

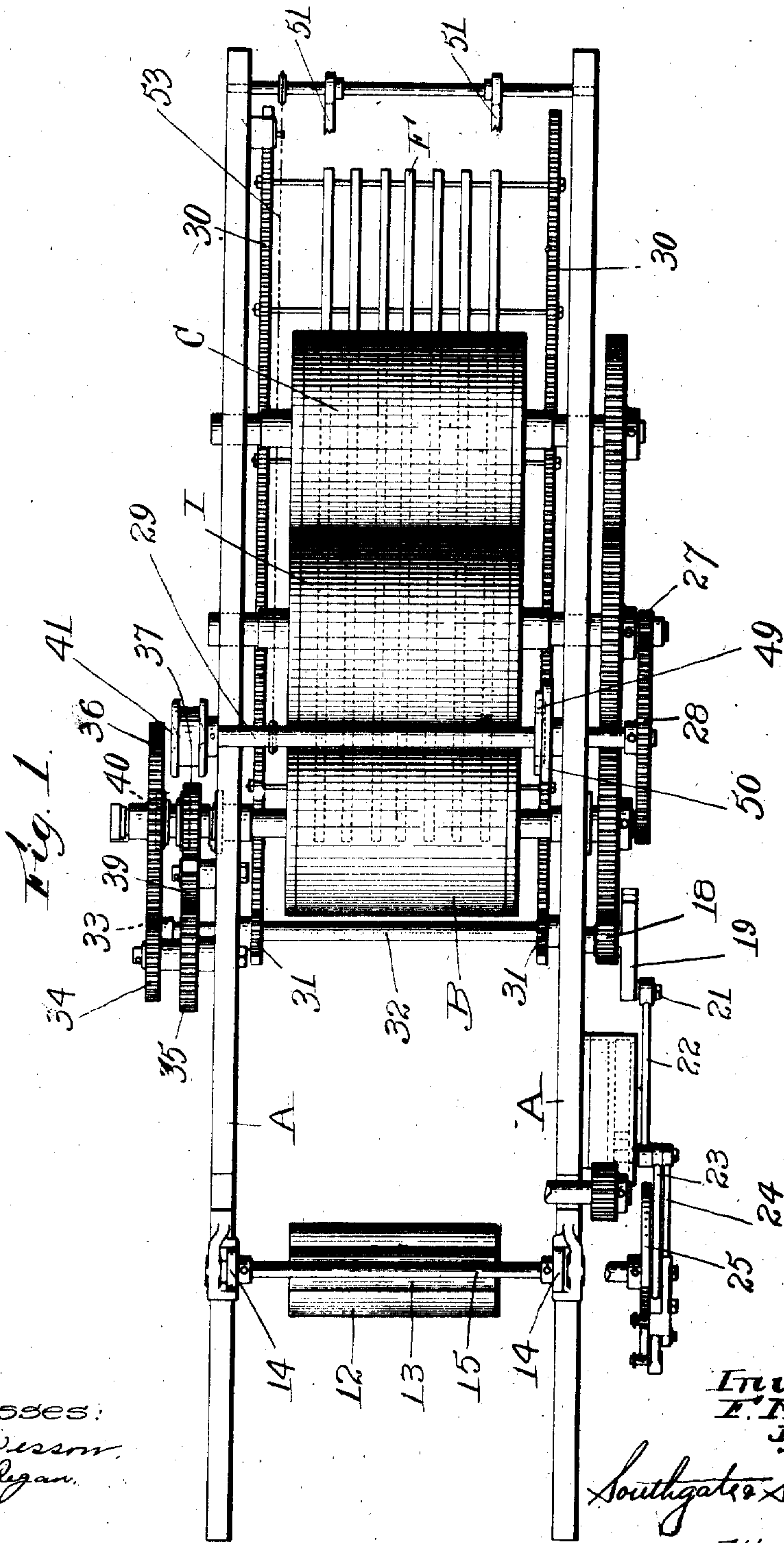
No. 897,219.

F. MEISEL.
PRINTING PRESS.

APPLICATION FILED OCT. 20, 1902.

PATENTED AUG. 25, 1908.

2 SHEETS—SHEET 1.



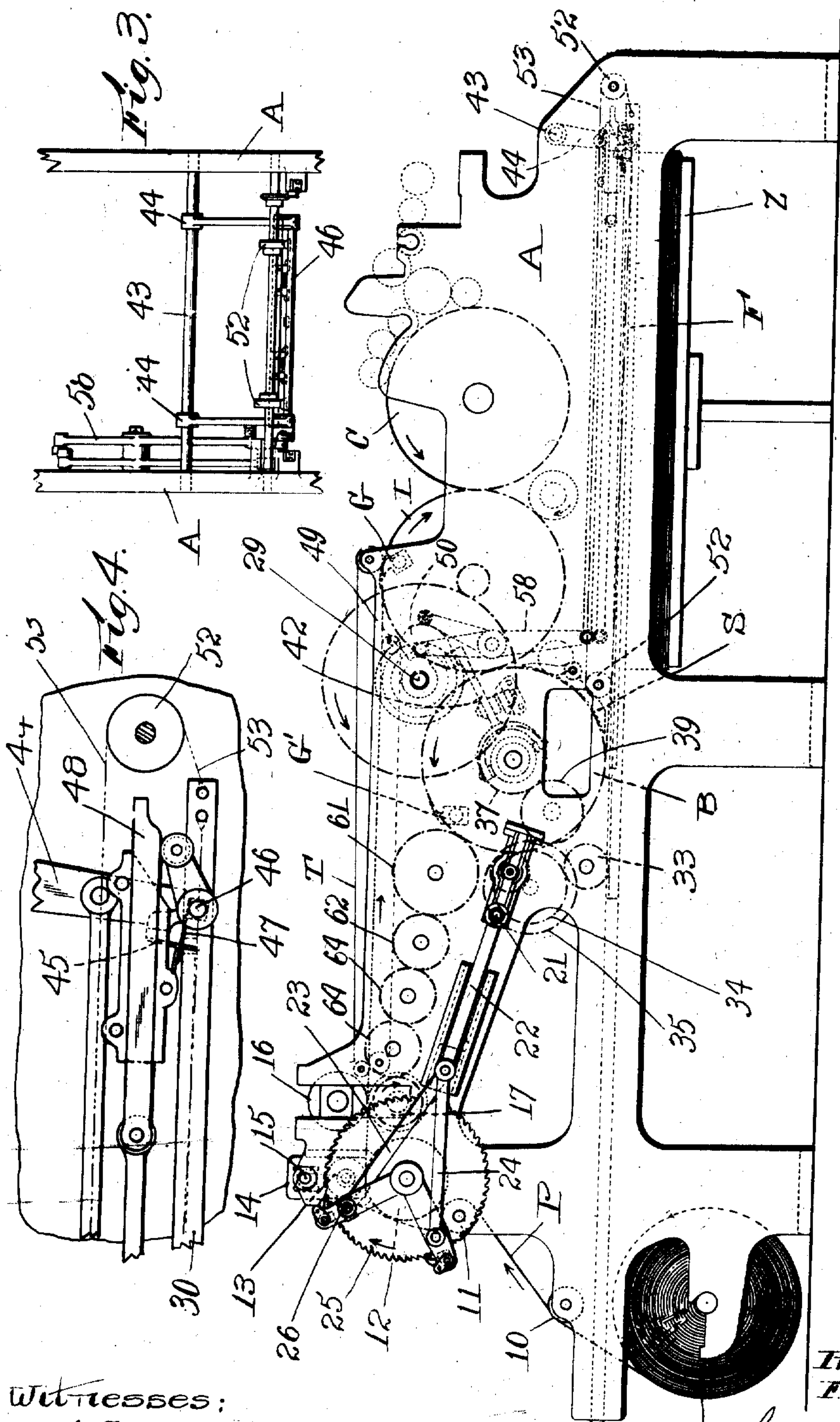
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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANCIS MEISEL, OF DOVER, NEW HAMPSHIRE.

PRINTING-PRESS.

No. 897,219.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed October 20, 1902. Serial No. 127,927.

To all whom it may concern:

Be it known that I, FRANCIS MEISEL, a citizen of the United States, residing at Dover, in the county of Strafford and State of New Hampshire, have invented a new and useful Printing-Press, of which the following is a specification.

This invention relates to that class of rotary printing presses which are designed to print upon separate sheets.

The especial object of this invention is to provide a simple, efficient, inexpensive and rapid printing press of this class with an intermittent, adjustable paper feeding mechanism for supplying the press with variable lengths of sheets.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying two sheets of drawings which show one form of the invention, and in which,

Figure 1 is a plan view of sufficient parts of a printing press to illustrate the application of my invention thereto. Fig. 2 is a side view of the same. Fig. 3 is a partial end view thereof, and Fig. 4 is a detail view of the delivery grippers.

In producing the coarser grades of printing, and even in producing some of the finer printed products, a rotary printing press may be operated at much higher speed than other styles of presses. This is due to the fact that the paper runs directly through the printing couples, and the printing speed is therefore only limited to the speed at which paper can be fed. On this account, rotary printing presses are now used for printing newspapers or for other products which require long runs. In actual practice, however, the rotary printing presses have not as yet come into general use for ordinary job printing, or other purposes where one press is required to produce a variety of products. This is due to the fact that rotary printing presses as heretofore constructed, have not usually been equipped to print on more than one size of sheet, and the speed of rotary presses which have been designed to print separate sheets have been limited to the speed at which the separate sheets could be delivered from the machine.

One especial object of my present invention is to provide a rotary press which may be readily set or adjusted to produce a variety of products. To accomplish these results, the paper is drawn from a web-roll, and

is severed into sheets before being fed to the impression cylinder. The paper feeding mechanism is of special construction, and although intermittent in action, it is controlled by two separate pawl and ratchet mechanisms, so as to produce a substantially uniform unwinding of the paper from the paper-roll. The pawl and ratchet mechanisms are capable of quick and simple adjustments to produce any desired length of sheets, which sheets are severed from the web of paper by the ordinary cutting cylinders, and are carried by tapes to the impression cylinder onto which they are taken by grippers and are printed by passing between the impression cylinder and printing cylinder.

From the impression cylinder the printed sheets are taken onto a gathering cylinder which will forward successive sheets to the delivery, or which may be made to collect several successive sheets. In the present instance, the machine illustrated, is arranged to collect six sheets upon the gathering cylinder. These sheets then run onto a reciprocating carriage which moves forward at the same speed as the paper-feed. The leading ends of the sheets are seized by delivery grippers, which grippers hold the sheets of paper while the carriage is being moved back into position to receive a succeeding number of sheets. The backward movement of the carriage takes place at a much slower speed than its forward motion. That is to say, the carriage is moved back from under the sheets at a slow even speed, so that the sheets will be delivered smoothly and efficiently upon the delivery table.

Referring to the accompanying drawings for a detail description of a printing press embodying my invention, as shown in Fig. 1, A designates the side frames. Journaled at one end of the side frames A, as shown in Fig. 2, is a web roll W, from which the paper P passes up and around guide rolls 10 and 11, and between intermittently operated feed rolls 12 and 13. The upper feed roll 13 is journaled in vertically movable boxes 14. Passing through the boxes 14 is a clamping shaft 15 having eccentrics for clamping the upper feed-roll down in operative position, or for holding the same up when the paper is being threaded into place. From the feed-rolls 12 and 13 the paper passes between the cutting cylinders 16 and 17 where it is severed into sheets, and the successive sheets are carried forward between constantly run-

ning tapes T, from which the sheets are taken by grippers G on the impression cylinder I. Coöperating with the impression cylinder I is the printing cylinder C having the usual inking mechanism, indicated by dotted lines. From the impression cylinder I the successively printed sheets are taken by grippers G' onto the gathering cylinder B. When the desired number of sheets has been collected on the gathering cylinder B, they are stripped therefrom by the usual switch S, which may be operated from the cam-shaft of the machine by any ordinary connections which need not be herein shown or described.

As the sheets are stripped from the gathering cylinder B they drop down onto a delivery carriage F which starts forward at the same speed as the travel of the sheets. The leading ends of the sheets are presented to the delivery grippers, (the construction and operation of which will be hereinafter described) and the complete sheets are delivered upon the delivery table Z when the delivery carriage F is moved back into position to receive a succeeding number of sheets. The gearing for operating these parts is most clearly illustrated in Fig. 1 of the drawings. As shown in this figure, the printing-cylinder C, impression-cylinder I, and gathering-cylinder B are geared to turn together. Secured on the shaft of the impression cylinder I is a small pinion 27 which meshes with a gear 28 secured on the cam-shaft 29. In the present instance, the gear 27 is one-sixth of the size of the gear 28, so that the cam-shaft will be turned once for each six revolutions of the impression cylinder, or the cam-shaft 29 will make one turn during the printing of six succeeding sheets. Meshing with and driven from the gear which is secured on the shaft of the gathering cylinder B is a pinion 18 journaled on a stud secured in the side-frames. Mounted upon and turning with the gear 18 is a slotted arm 19. Adjustably fastened in the slotted arm 19 is a crank-pin 21 which is connected by a link 22 to a cross-head which moves up and down in inclined ways on the frame of the machine. Pivoted on a crank-pin in the movable cross-head are links 23 and 24 which are connected at their outer ends to pawl-carrying arms having pawls engaging the ratchet-disk 25 secured upon the shaft of the feed-roll 12.

By means of this construction it will be seen that the crank-pin 21 will reciprocate the movable cross-head, and that the links 23 and 24 will swing the pawl-carrying arms in relatively opposite directions. That is to say, these pawl-carrying arms will open and shut like the jaws of a pair of scissors, so that while one pawl-carrying arm is moving in such direction as to advance the ratchet-disk 25, the other pawl-carrying arm will be on its idle or return stroke. I consider this a feature of importance, as by means of this

construction, I secure a substantially uninterrupted feed of the paper from the web-roll. That is to say, either one pawl-carrying arm or the other will at all times be acting to unwind the paper from the web-roll. To adjust this paper feeding mechanism to produce different lengths of sheets, the crank-pin 21 may be set or adjusted to have different lengths of throw to move the cross-head different distances as required. In some cases, in order to obtain a still finer adjustment of the length of sheet, it is desirable to adjust one pawl-carrying arm independently of the other, so that its throw may be increased or decreased by one tooth of the ratchet wheel 25. To accomplish this purpose, the pin 26 which connects the link 23 with one of the pawl-carrying arms may be made eccentric, so that by setting or turning this eccentric pin, as fine an adjustment as required may be secured.

The cutting cylinder 17 is driven from the gathering cylinder B through the intermediate gears 61, 62, and 64.

The delivery carriage F may consist of a number of strips or pieces connected by cross bolts. The side pieces 30 of the delivery carriage F are provided with rack-teeth on their upper edges which mesh with gears 31 secured on a cross-shaft 32. At its outer end, the cross-shaft 32 is provided with a gear 33 meshing with a gear 34 journaled on a stud extending from the side-frame. Secured to and turning with the gear 34 is a somewhat larger gear 35. Also meshing with the gear 34 is a large gear 36, which is journaled loosely on the shaft of the gathering cylinder B. Meshing with the gear 35 is an intermediate gear 39 which meshes with a gear 37 also mounted loosely on the shaft of the gathering cylinder B. Splined onto the shaft of the gathering cylinder B so as to be longitudinally movable thereon, is a clutch-piece 40, which is arranged to be thrown into frictional engagement either with the large gear 36 or the smaller gear 37. By means of this construction when the clutch-piece 40 is thrown into engagement with the large gear 36, the delivery carriage F will be moved forward at the same speed as the travel of the paper, while when the clutch-piece 40 is thrown into engagement with the gear 37, the delivery carriage F will be moved back in the opposite direction, and at a slower speed. The clutch-piece 40 is operated from a cam 41 on the cam-shaft 29 through a lever 42, as indicated most clearly by the dotted lines in Fig. 2.

Coöperating with the delivery carriage F are the tapes 51 which are mounted on rollers 52. The ends of a driving belt 53 are secured to the carriage, as shown most clearly in Fig. 4, and the tapes 51 move in unison and serve to hold the sheets down on the carriage while they are moving forward.

Journaled in the side frames A at the de-

livery end of the machine is a rock-shaft 43, extending down from which are the arms 44, shown most clearly in Fig. 3. At their lower ends, the arms 44 are provided with a cross-bar 45 carrying the stationary gripper-jaw. Journaled in the lower ends of the arms 44 is a rock shaft 46 carrying the movable gripper-jaw 47. Extending from the rock-shaft 46 is an arm having a friction wheel which is operated by a sliding cam 48. The swinging arms 44 are operated by a link from a lever 58 having a roller engaging a cam 49 on the cam-shaft 29, as shown most clearly in Fig. 1, while the sliding cam 48 for closing the movable gripper-jaw is operated by a link from a lever having a friction roll operated by a cam 50 on the cam-shaft 29, as also shown most plainly in Fig. 1. The delivery grippers are normally opened by springs in the ordinary manner. The parts of this delivery gripper mechanism are so timed that as the sheets are being carried forward by the delivery table, the delivery grippers will meet the leading edges of the sheets, and will engage the sheets and hold the same while the delivery carriage is being retracted. The grippers will then open and be moved slightly back so that the ends of the sheets will drop down onto the table.

The operation of the several parts of a printing press constructed according to my invention have been so fully explained in describing the constructions in detail, that it is not believed necessary to describe the operation of the printing press as a whole.

Although I have disclosed a delivery mechanism, I do not claim it herein.

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art without departing from the scope thereof as expressed in the claims, and that my invention may be applied to printing presses of somewhat different type from that herein illustrated. For example, my improved form of paper-feeding and sheet-delivery mechanism is equally applicable to a perfecting press in which the sheets are printed upon both sides. I do not wish, therefore, to be limited to the particular construction I have herein shown and described, but

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a printing press, the combination of

a printing couple, a paper feeding mechanism, two sets of intermittently operating connections acting successively to produce a substantially continuous paper feeding action, and means for adjusting the same to supply variable lengths of sheets.

2. In a printing press, the combination of a printing couple, a paper feeding mechanism, and two sets of intermittently operating pawl and ratchet mechanisms acting successively to produce a substantially continuous paper feeding action.

3. In a printing press, the combination of a printing couple, a paper feeding mechanism, and an actuating mechanism therefor, comprising a ratchet wheel and two oppositely moving crank-actuated levers carrying pawls acting successively on the ratchet-wheel, to produce a substantially continuous paper feeding action.

4. In a printing press, the combination of a printing couple, a paper feeding mechanism, and operating connections therefor, comprising a ratchet wheel, a pair of pawl carrying levers pivoted concentrically with the ratchet wheel, a crank-actuated cross-head, a link connecting each pawl-lever with the cross-head, said links being arranged on opposite sides of the center of the ratchet-wheel, and means for adjusting the throw of the crank which operates the cross-head to produce a variable length of paper feed.

5. In a printing press, the combination of a printing couple, a paper feeding mechanism, and actuating connections therefor, comprising a ratchet wheel, two pawl carrying arms pivoted concentrically therewith, a crank-actuated cross-head, a link connecting each arm with the cross-head, said links being arranged on opposite sides of the center of the ratchet-wheel, means for adjusting the throw of the crank which actuates the cross-head to vary the length of the paper feed, and an adjustable connection between one of the pawl carrying arms and its link to provide for finer adjustments of the paper feed.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

FRANCIS MEISEL.

Witnesses:

JOHN QUINN,

A. G. WHITTEMORE.