(No Model.)

4 Sheets—Sheet 1.

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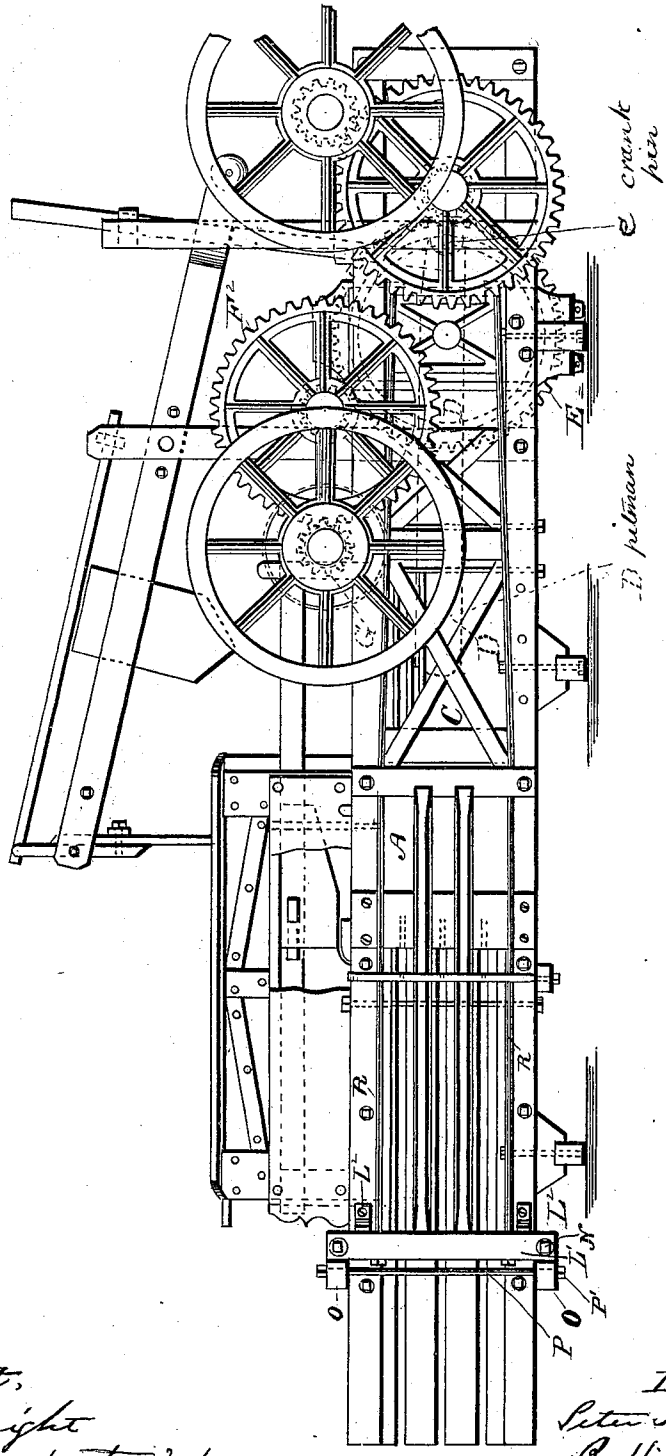


Fig. 1.

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Fig. 2.

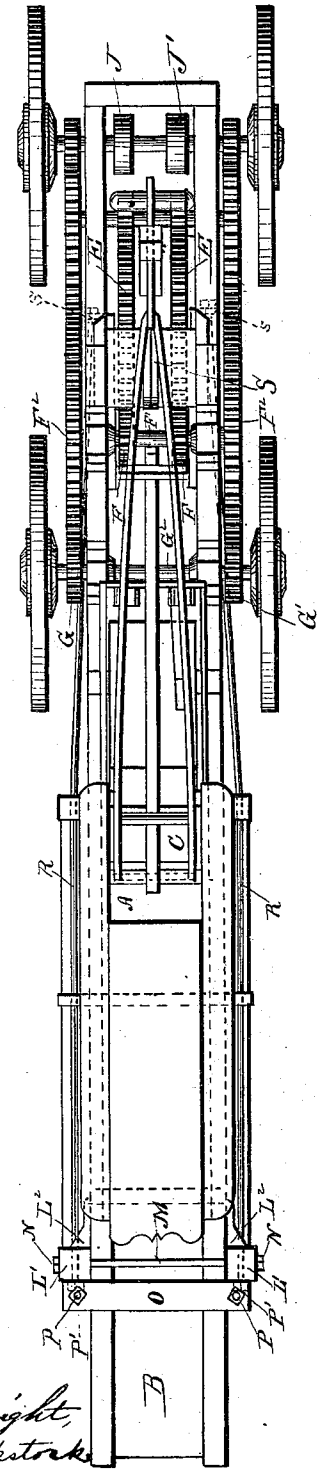


Fig. 4.

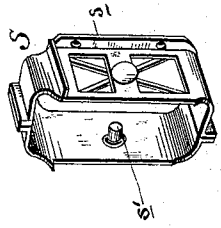
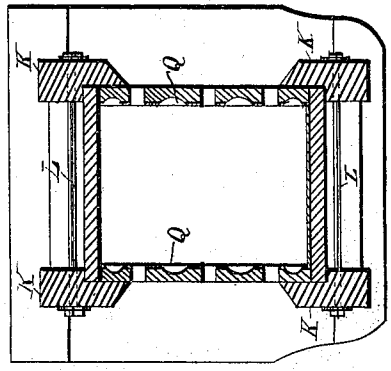


Fig. 3.



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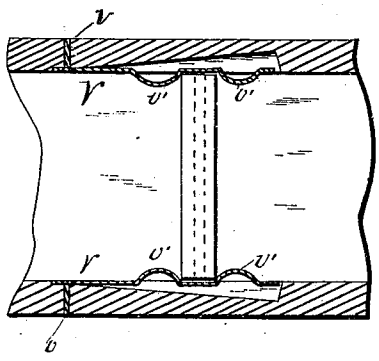


Fig. 7.

Fig. 8

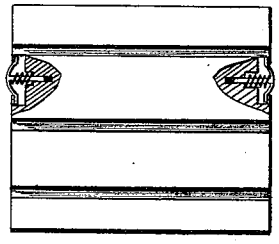


Fig. 5.

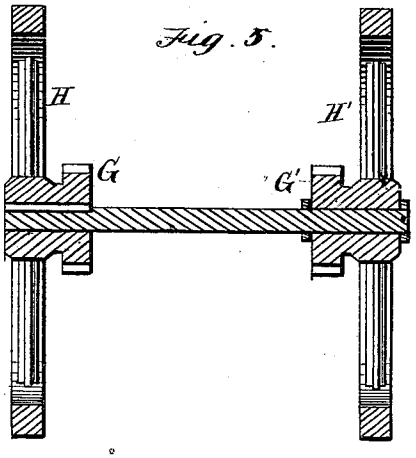
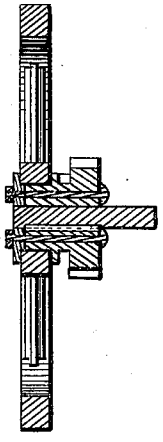


Fig. 6.



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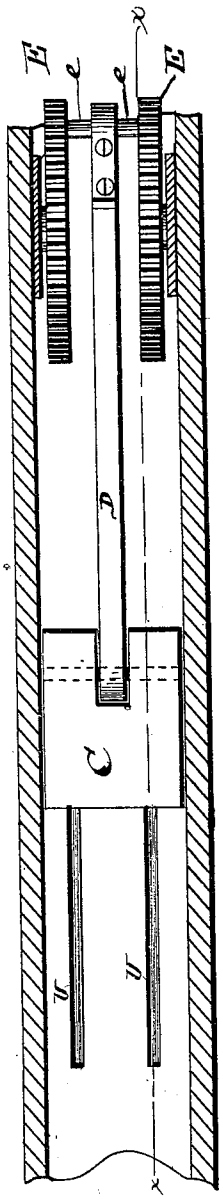


Fig. 9.

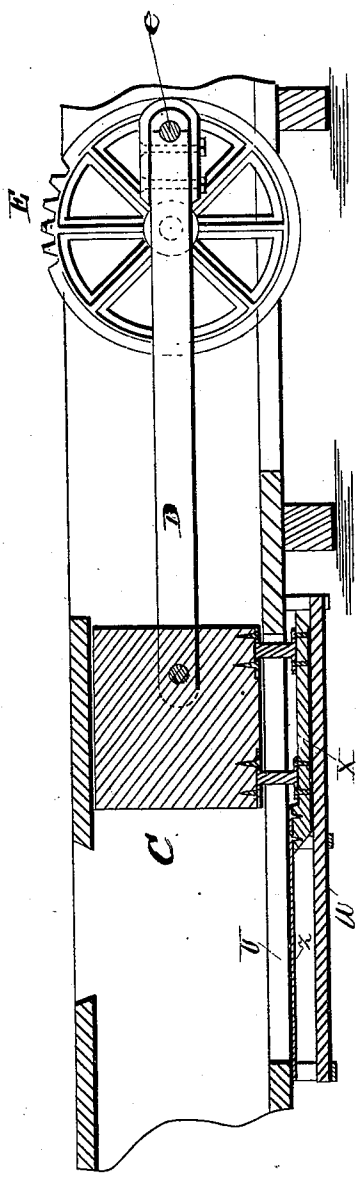


Fig. 10.

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UNITED STATES PATENT OFFICE.

PETER K. DEDERICK, OF ALBANY, NEW YORK.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 250,895, dated December 13, 1881.

Application filed April 19, 1880. (No model.)

To all whom it may concern:

Be it known that I, PETER K. DEDERICK, of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Baling-Presses; 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 part of this specification, in which—

Figure 1 is a side elevation of a press provided with my improvements. Fig. 2 is a top-plan view of the same. Fig. 3 is a cross-section of the bale-chamber; Fig. 4, a perspective view of the power-plates. Figs. 5 and 6 are views showing modes of mounting the balance-wheels; Fig. 7, a view showing means for holding up the follower applied to the press-box; Fig. 8, a view showing means for holding up the follower, applied to the follower itself; and Figs. 9 and 10, views showing the manner of supporting the traverser on guides outside of the press-box.

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

This invention relates to improvements in that class of baling-presses covered by Letters Patent Nos. 132,566 and 132,639, granted to me October 29, 1872, and by various other patents granted to me since that date.

The invention consists, first, in the combination, with the crank-wheels, of the gear-shafts provided with gear-wheels on both sides of the press, and the independently-operating balance-wheels, each adapted to apply its accumulated or stored-up power to the gear-wheels on the side of the press on which it is located, whereby the gearing on each side of the press is made to perform an equal share of the work under all circumstances; secondly, the combination, with the crank-wheels, of two sets of power-gearing geared to the crank-wheels at different points on the peripheries of the latter, whereby said crank-wheels are enabled to stand an increased amount of power and apply it to the traverser-pitman without breakage of their teeth and without increasing their weight; thirdly, in providing the inner wall of the bale-chamber with longitudinal depressions or grooves on both sides of the tying-slots, whereby to produce raised projections or ribs on the sides of the bale, between which to apply the bands, and thus leave the band below the contact-surfaces of the bales; fourthly, in the combination, with the press-box having the feed-orifice, of the reciprocating traverser playing back and forth in the press-box, the follower adapted to be inserted in the press-box in front of the traverser, and a spring or springs operating automatically to hold the follower in vertical position upon its insertion in the press-box, and to retain the follower until carried forward by the traverser; fifthly, in the combination of springs constructed as hereinafter described, adapted to hold up the follower, with the sides of the press-box and the follower; sixthly, in supporting the traverser on guides or bearings that are arranged outside of the press-box, so that the application of the oil, grease, or other lubricant to said guides or bearings will not soil the inside of the press-box, and thereby damage the cotton or other material being baled; seventhly, in the combination, with the press-box and the traverser, of slides and guides of peculiar construction; and, lastly, the combination, with the slotted press-box, traverser, slides, and guides, of a projecting plate for covering the slots when the traverser is retracted.

In the drawings, A represents the press-box, B the bale-chamber, and C the reciprocating traverser, by means of which successive charges of material fed into the press-box are forced from the press-box into the bale-chamber and built up into sectional bales in the latter.

D is a pitman, connected at one end to the reciprocating traverser, and at the other end to the crank-pin *e* of crank-wheels E E. The crank-wheels E E are mounted upon and secured to short shafts $s' s'$, projecting from the power-plates S of the press, and receive motion from two pinions, F F, secured to an intermediate shaft, F′. This intermediate shaft is provided with large gear-wheels F^2 F^2 at its ends, on each side of the press, and is in turn driven from the balance-wheel shaft G^2 by means of small pinions G G′.

Thus far described the power-gearing does not materially differ from that shown and described in Letters Patent No. 152,084, granted to me June 16, 1874.

Heretofore it has been customary for me to

employ a single balance-wheel on one end of the balance-wheel shaft, either rigidly secured thereto or, as shown in said last-mentioned patent, held thereto by friction merely; but such arrangements have proved defective, because if the several shafts get out of line or the teeth of the various pinions and gear-wheels on one side of the press out of line with those on the other side, especially in portable presses, all the work will be done by the gearing on one side alone, and racking and twisting of the frame of the press will result. To remedy this defect I now mount two balance-wheels upon the balance-wheel shaft, one at each side of the press, so that each wheel shall act independently of the other, and apply its accumulated or stored-up power to the gearing on the side of the press on which it is located, and thus distribute the work uniformly between the gearing on both sides. The independent action of the balance-wheels may be accomplished in various ways. One wheel may be secured to the shaft and the other loose, or both may be loose. The pinions on the balance-wheel shaft should be loose or fixed, according as their adjacent balance-wheels are loose or fixed.

In Fig. 5 one of the balance-wheels, H, is shown fixed to the shaft, with the pinion G formed upon or otherwise rigidly secured to its hub, while the other balance-wheel H′ and its pinion G′ are mounted loosely upon the shaft, so as to run freely. Where the secured wheel is held to a rigid collar on the shaft by friction, as shown in Fig. 6, and also in my Patent No. 152,084, before referred to, its adjoining pinion may be secured to said rigid collar, the other wheel and pinion running loose, as described. As before stated, both wheels may be loose, or one loose and the other fixed. I prefer, however, the latter arrangement. When both wheels are loose the driving-band pulley should be secured to one of them.

In making presses for very compact baling, I have found it impossible to make the teeth of the gearing strong enough to stand the pressure to which they must necessarily be subjected, and yet preserve the requisite number of teeth in them to secure a proper speed without making the wheels very large and cumbersome. Especially is this the case with the crank-wheels. If they are made smaller their teeth will often crumble and break off and render it necessary to substitute new wheels. I have overcome the difficulty by employing an additional set of gearing and balance wheels, as shown in Figs. 1 and 2, driving each of the crank-wheels by means of two pinions operating simultaneously on different parts of the crank-wheels, thereby enabling said crank-wheels to stand double the amount of power without increasing their weight or size or the dimensions of their teeth. In fact, I duplicate the gearing heretofore employed, with the exception of the crank-wheels. The balance-wheels and pinions in this second set of gearing may be mounted loosely or rigidly on the balance-wheel shaft, as hereinbefore described, and power may be applied to both or one of the balance-wheel shafts, as may be preferred. To accommodate the secondary gearing the frame of the press may be extended, as shown in Figs. 1 and 2, and the shafts located on top; but I preferably place the first shaft at or below the center of the crank-wheels and the second or balance-wheel shaft higher up, as shown. A tight pulley, J, and a loose pulley, J′, are preferably located on the secondary balance-wheel shaft, near the center, as in Fig. 2.

To increase the strength of the bale-chamber to adapt the press to very compact baling, the four longitudinal timbers or main supports K K K K are widened or extended over the sides to the bottom and top tying slots, as shown in the sectional view, Fig. 3, and stout cross-rods L L, with plates or washers and nuts at their ends, are applied to hold them firmly in position. With this construction, of course, only those planks of the sides which are between the posts constitute the adjustable portion of the sides of the bale-chamber, although the top and bottom portions may be adjusted as heretofore.

It has been customary to employ clamp-posts at the discharge end of the bale-chamber for the purpose of holding the sides in position, and also to employ an adjustable band around the middle of the bale-chamber for regulating the amount of friction on the bales passing through the press. I have found from experience that the projecting ends of the sides of the press require no support, and that it is therefore unnecessary to employ the clamp-posts at that point. I therefore now move the clamp-posts up to the middle of the bale-chamber, at the points formerly occupied by the adjusting-band, and thus dispense with the adjusting-band entirely, making the clamp-posts perform the double function of supporting the sides and serving as means for adjusting the same in or out to increase or diminish the friction. This arrangement is shown in Figs. 1 and 2, L′ representing the two posts, and M N the cross bolts and nuts, respectively, by which they are clamped and adjusted. In addition to these clamp-posts for adjusting the sides, timbers O O may be placed on the top and bottom of the bale-chamber and united by adjusting rods P and nuts P′ to impinge against the bale at the top and bottom also, as shown in said last-mentioned figure.

Grooves or depressions Q are formed in the inner surface of the walls of the bale-chamber, so that the material being baled will be forced into them in its passage through the press, and thus form raised projections on the bales between which to apply the bands or ties, and thus leave said bands or ties below the contact-surfaces of the bale. In pressing very compact bales the friction and strain on the bale-chamber is so great that the shoulders and tenons of the structure gradually become crushed and

loosened, and every stroke of the traverser causes a play or movement of the sides. To meet this defect I connect the bale-chamber to the power-plate of the press by means of strong horizontal rods R R, as shown in Figs. 1 and 2. The manner of securing these rods R is as follows: Each of the power-plates S is provided with a heavy flange or projection, *s*, (see Fig. 4,) through which the ends of the rods pass, being secured by nuts, or otherwise, as shown. The rods extend lengthwise of the machine, and are connected to the bale-chamber at any suitable point—for instance, as shown in Figs. 1 and 2, where they are represented as passing through the posts L′ L′, brace-blocks L^2 L^2 being placed behind said posts to resist the strain. The rods thus disposed bind the bale-chamber to the power-frame, and prevent the play and loosening of the joints of the structure before alluded to.

It sometimes happens that a follower or partition is placed in the press-box so carelessly that it falls down on its side before the traverser moves to carry it forward into the bale-chamber, the result of which is that the press is stopped abruptly, with probably some part of its mechanism broken. To guard against accidents of this kind, I provide means for holding the follower in a vertical position until the traverser comes up to release it, which means are either secured to the press-box or to the follower itself. The result can be accomplished in a variety of ways.

In Fig. 7, V V represent long steel springs, secured to the sides of the press-box at their ends next the traverser by bolts *v v*, and with their forward ends free and lying within recesses in the casing. These springs have lugs or projections *v′ v′*, located far enough apart to admit the follower between them, and projecting into the press-box far enough to prevent the follower from falling down. The projections are rounded or beveled off, so as not to catch upon the hay when it is forced past them by the traverser. These springs are located near the upper part of the press-box, and in such position that the followers can be applied from the feed-opening of the press-box. When the traverser moves forward it crowds back the springs until their projections are flush with the press-lining, thereby releasing the follower and allowing it to be carried forward into the bale-chamber.

In Fig. 8 I have shown spring-seated projections on the sides of the follower itself. These projections consist of oval-headed bolts with spiral springs behind them to force them out. Small plates on the edges of the follower overlap the edges of the bolt-heads and prevent the bolts from coming completely out. Inasmuch as the follower is only three-eighths of an inch smaller than the press-box, the spring-bolts have to project but one-fourth of an inch on either side to hold the follower up when forced down in the press-box.

In presses as ordinarily constructed, in oiling the slides or wheels on which the traverser works, more or less of the oil gets upon the inside of the press-box, and the cotton is thereby soiled and the outside of the bales damaged both in appearance and quality. I remedy this difficulty by supporting the traverser on guides or bearings that are arranged entirely outside of the press. One embodiment of the idea is represented in Figs. 9 and 10 of the drawings, wherein the bottom of the press-box is slotted at U U, and slides or shoes X X, attached to the lower side of the traverser, project through such slots and rest on ways or guides W outside of the press-lining.

The slides may be provided with friction wheels or rollers, or friction wheels or rollers may be inserted in the ways or guides for the purpose of reducing friction. By this arrangement the oil or other lubricant can be applied to the bearing-surfaces without soiling the inside of the press-box, as will be apparent.

Of course other ways of supporting the traverser on guides outside of the press-box may be devised without departing from the spirit of my invention in this particular, and many such ways will at once suggest themselves to the mind of any skilled mechanic.

A projecting plate, Z, is formed upon or secured to the slides or shoes below the lining of the press, for the purpose of covering the slots U U when the traverser moves back, so as not to permit any of the material being baled or dirt, &c., to fall through said slots onto the guides below.

I claim as my invention—

1. The combination of the crank-wheels, the gear-shafts provided with gear-wheels on both sides of the press, and the independently-operating balance-wheels, each adapted to apply its accumulated or stored-up power to the gear-wheels on the side of the press on which it is located, substantially as described, for the purpose specified.

2. The combination, with the crank-wheels E E, of the one set of power-gearing located in front of the crank-wheels and the other set of power-gearing located in rear of the crank-wheels, said two sets of gearing being geared to the crank-wheels at different points on their peripheries, whereby the crank-wheels are enabled to stand an increased amount of power and apply it to the traverser-pitman without breakage of their teeth and without increasing their weight, substantially as described.

3. The bale-chamber provided with tying-slots and with longitudinal grooves or depressions in the inner face of its side walls on both sides of the tying-slots, substantially as described, for the purpose specified.

4. The combination, with the press-box having the feed-orifice, of the reciprocating traverser playing back and forth in the press-box, the follower adapted to be inserted in the press-box in front of the traverser, and a spring or springs operating automatically to hold the follower in vertical position upon its insertion in the press-box, and to retain the follower un-

til carried forward by the traverser, substantially as described.

5. The combination of the springs V V, constructed as described, with the sides of the press and the follower, substantially as described, for the purpose specified.

6. In a baling-press, the combination, with a slotted press-box, of a reciprocating traverser, slides or arms which project from the traverser through the slots in the press-box, and guides for said slides or arms located outside of the press-box, substantially as described, for the purpose specified.

7. The combination of the slotted press-box, the traverser, the slides X, and guides W, substantially as described.

8. The combination of the slotted press-box, the traverser, the slides X, and guides W, and projecting plate Z, for covering the slots when the traverser is retracted, substantially as described.

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Witnesses:
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R. J. VAN SCHOONHOVEN.