

D. GESTETNER.
STENCIL PRINTING MACHINE.

APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 1.

Fig:1.

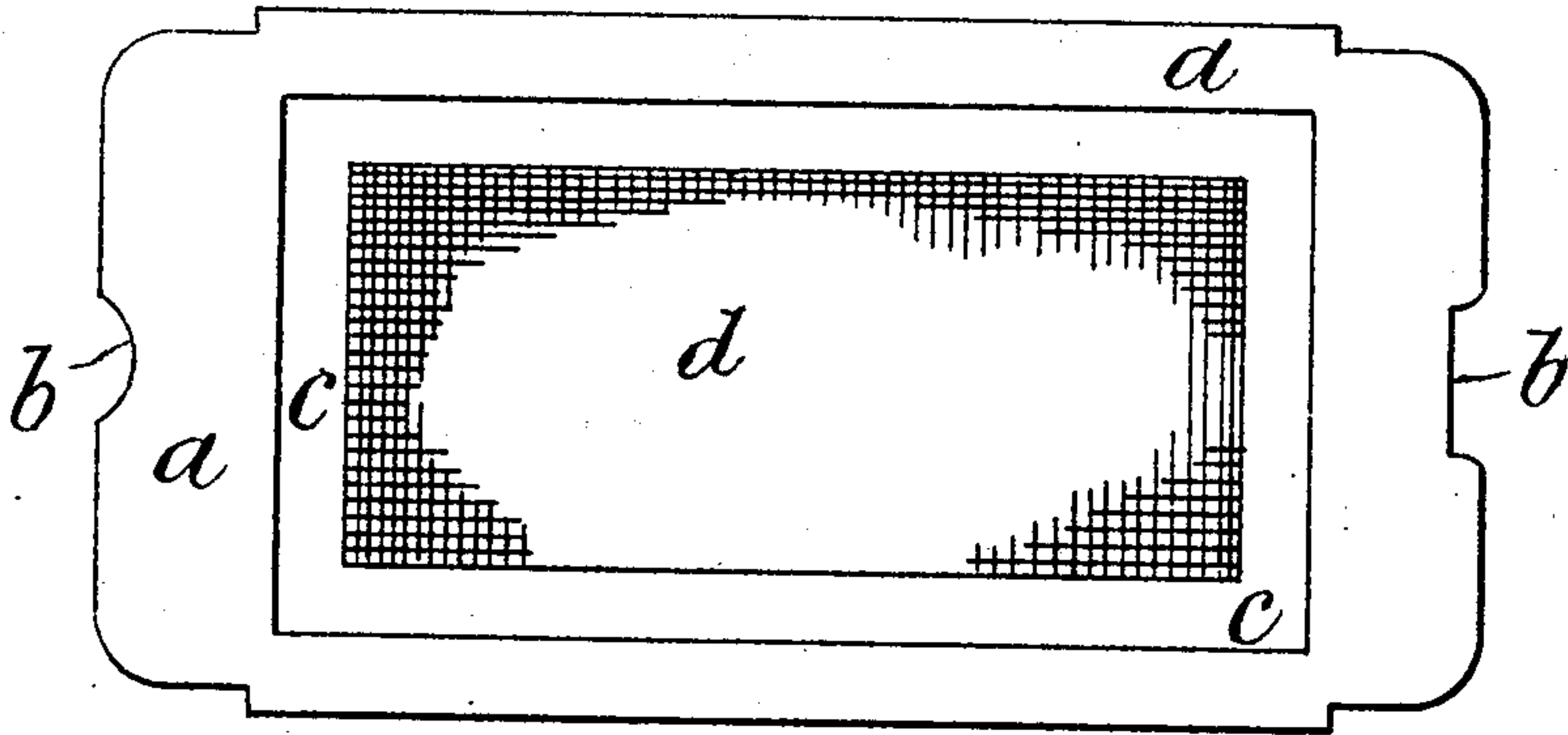


Fig:2.

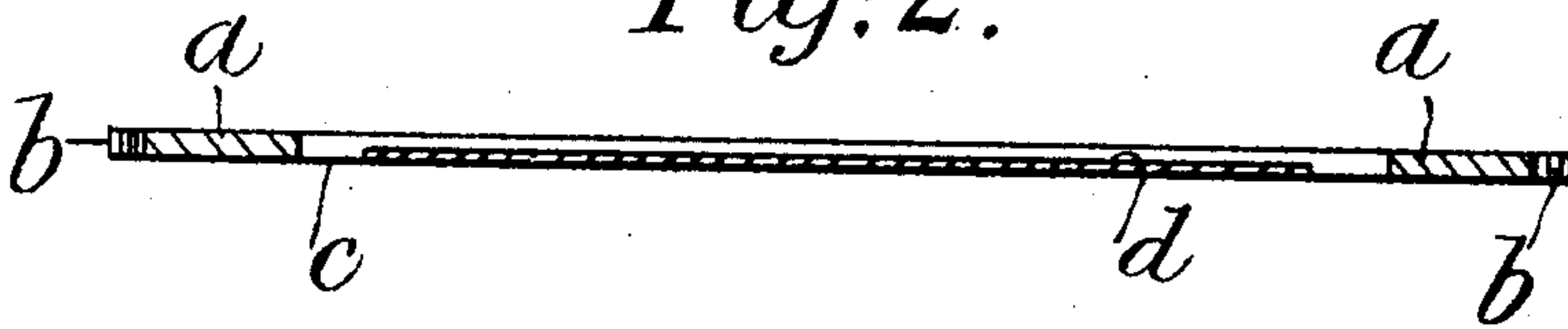


Fig:3.

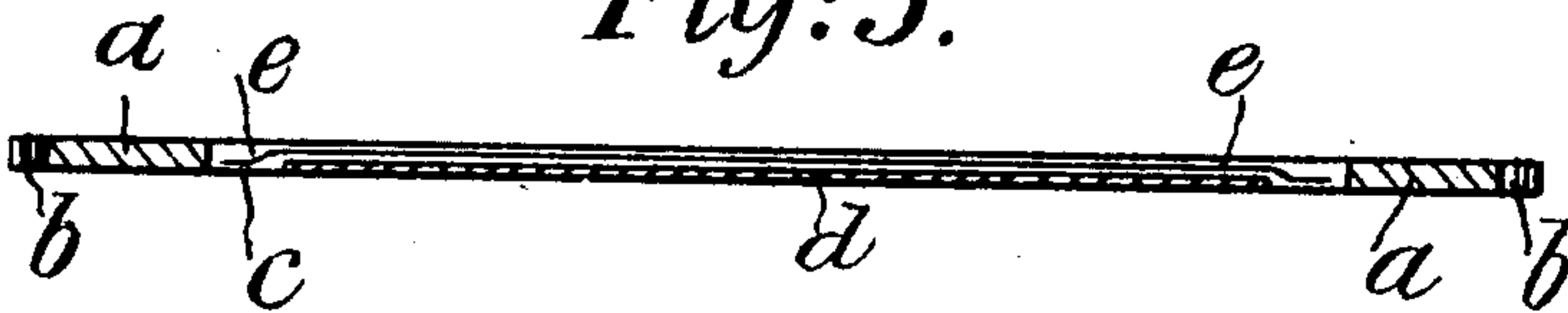
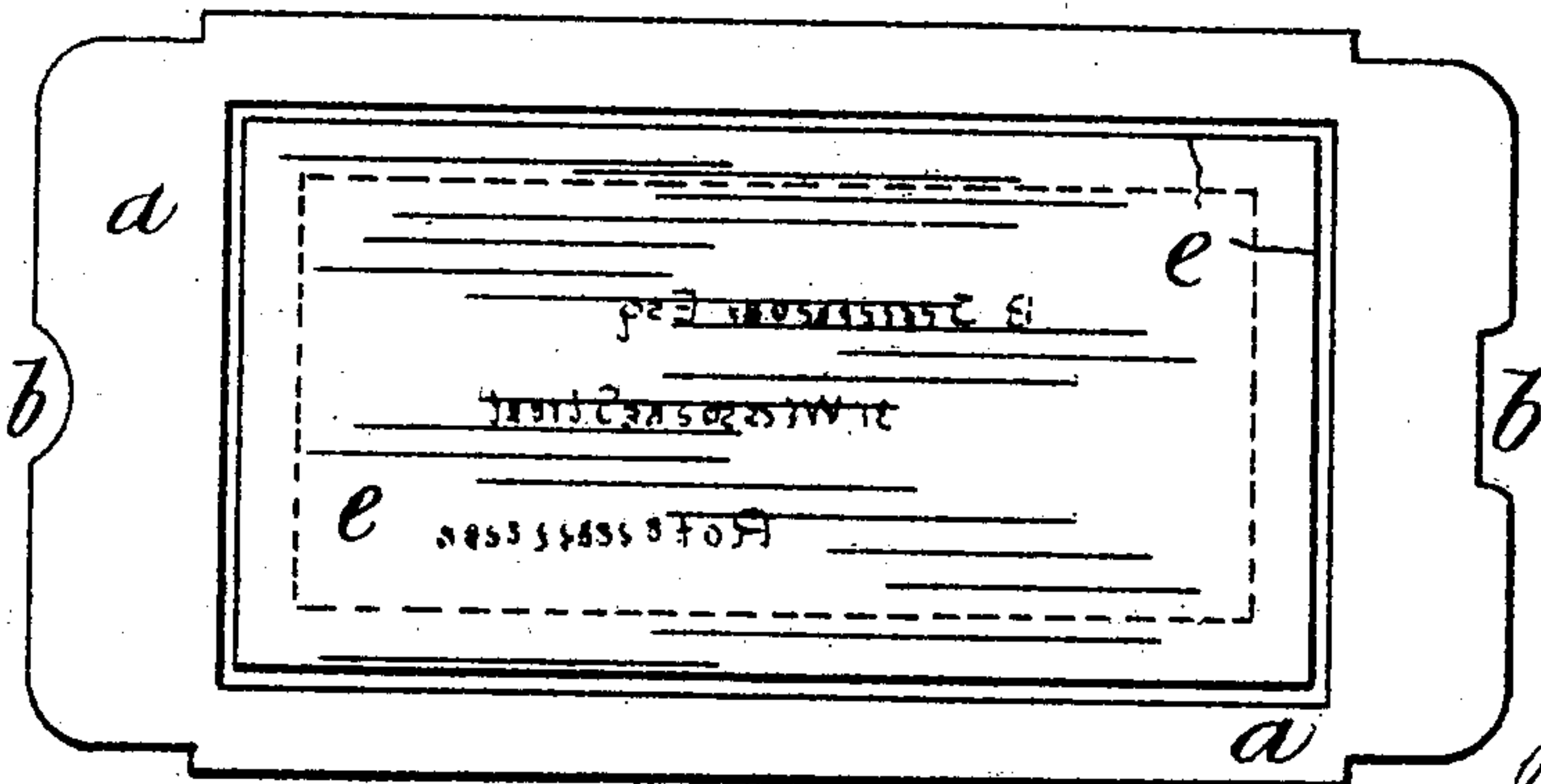


Fig:4.



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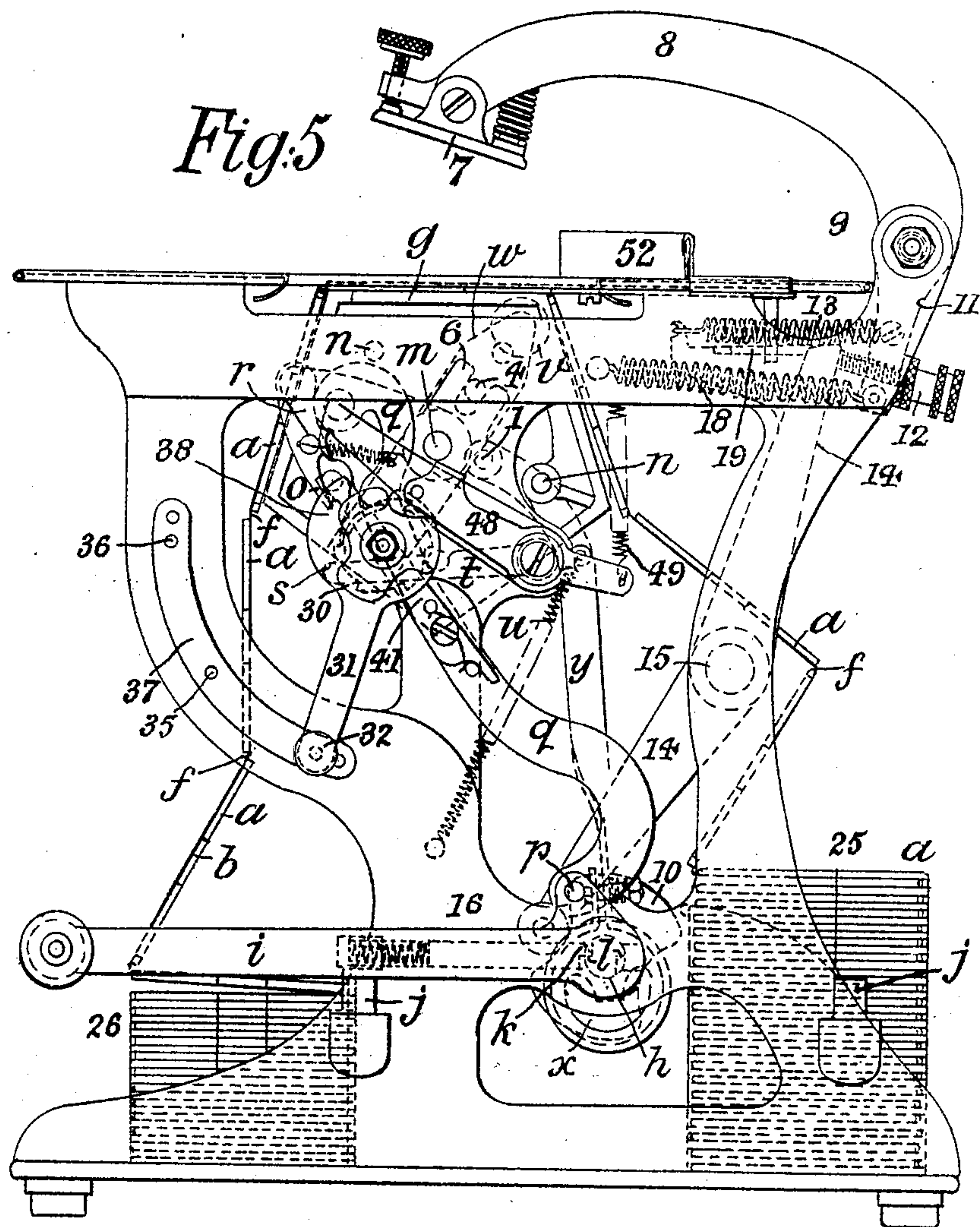
No. 805,536.

PATENTED NOV. 28, 1905.

D. GESTETNER.
STENCIL PRINTING MACHINE.

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10 SHEETS—SHEET 2.



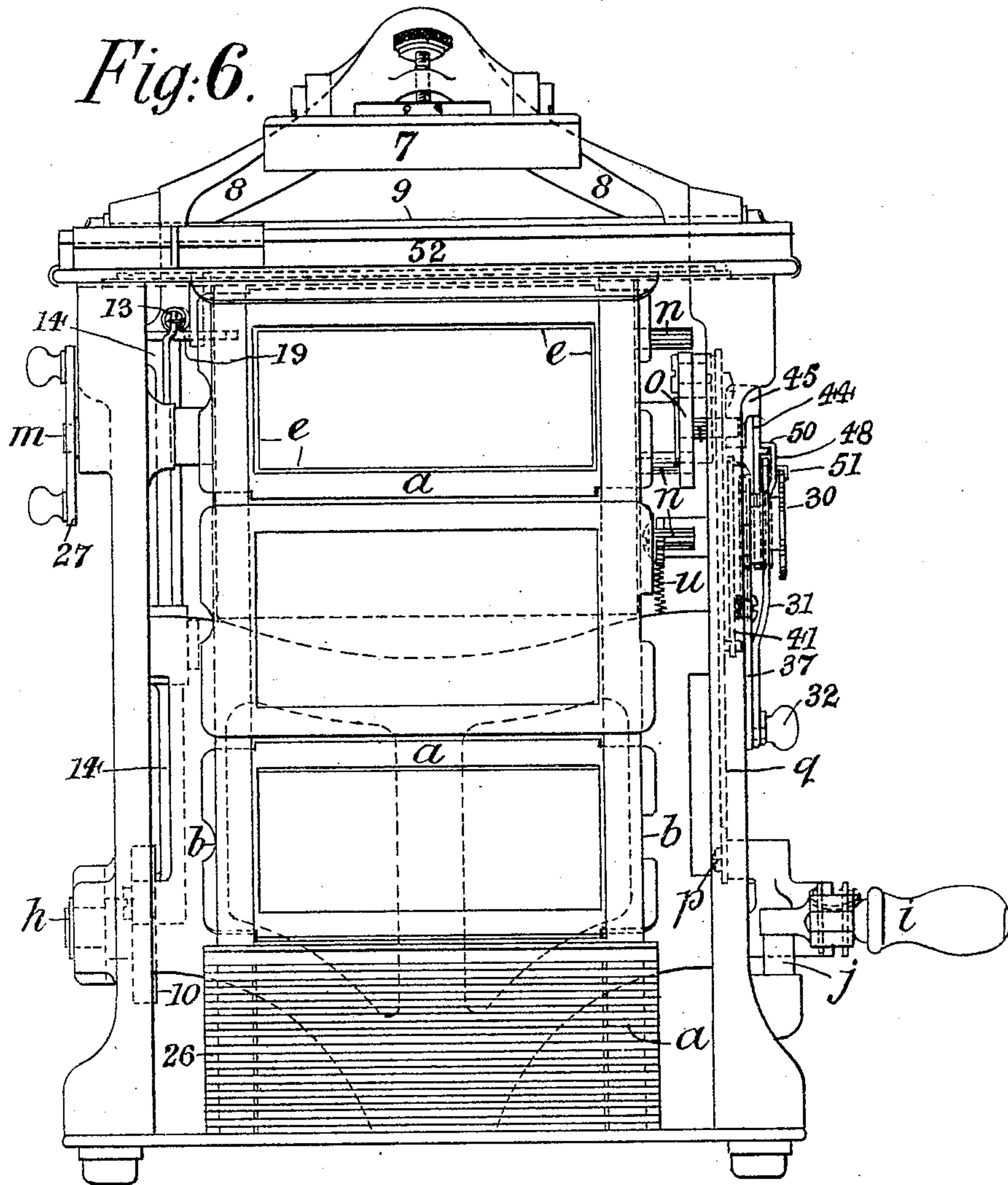
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D. GESTETNER.
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APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 3.



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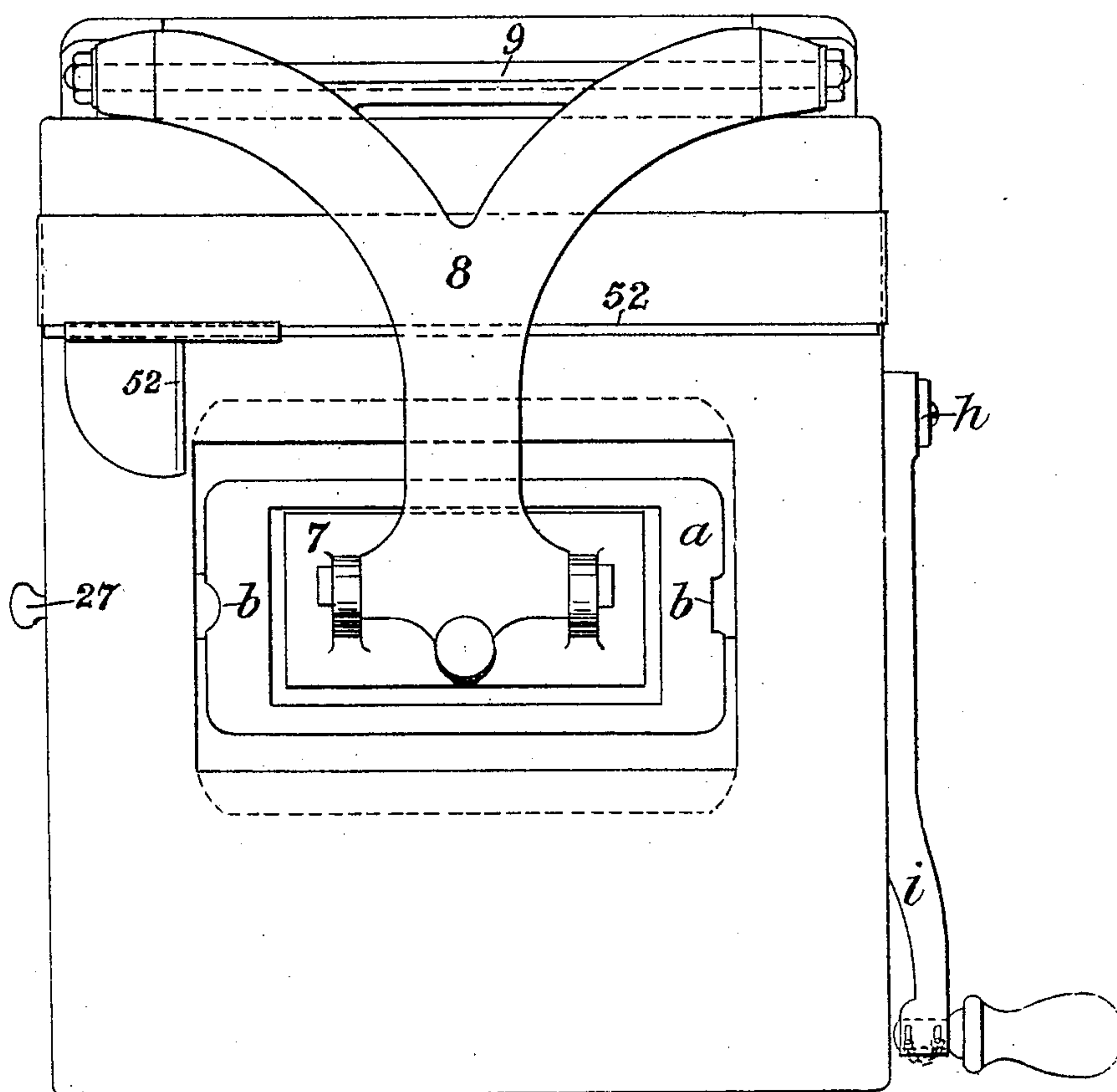
PATENTED NOV. 28, 1905.

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10 SHEETS--SHEET 4.

Fig:7.



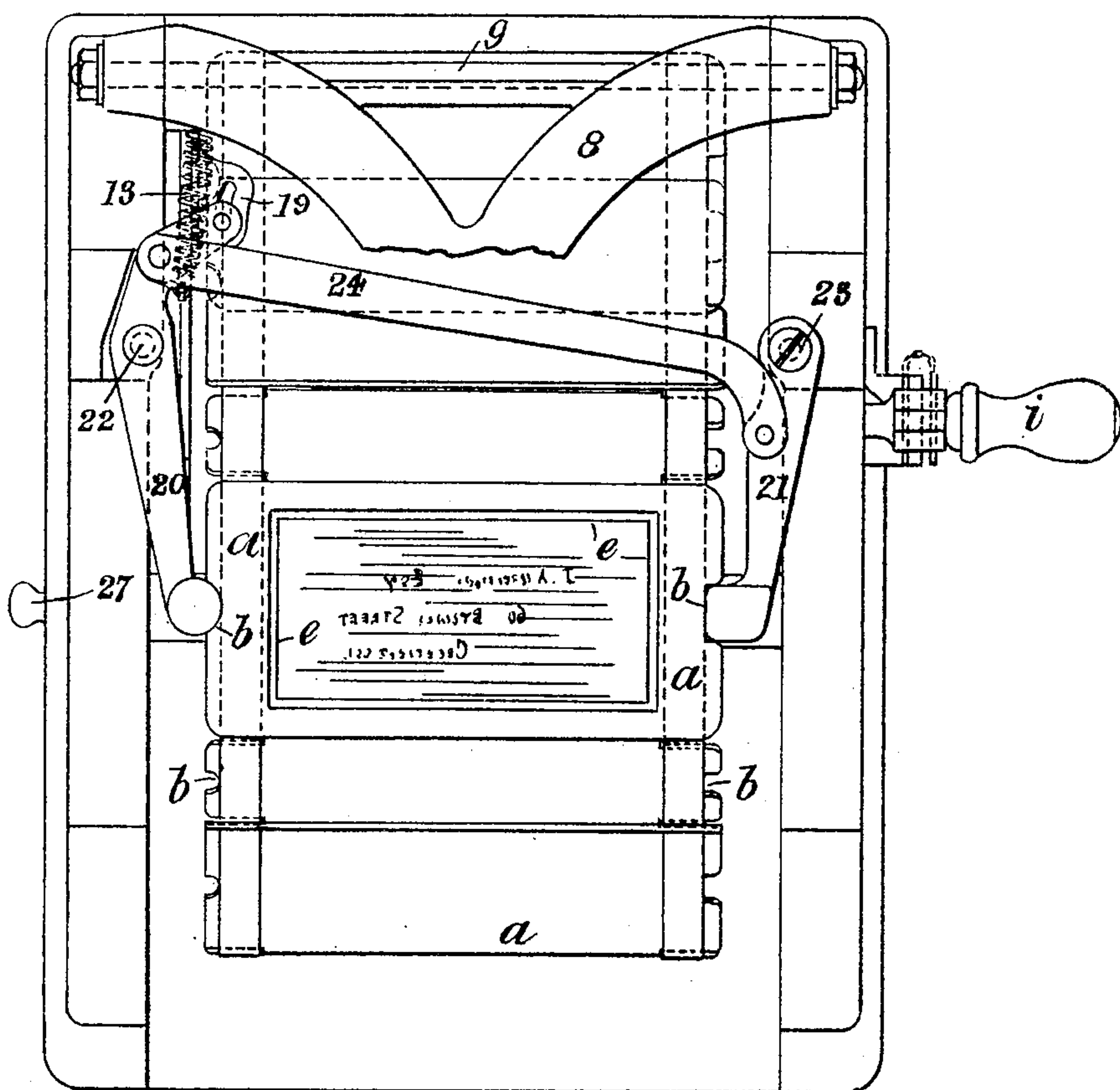
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STENCIL PRINTING MACHINE.
APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 5.

Fig. 8.



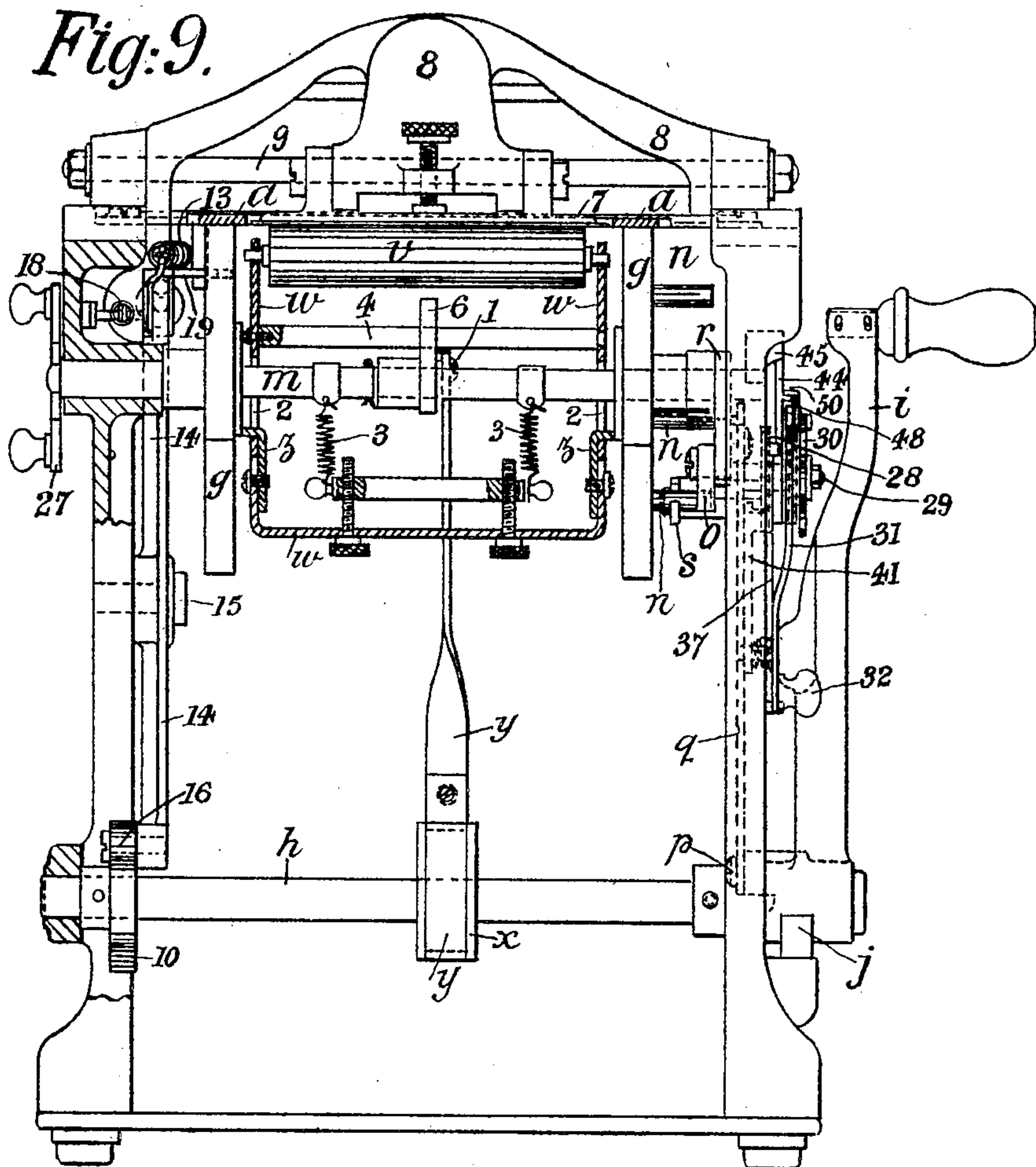
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D. GESTETNER.
STENCIL PRINTING MACHINE.

APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 6.



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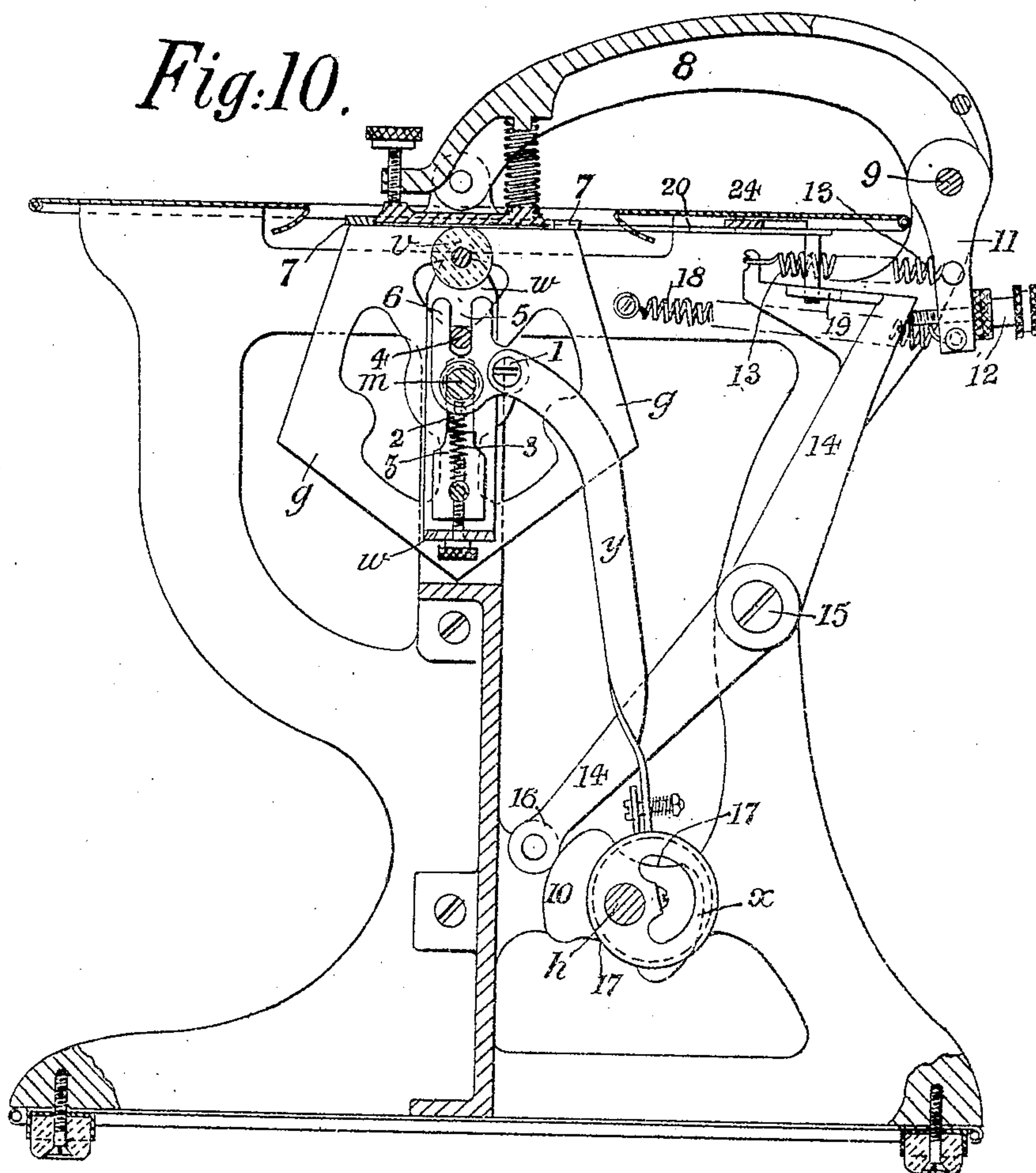
PATENTED NOV. 28, 1905.

D. GESTETNER.
STENCIL PRINTING MACHINE.

APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 7.

Fig:10.



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D. GESTETNER.
STENCIL PRINTING MACHINE.
APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 8.

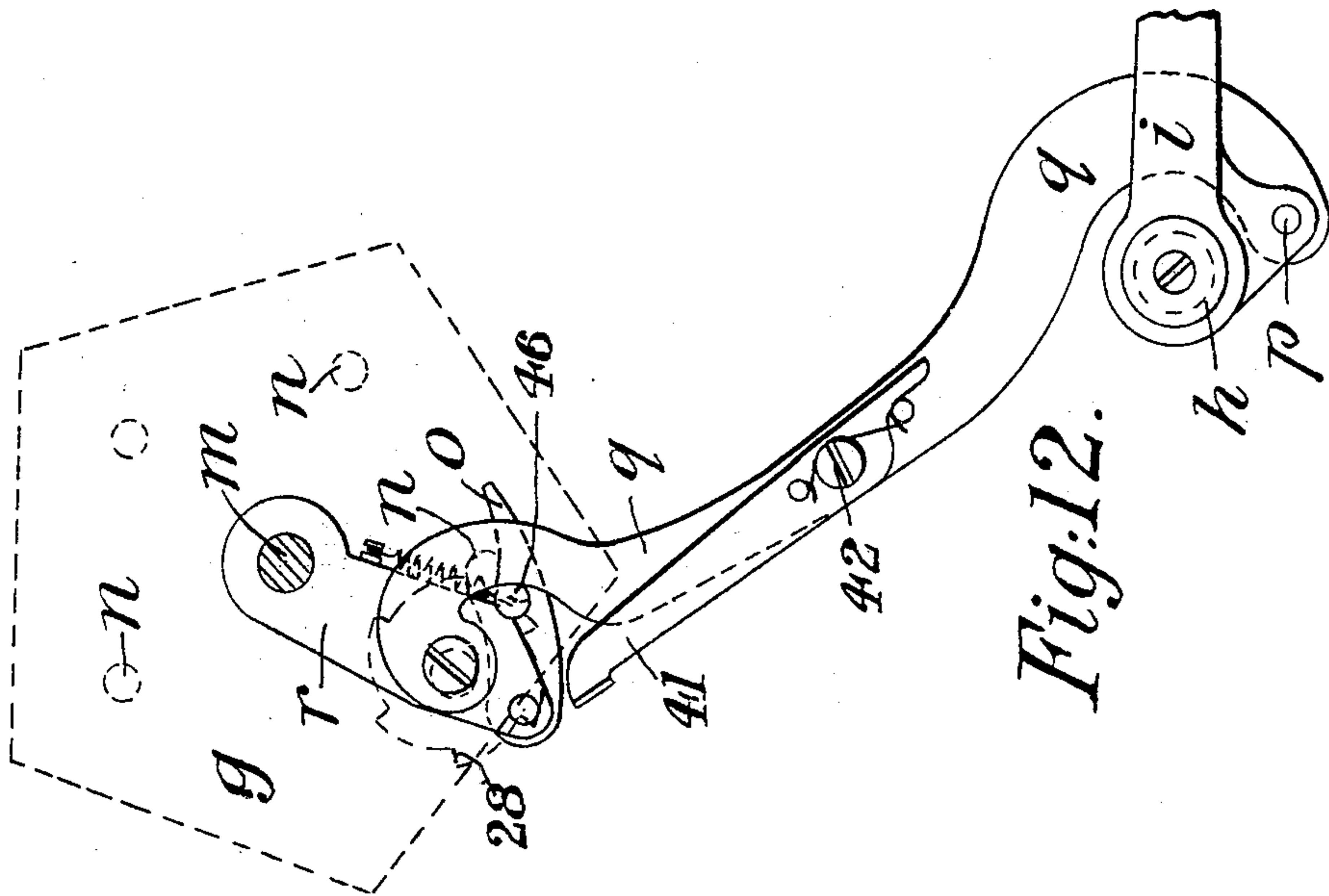


Fig. 12.

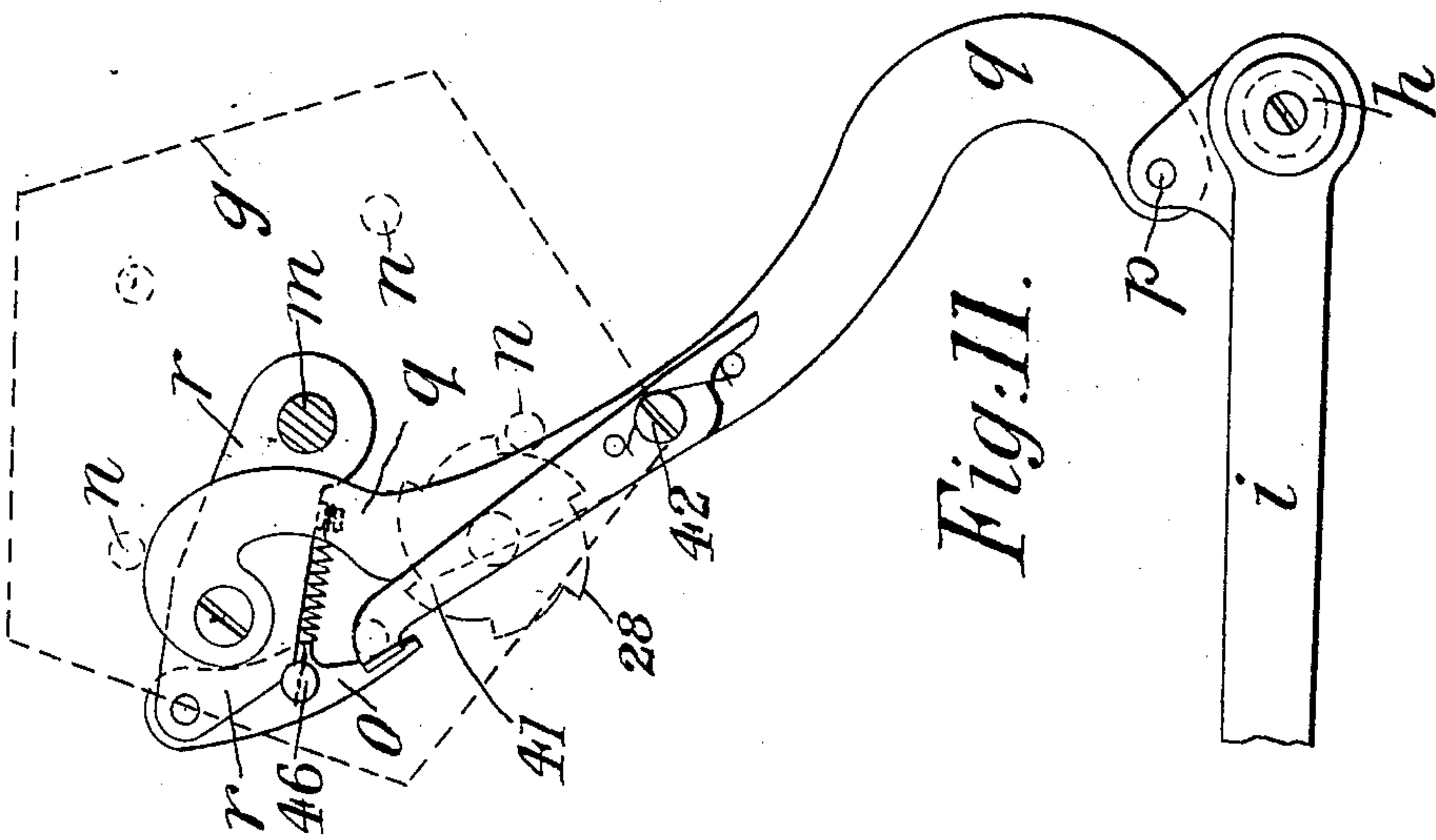


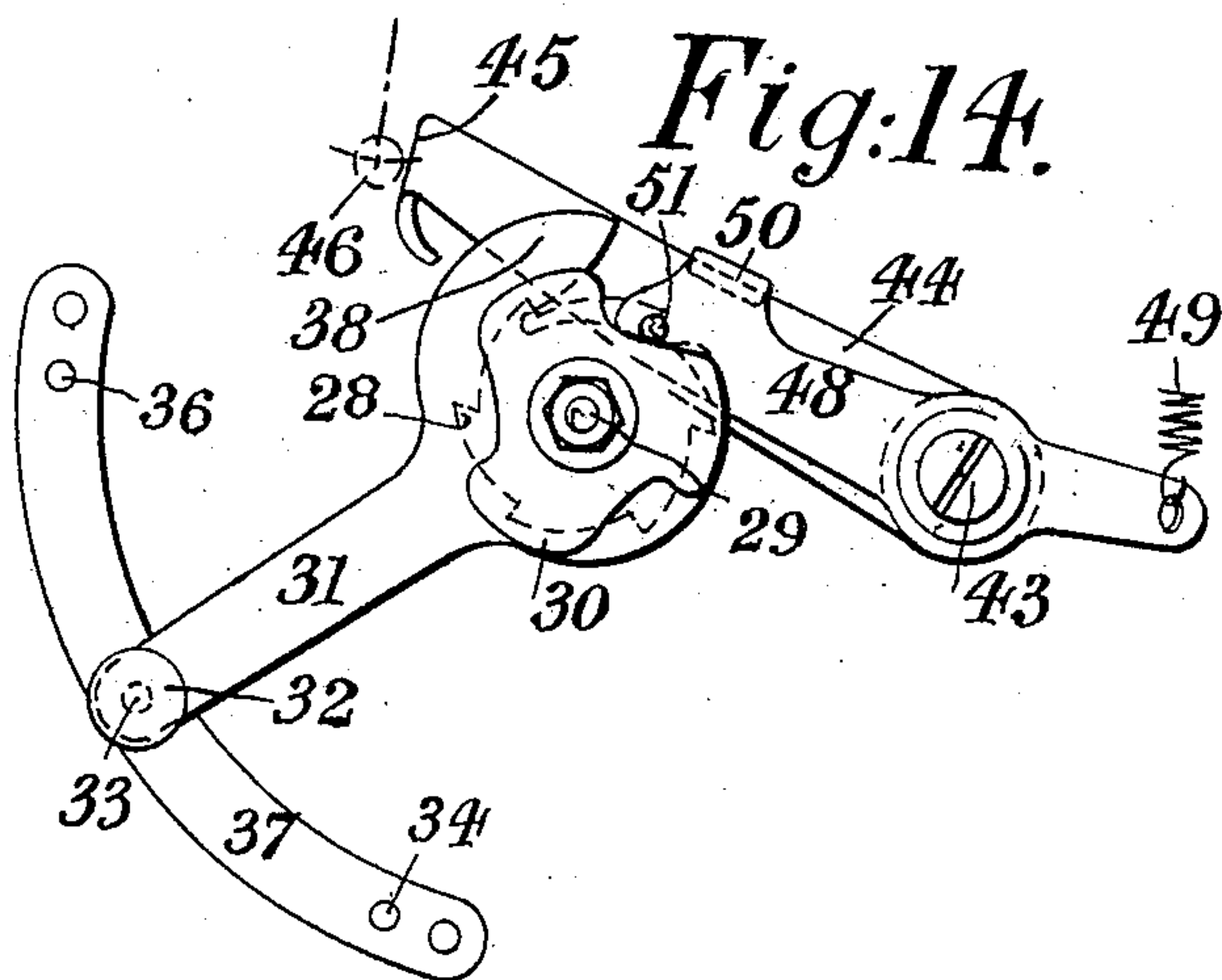
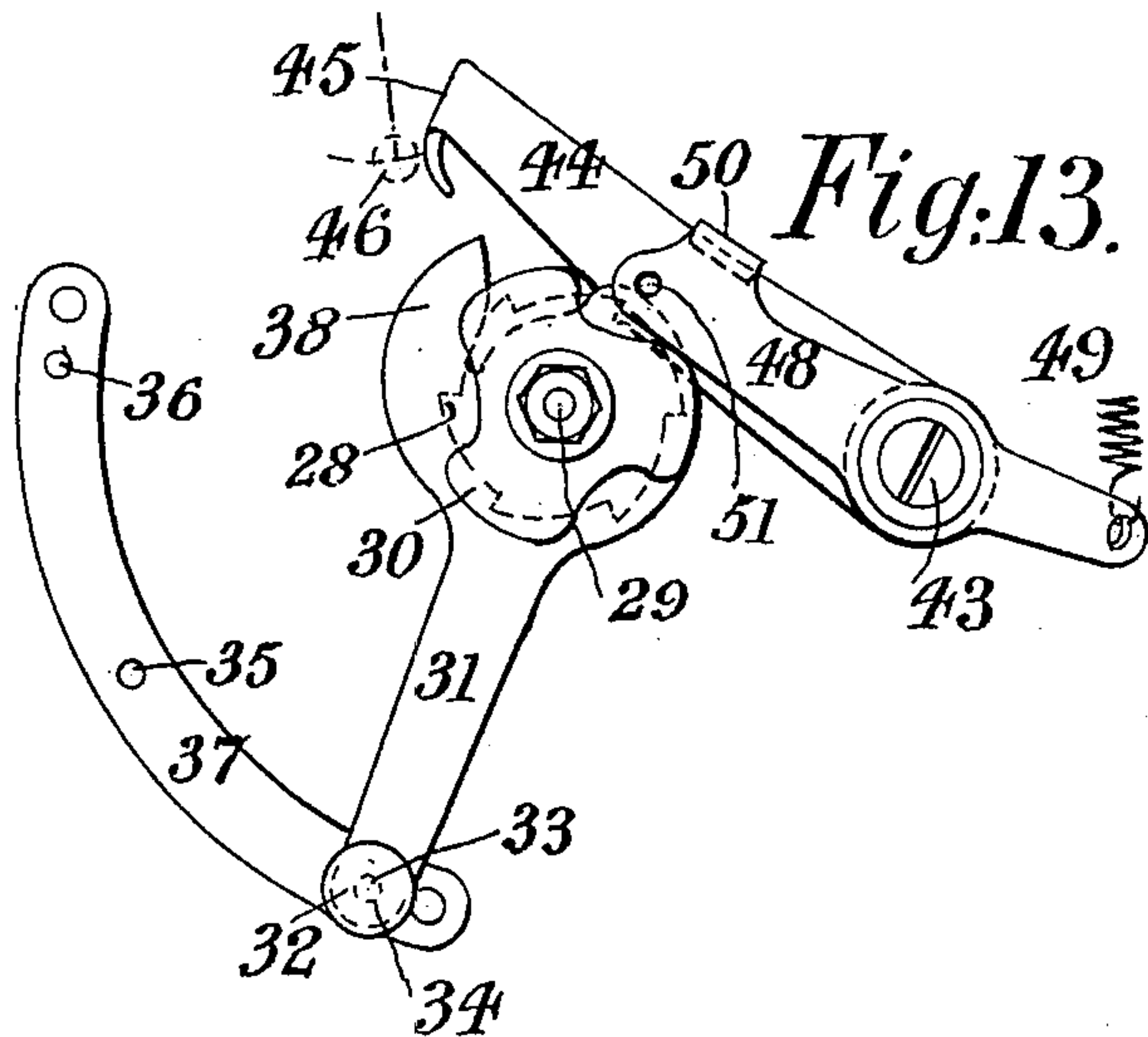
Fig. 11.

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APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 9.



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STENCIL PRINTING MACHINE.

APPLICATION FILED JULY 8, 1905.

10 SHEETS—SHEET 10.

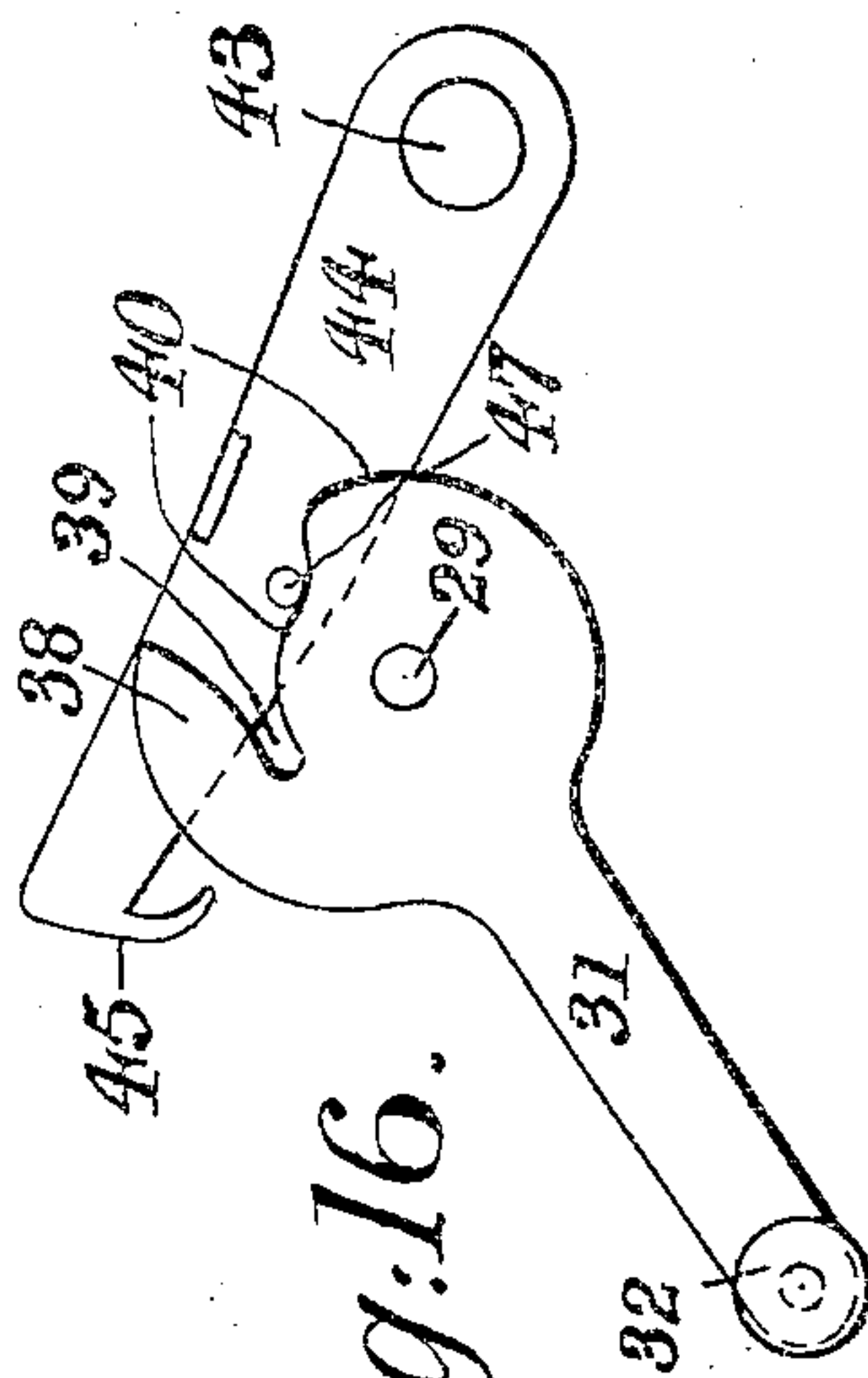


Fig:16.

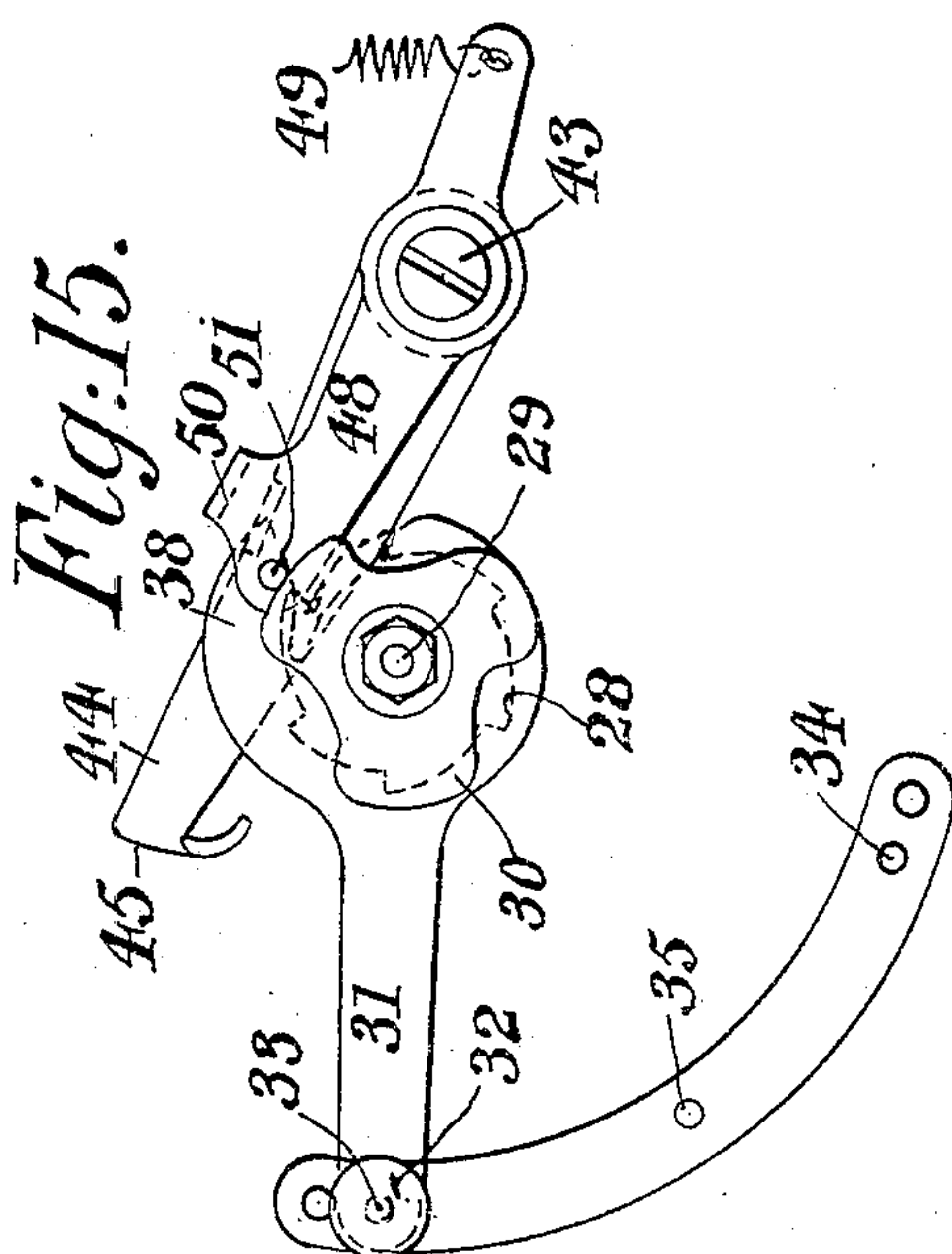


Fig:15.

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UNITED STATES PATENT OFFICE

DAVID GESTETNER, OF TOTTENHAM HALE, ENGLAND.

STENCIL-PRINTING MACHINE.

No. 805,536.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed July 8, 1905. Serial No. 268,852.

To all whom it may concern:

Be it known that I, DAVID GESTETNER, a subject of the King of Great Britain, residing at Tottenham Hale, in the county of Middlesex, England, have invented new and useful Improvements in Stencil-Printing Machines, of which the following is a specification.

The invention has for its object improvements in stencil-printing machines which are more especially intended for printing addresses, but which may also be used for other printing purposes.

I will describe my invention by the aid of the accompanying drawings, in which—

Figure 1 is a plan, and Fig. 2 a longitudinal cross-section, of a frame provided with an ink-pad. Fig. 3 is a longitudinal cross-section, and Fig. 4 a plan, of a similar frame with a stencil in position over the ink-pad. Fig. 5 is a side view, Fig. 6 a front view, and Fig. 7 a plan, of a stencil-printing machine arranged to print from ink-pad and stencil carrying frames linked together to form a chain. Fig. 8 is a plan with parts broken away. Fig. 9 is a front view, partly in section; and Fig. 10 is a longitudinal section showing some of the parts in a different position from that represented at Figs. 5 to 7. Figs. 11 and 12 are detail views showing different positions of the cylinder-operating mechanism. Figs. 13, 14, and 15 are side views showing, respectively, the different positions of mechanism for causing the machine to print once or twice from each stencil-frame in succession or for printing continuously from the same stencil-frame; and Fig. 16 is a detail view.

a is a frame consisting of sides and ends of stiff material, preferably cardboard or straw-board, having notches *b* in the ends, preferably of different shapes, and an ink-proofed sheet *c*, stretched over and attached to the sides and ends of the frame *a*. In the center of the space in each frame *a* is mounted on the sheet *c* an ink-pad *d*, consisting of a sheet of absorbent material saturated with ink, the said pad being of such dimensions as to leave around its edges a non-ink-saturated margin, consisting of the ink-proofed sheet *c*, to prevent the spreading of the ink beyond the required limit. The stencils *e* are of dimensions approximately to fit the spaces in the frames *a*, and they are placed on the ink-pad *d*, which latter securely holds them in position. These ink-pad and stencil carrying frames *a* may be fed singly from a magazine to the printing position and away therefrom in manner simi-

lar to that hitherto employed in feeding frames carrying stencils which have required to be inked at each operation. I, however, prefer to connect said frames *a*, as shown in the drawings, into a chain by means of flexible bands *f* and to pass said chain of frames over a cylinder *g*, preferably pentagonal. Alternate frames are reduced in width at the ends, as shown in the drawings, to insure their correctly passing over the cylinder and folding flat upon each other. The cylinder has a step-by-step motion imparted to it to bring the frames successively into and away from the printing position, and I prefer to employ the following arrangement of operating mechanism.

h is the main or driving shaft, upon which the operating-lever handle *i* is loosely mounted. This handle has a reciprocating semi-rotation imparted to it which is limited by stops *j*, and such handle gives an intermittent semi-rotation to the shaft *h* in its motion from right to left, but leaves such shaft stationary when it is moving from left to right. For this purpose the arm of the lever-handle *i* is hollow and fitted with a spring-pawl *k*, while the shaft *h* is formed with two notches *l* (see Fig. 5) diametrically opposite each other and with each of which such spring-pawl *k* alternately engages.

The cylinder *g* consists of pentagonal end plates fixed rigidly on the shaft *m*, and one of such end plates, by means of pins *n*, fixed thereto, forms a ratchet-wheel, which is operated by a pawl *o*, receiving motion from the handle *i* in the following manner: The handle *i* has a crank-pin *p*, which is pin-jointed to one end of a link *q*, the other end of which is pin-jointed to a lever *r*, loosely mounted on the shaft *m*. The lever *r* has pivoted thereto the spring-pressed pawl *o*, which acts against the pins *n*. An adjusting stop-lever *s*, formed with a recess *t* and acted upon by a spring *u*, acts against the pins *n* to stop the motion of the cylinder at the proper point and to hold it firmly during the printing process.

An impression-roller *v* is carried by a swinging frame *w*, mounted loosely on the shaft *m* and receiving motion from an eccentric *x*, fixed on the main shaft *h*, which eccentric is by the strap and link *y* connected with a crank-pin 1 on the arm 6, hereinafter referred to. By these means the impression-roller *v* will act against the under side of each frame *a* at both its backward and forward motion, but will be free from such frame at each end of its motion. The swinging frame *w* has

slots 2 in its side bars, through which the shaft *m* passes, and it is acted upon by springs 3 to force the impression-roller *v* upward for printing. The frame *w* is both guided and limited in its motion by adjustable guides *z z*, by the slots 2, and by a rod 4, fixed to the side bars *w* and moving in a slot 5, formed in the operating-arm 6, which latter is mounted loosely on the shaft *m*. The impression-roller *v* acts to press the ink-pad and stencil upward against an envelop or sheet of paper placed between them and a platen 7, carried by a bifurcated frame 8, mounted loosely on a shaft 9, and operated in the following manner by a cam 10 on the main shaft *h*: One of the arms of the bifurcated frame 8 has fixed thereto an arm 11, provided with an adjusting-screw 12 and connected by a spring 13 to the upper end of a lever 14. This latter lever is mounted at or near its center on a stud-axis 15 and has a roller 16 at its lower end, which is acted upon by the cam 10, which has two diametrically opposite recesses 17, into one or the other of which the roller 16 falls after each printing operation. By these means the cam 10 not only operates the platen, but holds the impression-roller firmly in its extreme positions and prevents any backward motion being given to the shaft *h* by the friction of the handle *i* and pawl *k* in their backward motion. A spring 18 is connected to the arm 11 and to the framing of the machine to keep the roller 16 up to the cam 17.

The upper end of the platen-operating lever 14 has a plate 19, in which is a cam-groove. Levers 20 and 21 are mounted, respectively, on axles 22 23, and the said levers are connected together on opposite sides of their axles by a link 24. The lever 20 is provided with a pin which is located within the cam-groove of the plate 19. These levers 20 and 21 at their free ends are formed with noses of shape to fit the notches *b* in the ends of the stencil-carrying frames *a*. Thus at each motion for printing of the platen the levers 20 and 21 are operated to correctly adjust the frames *a* before the printing is effected.

The envelops or other printed matter are released from the stencils by the upward motion of the rear corners of the flat sides of the pentagonal cylinder *g*.

The chain of frames *a* passes loosely over the cylinder *g*, which latter drags them forward intermittently from a pile 25 and delivers them in another pile 26.

The cylinder *g* may when required be rotated by hand by means of the lever 27, fixed on the shaft *m*, without giving motion to the other mechanism.

I will now describe the mechanism whereby the machine is enabled to print once or twice from each stencil-frame in succession or to print continuously from the same stencil-frame.

28 is a ratchet-wheel fixed on the inner end

of the axle 29, on the outer end of which latter is fixed a cam 30, formed with three rises and three recesses. On the axle 29, between the parts 28 and 30, is loosely mounted a spring-arm 31, the outer end of which is provided with a knob 32 and inwardly-projecting pin 33, which latter can thus be readily shifted to one or other of the three recesses 34, 35, and 36 on the segment 37. The hub end of the arm 31 is formed with a hook-shaped part 38, a space 39, and cam-surface 40 for the purpose hereinafter described. Step-by-step motion is given to the ratchet-wheel 28 by a spring-pressed pawl 41, which is pin-jointed at 42 to the link *q*.

On the frame of the machine is a stud-axis 43, on which is mounted an arm 44, the front end of which has a face 45, against which a pin 46 on the pawl *o* rests to keep said pawl out of action when the said arm is in the positions shown at Figs. 14 and 15. When in the position shown at Fig. 13, the face 45 of the arm 44 is too high to prevent the pawl *o* acting on the pins *n*. This arm 44 has a stud 47, (see Fig. 16,) which may rest on the cam-surface 40 or be held down by the hook-shaped part 38 of the arm 31, as shown at Fig. 15. On the stud-axis 43 is also mounted an arm 48, the tail end of which is acted upon by a spring 49, while at its front end it has a projection 50, extending over the top of a projection on the arm 44, and a pin 51, which is acted upon by the cam 30. The bosses of the arms 44 and 48 are pressed frictionally together, so that the arm 48 shall when moved by the cam 30 also give motion to the arm 44, except when the latter is held down by the hook 38, at which time the arm 48 will be raised and lowered by the cam 30 without moving the arm 44.

By the above means when the arm 31 is in the position shown at Fig. 13 the arm 44 is resting by its stud 47 on the top of the cam-surface 40, and the cam 30 has no action on the arm 48, in which position the arm 44 is so high that it has no influence on the action of the pawl *o*. This latter consequently gives motion to the cylinder *g* at each backward motion of the handle *i*, and the machine with the parts in this position prints once from each stencil-frame in succession. When the arm 31 is in the position shown at Fig. 14, the arm 44 is resting by its stud 47 on the lower part of the cam-surface 40, and the arm 48 is resting by its pin 51 on the cam 30. Thus at each double action of the handle *i*—that is to say, after each operation of the platen—a rising or falling motion is given to the arms 44 and 48, whereby the arm 48 is alternately in position to permit of and to prevent the action of the pawl *o* on the pins *n*. By this arrangement of the parts the machine is caused to print two copies from each stencil-frame in succession. When the arm 31 is in the position shown at Fig. 15, the arm 44 is held down

by the hook 38, so that its front end is constantly in position to prevent the pawl *o* acting on the pins *n*. In this position of the parts, although the cam 30 gives motion to the arm 48, this latter has no effect on the arm 44. By this arrangement the machine is enabled to print continuously from the same stencil-frame.

52 represents adjustable fences, against which the envelops or sheets of paper are fed to insure regularity of printing thereon.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A stencil-printing machine characterized by a series of frames, each carrying an ink-pad and a stencil, said frames being made of stiff material and having ink-proof material stretched over and attached to the sides and ends thereof, the ink-pad being placed on the ink-proof material centrally of the space in the frame and the stencil being placed above said ink-pad substantially as herein set forth.

2. A stencil-printing machine having ink-pad and stencil carrying frames connected together into a chain, a cylinder over which such chain of frames is passed and to which a step-by-step rotary motion is given, a spring-operated adjusting-stop to stop and hold the cylinder in proper position for printing, a platen receiving a rising-and-falling motion and pressing the paper downward for printing, an impression-roller underneath the ink-pad and stencil to press the latter upward for printing at each forward and backward mo-

tion of the roller, a driving-shaft having ratchet-teeth, a handle on said shaft having a spring-pawl acting in connection with said ratchet-teeth and receiving a reciprocating semirotation and mechanism operated by the shaft to give motion to the various parts of the machine, substantially as herein set forth.

3. A stencil-printing machine having ink-pad and stencil carrying frames connected together into a chain, a cylinder over which such chain of frames is passed and to which a step-by-step rotary motion is given, a spring-operated adjusting-stop to stop and hold the cylinder in proper position for printing, a platen receiving a rising-and-falling motion and pressing the paper downward for printing, an impression-roller underneath the ink-pad and stencil to press the latter upward for printing at each forward and backward motion of the roller, a driving-shaft having ratchet-teeth, a handle on said shaft having a spring-pawl acting in connection with said ratchet-teeth and receiving a reciprocating semirotation, mechanism operated by the shaft to give motion to the various parts of the machine, and means for enabling the machine to print either once or twice from each stencil in succession or continuously from a single stencil, substantially as herein set forth.

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

DAVID GESTETNER.

Witnesses:

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