(No Model.) 3 Sheets—Sheet 1.

P. K. DEDERICK.

BALING PRESS AND METHOD OF BALING.

No. 457,632. Patented Aug. 11, 1891.

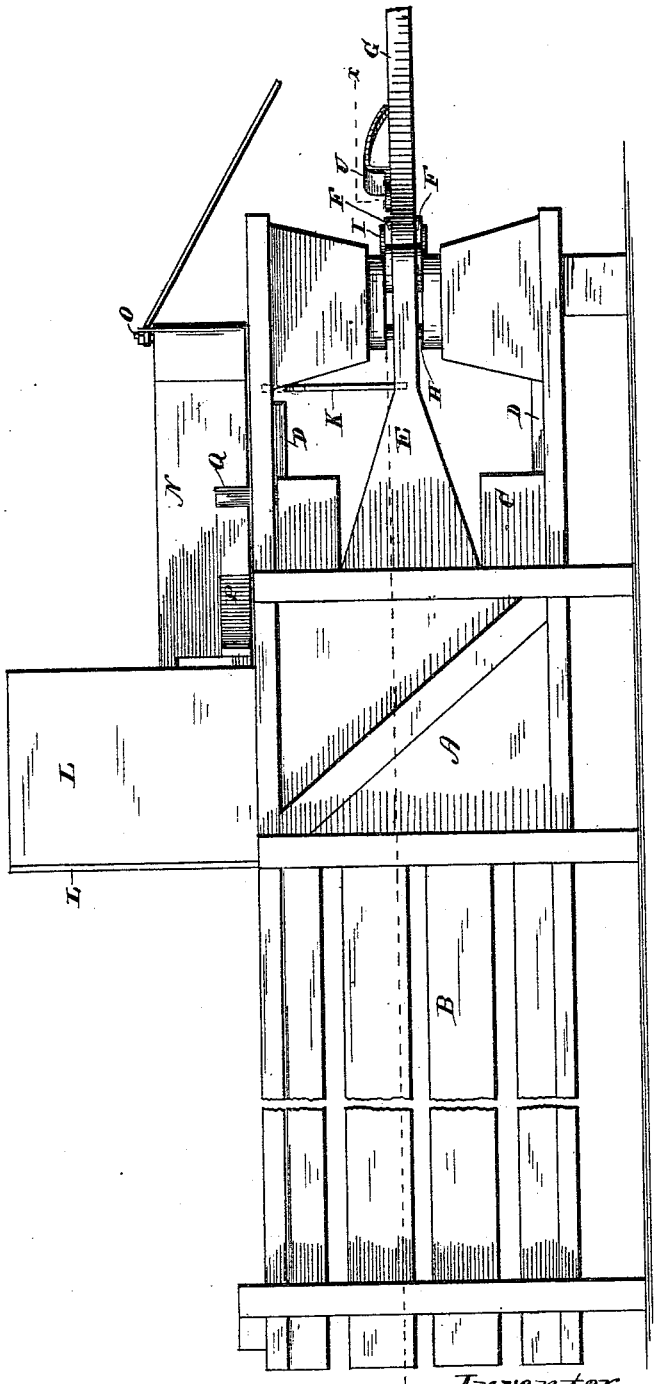

Fig. 1.

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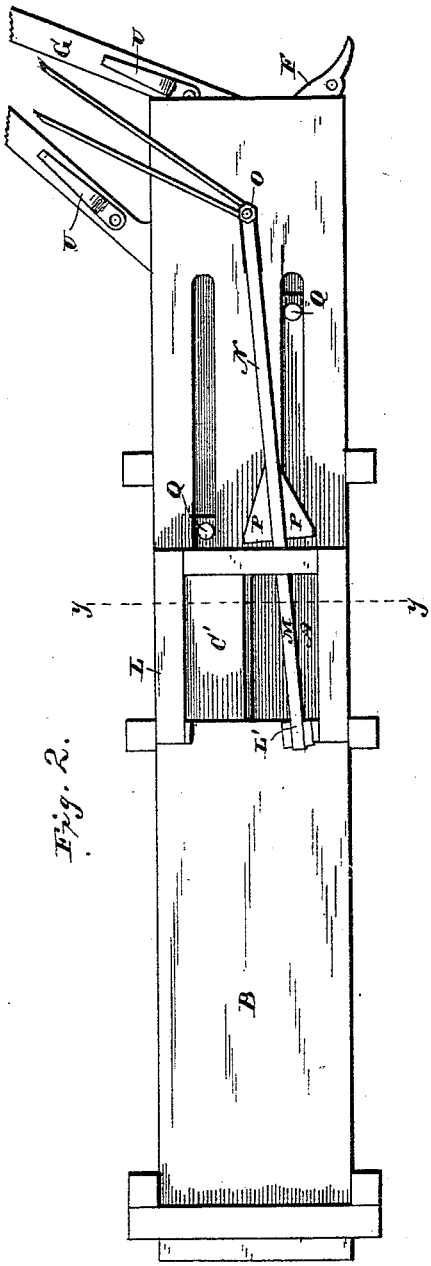

Fig. 2.

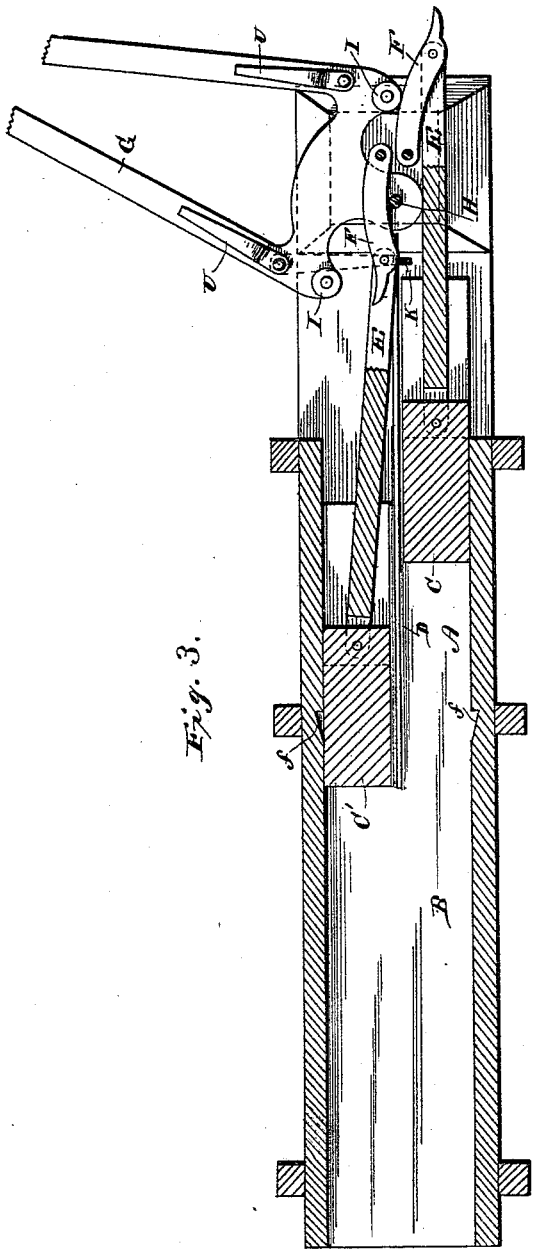

Fig. 3.

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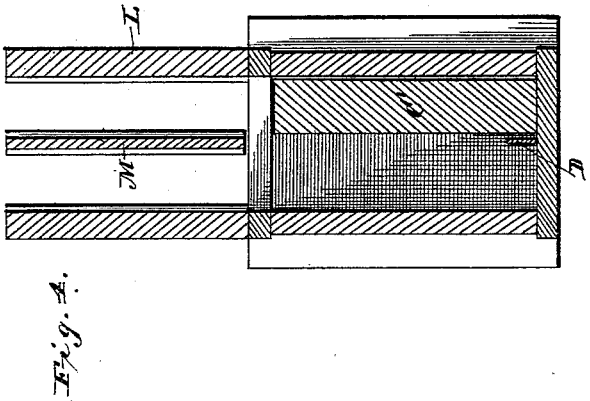

Fig. 4.

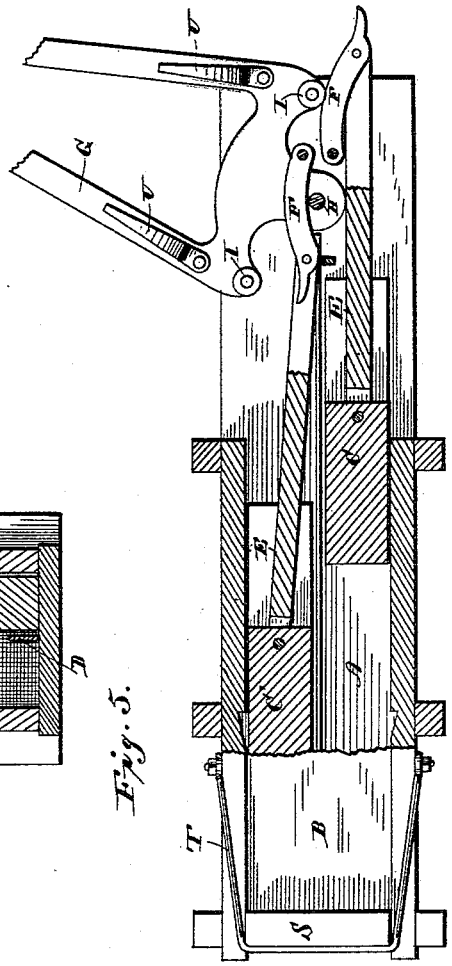

Fig. 5.

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UNITED STATES PATENT OFFICE.

PETER K. DEDERICK, OF LOUDONVILLE, NEW YORK.

BALING-PRESS AND METHOD OF BALING.

SPECIFICATION forming part of Letters Patent No. 457,632, dated August 11, 1891.

Application filed August 14, 1886. Serial No. 210,903. (No model.)

To all whom it may concern:

Be it known that I, PETER K. DEDERICK, of Loudonville, in the county of Albany and State of New York, have invented a certain new and useful Improved Baling-Press and Method of Baling; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

My invention relates particularly to that class of baling-presses known as "continuous" or "perpetual" presses, in which the bales are formed or built up in sections in a bale-chamber by means of a reciprocating traverser or plunger working within a press-box and operating to force into said bale-chamber successive charges of material fed in front of it, though my invention is also applicable to other styles of presses, as will hereinafter be more fully explained.

In order to form compact bales by presses of the continuous or perpetual type, it has heretofore been found most practical to make the bales comparatively small in size, for two principal reasons—first, because when large bales were attempted to be formed the middle portion of each section would bulge out or expand back after the pressure of the traverser had been removed to such an extent as to render the retainers located at the sides of the bale-chamber ineffectual to hold said section, and, secondly, because, owing to the extent of expansive surface in a large bale, too much power was required to do the pressing.

It is the principal object of my invention to produce large-sized sectional bales by presses of the character referred to without increasing the capacity of the power-applying devices.

To this end it consists, primarily, in a new method of producing sectional bales, consisting in forming each section or layer by pressing a series of charges alongside each other to cover the cross-sectional area of the proposed bale and holding said charges, after being so pressed, from back expansion, and, when the bale is sufficiently built up in this way, applying the ties thereto; and it further consists in a novel form of press for carrying said method into practice and in the various details of construction and combinations of parts involved in such press, all which will be fully described hereinafter, and pointed out in the claims at the end of this specification.

Referring to the accompanying drawings, Figure 1 represents a side elevation of a press constructed in accordance with my invention; Fig. 2, a top plan view of the same; Fig. 3, a longitudinal horizontal section on the line $x\,x$, Fig. 1; Fig. 4, a cross-sectional view on the line $y\,y$, Fig. 2. Fig. 5 shows the application of my improvement to an ordinary press having an end door.

Similar letters of reference in the several figures indicate the same parts.

A represents the press-box, and B the bale-chamber, of a continuous or perpetual press. Within the press-box are arranged and adapted to play side by side two reciprocating traversers C C′, the same being preferably separated and guided in their movements by narrow guides or flanges D D at the top and bottom of the press-box, as shown in Fig. 4. To each of these traversers is connected a pitman E, which is jointed at its outer end to an arm or arms F, pivoted to the frame of the press and constituting, together with the pitman, a toggle-joint. The arms F are preferably curved on their outer surfaces and are extended beyond their point of connection with the pitman, all as shown in Figs. 3 and 5. A horse lever or sweep G is mounted upon a shaft H in front of the pivots, upon which the pairs of arms F swing and between the said pairs of arms F, and is provided at opposite sides of its head with friction-rollers I, which are adapted, when the horse-lever is vibrated, to bear against the outer sides of the pairs of arms F, so as to bring each pair of the latter in turn in line with the co-operating pitman, or, in other words, force the toggle up to the center.

K is the swinging arm, which normally hangs between the ends of the two pairs of arms F and serves by being thus interposed to cause one or the other of the toggles to be thrown off its center when the horse-lever is vibrated, as will be presently explained. This lever may be swung out of the way, when desired, as will be readily understood.

L is the feed-hopper, arranged above the

press-box and containing a partition M, secured to an arm N, that is pivoted at O and has inclined or beveled projections P on its opposite sides, with which pins Q, projecting from the traversers, are adapted to co-operate to effect the vibration of the partition.

When the press is arranged for operation, the arm K is swung down into the position shown in Figs. 1 and 3, the horse-lever stands in the position shown in said figures, and one of the traversers—say the one at the right—is at the limit of its movement forward, and the other—namely, the left one—at the limit of its movement rearward. A charge of hay or other material being now forced down into the hopper over the projected or right-hand traverser, the act of crowding it into the hopper will swing the partition M into the position shown in Fig. 2. Then as the horse-lever is swung around to the opposite side of the press the rollers on the advancing side of its head will act upon the arms F of the retracted or left-hand traverser and cause the toggle of which said arms form a part to be straightened out, the retracted traverser to be pushed forward and the toggle of the projected or right-hand traverser to be pushed off the center by means of the interposed arm K, thus allowing said projected traverser to be retracted. As the left-hand traverser nears the end of its forward movement the pin Q, projecting from its top, will strike its co-operating wedge-shaped projection P on the arm of the vibratory hopper-partition and force said partition toward the opposite side of the hopper, thereby preliminarily condensing the charge of material, and as soon as the right-hand traverser is reversed the condensed charge of material is forced down into the press-box in front of it, while another charge of loose material is crowded in between the opposite sides of the vibratory partition and the opposite wall of the hopper, so as to throw the said partition backward into position to be in turn acted upon by the pin on the right-hand traverser. Upon the horse-lever being now swung back to the starting-point the right-hand traverser will be forced forward, so as to force the charge of material in front of it into the bale-chamber of the press, while the left-hand traverser will be in turn retracted, and in all subsequent movements of the horse-lever the operations described will be repeated. In the machine shown the movement of the toggle inward is arrested by the shaft H; but any stop may be employed.

It should be here remarked that the construction of the power-applying devices is such as to cause one or the other of the traversers to always remain projected forward. This is essential, since it is partly by means of the traverser that the column of pressed material forced into the bale-chamber is supported—that is to say, when the right-hand traverser forces its charge into the bale-chamber it remains there, supporting said charge and the column of material in the bale-chamber in front of it until the left-hand traverser advances with its charge and stands alongside of it, and it is then, and not till then, that the right-hand traverser returns for a new charge, leaving the left-hand traverser to retain and support the column against back expansion until relieved of this duty by the advance of the right-hand traverser again.

Suitable retainers of ordinary construction—such as the shoulders shown at *f*—are employed at the entrance to the bale-chamber to assist the traversers in holding the pressed column.

The bale-chamber of this press is made much larger in cross-section than the bale-chamber of an ordinary continuous or perpetual press, and the bale built up in it according to the method and by the devices herein described consists not merely of successive sections or layers formed of single charges, each of which covers the whole cross-sectional area of the bale, as in bales made by the ordinary continuous presses, but of successive sections or layers which are themselves each composed of a series of charges arranged alongside each other and together covering the cross-sectional area of the bale.

When a column of the pressed material of sufficient length to form a bale has been forced into the bale-chamber, the usual ties are applied to it through the slots in the sides of the bale-chamber in the ordinary manner, and the formation of a new bale is commenced against such first-named bale, as usual.

I prefer to employ the swinging arm K as the means for throwing the toggles alternately off of the center when the horse-lever is vibrated, because when a sufficient quantity of material has been pressed to form a bale said arm can be swung out from between the toggles, so as to enable both of the latter to be brought up to the center and there retained while the ties are being applied to the bales. Where the toggles are thus retained on the center it becomes necessary to provide some means for forcing them off the center in order to enable the swinging arm to be again brought back to operative position. A variety of contrivances might be suggested for effecting the desired result. For instance, the horse-lever head may be provided with arms U U, capable of being turned around so as to form practically an extension of the horse-lever, as shown in dotted lines, Fig. 3, and so as to bear against the opposite toggle and push it off the center when the horse-lever is moved. When not in use, these arms U U may be swung back on the horse-lever, as indicated by the full lines, Fig. 3.

While I prefer to practice my invention in connection with presses of the continuous type, it nevertheless can be applied to the ordinary presses adapted to contain but one bale at a time and that have a hinged door for closing

the end of the bale-chamber. Fig. 5 shows a press of this character, S being the hinged end door and T a device for locking it when closed.

In an application filed by me March 30, 1886, Serial No. 197,179, I have claimed the combination, with a divided press-box, of two traversers operating therein, and a bale-chamber in which the charges of material compacted by the two traversers are forced and united, and I do not therefore claim such matter, broadly, herein.

Having thus described my invention, what I claim as new is—

1. The herein-described method of making bales, consisting in successively compressing a number of series of layers or sections side by side, retaining said sections under pressure at the inner edge, and finally uniting all the series of sections by common confining means to form a single bale composed of both longitudinal and lateral sections, substantially as described.

2. The herein-described method of making bales, consisting in alternately compressing a series of layers or sections side by side, retaining one series under compression until the next layer in the adjoining series is compressed, and finally uniting the adjoining series in one bale by common confining means, whereby a bale is formed composed of both longitudinal and lateral sections, substantially as described.

3. The combination, with the two traversers and their toggles, of the vibratory horse lever or sweep, and a device, such as described, interposed between the toggles for the purpose of causing one toggle to be thrown off its center when the other toggle is forced up to the center, substantially as described.

4. The combination, with two traversers and their toggles, of the vibratory horse lever or sweep and the adjustable arms or extensions on the sweep-head for assisting in pushing the toggles off the center, as set forth.

5. The combination, with the press-box, bale-chamber, and the two traversers, of a hopper and a vibratory partition in said hopper operated alternately by the two traversers to preliminarily condense charges of material, substantially as described.

6. The combination, with the press-box, bale-chamber, and the two traversers, of the hopper and the vibrating partition or condenser therein having the wedge-shaped projections, and the pins on the traverser co-operating with said projections to vibrate the partition, as set forth.

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