E. M. LOCKWOOD.

WINDING DEVICE FOR WIPING WEBS OF EMBOSSING PRINTING MACHINES.

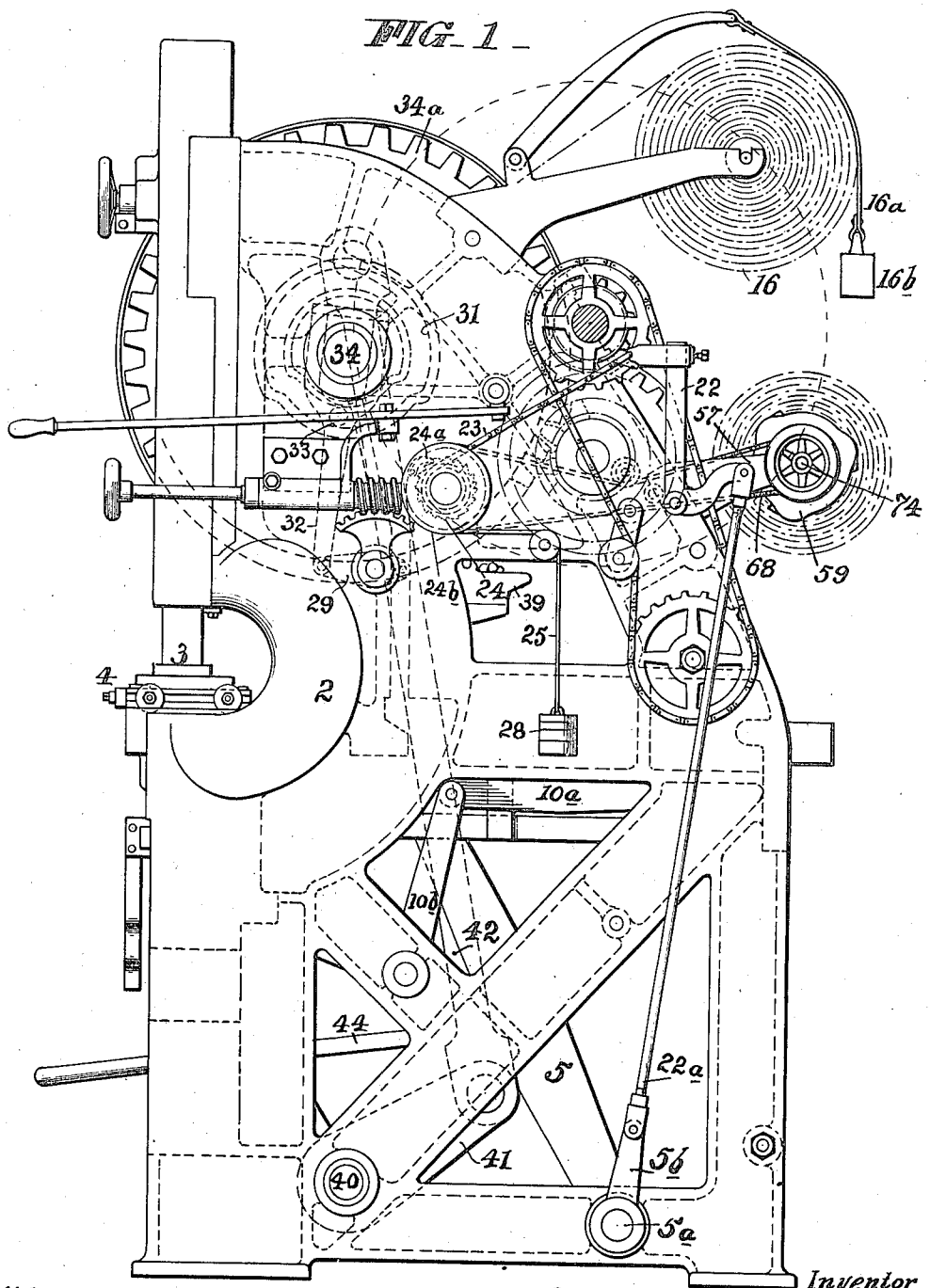
APPLICATION FILED JUNE 26, 1917.

1,310,195.

Patented July 15, 1919.

3 SHEETS—SHEET 1.

FIG. 1.



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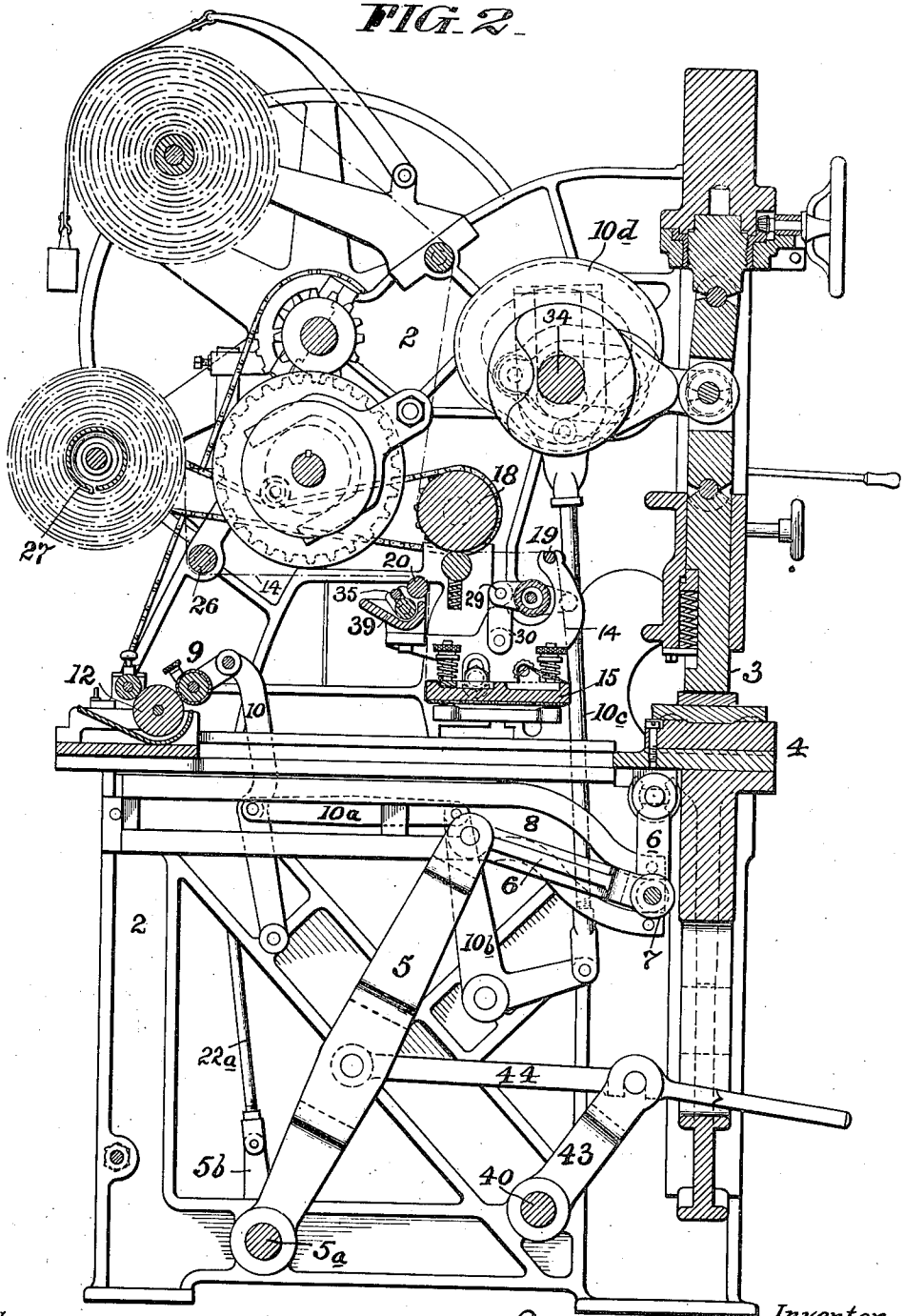
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3 SHEETS—SHEET 2.

FIG. 2.



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3 SHEETS—SHEET 3.

FIG. 3

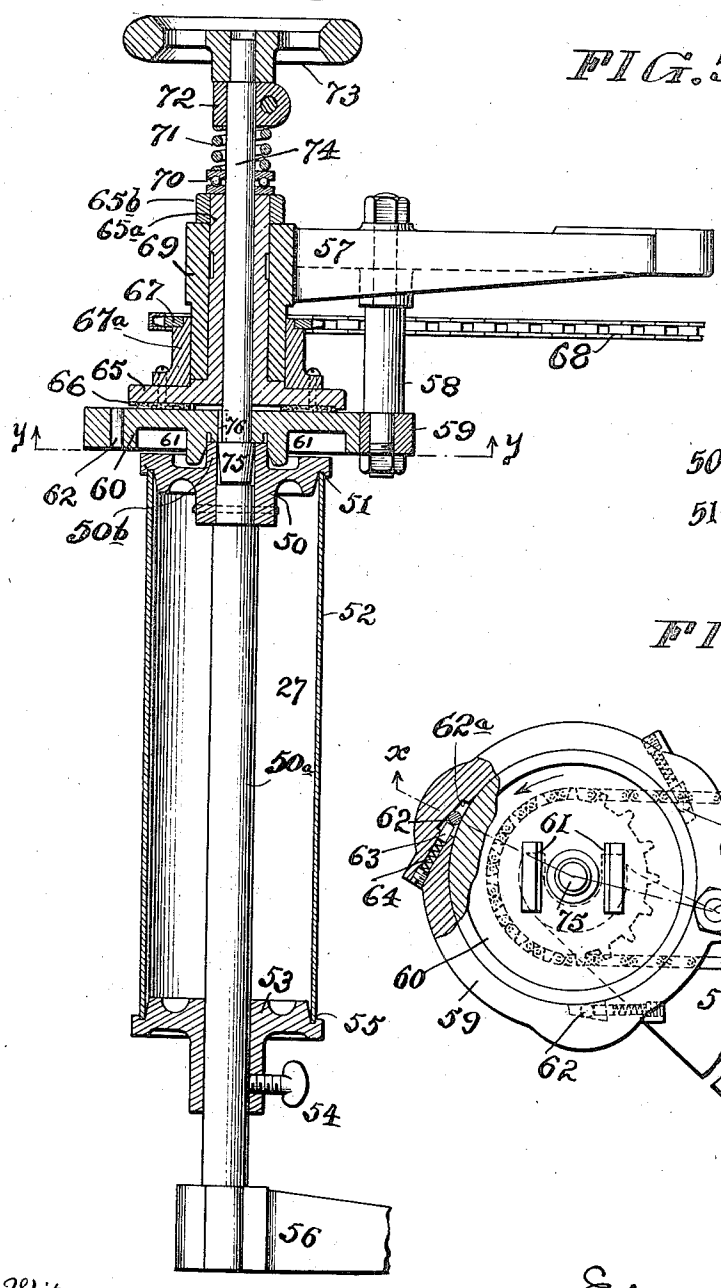


FIG. 5

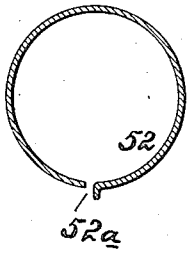


FIG. 6.

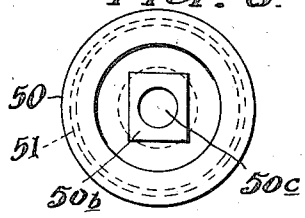


FIG. 4

Witness

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WINDING DEVICE FOR WIPING WEBS OF EMBOSSING PRINTING-MACHINES.

1,310,195. Specification of Letters Patent. Patented July 15, 1919.

Application filed June 26, 1917. Serial No. 176,991.

To all whom it may concern:

Be it known that I, EDWARD M. LOCKWOOD, a citizen of the United States, and resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Winding Devices for Wiping Webs of Embossing Printing-Machines, of which the following is a specification.

The object of my invention is to improve the details of an embossing printing press in which the surplus ink is removed from the die by means of a web of paper which is intermittently fed in such manner as to present a fresh paper wiping surface to the die after each inking thereof; and my improvements are particularly directed to the means for feeding wiping web and winding it into a roll upon a detachable mandrel.

More particularly, my object is to provide an efficient means for winding the used wiping web upon a mandrel with a speed commensurate with the requirements of the machine and whereby the paper roll is easily removed from the mandrel when full; the mechanism being so constructed that the tension under which the paper web is rewound is substantially uniform and predetermined.

With these and other objects, hereinafter set out, in view, my invention consists of certain constructions and combinations of parts fully described in the following specification and more particularly defined in the claims.

My invention will be better understood by reference to the accompanying drawings, in which:—

Figure 1 is an elevation of an embossing printing press embodying my improvements, with the belt wheel removed; Fig. 2 is a sectional elevation of the same; Fig. 3 is a sectional plan view (on line *x*—*x* of Fig. 4) of the means for rewinding the used wiping web; Fig. 4 is an elevation of a portion of the same; Fig. 5 is a cross section of the mandrel body; and Fig. 6 is an end view of the mandrel.

The general construction of embossing printing presses having automatic wiping devices is well known in the art, but for imparting a better understanding of my improvements therein, I have shown in Figs. 1 and 2 the details or operative parts of such a machine, and will now briefly describe the same. 2 is the main frame, 3 is the stamping plunger and is adapted to be operated by the usual cam and toggle mechanism, and 4 is the die carriage and die secured thereon. The die carriage is reciprocated horizontally, from the position shown, backward under the wiper pad 15 and to a position to receive ink by the ink applying roller 9, and thence forward again to the impression position shown. When the die is moved backward to receive ink, the wiper frame and pad 15 are raised so that the paper wiping web 14 does not touch the die; but when the die has been inked and moved forward, the wiper pad 15 is moved downward into wiping position for pressing the paper web 14 into contact with the die as it passes beneath, for causing the surplus ink upon its surface to be wiped off upon the web so as to leave the die clean except for the ink in the engraved grooves, as in intaglio printing. The carriage and die 4 are reciprocated by the rocking lever 5 and links 6, 6, jointed together at 7, one of the links being hinged to the carriage and the other to the lever 5. The hinge 7 has guide rollers which traverse the guideway 8, so that the links fold at the termination of the oscillation of the lever 5 to give a dwell to the carriage and die during the printing or embossing operation. The inking roller is carried by levers 10 which are rocked by suitable means operated from the main shaft 34, said means comprising a bell crank 10^b having one arm connected with the levers 10 by a link 10^a, and having the other arm connected to a link or bar 10^c, which is operated by a cam 10^d secured to the main shaft 34. In fact, all of the power emanates from this main shaft, but it will not be necessary to describe in detail the several instrumentalities employed, as these may be of any suitable construction so far as the utility of my invention is concerned. The lever 5 which operates the carriage is oscillated by a link 44, which is hinged to a rocker arm 43 secured to a rock shaft 40 also having an arm 41 which is connected by a link 42 to a crank pin on the main driving gear 34^a secured to the shaft 34.

The means for raising and lowering the wiping pad is shown in Figs. 1 and 2, and comprises a rocking lever 29 having at one end a link 30 which carries the wiping frame and pad 15, said lever having at its

other end connection with a power applying rod 32 guided at its upper end by the shaft 34. The rod 32 has a roller 33 working in a cam groove 31 of a cam secured to the said main shaft 34. This means reciprocates the wiping frame and pad at properly timed intervals, as will be understood.

The wiping web is of paper and wound in a roll 16, supported so as to be unwound therefrom as required. A friction strap 16^a, weighted at 16^b, applies a braking action to prevent spinning under the intermittent pull. The web 14 passes from the roll 16 over guide 17, thence between the rolls 18, thence over guide roll 19 on the wiper frame, thence under the wiper pad 15, thence upward and over the solvent applying roller 20, thence under the guide 26 to the winding mandrel 27. The mandrel 27 is intermittently driven to properly feed the web through the machine in such manner that it is fed when the embossing is not taking place and when the wiper pad is out of action. The solvent roll 20 may be supplied with solvent from a trough 39 in any suitable manner, that shown being suitable rollers 35 which may be oscillated to deliver to the surfaces of the roller 20 the necessary quantity of solvent. It is however immaterial to my invention as to what particular details are employed in the general makeup of the operating parts of the machine.

I will now describe the means for feeding the wiping web. As before stated, this is accomplished by imparting rotary motion to a mandrel 27 upon which the paper web is wound after being employed in wiping the ink from the die. The construction of the mandrel is best shown in Figs. 3 to 6 inclusive, and its position in the organized machine is shown in Figs. 1 and 2. The mandrel proper, upon which the paper web is wound, is a slotted cylinder 52, one end fitting a groove 51 on a head 50 secured to a shaft 50^a, and having the other end received in a groove 55 in an adjustable head 53 slidably mounted on the shaft 50^a and clamped thereon by screw 54. When the screw 54 is loosened, the head 53 may be slipped off and slotted tube 52 removed. Fig. 5 shows the cross section of the tube, a portion of the slot 52^a being turned outward to form a binding shoulder for locking the web to the mandrel 2 when rotated. The head 50 has a recessed central bearing 50^c on its outer end, and this is surrounded by a square hub 50^b, as shown in Figs. 3 and 6. The square end 50^b fits between the parallel lugs 61 on the driven disk 60; and extending through and keyed to the disk 60 at 76 is the shaft 74 having the extending end 75 forming a central bearing for the recess 50^c in the head 50. In attaching the mandrel in position, the head 50 is placed upon the end 75 and with the square hub 50^b between the lugs 61, and then the free end of the shaft 50^a is dropped into the open bearing 56 on the main frame of the machine. The shaft 50^a is shouldered so that its head 50 is held up to its connection with the parts 61 and 75 of the disk 60. When in position the end of the web 14 is thrust through the slot 52^a and a couple of wrapping turns are made about the mandrel, and the attachment is accomplished.

The disk is sleeved within a frame 59 which is held rigidly by a stud 58 extending from the bracket 57 attached to the main frame of the machine. The frame 59 has ratchet means to prevent the disk 60 and its shaft 74 rotating backward and said ratchet means comprises roller 62 in cam grooves 62^a and pressed into frictional contact with the disk by follower 63 and coil springs 64. In this way, the disk may rotate forward (as per arrow Fig. 4), but cannot be moved backward. By use of roller clutches in place of ratchet teeth, forward motions of any degree may be obtained, and all backward movements of the wiping web prevented, thereby enabling the exact quantity of paper web required to be fed at each wiping operation may be insured and all waste by inaccurate feeding avoided.

The bracket 57 is provided with a long bearing 69 in which is journaled a sleeve 65^a carrying at one end a disk 65 faced with leather 66 and having its other end provided with a collar 65^b to prevent longitudinal motion in the bearing. The shaft 74 of the disk 60 is journaled in the sleeve 69 and by means of the spring 71 draws the disk 60 tightly against the friction surface 66 of disk 65, so that it may be driven forward by the action of said disk 65. The spring 71 rests upon a ball bearing collar 70 arranged next to the end of the sleeve 65^a, and its other end presses against an adjustable collar 72 clamped upon the shaft 74. A wheel 73 may be secured upon the extreme outer end of the shaft 74 by which to adjust said shaft when desired or for any other purpose as in applying the paper web to the mandrel and taking up the surplus web to start the tension thereon.

67 is a sprocket wheel and is secured to the disk 65 of the sleeve 65^a; and for rigidity, this sprocket wheel is provided with a wide hub journaled upon the outside of the bearing 69 as indicated at 67^a. The sprocket wheel 67 is driven by a sprocket chain 68 and suitable operative means therefor whereby it is given an intermittent action. In machines of this class, the power transmitting connections are of such a nature that an intermittent motion is imparted to the chain 68, so that the winding mandrel for the wiping web is also given an intermittent rotation. The means shown for imparting this intermittent motion to the sprocket chain 68

may consist of the following instrumentalities. The feeding roller 18 (Fig. 2) is given an intermittent rotation by a pawl and ratchet device (Fig. 1). The roller 18 is provided with a ratchet wheel 24 which is intermittently rotated by a pawl 24^a carried by a disk 24^b. This disk is pulled in one direction by a belt 25 and weight 28 and in the other direction by a chain 23 which is operated by a bell crank 22 which is oscillated by a link 22^a hinged at its lower end to a rocker arm 5^b secured to the transverse shaft 5^a to which the rocker lever 5 is secured and upon which it oscillates. It will be seen therefore that when the lever 5 oscillates to move the carriage and die 4 backward to receive ink the pawl and ratchet device is operated to rotate the roller 18 for feeding the wiping web 14 and the same action operates the sprocket chain 68 to impart an intermittent rotation to the mandrel for taking up the surplus web which has thus been provided. This feeding action takes place when the carriage is approaching the inking means and the operation is so timed that the paper web is held against feeding during the return of the carriage and its inked die so that the latter may be wiped clean as before explained. The chain 68 being driven from the intermittently operated roller 18, gives to the mandrel operating disk 65 a partial rotation, and this through friction surface 66 gives a like motion to the disk 60 together with the mandrel 27. This action winds up a given length of the web 14 to draw a clean surface thereof under the wiping pad 15. This having been done, and the carriage and die 4 having been moved under the wiping pad (but without touching the web) to a position to receive ink from the roller 9 when moved forward, the wiping pad 15 is moved downwardly by the action of cam 31 (Fig. 1), and the carriage and die 4 moving forward cause the die to wipe its inked surface upon the under surface of the web 14 below the said wiping pad 15 as before stated. While this operation is taking place, there will be a back pulling upon the web 14 by the action of the moving die, and this is resisted by the clutch rollers 62 holding the disk 60 and the mandrel 27 against any backward rotation; and consequently, as there is no lost motion, only sufficient paper web is required to be fed forward at each operation as will perform proper wiping. It will be evident that if there was no clutch means for directly controlling the mandrel to prevent its backward rotation, the lost motion in the chain 68 and the ratchet mechanism of the power transmitting connections will permit objectionable back movement, which should be prevented and is prevented by my present improvement.

The extent of friction between the disks 65 and 60 may be made to suit the requirements by adjusting the tension of spring 71 by nut 72, but this friction is only required to be sufficient to feed the paper web at a time when the wiping strain is not occurring, and in such manner that an efficient feeding operation is insured.

The employment of a suitable back clutch mechanism between the driving means of the mandrel and the mandrel itself or its immediate supporting means, to prevent any back movement of the web by reversed motion of the mandrel, is very important to the effective operation of the machine of the class here described, and this improvement constitutes an important feature of my invention.

I have heretofore referred to the general character of the embossing printing press herein described as being of a general character in commercial use, and the general construction shown, other than the improvements forming the subject matter of the present application, will be found fully illustrated and described in Letters Patent No. 1,102,770, granted to me on July 7, 1914.

While I have described my improvements in the form which I have employed commercially and found well suited to the requirements of the invention, nevertheless I do not confine or restrict myself to the details, as these are susceptible of modifications and changes within the scope of mechanical skill without departing from the spirit of the invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A mandrel for winding a web and feeding it in an intermittent manner, combined with means for operating the mandrel comprising a driven disk with which the mandrel is detachably engaged, a friction clutch mechanism to prevent the driven disk rotating backward, a driving disk frictionally engaging the driven disk for driving it, and means for imparting motion to the driving disk.

2. A mandrel for winding a web and feeding it in an intermittent manner, combined with means for operating the mandrel comprising a driven disk with which the mandrel is detachably engaged, a friction clutch mechanism to prevent the driven disk rotating backward, a driving disk intermittently driven in one direction only frictionally engaging the driven disk for driving said driven disk, spring devices for adjusting the pressure of the frictional engagement between the driving and driven disks, and means for imparting intermittent motion to the driving disk in one direction only.

3. A mandrel for winding a web and feeding it in an intermittent manner, combined

with means for operating the mandrel comprising a driven disk with which the mandrel is detachably engaged, a clutch mechanism to prevent the driven disk rotating backward consisting of a stationary frame surrounding the perimeter of the driven disk and having cam-shaped pockets with roller clutches in said pockets and springs to hold the roller clutches in constant engagement with the cam portions of the pockets and perimeter of the driven disk, a driving disk frictionally engaging the driven disk and intermittently driven in the same direction for driving the driven disk, and means for imparting intermittent motion to the driving disk.

4. A mandrel comprising a slotted tube, combined with a shaft extending axially through the tube and having an annularly grooved head fixed thereon and in the groove of which one end of the tube is received and centered concentrically to the shaft, an adjustable head slidably mounted upon the shaft and also provided with an annular groove in which the other end of the tube is received and detachably clamped, a continuously rotating shaft in axial alinement with the mandrel shaft, and a disk frictionally driven by the continuously rotating shaft, said disk having a central bearing and engaging the annularly grooved head which is fixed to the mandrel shaft and also having projecting portions which engage the said head to detachably couple with the same and rotate it.

5. Means for operating a wiping web of a printing press, consisting of a mandrel upon which the web is wound, combined with a fixed bearing, a sleeve journaled in the bearing and having a driving disk, a sprocket wheel journaled upon the outside of the bearing and secured to the disk to rotate it, means for intermittently driving the sprocket wheel in one direction only, a driven disk for operating the mandrel frictionally driven by the driving disk and having a shaft extending through and having a bearing in the sleeve, a spring about the shaft to yieldingly press the two disks together, friction clutch means to permit the driven disk to rotate in one direction only.

6. Means for operating a wiping web of a printing press, consisting of a mandrel upon which the web is wound, combined with a fixed bearing, a sleeve journaled in the bearing and having a driving disk, a sprocket wheel journaled upon the outside of the bearing and secured to the disk to rotate it, means for intermittently driving the sprocket wheel in one direction only, a driven disk for operating the mandrel frictionally driven by the driving disk and having a shaft extending through and having a bearing in the sleeve, a spring about the shaft to yieldingly press the two disks together, an inclosing fixed frame having a circular opening in which the driven disk is located said frame having cam-shaped pockets, roller clutches in said pockets and constantly resting in contact with the perimeter of the driven disk, a spring to press the roller continually in contact with the cam surface and disk whereby it is constantly in clutching relation, and a detachable connection between the mandrel and driven disk.

In testimony of which invention, I hereunto set my hand.

EDW. M. LOCKWOOD.

Witnesses:
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E. W. SMITH.