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W. H. GRAY.
BALING PRESS.

(Application filed Nov. 6, 1900.)

(No Model.)

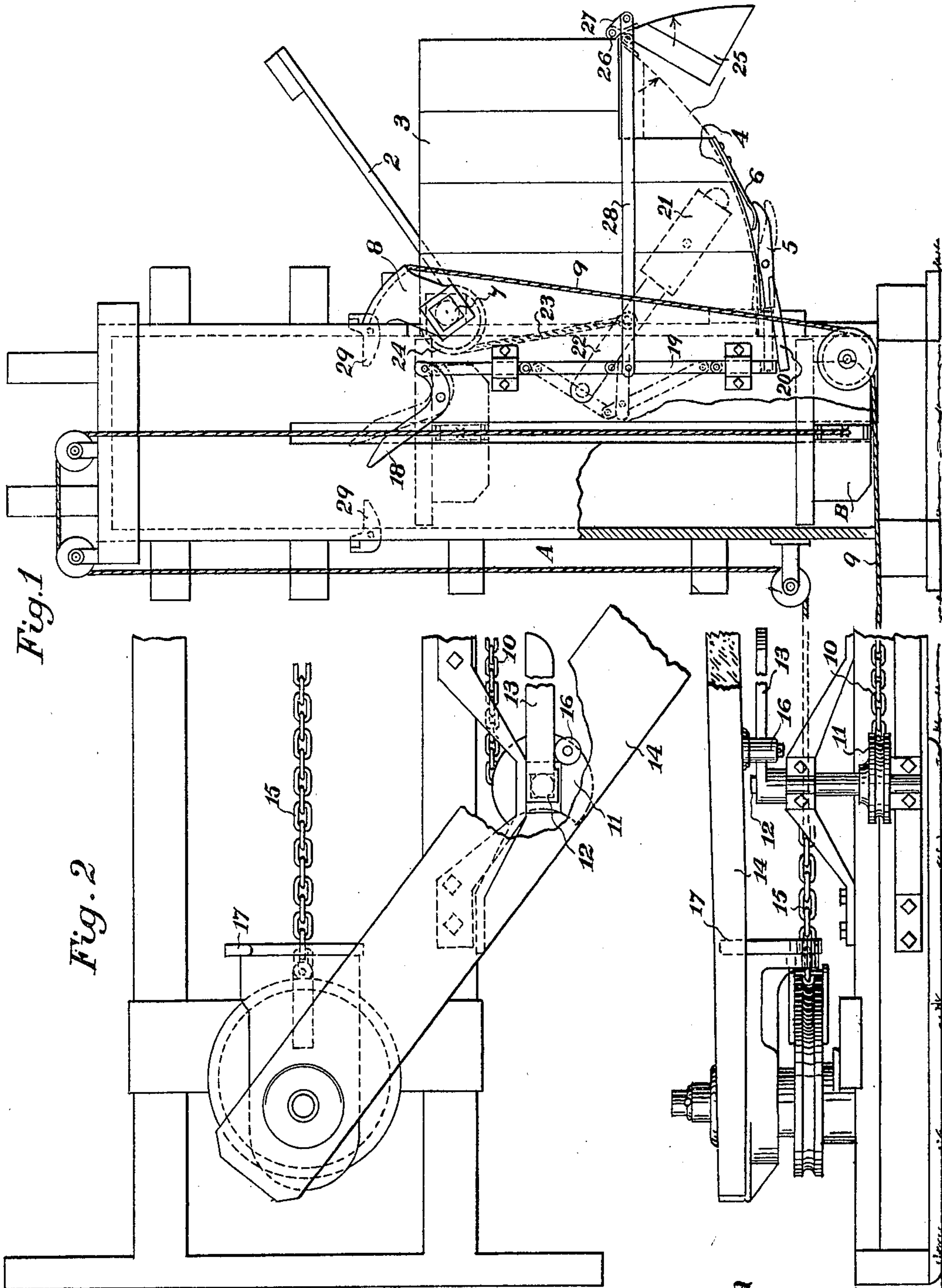


Fig. 1

Fig. 2

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UNITED STATES PATENT OFFICE.

WILLIAM H. GRAY, OF SAN LEANDRO, CALIFORNIA.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 670,175, dated March 19, 1901.

Application filed November 6, 1900. Serial No. 35,646. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GRAY, a citizen of the United States, residing at San Leandro, county of Alameda, State of California, have invented an Improvement in Baling-Presses; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in
10 baling-presses.

It consists of the parts and the constructions and combinations of parts hereinafter described and claimed.

Figure 1 is a side elevation of my baling-
15 press. Fig. 2 is a plan of the rear part of the same.

This invention is designed for use upon that class of presses in which the material to be compressed is fed in successive charges
20 into a throat or hopper on the side of the upright press. The door of this opening is hung from the top instead of the bottom and in closing sweeps down through the concave bottom, so that hay will be naturally forced
25 into the body of the press without chance of escape.

As illustrated in the present drawings, A represents a vertical rectangular hay-press having a follower B, which remains in the
30 lower part of the press while the charge is being introduced and which is raised by means of chains passing over suitable direction-pulleys and connecting with the ends of the follower B, which extend through slots in the
35 side of the press for this purpose. The opposite end of the chain is connected with a winding-drum operated by a horse-power sweep or other suitable mechanical power.

2 is the door of my press, which swings in
40 between the sides 3 of the hopper, and 4 is a curved bottom of the hopper, the arc of which is formed upon the radius about which the door itself swings, so that the door swinging upwardly when it is opened allows the material to be compressed to be thrown into the
45 hopper until the latter is filled. Then the door is closed, sweeping downwardly through the curved bottom 4 above the follower, the door being automatically fastened by a latch or latches 5, pivoted and acted upon by a
50 spring 6, so that when the door has passed the inner end of the latch the latter springs

up and engages the outer face of the door, so as to prevent being opened until the latch is again disengaged. The door is firmly secured
55 to a trunnion 7, which may be a three-inch square iron with journals near the ends turning in suitable journal-boxes. The outer ends of the trunnion-iron extend exterior to the end planks of the press sufficiently
60 to allow the arms or segments 8 to be fixed thereto. Power is applied through these segments to close the door through any flexible continuous connection, such as wire rope 9, rods and chains, as at 10, completing the con-
65 nection with the segment or drum 11, about which the chain is wound, so as to pull upon the segment and, thus turning the trunnion 7, close the door. The segment 11 is fixed at any suitable point upon the power apparatus,
70 which is usually located at a considerable distance from the press. This segment has a square shaft 12, upon which a lever 13 is fixed. The power is here shown as being applied through a lever or sweep 14, to which the ani-
75 mals are attached, so as to walk in a circle. The follower-chain 15 is coiled upon a drum when the sweep 14 is moved around the circle. The sweep 14 has a roller 16, the spindle of which is bolted to the lower part of the
80 sweep, so that as the sweep is moved around this roller 16 contacts with the lever 13 before the sweep has reached the point where it commences to move the follower. The lever
85 13 is turned about one-half a complete circle, while the outside end of the sweep travels about 12 feet, and this is sufficient to act through the continuous connections 9 and 10 and 7 and 8 to close the door. The sweep then arrives at the hook 17, which it engages,
90 and this acting upon the drum, which winds the chain 15, causes the follower to commence to move. When the door 2 has been closed, it is locked, as before described, by the spring-pressed latch 5. This latch is automatically
95 disengaged by the upward movement of the follower at the instant when the charge has been compressed by means of a lever 18, fulcrumed between its ends and having one end lying in the path of movement of the follower
100 or a part carried thereby that the follower will contact with it when it rises.

19 is a jointed or toggle push-bar slidable in guides, and one end is connected with the

lever 18. The other end contacts with an arm 20, which projects from and is carried by the latch 5, and when by the movement of the lever 18 and the push-bar 19 (the latter being in a straight line) the arm 20 and the latch 5 are depressed the door is released and is then opened by the action of a weight 21, fixed to a lever 22 and a rope 23, connecting said lever with a wheel or drum 24, which is carried upon the shaft or trunnion 7 of the door.

In order to insure the straightening of the toggle-lever 19 when desired and allowing it to bend at the meeting angle under certain other conditions, I have shown a swinging weight or step 25, mounted upon a pin or shaft 26, having a short crank-arm, as 27. This crank-arm is connected by a rod or link 28 with the knee or toggle rod 19, and while the press is being charged, the weight 25 hanging outside of the hopper, the crank-arm 27 will act through the rod 28 to keep the jointed rod 19 in a straight line, so that the movements of the follower will act through the lever 18 to release the door 2 after each charge has been compressed. The charges are held in place after each compression by the usual retainers 29. After the bale has been finally completed and is to be tied the step 25 is turned inwardly, so as to lie inside of the hopper, where it forms a step upon which the operator can stand while tying the bale. This movement of the step turning the crank 27 acts through the rod 28 to push the jointed lever 19 outside of a straight line, so that when the follower rises it moves the lever 18; but its only action will be to further bend the jointed arms 19 without disengaging the latch 5, as the tendency of the lower portion of the lever 19, which engages the latch, is now to move away from said latch. As soon as the bale is tied this swinging step 25 is again thrown out and is in position to again operate the disengaging mechanism of the latch. Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a baling-press of a hopper extension from one vertical side thereof and having a curved bottom, a shaft journaled in the upper portion of the hopper and having end connections, a door fixed to and turnable with the shaft, the power devices, and connections therefrom to the end connections of the shaft whereby the door is operated to force a charge from the hopper into the press.

2. The combination with a baling-press, of a hopper having a concaved bottom, a door, a shaft forming an axis for the door said shaft having arms fixed to its ends, a power mechanism, and connections therefrom to said arms whereby the door is closed downwardly with its free edge moving over the curved bottom, and mechanism by which the door is held in a closed position.

3. The combination in a baling-press of a

vertical press-box and follower reciprocable therein, a feed-opening at the side of the press-box, a hopper having a concaved bottom and located to receive charges of material and hold them in line with the opening, a shaft horizontally journaled above the opening and axial with the curvature of the bottom of the hopper, and a door fixed to and carried by said shaft so as to swing downwardly and inwardly through the hopper, segments fixed to the ends of the shaft and connections between said segments and the power mechanism whereby the door is closed.

4. The combination in a baling-press of a press-box, a follower movable vertically therein, a feed-opening and hopper at the lower part of the press-box whereby successive charges of material are delivered therein, a door fixed to a horizontal shaft above the feed-opening, segments fixed to the ends of the shaft and flexible continuous connections from said segments, a winding pulley or drum to which the opposite ends of said connections are attached, a sweep and connections between it and the follower whereby the latter is raised and intermediate connections whereby the sweep actuates the door-closing mechanism before the follower begins to move.

5. The combination in a baling-press of a vertical press-box, a vertically-movable follower, a sweep and a drum or pulley actuated thereby, flexible connections between said drum and the follower whereby the latter is raised, a feed-opening and hopper at one side of the lower part of the press-box, a door hinged above the opening, segments fixed to the hinge-shaft of the door and flexible connections between said segments, and a pulley or pulleys journaled upon the power-frame, a lever-arm by which said pulleys are turned and a lug or projection carried by the sweep adapted to engage said lever-arm before the follower-actuating drum is set in operation, whereby the door is first closed and the charge of material forced into the press, said charge being afterward compressed by the movement of the follower.

6. In a baling-press, a vertically-disposed press-box and follower movable vertically therein, a feed-opening and hopper at one side of the lower part of the press-box, a door fixed to a journaled hinge-shaft above the opening and closable downwardly through the hopper, segments fixed to the door-carrying shaft, and flexible connections between said segments and a winding-pulley mounted upon the power apparatus, other winding-pulleys and flexible connections between said pulleys and the follower whereby the latter is reciprocated within the press-box, a sweep through which power is applied and lugs or stops whereby the movement of the sweep acts first to close the door and afterward to move the follower.

7. The combination in a baling-press of a vertically-disposed press-box, a follower and mechanism by which it is caused to reciprocate

cate therein, a feed-opening and a hopper projecting horizontally from one side of the press-box, a door fixed to a hinged shaft journaled above the hopper and feed-opening
5 mechanism including segments fixed to the ends of said shaft, and power devices and connections therefrom to the segments, by which the door is closed through the hopper to sweep a charge of material into the press-
10 box, spring-pressed latches by which the door is locked when closed, and a mechanism actuated by the upward movement of the follower whereby the latches are disengaged to allow the door to open.

15 8. The combination in a baling-press of the vertical press-box, a follower movable therein, a feed-opening and hopper at one side of the press-box, a door mounted upon a shaft journaled and turnable above the door-opening
20 and hopper, mechanism by which the door is closed through the hopper, spring-pressed latches by which the door is locked in its closed position, a slidable rod, one end of which engages with projections from the
25 latches, and a lever with which the other end is connected, said lever lying in the path of the follower and movable thereby to disengage the latches and allow the door to open after the follower has compressed the charge.

30 9. The combination in a baling-press of a vertical press-box, a follower movable therein, a feed-opening and a hopper projecting horizontally from one side of the press-box, a turnable shaft having arms fixed to its ends
35 and a door fixed to and turnable with said

shaft, mechanism including power devices and connections therefrom to said arms, by which said door is caused to swing downwardly through the hopper and close upon the charge
40 which is delivered into the press-box, spring-pressed latches by which it is locked in its closed position, a mechanism actuated by the follower to disengage said latches after the charge has been compressed, and weighted
45 arms connected with the door whereby the latter is automatically opened and released.

10. The combination in a baling-press of a vertical press-box and follower movable therein, a feed-opening and hopper located at one side of the press-box, a door hinged above the
50 feed-opening and hopper, and mechanism by which said door is caused to swing downwardly through the hopper to sweep the charge into the press-box, latches by which the door is locked when closed, toggle-levers
55 and guided slidable rods between which they are located, a lever-arm connected with said rods and actuated by the follower when the charge has been compressed whereby the rods release the spring-latch, a swinging step
60 mounted upon a crank-shaft, and connections between said crank-shaft and the toggle-levers whereby the latter are maintained in line with the slidable rods.

In witness whereof I have hereunto set my
65 hand.

WILLIAM H. GRAY.

Witnesses:

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JESSIE C. BRODIE.