

No. 736,593.

PATENTED AUG. 18, 1903.

J. GOHY.

MACHINE FOR SOLDERING HEALDS FOR WEAVING LOOMS.

APPLICATION FILED SEPT. 26, 1902.

NO MODEL.

6 SHEETS—SHEET 1.

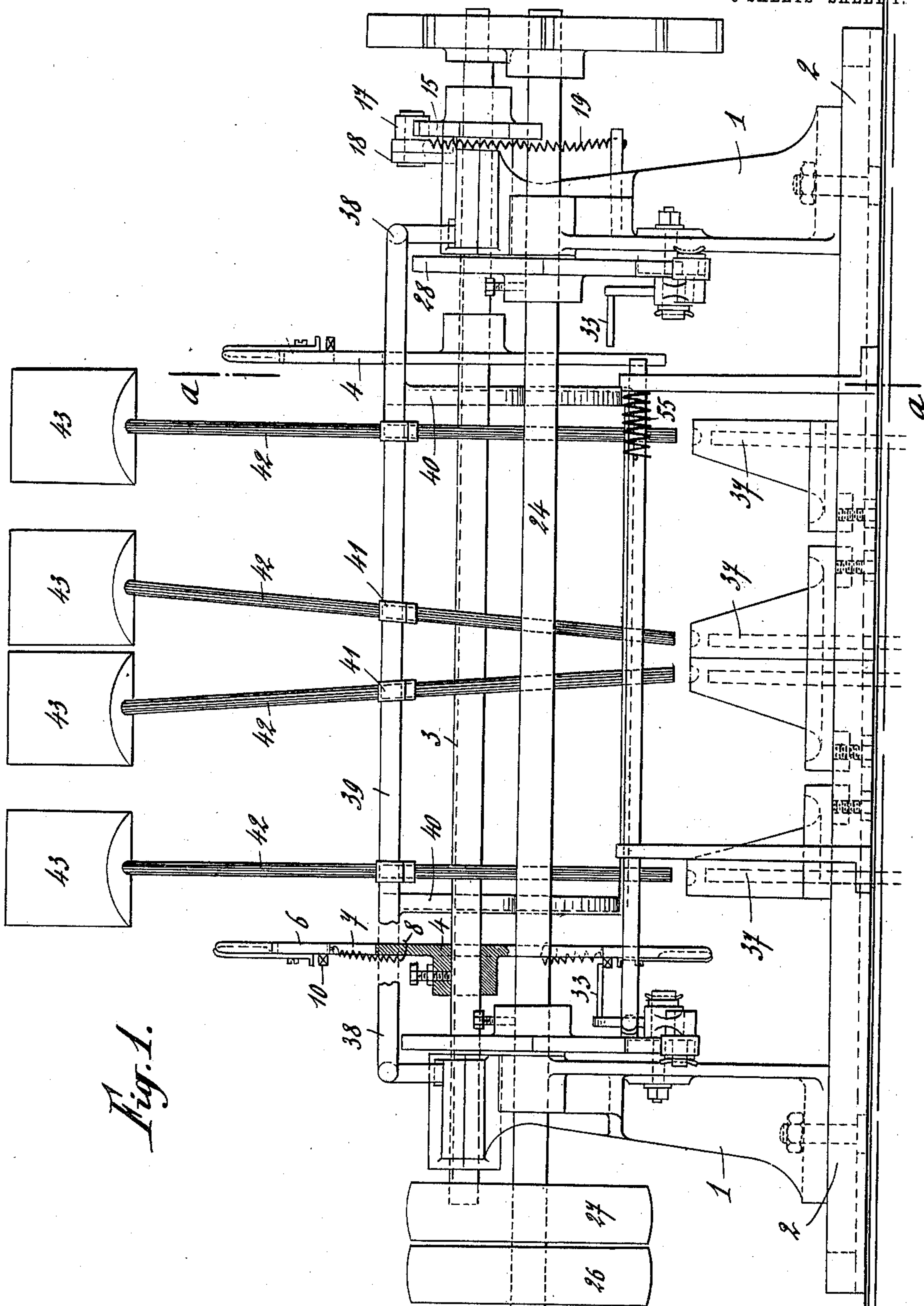


Fig. 1.

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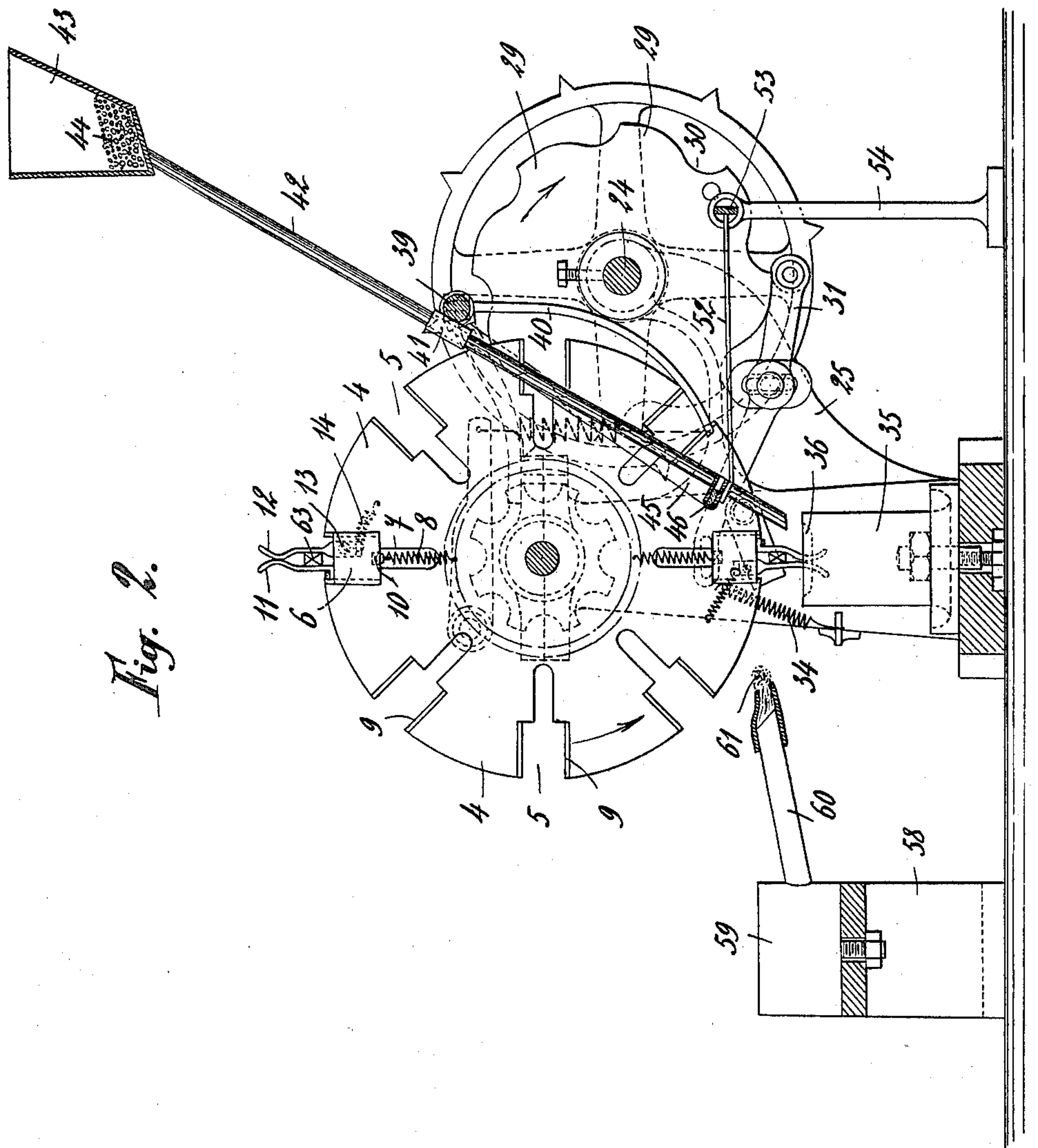


Fig. 2.

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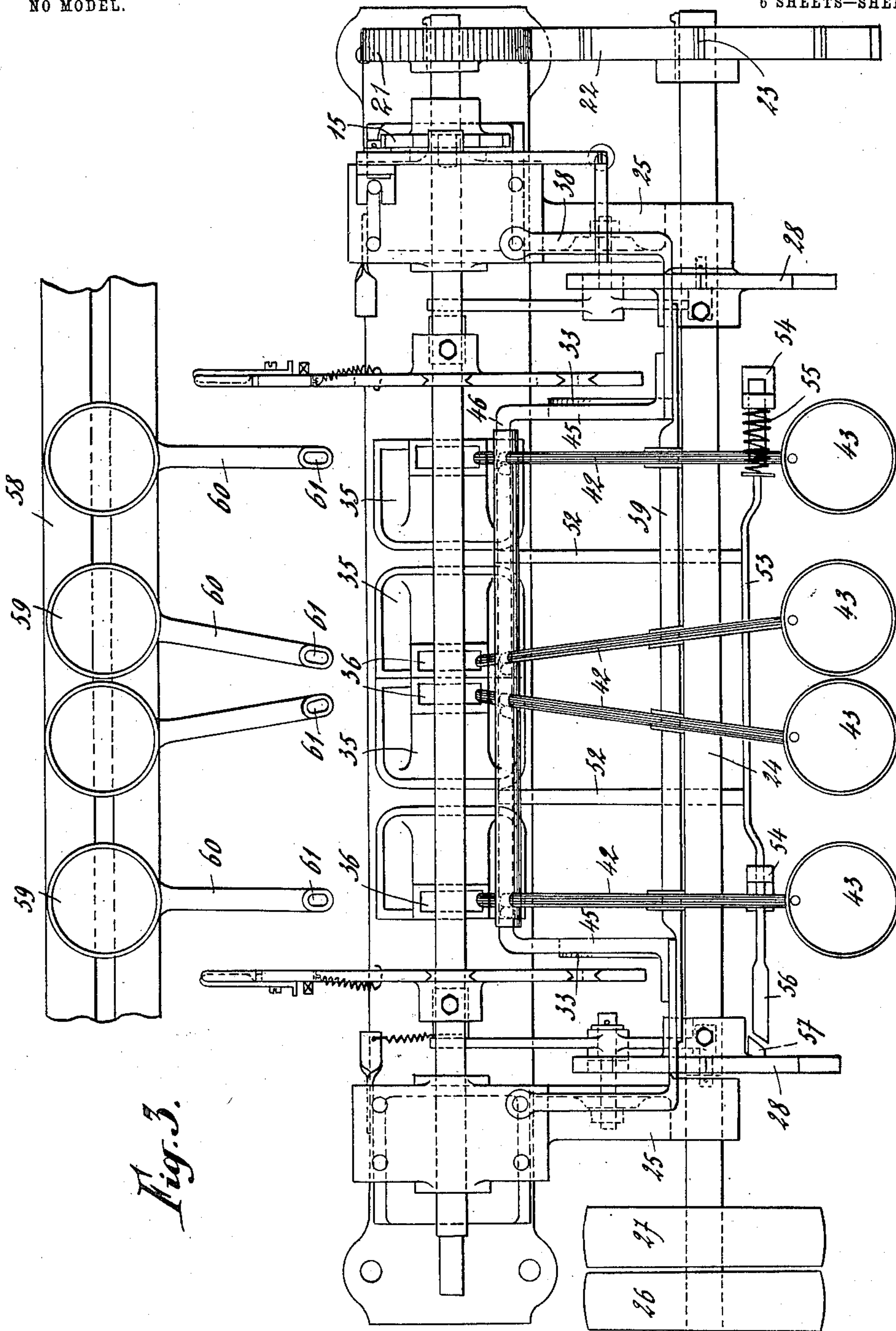


Fig. 3.

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6 SHEETS—SHEET 4.

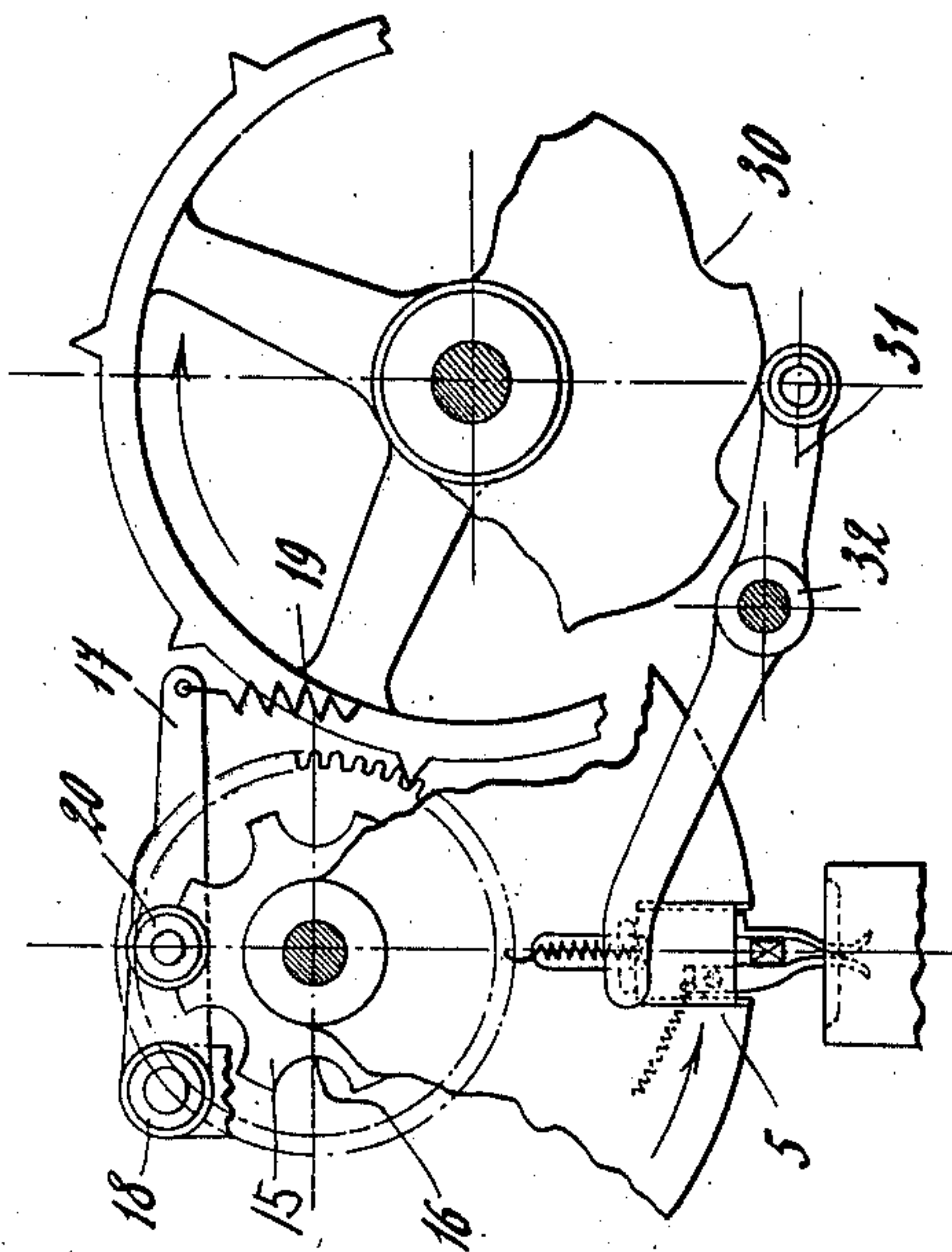
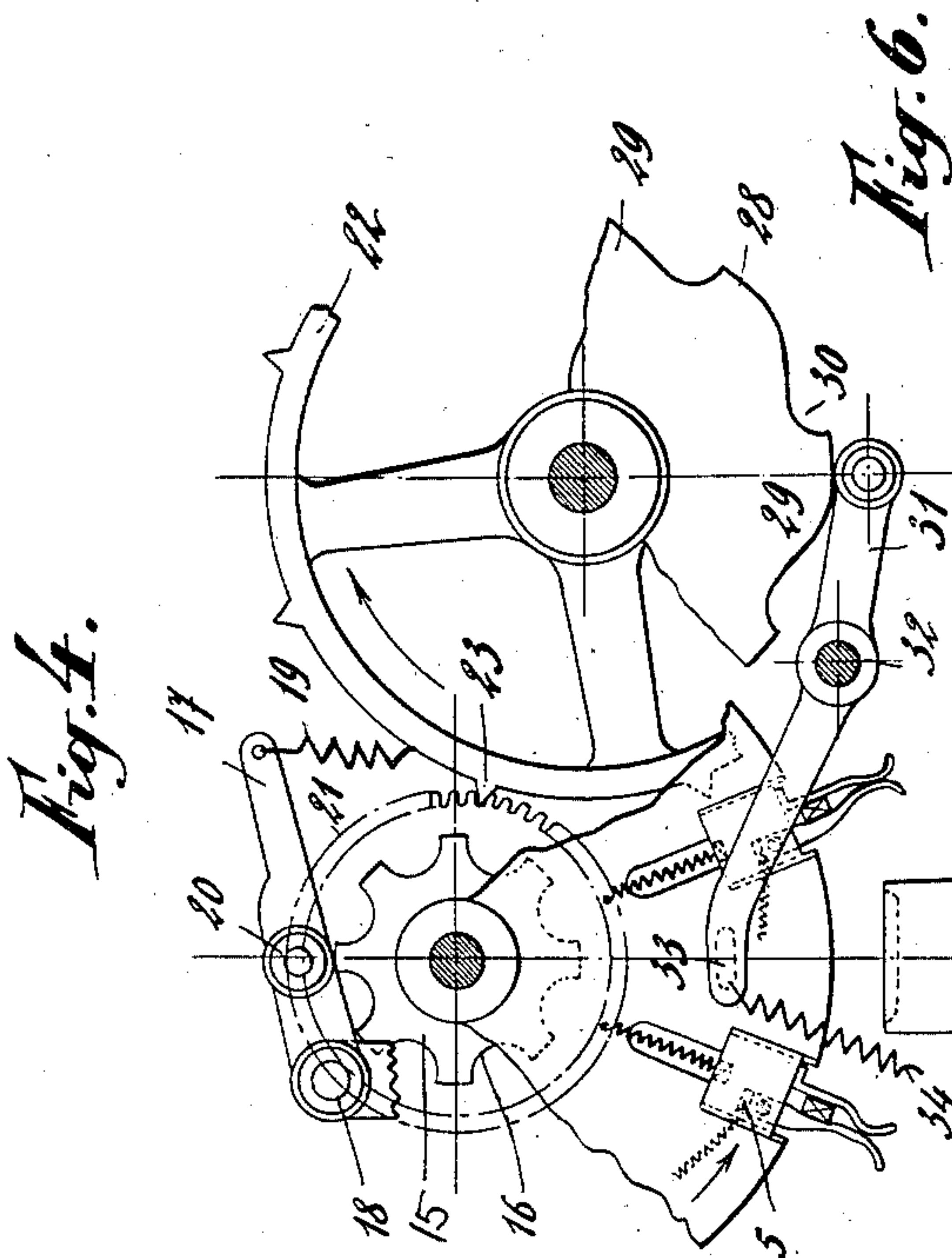
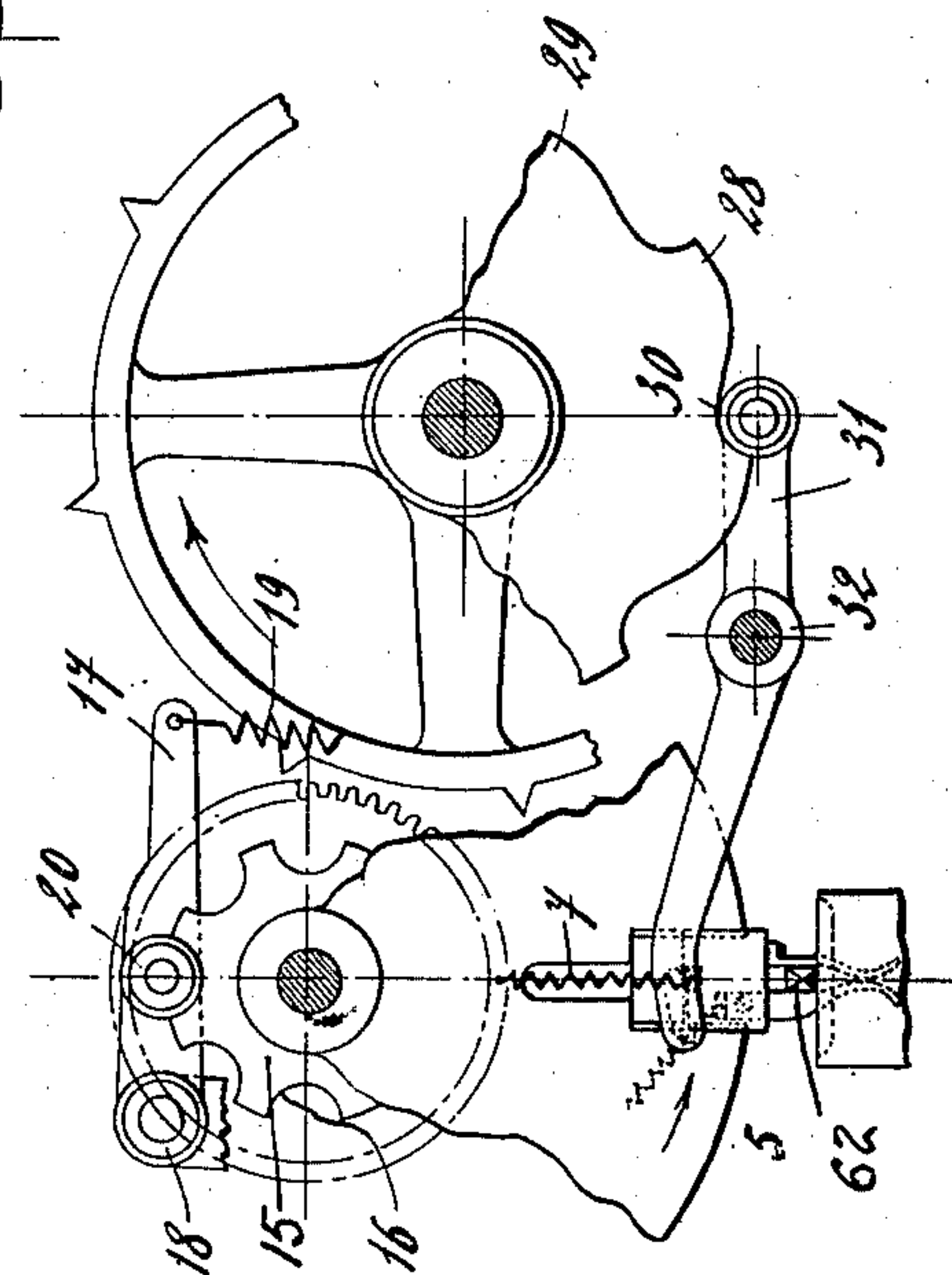


Fig. 5.



Witnesses

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6 SHEETS—SHEET 5.

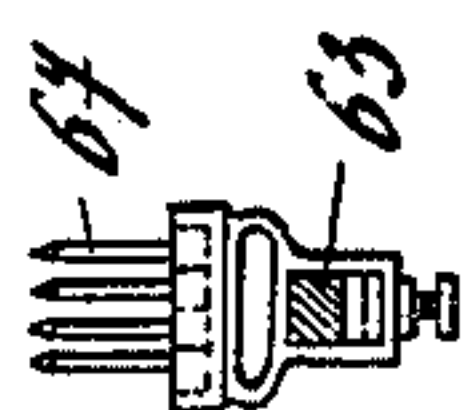


Fig. 9.

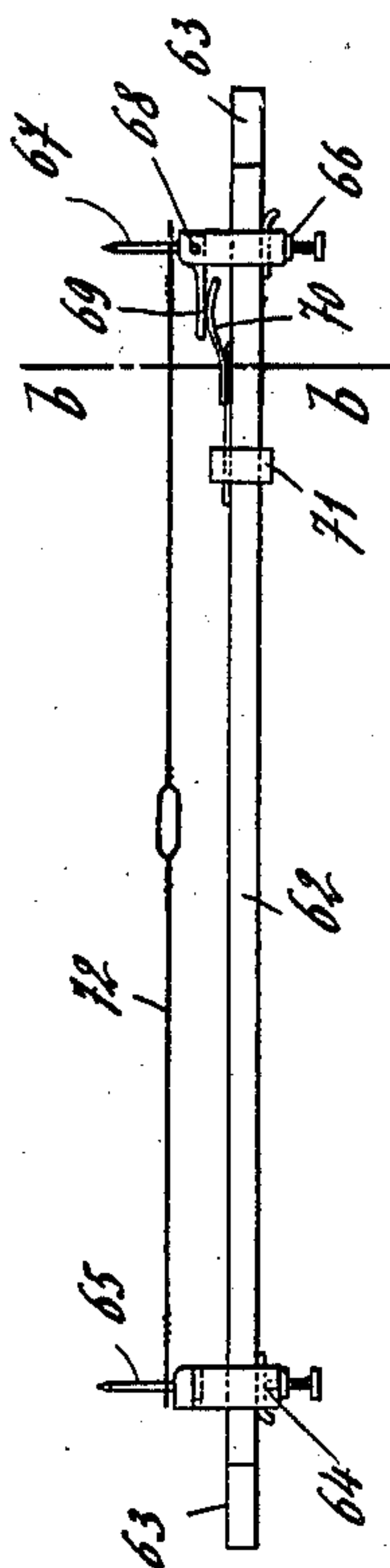


Fig. 7.

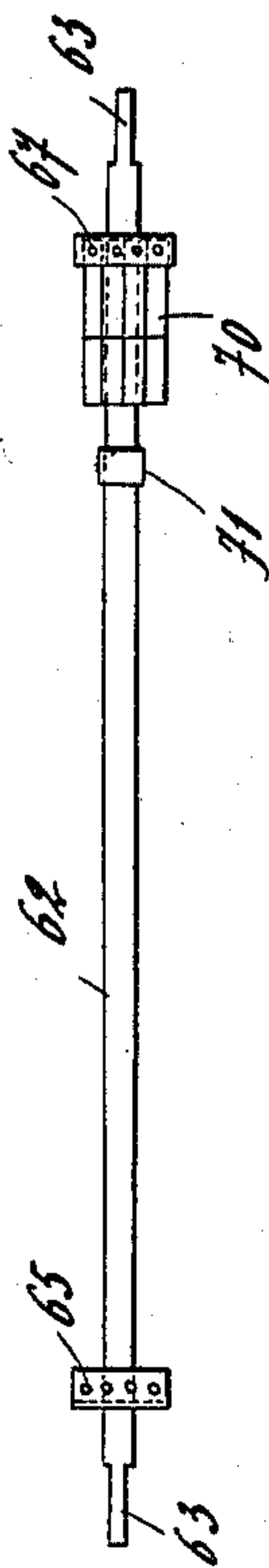


Fig. 8.

Fig. 11.

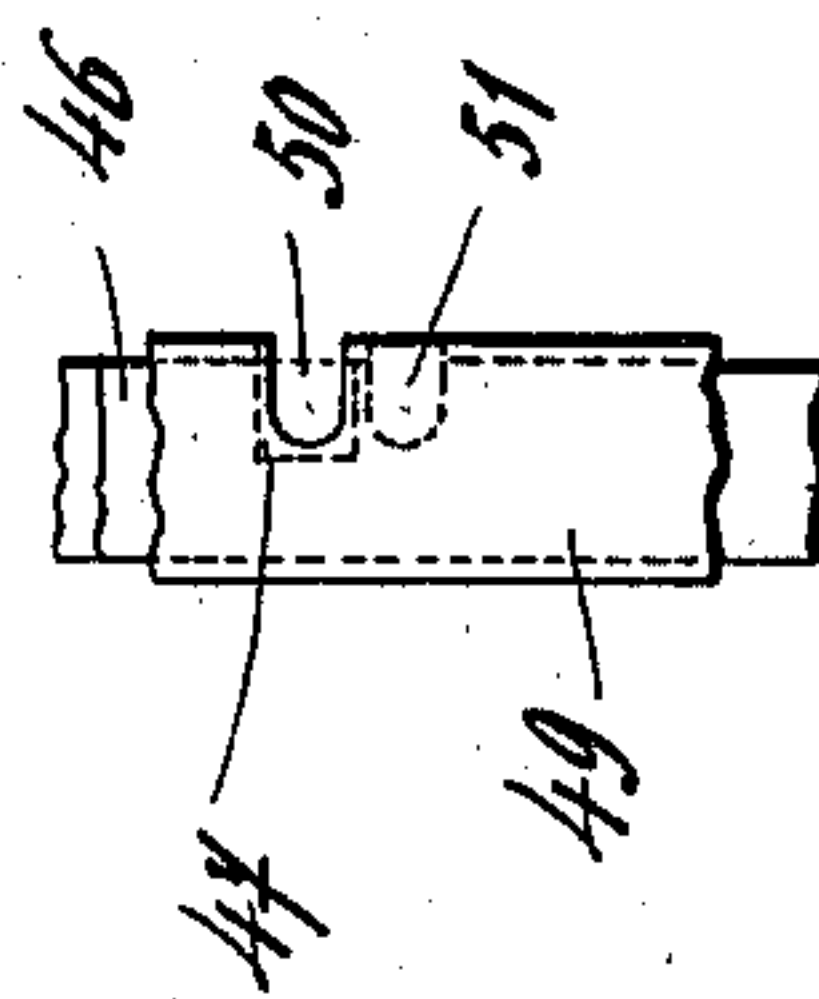
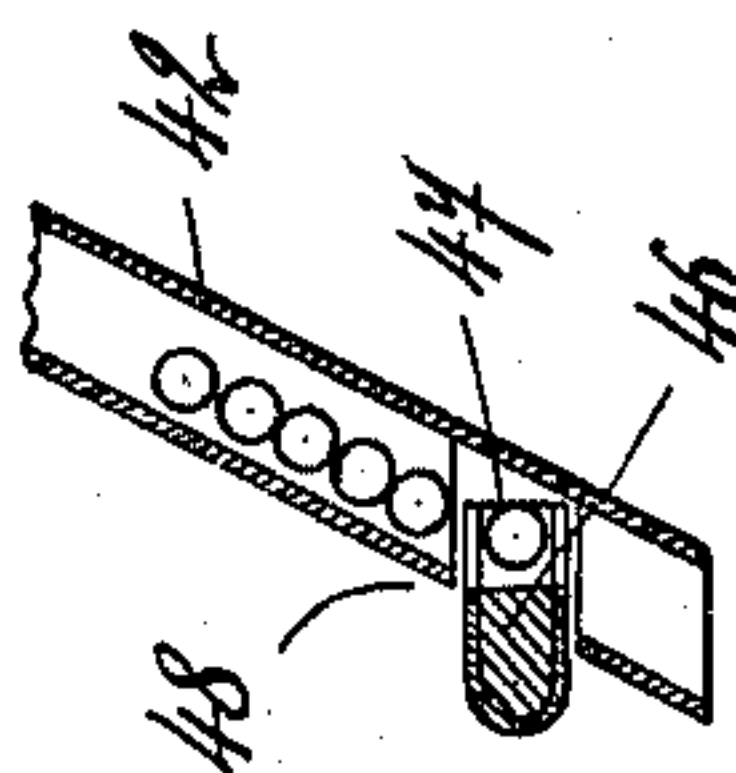


Fig. 10.



Witnesses

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6 SHEETS—SHEET 6.

Fig. 12.

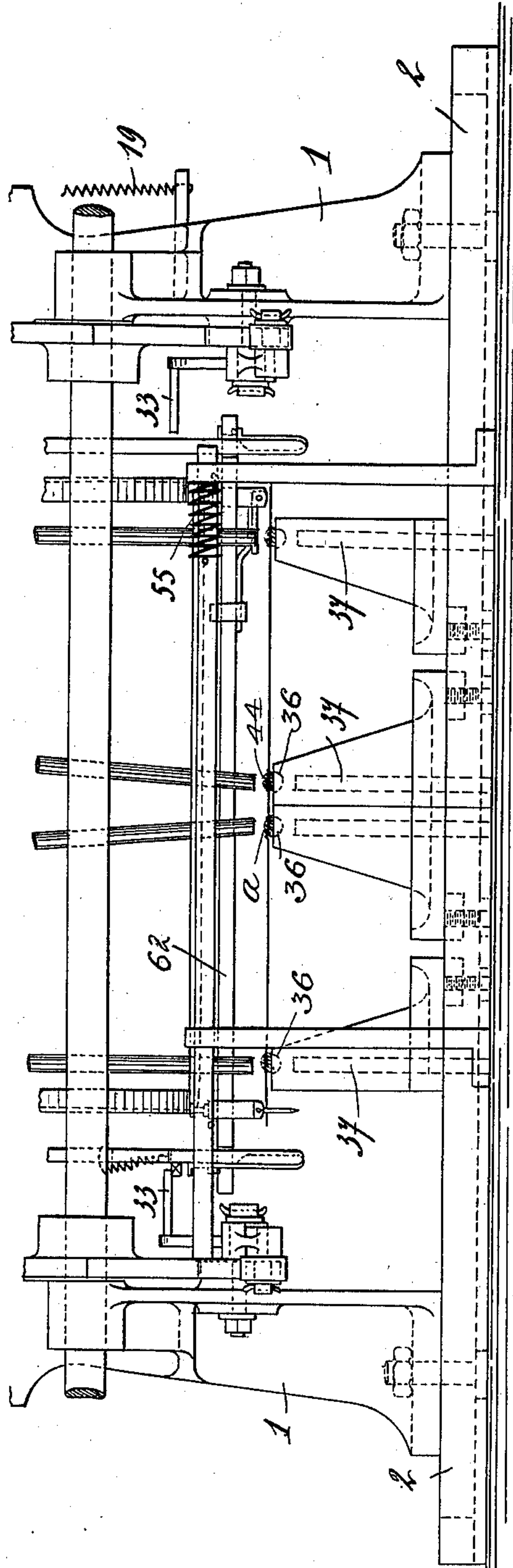
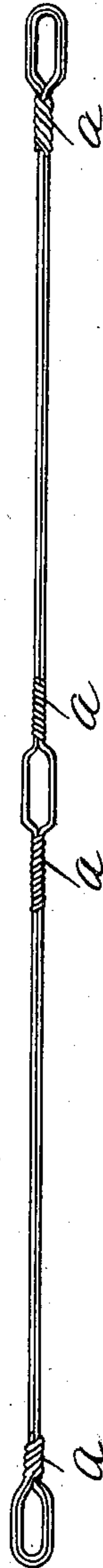


Fig. 13.



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UNITED STATES PATENT OFFICE.

JEAN GOHY, OF ENSIVAL, NEAR VERVIERS, BELGIUM.

MACHINE FOR SOLDERING HEALDS FOR WEAVING-LOOMS.

SPECIFICATION forming part of Letters Patent No. 736,593, dated August 18, 1903.

Application filed September 26, 1902. Serial No. 124,994. (No model.)

To all whom it may concern:

Be it known that I, JEAN GOHY, a subject of the King of Belgium, residing at Rue de Pepinster, Ensival, Verviers, in the Kingdom of Belgium, have invented a new and useful Machine for Soldering Healds for Weaving-Looms, of which the following is a specification.

This invention relates to a machine whereby the eyes of a large number of healds for weaving-loom can be soldered at a single operation.

The accompanying drawings illustrate, by way of example, one way of carrying out my invention.

Figure 1 is a front elevation of the machine. Fig. 2 is a section on the line *a a* of Fig. 1. Fig. 3 is a plan view corresponding to Fig. 1. Figs. 4, 5, and 6 are three views diagrammatically illustrating the various positions which the principal parts assume during the working of the machine. Fig. 7 is a side view of a heald-support by means of which the healds are mounted in the machine. Fig. 8 is a plan view of the said support, and Fig. 9 is a section on the line *b b* of Fig. 7. Fig. 10 and Fig. 11 are views of details of a solder-distributing mechanism. Fig. 12 is a side view of the lower part of the machine, showing a heald in the act of being soldered. Fig. 13 is a view of a heald, showing the twisted portions which are to be soldered in order to make the healds strong.

The machine comprises two standards 1, mounted upon a table 2. In the standards 1 turns a shaft 3, on which are mounted at a suitable distance apart two disks 4, each having a certain number of radial slots 5, in which slide blocks 6, subjected to the action of springs 7, connected to the said blocks 6 and fixed in holes 8 in the disks 4. These blocks 6 are guided in the radial slots of the disks 4 by means of bevel edges 9 and carry a stop 10, the object of which will be hereinafter explained. Each block 6 is provided with a clip formed of two arms 11 and 12, one of which, 11, is fixed directly upon the block 6 and the other of which, 12, is hinged at 13 to this support and is subjected to the action of a spring 14, Fig. 2, keeping the upper ends of the arms 11 and 12 in contact with each other. These clips are designed to receive

bars each of which carries a certain number of healds, as hereinafter explained.

The shaft 3 carries outside one of the standards 1 a disk 15, provided with a number of recesses 16, corresponding with the number of blocks 6, carried by the disks 4. A lever 17, adapted to oscillate upon a bracket 18 and subjected to the action of a spring 19, acts, by means of a roller 20 in the recesses 16 of the disk 15, to always keep the latter, and consequently the shaft 3 and the disks 4, in a given position. The shaft 3 receives an intermittent rotary movement from a gear-wheel 21, Fig. 3, actuated by a wheel 22, provided with a number of teeth 23, corresponding with the number of blocks 6, carried by the disks 4. This wheel 22 is mounted upon a driving-shaft 24, supported in brackets 25, formed integral with the standards 1. This shaft 24 carries at the end opposite to the wheel 22 the loose and fast pulleys 26 and 27 for driving the machine. Between the two brackets 25, supporting the shaft 24, are mounted two cam-wheels 28, provided with a number of bosses 29 and recesses 30, corresponding with the number of blocks 6, mounted in the disks 4. Each of these cams 28 acts upon the end of a lever 31, oscillating upon a pivot 32, mounted on one of the sides of the brackets 25. The opposite end of each of the levers 31 is provided with a projection 33, which advances near to the disks 4, so as to allow of acting upon the stops 10 of the blocks 6 of each of the disks 4 when the ends of the levers 31 in contact with the cams 28 fall into one of the recesses 30 of the said cams, and consequently each of the arms 33 can descend under the action of a suitable spring 34.

Between the disks 4 are fixed on the table 2 blocks 35, Fig. 3, having at their upper part buckets 36, containing a certain quantity of melted tin solder, serving to effect the soldering of the healds. These buckets 36 can be heated in any suitable manner—such, for example, as by means of Bunsen burners 37, heating the interior of the block 35.

On the standards 1 of the machine are mounted two supports 38, holding a bar 39, which supports two curved arms 40, the purpose of which will be hereinafter described. To this bar 39 are fixed, by means of suitable

fastenings 41, vertical or inclined tubes 42, extending to near the tops of the buckets 36, containing the solder. Each of these tubes is provided at its upper part with a receptacle 5 43, designed to contain a certain number of granules or globules of solder 44, Fig. 2, each of which represents the quantity of solder necessary for soldering the total number of healds which the machine is capable of sol- 10 dering during one complete rotation of the disks 4.

To the bar 39 are fixed two arms 45, Figs. 2 and 3, arranged obliquely and connected at their lower ends by a cross-bar 46, provided 15 at the part where each tube 42 is situated with a recess 47, Figs. 10 and 11, designed to contain a small globule of solder coming from the corresponding receptacle 43. To this end the cross-bar 46 enters notches 48, made in 20 the tubes 42. On this cross-bar 46 a sheet-metal plate is arranged to slide, said plate being provided at points adjacent the tubes 42 with notches 50 51, which are out of alignment with each other vertically.

25 When the notch 50 comes into line with the corresponding tube 42, one of the globules of solder 44 contained in the said tube can pass into the recess 47 in the fixed cross-bar 46 and will be retained in this recess by the 30 solid portion of the lower part of the bent plate 49. If now the plate 49 has just been moved longitudinally over the cross-bar 46, the said plate will close the recess 47 of the cross-bar 46 at its upper part, while the lower 35 opening 51, coming into line with the tube 42, will allow the globule of solder 44 contained in the recess 47 to pass. This globule of solder then rolls through the lower part of the tube 42 into the bucket 36, placed un- 40 der the tube. In order to give the necessary movements to the plate 49, it is carried by two cross-bars 52, Figs. 2 and 3, fixed to a rod 53, mounted in supports 54. This rod 53 is controlled by a spring 55, Figs. 1 and 3, 45 which continually tends to bring the end 56 of the rod 53 into the path of a boss 57, carried by one of the cams 28, already mentioned.

On a support 58, mounted parallel with the axis of the machine, are fixed vessels 59, each 50 provided with a short tube 60, containing a wick 61, placed in the path of the healds when they are placed in the machine. These vessels contain a suitable acid, and their tubes 60 are arranged so as to be always fed with 55 the acid. The wicks 61 are thus suitably impregnated and can wet the healds before the soldering takes place.

Having explained in detail the operation of the machine hereinbefore described, I will ex- 60 plain the method of fixing the healds in the machine.

The healds, the twisted portions *a* of which, Fig. 13, are to be soldered in order to make the healds sufficiently resistant, are carried 65 by supports which are introduced between the clips 11 12 of the blocks 6. These supports each consist of a bar 62, Figs. 7 and 8,

the ends 63 of which are reduced in thick- 70 ness, so as to allow of easily entering between the arms 11 and 12 of the clips of the blocks 6. On each of the said bars 62 is fixed on one side a stirrup 64, carrying a certain number of pins 75 or points 65, designed to receive one of the ends of the healds to be soldered. At the other end of each bar 62 is adjustably fixed a similar stirrup 66, carrying pins or points 67, 80 arranged to rotate upon a pivot 68, and each provided with an angular arm 69, on which can act a spring 70. These springs 70, corresponding in number with the pins or points 85 67, are fixed to a ring 71, sliding with friction over the bar 62. The stirrup 66 and the ring 71, carrying the springs 70, can be placed as desired upon the bar 62 at a suitable distance from the stirrup 64, according to the 90 length of the healds to be soldered. The healds 72 are fixed, as shown at Fig. 7, between the pins or points 65 and 67 of the heald-supports. Each support being pro- 95 vided, as shown in the drawings, with a certain number of pins or points 65 and 67 can receive a corresponding number of healds 72—four, for example, in the case represented. The placing of the healds upon the supports 100 is done in advance by a workman, who introduces a hinged pin or point 67 into one of the end eyes of each heald and afterward exerts a slight pull upon the heald, so as to overcome the action of the corresponding spring 105 70 and cause the pin or point 67 to slightly rock in order to allow of the introduction of a point 65 into the second end eye of the heald. The supports having been thus prepared are introduced between the clips 11 12 of the mov- 110 able blocks 6 of the disks 4 during the rotation of the latter. For this purpose it is only necessary to push the bars 62 so as to cause the ends 63 thereof to pass between the clips 11 12, thereby overcoming the action of the 115 springs 14, which act upon the movable arms 12 of the clips. When the machine is thus provided with bars 62, each carrying a certain number of healds, it is mechanically ro- 120 tated. As shown in Fig. 4, when one of the teeth 23 of the wheel 22 moves the gear-wheel 21, and consequently rotates the disk 4, the ends of the levers 31 are lowered into contact with one of the bosses 29 of the cams 28 and the arms 33 are raised and moved away from 125 the stops 10 of the blocks 6, which can then come into position under these arms. During the rotation of the disks, however, and before the arrival of the blocks 6, regarded as being in this position, the healds carried by the bar 62 in question have encountered 130 the wicks 61, Fig. 3, and are wetted with acid at the parts which are to be soldered. The said healds are now ready to receive the solder. As soon as the ends of the levers 31 fall into the recesses 30 of the cams 38 the tooth 23 of 135 the wheel 22, which has just caused the rotation of the disks 4, becomes disengaged from the gear-wheel 21, and the disks 4 can be instantly rendered immovable by the fall of the

roller 20 into the recess 16 in the locking-disk 15. The levers 31 now fall under the action of the springs 34 and act upon the stops 10 of the blocks 6, thereby causing the two corresponding blocks to slide in the radial slots 5 of the disks 4. The bar 62 is thus lowered into the position shown in Figs. 5 and 12, in which position the adjacent points of the eyes are immersed in the melted solder contained in the buckets 36 of the blocks 35, as clearly shown in Fig. 12. The healds carried by a single bar 62 are held for a moment in the solder, while the ends of the levers 31 commence to rise over the following boss 29 of the cams 28. As the rotation of the said cams 28 continues the arms 33 of the levers 31, which act upon the stops 10 of the blocks 6, rise, thus allowing the said blocks to resume their former position under the action of the springs 7, Fig. 6. Directly after the bar carrying the healds resumes its ordinary position the following tooth 23 of the wheel 22 takes into the gear-wheel 21 and again rotates the disks 4, thereby causing the bar carrying the soldered healds to move away from the soldering-buckets 36, while the arms 33 are kept fixed during the time that the ends of the levers 31 are subjected to the action of the circular portion of the bosses 29 of the cams 28. Immediately after the levers 31 fall back into the recesses following the cams 28 the two blocks 6, holding the following bar filled with healds, in turn come into position under the arms 33 of the levers 31 and the disks 4 again become fixed, so as to allow a fresh soldering operation to take place. During the rotation of the disks 4, which cause the bar 62 to move away from the soldering-buckets, the said bar which carries the healds which have just been soldered engages under the ends of the curved levers 40. The disks continuing their rotation, the said curved levers, by reason of their eccentricity with relation to the circumference described by the periphery of the disks, cause the bar 62 in question to pass out from between the clips 11 12 of the blocks 6. This bar consequently falls outside the machine. In order to secure a continuous action of the machine, it is only necessary as the empty clips 11 12 are presented to the workman, whose duty it is to attend to the machine, for him to introduce therein a fresh bar filled with healds. This operation can easily be effected when the disks 4 stop and are held fixed by means of the locking-disks 15. By this continuous and uninterrupted working of the machine I am enabled to produce as many as fifty thousand soldered healds per day instead of about two thousand, which is all that could heretofore be produced when working by hand. At each rotation of the disks 4 the boss 57, carried by one of the cams 28, encounters the end 56 of the rod 53 and causes it to move laterally and consequently a globule of solder 44 to fall in each of the soldering-buckets, this distributing mechanism operating in

the manner already described. When the bars 62, carrying a certain number of soldered healds, have been withdrawn from the machine in the manner described and have fallen in front thereof, they are taken by a workman, who simultaneously releases all the healds from a bar by moving the ring 71 on the said bar so as to overcome the action of the springs 70 on the ends 69 of the rods 67. These rods, being no longer held up, turn upon their common pivot 68, Fig. 7, and simultaneously disengage all the healds.

The machine obviously effects a considerable saving when compared with the hand labor required by the existing process and also a great saving in gas.

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. In combination a holder for a plurality of healds comprising pins to enter the eyes of the healds, carrier means for said holders and solder-applying means to and from which a plurality of healds are moved at a time by the carrier means, substantially as described.

2. In combination, carrier means, holders for the healds comprising bars having means to engage the healds, clips for holding the said bars removably and solder means, the said clips being on the carrier means, substantially as described.

3. In combination, carrier means, a holder for the healds comprising a bar having a rigid pin at one end and a pivotally-supported pin at the other end, said pins being adapted to enter the eyes of the healds and soldering means, substantially as described.

4. In combination, rotary carrier-disks having radial slots, blocks movable in said slots, clips carried by said blocks, heald-holders carried by said clips and adapted to support each a plurality of healds, soldering means for rotating the carrier-disks step by step and means for moving the blocks radially when the carrier is at rest to move the healds to the soldering means, substantially as described.

5. In combination, rotary carrier means, buckets for containing solder, means for feeding automatically solder-pellets to the said buckets, holders for the healds carried by the said carrier means and means for moving the holders toward and away from the buckets, substantially as described.

6. In a heald-soldering machine, the combination of a carrier and heald-supports, each comprising a bar adapted to be mounted on the carrier, a stirrup carried by the said bar, fixed pins on the said stirrup, a second stirrup, hinged pins thereon and springs for keeping the hinged pins upright, substantially as described.

7. In a heald-soldering machine the combination of a heald-soldering mechanism, heald-supports carrying each a group of healds, the said heald-supports being mount-

ed on the heald-soldering mechanism, receptacles 43 containing solder material in the form of granules, a solder-distributing apparatus comprising tubes 42 connected to the
5 solder-containing receptacles, a cross-bar 46 entering notches 48 made in the tubes 42, the said bar 46 being provided with a recess 47 in each notch 48 of the tubes 42, a sheet-metal plate 49 embracing the cross-bar 46 and pro-
10 vided with notches 50 51 displaced with rela-

tion to one another and an actuating mechanism for the said sheet-metal plate, substantially as described.

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

JEAN GOHY.

Witnesses:

GREGORY PHELAN,
MAURICE GERBEAULT.