

April 3, 1928.

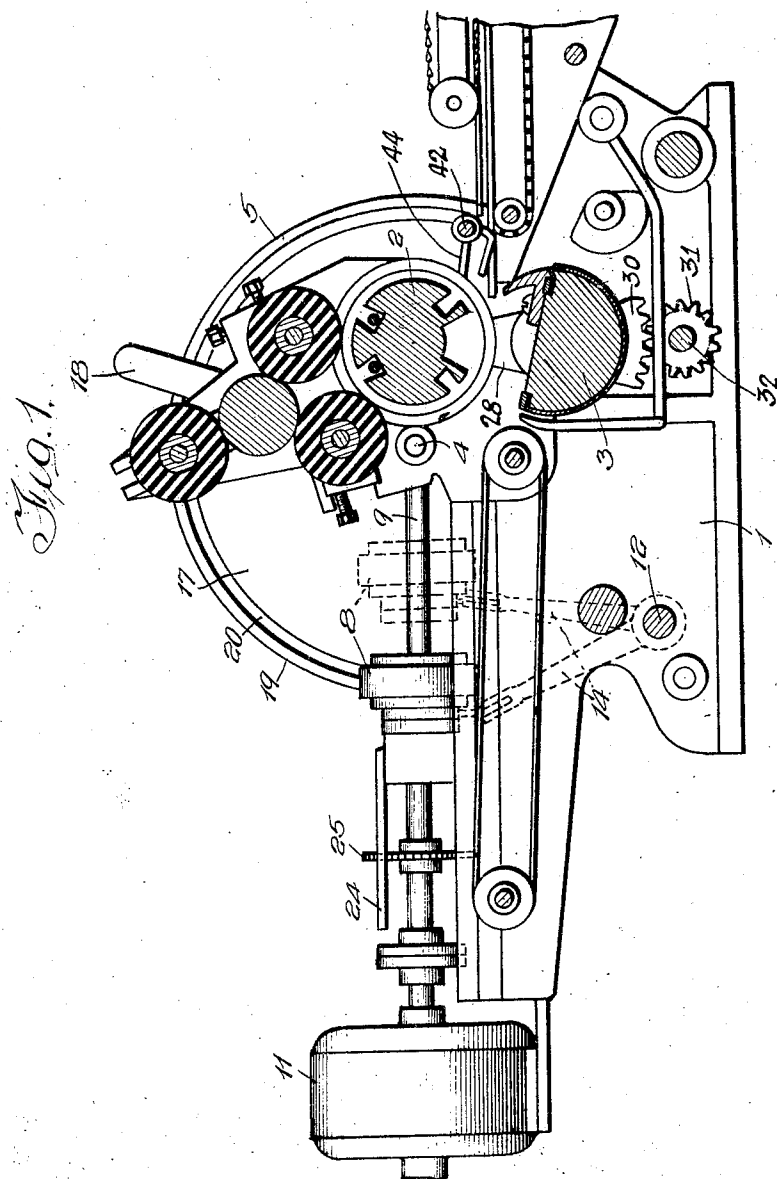
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C. L. POST

SHEET FEEDING AND DRIVING MEANS

Filed Oct. 3, 1924

3 Sheets-Sheet 1



Witnesses:
W. F. Hulroy
Harry R. L. White

Inventor:
Claude L. Post
Stie & Stie
Attys

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C. L. POST

SHEET FEEDING AND DRIVING MEANS

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3 Sheets-Sheet 2

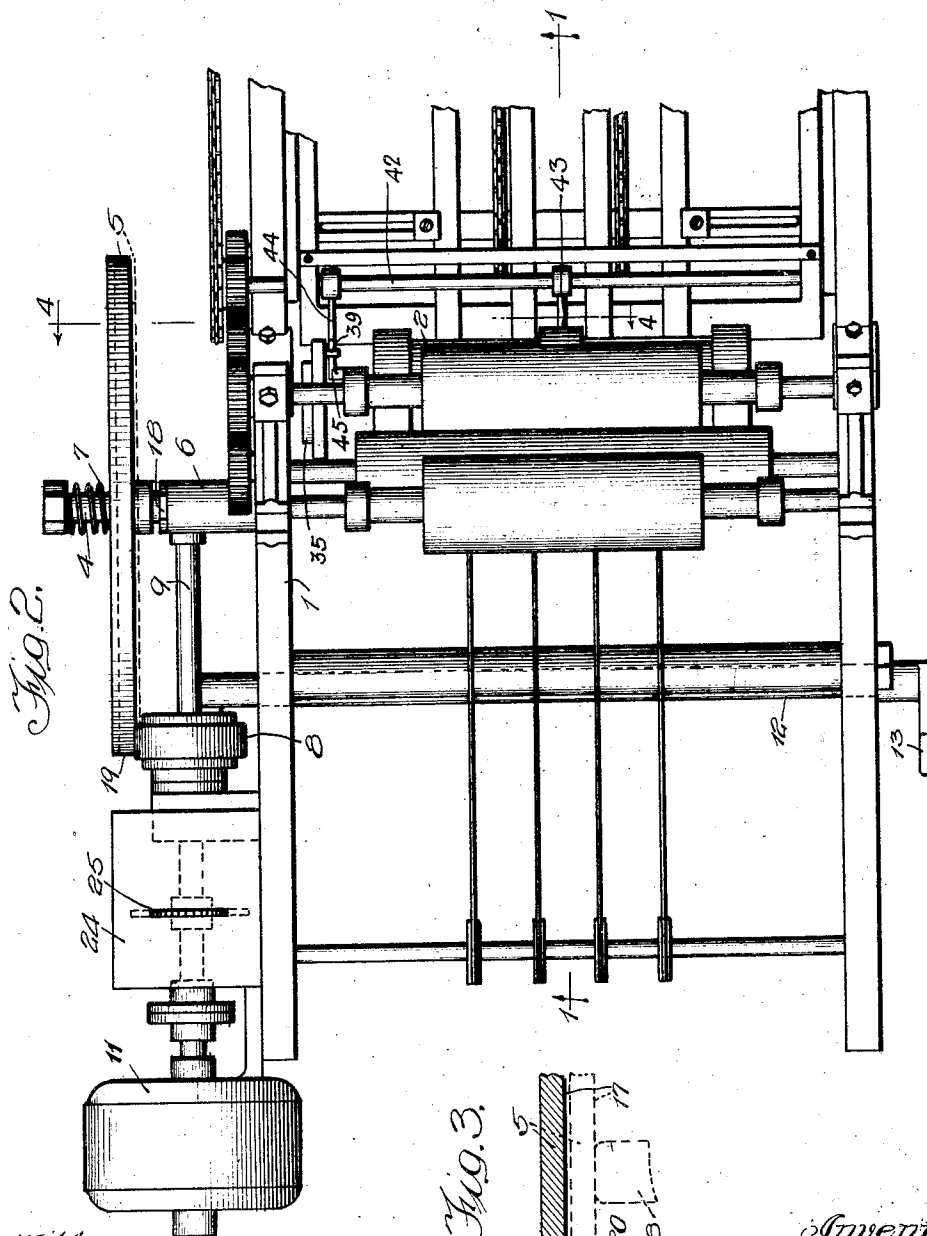


Fig. 2.

Fig. 3.

Witnesses:

W. F. Kilroy

Harry R. Lewitz

Inventor:
Claude L. Post

W. F. Kilroy
Harry R. Lewitz

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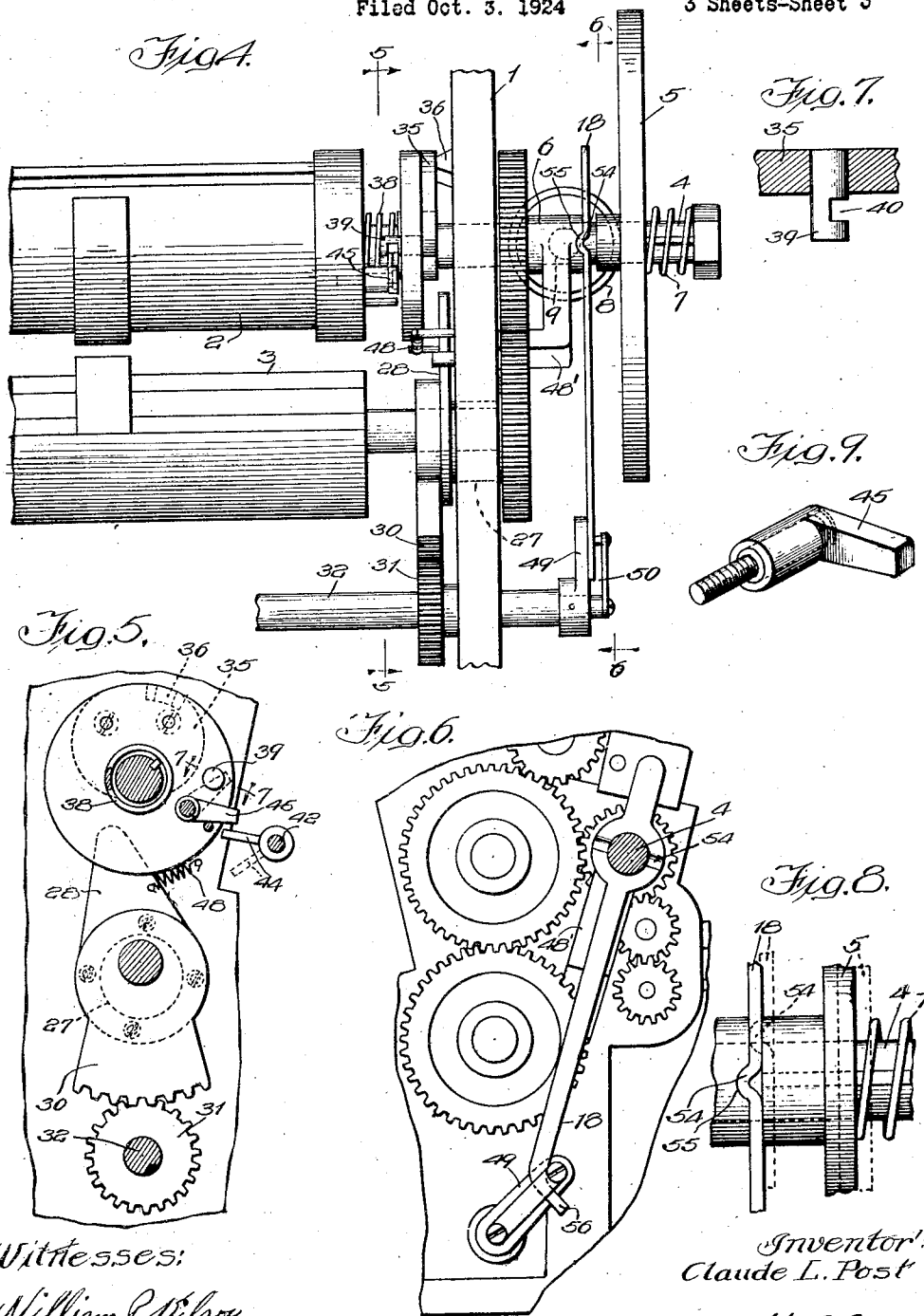
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C. L. POST

SHEET FEEDING AND DRIVING MEANS

Filed Oct. 3, 1924

3 Sheets-Sheet 3



Witnesses:

William L. Hilroy

Harry B. L. White

Inventor:
Claude L. Post

Hill Hill

UNITED STATES PATENT OFFICE.

CLAUDE L. POST, OF CHICAGO, ILLINOIS.

SHEET FEEDING AND DRIVING MEANS.

Application filed October 3, 1924. Serial No. 741,426.

My invention belongs to that general class of devices known as sheet feeding and driving means, and relates more particularly to a controlling means particularly adapted for use in connection with a printing press or the like of the type described in my pending application, Serial No. 627,455, which is operated at high speeds. The present invention is in the nature of a supplementary driving control whereby the operator can at will operate the machine by power and yet control the same in such a manner that the same may be operated in one or more steps to vary the relative positions of the parts without requiring turning the machine over by hand to get slight movements. In adjusting the parts, feeding mechanism, distributing the ink on the rolls, etc., it is desirable to turn the machine slowly, as required, instead of driving the same at more or less high speed. With my improved mechanism of the type shown in the application referred to, the printing mechanism is automatically cut out when there are no sheets going through the machine or feeding ceases due to a gummed envelope not feeding. Consequently, it has been customary heretofore to turn over the drive wheel or disc by hand in adjusting the plate or type and the various other parts of the mechanism which can best be done by moving the parts slowly and watching their several movements. A sheet, envelope or the like may be fed up to the printing roll slowly in adjusting the parts or trying out the adjustments of the printing mechanism.

The present invention relates particularly to an improved construction wherein the operator may employ the power for controlling the machine in a step-by-step action or to operate it slowly. The invention has among its objects the production of a mechanism of the kind described that is simple, compact, reliable, efficient and satisfactory for use wherever found applicable. More particularly it has as an object the production of a control mechanism that will permit the operator to control the machine and operate the same by a step-by-step movement whenever desired by power rather than by

manually turning over the machine. Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a sectional view taken substantially on line 1—1 of Fig. 2, showing a portion of the entire press;

Fig. 2 is a top plan view of the same;

Fig. 3 is a sectional view through a portion of the disc 5, showing in dotted lines changed positions;

Fig. 4 is a section taken on line 4—4 of Fig. 2;

Fig. 5 is a section taken on line 5—5 of Fig. 4;

Fig. 6 is a section taken on line 6—6 of Fig. 5;

Fig. 7 is a section taken on line 7—7 of Fig. 5;

Fig. 8 is an enlarged fragmentary elevation of a portion of the apparatus shown in Fig. 4; and

Fig. 9 is a perspective view of a latch member forming part of the illustrated embodiment of the invention.

Referring to the drawings, in which the preferred embodiment of my invention is shown, 1 represents parts of a press frame, 2 type roll, and 3 the impression roll, it being understood that these parts are constructed as desired. Power is transmitted to these rolls, as well as to the inking rolls and other mechanism through a drive shaft 4, driven by a disc 5 suitably mounted on the shaft. As shown, the shaft is carried at the drive end by bearing 6, 7 being a spring bearing against the disc and a head on the shaft tending to normally move the disc into driving engagement with the friction wheel 8, suitable mechanism hereinafter referred to being employed to control the engage-

ment of the friction wheel with the disc during the operation of the machine and feeding of the sheets, envelopes or the like, between the printing roll 2 and impression roll

3. As shown, the friction wheel 8 is slidably mounted on the shaft 9, which is driven by a motor 11 or equivalent means for the purpose. The sliding movement of the friction wheel 8 on shaft 9 may be controlled in any suitable manner, that shown consisting of an arm 14 mounted on shaft 12, to which may be attached a shifting lever 13.

The construction of this mechanism may be as described in my pending application Serial No. 700,403, or in an equivalent manner. As the friction wheel is moved toward or from the shaft 4, obviously the speed of the machine is varied, that is, increased or decreased, depending upon the direction of movement. The driving engagement, however, is normally controlled by a lever 18 in the manner described in my above mentioned applications. When material is being fed through the press, the disc 5 is maintained in engagement with the friction wheel 8, so that as the motor is driven, shaft 4 is rotated, driving the press and feeding mechanism. When there is nothing being fed through the press, however, disc 5 is automatically thrown and maintained out of engagement with the face 17 of the disc. In adjusting the plates or slugs on the printing roll, adjusting the feeding mechanism, inking the rolls, or feeding up new sheets, it is frequently desirable to move the mechanism of the machine in a step-by-step movement or small portion of the travel of the parts, and heretofore it has been customary to grasp the disc and turn it by hand. This is inconvenient, and I have therefore provided an arrangement whereby the power may be employed for this purpose.

Referring to Fig. 3, 19 represents a flange on the disc 5, which I prefer to provide with an inclined face 20. With the machine stopped and the friction wheel, for example, in the position indicated by the dotted lines in Fig. 3, there is no movement of the disc. If, however, the friction wheel is shifted toward the outer edge of the disc, it will engage with the face of the projecting flange 19, the inclined face 20 permitting the same to ride upon the face so that the machine will be driven by power and at a slower speed than if engaged with the face 17. By bringing the friction wheel into engagement with the face on the flange for one or more short intervals, or continuously, if desired, the throw-off mechanism, including the lever 18, does not perform its function, causing the machine to stop, although in operative stopping position. When the disc is moved toward shaft 4, the disc engages with the flange, the automatic throw-off mechanism is then operative and maintains the

disc 5 out of engagement with the friction wheel. The operator thus has an independent control by means of which the machine may be operated in the usual manner free from the automatic control without feeding, or, step-by-step without subjecting the drive to the automatic control. It is also convenient in starting up the machine.

The mechanism which automatically controls the driving engagement between the disc 5 and the friction wheel 8 preferably insures that the type roll 2 and platen roll 3 shall not come together unless an envelope is presented thereto. The roll 3 is mounted in the eccentric bushings 27. Connected to one of these bushings, as shown more clearly in Fig. 5, is a lever 28, so that when the lever is rocked or pivoted, the bushing will be oscillated to lower the rotational axis of the roll 3 and thus separate the rolls 2 and 3.

For actuating the eccentric journals simultaneously, a gear segment 30 is operatively connected to the lever 28 and is adapted to mesh with a pinion 31 mounted on a shaft 32 extending across the frame 1, the other end of the shaft 32 having a pinion thereon similar to the pinion 31 and intermeshing with a gear segment thereat rigidly connected to the eccentric bushing at the adjacent end of the roll 3.

A cam member 35 is drivably connected to the shaft of the roll 2, but is slidable longitudinally thereof, said cam being of such contour that it will operate the lever 28 only when rotating in the same plane therewith. An abutment or stationary cam 36 is carried on the frame 1 to engage the rotary cam 35 and retrieve it out of registry with the lever 28, but guiding it into registry with the lever whenever said slidable cam 35 is moved longitudinally of the shaft of the type roll (to the right). A coiled spring 38 is interposed between the rotary cam and the adjacent end of the type roll in order to constantly urge the rotary cam to the right and into operative engagement with the lever 28.

As the lever 28 is intended to be oscillated only when there are no envelopes passing through the printing rolls, means must be provided for normally preventing such operation and for automatically moving the cam 35 to actuate the lever when the passage of envelopes is interrupted. For this purpose, a slotted lug or pin 39 is fixed to the rotary cam 35, the slot therein being indicated at 40. This pin is rigidly carried by the cam and projects inwardly of the inner side thereof (see Figs. 4, 5 and 7).

A rocker shaft 42 is mounted on the stationary framework adjacent the printing rolls, and intermediate the ends of said rocker shaft there is carried an arm 43 which extends in the path of envelopes passing to the printing rolls, the shaft 42 being freely

mounted in its end bearings so that when an envelope is passing beneath the arm, said arm will be raised or lifted by the envelope, and when there is no envelope beneath the arm, it will drop, due to gravity, and rock the shaft 42.

A lever or arm 44 is carried by the rock shaft 42 adjacent the rotatable cam 35 and is adapted to engage with a catch or lock member or arm 45 pivotally carried by the roll 2 as shown more clearly in Figs. 4, 5 and 9. The width of the catch member is such that it may enter the slot 40 formed in the pin 39 and hold the cam member 35 in its retrieved position against the outwardly exerted pressure of the spring 38.

The operation of the means for separating the printing rolls is as follows: Assuming that there is no envelope in readiness for insertion between the printing rolls and that the rolls are rotating, it will be seen that the spring 38 constantly presses the rotary cam toward the stationary cam. The arm 44 will then be in the position indicated by dotted lines in Fig. 5. The continued rotation of the cam will cause it to slide off the stationary cam and engage with the lever 28 to actuate it to cause separation of the rolls. On account of the centrifugal force the locking pin 45 will be thrown out of the slot 40 and the cam 35 will be released thereby to actuate the eccentric bushings. A spring 48 may be positioned to engage the lever 28 to return it to its normal position after each actuation thereof.

When there is no envelope between the rolls, the catch hits the arm 44, which is then in the position shown in dotted lines in Fig. 5, but the catch is not moved sufficiently on its pivot to re-engage in the slot 40, and thus the cam 35 will not be locked but will ride over the cam 36 to the crest thereof into its retrieved position shown in full lines in Fig. 4, whereupon in case there is still no envelope in position to pass through the printing rolls, the catch will again hit the arm 44 but fail to enter the slot, and the printing rolls will again separate. As soon as an envelope is in position for insertion between the rolls, the envelope-supported arm 43 will be lifted to rock the arm 44 to the full line position shown in Fig. 5 whereupon it may engage with the catch 45, this time causing said catch to enter into the slot 40 and retain the movable cam locked in its retrieved position. Thus, in each rotation of printing rolls, the latch is released through centrifugal force and in case the feed of envelopes is uninterrupted the lock will be pressed back into the slot just as the rotary cam is at the end of its ride over the stationary cam and again lock said cam in place. However, in case the feed of envelopes is interrupted, the released latch will not be pushed back into the slot but

will remain free until it again engages the arm 45, whereupon it will be either lifted to its unlatched position or will be lifted to its latched position in the slot, depending upon whether or not there is or is not an envelope beneath the arm 43.

The means for automatically controlling the driving engagement between the disc 5 and the friction wheel 8 comprises the spring 7 interposed between the disc 5 and the end of the shaft 4 which urges the driving means in operative engagement. A bracket 48' is carried by the frame, either integral therewith or as a separate part, and having a bore through which the shaft 4 extends. The rock-shaft 32 has a rocker-arm or crank 49 at its end, the same formed with an elongated opening or slot 50 there-through. The lever 18 is arranged between the disc 5 and the bracket 48' forming an end-bearing for said disc or drive-wheel. A radial projection 54 is formed at the upper end of the lever 18 and a corresponding recess 55 is formed in the opposed surface of the stationary bracket 48', as shown, so that when the projection 54 is seated in the recess 55, the friction disc 5 will be in operative engagement with the friction driving-wheel 8, the spring 7 tending to keep the parts in such engagement.

It is obvious that if the lever 18 is rocked about the shaft 4, the projection 54 will become unseated from the recess 55, causing the lever to move to the right (Fig. 4) to move the friction-disc 5 against the action of the spring out of engagement with the driving-wheel 8 and thus shut off the drive of the shaft 4. The lower end of the lever 18 is formed with a hook 56, which is adapted to be removably inserted through the slot 50 of the member 49.

Whenever the eccentric bushings 27 are rotated to separate the rolls 2 and 3, the shaft 32 is rocked and the lever 18 is correspondingly rocked about the shaft 4, the lever 18 being moved laterally to release the driving wheels 5 and 8 from engagement. As soon as the shaft 32 resumes its normal position, the projection 54 will again seat in the groove 55, the spring 7 tending to hold it in place.

The machine is preferably placed in operation with the wheel 8 in engagement with the flange 19 and then it is advanced into engagement with the face 17 after the sheets being printed have commenced to pass between the rolls 2 and 3.

I prefer to arrange between the driving mechanism proper and the motor a cut-off saw 25, provided with a table 24. This mechanism is arranged at this point so that it may be operated regardless of the operation of the machine or simultaneously therewith. Its purpose is to provide a mechanism whereby plates or linotype slugs or the like

may be trimmed or cut to size. Ordinarily, the saw 25 is covered with a hood or guard (not shown) so as to prevent accidental engagement therewith.

5 Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts here-
10 in shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

15 1. In a device of the kind described and in combination, printing means, and means for driving said printing means comprising a drive wheel and a friction wheel movable radially of said drive wheel, said drive wheel
20 normally movable laterally to engage or disengage from the friction wheel, said drive wheel provided at its outer edge with an annular flange forming an auxiliary driving face operable to engage with the friction
25 wheel when the drive wheel is moved laterally to its normally inoperative position and the friction wheel is moved opposite the auxiliary drive face, and means for driving the friction wheel.

30 2. In a device of the kind described and in combination, driving mechanism comprising a driven element and a driving element, said elements each relatively adjustable whereby movement of one element away
35 from the other disengages them from operative relation, and movement of the other element engages them when the said first element is moved in a normally inoperative driving position, and one of said elements
40 having a cylindrical face engageable with the other element in each of the driving positions.

3. In a device of the kind described and in combination, a driven member and a driving member, said driven member normally
45 movable to engage or disengage from the driving member, said driven member provided with an auxiliary driving face operable to engage with the driving member when the latter is moved opposite thereto
50 with the drive wheel in its normally inoperative position, and said driving member having a cylindrical face engageable with the driven member in both positions thereof.

55 4. In a device of the character described and in combination, a drive wheel and a friction wheel, said drive wheel normally movable laterally to engage or disengage from the friction wheel, an annular flange at the
60 outer edge of said drive wheel extending laterally therefrom, an inclined face on the inner edge of said flange, said flange forming an auxiliary driving face operable to engage with the friction wheel when the drive
65 wheel is moved laterally to its normally in-

operative position, said friction wheel riding over the inclined face to a position opposite the auxiliary drive face, and means for driving the friction wheel.

5. In a device of the kind described and
70 in combination, a drive wheel and a drive face thereon, a friction wheel engageable with said drive wheel, said drive wheel movable out of driving engagement with said friction wheel and provided with a flange
75 at the edge, means for automatically throwing the drive wheel out of engagement, said friction wheel movable to engage said flange when the drive wheel is in its normally out
80 of engagement position with the friction wheel, whereby the drive wheel may be driven independently of the automatic throw-off means.

6. In a device of the kind described and in combination, a drive shaft, a driving
85 wheel thereon consisting of a disc adjustable longitudinally of said shaft and provided with a normal drive face and an auxiliary driving face, a power shaft, a friction wheel on said power shaft thereon movable longi-
90 tudinally of the power shaft and operable to engage the normal driving face when the drive wheel is in its normal driving position, or to engage the auxiliary face when the drive wheel is in its normally inoperative
95 driving position, said friction wheel having a surface engageable with said normal driving face and said auxiliary driving face.

7. In a device of the kind described and
100 in combination, a drive shaft, a drive wheel thereon consisting of a disc adjustable longitudinally of said shaft and provided with a normal drive face and an auxiliary driving face, automatically operable controlling
105 means therefor, a power shaft provided with a friction wheel thereon movable longitudinally of the shaft and operable to engage the normal driving face when the drive wheel is in its normal driving position, or to en-
110 gage the auxiliary face when the drive wheel is automatically moved to its normally inoperative position.

8. In a device of the kind described and in combination, a drive shaft, a drive wheel
115 on said drive shaft, a second wheel drivingly engageable with said drive wheel, means for resiliently holding said wheels in operative engagement, means automatically operable to release the drive means, said first-men-
120 tioned drive wheel provided with a flanged portion engageable by the driving wheel when out of normal engagement with the drive wheel, and means for controlling the drive wheel to bring the same in or out of
125 engagement with said flange at will.

9. In a device of the kind described and in combination, a drive shaft, a drive wheel
on said drive shaft, a second wheel drivingly engageable with said drive wheel, means
130

for resiliently holding said wheels in operative engagement, means automatically operable to release the drive wheel and move the same to an inoperative position, said
5 first-mentioned drive wheel provided with a flanged portion engageable by the driving wheel when it is out of its normal engaging relation with the drive wheel, and means for controlling the driving wheel to bring the same in or out of engagement with said 10 flange at will.

In testimony whereof, I have hereunto signed my name.

CLAUDE L. POST.