

S. HARDY.  
CLOTH CUTTING MACHINE.  
APPLICATION FILED NOV. 14, 1909.

925,096.

Patented June 15, 1909.

5 SHEETS—SHEET 1.

Fig. 1.

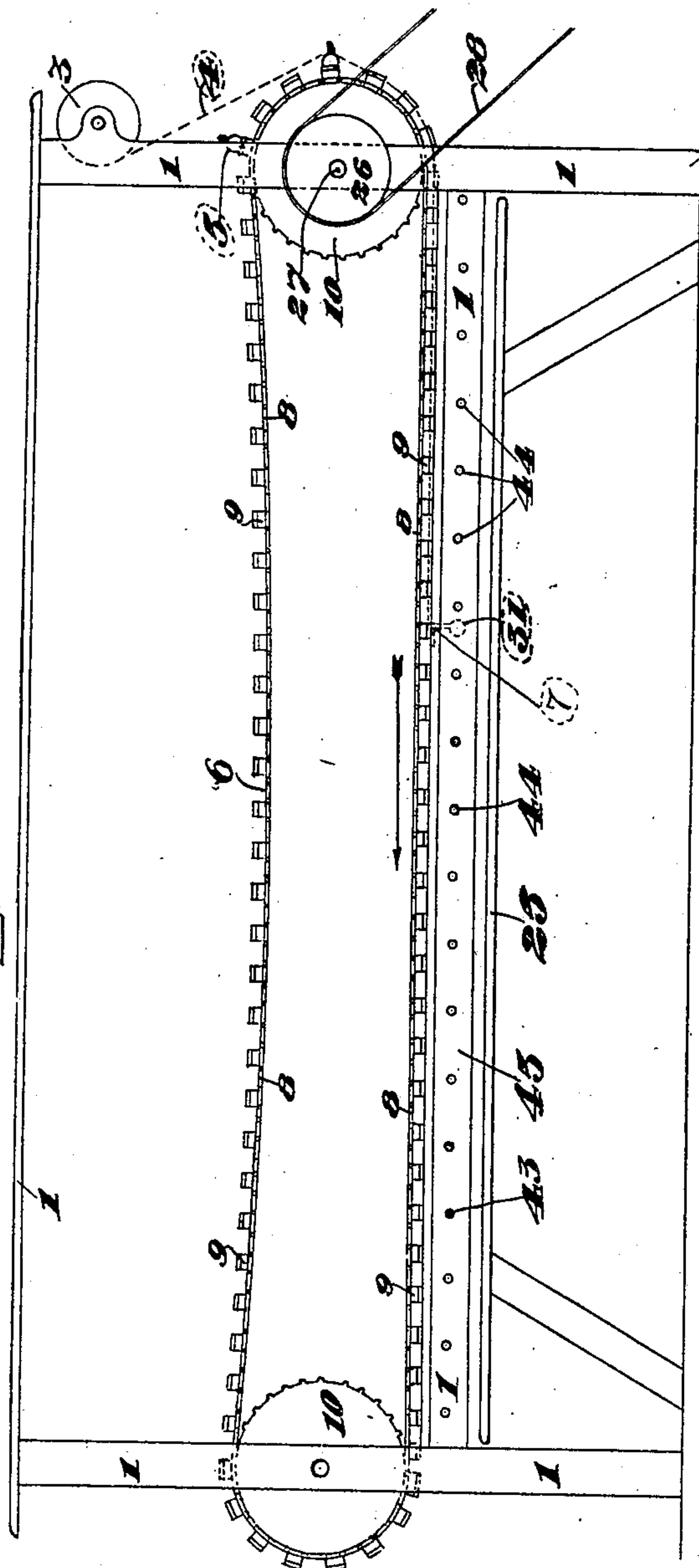


Fig. 2.



Fig. 3.



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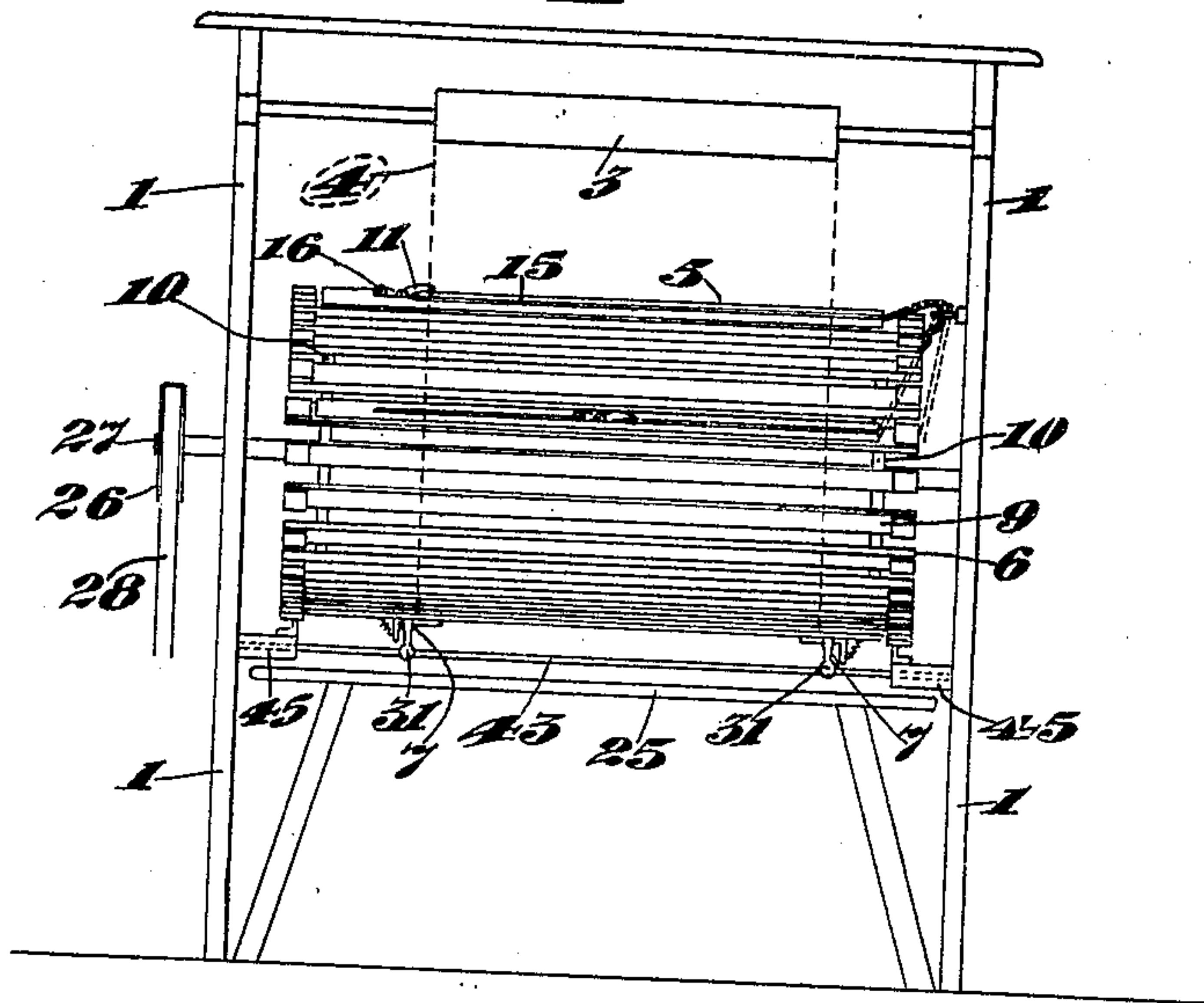
His Attorney.

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6 SHEETS—SHEET 2.

*Fig. 4.*



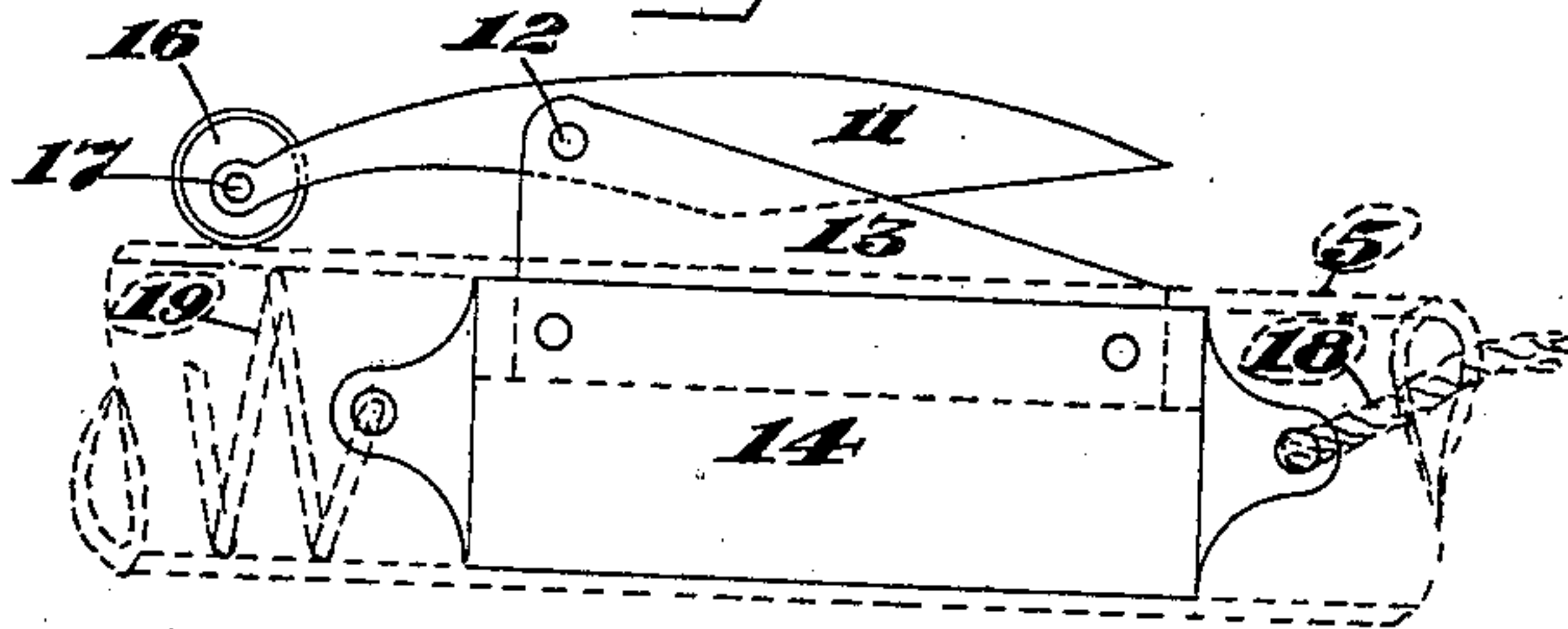
*Fig. 5.*



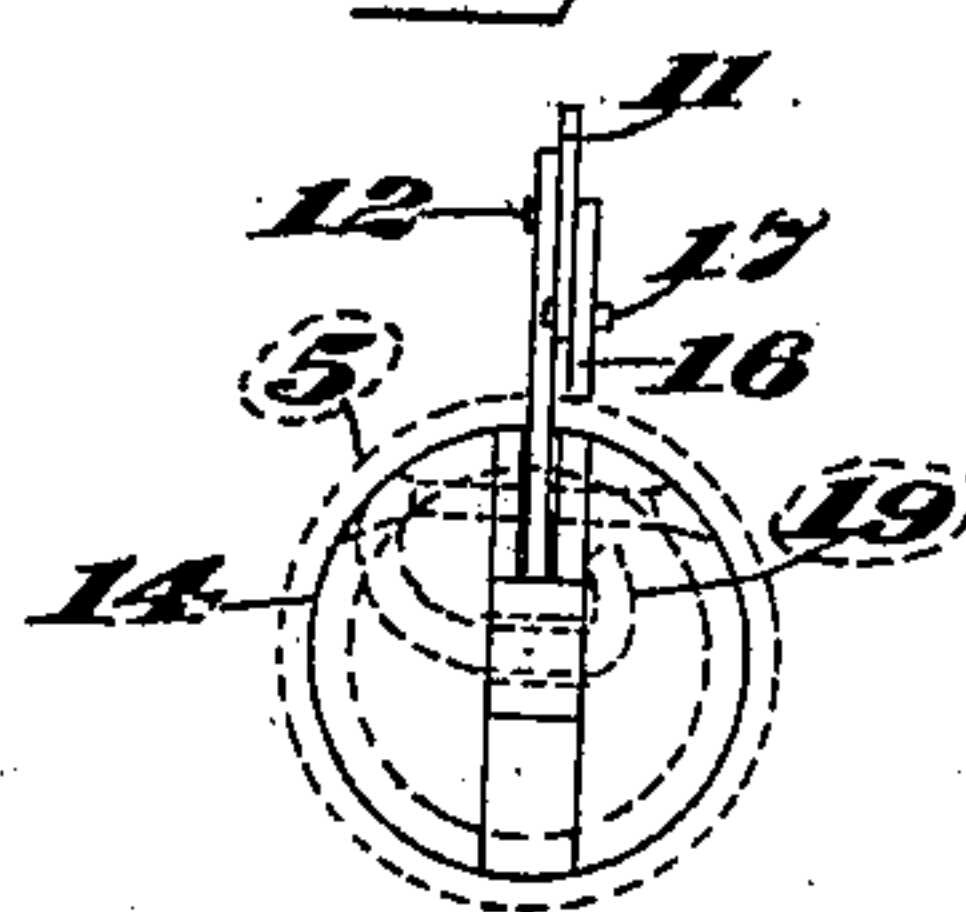
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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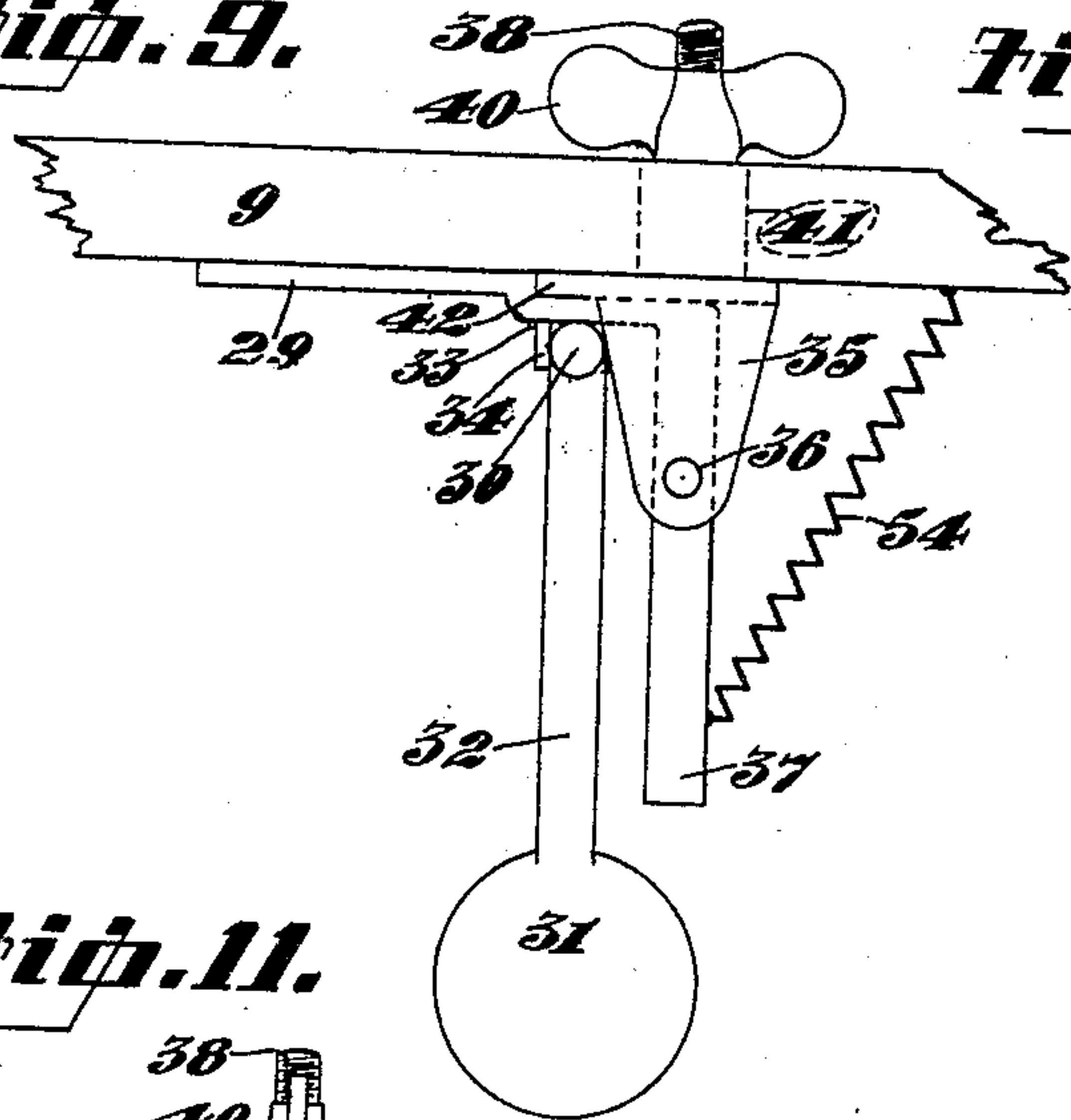
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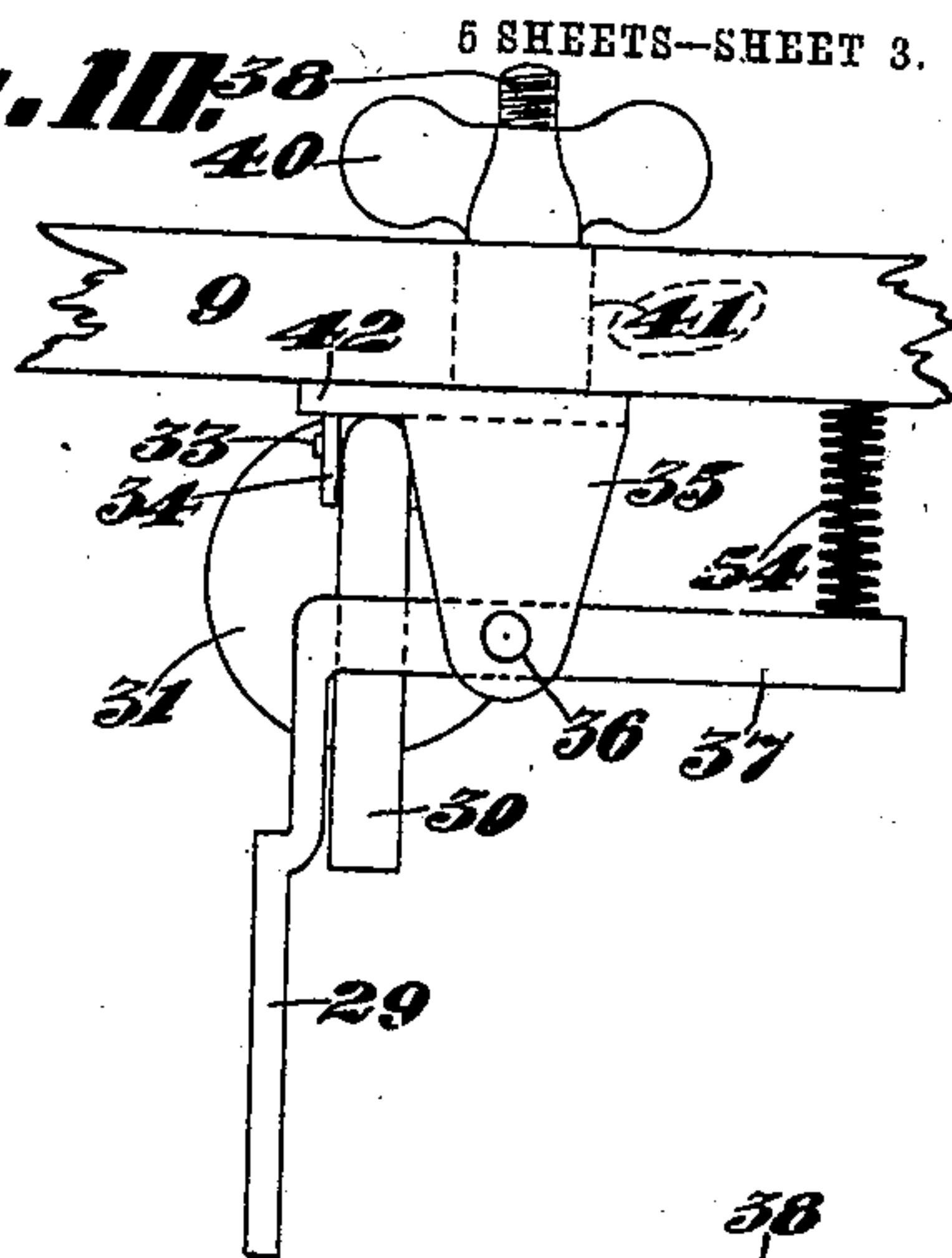
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5 SHEETS—SHEET 3.

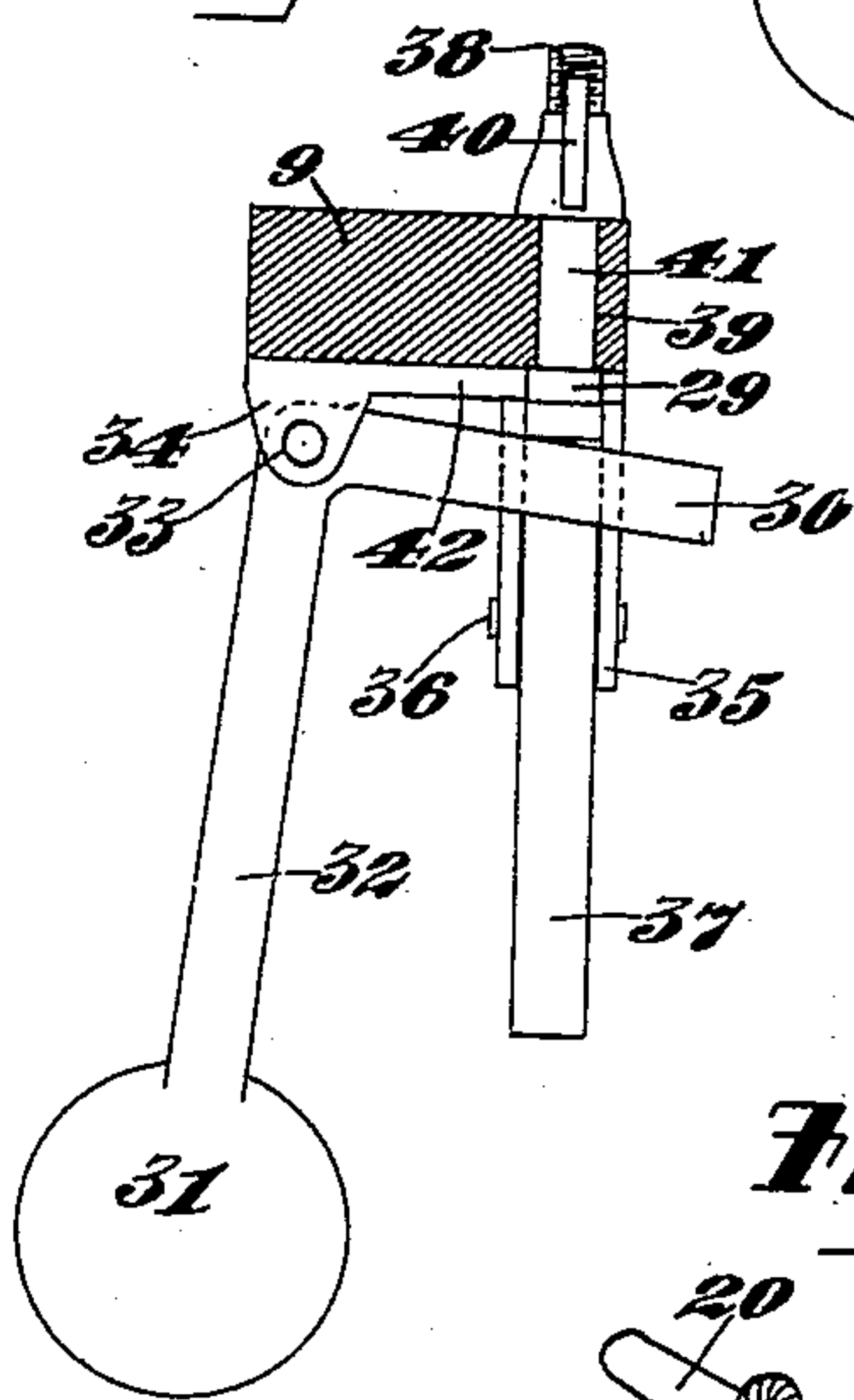
**Fig. 9.**



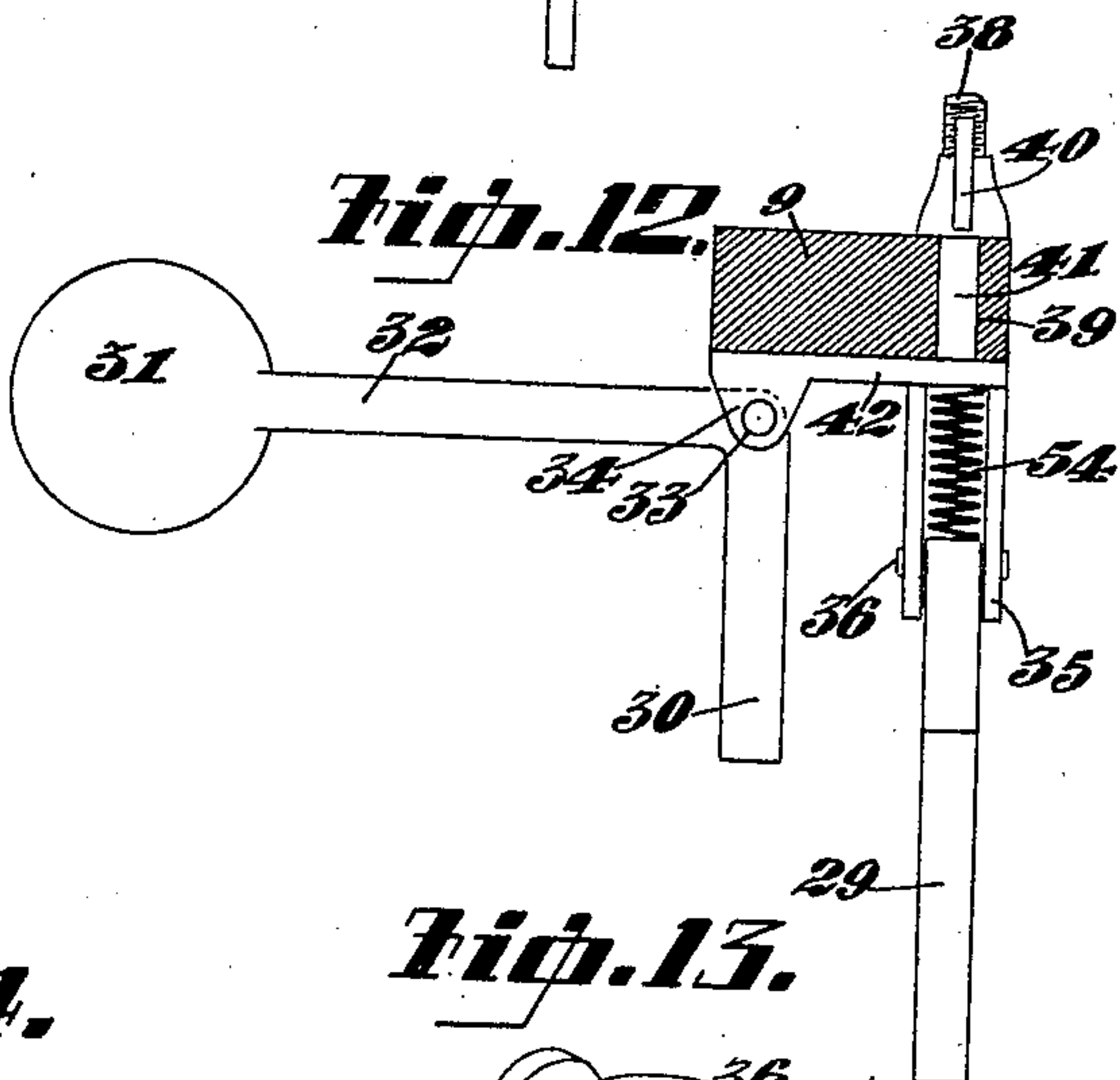
**Fig. 10.**



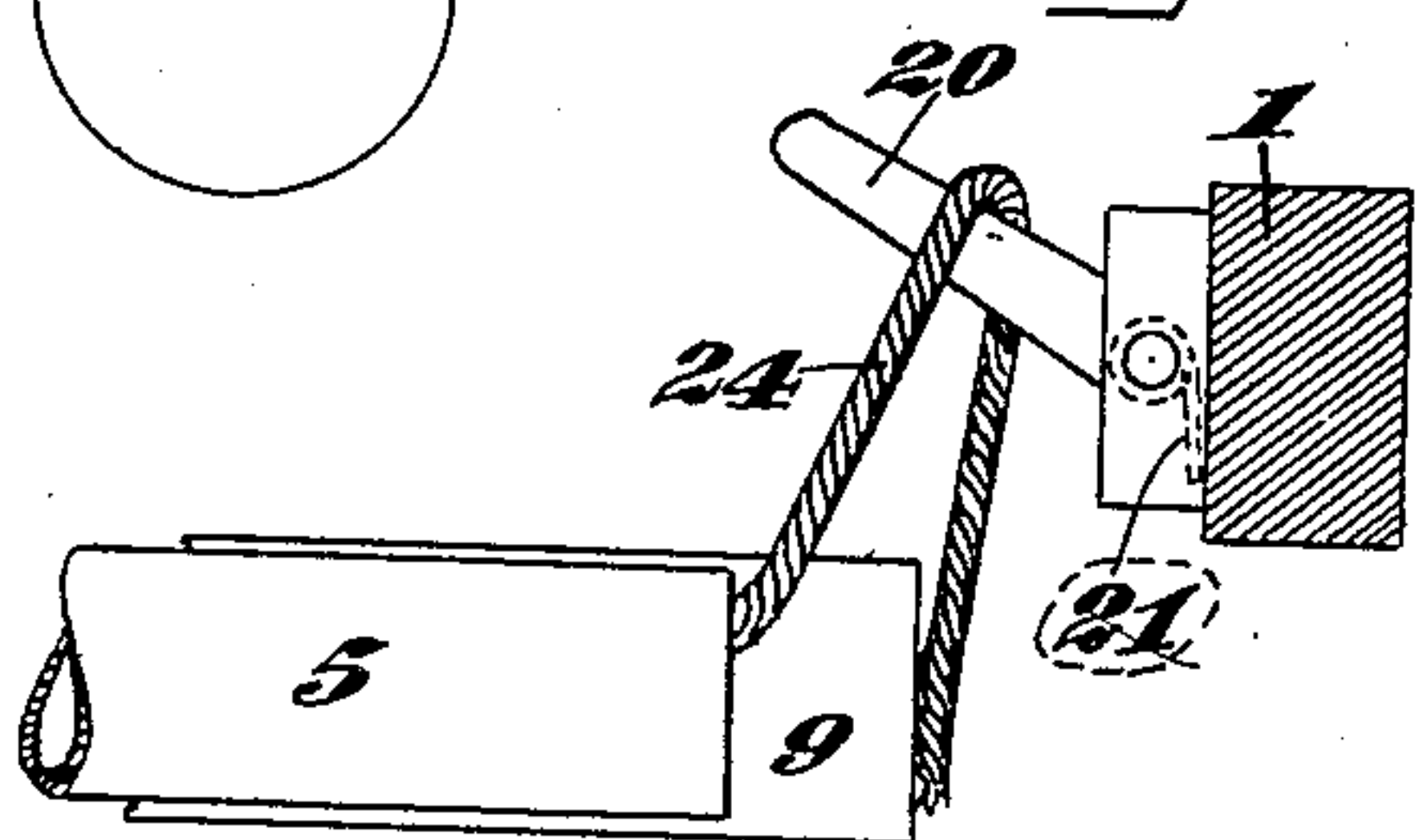
**Fig. 11.**



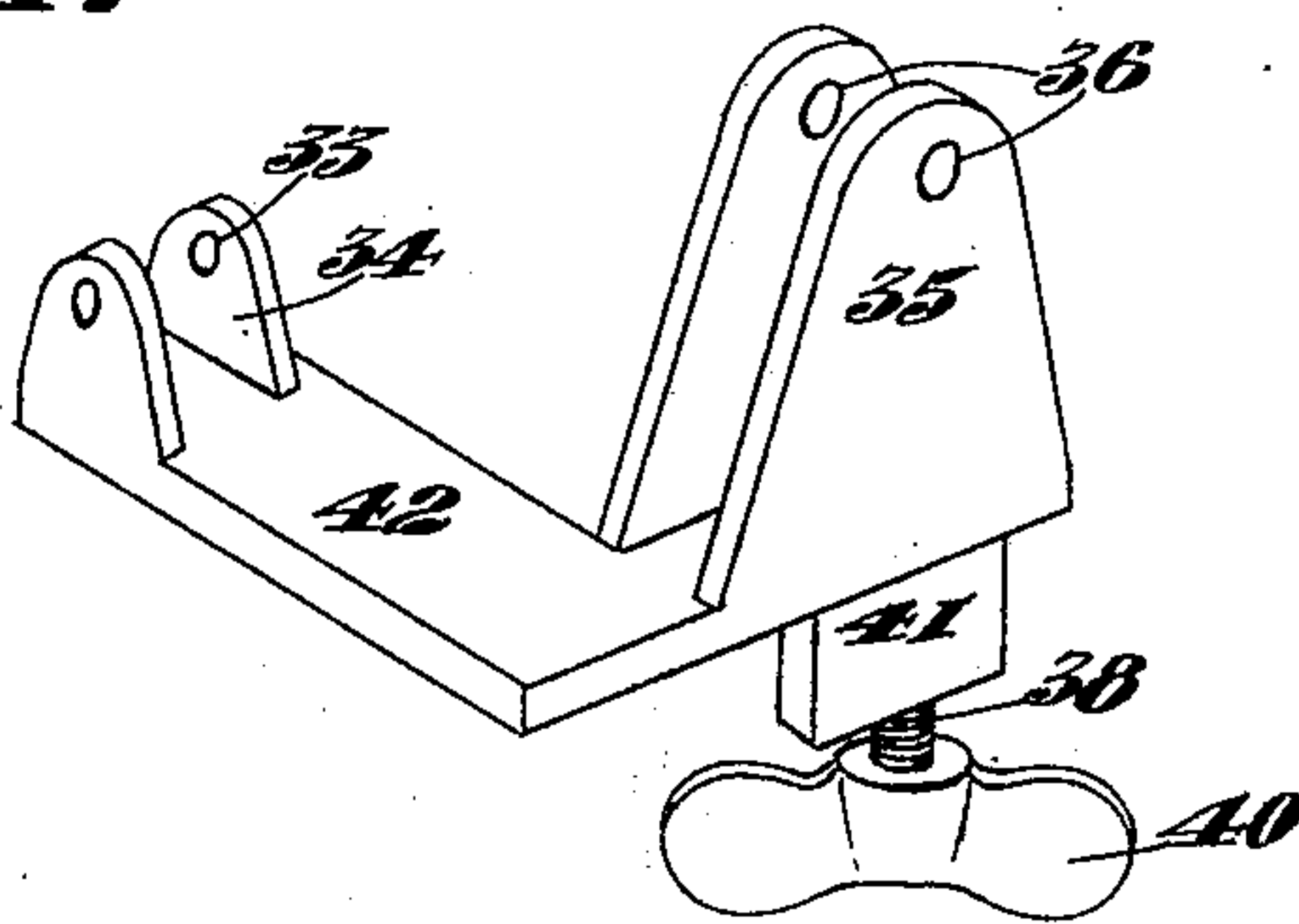
**Fig. 12.**



**Fig. 14.**



**Fig. 13.**



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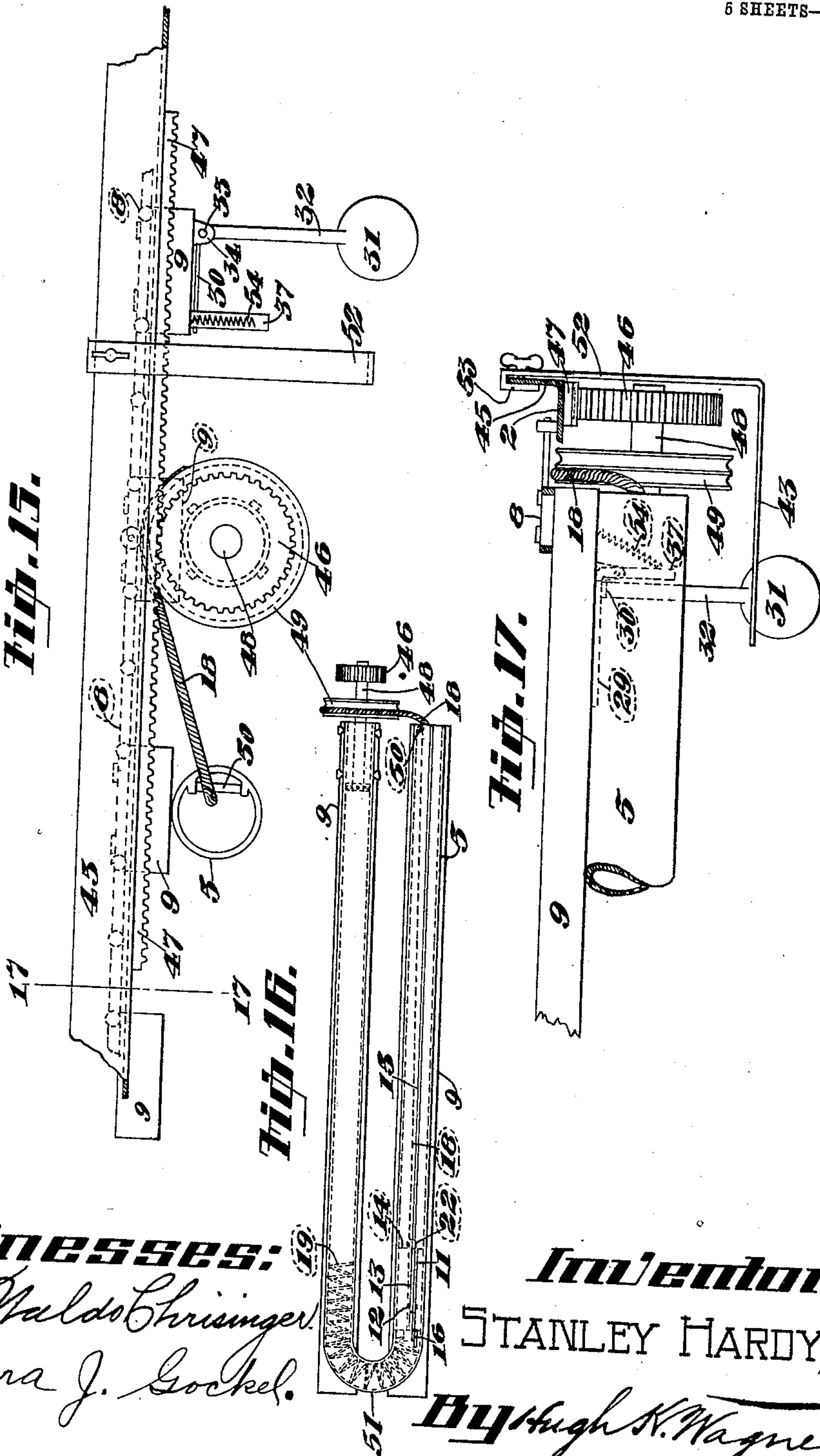
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6 SHEETS—SHEET 4.



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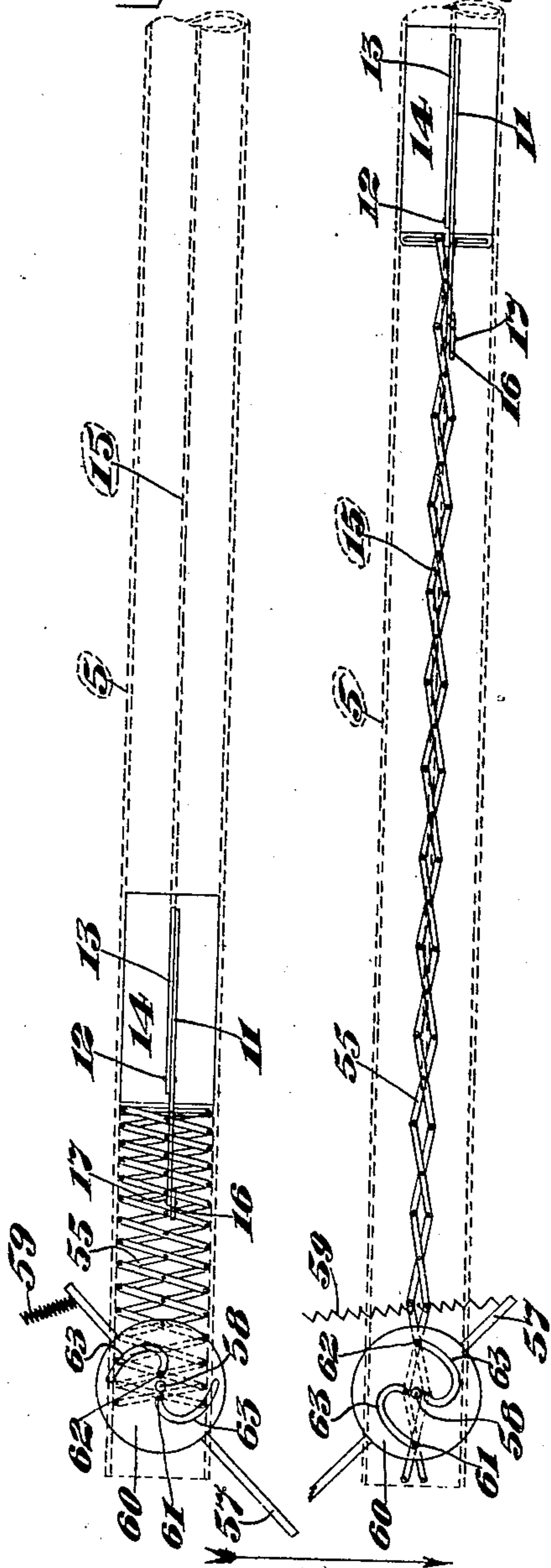
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Patented June 15, 1909.

5 SHEETS—SHEET 5.

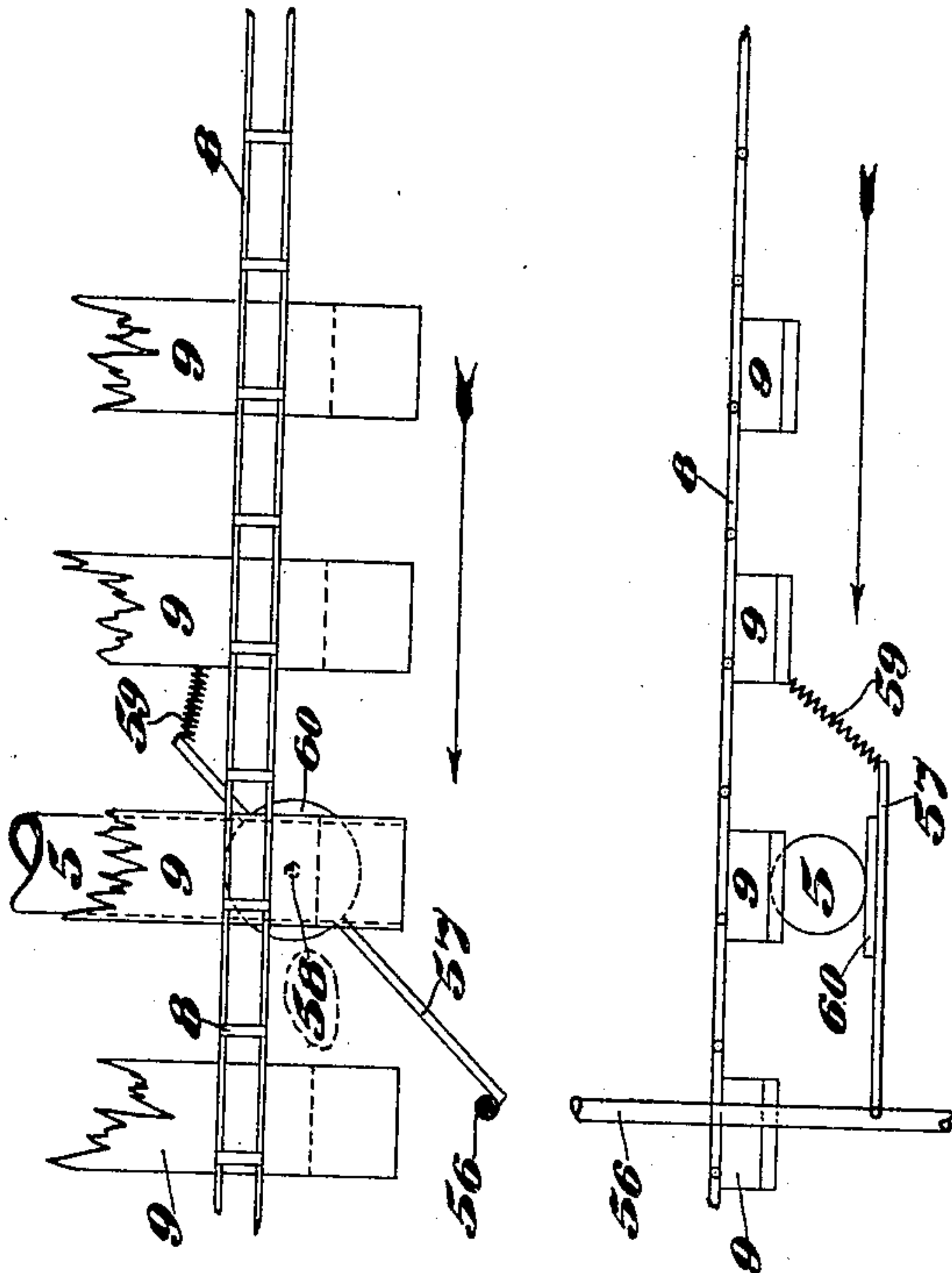
*Fig. 18.*

*Fig. 19.*



*Fig. 20.*

*Fig. 21.*



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# UNITED STATES PATENT OFFICE.

STANLEY HARDY, OF ST. LOUIS, MISSOURI.

## CLOTH-CUTTING MACHINE.

No. 925,096.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed November 14, 1908. Serial No. 462,550.

*To all whom it may concern:*

Be it known that I, STANLEY HARDY, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Cloth-Cutting Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention consists in an improved machine for cutting cloth and the like, and is especially designed for handling duck, such as is used in making awnings, tents, and similar articles.

In the drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation of the machine, the main frame being constructed of wood; Figs. 2 and 3 are side and top views, respectively, of the knife or scissors guide and connected parts, including the scissors, both said figures being on an enlarged scale as compared to Fig. 1; Fig. 4 is an end view, looking from the right in Fig. 1; Figs. 5 and 6 are detailed views of the slats or strips of the endless conveyer; Fig. 7 is an enlarged view of the scissors and connected parts; Fig. 8 is an end view of the same, looking from the right in Fig. 7; Figs. 9 and 10 are detailed views, on an enlarged scale, of the cloth-clamping device; Fig. 11 is a view taken at a right angle to Fig. 9; Fig. 12 is a view taken at a right angle to Fig. 10; Fig. 13 is another detailed view, on an enlarged scale, of the cloth-clamping device (the device being shown upside down); Fig. 14 is a detailed view of one form of device for advancing the scissors; Fig. 15 is a side elevation of a modified form of means for advancing the scissors, in which view the frame of the machine is shown as constructed of angle-irons; Fig. 16 is a modified form of scissors guide and connected parts; Fig. 17 is a sectional view on the line 17—17, Fig. 15; Figs. 18 and 19 illustrate a modified form of scissors advancer and retractor; and Figs. 20 and 21 illustrate the position of same with relation to the endless conveyer.

The main frame of the machine may be made either of wood, as shown in Figs. 1 and 4, or of metal, as shown in Fig. 15, in which case angle-irons 2 will be largely used.

A roll of cloth 3 will be supported in any suitable manner from frame 1, and the cloth

4 extends past the scissors guide 5 and to the point on the endless conveyer 6 where are located the clamps 7, by which the cloth is attached to the endless conveyer. When, therefore, the conveyer travels (from right to left in Fig. 1), it draws with it the cloth 4, as denoted by the arrow. The endless conveyer 6 is formed of chains 8 and slats or strips 9. Said chains travel in engagement with sprocket wheels 10 supported by the main frame of the machine. The conveyer extends from one end of the machine to the other, and the width thereof about equals the width of the machine. One pair of sprocket wheels 10 is located at one end of the machine, spaced apart about the width of same, and another pair at the other end, and similarly spaced away from each other.

A hollow member, preferably in tubular form, constitutes the guide 5, on which is mounted the oscillating scissors blade 11, pivoted at 12 to the slidable scissors blade 13 carried by the block 14 adapted to slide lengthwise within the guide 5, said blade 13 projecting through slot 15 in said guide. The roller 16 is eccentrically fastened at 17 to the shank of blade 11, and, when cord 18 is pulled and causes block 14 and blade 13 to move forward, roller 16 rolls upon the periphery of guide 5, and, due to its eccentric connection with blade 11, causes same to work up and down, and the forward part thereof to cooperate with blade 13 for cutting purposes, like the two blades of a pair of scissors. In an ordinary pair of scissors, however, both blades move more or less, while in this construction blade 13 is stationary relative to blade 11. Cord 18 serves to advance the scissors to cut the cloth, while spring 19 retracts same after that operation. The guide 5 is fastened to one of the slats 9, and, therefore, extends transversely to the conveyer 6, the cloth 4 passing over slot 15, and thus partly around guide 5, and being thus in position in advance of the first movement of the scissors. When cord 18 is pulled, the scissors cut across the cloth 4 until the end piece thereof has been severed from the main body coming from roll 3, at which time the pull upon cord 18 automatically ceases, and spring 19 causes the automatic return of the scissors to its initial position. The end of cord 18 protrudes from the hollow guide member 5, and is fastened to the slat on which the guide 5, in which it



operates, is fastened, thus forming a loop of said end. A pivoted and spring-pressed finger 20 is fastened at such point on the main frame 1 of the machine that, at the exact point where it is desired that the cutting of the cloth shall begin, said finger catches in the loop formed of the end of cord 18, which, by reason of the onward travel of the conveyor 6, pulls block 14 and the carried scissors forward in guide 5 transversely across the machine, said scissors cutting the cloth as it goes. Finger 20, being pivoted, is capable of moving downward from the position shown in Fig. 14 when the pressure of spring 21 is overcome by reason of the fact that block 14 ceases to advance when lug 22 strikes on stop 23. Instantly upon such depression of finger 20, it becomes disengaged from the loop 24 of cord 18, and, under the pressure of spring 21, returns to the position shown in Fig. 14, while spring 19 similarly retracts block 14 and the carried scissors to the position shown in Fig. 2. When the cloth has been cut, it falls on table 25 located underneath the endless conveyor 6, or upon the floor if there be no table present, or it may fall upon some other endless conveyor (not shown) which will carry it to some other place. The endless conveyor 6 is driven by pulley 26 mounted on the shaft 27 by means of belt 28, or any other suitable source of power, and is preferably so driven continuously.

It may be desirable to cut pieces of cloth of different lengths with this machine, and, in order to do so, the number of scissors mounted thereon may be varied, and their distance apart altered or regulated, according to desire. There may thus be only a single guide 5 and accompanying scissors mounted on the endless conveyor, or there may be a plurality of same. In case there be a plurality of scissors, a plurality of pairs of clamps 7 must, also, be provided. The length of the piece that will be cut is determined by the distance of said clamps from the scissors. Thus, the continuous rotation of conveyor 6 causes the clamps 7 to pull the cloth over the guide 5 from roll 3, and, likewise, the continuous movement of said conveyor brings loop 24 into engagement with finger 20 on the main frame, while the continued travel of said conveyor results in pulling on the remainder of cord 18 in such manner that block 14 slides within guides 5 and causes the scissors to shear through the cloth, which is tightly stretched across guide 5 by reason of having been carried forward by clamp 7.

A flat piece of metal 29 clamps the cloth to a slat or strip 9, being pulled tightly against the cloth to bind same to said strip by means of the arm 30, which is raised thereagainst by the falling of weight 31 attached to arm 32 in rigid connection with arm 30, said pair of

arms 30 and 32 forming an elbow pivoted at 33 in lugs 34, plate 29 being pivoted in lugs 35 at 36 by means of the arm 37 of the elbow formed by plate 29 and arm 37.

The device that has just been described is attached to a strip 9 by means of shank 38 that runs through slot 39 in such strip, a thumb-nut 40 serving to draw block 41 into said slot and to bind plate 42 closely against said strip. The cloth clamps are located upon any one of the strips 9 according to the distance that is desired to be maintained between same and the next pair of scissors, as thereby is determined the length of cloth cut off the main body. Said clamps are, likewise, adjustable laterally, so as to clamp any width of cloth, each clamp being movable in slot 39, when thumb-nut 40 has been loosened, shank 38 or block 41 being slidable in said slot.

As the endless conveyor 6 travels along, the weight 31 strikes on bar 43, predeterminedly located in a pair of perforations 44 in horizontal members 45 of the main frame of the machine, there being one such horizontal beam or member on each side of the machine, and one of said pairs of perforations being located in each. When weight 31 strikes bar 43, arm 30 is thrown out of engagement with arm 37, so that plate 29 is allowed to fall out of engagement with cloth 4. There may be a plurality of bars 43, but each one is so located with reference to a pair of scissors that same will automatically disengage the cloth at some certain point and release same when the cutting operation has been completed. The first time the cloth clamps take hold of the cloth, the cloth must be inserted between plate 29 and strip 9 by hand, but the subsequent operations are automatic. The gripping of the cloth is occasioned by the natural action of weight 31 in causing, during the lower half of the travel of the conveyor 6, arm 30 to rise into engagement with plate 29 and to lift plate 29 into gripping contact with cloth 4. After a cutting operation has been performed, the end of the length of cloth that has been severed falls upon the table 25, while the cloth clamps continue to travel forward, pulling said length of cloth with them upon table 25, until weight 31, in traveling in the direction indicated by the arrow in Fig. 1, strikes on bar 43, which may be located in any predetermined pair of perforations 44, whereupon, as heretofore explained, that end of the cloth is released. Thereupon, with the continued travel of the conveyor, when the cloth clamps reach the place where the conveyor passes over sprocket wheels 10 (at the left of Fig. 1), weight 31 changes its position by gravity, and falls so as to cause arm 30 to assume a position substantially perpendicular to the conveyor, which position it maintains until the time when the conveyor passes over the sprocket wheels at



the initial end of the machine. At that time, weight 31 again changes its position by gravity, thereby causing arm 30 to impact against arm 37 forward of pivotal point 36, thereby forcing plate 29 into engagement with the loose end of cloth 4 left hanging down after the last previous cutting operation by a pair of scissors. The cloth, being thus automatically gripped again, is pulled forward with the conveyer the desired distance until another predetermined cutting operation takes place.

A modified form of scissors advancing and retracting mechanism is illustrated in Figs. 15, 16, and 17, in which a rack wheel 46, borne by a strip 9, engages an incontinuous rack 47 as said wheel is carried forward by the travel of the conveyer 6, of which strips 9 form a part. Rotation of wheel 46 thus produced rotates shaft 48, and with it pulley 49, to which is tightly fastened the end of cord 18, which may, if desired, as it makes its exit from guide 5, pass over anti-friction roller 50. When said rack-wheel 46 comes to the end of, and rides off, said rack 47, spring 19 retracts the cutting means through the hollow guide. The travel of the cutting means across the material stretched upon the conveyer is repeated as often as said rack-wheel 46 is allowed to contact with the interrupted rack portions 47. A U-shaped tube, or other hollow member 51, takes the place of hollow member or guide 5, but serves the same purpose and the additional one of receiving spring 19 without making it necessary to increase the width of the entire machine merely, as in the form illustrated in Figs. 2 and 3, to provide a place for spring 19 in the end of the scissors guide. The width of the machine can be reduced by causing the spring 19 to pass through the end of the U and into the opposite arm of the U from that containing cord 18, as shown in Fig. 16. The end of that arm of the U-shaped tube 51 provides a convenient bearing for shaft 48, and, thus, a mounting for rack wheel 46 and pulley 49.

In that form of the machine in which the frame is made of angle-irons, the bars 43 are formed, as shown in Fig. 17, with an elbow 52 projecting upward therefrom and hooking, by means of lip 53, over the beam 45. Spring 54 does for arm 37 and plate 29 what bar 43 hitting weight 31 does for arm 30, since, when weight 31 is moved so as to disengage arm 30 from arm 37, spring 54 cooperates to pull arm 37 in such direction as to move plate 29 away from strip 9. Spring 54, also, serves the purpose of holding plate 29 in said position during that part of the travel thereof with the conveyer when it would be undesirable for same to be movable or to engage strip 9. Spring 54, therefore, holds plate 29 in such position that cloth 4 can pass in between same and strip 9 prior to automatic clamping.

Another modification of the scissors advancing and retracting means is illustrated in Figs. 18 to 21, in which a lazy tongs 55 (or parallel levers) is substituted for the cord 18, and the block 14 is pushed forward in guide 5 by said parallel levers, instead of being pulled by cord 18. The time for actuation of the scissors can, with this device, be regulated to occur at any predetermined point just as well as where the cord device, as hereinbefore described, is used, 56 denoting a rod or stop, or similar pin, either attached to the main frame of the machine or otherwise definitely and predeterminedly located, upon which lever 57 will strike as the endless conveyer travels toward same in the direction indicated by the arrows in Figs. 20 and 21. When said lever 57 strikes on stop 56, said lever rotates on pivot 58 against the pull of spring 59, and, being fixed to wheel 60, causes said wheel also to rotate. Pins 61 and 62 project from lazy tongs 55 and enter cam groove 63 formed in wheel 60. Thus, when wheel 60 rotates from the initial position (shown in Fig. 18), in which the lazy tongs 55 is retracted, pins 61 and 62 travel to the extremities of cam groove 63, thereby extending the lazy tongs 55, and, by thus pushing block 14, advancing the scissors. As soon as such rotation of wheel 60 as is necessary has been accomplished, lever 57 rides past rod 56, and spring 59 returns wheel 60 and pins 61 and 62 to their initial position, thus closing the lazy tongs and retracting the scissors.

Having thus described my said invention, what I claim and desire to secure by Letters-Patent is:

1. In a device of the character described, the combination of a movable cutter-blade, pivoted between its ends and having an eccentric actuator between its pivotal point and one of its ends, and another cutter-blade stationary relative to said movable cutter-blade.

2. In a device of the character described, the combination of a movable cutter-blade pivoted between its ends and having a traveling eccentric actuator between said pivotal point and the rear end of the blade proper and another cutter-blade stationary relative to said movable cutter-blade.

3. In a machine of the character described, the combination of an endless conveyer and a cutter thereon adapted to travel transversely thereacross.

4. In a device of the character described, the combination of a hollow member, a block, a cutter-blade fixed to said block, a movable cutter-blade pivoted to said fixed cutter-blade, and a roller eccentrically attached to said movable cutter-blade.

5. In a device of the character described, the combination of a hollow member, a block, a cutter-blade fixed to said block, a movable cutter-blade pivoted to said fixed cutter-



blade, a roller eccentrically attached to said movable cutter-blade, and means for advancing said cutter-blades.

6. In a device of the character described, the combination of a hollow member, a block, a cutter-blade fixed to said block, a movable cutter-blade pivoted to said fixed cutter-blade, a roller eccentrically attached to said movable cutter-blade, means for advancing said cutter-blades, and means for restoring same to their original position.

7. In a machine of the character described, the combination of a reciprocal cutting means, an endless conveyer, and means actuated by said endless conveyer for advancing said cutting means.

8. In a machine of the character described, the combination of reciprocal cutting means, an endless conveyer, means actuated by said endless conveyer for advancing said cutting means, and means for returning said cutting means to its original position.

9. In a machine of the character described, the combination of an endless conveyer, means for driving same, cloth clamps arranged to support a material across the width of said conveyer, and cutting means.

10. In a machine of the character described, the combination of an endless conveyer, means for driving same, cloth clamps, and cutting means adapted to travel transversely to the path of said conveyer.

11. In a machine of the character described, the combination of a main frame, a conveyer, cloth clamps arranged to support a material across the width of said conveyer, and means supported by said frame for unclamping said clamps.

12. In a machine of the character described, the combination of an endless conveyer for carrying the cloth and cloth clamps borne by said conveyer, said clamps, and their actuating means being carried upon the same adjustable and detachable plate.

13. In a machine of the character described, the combination of an endless conveyer and a cutter adapted to travel transversely there-across.

14. In a machine of the character de-

scribed, the combination of a conveyer, a shank perpendicular thereto, a plate attached to said shank, said plate having two pairs of lugs, a clamping member pivoted in one of said pairs of lugs, and a weighted clamp-actuating member pivoted in said other pair of lugs.

15. In a machine of the character described, the combination of a conveyer and a cloth clamp adjacent thereto, said cloth clamp comprising a pivoted clamping member and a pivoted actuating member, said actuating member being arranged at a right angle to said clamping member and adapted to actuate same, said actuating member bearing a weight.

16. In a machine of the character described, the combination of an endless conveyer, cutting means advanceable there-across, a cord attached to said cutting means, and a finger for engaging said cord to advance said cutting means.

17. In a machine of the character described, the combination with the main frame of a conveyer supporting a cloth clamp and supporting an actuating means therefor.

18. In a machine of the character described, the combination with the main frame of a conveyer supporting a cloth clamp and supporting a pivoted and weighted actuating means therefor, said actuating means being arranged at a right angle to said clamping means.

19. In a machine of the character described, the combination of a conveyer, an adjustable stop adjacent thereto, and a gravity-actuated clamping means part of which may contact with said stop.

20. In a machine of the character described, a conveyer and means for holding and releasing the material fed thereupon, said means being capable of operation by the force of gravity alone.

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

STANLEY HARDY.

Witnesses:

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