No. 750,863. PATENTED FEB. 2, 1904.

A. D. KLABER.

DUPLICATING MACHINE.

APPLICATION FILED JULY 8, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

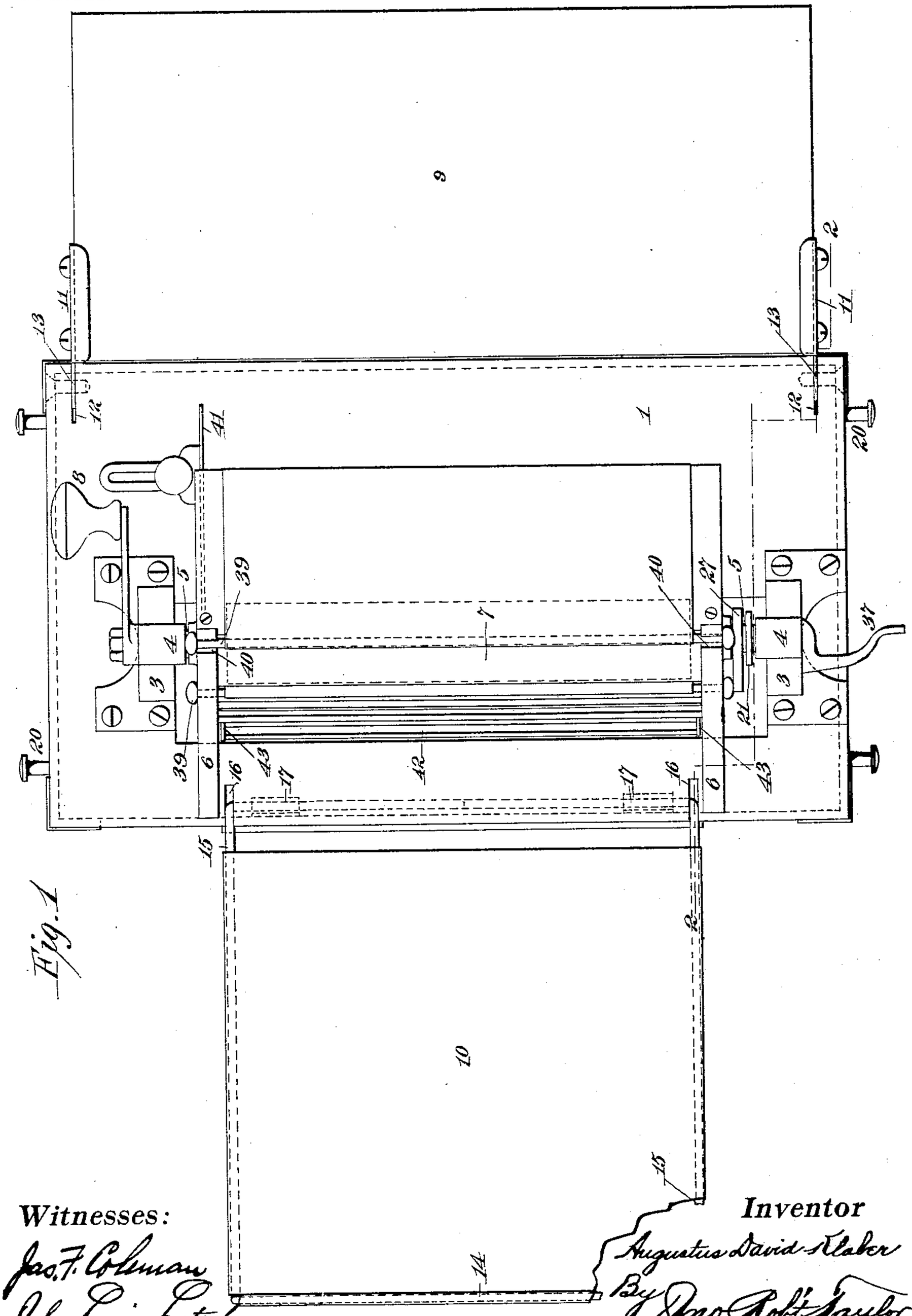

Fig. 1.

Witnesses:
Jas. F. Coleman
John Louis Lotsch,

Inventor
Augustus David Klaber
By Jno. Robt. Taylor
Att'y.

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NO MODEL. 3 SHEETS—SHEET 2.

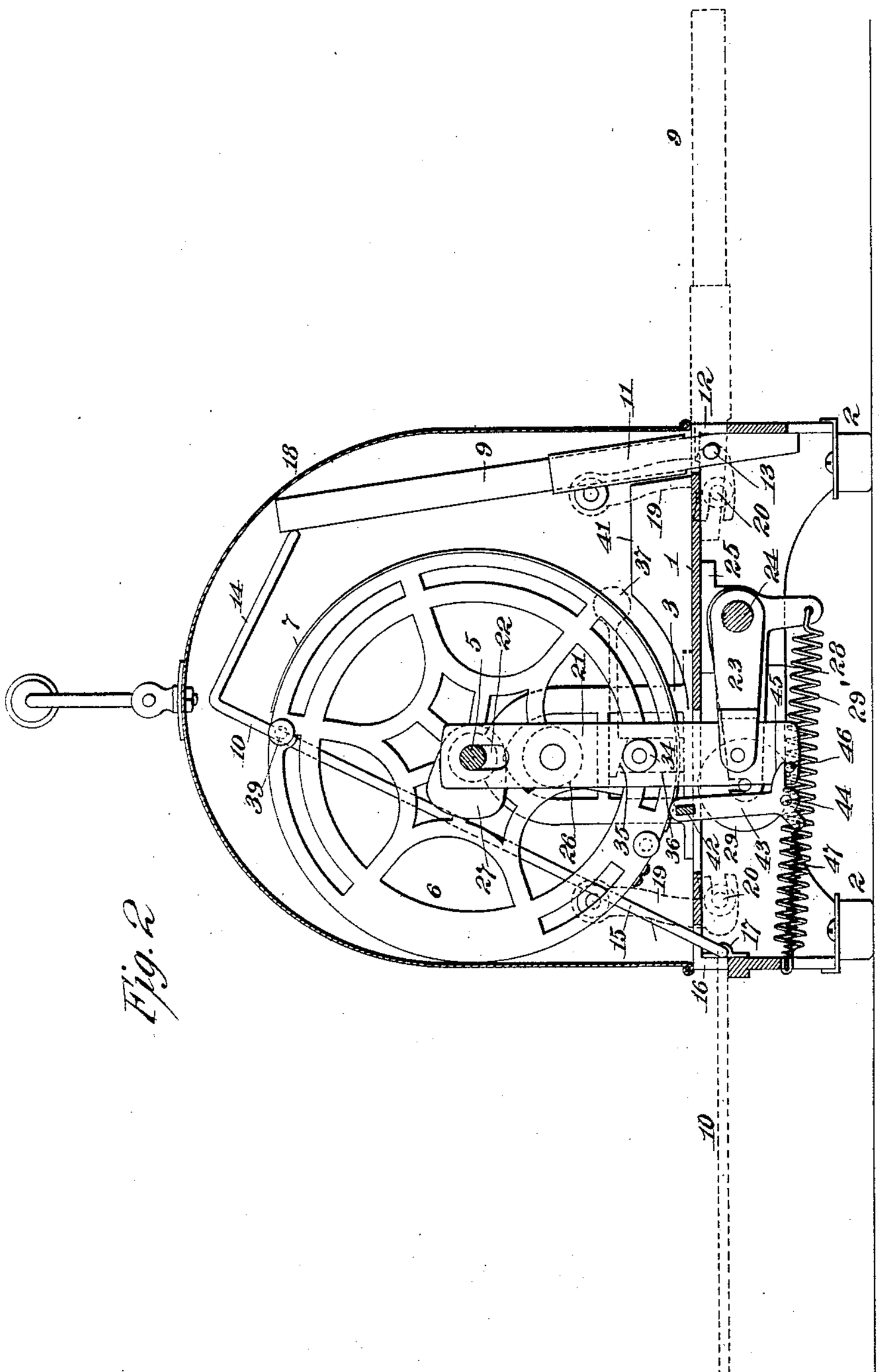

Fig. 2

Witnesses:

Jas. F. Coleman

John Louis Lotsch

Inventor

Augustus David Klaber

By Jno. Robt Taylor

Att'y.

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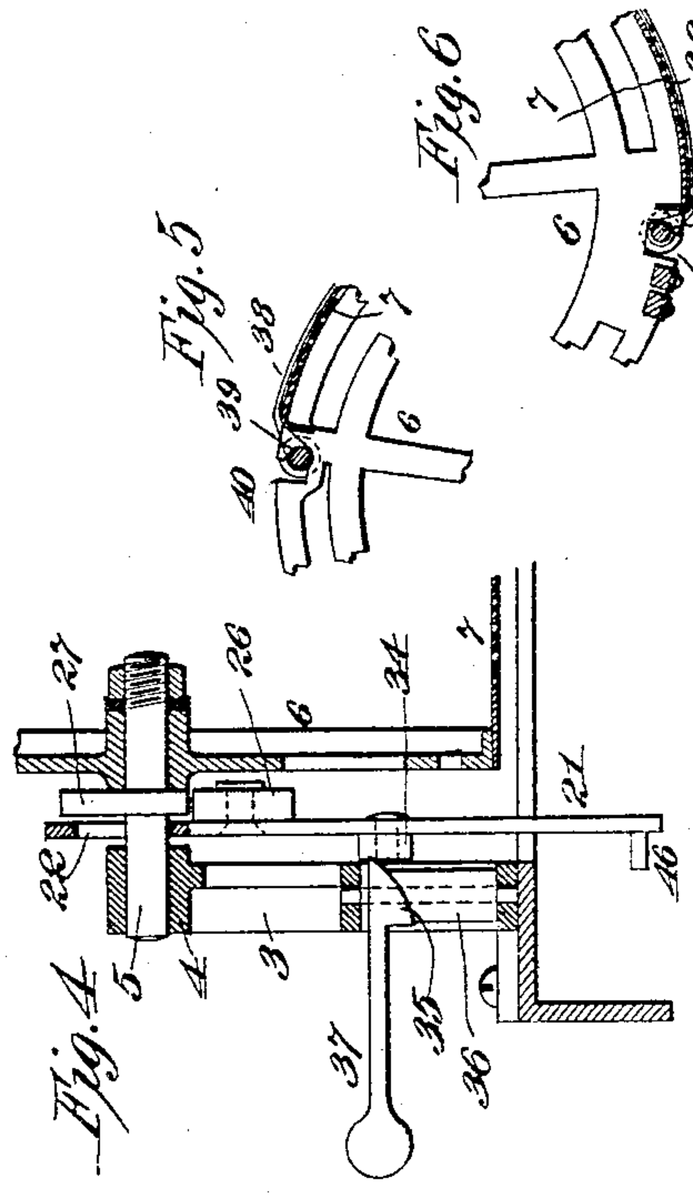
NO MODEL. 3 SHEETS—SHEET 3.



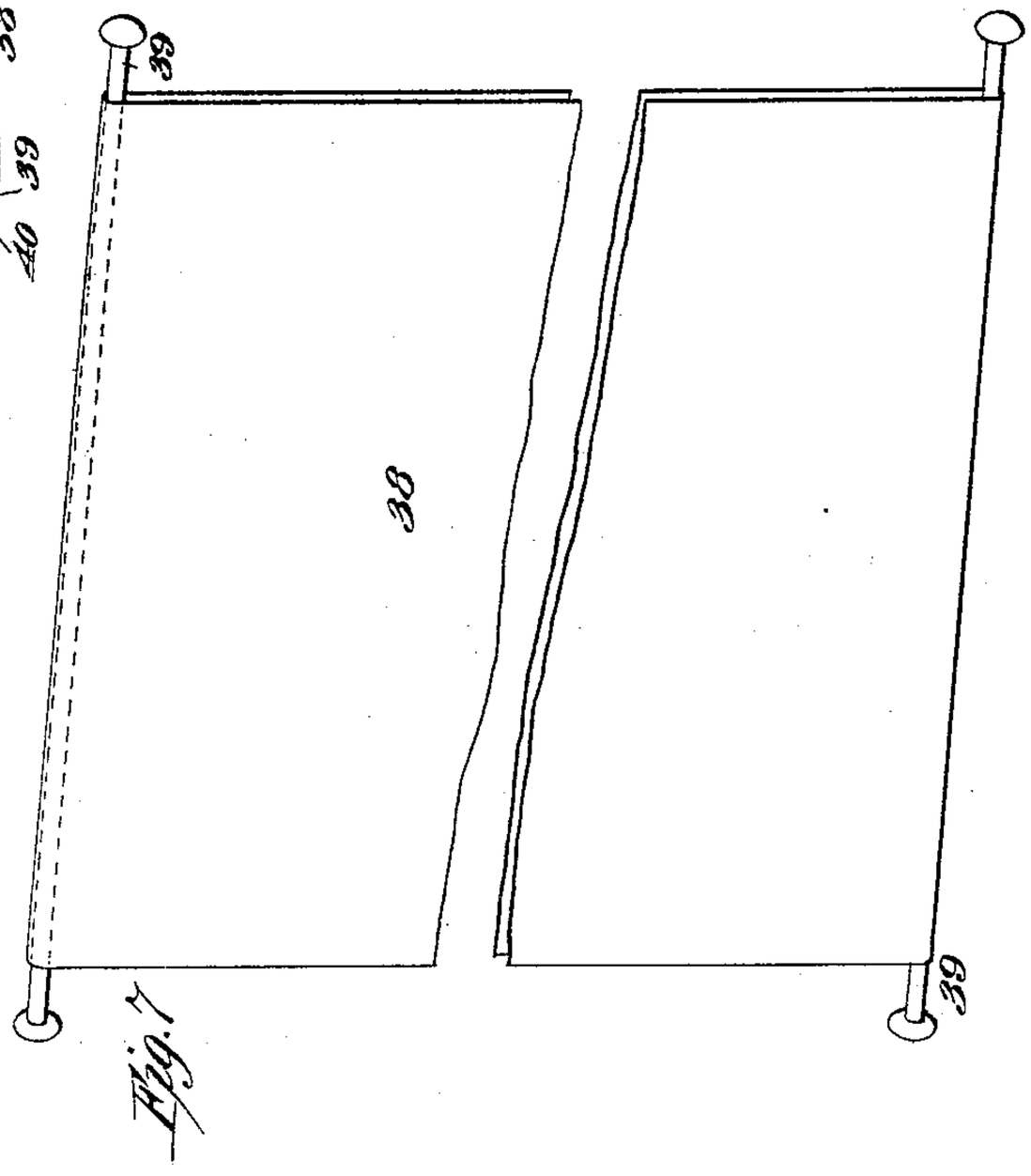


Fig. 7

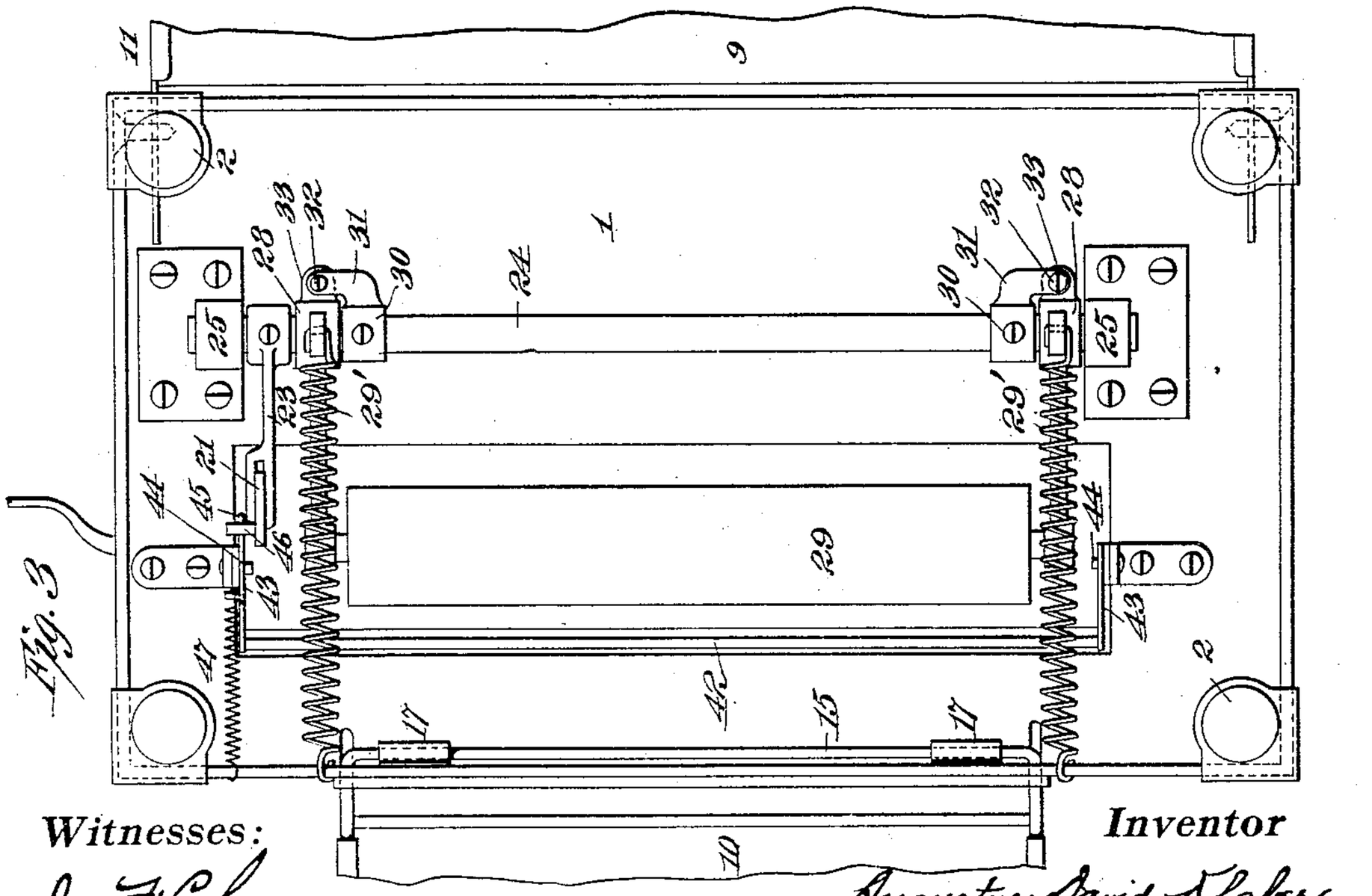


Fig. 3

Witnesses:

Jas. F. Coleman

John Louis Lotsch.

Inventor

Augustus David Klaber

By Jno. Robt Taylor

Att'y.

No. 750,863. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

AUGUSTUS DAVID KLABER, OF LONDON, ENGLAND, ASSIGNOR TO A. B. DICK COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DUPLICATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 750,863, dated February 2, 1904.

Application filed July 8, 1902. Serial No. 114,749. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS DAVID KLABER, a subject of the King of Great Britain, residing at London, England, have invented a certain new and useful Improvement in Duplicating-Machines, of which the following is a description.

My invention relates to improvements in rotary duplicating-machines employing typewritten or autographic stencils; and my object generally is to improve the construction and operation of these devices.

The present improvements relate especially to a novel arrangement of the supporting-platform for the sheets to be printed and the receiving-tray for the printed sheets, whereby such devices may be moved out of their normal position so as to closely coöperate with the stencil-carrier to thereby permit the employment of a single inclosing casing covering all the parts, by means of which the device may be transported.

The improvements also relate to details for the pivotal mounting of said platform and receiving-tray.

The improvements further relate to the employment of a paper-stop, against which the sheets to be printed are brought to properly aline them, said stop coöperating with the impression-roller so as to be automatically brought into position above the roller to aline the sheet after the stencil has left the impression-roller and subsequent to the downward movement of the impression-roller, assuming the latter to be possessed of that function, and said stop being automatically withdrawn from its alining position immediately preceding the engagement of the stencil with the sheet to be printed, to thereby permit the latter to move longitudinally in its printing operation.

The invention relates, further, to details of construction coöperating with the oscillating frame of a movable impression-roller and by means of which the paper-alining stop will be caused to partake of the automatic movements referred to.

The invention relates, further, to improvements in the devices for supporting, operating, and adjusting the impression-roller, as well as in further details of construction and operation, all as will be more fully hereinafter described and claimed.

In order that the invention may be better understood, attention is directed to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a plan view of my improved stencil-printing machine with the cover removed and with the paper-supporting platform and paper-receiving tray extended; Fig. 2, a section on the line 2 2 of Fig. 1 with the platform and tray folded up, illustrating the normal position of these parts in dotted lines; Fig. 3, a bottom plan view of the base of the machine, illustrating particularly the support for the impression-roller; Fig. 4, a detail view of the cam-lever for locking the impression-roller downwardly when the machine is out of use to thereby prevent the impression-roller from flattening against the stencil-carrier; Figs. 5 and 6, detail views illustrating the connection between the pad and stencil-carrier, over which pad the stencil is secured; and Fig. 7, a detail perspective view illustrating the pad and supporting-bars therefor.

In all of the above views corresponding parts are represented by similar numerals.

The base 1 is made, preferably, of cast metal, so as to be light and strong, and is provided on its supporting-feet with rubber pads 2. Secured to the top of the base 1 are pedestals 3, carrying bearing-boxes 4. Mounted in these bearing-boxes are stub-shafts 5, to which are secured the skeleton disk-like heads 6 of the stencil-carrier, said heads being connected by a foraminated segment 7, to which the stencil is secured. One of the stub-shafts 5 is provided with a handle 8, by which the stencil-carrier may be turned, said handle being located within the plane of the base 1, as shown, so as to be received within the cover when applied. Pivoted to the base 1, at one side, is the platform 9 for receiving the pile of sheets which are to be successively printed upon, and pivoted to its other side is a tray 10 for receiving the printed sheets. In practice the platform 9 is made of wood and the tray 10 of sheet metal; but obviously this is im-

material. The platform is carried by bracket-arms 11, working in slots 12 in the base 1 and mounted on pivots 13. When the platform is in its normal position, the inner ends of the bracket-arms 11 engage the under side of the top of the base, and when the platform is swung upwardly these ends engage the inner side of the end wall of the base, as shown. The tray 10 is formed with a substantially vertical end 14, and said tray is carried on a wire frame 15, which extends along its sides as well as along the sides and top of the vertical end 14 thereof. The frame 15 passes through slots 16 in the base 1 and is received within clips 17, so as to permit the tray to be swung upwardly from the position shown in dotted lines, Fig. 2, to the position shown in full lines. When the tray and platform are moved to the position shown in full lines, Fig. 2, a cover 18 may be applied to inclose all the parts, said cover being held in place by means of latches 19 (see dotted lines, Fig. 2) engaging over pins 20 on the base 1.

Located between one of the disks 6 of the stencil-carrier and the adjacent pedestal 3 is a reciprocating bar 21, formed with a vertical slot 22 near its upper edge, which straddles one of the stub-shafts 5. This bar is connected near its lower end with an arm 23, secured to a rock-shaft 24, mounted in bearings 25. (See Fig. 3.) The reciprocating bar 21 is provided with an antifriction-roller 26, with which a cam 27 on the stub-shaft 5 engages to depress said bar immediately after the stencil leaves the printed sheet and to permit the bar to again return immediately before the stencil engages the next succeeding sheet, as will be explained. The rock-shaft 24 carries a pair of arms 28 loosely thereon, said arms being provided with open bearings receiving the shaft of an elastic impression-roller 29, which works within an opening in the base 1 and periodically coöperates with the stencil-carrier or stencil. The arms are further provided with depending fingers, to which are attached coil-springs 29′, anchored to the base, which springs tend to hold the impression-roller in contact with the stencil-carrier, as will be understood. Adjacent to each of the arms 28 is a collar 30, secured to the rock-shaft 24, and each of said collars is provided with a lug 31, carrying an adjusting-screw 32, engaging a lug 33 on the bearing of each arm 28. By operating the adjusting-screws 32 the vertical position of the impression-roller can be adjusted with great delicacy, as will be understood. The reciprocating bar 21 is provided with an antifriction-roller 34, adapted to be engaged by a cam 35, carried by a sleeve 36, mounted on a vertical supporting-pin in the adjacent pedestal 3. This sleeve is provided with a lever 37, having a finger-piece at its end, by means of which the sleeve may be partially rotated. Normally the lever 37 extends outside of the plane of the base 1, as shown in Fig. 1, to thereby prevent the cover 18 from being applied in place. When, however, the lever 37 is swung inwardly to engage the cam 35 with the antifriction-roller 34, and thereby depress the bar 21, said lever will be located within the line of the base to thereby permit the cover to be applied in position. In this way I necessitate the withdrawal of the impression-roller from the stencil-carrier when the cover is to be applied, and thereby prevent the impression-roller from becoming flattened by reason of that engagement when the machine is out of use and its parts are covered.

As stated, the foraminated segment 7 of the stencil-carrier is covered by a pad to which the stencil is applied, and the present improvements also contemplate novel features of construction, so far as this pad is concerned and so far as relates also to its method of application. The pad comprises a preferably continuous belt of textile material 38, (see Fig. 7,) in which are received the headed bars or rods 39. These bars are engaged within recesses 40, Figs. 5 and 6, formed in the heads 6 of the stencil-carrier, the pad being placed under tension or stretched slightly in applying the bars in position. These recesses are also preferably formed with curved engaging faces to prevent the bars 39 from being accidentally displaced therefrom. The pad so constructed and arranged may be applied to the machine with great ease and convenience, it being only necessary to drop the rods 39 within the recesses 40, whereupon the tension will hold the pad in position. Additionally, where such pad is made in the form of a continuous belt longer life of the pad is secured, it being possible to vary the points at which the rods coact therewith. Ordinarily the machine is provided with an adjustable gage 41 for alining the side edges of the sheets to be printed, as is common in the art.

In order to limit the movement of the sheets to be printed, or, in other words, to properly aline the sheets previous to the engagement of the stencil therewith, I make use of a paper-alining stop 42, which is carried on arms 43, mounted on pivots 44 within the base 1. When the impression-roller 29 is in its downward position, this alining-stop occupies a position immediately over the impression-roller, so as to limit the movement of the sheet in the machine. When, however, the impression-roller is elevated to permit the stencil to engage the sheet, this stop is moved to the position shown in Figs. 1 and 3. This movement of the alining-stop is effected by providing an arm 45 as an extension to one of the levers 43, which arm is engaged by a pin 46 on the reciprocating bar 21. A spring 47 maintains the arm 45 in engagement with said pin. It will be seen that when the bar 21 is moved downwardly to lower the impression-roller the spring 47 will move the alining-stop toward the impression-roller to occupy a

position immediately above the same. When, however, the bar 21 is elevated, the pin 46 will engage the arm 45 to move the stop out of the line of travel of the paper, as above described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a stencil-printing machine, the combination with a base and rotary stencil-carrier, of a paper-receiving tray pivotally connected to said base and adapted to swing bodily upon its pivotal point to an operative position to coöperate with said stencil-carrier and to an inoperative position adjacent to said stencil-carrier, substantially as set forth.

2. In a stencil-printing machine, the combination with a base and rotary stencil-carrier, of a paper-receiving tray pivotally connected to the base and movable to a position within the side members of the stencil-carrier, substantially as and for the purposes set forth.

3. In a stencil-printing machine, the combination with a base and rotary stencil-carrier, of a paper-receiving platform and a paper-tray, both pivotally connected to the base and adapted to swing bodily upon their pivotal points to a position adjacent to said stencil-carrier, substantially as set forth.

4. In a stencil-printing machine, the combination with a base and rotary stencil-carrier, of a paper-platform pivotally connected to the base and movable to a position adjacent to the stencil-carrier, and means carried by the pivoted end of said platform for limiting the movement of said platform in either of its positions, substantially as set forth.

5. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a rock-shaft, means comprising an arm carried by said rock-shaft and coacting with a reciprocating bar actuated by said stencil-carrier for operating said rock-shaft from the stencil-carrier, a pair of arms carried by said rock-shaft, an impression-roller mounted in said arms, and means for adjusting the position of said arms with respect to the rock-shaft, substantially as and for the purposes set forth.

6. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a rock-shaft, an arm carried thereby and actuated by a connection with the stencil-carrier, a pair of arms carried by said rock-shaft, an impression-roller mounted in said arms, a collar secured to the rock-shaft adjacent to each of said arms, and an adjusting-screw carried by each of said collars and coöperating with the adjacent arm for adjusting the position of the latter with respect to the rock-shaft, substantially as set forth.

7. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a reciprocating bar, connections between the stencil-carrier and said bar, an impression-roller, connections between said impression-roller and said bar for moving the impression-roller toward and away from the stencil-carrier, a paper-alining stop movable toward and away from position above the impression-roller, and connections between said paper-alining stop and said bar for operating the former, substantially as and for the purposes set forth.

8. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a vertically-reciprocating bar, connections between said bar and said carrier, a paper-alining stop, a lever connected with said stop, and a pin on the reciprocating bar for engaging said lever, substantially as set forth.

9. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a vertically-reciprocating bar, connections between said bar and said carrier, a paper-alining stop, a lever connected with said stop, a pin on the reciprocating bar for engaging said lever, and a spring for engaging said lever with said pin, substantially as set forth.

10. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, a reciprocating bar, an impression-roller, connections between said bar and roller, and connections between the rotary stencil-carrier and said bar, of a vertically-mounted sleeve, a cam on said sleeve engaging the bar, and a lever on said sleeve for partially rotating the same, substantially as and for the purposes set forth.

11. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a pad in the form of a continuous belt applied to said carrier, substantially as set forth.

12. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a pad, and a pair of bars or rods loosely engaging with the ends of said pad and received in recesses in the stencil-carrier for holding said pad in position, substantially as set forth.

13. In a rotary stencil-printing machine, the combination with a rotary stencil-carrier, of a pad in the form of a continuous belt applied to said carrier, and a pair of bars or rods engaged within said pad and received in recesses in the stencil-carrier for holding the pad in position, substantially as set forth.

This specification signed and witnessed this 16th day of June, 1902.

AUGUSTUS DAVID KLABER.

Witnesses:

H. D. JAMESON,

F. L. RAND.