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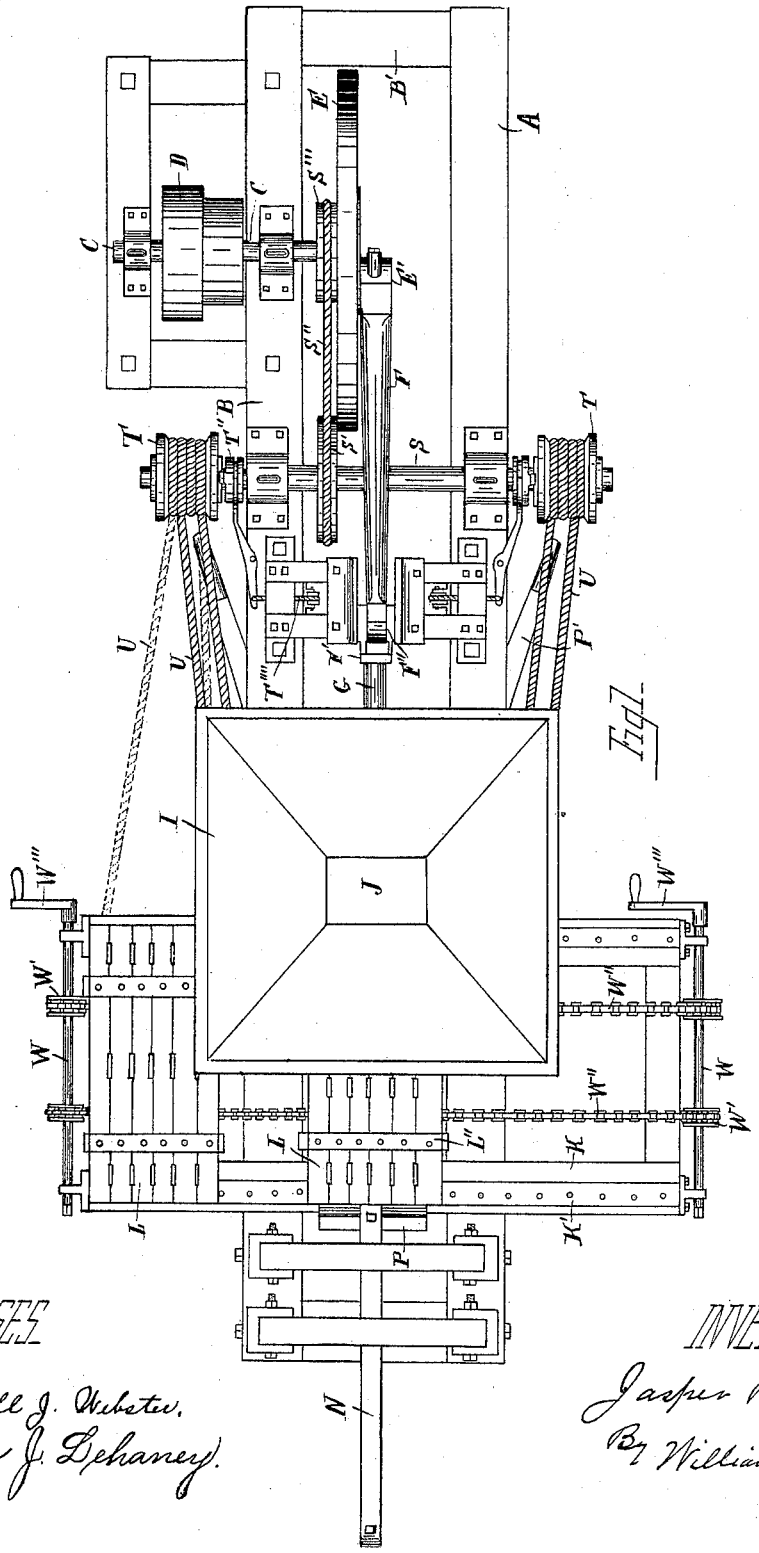

Fig. 1.

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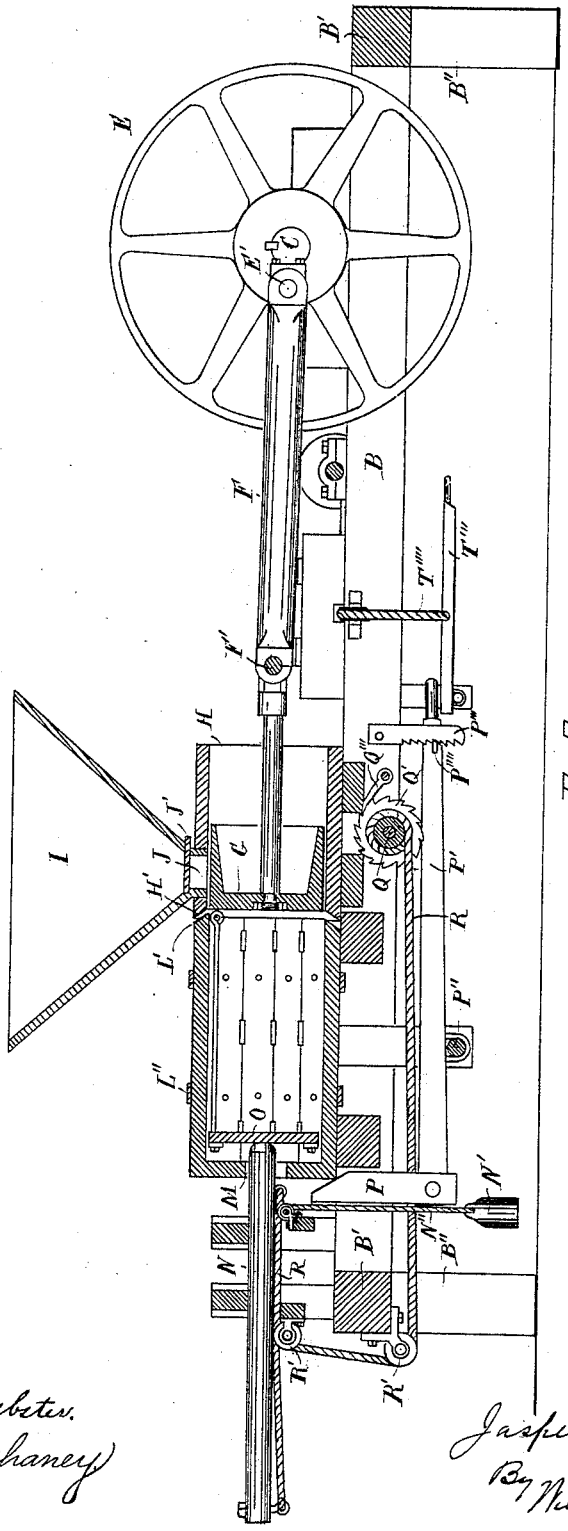

Fig 2.

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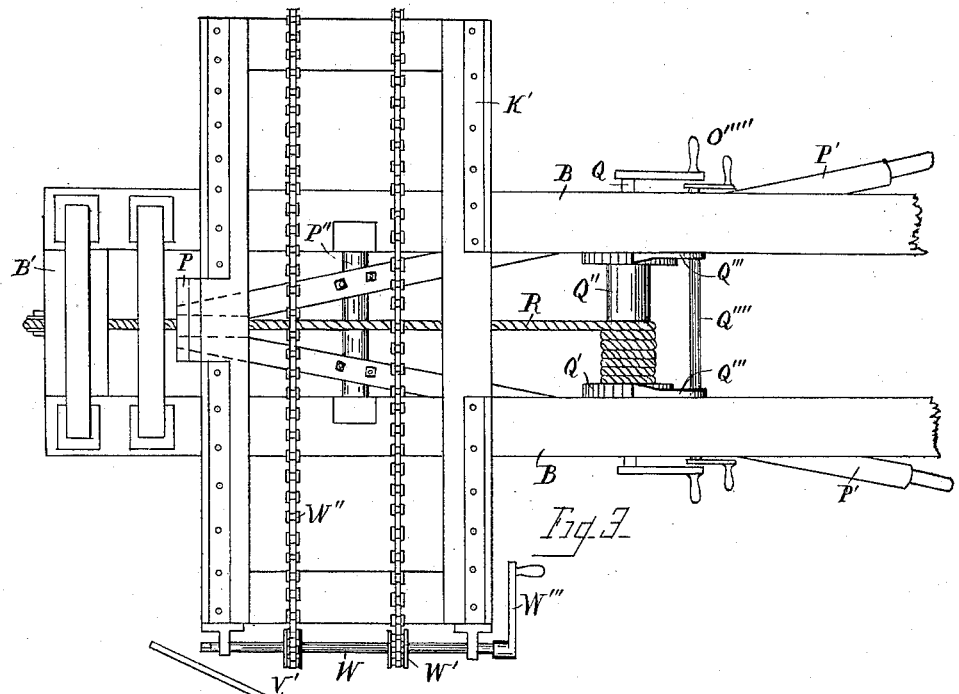

Fig. 3.

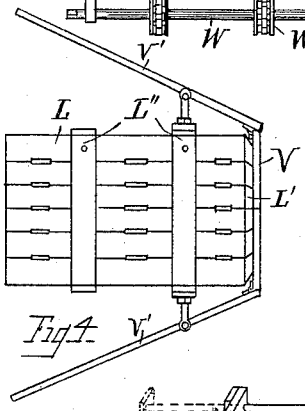

Fig. 4.

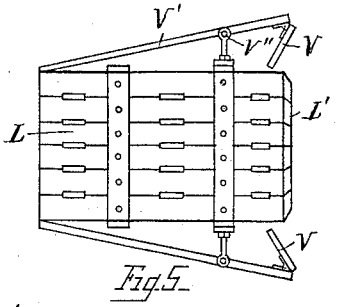

Fig. 5.

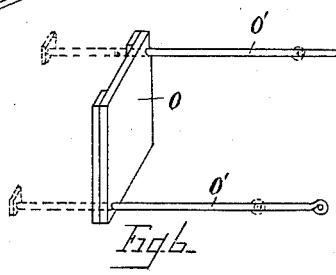

Fig. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JASPER BILLINGS, OF TOLEDO, OHIO.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 418,156, dated December 31, 1889.

Application filed June 10, 1889. Serial No. 313,769. (No model.)

To all whom it may concern:

Be it known that I, JASPER BILLINGS, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Baling-Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to presses, more particularly of that class designed for compacting cut hay, bran, cotton, lint, and material of an analogous character into sacks for the purpose of cheap transportation.

The object of the invention is to provide a press with great power for compressing the material into the least possible space, with provision for a continuous operation of the same when baling or sacking the material.

A further object is to mount a series of baling-boxes upon a trackway at right angles to the reciprocation of the plunger, with means for moving the boxes simultaneously to withdraw a filled box and move an unfilled box into position to be filled.

A further object is to provide for an equal degree of pressure upon the material compacted within the baling-boxes by means of a movable head within the same and retracted against the pressure of a weight.

A further object is to provide means for withdrawing the bale or filled sack from the baling-boxes.

A further object is to provide means for closing the open end of the sack (when sacking loose material) by means of boards movable in opposite directions across the open end of the baling-box, and operated by means of levers fulcrumed upon the side of the box.

In the drawings, Figure 1 is a plan view of a complete press. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a plan view of a portion of the frame with the hopper and baling-boxes removed to disclose the wedge and lever for operating the same and the endless chain for moving the boxes laterally, one of the shafts and sprocket-wheels thereon being omitted. Fig. 4 is a top plan view of one of the baling-boxes provided with fulcrumed levers, to which are connected hinged doors for closing the forward end of the box, the doors being shown as closed. Fig. 5 is a similar view, the doors being shown open. Fig. 6 is a perspective view of a device for removing the packed material from the box, combining also the feature of a movable head, against which the material bears when being packed.

A designates the frame of the press, comprising longitudinal sills B and cross-timbers B′, the frame being either supported upon legs B″, as shown, or it may be mounted upon wheels for convenient transportation.

C designates the main power-shaft, journaled on one of the sills B, and a side frame secured thereto and having a driving-pulley D secured thereon, from which power is received from any preferred motor.

E designates a crank-wheel secured to the inner end of the power-shaft, the wheel being of a sufficient weight to act as a balance-wheel.

Upon crank E′ of wheel E is secured one end of a pitman F, the opposite end of the pitman being secured to a plunger G, the pitman being jointed at F′ and connected with a slide F″, which slides in ways upon the frame. Plunger G reciprocates in an open-ended chamber H, preferably rectangular in cross-section and permanently secured to the frame, the opposite end of the chamber being beveled outwardly at H′, for a purpose hereinafter stated. Upon the upper side of the chamber H is secured a hopper I, which communicates with the chamber through a rectangular perforation J, which is closed by means of a slide J′.

K designates a trackway at right angles to the chamber H, preferably formed with angle-irons K′, secured upon the sills thereof, upon which baling-boxes L may be moved, as will be more fully explained.

L designates baling-boxes of a size corresponding in cross-section with the chamber H, and beveled at L′ inversely to the bevel H′ of the chambers.

Boxes L are strongly bound with metal bands L″, and at the rear end are formed with an opening M, through which a bar N enters, and is urged forward by means of a

weight N′, secured thereto through the medium of a rope N″, the end of the bar bearing against a movable head O, carried upon headed rods O′, extending longitudinally of the box and within the interior thereof.

P designates a wedge arranged in rear of the box coincident with chamber H and pivotally secured to levers P′, fulcrumed upon a rod P″ beneath the frame, the levers being arranged one upon each side of the frame, and held to any adjustment by means of swinging serrated bars P‴, adapted to engage with catches P⁗ upon the levers.

The angle-irons, which serve as tracks upon which the boxes move, are cut away in front of the wedge to allow the same to rise and urge the box in front of the same forward to cause the beveled end L′ to enter the inversely-beveled end H′ of the chamber.

Q designates a shaft journaled beneath the frame, and provided with a crank Q⁗ and ratchet-wheel Q′ upon each end thereof, with a drum Q″ secured centrally thereof, upon which is wound a rope R, which passes around pulleys R′ and is connected with bar N, by which means the bar can be retracted entirely out of the rear end of the baling-box by turning the drum Q″, and held in adjustment by means of pawls Q‴ upon a shaft Q⁗, extending across the frame in parallel relation with shaft Q and provided with a crank upon each end.

S designates a shaft journaled transversely of the frame and provided with a pulley S′ between its ends, over which runs a belt S″, driven by a pulley S‴ on the main power-shaft C. Upon each end of shaft S is loosely journaled a drum T, adapted to be caused to revolve with the shaft by means of clutch T″, operated by means of a treadle T‴, connected therewith by a rope T⁗, there being a treadle and rope to each clutch. Upon the drums T are wound ropes U, for a purpose hereinafter described.

I have heretofore referred to the movable head O. This head subserves two purposes—first, that of being urged forward by the bar N, and thereby serving to receive the material at the first formation of a sack or bale, and by holding the same centrally of the length of the bale-box causes the first material introduced to be compacted as densely as when the box is filled. A second use to which the head is put is that of expelling the bale through the medium of the rods O′, to which the ropes U are attached when the bale is completed, as shown in dotted lines, Fig. 1, and by throwing the clutch nearest the baling-box into gear with drum T the sack or bale is drawn out.

It will be understood by the description given thus far that the press can be managed from either side, as there are two levers P′ (one upon each side) for actuating the wedge, there being also a crank upon each end of shafts Q and Q‴ by which to withdraw the bar N from either side, and there being two drums T and clutches upon each side of the frame by which to operate the same.

V designates doors or closing-boards hinged to levers V′, fulcrumed at V″ upon the baling-box, these doors being intended to close the open end of the sack when filled and hold the material therein during the process of sewing the two opposite sides of the sack.

To move the boxes L upon the trackway K are arranged shafts W, one across each end of the trackway and journaled in bearings secured thereto. Upon each shaft W are secured sprocket-wheels W′, over which are arranged endless chains W″, secured to the baling-boxes, by which means, when the shaft upon either side is turned by means of crank W‴, one of the boxes will be caused to move into position in coincidence with chamber H and the other box will be moved to one side to be discharged of the packed material.

In operation, in sacking bran or analogous material, the head O and rods O′ are inserted into the baling-box. The sack is then placed into the box with the bottom resting against the head O and the top of the sack protruding out of the box sufficiently to be held frictionally between the beveled ends H′ and L′ of the chamber H and box L, respectively. Shaft W is now turned to cause chains W″ to move a box into coincidence with the chamber H, when the lever P′ upon the side most convenient to the operator is moved to cause the wedge P to bear against the box and urge the same forward to cause the beveled end to enter the oppositely-beveled end of the chamber H, and the wedge is held to this adjustment by means of catch P⁗ engaging with serrated bar P‴. Pawls Q‴ are disengaged from ratchet-wheels Q′, and the bar N is allowed to enter the opening M in the rear end of the box, weight N′ urging the bar forward against the head O. The material to be pressed is introduced into hopper I, and slide J′ is drawn, allowing the material to pass into the chamber H upon each back stroke of the plunger and to be compacted into the bale at each forward stroke, the head O bearing firmly against the material in the sack, thereby causing the same to be densely compressed at the commencement of the operation, the head gradually retracting against the pressure of the material until the sack is completely filled, when the shaft Q is turned, causing rope R to retract bar N from opening O. Catch P⁗ is released from engagement with serrated bar P‴ and the wedge P is dropped from frictional engagement with the end of the box, when shaft W is turned, causing the chains W″ to move the filled box to one side and an unfilled box in coincidence with chamber H, ready to be filled. The doors or boards V are now closed over the mouth of the sack by means of levers V′, and the two diametrically-opposite sides of the end of the sack are sewed, thereby closing the sack from the possibility of escape of the material, and the doors are withdrawn therefrom

by a reverse movement of the levers, when ropes U are connected with rods O′ and the clutch upon the side of the frame upon which the box rests is caused to engage to revolve drum T, thereby withdrawing the package from the baling-box, when the operation is repeated. During the interim of changing boxes the feed of material can be stopped by closing slide J′ of the hopper.

It will be seen that by the arrangement described the power mechanism may be constantly running and that the change of boxes can be effected quickly, thereby causing the operation to be practically continuous.

What I claim is—

1. In a press, a power-shaft, a pitman connected therewith, an open-ended chamber, a plunger connected with the pitman and reciprocating therein, in combination with a laterally-movable bale-box adapted to be brought into coincidence with the chamber, and a movable wedge adapted to be forced against the baling-box to hold the same in place, as and for the purpose set forth.

2. In a press, a hopper, a chamber in communication with the same, a plunger within the chamber, a trackway at right angles to the chamber and provided with longitudinal movable chains having laterally-moving baling-boxes connected therewith, as and for the purpose set forth.

3. In a press, an open-ended chamber, a plunger reciprocating therein, a baling-box having an open end in coincidence with the chamber and provided with an opening in the opposite end, a movable head within the baling-box, and a bar passed through the opening in the box, a rope secured to the outer end of the bar, and a weight attached to the rope to force the bar against the movable head, as and for the purpose described.

4. In a press, an open-ended chamber adapted to receive the material to be pressed and formed with a beveled end, in combination with a baling-box having an end beveled reversely to the end of the chamber, in combination with a wedge pivotally connected to a lever and adapted to be urged against the rear end of the box to cause the beveled end of the same to enter the beveled end of the chamber, as and for the purpose set forth.

5. In a press, a baling-box, a movable head therein, in combination with a movable bar held frictionally against the movable head by a weight, and a rope and drum connected with the bar to retract the same, as and for the purpose set forth.

6. In a press, in combination with a reciprocating plunger, a trackway at right angles thereto, shafts journaled upon each end of the trackway and provided with sprocket-wheels, endless chains upon the sprocket-wheels, and baling-boxes connected with the chains, as and for the purpose set forth.

7. In a press, a baling-box, an insertible head provided with rods, in combination with a shaft arranged transversely of the frame and receiving motion from the main power-shaft, drums upon the first-named shaft, and ropes upon the drums connected with the rods, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

JASPER BILLINGS.

Witnesses:
J. HADE,
WILLIAM WEBSTER.