

No. 819,984.

PATENTED MAY 8, 1906.

T. C. DEXTER.
BUNDLING PRESS.

APPLICATION FILED JUNE 22, 1905.

4 SHEETS—SHEET 1.

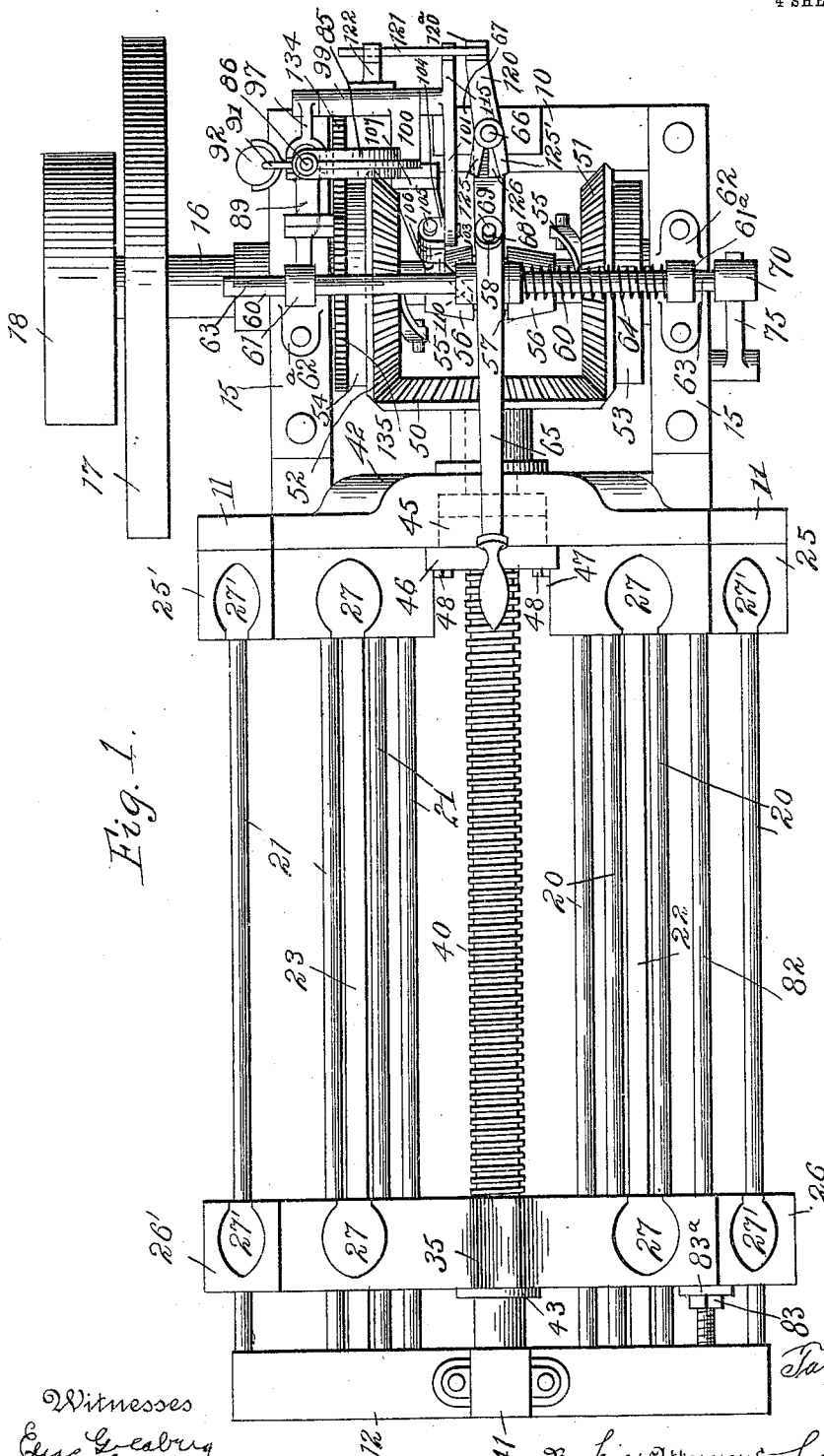


Fig. 1.

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Inventor.

Knight & Co.

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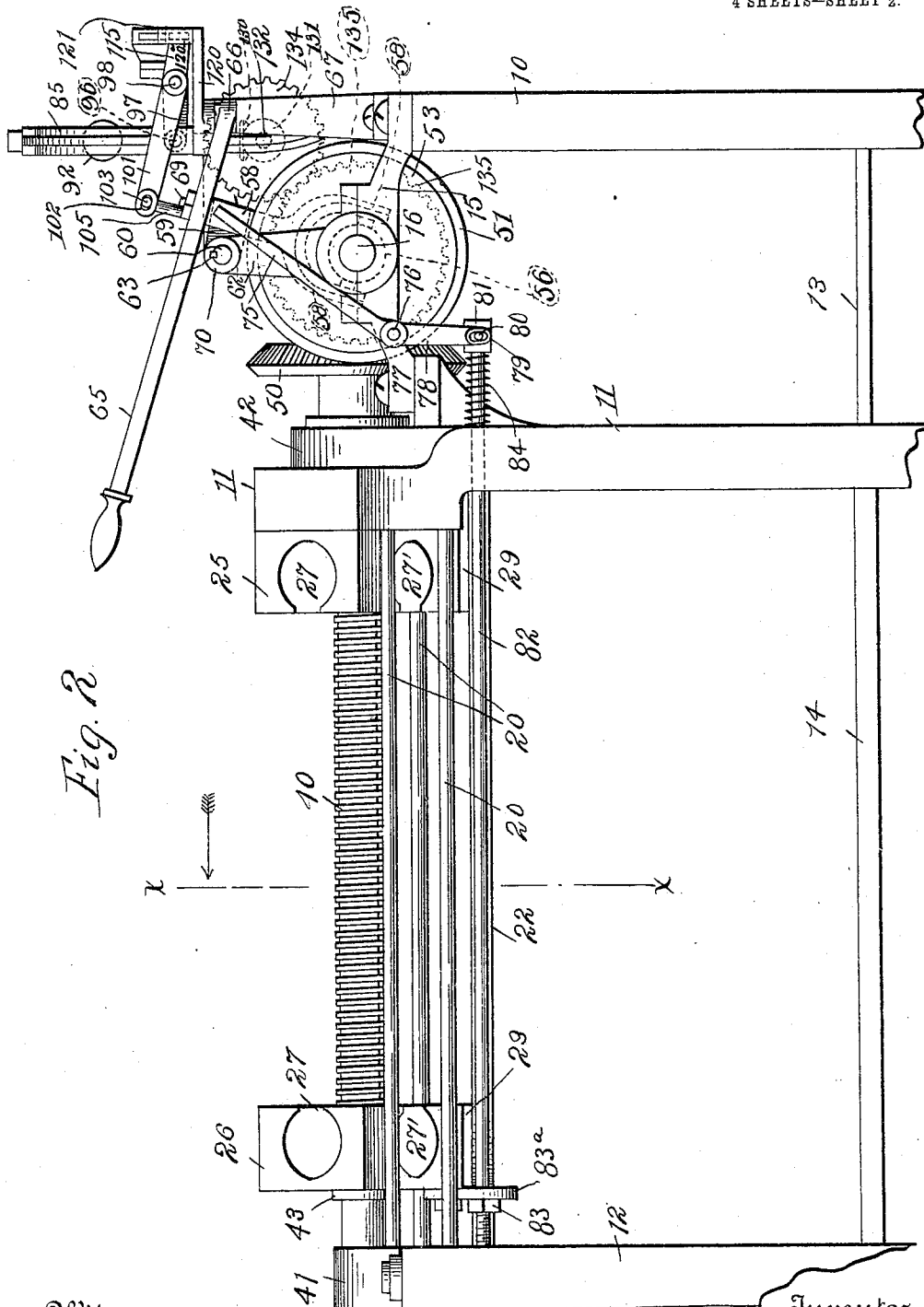


Fig. 2

Witnesses
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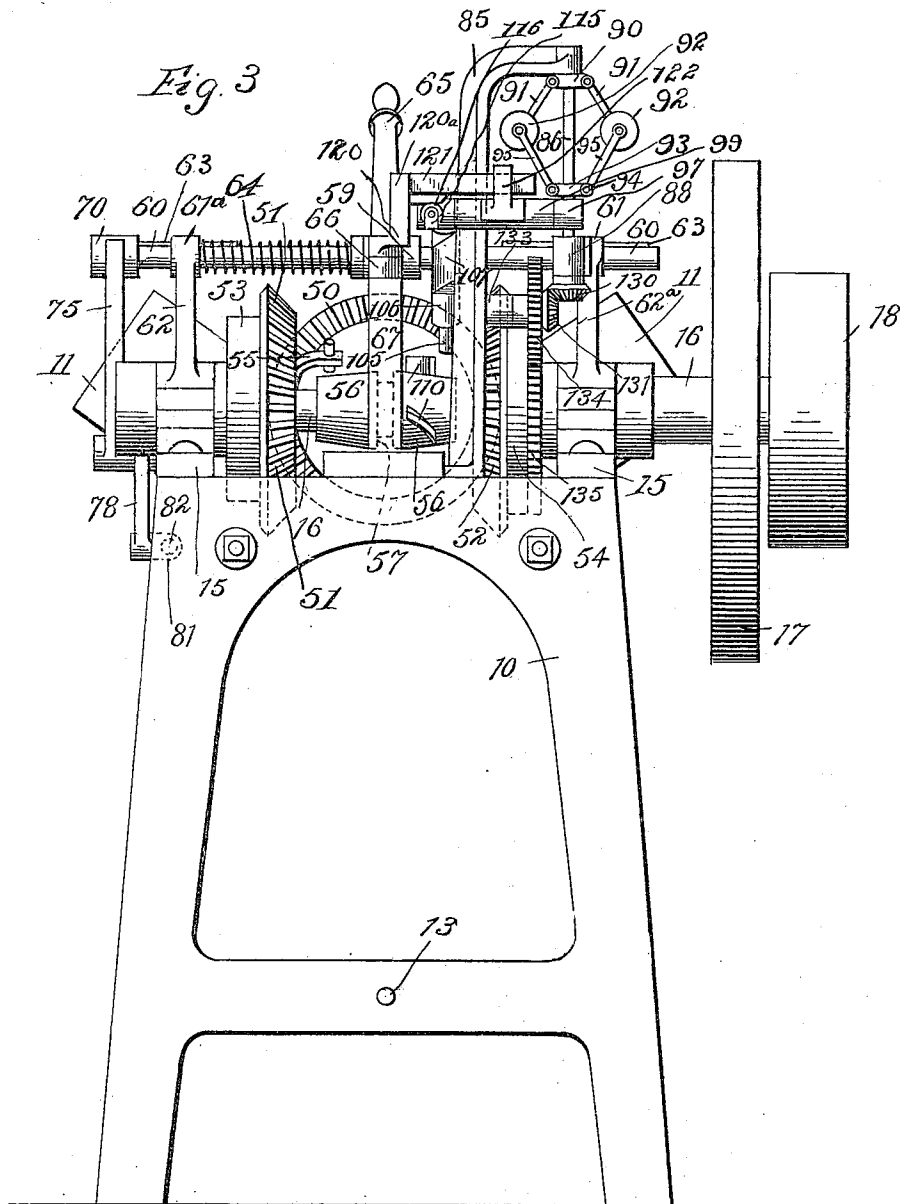
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4 SHEETS—SHEET 3.



Witnesses
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P. F. Smirk

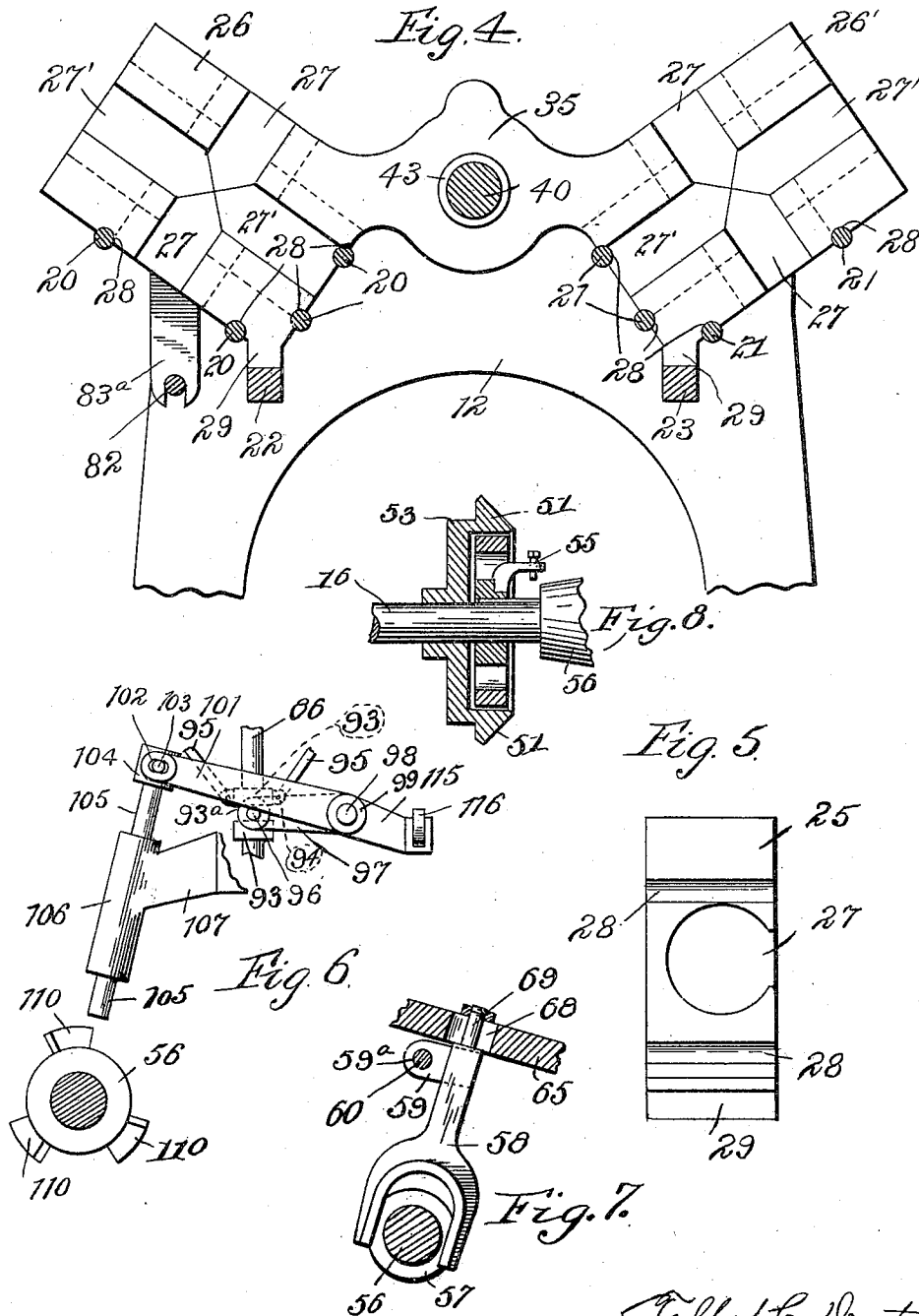
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4 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

BUNDLING-PRESS.

No. 819,984.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed June 22, 1905. Serial No. 266,458.

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Bundling-Presses, of which the following is a specification.

My present invention relates to improvements in mechanically-operated presses for compactly bundling sheets or signatures into convenient form for storing.

More particularly my invention relates to improvements in automatic throw-out mechanism for such bundling-presses whereby the power is thrown out and the action of the press is arrested when the compression has reached a certain predetermined degree.

The throw-out mechanism in my improved press is actuated by a stopping device, which is driven by a slip-clutch interposed between the power-shaft and screw of the press, so that the slowing down or stopping of the screw when the required pressure is reached will react upon the stopping device to cause it to disconnect the power from the machine.

My improvements are particularly applicable to a double bundling-press in which two bundles of sheets or signatures can be simultaneously compressed; but my improvements may be applied effectively to a single bundling-press.

My invention consists of novel features of construction and combination of elements for effectively accomplishing the desired results, and in order that my invention may be fully understood I will first describe the same with reference to the accompanying drawings, and afterward point out the novelty more particularly in the annexed claims.

In said drawings, Figure 1 is a plan view of a double bundling-press embodying my improvements. Fig. 2 is an elevation of the same looking at the right-hand side of the press. Fig. 3 is a rear end view of the same. Fig. 4 is a detail transverse sectional elevation taken on the line X X of Fig. 2 and looking forwardly in the direction indicated by the arrow. Fig. 5 is an edge view of one of the compression-heads. Fig. 6 is a detail inner side view showing parts of the stopping device and throw-out mechanism. Fig. 7 is a detail view of the double clutch-spool, actuating-arm, and lever. Fig. 8 is a detail axial section of the right-hand friction band-clutch.

The framework of my improved bundling-press may be of any suitable form and con-

struction to properly support the operative parts of the mechanism. In constructing a double bundling-press, such as shown in the drawings and hereinafter described, I prefer to form the frame of three uprights 10, 11, and 12, suitably braced adjacent to their lower ends by tie-rods 13 and 14. A rear end view of the frame-upright 10 is shown in Fig. 3, and it will be understood that the other uprights 11 and 12 are of substantially the same form, differing slightly in the shape of their upper ends to adapt them to support the bundling-troughs, as indicated in Fig. 4. The frame-uprights 10 and 11 are braced at the top by the brackets or pillow-blocks 15, in which the main power-shaft 16 is suitably journaled. Power-shaft 16 carries upon one end fly-wheel 17 and band-pulley 18, by which the press is operated. This power-shaft 16 also carries suitable gears and clutches for connecting it with the compression-screw, as hereinafter explained.

Supported between the uprights 11 and 12 at their upper ends are two parallel bundling-troughs, each trough being formed of a series of parallel rods or bars 20 or 21, said rods or bars being rigidly secured at their ends in any suitable manner to the frame parts so as to form a rigid structure, including the two bundling-troughs. The bars 20 form one of the troughs and the bars 21 the other. Arranged directly beneath each of the troughs is a square track-bar 22 or 23, extending parallel with the trough-bars and serving the purpose of assisting in supporting and steadying the compression-heads of both of the bundling-troughs. Each trough is provided with two compression-heads 25, 26 and 25' 26', between which the sheets or signatures are compressed by the action of the machine. Each compression-head is formed in its compression-face with the intersecting slots 27 and 27', which expand interiorly into circular enlargements to facilitate the operation of passing the binding-cords around the bundles. The compression-heads are also each formed with grooves 28 in their edges to fit upon the trough rods or bars 20 21 and with integral downwardly-projecting ribs or flanges 29. The rib or flange 29 of each compression-head rests upon the upper face of one of the track-bars 22 23, so as to assist in supporting the trough-head in its angular position in the trough and at the same time provide a guide along which the rib or flange of each movable head

slides when the compression-head is moved. The compression-heads 25 and 25', arranged one in each of the bundling-troughs, are independent of each other. These heads 25 and 25' rest normally against the inner face of the frame-upright 11, to which they may be bolted. The other compression-heads 26 and 26', which may be called the "traveling" compression-heads, are united into an integral rigid structure by means of a bridging portion 35, which extends between the two heads, as shown in Figs. 1 and 4 of the drawings. This bridging portion 35 connects adjacent corners of the heads 26 and 26', forming, in effect, a compound head, the two portions of which are adapted to operate in unison to compress the bundles in both troughs simultaneously.

40 is the compression-screw, which is suitably journaled adjacent to its opposite ends in bearings formed in the upper parts of the frame-uprights 11 and 12, one bearing being shown at 41 and the other at 42. This compression-screw 40 is threaded through a suitable nut 43, rigidly secured in a suitable opening extending through the bridging or connecting portion 35 of the connected compression-heads, so that the rotation of the screw will cause the two traveling compression-heads to move in the parallel troughs as a single structure. Within the bearing 42 of the upright 11 the screw 40 is provided with a thrust-bearing collar 45, which is shrunk or otherwise securely fastened to the screw so as to rotate with the screw in the bearing-socket of the upright 11. A capping-plate 46 of ring form surrounds the screw 40 and is securely fastened within the recess 47 against the inner face of the upright 11 by means of bolts 48, so as to securely confine the thrust-bearing collar 45 in its bearing-socket, and thereby effectively prevent the longitudinal displacement of the screw 40.

50 is a bevel-gear keyed to the power end of the screw 40. This gear 50 is in constant mesh with two similar bevel-gears 51 and 52, which are loosely journaled upon the power-shaft 16, above referred to, each gear 51 and 52 being arranged adjacent to one of the shaft-bearings 15. Combined with each of the loosely-mounted gears 51 and 52 is a friction band-clutch of ordinary construction, as shown in Fig. 8, the rim portion 53 or 54 of each clutch being formed integral with or rigidly attached to one of the gear-wheels, while the expansible band portion of each clutch is keyed to the power-shaft and carries the usual pivoted rock-arm 55, which is adapted to be engaged by one of the conical ends of the double clutch-spool. 56. This clutch-spool 56 is suitably mounted upon the power-shaft 16 and is capable of sliding longitudinally upon said shaft in either direction to actuate either clutch so as to lock either of the bevel-gears 51 or 52 upon the

power-shaft. This double clutch-spool 56 is formed with an annular groove 57, (also indicated by dotted lines in Fig. 3,) in which engages the forked lower end of the actuating-arm 58, as shown in Fig. 7, said arm 58 having an offset 59 formed with a transverse cylindrical socket 59^a, which fits upon a supporting-rod 60. The socketed offset 59 is securely fastened upon the rod 60 so as to move with said rod. The rod 60 is mounted to slide in bearings 61 and 61^a, formed in the upper ends of bracket-arms 62 and 62^a, which project up from the pillow-blocks 15. The portions of the rod 60 adjacent to its ends which slide in bearings 61 and 61^a are provided with splines or feathers 63, which operate in feather-grooves within the bearings to prevent the rotary shifting of the rod and to allow the longitudinal shifting of the rod to carry the clutch-spool in either direction.

Surrounding the rod 60 between the offset 59 of the spool-actuating fork and the right-hand bearing 61^a is an expansion spiral spring 64, which spring tends to resist the movement of rod 60 and the connected actuating-fork in one direction toward the right-hand side of the machine and serves the purpose of automatically returning said parts toward the left-hand side of the machine to their central inactive position for freeing gear 51 upon shaft 16, as hereinafter explained.

65 is a hand-lever journaled at 66 upon the upper end of an upright bracket 67, which is secured to the upper edge of the frame-upright 10. This hand-lever 65 has a short longitudinal slot 68, into which projects the pin 69, formed upon the upper end of the spool-actuating fork-arm 58. By means of the hand-lever 65 and the fork-arm 58 the spool 56 can be shifted in either direction.

Mounted upon the projecting end of the rod 60, at the right-hand side of the press, is a collar or tappet 70, which is adapted to coact with the latch of the automatic tripping mechanism, presently to be described, for the purpose of holding the clutch-operating mechanism in its right-hand shifted position until released by the action of the machine. This automatic tripping mechanism will now be described. 75 is a latching-lever mounted upon a short shaft 76, journaled upon a bracket 77 at the right-hand side of the machine. Depending from the short shaft 76 is a rock-arm 78, formed at its lower end with a slot 79, which engages a pin 80, projecting from a tappet or collar 81, secured to the projecting end of a trip-rod 82. Trip-rod 82 passes freely through an opening in the central frame-upright 11 and extends to the rear of the machine through an opening in the end upright 12. Secured to the end of the trip-rod 82 is a tappet-nut 83. Bolted to the rear face of the traveling compression-head 26 is a downwardly-projecting forked tappet-plate 130

83^a, arranged to straddle the tappet-rod 82, so that when the compression-head 26 reaches the end of its return stroke after compressing the bundle said forked tappet-plate 83^a will engage the tappet-nut 83^a and move the rod 82 rearwardly to actuate the latching-lever, as hereinafter explained. Between the tappet 81 and the frame-upright 11 an expansion spiral spring 84 is confined on the rod 82, so as to give said rod a normal spring tendency to move forwardly and cause the latching-lever 75 to move upwardly into engagement with tappet or collar 70.

A bracket 85 projects up from the end of frame 10 and has journaled in its upper outwardly-extending end the vertical shaft 86 of a stopping device of ordinary construction. The lower end of the shaft 86 is journaled in the bearing 88 of the bracket-arm 89, projecting rearwardly from the bracket 62^a. This shaft 86 has secured to it the upper ring 90, to which are pivotally connected the links 91, supporting the balls or weights 92. The vertically-movable lower ring 93 is freely journaled upon the shaft 86 and is provided with ears 94, to which the links 95 are pivoted; said links being in turn pivoted to the balls or weights 92. The lower end of the shaft 86 has keyed to it a miter-gear 130, which meshes with a similar gear 131, keyed to a short shaft 132, journaled in a boss 133, projecting from the bracket 85. This short shaft 132 also carries the gear-wheel 134, which meshes with a large gear 135, formed integral with or otherwise secured to the rim portion 54 of the left-hand clutch. By means of this described gearing the stopping device will be rotated whenever the left-hand clutch is locked to the shaft 16 for driving gear 52. The vertically-movable lower ring 93 is formed with an annular groove 93^a, in which engage the inwardly-projecting pins 96, carried by the forked rock-arm 97, which is keyed to a short rock-shaft 98, journaled in the bearings 99, formed upon the bracket-arm 100, which latter projects rearwardly from the vertical bracket 85. (See Fig. 1.) Secured to the right-hand or inner end of the rock-shaft 98 is a rock-arm 101, formed with a slot 102 in its forward end, which engages a pin 103, projecting from a block 104, secured to the upper end of a rod 105, which is mounted to slide in a bearing 106, formed on a forwardly-projecting arm 107, which is secured to the bracket 85. The rod 105 is adapted to be projected into the path of a series of spiral wings 110, mounted upon the left-hand end of the double-clutch-cone 56.

Projecting rearwardly from rock-shaft 98 in line with the rock-arm 101 is a short rock-arm 115, supporting an antifriction-roller 116. Journaled at 66 above the operating-lever 65 is a rearwardly-projecting arm 120. This arm 120 has an upward extension 120^a, to the upper end of which is secured a hori-

zontal cam-bar 121, which moves in a suitable opening formed in the guide-bracket 122, projecting rearwardly from bearing 99. This cam-bar 121 operates upon the antifriction-roller 116 to raise and lower the spool-actuating rod 105 under certain circumstances hereinafter explained. The arm 120 is formed with two inwardly-projecting angular lugs or fingers 125 125', which rest upon opposite sides of an angular flange 126, formed integral with and projecting from the upper face of the operating-lever 65, adjacent to pivot 66. The purpose of the lugs 125 and 125' and flange 126 is to cause the operation of cam-bar 121 by the operating-lever 65.

The operation of the machine will be clear from the brief description following. The power-shaft is continually rotated, the clutch-spool 56 being normally in central disengaged position to allow both gears 51 and 52 to remain at rest. Under these conditions the compression-screw is also at rest. The compression-heads being in their separated position, the two troughs are filled with sheets or signatures that are to be compressed into bundles. A sufficient quantity of sheets or signatures are placed in each trough to practically fill the space between the compression-heads. The hand-lever 65 is then pushed or pulled from the right-hand side toward the left-hand side of the machine for shifting the clutch-spool away from the right-hand side toward the left-hand side of the machine and for locking the gear 52 upon the power-shaft, with the result that compression-screw 40 will be rotated to move the heads 26 and 26' rearwardly in the parallel troughs. In thus moving the lever 65 from the right-hand side toward the left-hand side of the machine it will be observed that the lug 126 of the lever will engage the lug 125 of arm 120 at the completion of the stroke of the operating-lever to withdraw the cam-surface of cam-bar 121 from its engagement with antifriction-roller 116. This would naturally allow pin 105 to drop into the path of the wings 110 of cone 56; but before said pin 105 has a chance to move into its lowered position the left-hand clutch has become engaged, so that through the gearing 130, 131, 134, and 135, as hereinbefore described, the stopping device will be rotated, causing the lower ring 93 to be elevated, so as to hold up the pin 105 through the rock-arms 97 and 101 and the connecting rock-shaft 98. The rotation of gear 52 through the clutch 54 causes the rotation of compression-screw 40, which will continue to rotate and force the connected compression-heads 26 and 26' toward the compression-heads 25 and 25' until the pressure exerted is sufficient to overcome the power of the slip-clutch 54. Just as soon as the clutch 54 slips and is retarded the stopping device will slow down and allow the lower ring to move

to its lowermost position, which will permit the pin 105 to move downwardly into the path of the rotating wings 110 upon the spool 56, with the result that the engagement of one of wings 110 with pin 105 will shift the spool 56 to its central position, thereby disconnecting the clutch 54 from the power-shaft. The operator then ties the bundles by passing cords around them through the armholes of the compression-heads in the well-known manner. As soon as the bundles have been made secure the operator shifts the lever 65 toward the right-hand side of the machine, throwing into action the bevel-gear 51, which imparts the reverse movement to the screw 40. The latching-lever 75 springs into engagement with the tappet 70 and holds the spool in its shifted position to the right-hand side of the machine, allowing the operator to release his hold upon the lever. The continued rotation of the screw 40 in its reversed direction causes the connected heads 26 and 26' to return to their normal positions, it being understood that when the connected heads reach their return position the tappet-plate 83^a will engage tappet-nut 83 and shift the tripping-rod 82 to discharge the latching-lever 75 from the tappet 70, thereby allowing the spring 64 to return the clutch-operating parts to their normal central inoperative position. The machine will then be ready for a repetition of the described operation.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a bundling-press, the combination of a trough, compression-heads in said trough, normally inactive power mechanism for moving one of said heads toward the other, a friction slip-clutch included in said power mechanism, and means actuated by a part of said clutch for opening the clutch when said part is retarded.

2. In a bundling-press, the combination of a trough, compression-heads in said trough, normally inactive power mechanism for moving one of said heads toward the other, a friction slip-clutch included in said power mechanism, manually-operated means for throwing in the clutch, and means actuated by a part of said clutch for opening the clutch when said part is retarded.

3. In a bundling-press, the combination of a trough, compression-heads in said trough, normally inactive power mechanism for moving one of said heads toward the other, a friction-clutch included in said power mechanism, a stopping device geared to said clutch, and means actuated by said stopping device for throwing out the clutch.

4. In a bundling-press, the combination of a trough, compression-heads in said trough, normally inactive power mechanism for moving one of said heads toward the other, a friction-clutch included in said power mechanism, manually-operated controlling means for throwing in the clutch, a stopping device geared to said clutch, and means actuated by said stopping device for throwing out the clutch.

5. In a bundling-press, the combination of a bundling-trough, compression-heads in said trough, power mechanism, including reversing-gears and clutches for moving one of said heads toward and away from the other, manually-operated means for independently throwing in said clutches, means actuated by a part of one of said clutches for opening the clutch when the motion of said part is retarded, and a tripping device actuated by the movable compression-head to throw out the other clutch when said head has returned to its extreme outward position.

6. In a bundling-press, the combination of a bundling-trough, compression-heads in said trough, power mechanism for operating one of said heads, two reversely-acting clutches included in the power mechanism, manually-operated controlling means for throwing either of said clutches into action, a stopping device geared to a part of one of said clutches and means actuated by the stopping device for automatically throwing out said clutch, and a tripping device actuated by the movable compression-head to throw out the other clutch when said head has returned to its extreme outward position.

7. In a bundling-press, the combination of a trough, coacting compression-heads in said trough, normally inactive reversible operating mechanism for moving one of said heads toward and away from the other, a stopping device, gearing connecting the stopping device to said operating mechanism, means, connected with the stopping device, adapted to return said mechanism to inactive position from one of its operative positions, a latching device adapted to hold the operating mechanism in its other operative position, and a tripping device suitably connected with the latching device and adapted to be actuated by the release movement of the press.

8. In a bundling-press, the combination of a trough, coacting compression-heads in said trough, normally inactive operating mechanism for moving one of said heads toward the other, a friction-clutch included in the operating mechanism, a stopping device geared to a part of said clutch, a clutch-spool for actuating the clutch, and a device controlled by the stopping device for moving the said spool into inactive position.

9. In a bundling-press, the combination of a trough, coacting compression-heads in said trough, normally inactive operating mechanism for moving one of said heads toward the other, a friction-clutch included in the operating mechanism, a stopping device geared to a part of said clutch, a clutch-spool for actuating the clutch, and a device controlled by the stopping device for moving the said spool into inactive position.

10. In a bundling-press, the combination of a trough, coacting compression-heads in said trough, normally inactive operating mechanism for moving one of said heads toward the other, a friction-clutch included in the operating mechanism, a stopping device geared to a part of said clutch, a clutch-spool for actuating the clutch, and a device controlled by the stopping device for moving the said spool into inactive position.

tuating the clutch, a hand-lever for moving said spool into active position, and a device controlled by the stopping device for moving the said spool into inactive position.

5 10. In a bundling-press, the combination of a bundling-trough, compression-heads in said trough, power mechanism for actuating one of said heads, a friction-clutch included in said power mechanism, a clutch-actuating
10 spool having wings, a hand-lever for moving said spool into active position, a stopping device suitably geared to the clutch, and a pin or rod suitably connected with and controlled by the stopping device and adapted to be
15 projected into engagement with the wings of the spool for moving the spool into inactive position.

11. In a bundling-press, the combination of a bundling-trough, compression-heads in
20 said trough, power mechanism for actuating one of said heads, a friction-clutch included in said power mechanism, a clutch-actuating spool provided with spiral wings, a stopping device suitably geared to a part of the clutch,
25 and a pin or rod suitably connected with and controlled by the stopping device and adapted to project into the path of the spiral wings upon the spool for moving the spool into inactive position.

30 12. In a bundling-press, the combination of a trough, compression-heads in said trough, power mechanism for operating one of said heads, a friction-clutch included in said power mechanism, a clutch-actuating spool,
35 a hand-lever adapted to move the spool into active position, a stopping device suitably geared to the clutch, a rod or pin adapted to be projected into engagement with the spool for moving it into inactive position, a rock-shaft connected with the stopping device and
40 said rod or pin, a rock-arm projecting from said rock-shaft and carrying an antifriction-roller, a cam-bar movably supported above said antifriction-roller, and means operatively
45 connecting said cam-bar and the operating hand-lever.

13. In a bundling-press, the combination of a trough, compression-heads in said trough, power mechanism for operating one of said heads, a friction-clutch included in said
50 power mechanism, a clutch-actuating spool provided with spiral wings, a hand-lever adapted to move the spool into active position, a stopping device suitably geared to the clutch, a rod or pin adapted to project into
55 the path of the spiral wings for moving the spool into inactive position, a rock-shaft connected with the stopping device and said rod or pin, a rock-arm projecting from said rock-shaft and carrying an antifriction-roller, a
60 cam-bar movably supported above said antifriction-roller, and means operatively connecting said cam-bar and hand-lever.

14. In a bundling-press, the combination of a trough, compression-heads in said trough,
65 power mechanism for operating one of said heads, a friction-clutch included in said power mechanism, a clutch-actuating spool, a hand-lever adapted to move the spool into active position, a stopping device suitably
70 geared to the clutch, a device connected with and controlled by the stopping device for moving the said spool into inactive position, and means operatively connecting said device with the hand-lever.

15. In a bundling-press, the combination of a trough, compression-heads in said trough,
75 power mechanism for operating one of said heads, a friction-clutch included in said power mechanism, a clutch-actuating spool, a hand-lever adapted to move the spool into active position, a stopping device suitably
80 geared to the clutch, a device connected with and controlled by the stopping device for moving the said spool into inactive position, a pivoted arm operatively connected with said device, and coacting lugs upon the pivoted arm and hand-lever.

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Witnesses:

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