

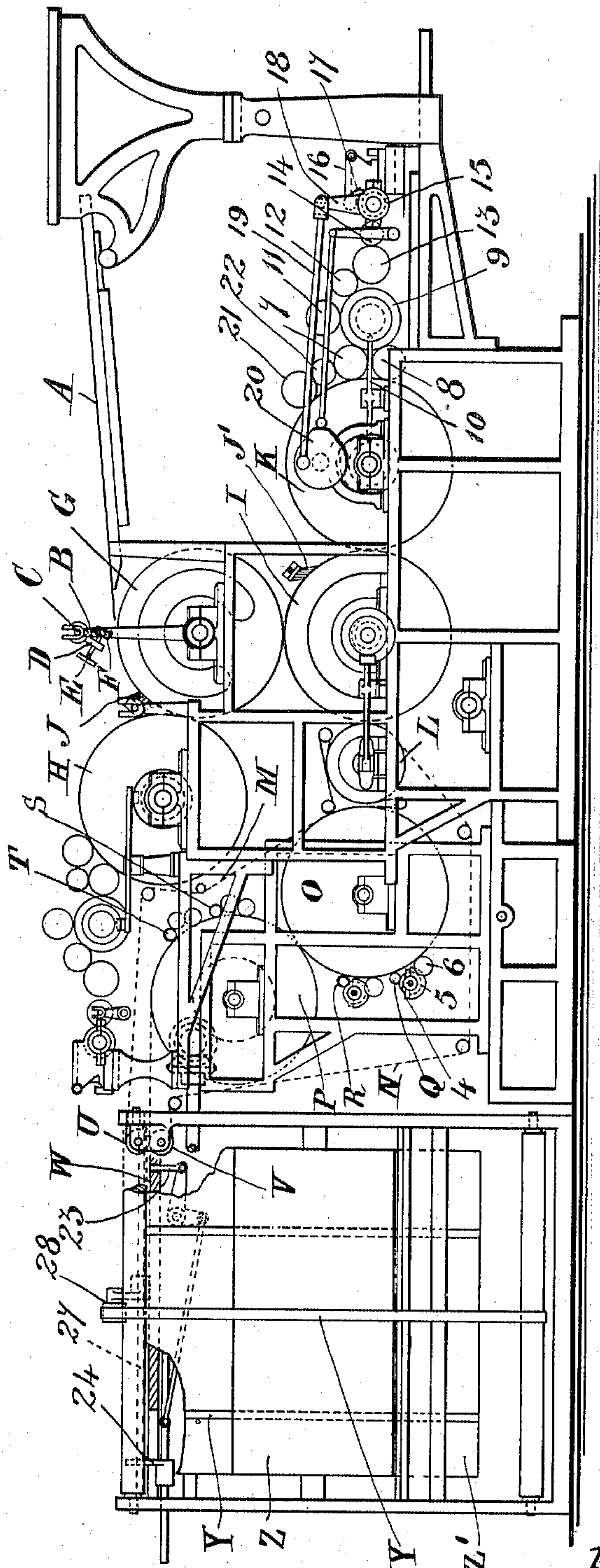
W. PANTER.  
 PRINTING AND RULING MACHINE.  
 APPLICATION FILED FEB. 29, 1908.

951,696.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses  
 Mac Payne  
 M. K. Freeman

Inventor  
 William Panter  
 By Cernon E. Hodges  
 his atty.

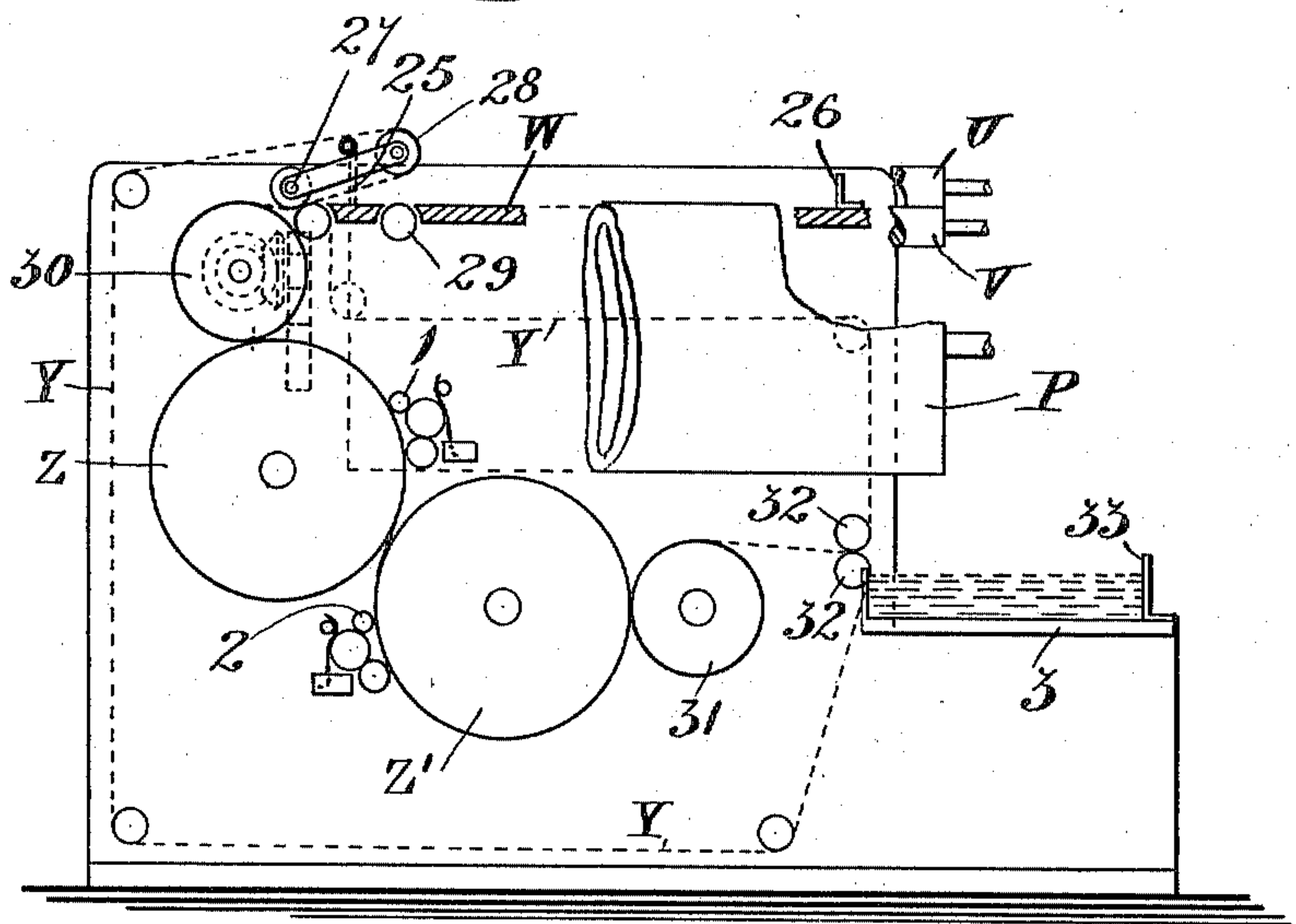
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2 SHEETS—SHEET 2.

*Fig. 2.*



Witnesses

Mar Payne

M. K. Freeman

Inventor

William Panter

By Vernon E. Rogers  
 his Atty.



# UNITED STATES PATENT OFFICE.

WILLIAM PANTER, OF BECKENHAM, ENGLAND, ASSIGNOR TO THE DUPLEX PRINTING AND RULING MACHINE COMPANY, LIMITED, OF LONDON, ENGLAND.

PRINTING AND RULING MACHINE.

951,696.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed February 29, 1908. Serial No. 413,541.

*To all whom it may concern:*

Be it known that I, WILLIAM PANTER, a subject of the King of Great Britain, residing at 56 Lennard road, Beckenham, Kent, England, have invented certain new and useful Improvements in Printing and Ruling Machines, of which the following is a specification.

The object of this invention is to construct a machine to rule in the vertical and horizontal direction, and print on both sides of a sheet of paper at one operation sheets of paper any width or length up to full size, and particularly for such jobs as have figures or words which must fall exactly on or between the ruled lines. Work of this character in the ordinary way is first ruled on a ruling machine and afterward printed on a printing machine, and if there be any variation in either ruling or printing, the paper is spoiled. With my machine any variation in the laying of the sheets does not affect the register as the ruling must always follow the printing.

To enable my invention to be clearly understood, I append hereto two sheets of drawings.

Figure 1. is a longitudinal elevation of my improved machine. Fig. 2. an end elevation of the portion to rule horizontal lines.

I will first proceed to describe the arrangements by which the sheets are conducted through the machine and delivered, and then the mechanism.

The sheets of paper to be printed are placed upon the table A, the operator feeding the sheets in turn to the front lay marks B, which are fastened to the shaft C by means of set screws. To enable the front marks B to be easily adjusted, I fix a lever D on the shaft C, the end of the said lever being drilled, tapped, and fitted with an adjusting screw E; when the front lay marks B are in position for laying down the sheet, the point of the adjusting screw E rests against the stop F and by regulating the screw E, the front lay marks B may be quickly advanced or set back as desired. The impression cylinder G is fitted with a set of grippers (which grippers being a well known method of conducting sheets through printing machines, I have not shown). The sheet after being laid to the front lay marks B by the operator, is seized by the grippers on the impression cylinder

G, the front lay marks B moving away at the same instant to clear the sheet by means of a cam fixed on to the cylinder G, which acts on the laymark shaft C by means of a lever and runner. The sheet is carried forward by the grippers on the cylinder G, under the smoothing brush J, and receives an impression on one side between the type cylinder H and the impression cylinder G. As the grippers on the impression cylinder G come opposite the grippers on the impression cylinder I, the sheet is transferred to the grippers on the impression cylinder I and by them carried forward passing under the smoothing brush J' and receiving another impression between the type cylinder K and the impression cylinder I, this second impression being on the reverse side of the sheet. As the grippers on the impression cylinder I come opposite the grippers on the carrying drum L, the sheet is transferred to the grippers on the carrying drum L, and is by them led forward and discharged into a double set of tapes M and N, these tapes M, N, carry it forward around the ruling drums O and P, each side of the sheet being alternately presented and passing between the ruling disks Q, R, S, T. The sheet now being printed and ruled on both sides, is carried by the endless tapes M, N, between the rollers U, V, and discharged by these rollers onto the table W, on which it is automatically adjusted by suitable mechanism. The sheet is then gripped by a pair of rollers placed at right angles to the printing machine, and conducted by tapes Y around ruling drums Z, Z', and against ruling disks 1, 2, which rule lines on both sides of the sheet at right angles to those already ruled, the sheet being afterward delivered on to a table 3, the whole operation being affected in one passage through the combined machine.

I will now describe the method whereby I apply ink to the ruling disks Q, R, S, T. I do not confine myself to the use of six sets of these ruling devices, but two sets to each ruling cylinder would be generally sufficient. Each set being an exact counterpart of the others, it is only necessary to describe one set. A set consists of the brass ruling disks Q, which are arranged on a spindle with suitable spacing pieces, any suitable number of which may be employed. The ruling disks are adjusted to



run in contact with the periphery of the ruling cylinder O, and also in contact with that of the rubber clothed ductor roller 4, which roller is mounted in bearings, on the ink trough 5. The ruling disks are automatically lifted at any given point, as in some cases a portion only of the sheet requires to be ruled. On the ductor roller 4 a toothed wheel is fixed, which engages with another wheel 6, running free on a stud. The wheel 6 gears into one fixed on the ruling cylinder O, from whence the set is driven. The number of teeth in these wheels is such as imparts to the ruling disks Q a surface speed identical with the surface speed of the ruling cylinder O. The ordinary ruling disks Q, R, S, T, are employed, the disks being automatically lifted at any given point when a portion only of the sheet requires to be ruled.

The inking arrangements for supplying ink to the type cylinder K are as follows: Two large composition clothed rollers 7 and 8 of the type generally used for inking the forms in all printing machines, are adjusted to run in contact with the printing surface of the cylinder K, and also with the periphery of the inking drum 9. A lateral reciprocating movement is imparted to the ink drum 9, by a lever 10, which lever is actuated by a cam groove in a disk mounted on the cylinder K. A clothed composition roller 11 similar to 7 and 8, rests on the ink drum 9, and is for the better distribution of the ink. A similar clothed roller 12 supplies ink from the small ink drum 13, to the large ink drum 9. The vibrating roller 14 supplies the ink from the ductor roller 15, the ductor 16 being too well known to require special description. The ductor roller 15 receives an intermittent motion by means of the ratchet 17 (working into a ratchet wheel on the end of the ductor roller) the ratchet lever 18, the connecting rod 19, and an eccentric pin in the face of the cam 20. This cam 20 also imparts a vibrating motion to the roller 14. In addition to the direct feed rollers 7 and 8, I also employ a third form roller 21, which receives its supply of ink from the form roller 7, by means of the intermediate roller 22. The inking for cylinder H is similar.

When the sheet on the table W and the tail end of the sheet is clear of the back stops 23, the said stops automatically pass upward through holes provided in the table W and the front stops 24 move forward and push the sheet up to the back stop 23. An automatic side gage 25, Fig. 2, packs the sheet up to an adjustable side gage 26, and

thus each of the sheets in turn are compelled to lay in the same position on the table W. The shaft 27 (the axis of which is at right angles with the axes of the printing cylinders and preceding portion of the machine, but parallel with the vertical ruling cylinders and remaining portion of the machine) carries a lever with the loose roller 28, which automatically drops on the driven roller 29 situated underneath the sheet, a gap being provided in the table W for the roller 29. The sheet now being gripped between the rollers 28 and 29 is carried forward into the tapes or cords Y Y. I do not confine myself to this method of conveying the sheets to the cross ruling apparatus as a cylinder fitted with gripping fingers or pneumatic suction (both of which are well known devices for seizing sheets of paper) would answer the purpose. The tapes or cords Y Y, convey the sheet around the turning roller 30 and conduct it through the ruling devices which rule one side of the sheet vertically on the ruling drum Z and the other side on the ruling drum Z', from whence it passes around the roller 31, and is delivered by the rollers 32, 32, into the delivery box 33 on the table 3.

What I do claim and desire to secure by Letters Patent is:—

1. A printing machine comprising a feed table, printing cylinders and ruling disks mounted adjacent the feed table, a receiving or adjusting table for adjusting the papers, a slidable stop extending through one end of said table, and an adjusting stop extending through the opposite end, ruling disks mounted below the table, and means for conveying the paper from the table to the ruling disks.

2. A printing machine comprising a feed table, printing and ruling mechanism for printing and ruling on both sides of the paper, a receiving or adjusting table, adjustable stops extending through the table for adjusting the paper, ruling disks mounted below the table at right angles to the first mentioned printing cylinders and ruling disks for ruling on both sides of the paper, endless cords or tapes for conveying the paper in contact with the ruling disks, and rollers journaled upon the table for conveying the paper to the endless cords or tape.

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

WILLIAM PANTER.

Witnesses:

PERCY E. MATTOCKS,  
HUGH HUGHES.