

H. G. LIEBENTHAL.
 DUPLICATING MACHINE.
 APPLICATION FILED OCT. 11, 1912.

1,048,551.

Patented Dec. 31, 1912.

FIG. I.

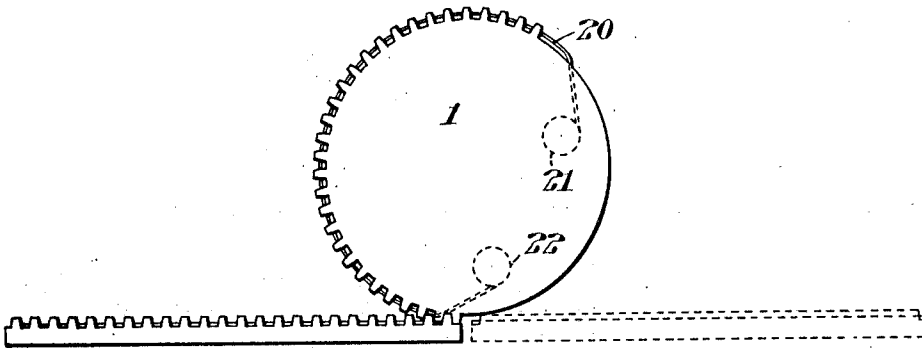


FIG. II.

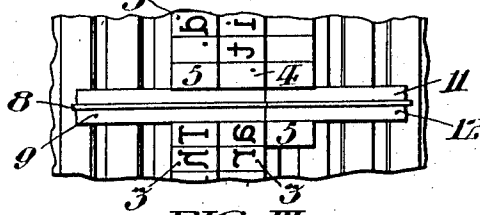


FIG. III.

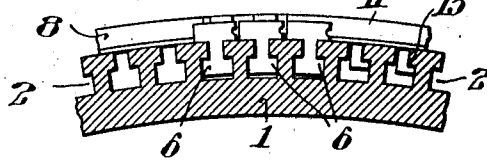


FIG. IV.



FIG. V.

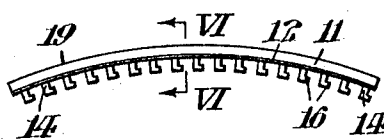
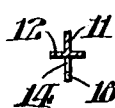


FIG. VI.



WITNESSES:
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 James M. Coby.

INVENTOR:
 Herman G. Liebsenthal,
 by Arthur E. Rapp,
 Attorney.

UNITED STATES PATENT OFFICE.

HERMAN G. LIEBENTHAL, OF PHILADELPHIA, PENNSYLVANIA.

DUPLICATING-MACHINE.

1,048,551.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed October 11, 1912. Serial No. 725,145.

To all whom it may concern:

Be it known that I, HERMAN G. LIEBENTHAL, of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Duplicating-Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My improvement is particularly applicable to printing machines of the type known commercially as the "Multigraph" comprising a rotary printing cylinder having a series of undercut channels in its perimeter extending parallel with its axis to receive complementary shaped flanged type which said cylinder presents in opposition to the other member of the printing couple. As ordinarily constructed, the only means with which such a machine is provided for printing lines at right angles to the lines of letter type consists of type fitted to the channels and having dash faces. Consequently, a series of such separate type must be used to print a line of greater extent than the dash carried by the face of a single type, and, unless said line type are accurately set and provided with means to hold them in alignment they print a broken line instead of the continuous line desired.

Therefore, it is the object of my invention to provide such a machine with means to present a continuous printing face to print lines at right angles to the lines of words, and, as hereinafter described, such means includes a rule strip curved to fit circumferentially upon said printing cylinder and preferably having means fitting in said undercut channels thereof adapted to retain it in set position.

My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings: Figure I is a side elevation of a rotary printing cylinder and a reciprocatory plane platen, such as are employed in a machine of the type specified. Fig. II is a fragmentary plan view of a portion of said cylinder with letter type and rule strips set therein. Fig. III is an end view of the elements shown in Fig. II. Fig. IV is a detached view of a complete rule strip such as shown at the left hand side of Figs. II and III, but on a smaller scale. Fig. V is a detached view of a complete rule strip such as shown at the right hand side of Figs. II and III, but on a smaller

scale. Fig. VI is a sectional view of said strip taken on the line VI, VI, in Fig. V.

In said drawings; the rotary printing cylinder 1, has the undercut channels 2, extending in its perimeter parallel with its axis, and, each type 3, 4, and 5, is provided with flanges 6, complementary to and fitted in said channels. The rule strip 8 being curved to fit the circumference of said cylinder 1 is held thereon between said type merely by frictional engagement of its flanges 9 therewith; said type being clamped together in the direction of the length of the lines of words by any suitable means. However, the rule strip 11 which is likewise curved to fit the circumference of said cylinder 1 and provided with flanges 12 for engagement between said type, is also provided with lugs 14 which fit in said undercut channels 2 so as to be retained by the overlapping ledges 15 engaging the flanges 16 on said lugs; so that said strip 11 may be retained on the cylinder independently of said type. It may be observed that the flanges 9 and 12 of said strips 8 and 11, which extend in contact with the circumference of said cylinder 1 support the printing edges 18 and 19 of said strips 8 and 11 in a plane at right angles to the perimeter of said cylinder 1 so as to insure the rectitude of the lines printed by said strips. I find it convenient to make the rule strips above described, by rolling them from brass or other suitable metal with the respective flanges 9 and 12 thereof straight and then curving said strips to fit said cylinder, by another rolling operation. However, it is to be understood that said strip may be otherwise manufactured, for instance, they may be cast of ordinary type metal or other suitable material.

When the type have been assembled in said cylinder 1 in the desired relation the inked ribbon 20 is drawn over the type faces and secured by connection with the rollers 21 and 22 which are mounted in said cylinder as indicated in Fig. I, so that when a sheet of paper is interposed between the platen and said cylinder and the latter turned until the platen is shifted to the position shown in dotted lines in Fig. I, said sheet is imprinted with an impression made from said type and rule strips through said inked ribbon.

I do not desire to limit myself to the precise details of construction and arrangement

above described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended
5 claims.

I claim:—

1. In a duplicating machine, the combination with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, held between said flanged type, having supporting flanges extending laterally upon opposite sides of said printing surface and bearing upon said drum, and, lugs on said rule strip fitted in said channels and having flanges engaged by the overhanging ledges in said channels.

2. In a duplicating machine, the combination with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, held between said flanged type, having supporting flanges extending laterally upon opposite sides of said printing surface and bearing upon said drum, and, lugs on said rule strip fitted in said channels.

3. In a duplicating machine, the combination with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, held between said flanged type, and having supporting flanges extending laterally upon opposite sides of said printing surface and bearing upon said drum.

4. In a duplicating machine, the combination

with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, held between said flanged type, and having a supporting flange extending laterally and bearing upon said drum.

5. In a duplicating machine, the combination with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, held between said flanged type, having lugs fitted in said channels and having flanges engaged by the overhanging ledges in said channels.

6. In a duplicating machine, the combination with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, held between said flanged type, and having lugs fitted in said channels.

7. In a duplicating machine, the combination with a rotary printing drum having a plurality of undercut channels in its periphery, of type having flanges fitted in said channels; and, a rule strip having a printing surface curved in concentric relation with said drum, having means connecting it with said drum independently of said type.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania this tenth day of October, 1912.

HERMAN G. LIEBENTHAL.

Witnesses:

ARTHUR E. PAIGE,
ANNA ISRAELVITZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."