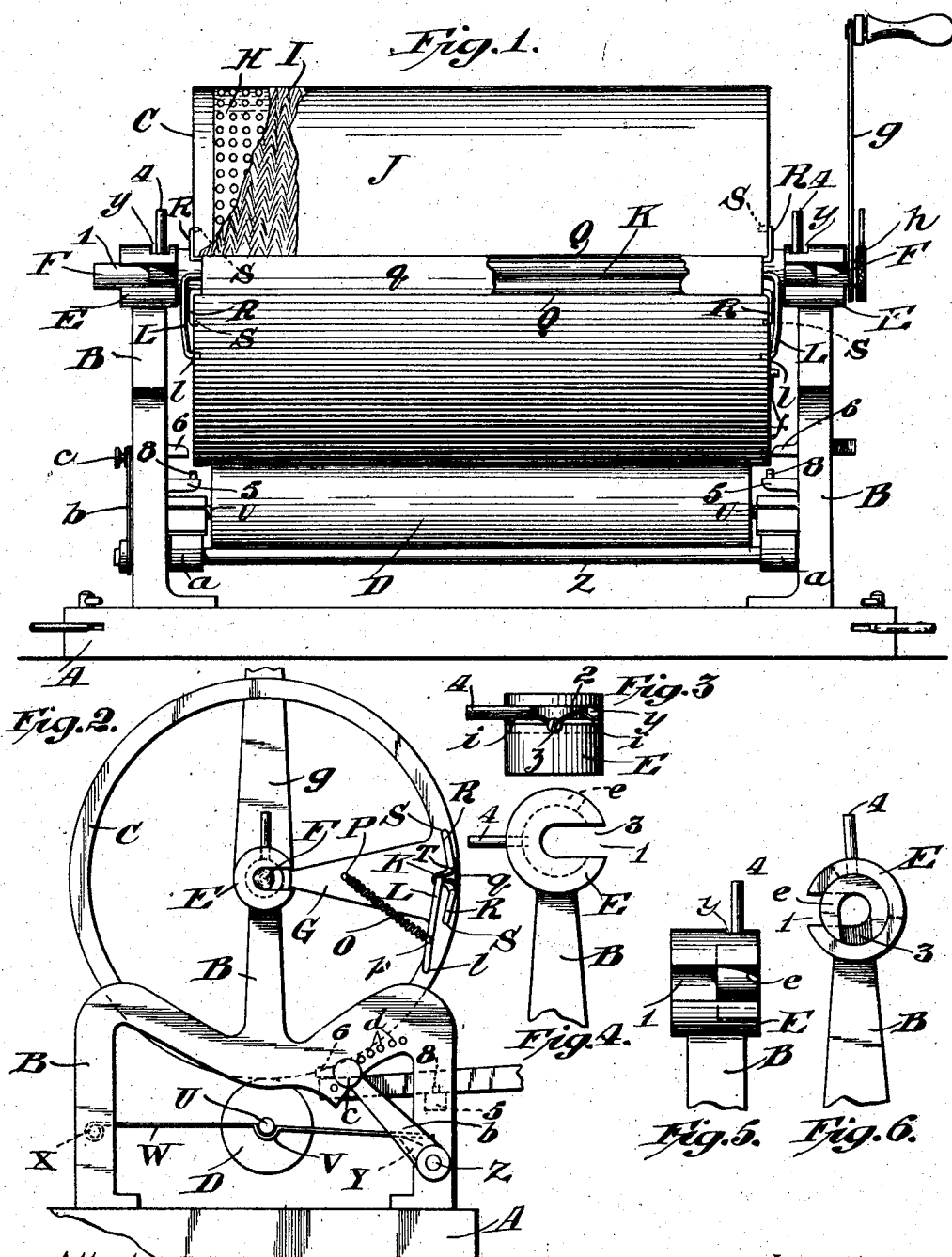


No. 833,854.

PATENTED OCT. 23, 1906.

J. STEEL.
 ROTARY DUPLICATOR.
 APPLICATION FILED JAN. 27, 1908.



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UNITED STATES PATENT OFFICE.

JAMES STEEL, OF LITTLE FALLS, NEW JERSEY.

ROTARY DUPLICATOR.

No. 833,854.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed January 27, 1906. Serial No. 298,144.

To all whom it may concern:

Be is known that I, JAMES STEEL, a citizen of the United States, and a resident of Little Falls, Passaic county, State of New Jersey, have invented certain new and useful Improvements in Rotary Duplicators, of which the following is a specification accompanied by drawings.

This invention relates to stencil-printing machines, more particularly to a machine in the form of a rotary duplicator; and the objects of the invention are to improve upon the construction of such machines, increase their efficiency with simplicity of parts which are not liable to get out of order, and enable the parts to be more readily adjusted than heretofore.

Another object of the invention is to improve upon the means for securing the pad or screen and the stencil-sheet upon the stencil-printing drum so that one may be secured upon the drum or moved therefrom without interfering with the other.

According to this invention also the entire drum may be readily removed from its bearings and placed therein without interfering with the remaining parts of the machine.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of a stencil-printing machine in the form of a rotary duplicator for carrying out the above objects embodying the features of construction, combinations of elements, and arrangement of parts having the general mode of operation substantially as hereinafter fully described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is a front elevation of a machine embodying the invention, partly broken away. Fig. 2 is an elevation of one end of the machine; and Figs. 3, 4, 5, and 6 are enlarged detail views of the drum-bearings.

Referring to the drawings, A represents the base of the machine, and B the frames or standards which support the stencil-printing drum C and the pressure-roller D, which co-operates with the drum. In this instance the drum comprises the trunnions F, operating in the bearings E, and the heads or ends G, connected by the perforated diaphragm or body portion H, upon which the pad or screen I and the stencil-sheet J are suitably secured, while the ink is applied to the interior of the drum in the usual manner.

As shown in the drawings, a slot K extends

longitudinally of the drum, and a longitudinal rod *g*, in this instance shown triangular, is made to substantially fill the top of the slot K, said rod being held in position by another rod L, which passes longitudinally through the triangular rod *g*. The rod L is preferably bent in the shape of a hook at both ends, which are to fit in holes *l* in the frame C. The triangular-shaped rod *g* and the bent rod L are held in the longitudinal slot K by means of the springs O, connected to the pins P on the heads G of the drum and to the pins *p* on the bent rod L. The rods *g* and L are for holding the stencil-sheet in position on the drum. The rod L, carrying the rod *g*, can be moved out of the slot K and revolved about the pivots at *l* until it comes in contact with the pin *f* in the frame C. The rod L is then held open by the spring O, thus allowing the stencil-sheet to be put on or removed. After the stencil-sheet has been put on and the rods put in place, as shown in the drawings, it will be noticed that the periphery of the drum is smooth and uniform and that the opening of the longitudinal slot in the drum has been substantially covered by the rod *g*.

In order to hold the screen or pad on the drum, spring-clips Q are provided, extending longitudinally of the face of the drum and suitably secured at each end to the heads G. According to this construction the means for securing the pad to the drum are independent of the stencil-sheet-securing means, so that one does not interfere with the other. The spring-clips Q are slightly curved in their normal position and provided with hooked ends R, which enter the holes S on the heads of the drum, whereby the clips are held on the drum. Preferably the shoulders or corners of the slot K are hollowed, as at T, in order to accommodate and hold the spring-clips Q.

According to the construction described, the ends of the pad I are first inserted under the spring-clips Q, and then the stencil-sheet J is placed upon the drum and the ends thereof secured under the longitudinal rod L, the rod *g* substantially filling the longitudinal slot K, so that the drum will pass uniformly over the pressure-roller D. The roller D is suitably carried in an adjustable bearing, so that its distance to and from the drum may be varied, and the pressure between the roller and the drum may also be varied. As shown, the roller D is provided with trunnions U, which bear in sockets V

on the rods W, pivoted at X on the frames B and bearing at their other ends upon the fingers Y, carried by the longitudinal rod Z, pivoted at each end at *a* in the frames B. At one end of the rod Z is secured an arm *b*, having a pin *c* at its outer end, adapted to cooperate with the apertures *d* on one of the frames B, so that the angular position of the arm *b* may be adjusted vertically to press the roller D more or less strongly against the drum C.

The trunnions F on the drum C are removably supported on the frame B by means of a bearing or outer sleeve E, said sleeve having a slot 1 at its side, into which the trunnions F are placed. Inside the outer sleeve E is an inner locking-sleeve *e*, provided with a slot 3. To the inner sleeve is attached a short operating-lever 4, a slot *y* being made in the upper part of the outer sleeve for the operation of the lever 4.

Fig. 4 shows the inner locking-sleeve *e* in a position to receive the trunnion F of the drum, both slots 1 and 3 being coincident.

Figs. 5 and 6 show the inner locking-sleeve *e* closed and locking the trunnion.

In Fig. 3, which represents a top view of the bearing, a small spring 2 is shown in the slot *y*, said spring being fastened at its center by the screw *z*, the outer ends of the spring being curved, as at *i*, so as to hold the lever 4 at its extreme positions.

The crank *g* is fastened to one of the trunnions F of the drum C by means of the screw *h*.

On the inside of the frame B are two lugs 5 and 6, attached thereto for the purpose of supporting the end of a board or table on the rotary duplicator.

The board or table is held in place by pins 8 on the lugs 5, which fit into holes on the bottom of the board or table 7, as shown in Fig. 2. The board or table so placed affords a suitable guide for the paper as it is fed between the drum and the pressure-roll.

The construction of the bearings of the trunnions above described can be varied without departing from the general mode of operation.

Obviously some features of this invention may be used without others, and the invention may be embodied in widely-varying forms.

Therefore, without limiting the invention to the devices shown and described and without enumerating equivalents, I claim, and desire to obtain by Letters Patent, the following:

1. In a rotary duplicator, the combination with the drum, of means for securing the pad and stencil-sheet thereto, said means being pivotally secured at the ends to the heads of the drum, and means connected to said securing means for making a substantially continuous surface on the drum.

2. In a rotary duplicator, the combination with the drum, of means for securing the pad and stencil-sheet in a longitudinal slot on the drum, means for substantially filling the longitudinal slot and means for holding said securing means in operative and inoperative positions.

3. In a rotary duplicator, the combination with a drum of longitudinally-extending elastic means independent of each other for securing the pad or screen and the stencil-sheet respectively to the drum, and means for holding both of said elastic means in an operative and inoperative position.

4. In a rotary duplicator, the combination with a drum, of longitudinally-extending elastic means for securing the stencil-sheet thereto, and means for holding said elastic means in an operative and inoperative position.

5. In a rotary duplicator, the combination with a drum, of means for securing the ends of the pad thereto, and means independent of said first-named means for securing the stencil-sheet thereto and for covering said securing means, said securing means being pivotally secured at their ends to the heads of the drum.

6. In a rotary duplicator, the combination with a drum, of devices for securing the ends of the pad or screen thereto and pivoted at the ends to the heads of the drum, means independent of said pad-securing devices extending continuously across the drum for securing the ends of the stencil-sheet thereto, means for holding said pad and stencil-sheet securing devices in an operative and inoperative position, and means for substantially covering the securing devices on the periphery of the drum.

7. In a rotary duplicator, the combination with a drum, of spring-clips extending longitudinally thereof and pivoted at the ends to the heads of the drum for securing the ends of the pad or screen thereto, means independent of said clips extending continuously across the drum for securing the ends of the stencil-sheet thereto, and means for substantially covering the securing devices on the periphery of the drum.

8. In a rotary duplicator, the combination with a drum, of longitudinally-extending elastic means independent of each other for securing the pad or screen and the stencil-sheet respectively to the drum, said means being pivoted at the ends to the heads of the drum, and means for substantially covering the securing devices on the periphery of the drum.

9. In a rotary duplicator, the combination with a drum, of a longitudinal slot in the periphery thereof, spring-clips arranged at the corners of said slot for holding the pad or screen on the drum, and a spring-pressed rod lying in said slot for holding the ends of the

stencil-sheet to maintain the sheet on the drum and means for substantially covering the securing devices on the periphery of the drum.

5 10. In a rotary duplicator, the combination with a drum, of a longitudinal slot in the periphery thereof, means arranged at the sides of said slot for holding the pad or screen on the drum and a rod in said slot for holding
10 the ends of the stencil-sheet to maintain the sheet on the drum, means for holding said pad and stencil-sheet securing means in an operative and inoperative position, and means for substantially covering the securing
15 devices on the periphery of the drum.

11. In a rotary duplicator, the combina-

tion with a drum, of a longitudinal slot in the periphery thereof, two separate means independent of each other for securing the pad or screen and the stencil-sheet respectively in
20 the said slot, means for holding said pad and stencil-sheet securing means in an operative and inoperative position, and means for substantially covering the securing devices on
25 the periphery of the drum.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES STEEL.

Witnesses:

C. W. MATCHES,
B. A. STANLEY.