

No. 671,634.

Patented Apr. 9, 1901.

P. H. SAUNDERS.  
DUPLICATING MACHINE.

(Application filed Oct. 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

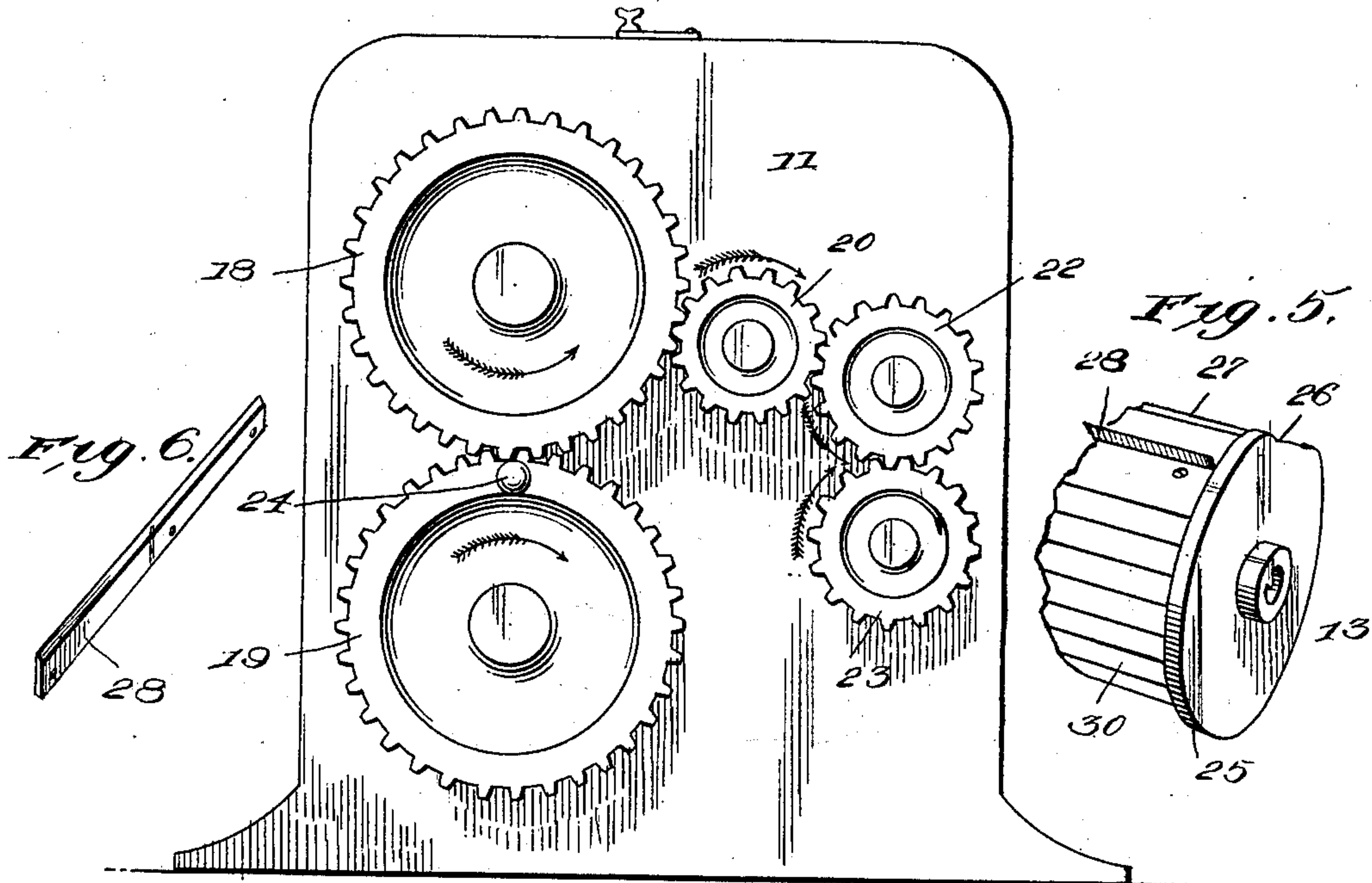


Fig. 2.

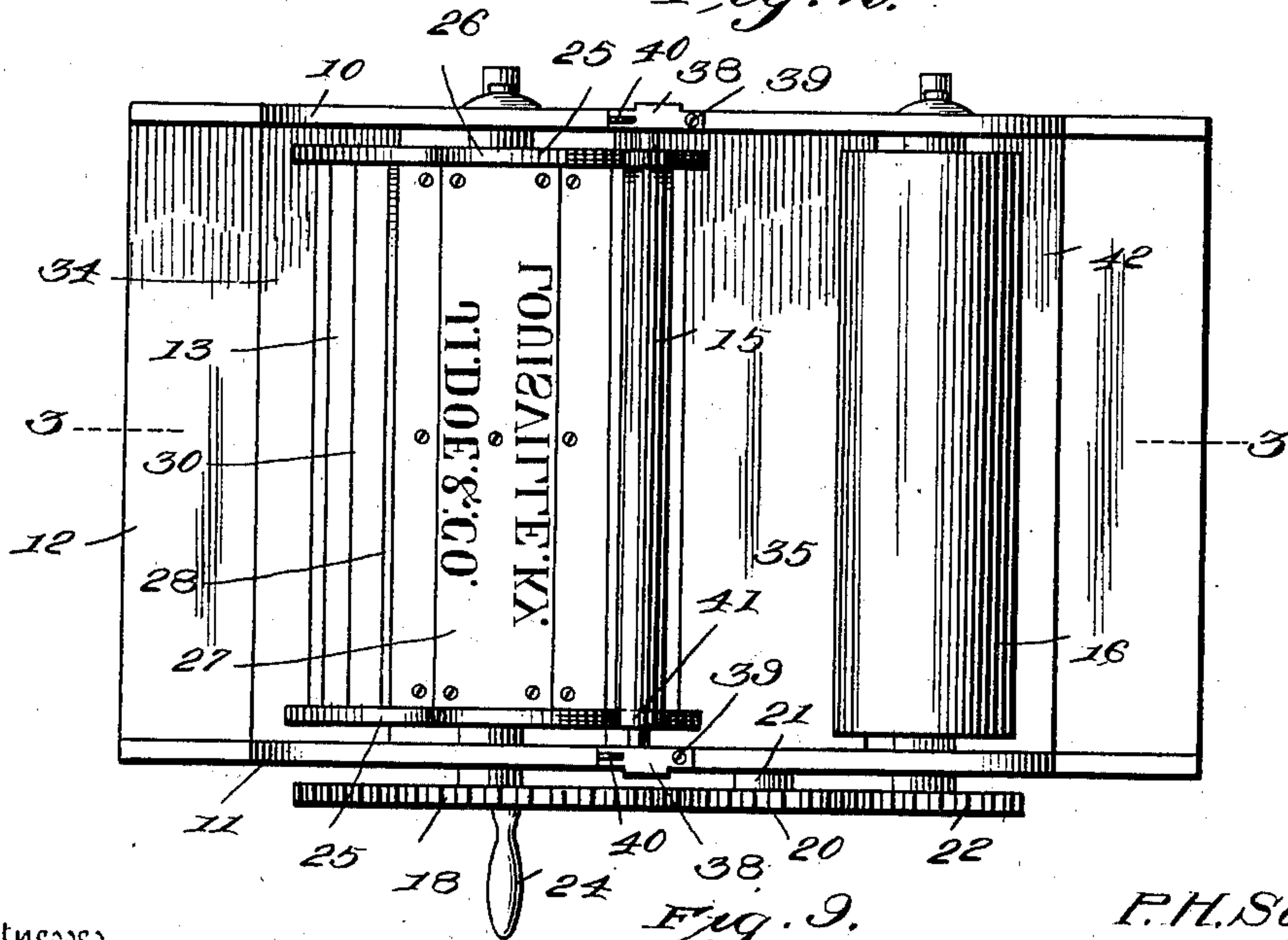
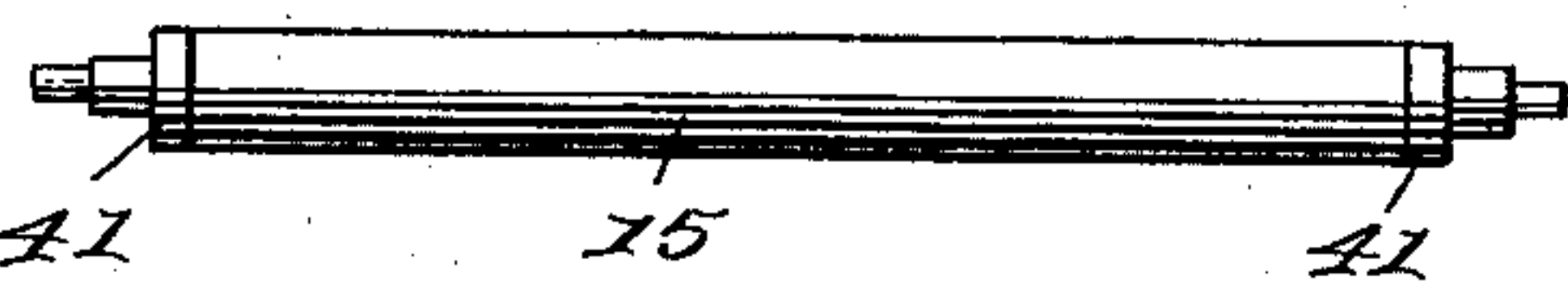


Fig. 3.



Witnesses

J. W. Kelly,  
Chas. Brock

Inventor  
P. H. Saunders,

by *Finch & Co.*  
Attorneys

No. 671,634.

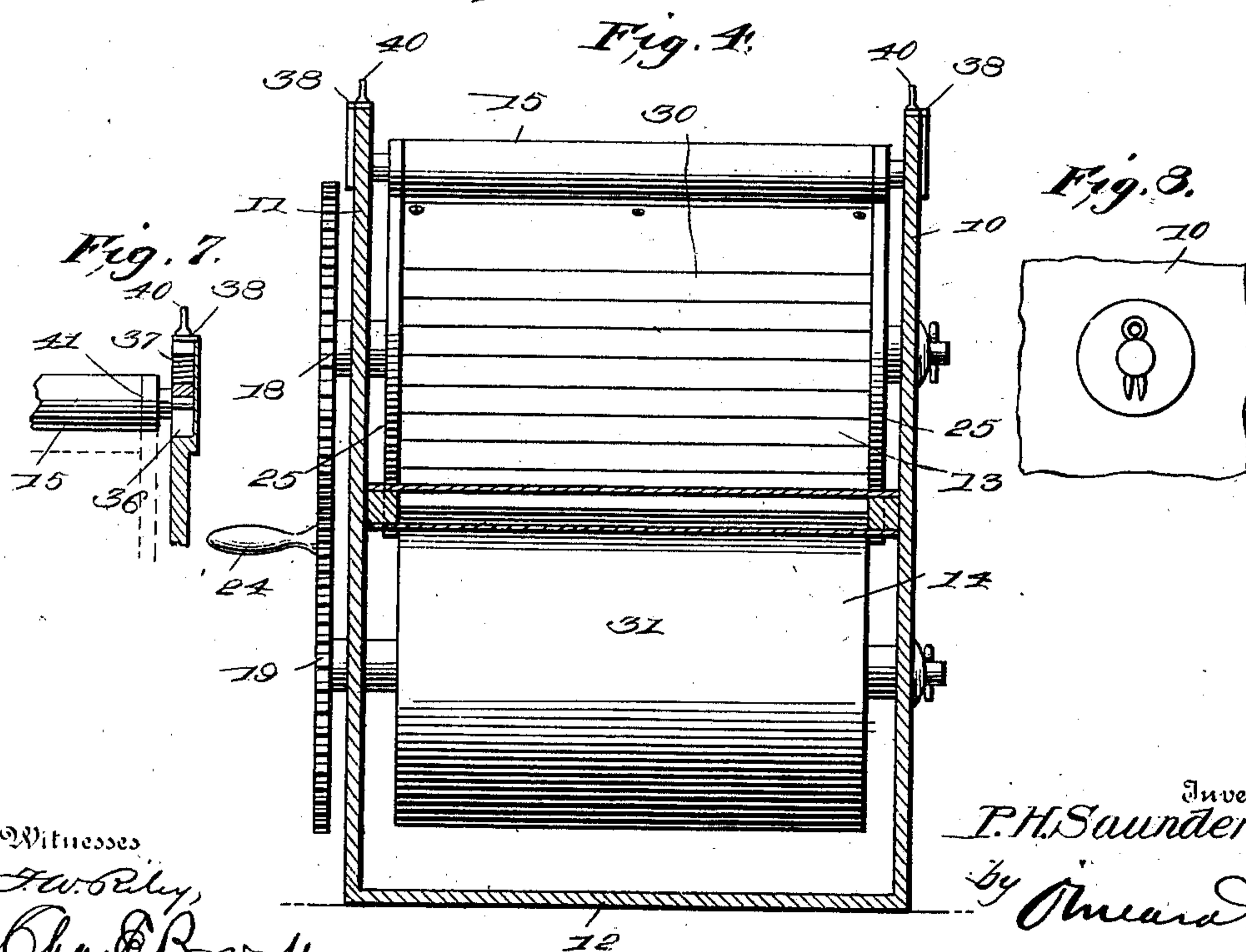
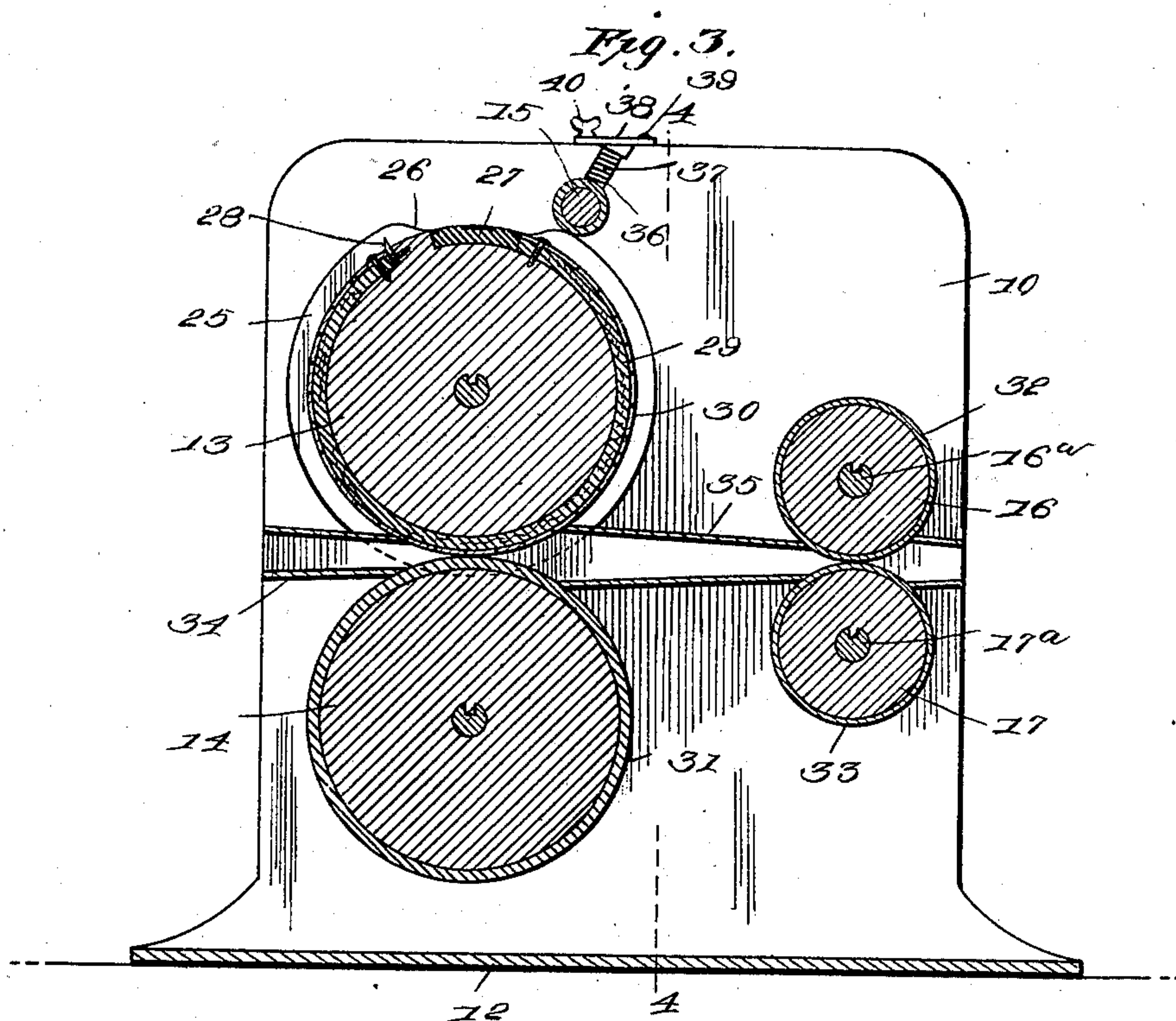
Patented Apr. 9, 1901.

P. H. SAUNDERS.  
DUPLICATING MACHINE.

(Application filed Oct. 21, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses  
H. W. Riley,  
Charles Brock

Inventor  
P. H. Saunders,  
by *Amundson*  
Attorneys



# UNITED STATES PATENT OFFICE.

PATRICK HAWES SAUNDERS, OF LOUISVILLE, KENTUCKY.

## DUPLICATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 671,634, dated April 9, 1901.

Application filed October 21, 1899. Serial No. 734,391. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK HAWES SAUNDERS, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Duplicating-Machine, of which the following is a specification.

My invention relates to means or apparatus for duplicating letters, circulars, &c., and more particularly to that class of such devices in which stencils, usually of wax-paper, are used. Such stencils made by type-writer, electric needle, and otherwise have long been used for such purposes, and the impression has usually been made by laying the stencil on a sheet of paper and passing an ink-roller over the top of it. It is also well known that rolls of paper or continuous strips have been printed at intervals by passing them through rolls carrying a type-form or an electrotpe.

It is the primary object of my invention to combine the processes named; and to that end my invention consists, broadly, in an apparatus in which are combined means for printing at intervals on a continuous strip of paper such matter as a heading for a letter and in its same passage through the machine to make an impression from a stencil between and alternating with the printed headings.

My invention further consists in various specific improvements in such an apparatus, as will be hereinafter fully described and afterward specifically pointed out in the appended claims.

In order that others skilled in the art to which my invention most nearly appertains may be able to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, in which—

Figure 1 is a view in side elevation of an apparatus constructed in accordance with my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical sectional view on the plane indicated by the broken lines 3 3 of Fig. 2. Fig. 4 is a vertical sectional view on the plane indicated by the broken lines 4 4 of Fig. 3 looking toward the left hand of said figure. Fig. 5 is a fragmentary detail perspective view showing one end of the printing-roll. Fig. 6 is a detail perspective view of the knife

detached. Fig. 7 is a detail view, partly in elevation and partly in section, of one bearing of the inking-roller. Fig. 8 is a view in elevation of part of the frame and one end of one of the rolls. Fig. 9 is a detail view in elevation of the inking-roll detached.

Like numerals are used to indicate the same parts wherever they appear in the several figures of the drawings.

Referring to the drawings by numerals, 10 and 11 indicate the two sides, and 12 the bottom, of the frame of the machine, which may be of any suitable material and design. In the sides are journaled the printing-roll 13, the impression-roll 14, the ink-roller 15, the absorbent or blotting roll 16, and the blotter impression-roll 17.

The printing-roll 13 and impression-roll 14 are in the same vertical plane and are driven in unison by means of gear-wheel 18 on roll 13 and gear-wheel 19 on roll 14. The gear-wheel 18 engages a gear-wheel 20 on a stub-shaft 21, which latter wheel engages a gear-wheel 22 on shaft 16, meshing with gear-wheel 23 on shaft 17. By means of this gearing when the gear-wheels are driven by a crank-handle 24 or by any suitable means or power the rolls 13 and 16 will be rotated in the same direction, as will also the rolls 14 and 17, the two upper rolls in direction opposite to that of the two lower rolls and all of the rolls at the same circumferential speed.

The roll 14 is of the same diameter as the roll 13, and the latter is provided with end annular flanges 25, cut away at 26, between which the former projects in order that the rolls may contact with each other.

In the periphery of the roll 13 is secured an electrotpe 27 of the letter-heading to be printed and a knife 28, while the rest of the roll is covered with an ink-pad 29, over which is secured the stencil 30.

The roll 14 is covered with rubber, as at 31, or with any suitable material to give a proper impression.

The roll 16 is covered with blotting-paper, as at 32, or with any other suitable absorbent material, while the roll 17, which is in the same vertical plane as roll 16, may be covered with rubber or other yielding material, as at 33.



Guide-plates 34 are placed in front of rolls 13 and 14 and guide-plates 35 between the pairs of rolls 13 and 14 and 16 and 17.

36 indicates open slots in the upper edge of the sides of the frame, in which the inking-roller 15 is journaled, the journals being normally pressed downward by springs 37, held in place by plates 38, pivoted on screws 39 in the upper edges of the frame and securable by thumb-screws 40.

The rolls 13, 14, 15, and 16, or any of them, may be provided with yielding bearings, if desired.

In the operation of the apparatus the electrotrope 27 is inked by the inking-roller, ring-flanges 41 at the ends of the inking-roller riding on the flanges 25 of the roll 13, whereby the roll is held off the stencil, the cut-away portion 26 of flanges 25 permitting the roller to contact with the electrotrope. A continuous strip of paper from a roll (not shown) located to the left of the apparatus, as illustrated in Figs. 1 and 3, is started through the space between plates 34 until the end is caught between rolls 13 and 14, when the rotation of the rolls will carry the strip through between plates 35 and rolls 16 and 17. As the strip passes between rolls 13 and 14 the heading will be printed by the electrotrope and the body of the letter or circular through the stencil and each length of strip for a letter or circular will be cut off by the knife 28, the end of the strip being caught between rolls 16 and 17 before the knife acts. The absorbent covering of roll 16 will take off any surplus of ink, thus drying the sheet and preventing "offsetting" as the sheets are passed between plates 42 upon any suitable shelf or other receptacle.

By means of my invention letter or circular heads may be printed on a continuous strip of paper, the body of the letter or circular stenciled thereon, and the proper lengths cut off as printed. The two impressions of heading and body may be in one color or they may be in different colors. All surplus ink is removed, and the operation may be much more rapidly

performed than is possible with any apparatus where each sheet must be separately handled. The cost of sheets printed by my apparatus will also be less than where the heading is first printed and the body matter stenciled on the printed sheets.

While I have illustrated and described an apparatus capable of performing all of the necessary functions for carrying out my invention, I desire it to be understood that I do not restrict myself to the exact constructions shown, as many changes might be made in the construction of the various parts of the device without departing from the spirit and scope of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a duplicating apparatus, the combination, with a support, of two pairs of rollers journaled therein, one of the rollers of one of the pairs being provided with a stereotype and a stencil, the peripheries of which are parts of the same circle, an inking-roller, means for moving it into contact with the stereotype and moving it beyond contact with the stencil, and means for rotating said rollers in unison, substantially as described.

2. In a duplicating apparatus, the combination, with a support, of two pairs of rollers journaled therein, one of the rollers of one pair being provided with a notched flange at each end, a stereotype upon the roller between the notches of the two flanges, a stencil upon one side of the stereotype and a cutter upon the other, the outer surface of the stereotype and the stencil forming part of the same circle, an inking-roller in position to engage with the stereotype and to be engaged by the flanges of said wheel and be held out of engagement with the stencil and guides for the rollers, substantially as described.

PATRICK HAWES SAUNDERS.

Witnesses:

W. B. FISHER,  
OSCAR CAMERER.