

No. 669,972.

Patented Mar. 19, 1901.

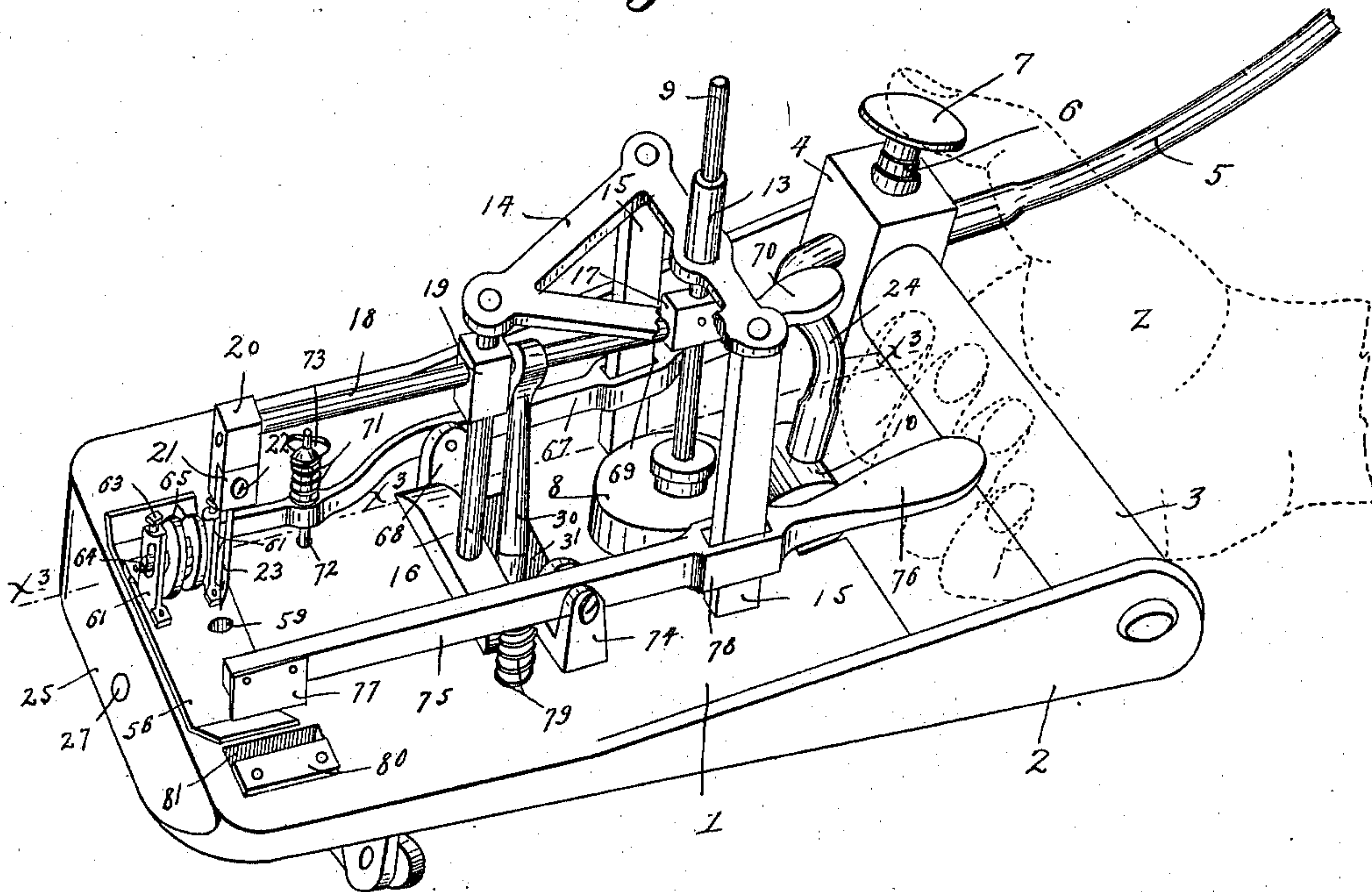
H. A. ANDERSON.
SEWING MACHINE.

(Application filed Sept. 3, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses.

Harry Kilgore.

A. D. Merchant.

Inventor.

H. Andrew Anderson.

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3 Sheets—Sheet 2.

Fig. 2.

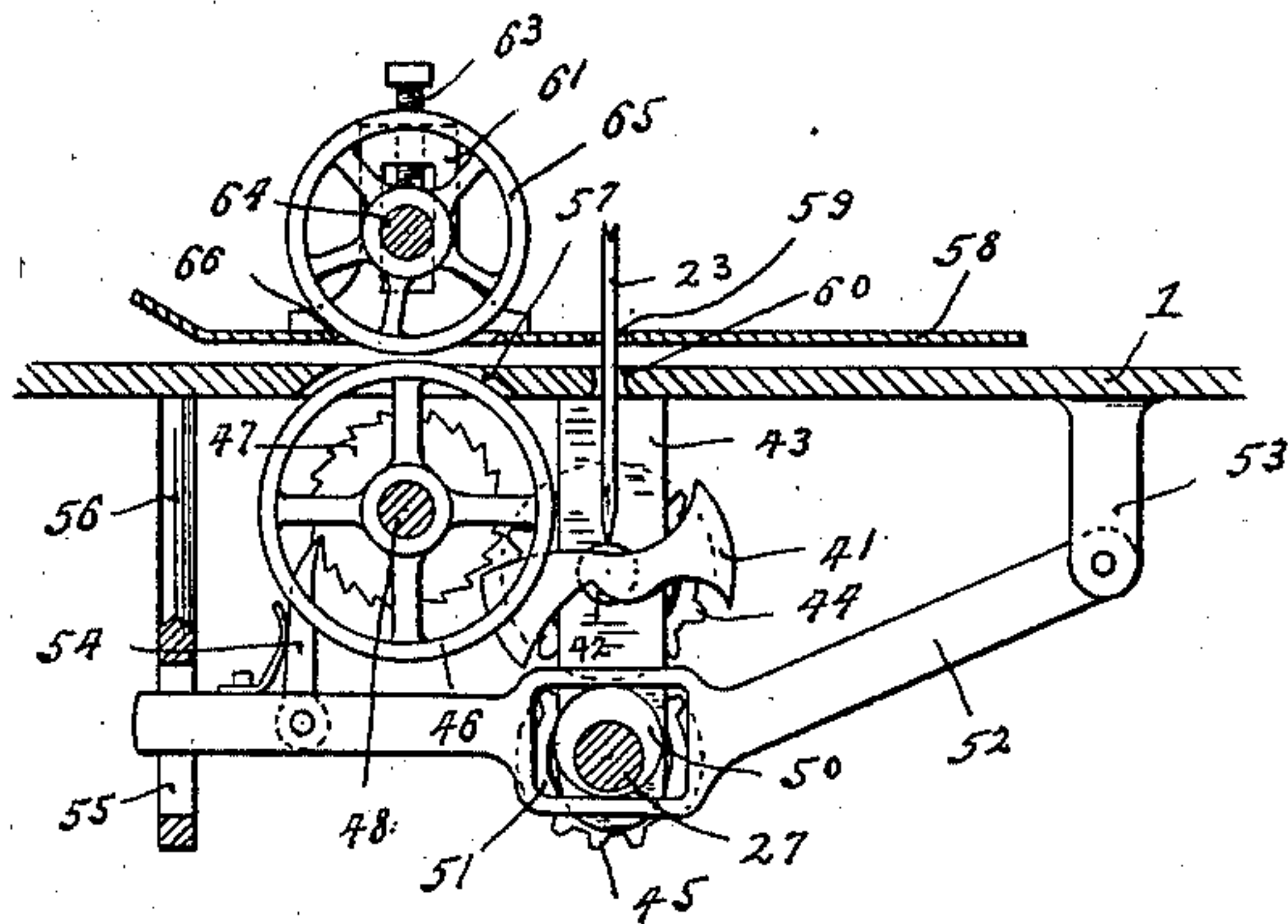


Fig. 3.

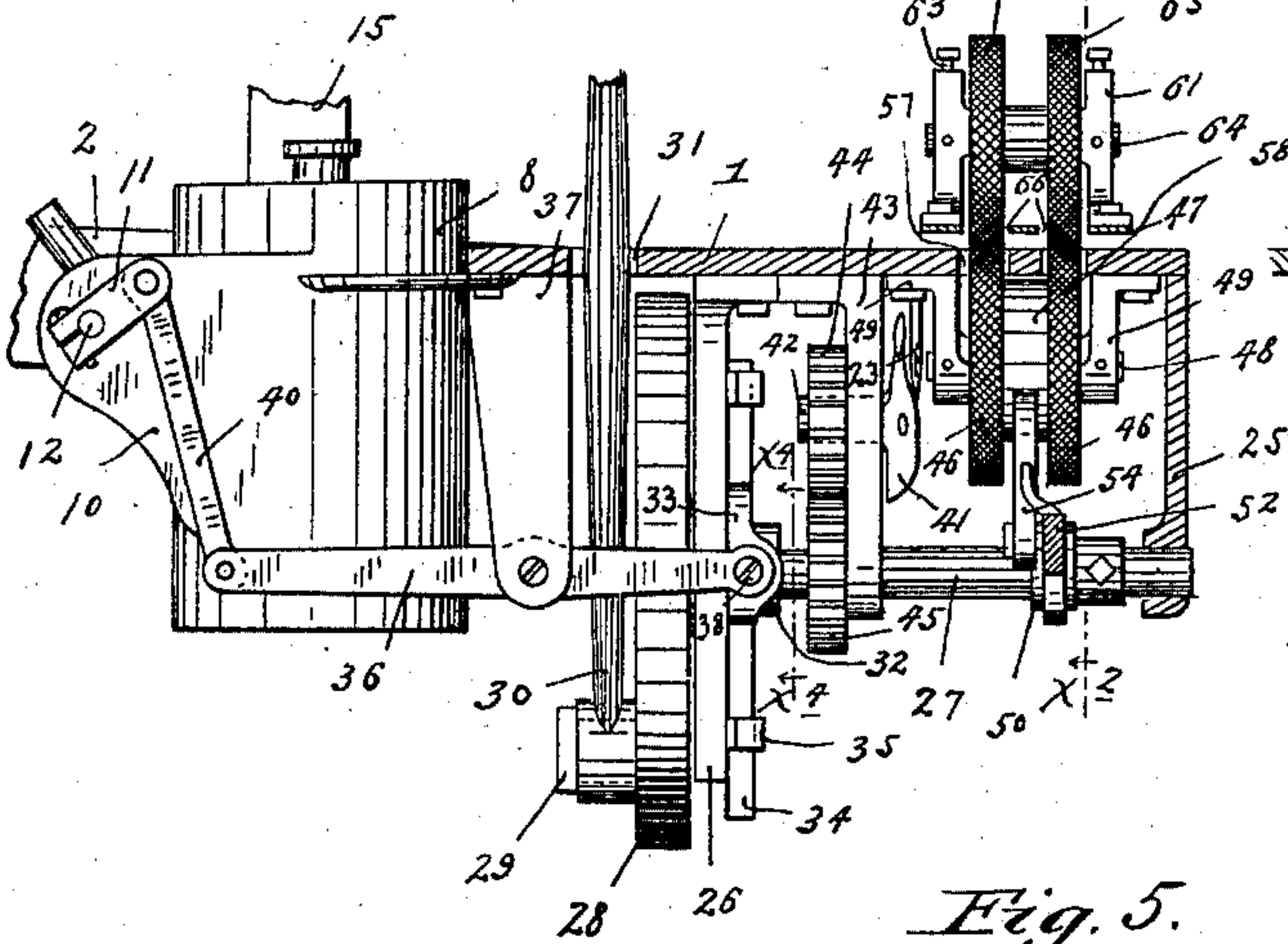


Fig. 4.

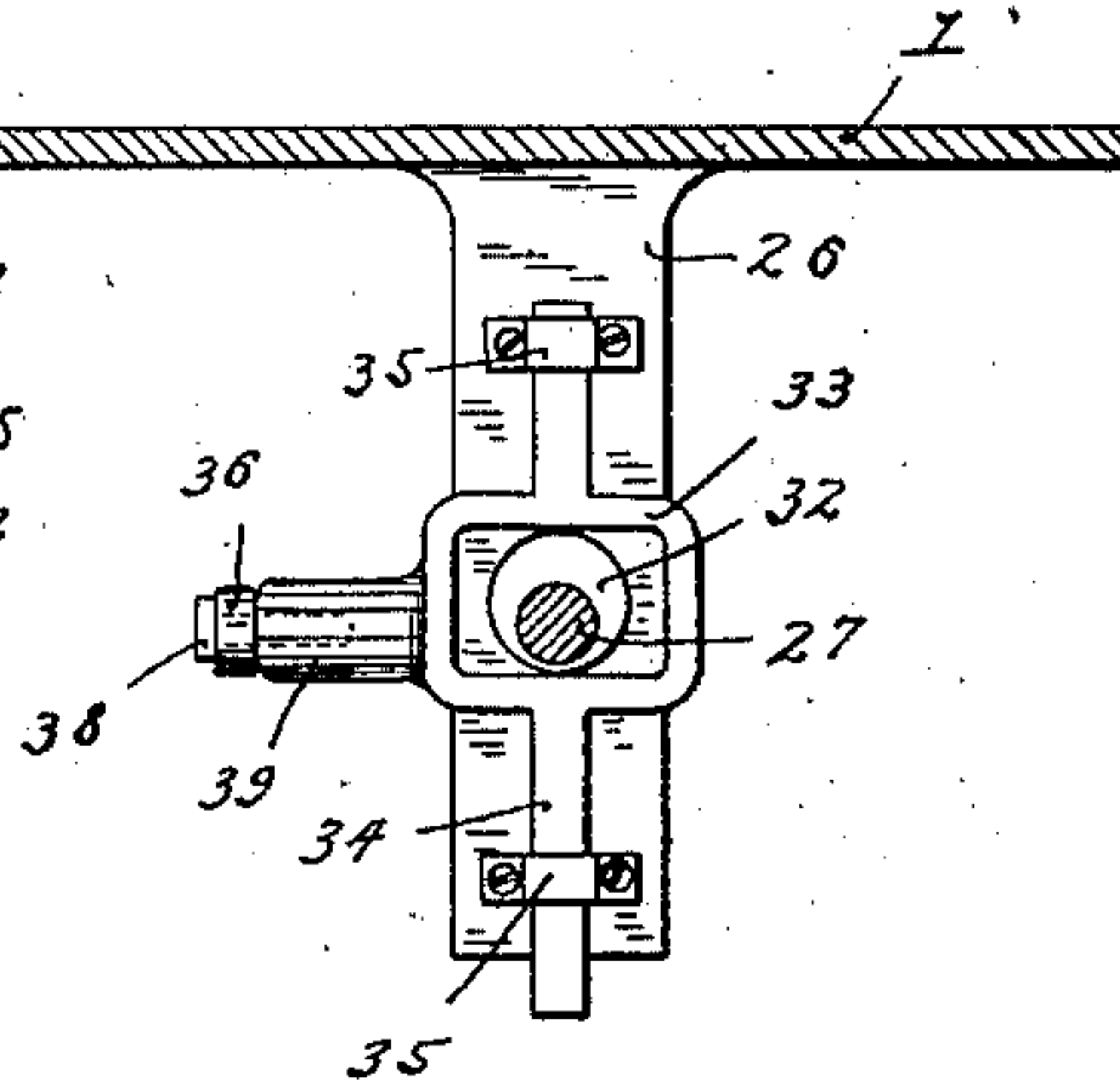
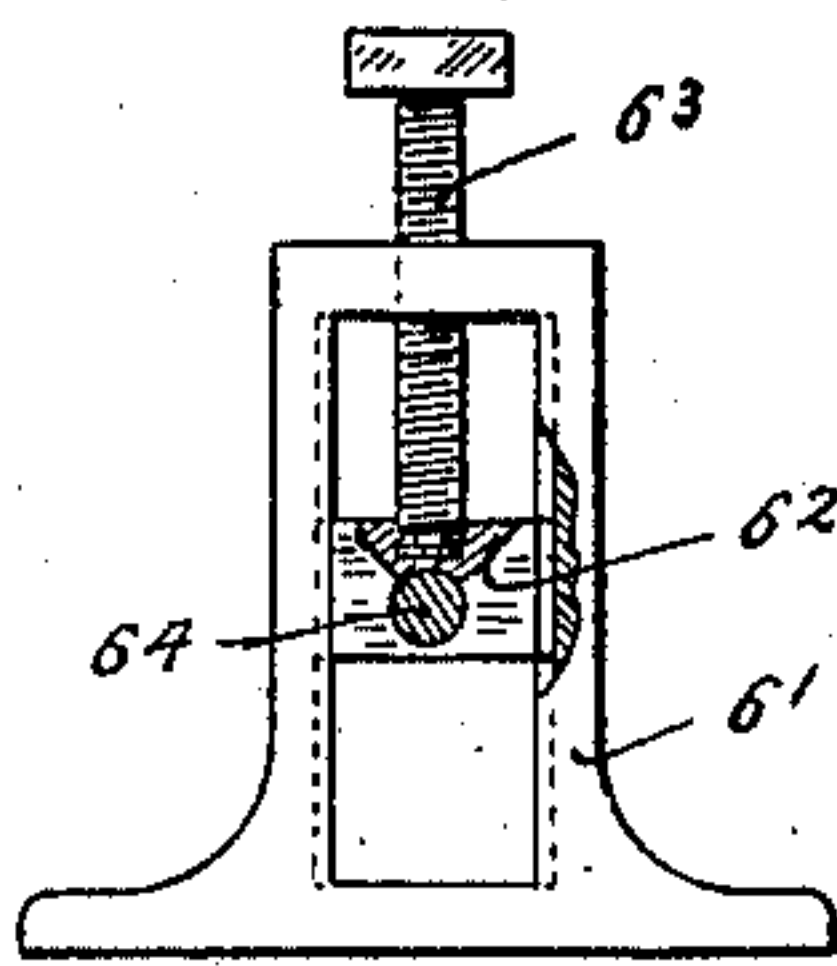


Fig. 5.



Witnesses.

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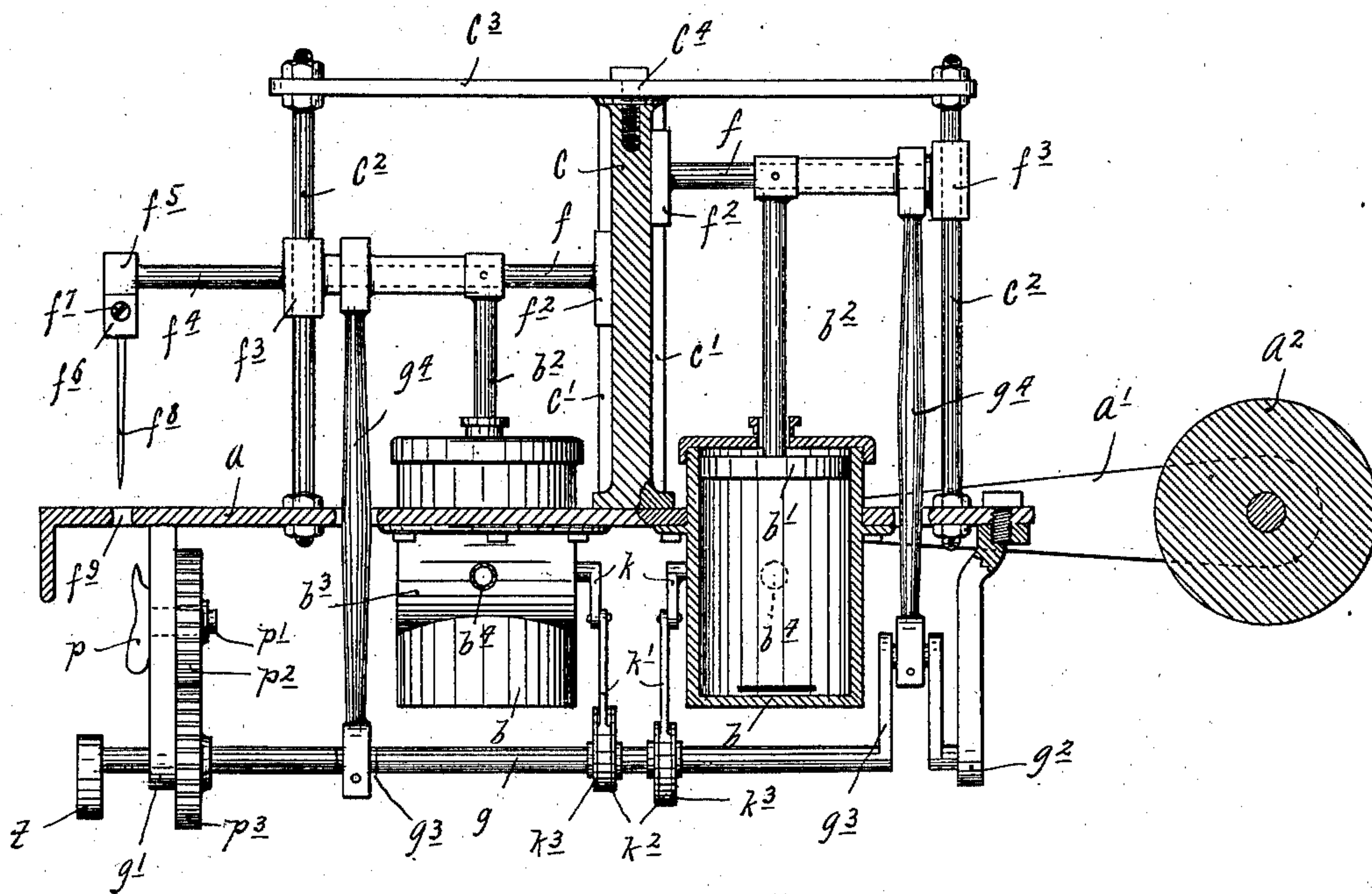
H. A. ANDERSON.
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(No Model.)

3 Sheets—Sheet 3.

Fig. 6.



Witnesses.

Harry Kilgore.

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UNITED STATES PATENT OFFICE.

H. ANDREW ANDERSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO ANDREW HANSON AND ANDREW BLOOMQUIST, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 669,972, dated March 19, 1901.

Application filed September 3, 1898. Serial No. 690,167. (No model.)

To all whom it may concern:

Be it known that I, H. ANDREW ANDERSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Portable Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sewing-machines, and has for its especial object to provide a sewing-machine adapted to be carried in the hand while driven from a source of power located at a distant point.

The immediate object had in view in designing this machine has been to provide such a machine adapted to sew flour or grain sacks after they have been filled without requiring the filled sacks to be moved while being sewed.

With the above objects in view my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

My invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a perspective view showing a sewing-machine constructed in accordance with my invention and involving a simple straight-line motor or engine which directly drives the mechanism of the machine and is itself driven by compressed air delivered thereto from a suitable source of supply located at a distant point through the instrumentality of a flexible tube or connection. Fig. 2 is a transverse vertical section taken approximately on the line $x^2 x^2$ of Fig. 3. Fig. 3 is a longitudinal vertical section taken approximately on the line $x^3 x^3$ of Fig. 1. Fig. 4 is a transverse vertical section taken on the line $x^4 x^4$ of Fig. 3. Fig. 5 is a detail view of one of the keeper-brackets carried by the presser-plate; and Fig. 6 is a central longitudinal section of a sewing-machine of approximately the form illustrated in Fig. 1, but wherein the machine involves and is

driven by a pair of straight-line engines, some of the parts being shown in full and others being removed.

In the construction illustrated in Figs. 1 to 5, inclusive, 1 indicates the supporting plate or bed of the machine, the same being provided with ears 2, between which a cylindrical handpiece 3 is secured. At one end of the handpiece 3 a valve block or seat 4 is secured, and a flexible tube 5 leads to the valve-seat formed in this block. A valve 6, provided at its projected stem portion with a thumb-piece 7, normally closes the passage through this valve block or seat 4. This valve 6 may be of any approved or common construction, which is adapted to be opened by pressure on the thumb-piece 7, and it should of course be under normal strain—as, for example, by means of a spring—to remain in its closed position.

8 indicates the cylinder, and 9 the piston-rod, of an ordinary straight-line motor, having suitable or ordinary valve mechanism (not specifically illustrated) contained within a valve-chest 10 and actuated directly by an arm 11 on a projecting rotary valve-stem 12. The construction of such valves or valve mechanisms are well understood. Hence it is not deemed necessary for the purposes of this case to further illustrate the same. The said cylinder 8 is passed vertically through the intermediate portion of the bed-plate 1 and is rigidly secured thereto, and the piston-rod 9 works at its upper end through a sleeve or guide 13, which, as shown, is formed as part of a triangular bracket 14, rigidly supported by a pair of standards 15 and a guide-rod 16, which parts 15 and 16 are rigidly secured at their lower ends to the bed-plate 1. Below the bracket 14 the piston-rod 9 is provided with an enlargement or head portion 17, from which the horizontally-extended rod 18 projects longitudinally of the machine. At its intermediate portion the rod 18 is provided with an enlargement or cross-head 19, that reciprocates on and is guided by the guide-rod 16. At its extreme forward end said rod 18 is provided with a needle-carrying head 20, which in turn is, as

shown, provided with a removable needle-clamp 21, held to the part 20 and clamped against the needle by a screw 22.

23 indicates the needle, which is clamped between the clamp 21 and the depending portion of the head 20, as above described.

24 indicates a pipe or tube which in the construction illustrated serves to convey the compressed air from the passage in the valve-block 4 to the valve-chest 10 of the engine-cylinder 8.

Extended longitudinally of the machine and mounted in a flange 25 and a bearing-bracket 26, depended from the bed 1, is a counter-shaft 27, provided at its inner end with a crank-disk or fly-wheel 28, having a crank-pin 29. The crank-pin 29 is connected to the lower end of a link or connecting-rod 30, that works through a suitable passage 31 in the bed-plate 1 and is pivoted at its upper end on the intermediate portion of the cross-head rod 18. As illustrated, the counter-shaft 27 is provided just outward of the bearing-bracket 26 with an eccentric 32, which operates on the recessed portion 33 of a vertically-movable strap or bracket 34, held for vertical movement by keepers 35, secured on the bracket 26.

36 indicates a lever pivoted at its intermediate portion to a depending bearing 37, secured to the bed-plate 1. At its forward end the lever 36 is pivoted at 38 to a projection 39 from the strap or vibrating bracket 34, and at its inner end it is connected by a link 40 to the free end of the valve-arm 11.

The parts 32 to 40, inclusive, are related to the valve-gear. This valve-gear may of course take various other forms.

In this machine an ordinary rotary hook 40 for coöperation with the needle to produce the loop in the thread is employed. 41 indicates this hook, which, as shown, is suitably mounted for coöperation with the needle, the same being rigidly secured to a short shaft 42, mounted in a depending bearing-bracket 43, and provided with a spur-gear 44, that is in mesh with another spur-gear 45 on the counter-shaft 27.

The feeding mechanism for giving the step-by-step motion to the machine in the act of sewing involves a pair of knurled or roughened feed-wheels 46, having secured to and between them a ratchet-wheel 47. The wheels 46 47 are mounted for common movements on a short shaft 48, rigidly secured in bearings 49, depending from the under side of the bed-plate 1.

The feed-wheels just described are given their step-by-step motion under the action of an eccentric 50, carried by the counter-shaft 27 and acting on the recessed portion 51 of a vibrating lever 52, which lever is pivoted at one end to a depending lug 53 from the bed-plate 1 and is provided at its free end with a spring-pressed pawl 54, that engages the ratchet-wheel 47. The free end of the lever 52 works in a vertical slot 55 of a stud 56, that

depends from the bed-plate 1 and holds said lever and pawl 54 against lateral movement. The feed-wheels 46 work through suitable slots 57 in the bed-plate 1 and project slightly above the upper face of the same for the proper engagement with the material being sewed.

For coöperation with the feeding mechanism just described I provide a presser device, which in its preferred form involves as follows: 58 indicates a transversely-extended presser-plate provided with a perforation 59 immediately overlying a similar perforation 60 in the bed-plate 1, and both of which perforations serve to permit the needle 23 to pass for coöperation with the hook 41. To this presser-plate 58 is rigidly secured a pair of keeper-brackets 61, in which bearing-blocks 62 are adjustably mounted by means of set-screws 63 working through said brackets and swiveled to said block. 64 indicates a short shaft which is rigidly secured to and carried by the vertically-adjustable blocks 62. On this shaft 64 a pair of knurled presser-wheels 65 are loosely mounted, said wheels being spaced apart and properly located for coöperation one with each of the feeding-wheels 46, as best shown in Figs. 2 and 3. By means of the set-screws 63 the wheels may be projected to a greater or less extent through slots 66, cut in the presser-plate 58. The presser-plate 58, keeper 61, and presser-wheel 65 are adapted to be raised into inoperative position by means of a lever extended to within easy reach of the thumb of the operator's right hand, by which the machine is held. This lever 67 is shown as fulcrumed at its intermediate portion on lugs 68 on the face of the bed-plate 1 and at its forward end is rigidly secured to the inner keeper 61 and to the presser-plate 58. The rear section of said lever 67 is perforated at 69 and works on the right-hand member of the standards 15, thereby guiding said lever against lateral movements. The said lever terminates at its rear end in the thumb-piece 70, adapted to be readily engaged, as just described. The presser-wheels 65 are spring-pressed toward or into engagement with the feed-wheels 46, this, as shown, being accomplished by a coiled spring 71 on a vertical stud or bolt 72, that is passed through a perforation in the forward portion of the lever 67 and is provided with a thumb-nut 73, by means of which the tension of said spring may be varied.

Extended longitudinally of the machine and pivoted at its intermediate portion to lugs 74 on the bed-plate 1, near its left-hand side, is another lever 75, that terminates at its rear end in a finger-piece 76 and is provided at its forward end with a knife or cutter-blade 77. This lever 75 is provided with a perforated section 78, that works on the left-hand member of the standards 15 and guides the lever against lateral movement. A spring 79, compressed between said lever and the bed-plate 1, normally holds the knife 77 upward out of the way of the work and in an inoperative

position. The knife 77 coöperates with a fixed shear-blade 80 on the bed-plate 1, and the bed-plate is cut away at 81 to permit the knife 77 to freely move below the blade 80. The finger-piece 76 of the lever 75 stands in position to be readily engaged by the fingers of the right hand while the machine is held thereby, as indicated in Fig. 1, in which figure *z* indicates the hand of the operator. The knife 77 stands in position to cut the thread or threads of the completed work when depressed by the lever 75, as indicated.

The operation of the machine just described is substantially as follows: The motive fluid, preferably compressed air, is supplied by any of the well-known sources or devices located at a distant point, the same being delivered through the flexible tube 5. Its admission to the valve-chest is controlled by depressing and releasing the thumb-piece 7 of the valve 6. By depressing said valve the air is admitted to said chest and the engine is thrown into action. The vibrations of the piston and its rod 9 vibrate the rod 18, cross-head 19, and needle-carrying head 20, and this vibration of the rod 20 will, through the link 30, cause the rotation of the crank-disk 28 and counter-shaft 27. The rotation of this counter-shaft 27 will, through the valve-gear 32 34 36 40, as previously described, properly control the actions of the valve mechanism of the engine. The rotary hook 41 will be moved with a properly-timed action with respect to the movements of the needle by means of the pair of spur-gears 44 45. The function of this hook is well understood, and, briefly stated, is when a single thread is employed to produce the loops of a chain-stitch. The thread is supplied to the needle in the ordinary manner from a suitably-held spool. (Not shown.) Substantially the same construction may be employed to produce a lock-stitch when two threads are provided; but as my present invention has no relation to the specific mechanism for producing the stitch this device need not be further illustrated. The rotations of the counter-shaft 27 and eccentric 50 cause vibrations of the lever 52, and the upward movements of said lever cause the pawl 54 by its action on the ratchet-wheel 47 to move the feeding-wheels 46 with a step-by-step action, so as to move the work while the needle is withdrawn or raised above the material or fabric being sewed, or, more properly speaking, if a stationary article, such as a bag, is being sewed the machine will be moved with a step-by-step action. The work or material to be sewed is placed between the lower or outer edge of the bed-plate 1 and the presser-plate 58 and between the coöperating feeding rollers or wheels 46 and presser-wheels 65, this being accomplished while the outer or lower end of the lever 67 and parts carried thereby are raised against the action of the tension-spring 71. The work is thus very securely held and at the same time is very easily moved in the proper direction.

It will be noted that the work is tightly pressed between the coöperating wheels 46 65, but is loosely held between the bed-plate 1 and presser-plate 58. From the above it is evident that the machine may be carried and operated by one hand and may be freely moved from place to place, its scope of movement only being limited by the length of the flexible supply-tube 5. For many purposes—in fact, in all cases where articles not easily moved are to be sewed—a machine of this general character has an obvious value.

The construction illustrated in Fig. 6 may employ the same feeding mechanism, the same presser device, and the same cutting device as are illustrated in Figs. 1 to 5, inclusive. The salient point of modification is found in the arrangement whereby a pair of engines set one in advance of the other are employed in lieu of a single engine, and the obvious advantage of this construction is that a fly-wheel is not necessary and no difficulty can possibly be encountered in starting the machine into action. In this construction, *a* indicates the bed-plate, provided with rearwardly-projecting lugs *a'*, between which a handpiece *a''* is secured. *b* indicates the cylinders of a pair of straight-line engines, the same being rigidly secured to and projected through the bed-plate *a*, and *b'* indicates the pistons of said engines, having projecting piston-rods *b''*. *c* indicates a vertical standard rigidly secured to and rising from the bed-plate *a*, from the point between the cylinders *b*, and provided with guideways *c'*. *c''* indicates a pair of vertical guide-rods rigidly secured at their lower ends to the bed-plate *a* and rigidly secured at their upper ends to the projecting ends of the tie-bar *c''*, the intermediate portion of which is rigidly secured to the upper end of the standard *c*, as shown at *c''*. *f* indicates a pair of horizontally-extended cross-head rods, which are provided at their inner ends with blocks *f''* and at their outer ends with perforated guide-heads *f''*, the former of which work in the guide-channels *c'* of the standard *c* and the latter of which work on the coöperating guide-rods *c''*. The upper ends of the coöperating piston-rods *b''* are rigidly secured to these cross-head rods *f*. The forward member of the guide-heads *f''* is provided with an extension *f''*, that terminates in a needle-carrying head *f''*, adapted to coöperate with a clamp *f''*, secured thereto by a screw *f''* to hold the needle *f''*. *f''* indicates a perforation in the bed *a*, through which the needle works, as in the previously-described construction. Again, as in the previously-described construction, a counter-shaft *g* is mounted below the bed-plate *a* and extended longitudinally of the machine, the same being journaled in the lower end of bearings *g'* *g''*, that depend from the bed *a*. This counter-shaft *g* is provided with a pair of cranks *g''*, that are set on quarters or one in advance of the other. These cranks *g''* are connected to the coöperating cross-head rods

f by means of links or connecting-rods *g*⁴. The cylinders *b* are provided with ordinary valve-chests *b*³ and with ordinary valve mechanisms contained within said chest. As shown, the projecting stems of these valves, which are assumed to be rotary valves, are provided with arms *k*, that are connected to projecting arms *k'* of eccentric-straps *k*², that work on eccentrics *k*³, set on quarters with respect to each other and carried by the counter-shaft *g*. These valves and valve-gears are of the ordinary construction and control the actions of the engines with a properly-timed action and in the ordinary manner. The compressed air or motive fluid is delivered to the valve-chest *b*³ through tubes or connections, (indicated at *b*⁴.) *p* indicates the hook, corresponding to the hook 41 of the previously-described construction, this hook being secured on a short shaft *p'*, mounted in the bearings *g'* and provided with a spur-gear *p*², that is in mesh with and driven by a spur-gear *p*³ on the counter-shaft *g*. *t* indicates an eccentric which corresponds to the eccentric 50, previously described in connection with Figs. 1 to 5 and which may operate in the same manner and upon the same mechanism.

From the foregoing it must be evident that my invention is generic, and hence capable of a large range of modification.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A portable sewing-machine adapted to be supported and carried in the hand while in operation, comprising the combination of a supporting-frame having a stitch-forming mechanism adapted to work adjacent an edge thereof, and provided with a transversely-arranged handpiece at the edge opposite said stitch-forming mechanism, a fluid-motor also mounted on the frame for operating the stitch-forming mechanism, a valve located in proximity to the handpiece in position to be operated by the thumb of the hand supporting the machine, a valve-chest, connections between the valve and said valve-chest, and a flexible connection leading from a distant source of fluid-supply to the said valve.

2. A portable sewing-machine adapted to be supported and carried in the hand while

in operation, comprising a supporting-frame having a stitch-forming mechanism thereon adjacent one edge thereof and a handpiece at the edge opposite the stitch-forming mechanism, a fluid-motor for operating the stitch-forming mechanism, a flexible tube or pipe leading from a distant source of fluid-supply to said motor, feeding devices for the fabric being stitched, and means in proximity to the handpiece for operation by the fingers of the hand supporting the machine to regulate the supply of fluid to the motor and for manipulating the feeding devices.

3. A portable sewing-machine adapted to be supported by the hand while in operation comprising a frame, stitch-forming mechanism on said frame, a fluid-motor also carried by the frame for operating the stitch-forming mechanism, a handpiece at one end of the frame, a valve in proximity to said handpiece for regulating the supply of fluid to said motor, a flexible connection between said valve and a distant source of fluid-supply, feeding and cutting devices each having a part projecting in proximity to the said handpiece, whereby the flow of fluid to the motor may be regulated, and the feeding and cutting devices may be manipulated by the fingers of the hand supporting the machine.

4. In a portable sewing-machine adapted to be supported by the hand while in operation, the combination of a frame, stitch-forming mechanism mounted thereon, a motor for operating said mechanism, a handpiece for supporting the machine, a pair of laterally-spaced feed-wheels, means for imparting a step-by-step movement thereto, a corresponding pair of laterally-spaced presser-wheels cooperating with the feed-wheels to hold the work during the stitching operation, and means for raising and lowering said presser-wheels having a part projecting in proximity to the said handpiece, whereby the same may be operated by the fingers of the hand while supporting the machine.

In testimony whereof I affix my signature in presence of two witnesses.

H. ANDREW ANDERSON.

Witnesses:

B. B. NELSON,

F. D. MERCHANT.