 26 an equalizer 42, consisting of a chain running over a central pulley 43, and over pulleys 43^a on the ends of the cross-head, said chain having at intervals rods or wires located at the points where no contact with the pulleys occurs. The ends of the chain are carried beyond the ends of the cross-head and the whiffletrees are attached thereto. The equalization of draft secured by this arrangement is evident.

What I claim is—

1. In a hay, cotton, or other press, the combination, with a suitable press mechanism, the box of which is connected to the frame of a horse-power, of a plunger-bar, a wheel having lugs, a segment of gear-teeth and a crank-pin to which the plunger-bar is connected, a main shaft on which the wheel is loosely mounted, said shaft carrying a cross-head having dogs which normally engage the lugs on the wheel, a gear meshing with the segment of gear-teeth, a shaft carrying said gear and having a pinion at its upper end, a cross-head revolving the main shaft and having racks by which reverse rotation is imparted to the pinion, gear, and wheel, and tripping cams or blocks arranged on a part of the horse-power frame above the dogs for tripping the latter prior to the action of the racks, substantially as described.

2. In a hay, cotton, or other press, the combination, with a plunger-bar, of a horse-power frame, a wheel having lugs, a segment of gear, and a crank-pin to which the bar is connected, a cross-head having dogs normally engaging the lugs on the wheel, a gear meshing with the segment of gear-teeth on the wheel, a shaft carrying said gear and having a pinion at its upper end, a cross-head by which motion is communicated to the cross-head carrying the dogs, the former having segmental racks by which reverse rotation is imparted to the pinion, gear, and wheel, and tripping cams or blocks arranged on a part of the horse-power frame above the dogs, and by which the latter are tripped and released from engagement with the lugs on the wheel, substantially as described.

3. In a hay, cotton, or other press, the combination, with a horse-power frame and a plunger-bar, of a wheel having lugs, a segment of gear, and a crank-pin by which the bar is reciprocated, a cross-head carrying dogs engaging the lugs on the wheel, a gear meshing at each part revolution with the segment of gear-teeth on the wheel, a shaft carrying said gear and having a pinion at its upper end, a main shaft, a cross-head on the main shaft having racks which mesh at each half-revolution with the pinion, tripping cams or blocks arranged on a part of the horse-power frame above the dogs, and elastic arms and slotted bearings supporting the shaft which carries the pinion and the gear, substantially as described.

4. In a hay, cotton, or other press, the combination, with a horse-power frame and a main shaft, of a plunger-bar, a wheel loosely

mounted on the shaft and having lugs, a segment of gear-teeth, and a crank-pin to which the bar is connected, a cross-head on the main shaft having dogs which normally engage the lugs on the wheel, a gear and a pinion on a separate shaft, the gear meshing with the segment of gear-teeth on the wheel, a cross-head on the main shaft having racks which mesh at each half-revolution with the said pinion, tripping cams or blocks arranged on a part of the horse-power frame above the dogs to trip the latter, rock-shafts on opposite sides of an opening in the press-box, said shafts having packer-arms, and connecting-bars operated by a cross-head on the plunger-bar and connected to actuating-levers on the rock-shafts, substantially as described.

5. The combination of the plunger and the lengthwise-reciprocating plunger-bar 5, having a cross-head 37, with the press-box having a top feed-opening, a rock-shaft 32, journaled directly on the press-box at one side of the feed-opening, a series of packer-arms 34, rigidly fixed to the rock-shaft, a lever-arm 35, rigidly secured to and depending from the end of the rock-shaft at one side of the press-box, and a connecting-bar 36, pivoted at one end to said depending lever-arm and at the other end to the cross-head on the lengthwise-reciprocating plunger-bar, substantially as described.

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

CHARLES A. ERICKSON.

Witnesses:
W. C. WILLISTON,
O. FORSSELL.