

No. 765,773.

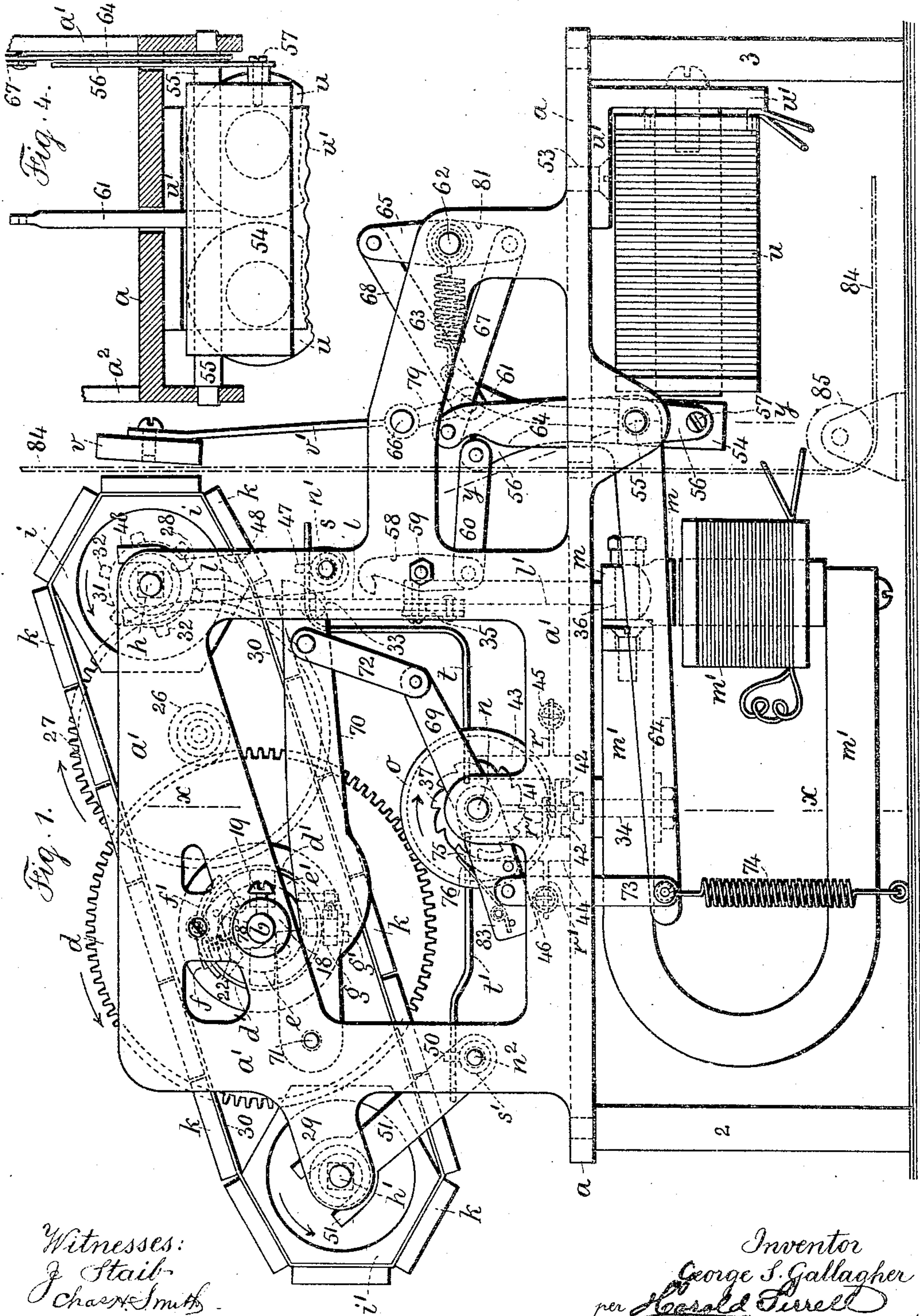
PATENTED JULY 26, 1904.

G. S. GALLAGHER.
ELECTRIC PRINTING MACHINE.

APPLICATION FILED SEPT. 18, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
J. Stail-
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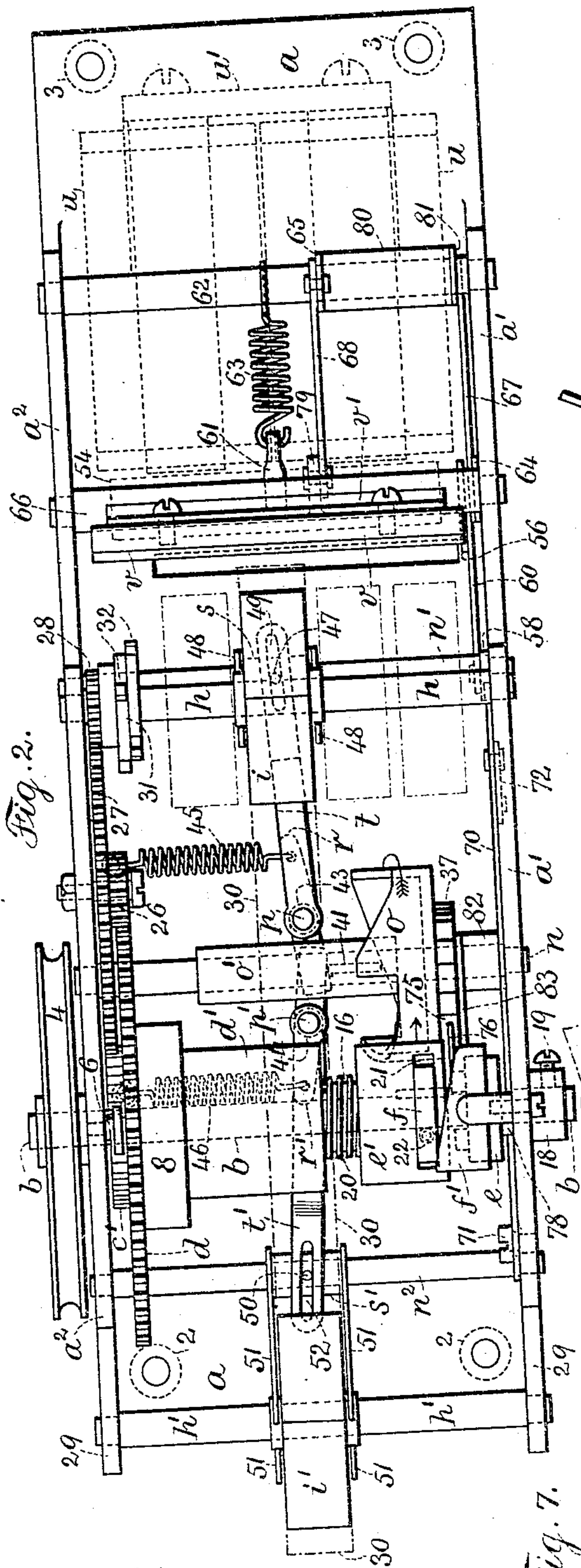


Fig. 2.

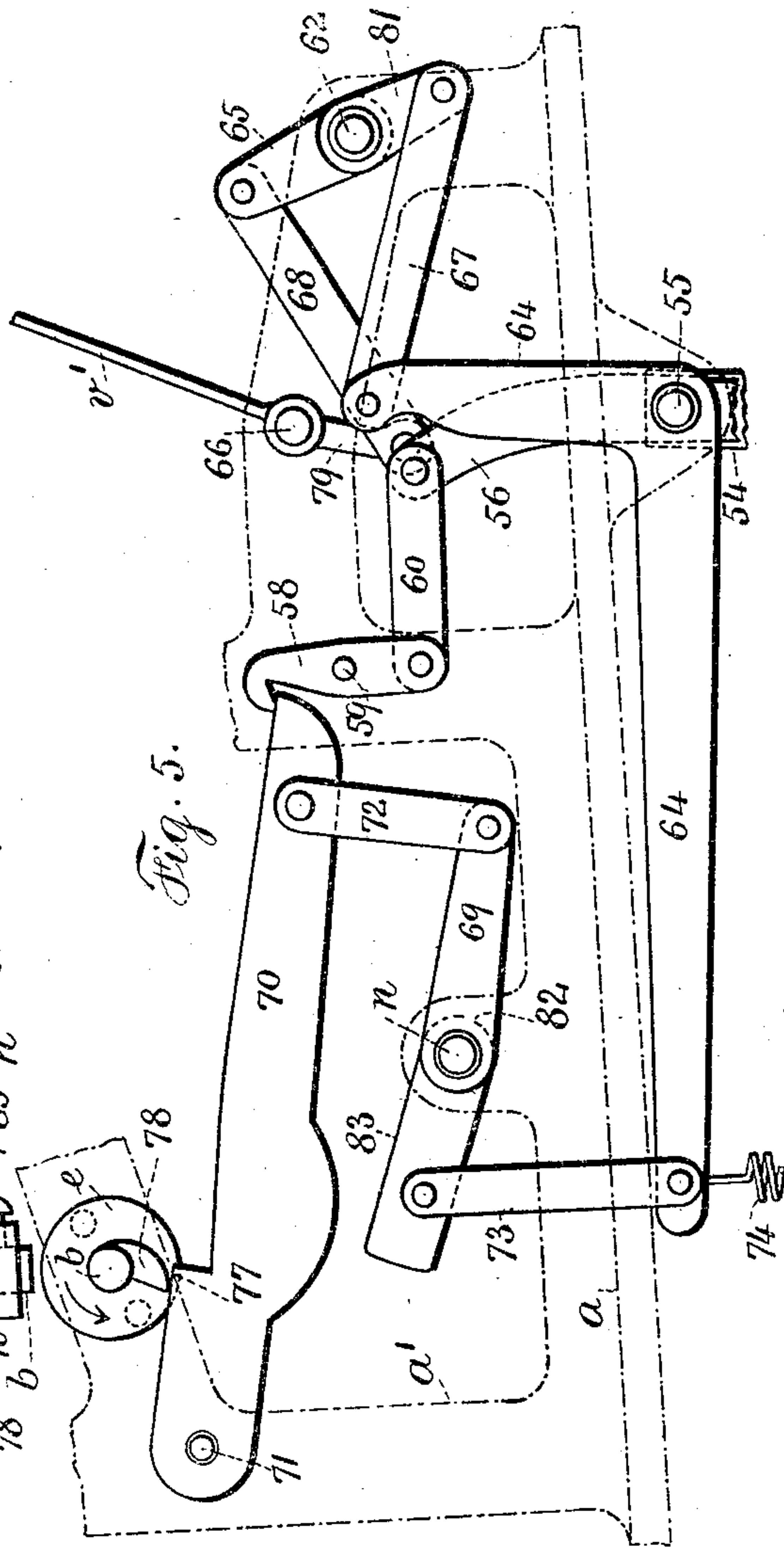


Fig. 5.

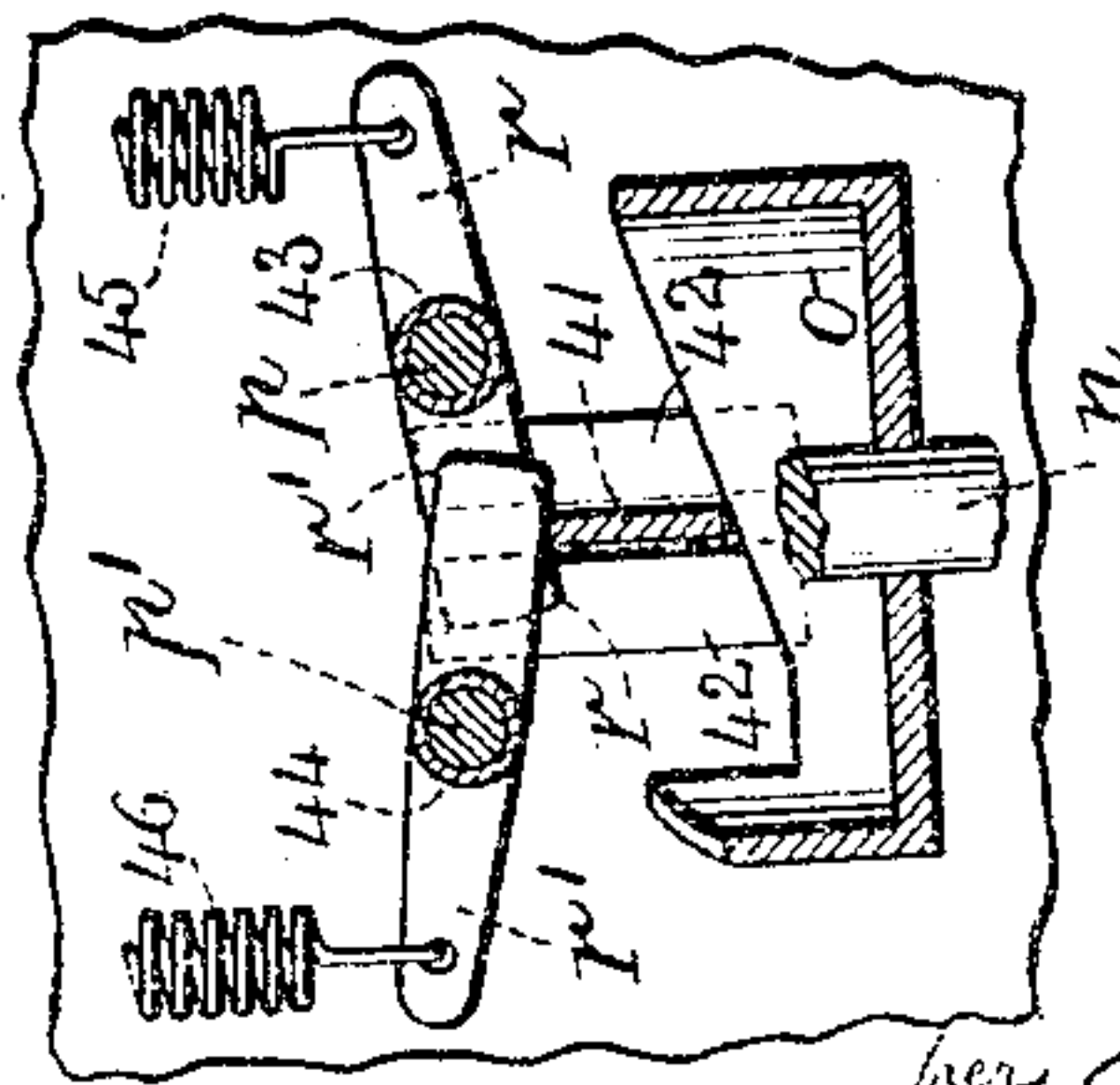


Fig. 7.

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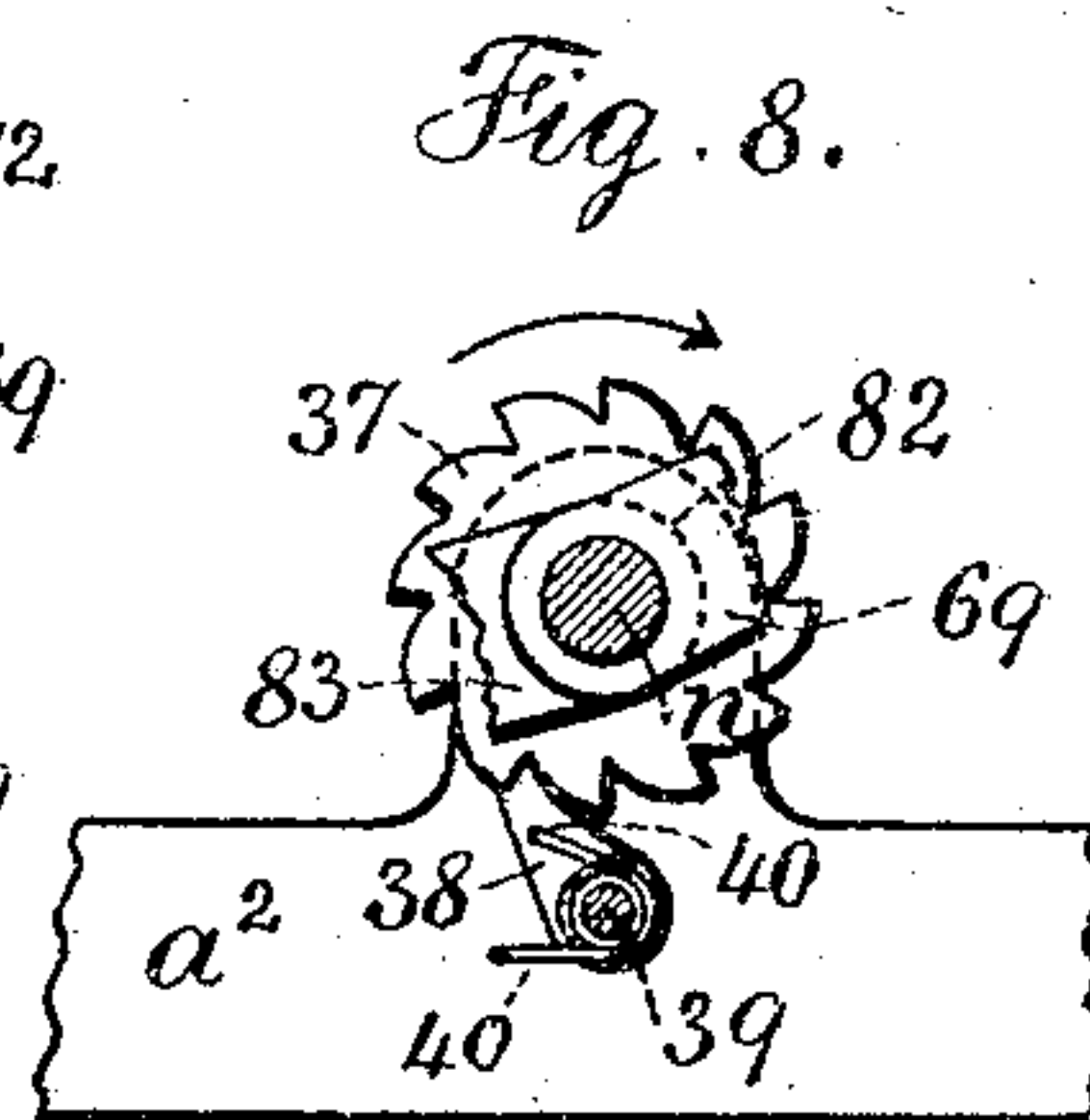
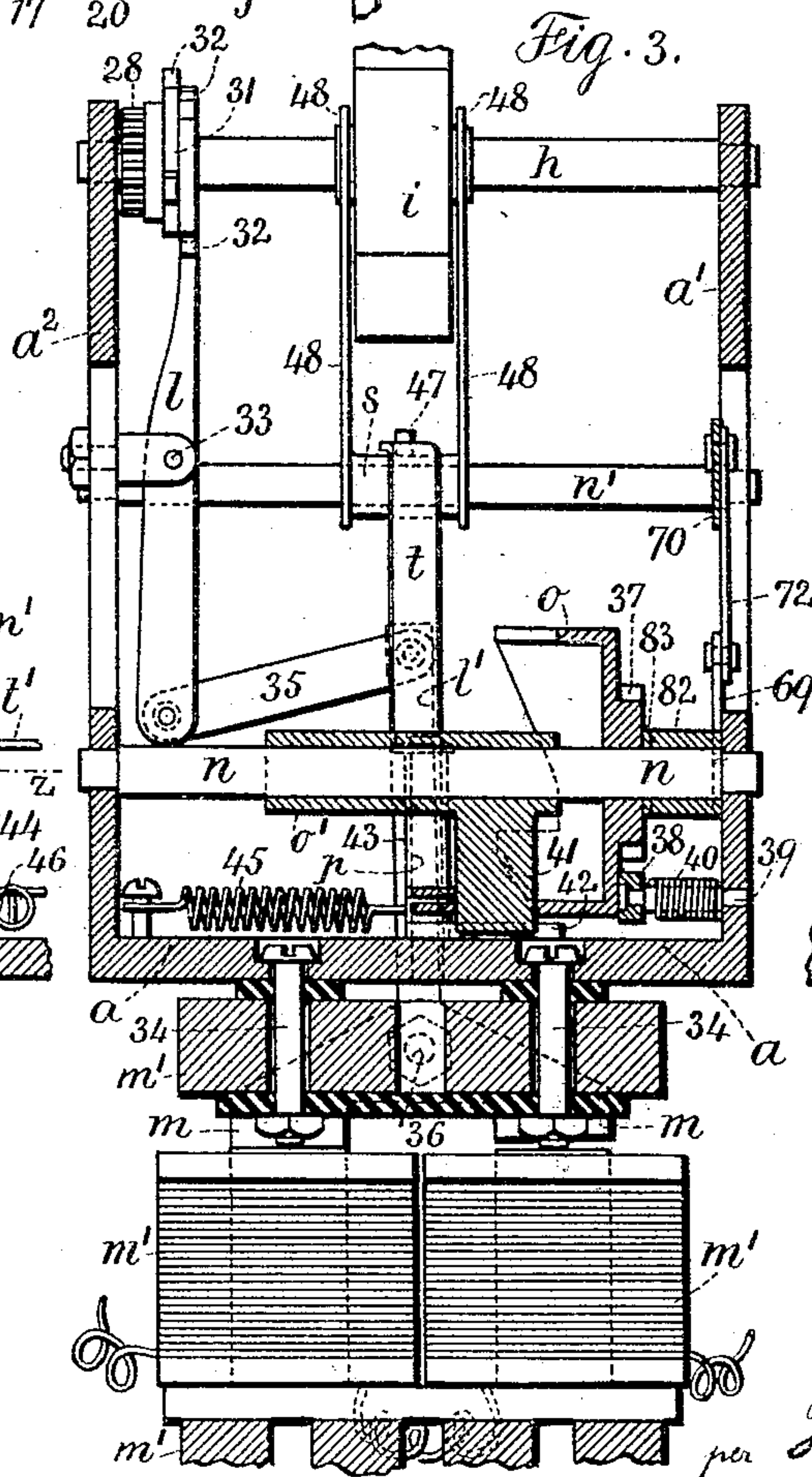
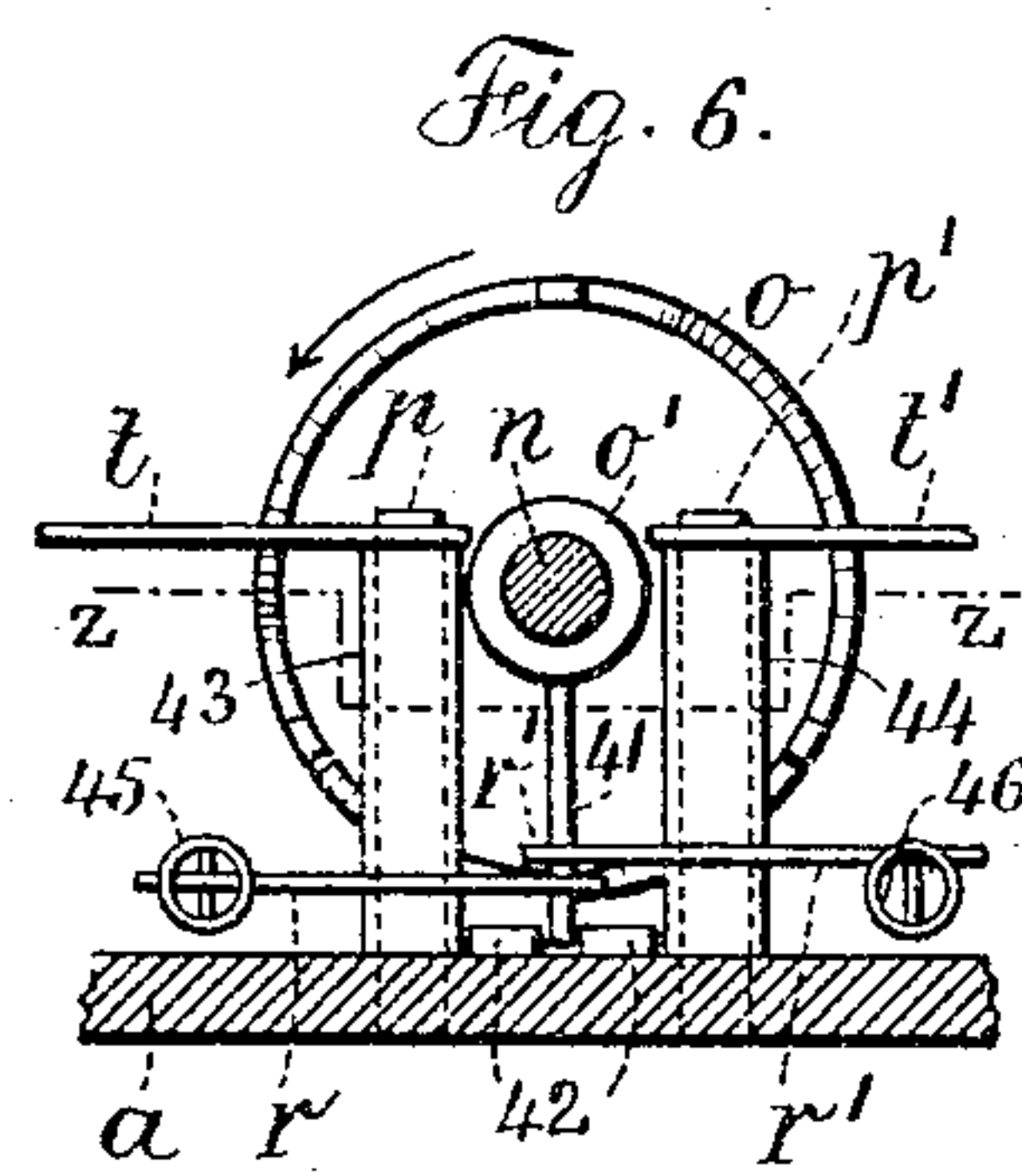
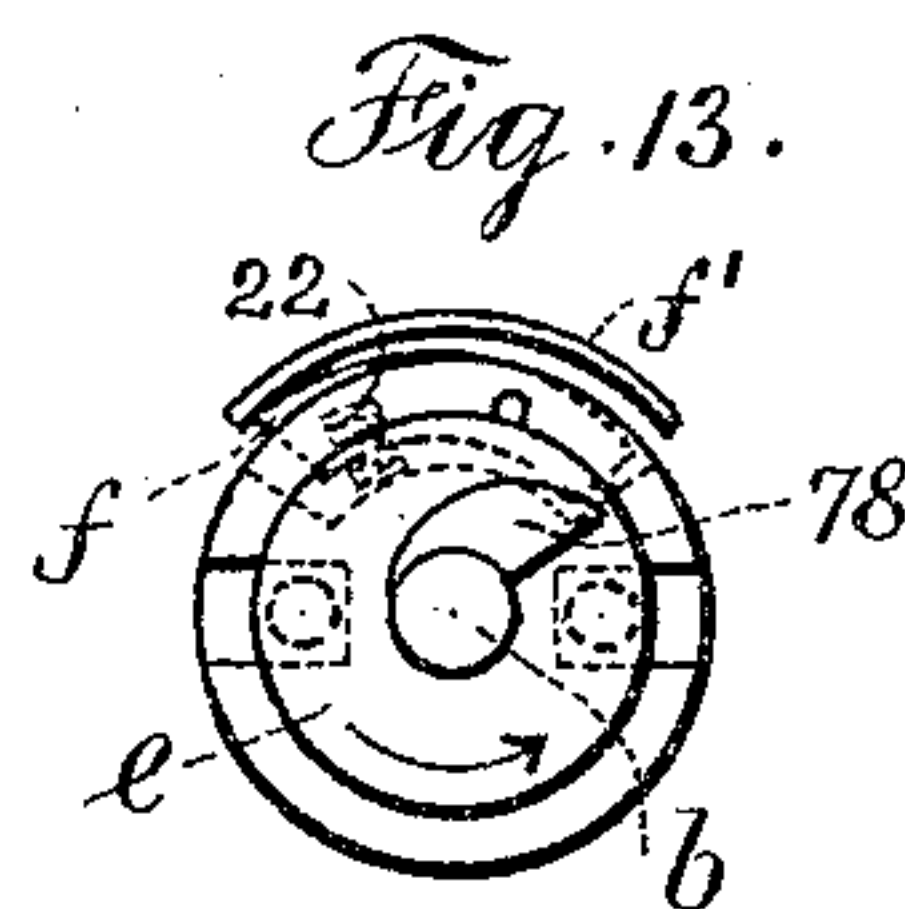
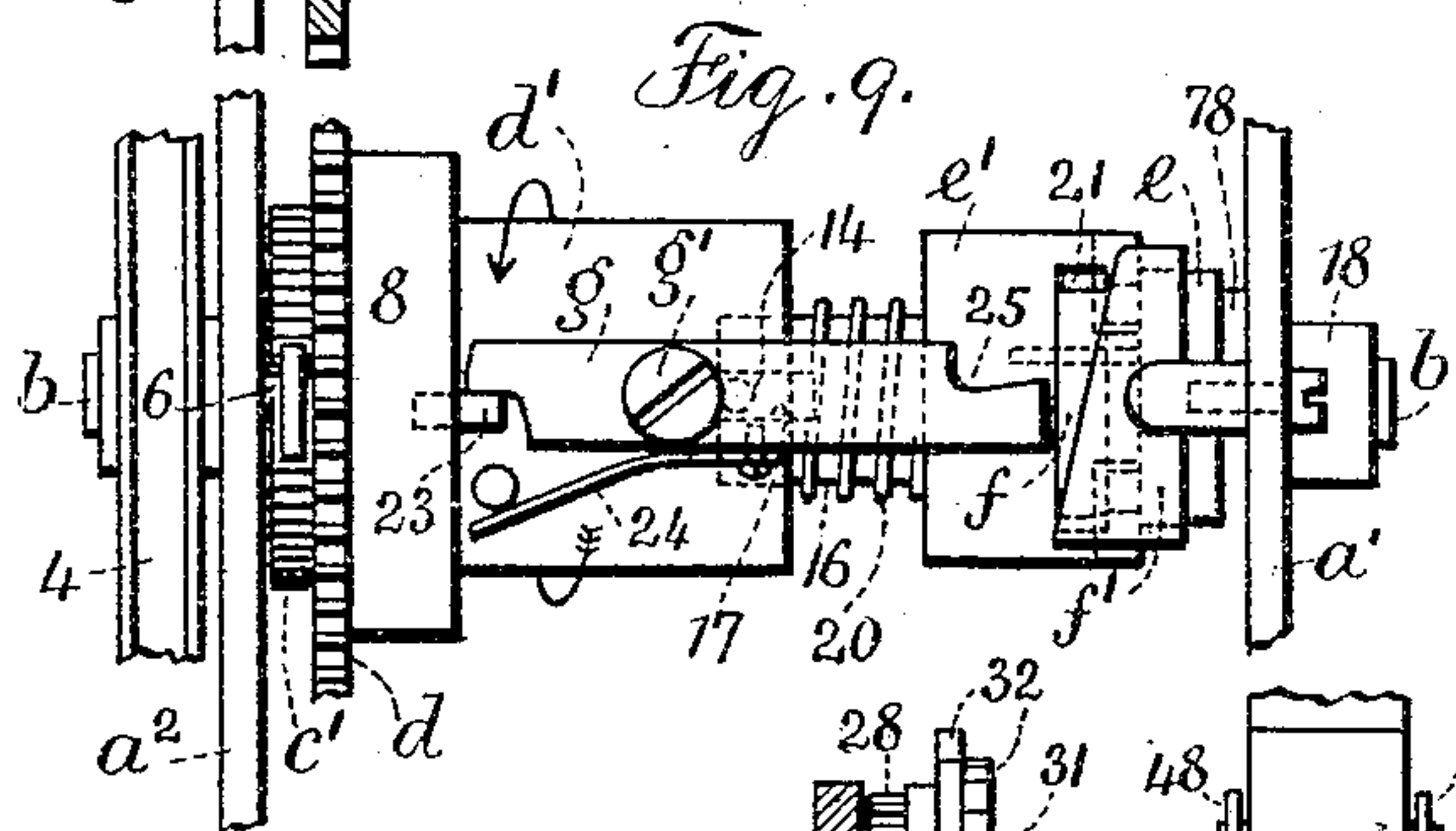
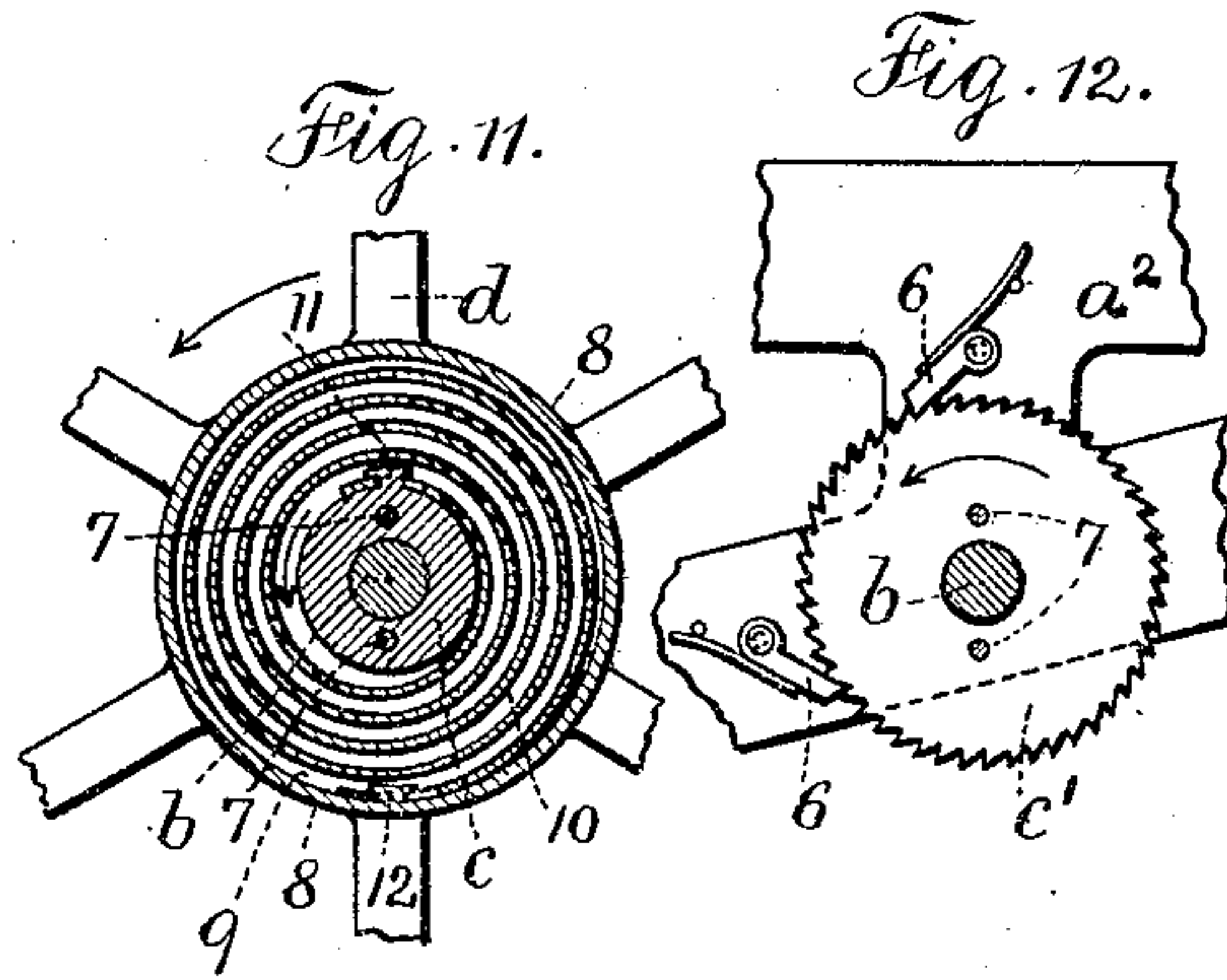
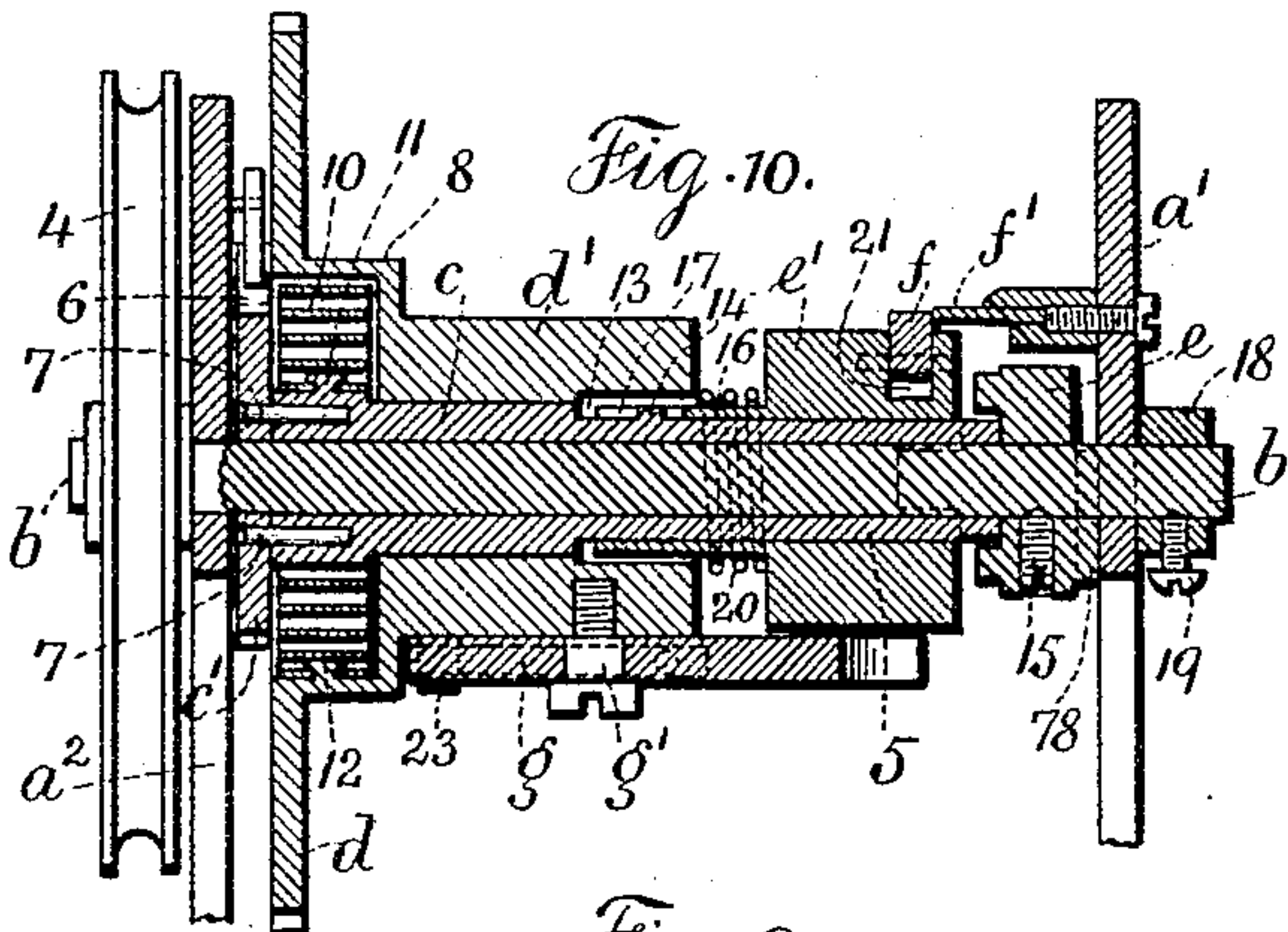
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GEORGE S. GALLAGHER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF,
RUPERT L. JOSEPH, AND FRANK E. BURROWS, OF NEW YORK, N. Y.

ELECTRIC PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 765,773, dated July 26, 1904.

Application filed September 18, 1903. Serial No. 173,700. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. GALLAGHER, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented an Improvement in Electric Printing-Machines, of which the following is a specification.

My invention relates to electric printing-machines, particularly designed for use in connection with my improved system for operating stock-boards, for which I have made application for Letters Patent of the United States, Serial No. 154,783, filed April 29, 1903, and in an improvement on the electric printing-machine shown and described in my application for Letters Patent of the United States, Serial No. 154,782, filed April 29, 1903.

In carrying out my invention I employ a frame, a continuously-revolving shaft mounted therein, a type-belt, supports for the frame, means for transmitting motion from the said continuously-revolving shaft to the said type-belt to normally impart to the latter a continuous movement, means for stopping the type-belt at any desired place, a platen, means for actuating the same, devices for shifting the type-belt laterally every time the platen is actuated and for returning the same to its initial position every time a line is printed, means for actuating said devices, a latch device for holding the platen-actuating means and the means for actuating the type-belt-shifting devices in a set position, means for releasing the said latch device simultaneously with the stopping of the type-belt, and means for automatically returning the platen-actuating means and the means for actuating the type-belt-shifting devices to their set position, all of which will be hereinafter more particularly described.

In the drawings, Figure 1 is a side elevation of my improved electric printing-machine, and Fig. 2 is a plan of the same. Fig. 3 is a vertical section at $x x$ of Fig. 1. Fig. 4 is a vertical section at $y y$, Fig. 1, looking to the right. Fig. 5 is a diagrammatic view of the actuating-levers when in their set positions. Fig. 6 is an elevation and partial section of the cam-wheel employed to shift the type-belt

laterally. Fig. 7 is a sectional plan on line $z z$, Fig. 6; and Fig. 8 is a sectional elevation of the ratchet-wheel for actuating the cam shown in Figs. 6 and 7. Fig. 9 is a plan of the continuously-revolving shaft and the parts connected therewith with the clutch in engagement, and Fig. 10 is a longitudinal section of the same. Fig. 11 is a sectional elevation of the continuously-revolving shaft, the sleeve, and the coil-spring employed for actuating the type-belt; Fig. 12, an elevation of the ratchet-wheel and stop-pawls for holding the same in position, and Fig. 13 is an elevation of the cam moving the actuating-levers and of the clutch.

a represents a platform carried by suitable supports 2 3 above a common base and provided on its longitudinal sides with frames a' a'' . Mounted in bearings in the frames a' a'' is a continuously-revolving shaft b , driven by a wheel 4. A sleeve c , having a reduced portion 5, fits over the revolving shaft b , and to the end of the sleeve c adjacent to the drive-wheel 4 is a ratchet-wheel c' , secured thereto by pins 7 and held by pawls 6, pivoted in the frame a'' .

d is a gear-wheel whose hub d' fits loosely on the sleeve c and is provided with a shoulder 8 and a recess 9 adjacent to the ratchet-wheel c' . Within the recess 9 I employ a strong coil-spring 10, one end of which is connected to a lug 11 on the sleeve c and the other end to a similar lug 12 on the inner side of the shoulder 8 and within the recess. The end of the hub d' is cut away internally, so as to form a recess 13 between this part and the reduced portion 5 of the sleeve c , and within the recess 13 the portion 5 of the sleeve c is provided with a lug 14.

At the end of the revolving shaft b opposite the drive-wheel I employ a pin-clutch, the pin-plate e of which is secured on the shaft b by a set-screw 15. The grip member e' of the clutch fits over the reduced portion 5 of the sleeve c and has a reduced end 16 extending into the recess 13 and provided with a slot 17, receiving the lug 14, so that the grip e' is slidable longitudinally on the portion 5 of the sleeve c , but not revoluble except

with said sleeve. The end of the sleeve *c* abuts against the pin-plate *e*, and the parts are kept in their relative positions by a collar 18, held on the shaft *b* by a set-screw 19 and
5 outside the frame *a'*.

The grip *e'* is normally held in contact with the pin-plate *e* by a spring 20, extending between the end of the hub *d'* and the adjacent side of the grip *e'*. The face of the grip *e'* is
10 provided with a recess 21, in which a spring-controlled finger *f* is pivotally secured and one end thereof normally held projected above the surface of the grip *e'* by means of a spring 22.

f' is a cam-plate secured to the frame *a'* in such a position as to engage either the side or the top of the finger *f*, depending upon the position of the grip *e'*. A lever *g* is pivoted at *g'* to the hub *d'* and is normally held
20 against a stop 23 in a position parallel with the revolving shaft by a spring 24, which bears against a stop on said hub, and at the end adjacent to the grip *e'* the side of the lever *g* is recessed at 25 for a purpose herein-
25 after set forth.

The operation of the above-described parts is as follows: Assuming that the grip *e'* is in engagement with the pin-plate *e*, the continuous turning motion of the shaft *b* is imparted
30 through the pin-plate *e* to the grip *e'* and sleeve *c*, tending to wind up the spring 10, whereby a continuous revolving motion is imparted to the gear-wheel *d* and its hub *d'*. As the grip *e'* revolves the side of the finger *f* engages
35 the cam-plate *f'*, and thereby the grip *e'* is forced along the reduced portion 5 of the sleeve *c*, releasing the said grip member. As the finger *f* rides along the face of the cam-plate *f'* the end of the finger comes in contact
40 with the recessed end of the lever *g*, merely swinging the same aside, and which after the finger has passed and the clutch been released snaps back into position by means of the spring 24. In order to make the contact with and the
45 movement of the lever *g* as small as possible, the end thereof is provided with the recess 25. The clutch is now released, and the grip *e'* and sleeve *c* are held stationary by the pawls 6 engaging the ratchet *c'*; but the power stored
50 up in the spring acts continuously to turn the gear-wheel *d* and its hub *d'*. The grip *e'* stops in a position with the side of the finger *f* in contact with the face of the cam-plate *f'* in the position shown in Fig. 10, and it will now
55 be apparent that as the gear *d* revolves the lever *g*, carried by the hub *d'*, will contact with the exposed surface of the finger *f*, depressing the same against the spring 22 until the outer portion of the finger *f* comes below the
60 cam-plate *f'*, and then the spring 20 will force the grip along into engagement with the pin-plate *e*, and the motion of the revolving shaft *b* will again be transmitted to the spring 10, so that intermittently the shaft *b* causes a
65 winding of the spring 10 to keep the same

wound sufficiently to make the gear *d* turn constantly. The motion of the gear-wheel *d* is transmitted through a pinion 26, gear-wheel 27, and pinion 28 to a shaft *h*, mounted in the frames *a'* *a''*. *h'* is a shaft mounted in pro-
70 jections 29 of the frames *a'* *a''*, and both shafts *h* *h'* are preferably rectangular in cross-section and carry, respectively, pulleys *i* *i'*, which I have shown as hexagonal, but which may be of any desired form. Passing around the
75 pulleys *i* *i'* is an endless type-belt 30, to which are secured type-blocks *k*, the width of each of which is approximately equal to the width of the faces of the pulleys *i* *i'*.

31 is a wheel secured on the shaft *h* and is
80 provided with two series of stop projections 32 in a staggered relation to one another.

l is a lever pivoted at 33 in a bracket secured to the frame *a''*, and *l'* is an arm connected to the armature *m* of a polarized relay-
85 magnet *m'*, secured to the platform *a* by screws 34. This armature is pivoted and has a rocking motion. The arm *l'* and lever *l* are connected by a link 35. The end of the lever *l* is adapted to engage the said staggered pro-
90 jections 32, first one of one series and then the next succeeding of the other series, and in order that this function may be performed the said lever is given a swinging movement by the rocking movement of the armature *m*,
95 pivoted at 36 and acting through the lever *l'* and link 35. This device is, in effect, an escapement mechanism regulating the speed of the gear-wheel *d*, and consequently of the type-belt 30. I also employ a shaft *n* and
100 shafts *n'* *n''*, all of which have bearings in the frames *a'* *a''*. The shaft *n* carries a multiple cam-wheel *o*, and integral therewith is a ratchet 37, and a stop-pawl 38, Fig. 8, carried by a pin 39, secured in the frame *a'*, is held
105 in engagement with the ratchet 37 by a spring 40. The shaft *n* also carries a sleeve *o'*, loose thereon and having a depending arm 41 extending almost to the base *a* and guided between
110 two lugs 42 on said base.

p *p'* are posts fixed in the base *a* and provided with sleeves 43 44, respectively. Levers *r* *r'* are secured to said sleeves 43 and 44, and springs 45 and 46 extend between the
115 outer ends of said levers and studs or screws on the base *a*, and the other and adjacent ends of said levers overlap each other. The depending arm 41 contacts on one edge with the faces of the cam-wheel *o* and on the other edge
120 with the overlapping ends of levers *r* *r'*, and these parts are maintained in these positions by the springs 45 and 46.

The shaft *n'* is provided with a collar *s*, having a pin 47 and arms 48, terminating in bifurcated portions which receive the shaft and
125 extend over the hub of the pulley *i*, and a lever *t* is secured at one end to the sleeve 43, and the other end is provided with a slot 49, into which the pin 47 passes. Similarly the shaft *n''* carries a collar *s'*, having a pin 50 and
130

arms 51, the bifurcated ends of which receive the shaft and extend over the hub of the pulley i' , and one end of a lever t' is secured to the sleeve 44, and the other end is provided with a slot 52, into which the pin 50 passes.

u is an electromagnet secured to a bracket u' , fastened to the base a by screws 53. The armature 54 of the electromagnet u is pivoted on an arbor 55, and an arm 56 is secured at 57 on one end of the armature 54. A latch-lever 58 is pivoted in the frame a' at 59, and a link 60 connects the end of the latch-lever with the end of the arm 56. An arm 61 is secured centrally to the armature 54 and extends through an opening in the base a and is connected to an arbor 62 by a spring 63.

A bell-crank lever 64 is pivoted on the arbor 55. A platen v is carried by an arm-plate v' on an arbor 66, and a short depending arm 79 is secured to said arbor 66. The arbor 62 is provided with a sleeve 80, to the opposite ends of which are connected lever-arms 65 and 81. The short arm of the bell-crank lever 64 is connected to the arm 81 by a link 67, and the short arm 79 is connected to the arm 65 by a link 68.

69 is a lever at one end of a sleeve 82, loose on the shaft n , and 70 a lever pivoted in the frame a' at 71. The free end of the lever 70 is adapted to be engaged by the latch-lever 58 and is connected to the end of the lever 69 by a link 72, and a lever 83 at the other end of the sleeve 82 is connected to the long arm of the bell-crank lever 64 by a link 73. This system of levers is held in its normal position, as shown in Fig. 5, by the latch-lever 58 and when released is actuated by a spring 74. The lever 83 carries a pawl 75, adapted to engage the ratchet 37 and held in contact with the same by a spring 76. The lever 70 is provided with a shoulder 77 and the side of the pin-plate e adjacent the frame a' with a cam projection 78, adapted to contact with the said shoulder 77 of the lever 70. The paper strip 84 (shown in Fig. 1) is preferably fed over a roller 85, through the base a , and between the platen and type-blocks by any suitable means, which, however, form no part of my present invention.

In the operation of the machine power from the continuously-revolving shaft b is intermittently transmitted to the spring 10, which applies a continuous force to the gear-wheel d , tending to rotate the same and the parts connected therewith, causing the travel of the type-belt, as hereinbefore described.

By momentarily closing the pulsating current which is caused to be sent through the coils of the polarized relay m' the lever l may be stopped against any of the projections 32 to bring the desired type-block k into position for printing. In so doing the current through the magnet u , which is in circuit with the coils of the polarized relay, is continued sufficiently long to cause the magnet u

to build up and attract its armature 54, thereby moving the arms 56 and 61 against the spring 63 and through the link 60 throwing the latch-lever 58. This releases the lever 70, whereupon the bell-crank lever 64 is swung by the spring 74, actuating the platen v and its arm v' through the levers 81 and 65 and the links 67 and 68 and moving the levers 83, 69, and 70 through the links 72 and 73 into the positions shown in Fig. 1, and in so doing the pawl 75 slips over a tooth of the ratchet 37, taking a new tooth. After the platen has been actuated the current through the magnet-coils is returned to a pulsating one, and the lever l is moved again to permit the travel of the type-belt, and the armature of the magnet u and the latch-lever and parts connected therewith are returned to the position shown in Fig. 5 by the spring 63.

As the continuously-revolving shaft b turns, the cam 78, carried by the pin-plate e , contacts with the shoulder 77 on the lever 70, depresses the said lever 70, and returns the bell-crank lever 64 and the parts connected therewith to their locked position (shown in Fig. 5) against the action of the spring 74. In its return movement the lever 83 by the pawl 75 imparts a partial rotation to the cam-wheel o , which in turning forces the depending arm 41 along in the groove in which it runs, and this moves the levers r r' against the action of the springs 45 46, thereby turning the sleeves 43 and 44 and swinging the arms t t' , which through the pins 47 50, sleeves s s' , and arms 48 51 causes a lateral shifting of the pulleys i i' on their shafts h h' to bring the line of the type-blocks into position for the next imprint. After the type-belt has reached its extreme lateral position the partial rotation of the cam-wheel o causes the depending arm 41 to ride over the end of one of the cam-faces, when the springs 45 46 force the depending arm 41 to the base of the next succeeding cam-face and return the pulleys i i' and the type-belt to their initial position. At the same time that the type-belt is returned to its initial position I employ a mechanism for shifting the paper strip 84 to the next position for printing the succeeding line; but the mechanism forms no part of my present invention.

I claim as my invention—

1. In an electric printing-machine, the combination with a base and frame and continuously-revolving shaft, of a gear-wheel, means for driving said gear-wheel, and means for intermittently transmitting power from the said continuously-revolving shaft to the said means for driving the said gear-wheel.

2. In an electric printing-machine, the combination with a base and frame and continuously-revolving shaft, of a gear-wheel, a spring for driving said gear-wheel, a clutch, and means for intermittently transmitting power from said continuously-revolving shaft to said

spring to exert a continuous driving power on said gear-wheel.

3. In an electric printing-machine, the combination with a base and frame and a continuously-revolving shaft, of a sleeve on said shaft, a gear-wheel hub therefor on said sleeve, a spring connected to said sleeve and gear-wheel to drive the latter, a ratchet-wheel, a clutch and means for connecting and disconnecting the parts of said clutch to intermittently transmit power from said continuously-revolving shaft to said spring to exert a continuous driving power on said gear-wheel.

4. In an electric printing-machine, the combination with a base and frame and a continuously-revolving shaft, of a sleeve on said shaft, a gear-wheel hub therefor on said sleeve, a spring connected to said sleeve and gear-wheel to drive the latter, a ratchet-wheel, a clutch, a pivoted spring-controlled finger mounted in a recess in the grip member of said clutch, a cam-plate secured to said frame, a spring extending between said grip member and the hub of said gear-wheel, and a lever pivoted on the hub of said gear-wheel so arranged that power from the said continuously-revolving shaft is intermittently transmitted to the said spring connecting the said sleeve and gear-wheel to exert a continuous driving power to the latter, substantially as described.

5. In an electric printing-machine, the combination with a base, frame and continuously-revolving shaft, of a gear-wheel, means for exerting a continuous driving power on said gear-wheel, means for intermittently transmitting power from the said continuously-revolving shaft to the aforesaid means, pulleys, shafts, upon which the same are slidably mounted, a type-belt passing over said pulleys, type-blocks on said type-belt, a pinion on the shaft of one of said pulleys, and a train of gears connecting the same with the said gear-wheel, and means for stopping the said type-belt in any desired position.

6. In an electric printing-machine, the combination with a base, frame and continuously-revolving shaft, of a gear-wheel, means for exerting a continuous driving power on said gear-wheel, means for intermittently transmitting power from the said continuously-revolving shaft to the aforesaid means, pulleys, shafts upon which the same are slidably mounted, a type-belt passing over said pulleys, type-blocks on said type-belt, a pinion on the shaft of one of said pulleys, and a train of gears connecting the same with the said gear-wheel, means for stopping the said type-belt in any desired position, means for shifting the type-belt, a device for actuating the same, a platen, devices for simultaneously actuating said platen and setting the said device for actuating the means for shifting the type-belt, means for holding the said devices in a set position, means for releasing the same, and means for simultaneously returning the said devices to

their set position and for moving the said device for actuating the means for shifting the type-belt.

7. In an electric printing-machine, the combination with a base, frame and continuously-revolving shaft, of a gear-wheel, means for exerting a continuous driving power on said gear-wheel, means for intermittently transmitting power from the said continuously-revolving shaft to the aforesaid means, pulleys, shafts upon which the same are slidably mounted, a type-belt passing over said pulleys, type-blocks on said type-belt, a pinion on the shaft of one of said pulleys and a train of gears connecting the same with the said gear-wheel, a wheel adjacent to said pinion on the said pulley-shaft, staggered projections on said wheel, a lever having a tapered end, a magnet adapted to swing said arm so that its tapered end comes in the path of first one and then the next succeeding projection on said wheel, means for shifting the type-belt, a device for actuating the same, a platen, devices for simultaneously actuating said platen and setting the said device for actuating the means for shifting the type-belt, means for holding the said devices in a set position, means for releasing the same and means for simultaneously returning the said devices to their set position and for moving the said device for actuating the means for shifting the type-belt.

8. In an electric printing-machine, the combination with a base, frame and continuously-revolving shaft, of a type-belt, means for moving and stopping the same at any desired position, a multiple cam-wheel, a shaft upon which the same is mounted, devices operated by said cam-wheel for shifting the type-belt and for returning the same to its initial position automatically when the end of a line is reached, and means for actuating said multiple cam-wheel.

9. In an electrical printing-machine, the combination with a base, frame and continuously-revolving shaft, of pulleys, a type-belt, means for moving said type-belt from said continuously-revolving shaft, a multiple cam-wheel, a shaft upon which the same is mounted, a sleeve upon said cam-wheel shaft, a depending arm on said sleeve and adapted to be engaged by the faces of said cam-wheel, a guide in which said depending arm slides, devices operated through the movement of said depending arm imparted by said cam-wheel to shift the type-belt laterally, and means for turning said cam-wheel a partial revolution at a time.

10. In an electrical printing-machine, the combination with a base, frame and continuously-revolving shaft, of pulleys, a type-belt, means for moving said type-belt from said continuously-revolving shaft, a multiple cam-wheel, a shaft upon which the same is mounted, a sleeve upon said cam-wheel shaft, a de-

pending arm on said sleeve and adapted to be engaged by the faces of said cam-wheel, a guide in which said depending arm slides, posts secured in said base, sleeves fitting over said posts, levers secured to said sleeves and having overlapping ends with which said depending arm engages, springs connecting the other ends of levers with studs in said base, devices connected to and operated by the turning of said sleeves to shift the type-belt and return the same to its initial position, and means for turning the said cam-wheel a partial revolution at a time.

11. In an electrical printing-machine, the combination with a base, frame and continuously-revolving shaft, of pulleys, a type-belt, means for moving said type-belt from said continuously-revolving shaft, a multiple cam-wheel, a shaft upon which the same is mounted, a sleeve upon said cam-wheel shaft, a depending arm on said sleeve and adapted to be engaged by the faces of said cam-wheel, a guide in which said depending arm slides, posts secured in said base, sleeves fitting over said posts, levers secured to said sleeves and having overlapping ends, with which said depending arm engages, springs connecting the other ends of levers with studs in said base, arms connected to said sleeves, collars, shafts for the same, a pin upon both collars with which the outer ends of said arms engage, arms extending from said collars to the hubs of said pulleys, whereby a movement of the cam-wheel shifts the type-belt and also returns the same to its initial position, and means for turning the said cam-wheel a partial revolution at a time.

12. In an electrical printing-machine, the combination with a base, frame, and continuously-revolving shaft, of a type-belt, means for moving the same by the continuously-revolving shaft, means for stopping the type-belt in any desired position, devices for shifting the type-belt laterally and returning the same to its initial position, means for actuating said devices, a platen, a bell-crank lever, devices actuated by said bell-crank lever for simultaneously actuating said platen and for setting the means for actuating the devices for shifting said type-belt, means for holding the last aforesaid devices in a set position, means for releasing the said devices, means for actuating the same when released, and means for simultaneously returning said devices to their set position and for operating the said means for actuating the said devices to shift the said type-belt.

13. In an electrical printing-machine, the combination with a base, frame, and continuously-revolving shaft, of a type-belt, means for moving the same by the continuously-revolving shaft, means for stopping the type-belt in any desired position, devices for shifting the type-belt laterally and returning the same to its initial position, means for actuat-

ing said devices, a platen, an arm to which the same is secured, an arbor to which the arm is connected, an arm connected to said arbor, a bell-crank lever, a lever, links connecting the arms of said lever respectively with the arm connected to said arbor and the short arm of the bell-crank lever, means for holding the bell-crank lever and parts associated therewith in a set position, means for releasing the same, means for actuating the same when released, and means for simultaneously returning said devices to their set position and for operating the said means for actuating the said devices to shift the said type-belt.

14. In an electrical printing-machine, the combination with a base, frame, and continuously-revolving shaft, of a type-belt, means for moving the same by the continuously-revolving shaft, means for stopping the type-belt in any desired position, devices for shifting the type-belt laterally and returning the same to its initial position, a ratchet-wheel, a lever, a pawl carried by said lever and engaging said ratchet to actuate said devices, a platen, an arm to which the same is secured, an arbor to which said arm is connected, an arm connected to said arbor, a bell-crank lever, a lever, links connecting the arms of said lever respectively with the arm connected to said arbor and the short arm of the bell-crank lever, a link connecting the long arm of the bell-crank lever with the said pawl-carrying lever, means for holding said bell-crank lever and associated parts in a set position, means for releasing the same, means for actuating them when released, and means for simultaneously returning the bell-crank lever and associated parts to the set position and for turning the said ratchet to actuate the devices for shifting the type-belt.

15. In an electrical printing-machine, the combination with a base, frame and continuously-revolving shaft, of a type-belt, means for moving the same by the continuously-revolving shaft, means for stopping the type-belt in any desired position, devices for shifting the type-belt laterally and returning the same to its initial position, a ratchet-wheel, a lever, a pawl carried by said lever and engaging said ratchet to actuate said devices, a platen, an arm to which the same is secured, an arbor to which said arm is connected, an arm connected to said arbor, a bell-crank lever, a lever, links connecting the arms of said lever respectively with the arm connected to said arbor and the short arm of the bell-crank lever, a link connecting the long arm of the bell-crank lever with the said pawl-carrying lever, a latch-lever, an electromagnet, devices connecting the armature of the electromagnet with the said latch-lever, a spring for actuating said bell-crank lever and associated parts, and means for simultaneously returning the bell-crank lever and associated parts to the set

position and for turning the said ratchet to actuate the devices for shifting the type-belt.

16. In an electrical printing-machine, the combination with a base, frame and continuously-revolving shaft, of a type-belt, means for moving the same by the continuously-revolving-shaft, means for stopping the type-belt in any desired position, devices for shifting the type-belt laterally and returning the same to its initial position, a ratchet-wheel, a lever, a pawl carried by said lever and engaging said ratchet to actuate said devices, a platen, an arm to which same is secured, an arbor to which said arm is connected, an arm connected to said arbor, a bell-crank lever, a lever, links connecting the arms of said lever respectively with the arm connected to said arbor and the short arm of the bell-crank lever, a link connecting the long arm of the bell-crank

lever with the said pawl-carrying lever, a latch-lever, an electromagnet, devices connecting the armature of the electromagnet with the said latch-lever, a spring for actuating said bell-crank lever and associated parts, a lever pivoted at one end in said frame, a shoulder on said lever, a link connecting the other end of the last aforesaid lever with the other arm of said pawl-carrying lever, and a cam adapted to engage said shoulder to return the bell-crank lever and associated parts to their set position, and to turn the said ratchet to actuate the devices for shifting the said type-belt.

Signed by me this 21st day of August, 1903.

GEORGE S. GALLAGHER.

Witnesses:

GEO. T. PINCKNEY,

BERTHA M. ALLEN.