

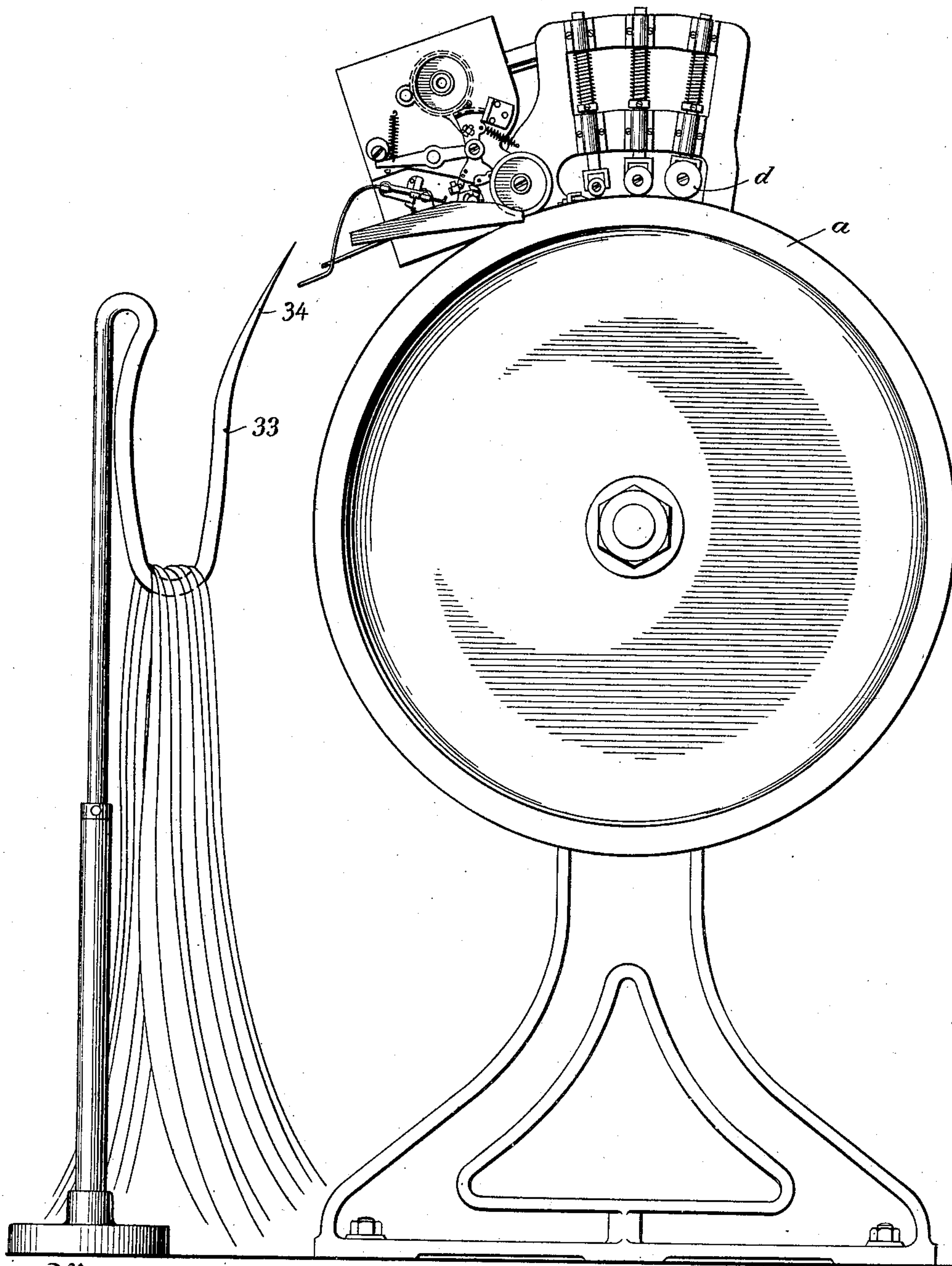
No. 897,141.

PATENTED AUG. 25, 1908.

E. POWELL.
MACHINE FOR HANDLING CANES, &c.
APPLICATION FILED SEPT. 11, 1907.

5 SHEETS—SHEET 1.

FIG: 1



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By his Attorney
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6 SHEETS—SHEET 2.

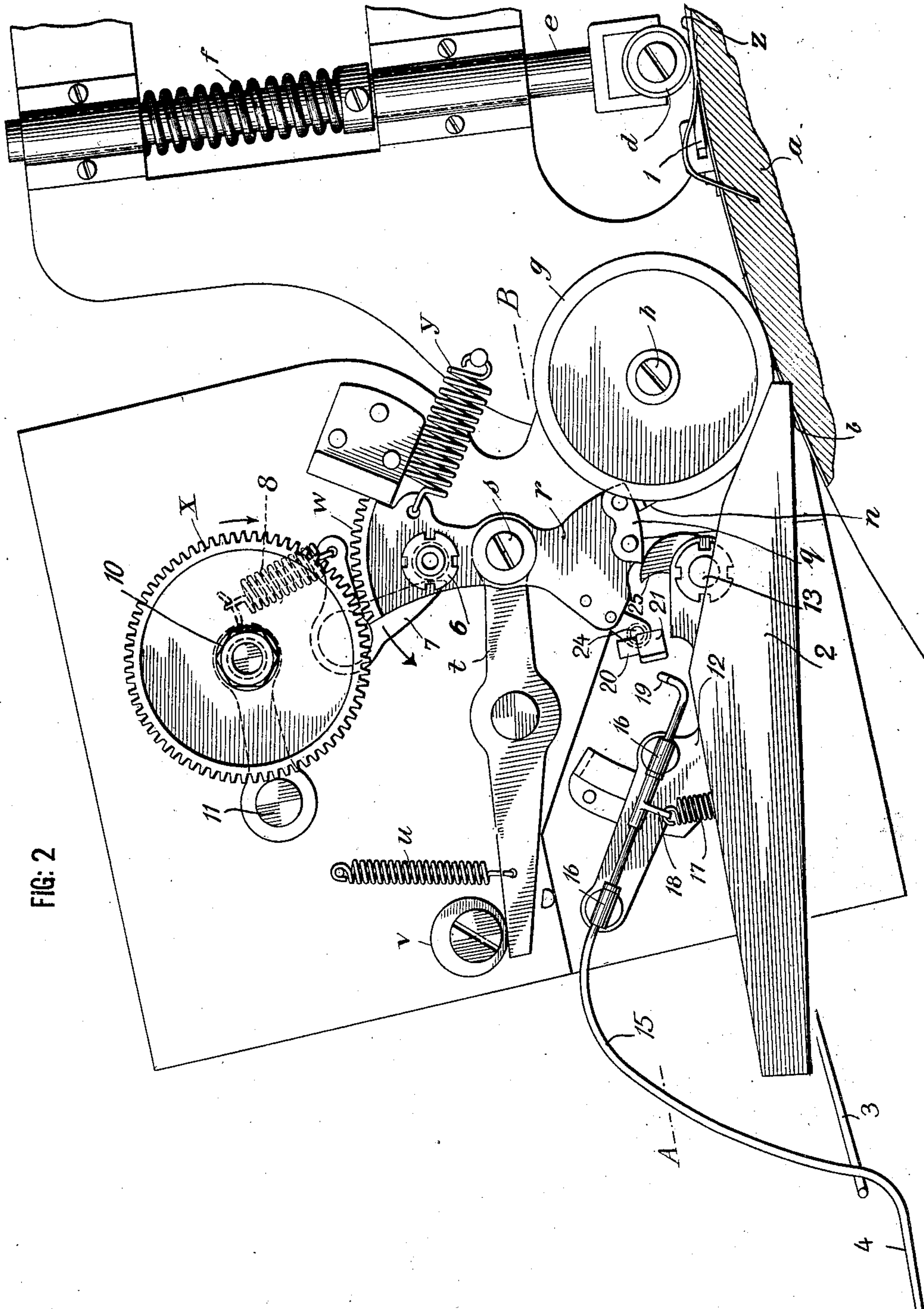


FIG. 2

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5 SHEETS—SHEET 3.

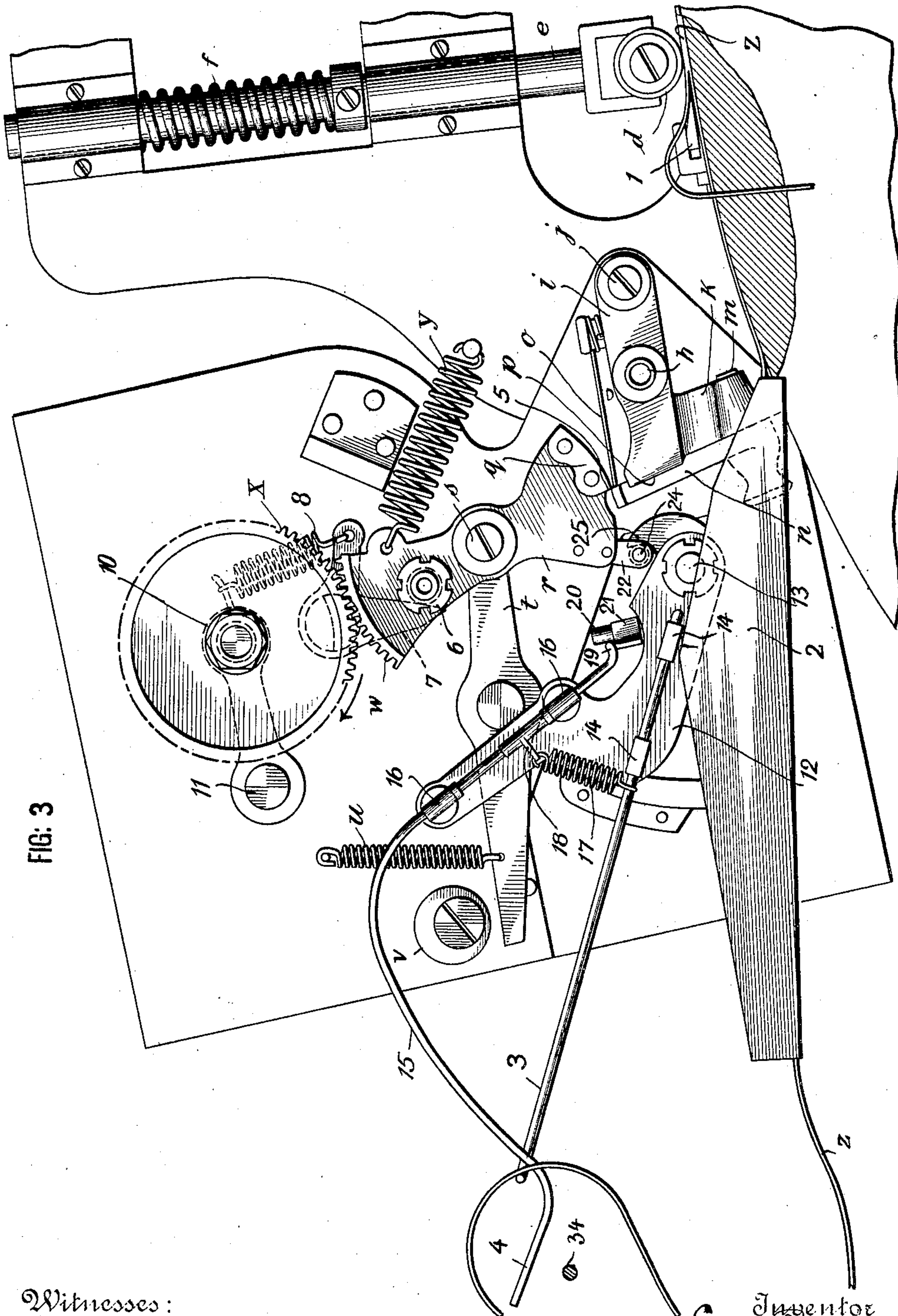


FIG. 3

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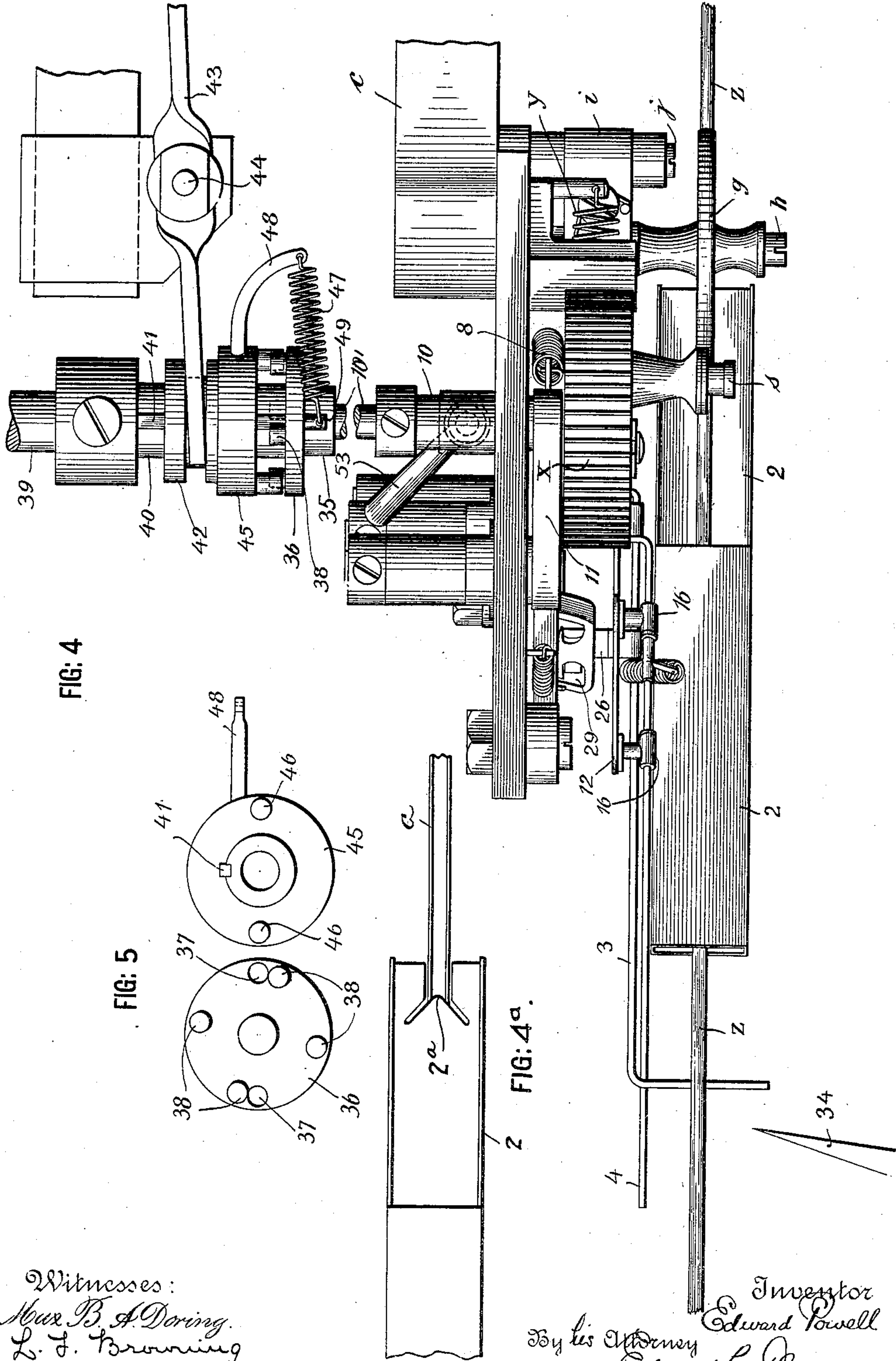
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

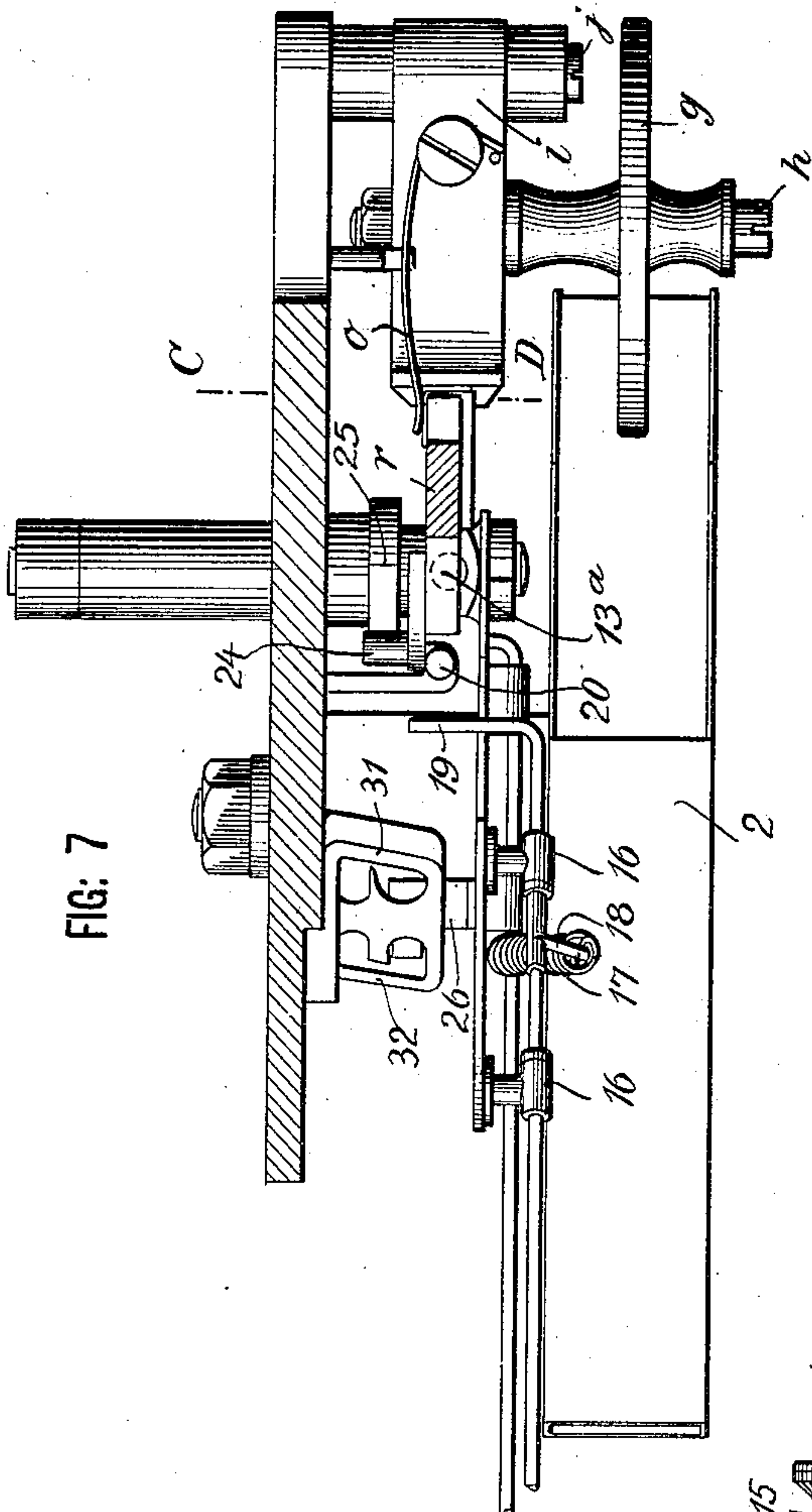


FIG. 7

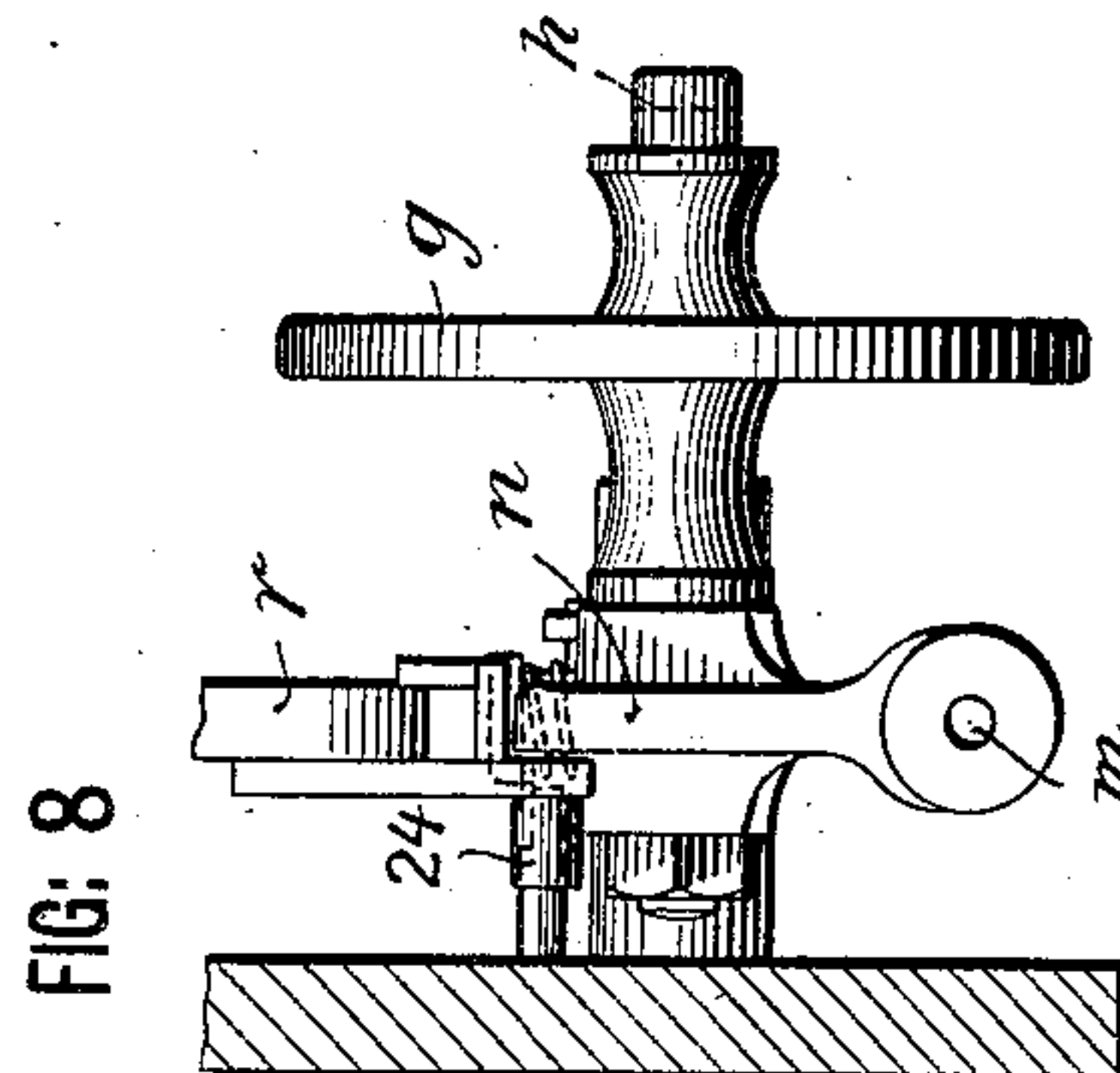


Fig: 8

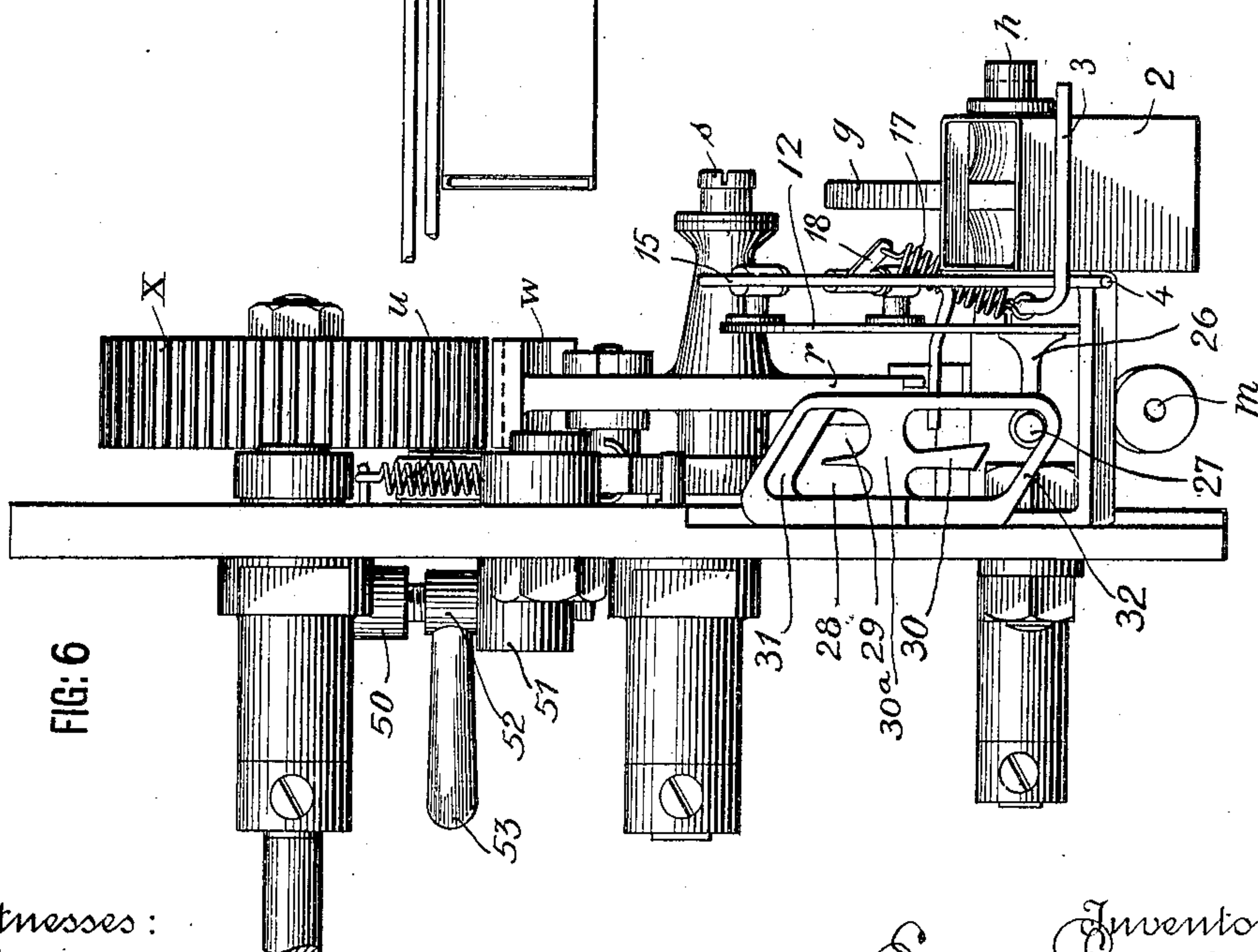


FIG: 6

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UNITED STATES PATENT OFFICE.

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MACHINE FOR HANDLING CANES, &c.

No. 897,141.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed September 11, 1907. Serial No. 392,355.

To all whom it may concern:

Be it known that I, EDWARD POWELL, a citizen of the United States of America, residing at Weehawken Heights, county of Hudson, State of New Jersey, have invented certain Improvements in Machines for Handling Canes, &c., of which the following is a specification.

Heretofore in trimming cane for weaving and other purposes it is passed over a table usually in the form of a rotating disk or short cylinder grooved to receive the cane, and is fed forward with the aid of a cooperating friction roll past or under a trimming knife and as the trimmed strip is discharged, it is seized by an operator and looped over a suitable horn, hook or support.

This invention comprises a mechanism automatically actuated to catch the cane as it leaves the trimming apparatus, loop it and deposit it on a receiving horn or support.

The invention is applicable to the handling of other strips than those of cane, and although described solely as applied to a cane trimming machine, it may have other uses.

So far as I am aware this operation has never heretofore been accomplished automatically.

In the accompanying drawing: Figure 1 is a front elevation: Fig. 2, a detail side view of the principal parts of the apparatus showing them in normal position: Fig. 3, a similar view showing the parts in another position: Fig. 4, a plan view: Fig. 4^a a detail plan view showing part of the grooved disk over which the cane to be trimmed passes, and part of the trough into which the trimmed cane is delivered: Fig. 5, a detail view showing in elevation opposing engaging faces of a clutch: Fig. 6, an elevation of the delivery side of the machine: Fig. 7, a section on the line A B of Fig. 2: and Fig. 8, a detail section on the line C D of Fig. 7.

In apparatus constructed in accordance with this invention, the cane actuating devices are automatically thrown into operation by passage of the cane strip between the revolving trimming bed and cooperating cane feeding roll.

The rotatable trimming bed or disk *a* has a groove *b*, Fig. 2, to receive the strip *z* of cane to be trimmed and is driven in any appropriate way as by a belt *c*, Fig. 4. Cooperating therewith are one or more spring pressed friction rollers *d* carried by upright

shafts *e* mounted to move endwise in appropriate bearings in the frame and having applied to them coiled springs *f* whose reaction tends to carry the wheels into the groove *b* in which the cane strip travels. Also running in this groove is a cooperating feed wheel *g* mounted upon an axis *h* carried in an arm or block *i* mounted to rock about a pivot *j* and having at its free end a downward extension *k* in which is a stud shaft *m* on which is mounted to rock forwardly and rearwardly an upwardly extending arm *n* normally urged outwardly by a spring *o* against a shoulder *p* on the end of the rocking arm *i*.

In the normal position seen in Fig. 2, the upper end of this arm *n*, which may be characterized as a lifting and tripping arm, bears against the periphery of a cam piece *q* forming part of or secured to the lower edge of a segmental plate *r* rocking about an axis *s* in the end of a lever to whose free end is applied a coiled spring *u* whose reaction tends to draw it against the periphery of an adjustable eccentric stop *v*. The opposite or upper periphery of the plate *r* is formed with gear teeth *w* adapted to mesh with the teeth of a power driven gear *x*. A coiled spring *y* applied to the rocking segmental plate above its axis and secured to a fixed part of the frame tends to depress the axis *s* and carry the gear teeth *w* out of engagement with the gear *x*. The cane strip *z* as it leaves the last of the pressure or friction wheels *d* is trimmed in the usual way by knife 1 and passes thence under the roll *g* acting to lift it and thereby cause the part *n* to elevate the plate *r* and carry its gear teeth *w* into engagement with wheel *x*. The trimmed cane strip as it leaves wheel *g* passes into a trough or channel 2 which is slotted in its front bottom edge to embrace the sides of the disk and formed with a tongue 2^a (Fig. 4^a) that runs in the groove of the disk and directs the trimmed strip into the trough. As the strip leaves the delivery end of the trough (Figs. 3 and 4) it passes over the angular or outwardly extending end of a catcher arm 3 operating as hereinafter described and having cooperating with it a laterally moving kicker or cane discharge arm 4. Gear wheel *x* moving in the direction indicated by the arrow will carry the upper or toothed end of the segmental plate *r* in the direction indicated by the arrow Fig. 2 into the position indicated in Fig. 3.

When the movement of the plate *r* is com-

pleted, the rocking lifting and tripping rod *n* will pass behind the rear end of the cam *g*, whose rear edge is formed with an inclined or curved cam face 5, so that the segmental plate *r* may drop although the wheel *g* be still held up by the cane strip passing beneath it. As plate *r* returns to normal position under the influence of its spring *y* the lifting and tripping arm *n* will be forced rearwardly by the cam face 5 against the tension of its spring *o*. When finally the strip of cane has passed from beneath wheel *g*, the wheel will drop into the groove in the tripping disk and the lifting and tripping arm *n* will then return to normal position below the periphery of cam *g* at the leading end thereof, Fig. 2.

Extending through the plate *r* is a headed screw bolt 6, the rear end of which extends beyond the rear surface of the plate into the path of the downwardly extending arm of a bell crank lever 7 having applied to its other arm a coiled spring 8 attached at its upper end to a projection 9 extending from a non-rotary but vertically movable bearing 10 in which the rotating shaft, carrying gear *x*, rotates. The bearing 10 is carried in the free end of a laterally disposed arm rocking about an axis 11 on the frame. When, therefore, the segmental plate is moved into engagement with the gear *x*, the latter member may yield upwardly but is held in engagement with the gear teeth *w* by reaction of spring 8.

The parts described (or equivalently acting parts, or parts performing the same general functions) effect actuation of the cane strip catching and discharge arms. Both these arms are carried upon a plate 12 rocking about a horizontal pivot 13 on the frame and also mounted to rock about an axis 13^a at right angles to the axis 13 so that the free end of the plate may move up and down as well as forwardly and rearwardly. The cane catching arm 3 formed with a right angle extension, Fig. 4, over which the trimmed cane strip *z* passes is rigidly secured to plate 12 at the points 14, 14. The cane strip discharging arm 15 is mounted to turn in bearings 16, 16 on the plate 12, its axis of motion being inclined upwardly from the horizontally disposed part of the arm 3 and the arm is curved downwardly and passes under the angular extension or bent end of arm 3 in Figs. 3 and 4. A spring 17 which may conveniently have one end attached to the arm 3 and its other end to a radial arm 18 projecting forwardly and downwardly from the arm 15 between its bearing 16, tends to hold the arm 15 in the same plane as the body of the arm 3. Beyond the inner bearing 16 the arm 15 is turned or bent inwardly in a suitable way and at a suitable angle to form a cam part 19 that is adapted to make contact with a roller 20 turning about an upright axis supported by a bracket 21 attached to the back plate or frame. At the

lower left hand corner of the segmental plate *r* there is a downward projection 22 carrying a lateral pin 24 adapted to engage a hook 25 fast on the horizontal axis 13 about which plate 12 rocks up and down. Projecting from the rear face of plate 12 is a post 26 carrying at its end a transverse pin 27 working in parallel cam ways 28, 29, separated by a dividing wall 30 of a greater width at the lower end than at the top and projecting above, below and beyond the cross-piece 30^a that carries it. The other cam way 29 is connected at the top with the rear cam way 28 by an upwardly inclined outside cam wall 31, and at the bottom cam way 28 is connected with cam way 29 by a downwardly inclined outside cam wall 32. It is designed in the operation of the machine, that plate 12 will rock upwardly, the pin 27 passing through the outer cam way 29, and that the plate will then be carried rearwardly by reason of the inclined cam wall 31 and will then move down with its pin 27 in the rear cam way 28, the lower inclined wall 32 bringing the pin 27 again in the position shown, Fig. 6, to move upwardly in cam way 29.

The operation of the machine as thus far described is as follows: A strip of cane to be trimmed being fed to the groove *b* of revolving disk *a* will pass under the friction rolls *d* and, after being operated upon by the trimming knife 1, will pass under the wheel *g* which normally runs against the bottom of the groove. The effect will be to raise the wheel thereby causing the lifting and tripping arm *n* to lift segmental plate *r* and carry the gear teeth upon its upper periphery into engagement with the driven gear *x*. The upper end of the plate *r* will now be moved to the left as indicated by the arrow in Fig. 2. The pin 24 at the lower edge of the plate will engage hook 25 on the shaft or axis 13 and the plate 12 will be rocked upwardly. At the time this movement of the plate 12 commences, a trimmed strip of the cane will be overlying the angular extension of the cane strip catching arm 3, seen in Fig. 4; and, since the cane to be trimmed is cut to substantially uniform length, the operation of all the parts may be so timed that as plate 12 commences to rise the middle portion of the cane strip will about overlies the arm 3. When the plate 12 in its upward movement approaches the position shown in Fig. 3, the angular cam extension 19 on the rocking cane strip discharging or delivery arm 15 will strike upon the stationary roller 20, rocking arm 15 in its bearing 16, 16 causing the free end of the arm to be quickly moved outwardly. This will occur when the parts have reached approximately the position shown in Fig. 3 and at a time when the trimmed cane strip *z*, or the looped part thereof engaging the lifting arm 3, will be elevated well out of the way of the trough or

guide way 2. The sudden impulse of movement outwardly of the cane strip discharging arm 15 will throw the looped or bent cane strip over a receiving horn or hook 33 whose end 34 is inclined upwardly toward and terminates in rear of the trough or channel 2 and under the arms 3 and 15 when they are in normal position. The looped cane strip passing over the inclined end of the hook will naturally fall into the bend of the hook, Fig. 1. Continued upward movement of plate 12 by reason of strain exerted upon hook 25 will cause such pressure of the projection of pin 27 upon the upper inclined wall 31 of the cam way as to carry the plate rearwardly and when hook 25 is released plate 12 will fall carrying with it the arms which have now resumed their normal relation in descending. In this descent, the angular end of the lifting arm 3 will pass below the delivery end of the trough 2 and then the plate will move outwardly by reason of the inclined face 32 of the cam, the angular extension of the lifting arm being again in position to receive the following strip of trimmed cane. In order that the apparatus may handle with equal efficiency longer strips of cane it is desirable to provide means by which rotation of wheel x may be briefly interrupted while engaged by the gear teeth w so that a greater length of the trimmed strip may pass over the looping arm before the latter rises. This may be conveniently accomplished by driving the gear x through an adjustable clutch provided with means that will allow some lost motion before the gear acts; so that by shifting the clutch at proper times by the operator, gear x may be permitted to pause for a moment after it is engaged by the gear teeth w . Such a clutch may be made as follows: Shaft 10' of the gear wheel has fast to it a hub 35 having an annular flange 36 with two opposite apertures 37, 37 and four equi-distant rearwardly projecting pins 38, 38. Beyond the flange 36, the end of shaft 10' may have its bearing in a socket in the end of the driving shaft 39. Fast on the driving shaft is a sleeve 40 having a spline 41 engaged by the movable member 42 of the clutch which may be shifted by a hand lever 43 pivoted at 44. This movable member of the clutch comprises a flange or disk 45 from the front face of which project diametrically opposite pins 46, 46 which normally enter the diametrically opposite apertures 37, 37 in the rear face of member 36 of the clutch. When a strip of cane of increased length is passing through the machine and the wheel g is lifted, the operator by manipulating lever 43 may disengage the pins 46 from the apertures 37 and the wheel x will remain at rest during the time that the pins 46 are passing from opposite the apertures to the diametrically opposite pins 38 located mid-way between the apertures 37.

The other pins 38 serve as stops. The two members of the clutch are restored to normal position by a spring 47 connected at one end to an arm 48 projecting from the shifting member 45 of the clutch and at the other end to a forwardly projecting pin 49 on the disk 36. Downward movement of shaft 10' is limited by an adjustable stop 50 shown as the head of a screw bolt passing through a projection 51 on the frame and provided with a lock nut 52 having a projecting operating handle 53. The effect of the elevation of the angular end of arm 3 when plate 12 rocks upwardly is to loop the cane at approximately its middle. Automatic looping of the cane as well as its automatic delivery to a receiving support are believed to be broadly new: as is also automatic operation of devices performing those functions by the strip of cane passing through the machine. Aside from these comparatively comprehensive features, the disclosed construction by which such operations are effected is believed to be novel. It will however be obvious to those skilled in the art that they may be varied in many ways without departing from the principles of this invention provided that such varied or modified mechanism accomplishes the automatic delivery of the trimmed cane from the machine and its delivery to a suitable holder or support, such, for instance, as the ordinary receiving hook or horn disclosed herein upon which, prior to this invention, the looped cane has been deposited by hand.

So far as I am aware I am the first to automatically loop and discharge the trimmed strips; and to set the automatic devices for that purpose into operation by the strips. The specific form of the devices may of course be varied by those skilled in the art and I do not deem it essential to describe modifications in the structure and behavior of the devices. I may say, however, that I prefer to use the strip discharging arm rather than to depend upon the lateral movement of the looper to discharge the strips.

I claim:

1. A machine for trimming cane comprising an automatically acting means for looping the trimmed strips and an automatic means for discharging the looped strips therefrom and delivering them to a suitable receiver.

2. A machine for trimming cane strips comprising a vertically movable means for looping and elevating the trimmed strips and an automatic means for discharging the looped strips therefrom and delivering them to a receiver.

3. A machine for trimming cane strips comprising an automatically actuated lifting and looping arm over which the trimmed strip passes, means whereby said arm is operated to loop the strip and an automatically acting arm which, when moved, engages the

looped trimmed strip adjacent its bent or looped part and delivers it to a suitable receiver.

4. A machine for trimming cane comprising an automatically acting means for looping the trimmed strips, an automatic means for discharging the looped strips therefrom and delivering them to a suitable receiver, and means set into operation by the cane strip in its passage through the machine to effect such automatic operation of the cane looping and discharging devices.

5. A machine for trimming cane strips comprising a vertically movable means for looping and elevating the trimmed strips, an automatic means for discharging the looped strips therefrom and delivering them to a receiver and means set into operation by the cane strip in its passage through the machine to effect such automatic operation of the cane looping and discharging devices.

6. A machine for trimming cane strips comprising an automatically actuated lifting and looping arm over which the trimmed strip passes, means whereby said arm is operated to loop the strip, an automatically acting arm which, when moved, engages the looped trimmed strip adjacent its bent or looped part and delivers it to a suitable receiver and means set into operation by the cane strip in its passage through the machine to effect such automatic operation of the cane looping and discharging devices.

7. A machine for trimming cane comprising an automatically acting means for looping the trimmed strips, an automatic means for discharging the looped strips therefrom and delivering them to a suitable receiver and means set into operation by the trimmed cane strip in its passage through the machine to effect such automatic operation of the cane looping and discharging devices.

8. A machine for trimming cane strips comprising a vertically movable means for looping and elevating the trimmed strips, an automatic means for discharging the looped strips therefrom and delivering them to a receiver and means set into operation by the trimmed cane strip in its passage through the machine to effect such automatic operation of the cane looping and discharging devices.

9. A machine for trimming cane strips comprising an automatically actuated lifting and looping arm over which the trimmed strip passes, means whereby said arm is operated to loop the strip, an automatically acting arm which, when moved engages the looped trimmed strip adjacent its bent or looped part and delivers it to a suitable receiver and means set into operation by the trimmed cane strip in its passage through the machine to effect such automatic operation of the cane looping and discharging devices.

10. In a cane strip trimming machine, automatically operating cane strip looping and

discharging devices comprising a looping arm having an angular extension over which the trimmed strip passes and a discharging arm arranged parallel with the body of the looping arm and under its angular extension and adapted to be moved laterally to disengage the looped trimmed strip from such extension.

11. In a cane strip trimming machine, trimmed strip looping and discharging devices comprising a looping arm vertically movable to loop the trimmed strip and a laterally movable arm to disengage the trimmed strip therefrom, means whereby both of said arms are caused to move together in one direction during the looping of the strip, means whereby the disengaging arm is moved transversely to disengage the strip from the looping arm and means whereby both arms are returned to normal position through a different path so that the looping arm will be in position to engage the next trimmed strip passing through the machine.

12. In a machine for trimming cane strips, trimmed strip looping and discharging devices comprising a looping arm with an angular extension over which the trimmed strip passes, a looped strip discharging arm, means whereby both arms are moved vertically to loop and elevate the trimmed strip, means for then operating the discharging arm laterally to disengage the trimmed strip from the looping arm and means for then moving both arms rearwardly downwardly and then laterally forward to normal position.

13. In a machine for trimming cane strips, trimmed strip looping and discharging devices comprising a looping arm with an angular extension over which the trimmed strip passes, a looped strip discharging arm, means whereby both arms are moved vertically to loop and elevate the trimmed strip, means for then operating the discharging arm laterally to disengage the trimmed strip from the looping arm, means for then moving both arms rearwardly downwardly and then laterally forward to normal position and means for automatically effecting such operations set into operation by the cane strip passing through the machine.

14. A machine for trimming cane strips, comprising the combination of a grooved cane bed over which the cane strip to be trimmed passes, a cooperating wheel having a movable bearing, running in said groove and adapted to be moved bodily by a cane strip passing along the groove, a driven gear wheel, a sector plate normally out of engagement therewith mounted upon a movable axis, means whereby when said wheel is moved bodily by a cane strip the sector is carried into engagement with the gear and trimmed strip looping and discharging devices automatically operated by said sector when moved by the driven gear.

15. A machine for trimming cane strips, comprising the combination of a grooved cane bed over which the cane strip to be trimmed passes, a cooperating wheel having
5 a movable bearing, running in said grooves and adapted to be moved bodily by a cane strip passing along the groove, a driven gear wheel, a sector plate normally out of engagement therewith mounted upon a movable
10 axis, means whereby when said wheel is moved bodily by a cane strip the sector is carried into engagement with the gear, trimmed strip looping and discharging devices automatically operated by said sector when
15 moved by the driven gear and means whereby when the sector has completed its movement its disengagement from the gear is automatically effected and the parts returned to normal position.

20 16. A machine for trimming cane strips, comprising the combination of a grooved cane bed over which the cane strip to be trimmed passes, a cooperating wheel having a movable bearing, running in said groove
25 and adapted to be moved bodily by a cane strip passing along the groove, a driven gear wheel mounted in a yielding bearing, a sector plate normally out of engagement therewith mounted upon a movable axis, means
30 whereby when said wheel is moved bodily by a cane strip, the sector is carried into engagement with the gear and driven thereby, a spring connection between the sector and bearing of the gear wheel whereby the wheel
35 and sector are held in engagement during the movement of the former, trimmed strip looping and discharging devices automatically operated by said sector when moved by the driven gear and means whereby when the
40 sector has completed its movement its disengagement from the gear is automatically effected and the parts returned to normal position.

45 17. A machine for trimming cane strips, comprising a driven gear, a gear toothed member moved into engagement with the gear by the action of a cane strip passing through the machine and trimmed strip looping and discharging devices operated by
50 said member, a power driven shaft acting to rotate the gear and adjustable lost motion clutch means interposed between the gear and shaft whereby when said member is caused to engage the gear there may be, at
55 the will of the operator, an interval of time due to the lost motion in the clutch during which the gear may remain at rest.

18. A machine for trimming cane strips, comprising a rocking part 12 adapted to
60 rock about a horizontal axis and about an axis transverse thereto, a trimmed strip looping arm rigidly attached to the plate, a

trimmed strip discharging arm mounted to rock upon the plate, cam devices acting to effect timely rocking of the discharging arm 65 to disengage the looped strip from the looping arm and cam devices for moving said plate laterally about its second named axis of motion during its movement from and return to normal position. 70

19. The combination with cane trimming devices, of automatic means for looping the cane strips as they pass from the machine.

20. The combination with cane trimming devices of automatic means for looping and 75 discharging the cane strips from the machine to a suitable holder.

21. The combination with cane trimming devices of automatic means for looping and discharging a strip, to a suitable holder, set 80 into action by a strip passing through the machine.

22. The combination with cane trimming devices of automatic means, for looping the trimmed strips as they leave the machine, 85 put into action by a strip passing through the machine.

23. The combination with means for feeding a strip forward endwise of automatically acting means, for looping the strip, set into 90 operation by the fed strip.

24. The combination with means for feeding a strip forward endwise of means automatically set into operation by the strip for looping and discharging it looped from the 95 machine.

25. The combination with means for feeding a strip forward endwise of automatically acting means movable vertically to loop the strip and laterally to discharge the looped 100 strip.

26. The combination with means for feeding a strip forward endwise of automatically acting means movable vertically to loop the strip and laterally to discharge the looped strip 105 and means acted upon by the strip to set said automatically acting means into operation.

27. In a cane trimming machine, strip looping and discharging devices movable vertically to loop the trimmed strip and laterally 110 to discharge it, and means for automatically actuating said devices.

28. In a cane trimming machine, strip looping and discharging devices movable vertically to loop the trimmed strip and laterally 115 to discharge it, and means set into operation by the strip for automatically actuating said devices.

In testimony whereof, I have hereunto subscribed my name.

EDWARD POWELL.

Witnesses:

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E. F. WICKS.