

April 3, 1928.

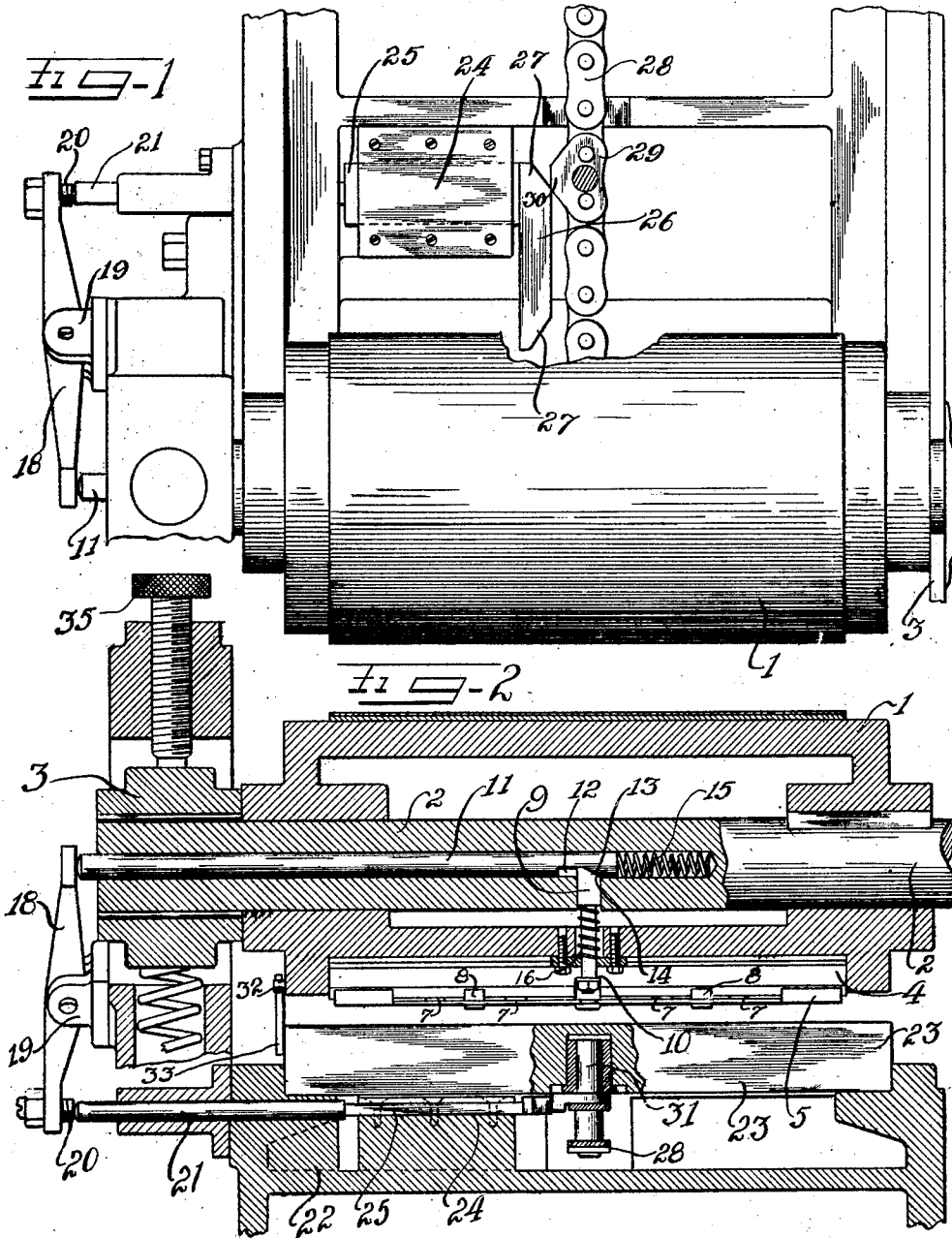
1,664,700

C. F. NAYER

PAPER GRIPPING DEVICE FOR PLATE PRINTERS

Filed April 6, 1927

2 Sheets-Sheet 1



INVENTOR

Carl F. Nayer

Charles F. Nayer

By

Att'y

April 3, 1928.

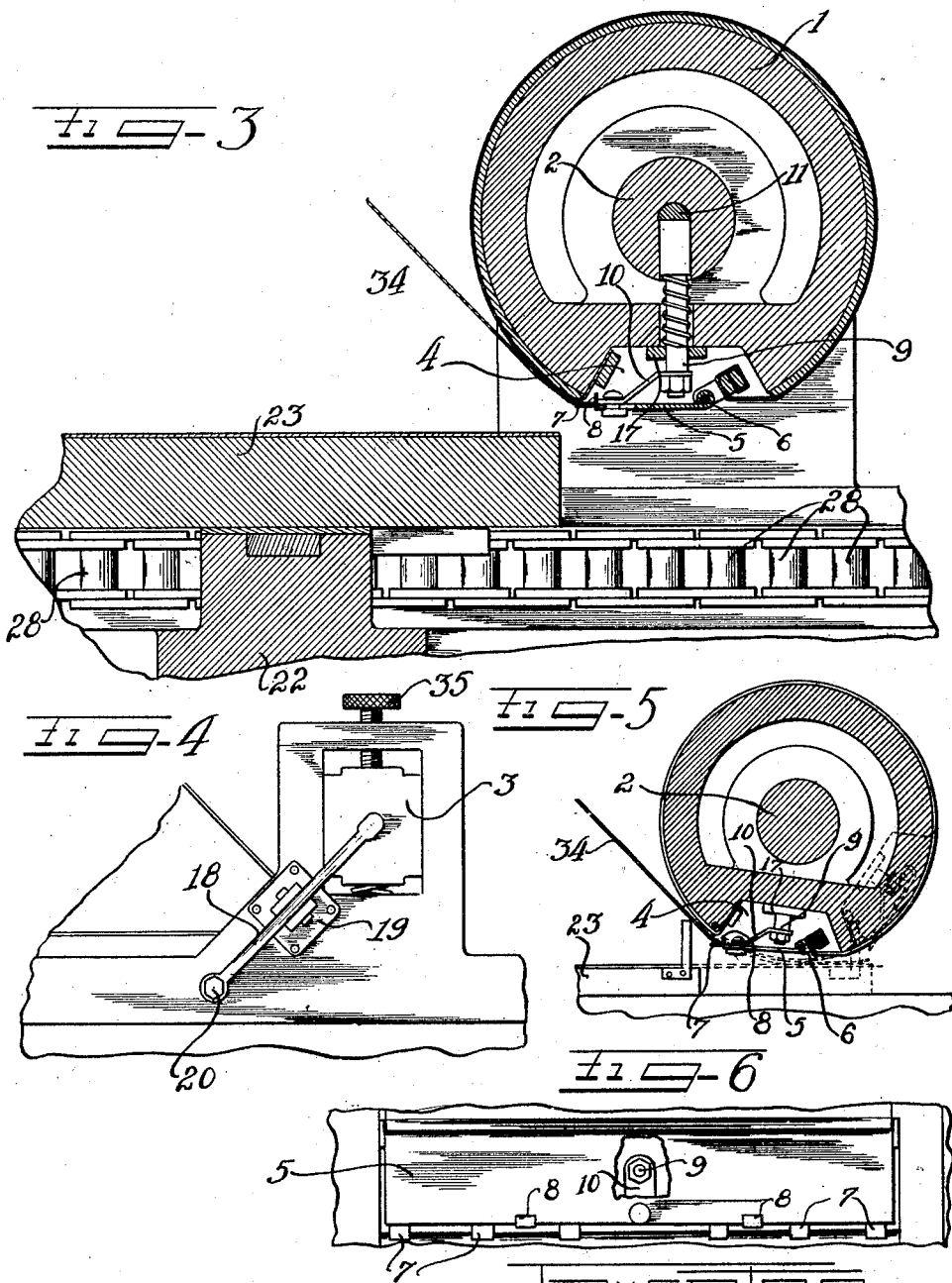
1,664,700

C. F. NAYER

PAPER GRIPPING DEVICE FOR PLATE PRINTERS

Filed April 6, 1927

2 Sheets-Sheet 2



INVENTOR

Carl F Nayer

Charles Miller

Ally =

UNITED STATES PATENT OFFICE.

CARL F. NAYER, OF CHICAGO, ILLINOIS, ASSIGNOR TO FULTON MACHINE CO., A CORPORATION OF ILLINOIS.

PAPER-GRIPPING DEVICE FOR PLATE PRINTERS.

Application filed April 6, 1927. Serial No. 181,292.

This invention relates to a printing machine and concerns itself primarily with gripping and registering means for the sheets of paper to feed the same between the printing roll and the bed plate.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred embodiment of this invention and in which similar reference numerals refer to similar features in the different views:

On the drawings:

Figure 1 is a fragmentary plan view of a printing machine involving this invention.

Figure 2 is a vertical longitudinal view through the printing roll and bed plate.

Figure 3 is an enlarged transverse vertical sectional view through a portion of the printing machine.

Figure 4 is an enlarged fragmentary end elevational view taken from the left hand end of Figure 1.

Figure 5 is an end elevational view of the roll.

Figure 6 is a plan view of the groove in the roll.

As shown on the drawings:

In the drawings there is illustrated a printing roll and a portion of the printing plate or bed plate that cooperates with said roll. The other parts of the machine are not illustrated as they are unnecessary for the purpose of explaining this invention.

The printing roll 1 which is covered with usual fabric coating or the like is secured upon a shaft 2 which is journaled at its ends in suitable bearings 3. This roll is provided with a longitudinal trapezoidal groove 4. A flat metal strip 5 is hinged in said groove upon a suitable rod 6 supported by the ends of the roll. The free margin of the plate 5 carries a plurality of yielding grippers 7 which are in the form of lugs or fingers and a plurality of stop lugs 8 are formed on the plate a short distance rearwardly of the gripping fingers. The hinged plate 5 is connected to a plunger 9 by means of a bracket 10. The plunger 9 extends through a suitable aperture in the body of the roll and into a suitable socket in the shaft 2 as shown in

Figures 2 and 3. The roll shaft is provided with a central bore in which a rod 11 is slidably mounted. The rod 11 is provided with a notch 12 which terminates at its rear end in a cam or sloping portion 13. The plunger 9 is provided with a similar sloping or cam-shaped end 14 which is normally projected in the notch 12 of the rod 11. A coil spring 15 is positioned between the rear end of the rod 11 and the end of the bore in the shaft 2 for yieldingly projecting the rod 11 in an outward direction. Normally the spring 15 will project the rod 11 in an outward direction and depress the plunger 9 against the tension of its spring 16 which surrounds the plunger between the shoulder formed by its upper enlarged head and an annular shoulder formed by the washer 17 which is secured to the bottom of the groove whereby the spring is confined for normally projecting the plunger 9 in an upward direction.

The rod 11 projects beyond the end of the shaft 2 for engagement by a lever 18 which is pivoted intermediate its ends upon a lug 19 secured to the end bearing for the shaft. The lower end of the lever 18 is provided with an adjustable contact member 20 which is adapted to be engaged by a sliding rod 21 in the stationary base 22 for the slidable printing plate 23. A guideway 24 is formed upon the stationary base 22. A slide 25 is mounted in this guideway. One end of the slide abuts the rod 21 while the other end of the slide carries a transversely extending cam member 26 the ends of which are beveled as indicated at 27.

The printing plate 23 is adapted to be actuated by a chain member 28 which has a special link 29 provided with a cam portion 30 which is adapted for engaging the cam member 26 for projecting the rod 21 for actuating the lever 18. The chain travels in a suitable space in the base 22 and is adapted to be attached to the printing plate by means of bolts 31 as shown in Figure 2. It might be mentioned that in the present machine the chain is designed to travel in a substantially rectangular path carrying the printing plate 23 therewith. During each cycle of travel the printing plate 23 will pass under the printing roll and as the printing plate comes to a predetermined position with respect to the roll, cooperating fingers 32 and

33 on the ends of the roll and printing plate will come into engagement for rotating the roll as the printing plate passes thereunder.

The sheets of paper are adapted to be fed 5 down against the periphery of the roll under the guidance of a feed table 34. If the roll should not form a proper contact in relation to the printing plate, the same may be adjusted by means of the end bearings 3 10 aforementioned which are slidably mounted in suitable boxes provided therefor and which may be adjusted by a screw 35 as is well known in the art.

In the operation of the machine it will, 15 of course, be understood that the chain 28 travels in a rectangular or oblong path and carries the printing plate 23 therewith. Normally the spring 15 will project the rod 11 beyond the end of the plunger 9 for de- 20 pressing the hinged plate 5 whereby it is possible for the operator to slip a sheet downwardly upon the feed table 34 into proper position. Consequently, the spring grip- 25 ping fingers 7 are normally held in an operative position. When the cam link 30 comes in position to engage the slide 25, the shaft 21 will be projected outwardly and the rod 11 will be projected inwardly 30 against the tension of the springs to bring the notch 12 opposite the end of the plunger 9 whereupon the spring 16 will elevate the plunger and at the same time the hinged 35 plate 5 to bring the gripping fingers into contact with the paper for gripping the same against the roll. These fingers will remain in gripping relation with the paper as long as the cam link 30 rides upon the cam member 26. When the cam link 30 40 rides off the cam member 26 the spring 15 will project the rod 11 outwardly and depress the plunger 9 through the coaction of the cam surfaces 13 and 14. At the same time the rod 21 will be shifted inwardly through the actuation of the lever 18 in 45 order to bring the cam member 26 in the path of the cam link 30. When the fingers or lugs 33 on the printing plate 23 engage the fingers 32 on the roll, the roll will be actuated by the bed plate. The roller will 50 be consequently rotated and as soon as the sheets are compressed between the roll and the printing plate the cam link 30 will ride off the cam member 26 allowing the spring 15 to project the rod 11 outwardly for de- 55 pressing the plunger 9 through the coaction of the cam surfaces 13 and 14 whereby the hinged plate 5 is depressed and the fingers 7 are moved out of gripping relation with the sheets. This operation will of course 60 be repeated through each cycle of operation of the printing plate.

From the foregoing, it will be appreciated that I have provided novel and positively actuated mechanism for controlling 65 the gripping fingers for the sheets in a

printing machine whereby the fingers are caused to grip the sheets at the proper time and in which the fingers are positively released at the proper time.

I am aware that many changes may be 70 made and numerous details of construction may be varied through a wide range without departing from the principles of this invention and I, therefore, do not purpose limiting the patent granted hereon, other- 75 wise than necessitated by the prior art.

I claim as my invention:

1. In a printing machine, a roll, a printing plate movable with respect to said roll, means for actuating said printing plate, 80 means on said roll for gripping a sheet of paper, a yieldingly actuated plunger slidably supported in said roll and connected to said gripping means, a rod in said roll for coaction with said plunger, a spring for 85 projecting said rod in one direction for depressing said plunger, and means actuated by the driving means of the printing plate for actuating said rod for releasing said plunger. 90

2. In a printing machine, a roll having a longitudinal groove, a hinged member mounted in said groove, said hinged member having gripping fingers, a spring actuated plunger slidably mounted in said roll 95 and connected to said hinged member, a printing plate movable with respect to said roll, driving means for said printing plate, and means responsive to said driving means for controlling said spring pressed plunger 100 for the purpose set forth.

3. In a printing machine, a roll having a longitudinal groove, a hinged member having gripping fingers supported in said groove, a spring pressed plunger slidably 105 mounted in said roll and connected to said hinged member, a printing plate movable with respect to said roll, a chain for actuating said printing plate, and mechanism for controlling said spring pressed plunger 110 actuated by said chain.

4. In a plate printing machine, a roll having a groove, a hinged member having gripping fingers mounted in said groove, a spring pressed plunger slidably mounted 115 in said roll and connected to said hinged member, a longitudinal rod slidably mounted in said roll for cooperating with said plunger, a lever engaging the end of said rod, a second slidable rod engaging said 120 lever, a printing plate movable with respect to said roll, and means actuated by the movement of said printing plate for actuating said last mentioned rod.

5. In a plate printing machine, a roll, 125 a hinged plate having gripping fingers carried by said roll, a spring pressed plunger slidably mounted in said roll and connected to said hinged plate, a rod slidably 130 mounted in said roll and having a cam

notch adjacent the end of said plunger, shifting said rod to bring said cam notch into registry with the end of said plunger. a spring for projecting said rod for depressing the plunger, a lever pivoted intermediate its ends for engaging said rod, and a movable printing plate, and means actuated by the movement of said printing plate for actuating said lever for

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

CARL F. NAYER.