

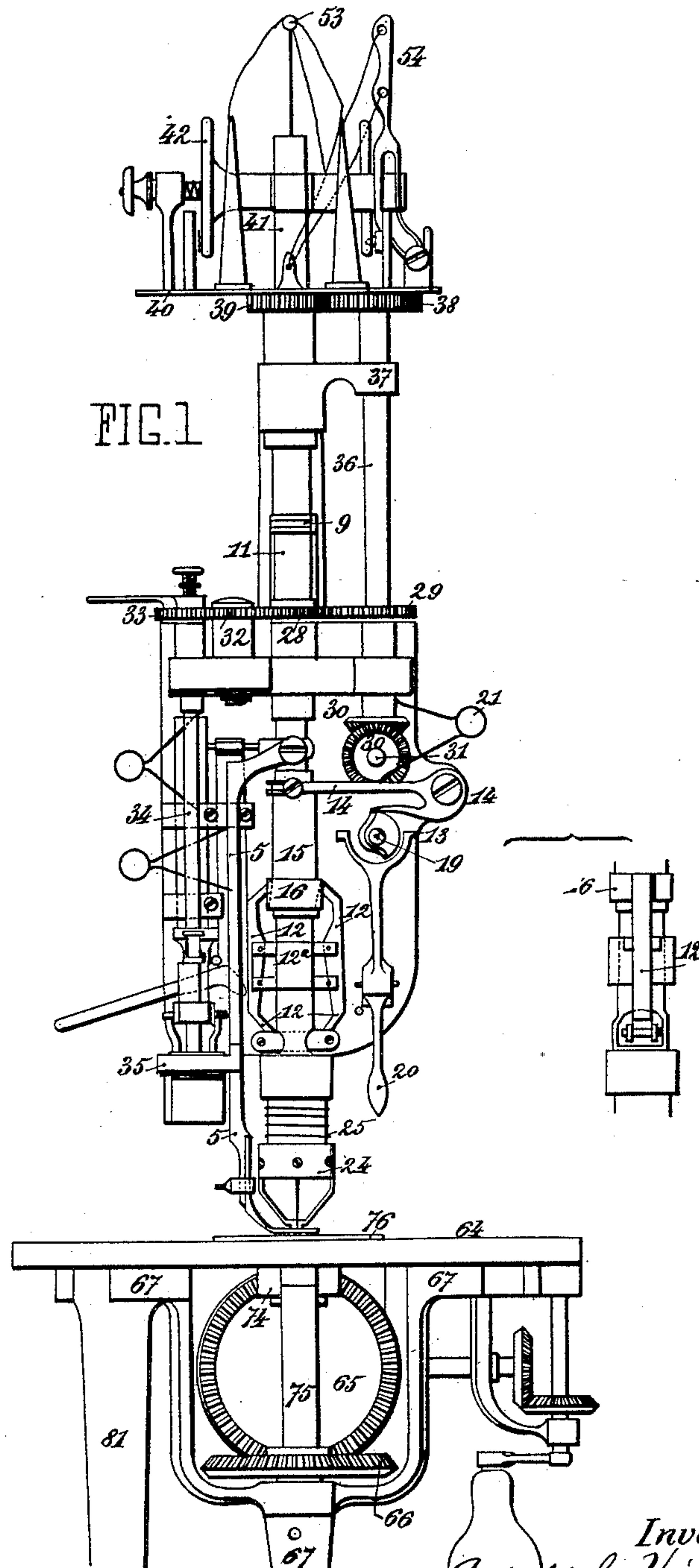
(No Model.)

6 Sheets—Sheet 1

A. V. DESHAYES.
EMBROIDERING MACHINE.

No. 462,858.

Patented Nov. 10, 1891.



Witnesses:
Jonathan Cilley—

Wm. S. Norton

By

Inventor,
Adolphe Victor Deshayes
Follett Mauro
his Attorneys.

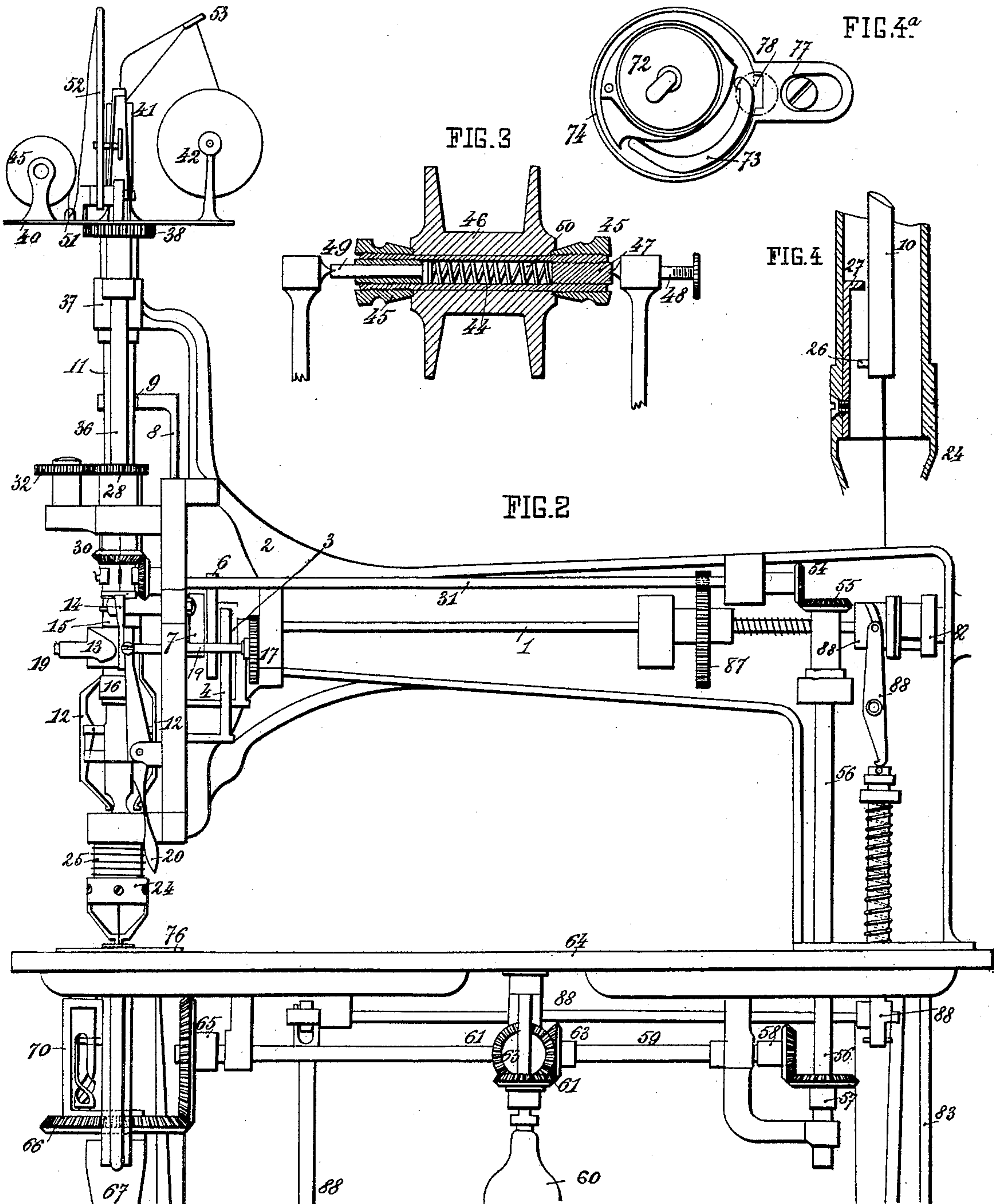
(No Model.)

6 Sheets—Sheet 2.

A. V. DESHAYES.
EMBROIDERING MACHINE.

No. 462,858.

Patented Nov. 10, 1891.



Witnesses:
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(No Model.)

6 Sheets—Sheet 3.

A. V. DESHAYES.
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FIG. 2

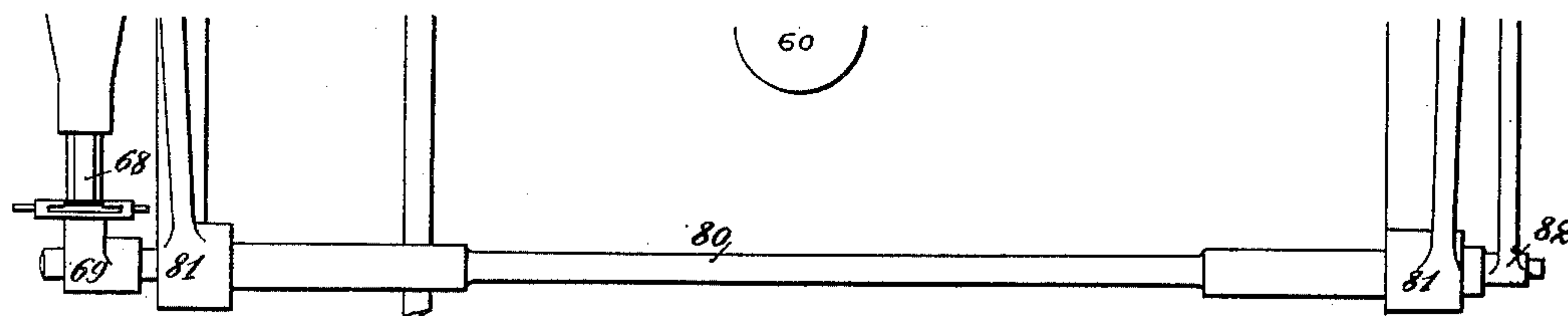


FIG. 7

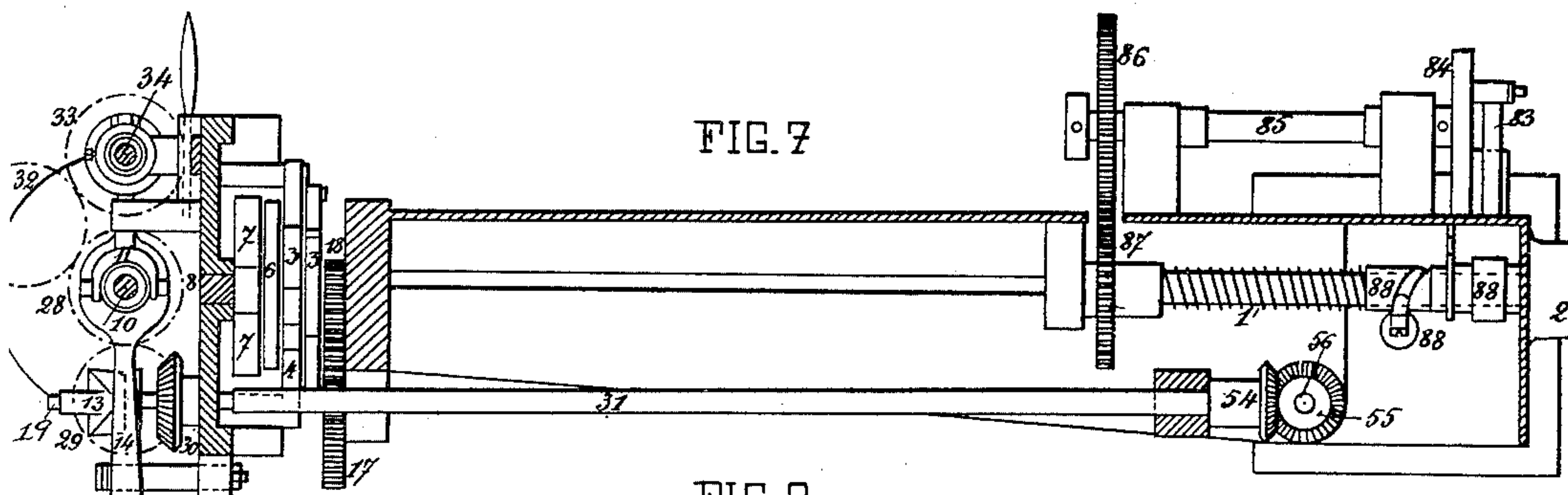
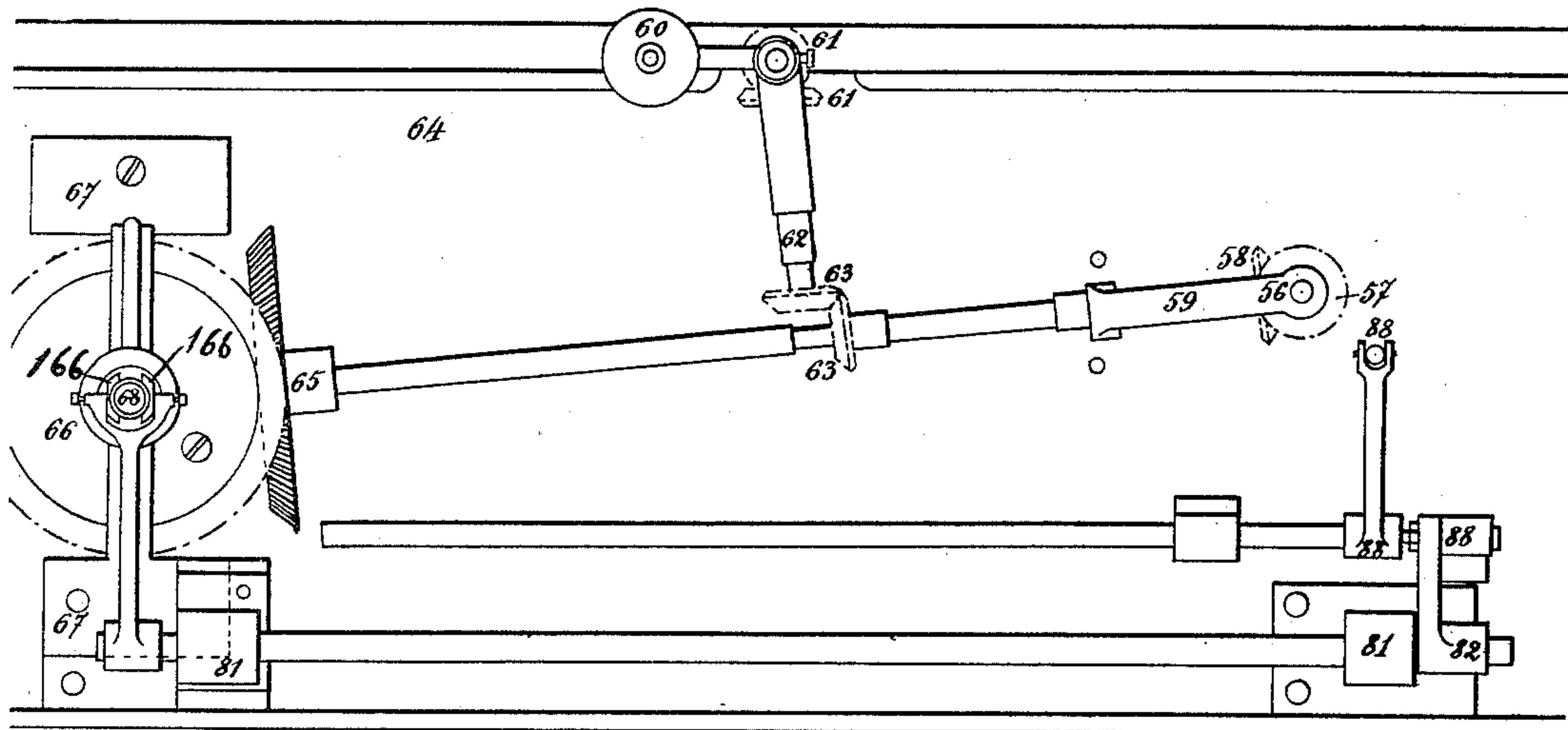


FIG. 8



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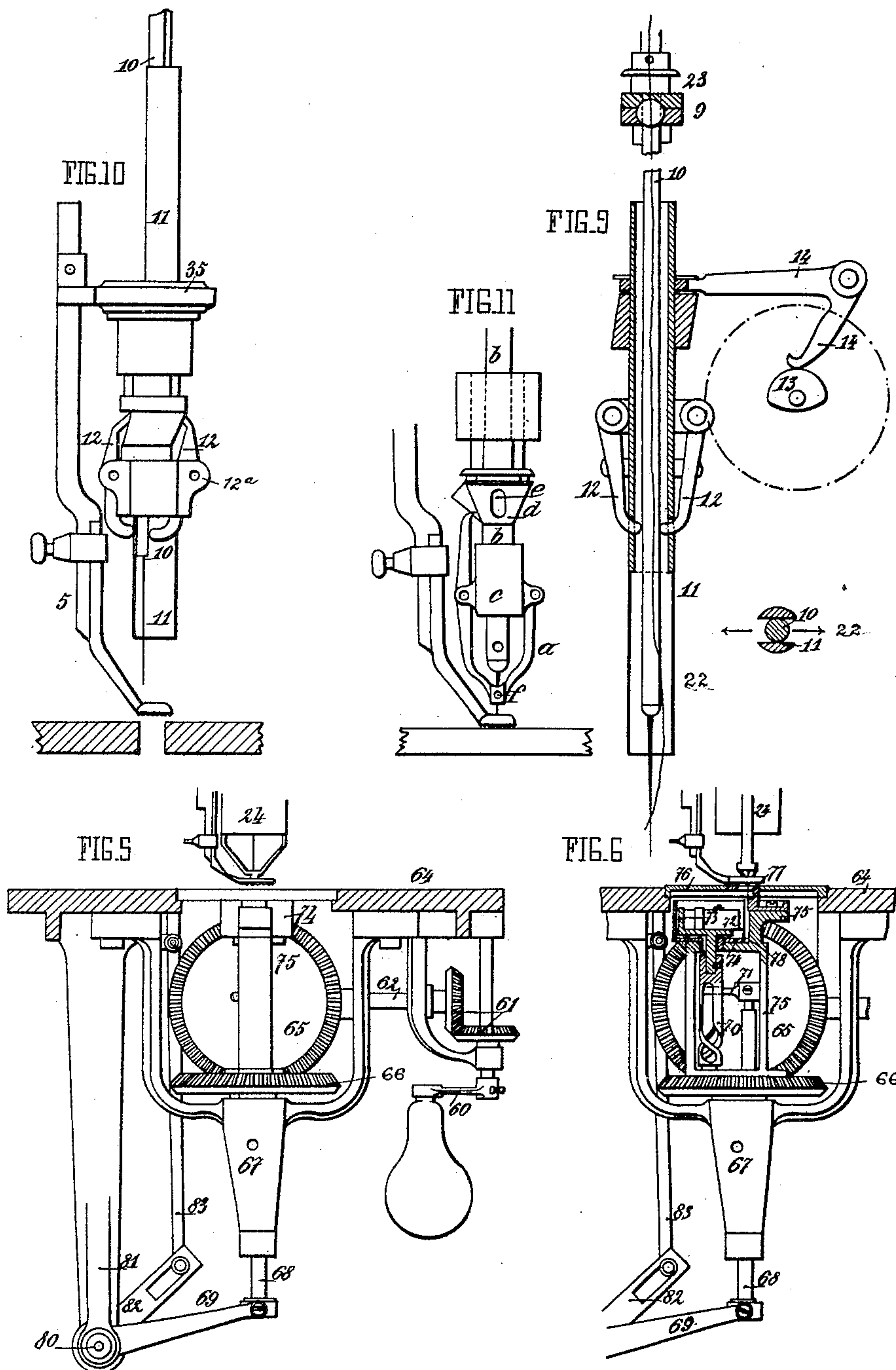
(No Model.)

6 Sheets—Sheet 4.

A. V. DESHAYES.
EMBROIDERING MACHINE.

No. 462,858.

Patented Nov. 10, 1891.



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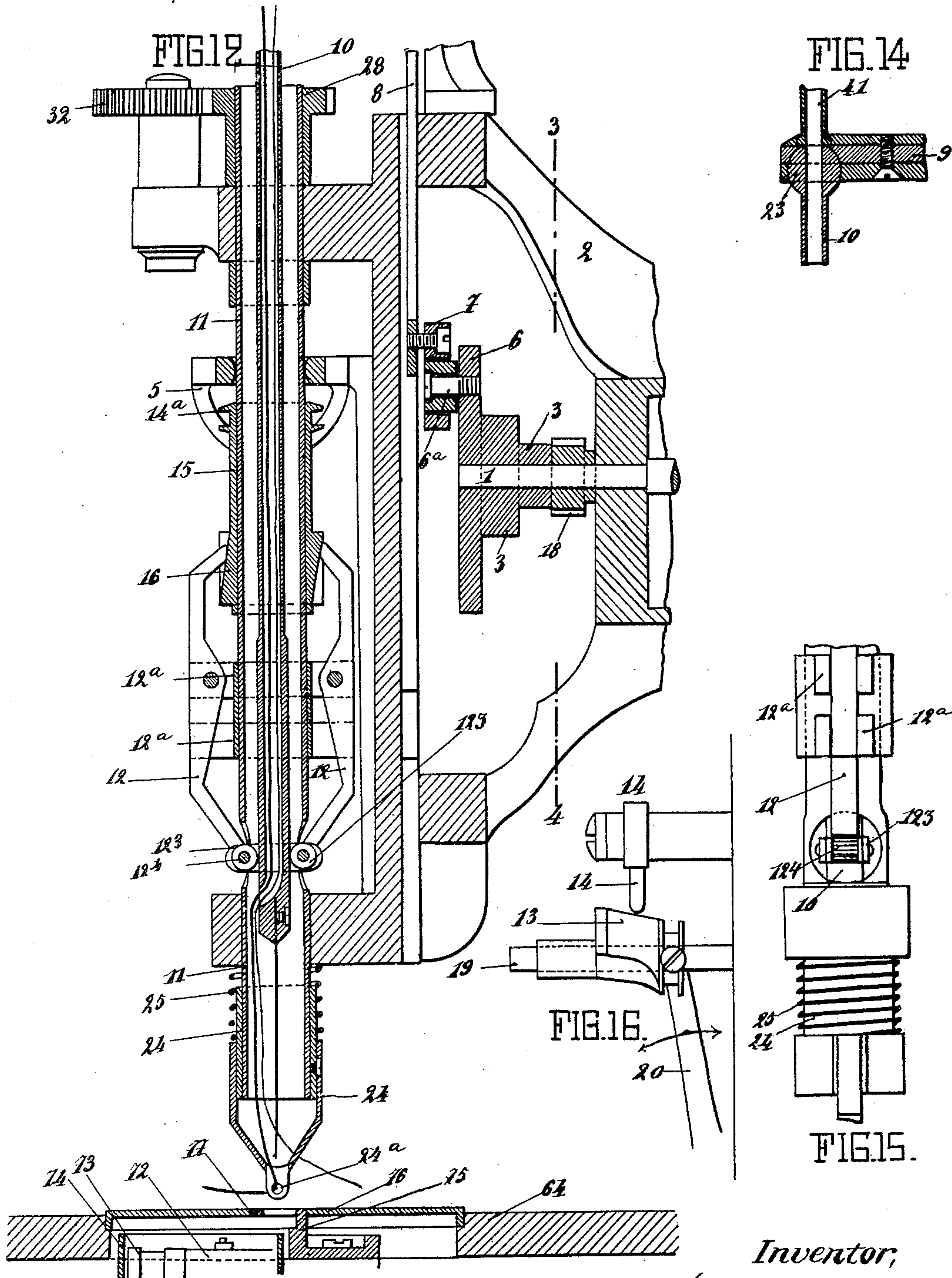
(No Model.)

6 Sheets—Sheet 5.

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EMBROIDERING MACHINE.

No. 462,858.

Patented Nov. 10, 1891.



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(No Model.)

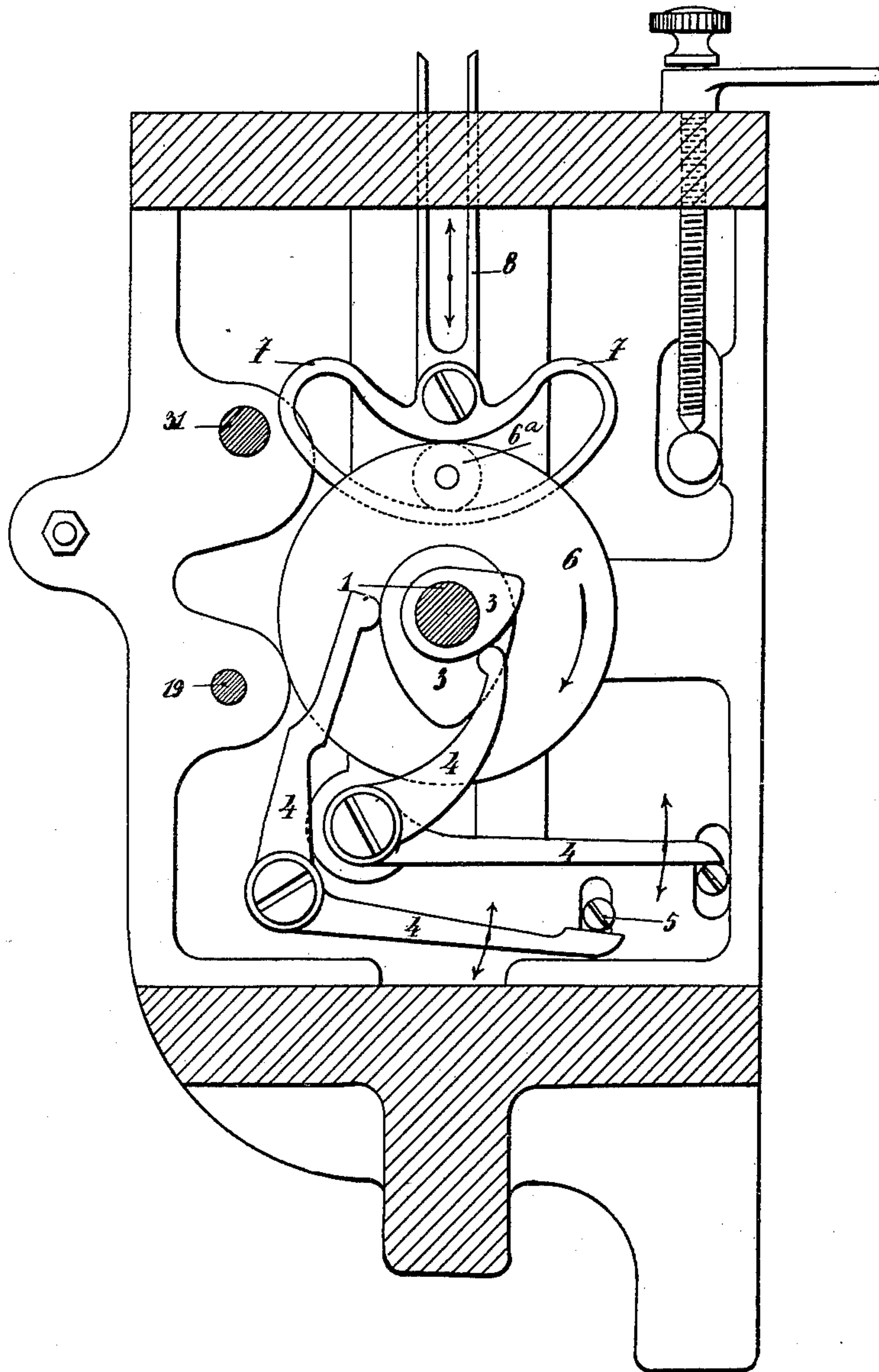
6 Sheets—Sheet 6.

A. V. DESHAYES.
EMBROIDERING MACHINE.

No. 462,858.

Patented Nov. 10, 1891.

FIG. 13.



Witnesses;
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A. G. Huston

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UNITED STATES PATENT OFFICE.

ADOLPHE VICTOR DESHAYES, OF PARIS, FRANCE.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 462,858, dated November 10, 1891.

Application filed July 21, 1891. Serial No. 400,246. (No model.) Patented in France December 19, 1887, No. 187,687, and in Belgium December 20, 1887, No. 79,988.

To all whom it may concern:

Be it known that I, ADOLPHE VICTOR DESHAYES, of the city of Paris, France, have invented a new or Improved Machine for Sewing, Embroidering, and other Kindred Operations, (for which I have obtained Letters Patent in France for fifteen years, dated December 19, 1887, No. 187,687, and in Belgium for fifteen years, dated December 20, 1887, No. 79,988,) of which the following is a full, clear, and exact description.

This invention relates to a new or improved machine with shuttle and with universal feed provided with a needle, which may be made oscillating or fixed at times, according to the work to be done. This machine executes, as desired, satin-stitch or tambouring, scallops, overedge-stitch seams, zigzags, braiding, cording, beading, and top and bottom embroidery, &c., as hereinafter described.

In order to enable my arrangement of machine to be well understood, I have illustrated it by way of example in the drawings filed with this specification, in which—

Figure 1 is a general view of the face of the machine. Fig. 2 is a side elevation. Fig. 3 shows separately the arrangement of automatic tension for the thread employed in sewing. Fig. 4 is a side elevation of the driving mechanism of the needle. Fig. 4^a is a detail of the shuttle and driving mechanism therefor. Fig. 5 is an end view of the apparatus for driving the shuttle. Fig. 6 shows particularly the arrangement of the shuttle. Fig. 7 is a horizontal section through the upper part of the head of the machine. Fig. 8 is an under side view of the machine. Fig. 9 shows separately in section the devices for oscillating the needle-bar. Fig. 10 represents a modified form of said devices. Fig. 11 illustrates an arrangement of oscillating guide with a needle which is always fixed. Fig. 12 is a sectional elevation, on an enlarged scale, of the head of the machine. Fig. 13 is a detail in elevation of the cams 3 and the auxiliary parts. Fig. 14 is a sectional detail of the joint at the upper end of needle-bar. Fig. 15 is a detail showing the back of the levers which cause the oscillation of the needle. Fig. 16 is a detail showing a side view of the conical cam by

which the needle is oscillated. Owing to its size, Fig. 2 occupies portions of two sheets.

As shown in the drawings, the driving-shaft 1, fixed in the head 2 of the machine, carries cams 3, which actuate the levers 4 to give the rising movement to the foot or presser bar 5, which draws the material in all directions—that is to say, universally.

On the driving-shaft 1 is also fixed the plate 6, furnished with a roller 6^a, Figs. 12 and 13, engaging with a heart-shaped piece 7. This heart-shaped piece is fixed on the flat bar 8, which is surmounted by support 9, in which is supported the spherical end 23, Fig. 14, of the needle rod or carrier 10, which is therefore free to rotate and oscillate, and which works in the interior of the central tube 11, Figs. 2 and 9. On this tube 11 are fixed the two twin levers 12, mounted on a collar 12^a. These levers serve to oscillate the needle-carrier 10 by means of a cam 13, that actuates a lever 14. For this purpose the lever 14, Fig. 7, terminates in a fork carrying two pins or projections fitted in the groove 14^a of the tube 15, formed in one with a coned or tapering part 16, that acts upon the two twin levers 12. The two levers 12 are connected together at their lower end by two pieces 12^b, between which the needle-carrier has its movement. (See Figs. 12 and 15.) These pieces are provided with two rollers 12^c in contact with the needle-bar 10, and movement is imparted to them by a toothed wheel 17, driven by a pinion 18, keyed on the driving-shaft 1.

The cam 13 is mounted on a shaft 19, which carries the gear 17, and which is provided at its end with a flat part in order that this cam may slide over the same (while maintaining its connection, so as to be capable of being rotated thereby) by the action of a forked lever 20, Figs. 2 and 16, so as to change the working of the needle, either to vary the extent of its oscillation or for rendering it fixed or stationary. For this purpose the lever 14 is maintained constantly in contact with the cam 13 by means of a pressure-spring 21, Fig. 1, whatever may be the position of the cam. The central tube 11, on which are mounted all the parts serving to transmit the oscillat-

ing movement of the needle, is provided internally and at its lower part with a groove 22, Fig. 9, which extends only for a certain height on said tube. This groove 22 constitutes at the same time a guide for the needle-tube 10, which, as explained, is mounted at its upper end in support 9 by means of a socket-joint 23. The guide 24 is mounted on the lower part of the tube 11 and is provided with a spiral spring tending to press it upon the fabric. This guide (which may be provided with an eye 24^a, as shown in Fig. 12) serves to exert pressure upon the material during the opening of the loop of the thread in order that the shuttle may pass therein and form the stitch. It also serves as a passage for the materials with which are formed the embroidery and the stitches already mentioned.

As the guide 24 cannot constantly be in contact with the material, it is raised when desired—that is to say, while the material is advanced by the presser or foot. For this purpose the needle-carrier 10 is provided at its lower end with a small projection 26, as shown separately in Fig. 4. This projection meets, during the ascent of the needle-carrier 10, the projection 27 of the said guide 24, and this causes the raising of the latter. The rotary movement is imparted to the central tube 11, as shown in Fig. 1, by means of a pinion 28, driven by another pinion 29, which receives its movement from two bevel-pinions 30, one of which is keyed upon the horizontal shaft 31. This central tube thus driven transmits in its turn the rotary movement to an intermediate pinion 32, which drives directly the pinion 33, that is mounted on the vertical shaft 34, carrying the universal feed 35.

The pinion 29 is mounted upon a vertical shaft 36, arranged in a support 37, fixed on the head 2. This pinion 29 drives a pinion 38, which actuates the pinion 39, Fig. 1, fitted on the support 37. The plate 40 is fixed on the pinion 39, by which it is moved. It is furnished with the reels and with the thread-tension. The support 9 has a reciprocating movement and carries a vertical tube 41, which is extended to a certain height, so as to surmount the plate 40 and to actuate the thread tension or distributor. This tube 41 forms also a prolongation of the needle-carrier 10. The plate 40 also carries the reel 42 for the reception of the material necessary for embroidering. This plate is also furnished with the automatic tension shown separately in Fig. 3. This tension consists of a tube 44, provided with two conical buttons 45, one fixed and the other movable. They are designed to fix the reel 46 on the tube 44. This arrangement also comprises at one of the ends of the tube a fixed pin 47, on which engages the point of the screw 48, which serves to give more or less tension to the reel. The other end of the tube is provided with a kind of piston 49, upon which acts constantly a coil-spring 50.

In unwinding from the reel 46 the thread

passes through the eye 51 to the tension 52, then into the tube 41, and finally to the needle. The material wound off the reel 42 passes first into the guide 53 and then takes the same paths as the thread, so as to finally enter the hole 24^a in the guide 24, in order to obtain upon said material the various stitches above specified.

The horizontal shaft 31, which serves to impart movement to the parts fixed on the head 2, carries a bevel-pinion 54, by which it receives rotary movement from a pinion 55, fixed on the vertical shaft 56. This shaft 56 also carries another bevel-pinion 57, engaging with a pinion 58, keyed on the horizontal shaft 59, which receives movement from the crank-handle 60. This crank-handle carries for this purpose two bevel-pinions 61 and a small horizontal shaft 62. This shaft is provided with bevel-pinions 63, by means of which the motion of the crank-handle 60 is transmitted to the horizontal shaft 59. This shaft 59 extends under the bed-plate 64 of the machine. It is furnished with a large bevel-pinion 65, gearing with a central pinion 66, upon which are mounted the parts requisite for the movement of the shuttle.

The pinion 66 is fitted in the support 67, fixed on the bed-plate 64, and is furnished at its center with a grooved rod 68, actuated by the forked lever 69, which carries for this purpose two flat rollers 166, Fig. 8, engaged in the groove of the rod. This rod 68 thus has a reciprocating movement, which it transmits to the screw 70 through the horizontal pin 71, attached to the top of rod 68, and extending, as shown, through the helical slots of screw 70. The screw 70 is designed to impart the circular oscillatory movement to the shuttle 72 by means of the shuttle-driver 73, fixed to the center of the screw, as shown in Fig. 6. This shuttle and its shuttle-driver work in a circular basin 74, Fig. 4^a, fixed on a frame 75, mounted on the pinion 66, and the shuttle lies just beneath the cloth-plate 76. At the center of this plate and in a recess formed for the purpose is fitted the needle-plate 77, Fig. 6. It is perforated with an oblong groove, in which the needle moves either in a rectilinear manner for ordinary sewing or according to the extent of its oscillation when making zigzag stitches; for instance. This needle-plate 77 is fixed on the support 75 and rotates with it in its circular motion. The screw 70 is mounted, as before stated, in the frame 75, and rotates at its upper part in the basin 74. It is, moreover, fixed at its lower part by a point formed in one with the same.

For the passage of the needle, I provide the edge of the basin 74 with a groove 78. This groove is similar to the oblong groove of the needle-plate 77, as shown in Fig. 4^a.

The lever 69 is designed to operate the screw 70, and is fixed to the end of a horizontal shaft 80, mounted in two supports 81, forming one with the bed-plate 64. This shaft 80 carries at its opposite end a crank-arm 82, at-

tached to the connecting-rod 83, connected to a crank-plate 84, Fig. 7. This arrangement transmits the alternating motion of the plate to the lever 69, and thence to the screw 70.

5 The plate 84 is fixed to the end of a shaft 85, which carries at the same time the pinion 86, Fig. 7. This pinion gears with the pinion 87, Figs. 2 and 7, for imparting continuous circular movement to the plate 84, which converts it into an alternating rectilinear movement. For this purpose the pinion 87 is mounted on the driving-shaft 1, whose motion it receives.

15 The engaging device 88 is one with the shaft 1, and consists of the parts necessary for this purpose, as in all embroidering-machines.

It is quite clear that I have described hereinabove my machine in principle only, and
20 that I am free to vary the details, forms, accessories, materials, dimensions, and arrangements of the same without changing in anywise the nature of my invention. Thus, for example, I may obtain the oscillatory movement of the needle by means of the arrangement illustrated in Fig. 10. In this case this arrangement dispenses with the vertical shaft 34 and the pinions 32 and 33, and then the drawing-pieces 35 are mounted directly upon
30 the central tube 11.

The modification illustrated in Fig. 11 shows an arrangement with an oscillating guide *a* and a fixed needle. This guide is mounted on the central shaft *b* by means of
35 a collar *c*, and it acts on a cone *d* in the same manner as the twin levers 12 above described. With this arrangement the material serving for embroidering arrives through the central tube either through the orifice *e* and then
40 passes into the hole *f* in the lower part of the oscillating guide *a*. Motion is given to this oscillating guide by the same parts, as in the case of the oscillating needle, and I thus obtain a straddling stitch on the material used
45 for embroidering when I cause this guide to oscillate; but when I render this guide fixed this enables me to fasten the embroidery

either at its center or on the side. This arrangement also enables me to embroider with chenilles, beads, braid, cords, &c.

I claim—

1. In an embroidering-machine, the combination, with the needle-bar free to oscillate in every direction, and with mechanism for reciprocating the same, of a cone or inclined
55 guide and connections for oscillating the needle-bar in its descent, and a regulating cam and lever for setting said cone or guide, substantially as described.

2. The combination, with the stitch-forming
60 mechanism of an embroidering-machine, including a reciprocatory needle-bar free to oscillate in every direction, of the adjustable regulating-cam 13 and connections, as specified, between the said cam and the sewing
65 mechanism for determining by the adjustment of said cam the length of stitch, substantially as described.

3. The combination of the needle-bar hung by a socket-joint in a reciprocatory support,
70 a tube surrounding the needle-bar, a cone or inclined guide carried by said tube, levers pivoted on the latter for oscillating the needle-bar from said cone or guide, and means, such as a cam and lever, for actuating said cone or
75 guide and for adjusting it to determine the length of stitch, substantially as described.

4. The combination, with the reciprocatory needle-bar hung so as to oscillate freely in every direction, the devices for oscillating the
80 needle, the shuttle and its driving mechanism carried on a rotatable support or wheel, and gearing connecting the shuttle-support with the devices for oscillating the needle, so that the former follows the direction of the latter,
85 substantially as described.

The foregoing specification of my new or improved machine for sewing, embroidering, and other kindred operations signed by me this 27th day of June, 1891.

'ADOLPHE VICTOR DESHAYES.

Witnesses:

ROBT. M. HOOPER,
ALBERT MOREAU.