

No. 753,872.

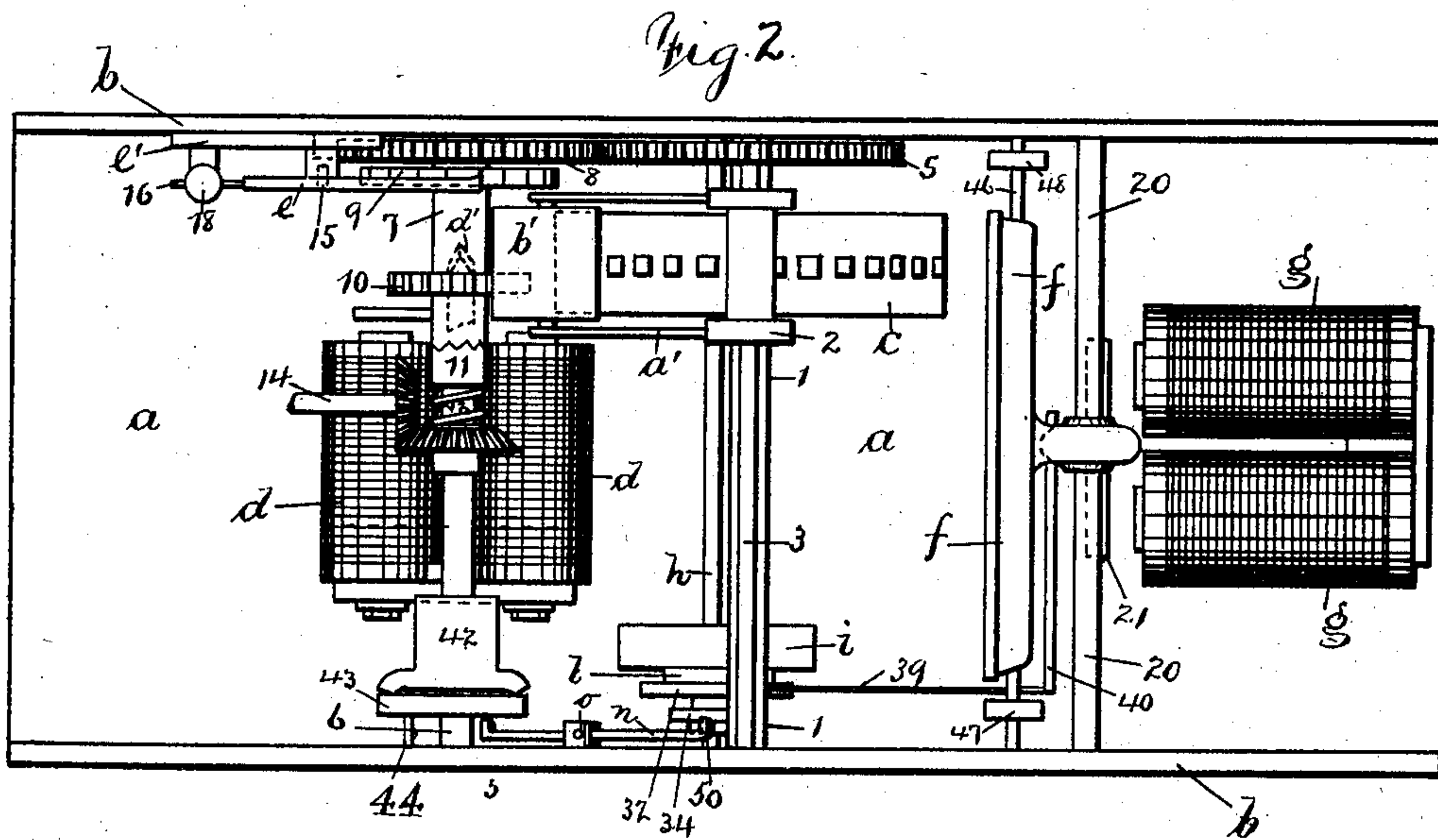
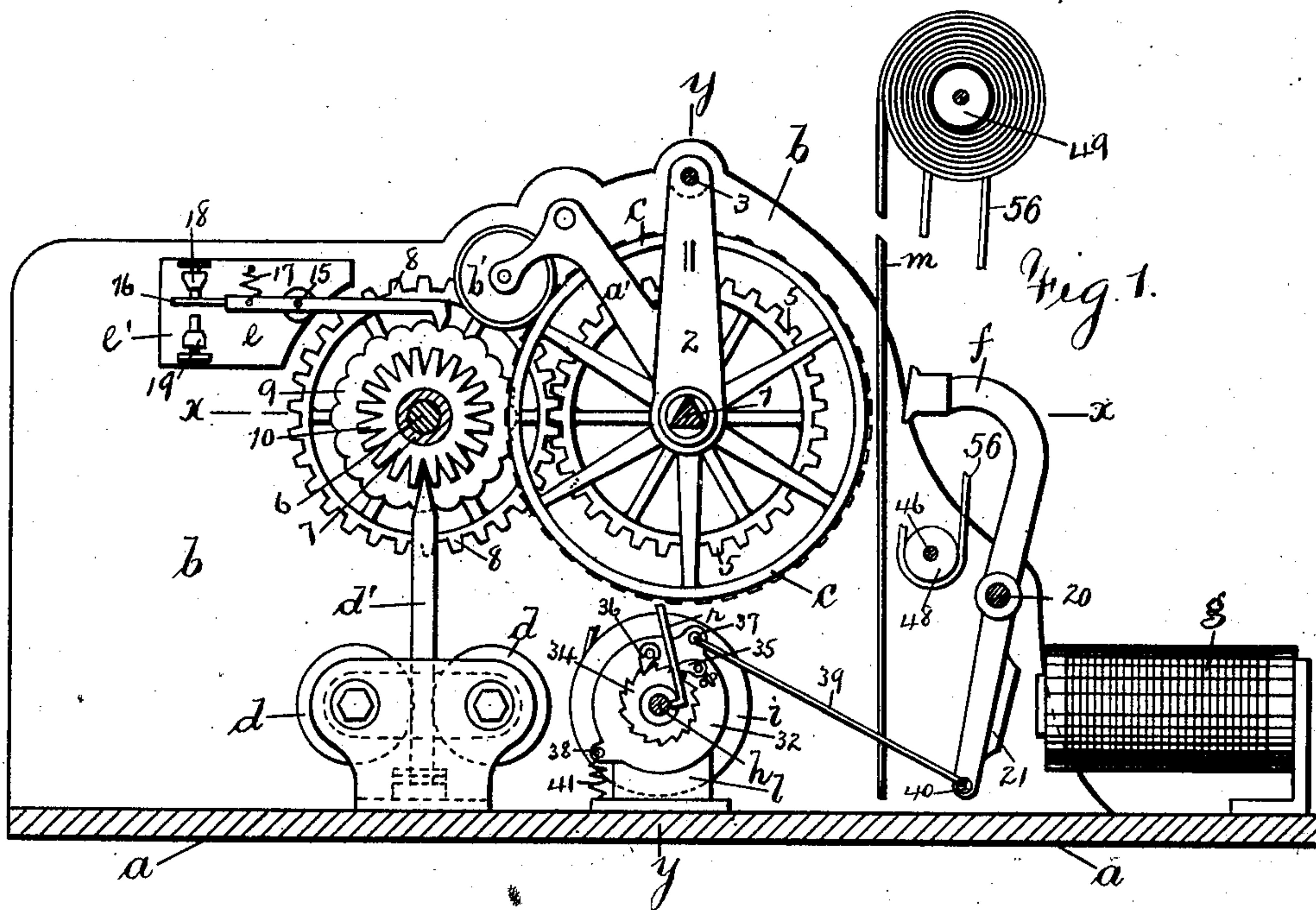
PATENTED MAR. 8, 1904.

G. S. GALLAGHER.
ELECTRIC PRINTING MACHINE.

APPLICATION FILED APR. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

Charles H. Smith
Charles H. Smith

INVENTOR
George S. Gallagher
PER *Harold S. Turrell*

ATTY

No. 753,872.

PATENTED MAR. 8, 1904.

G. S. GALLAGHER.
ELECTRIC PRINTING MACHINE.

APPLICATION FILED APR. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 3.

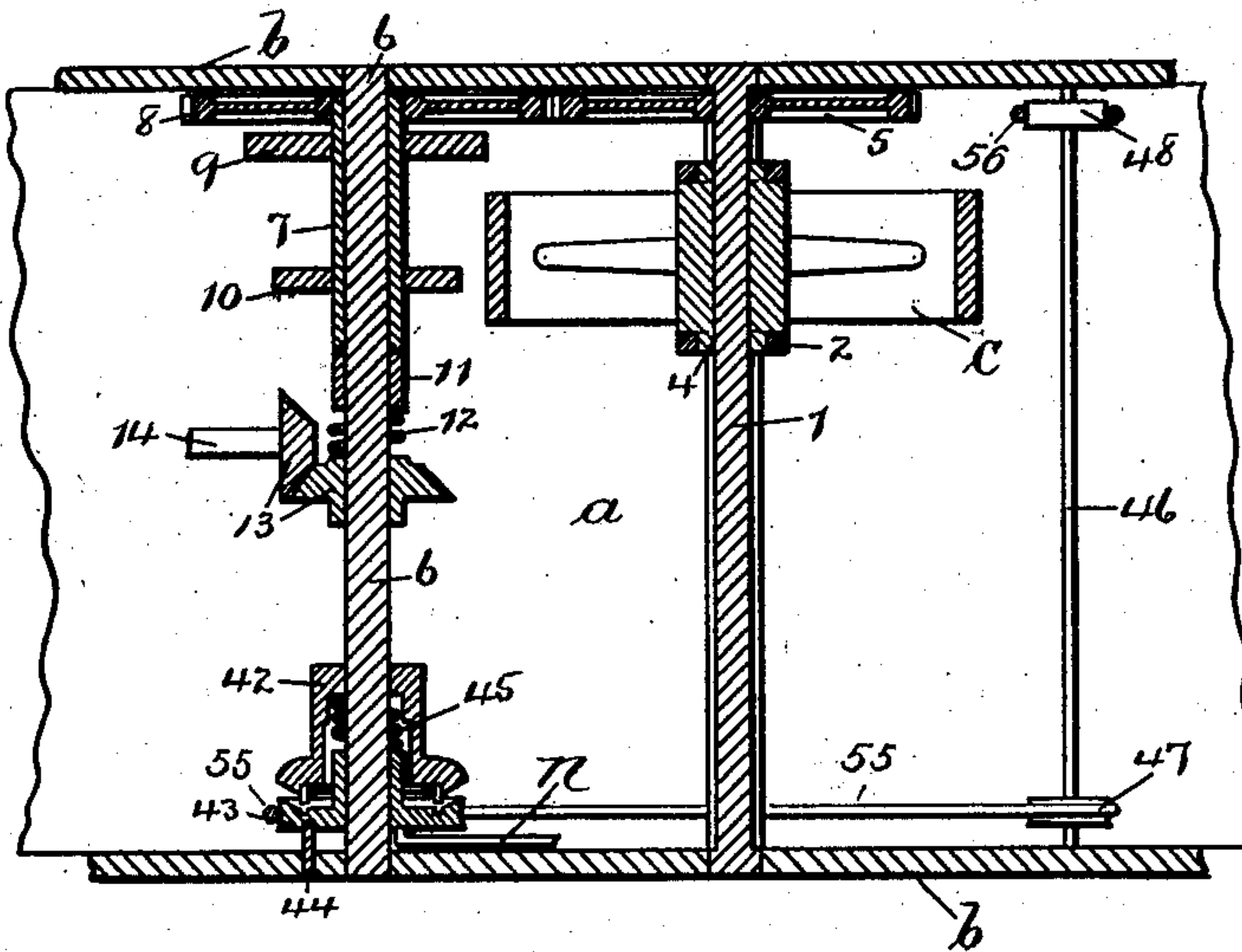


Fig. 4.

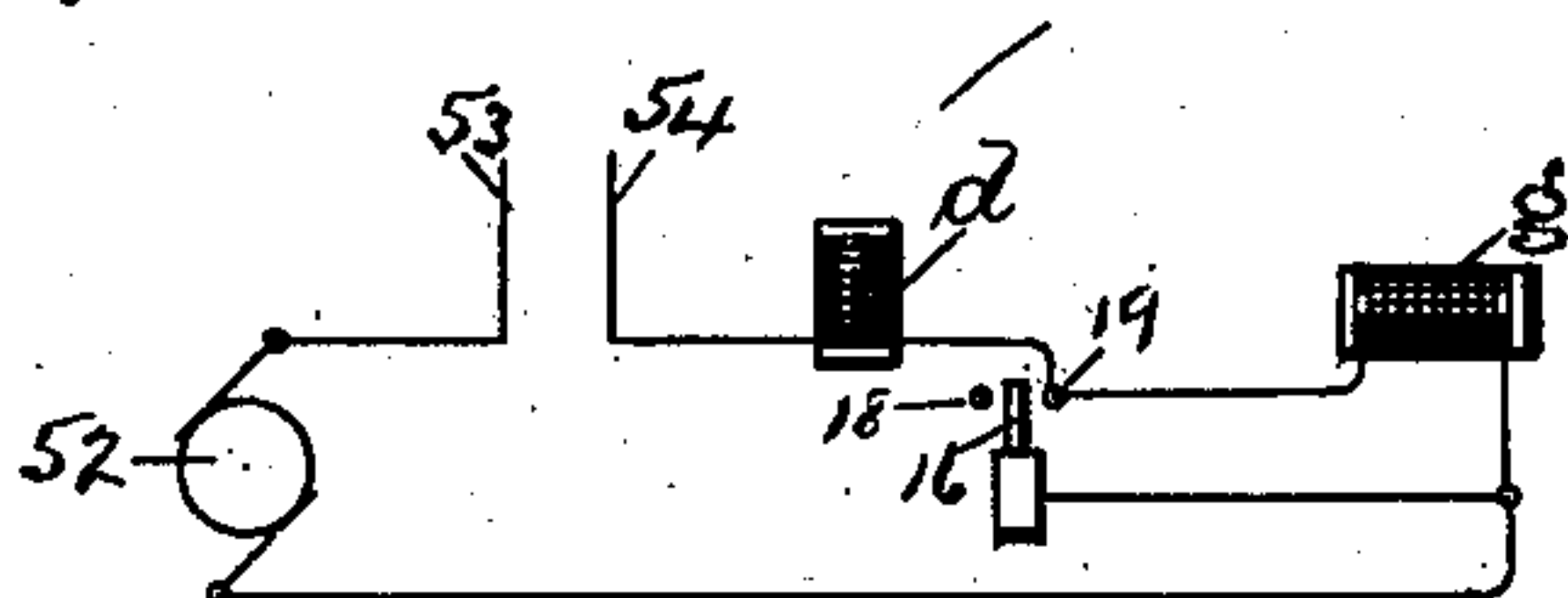
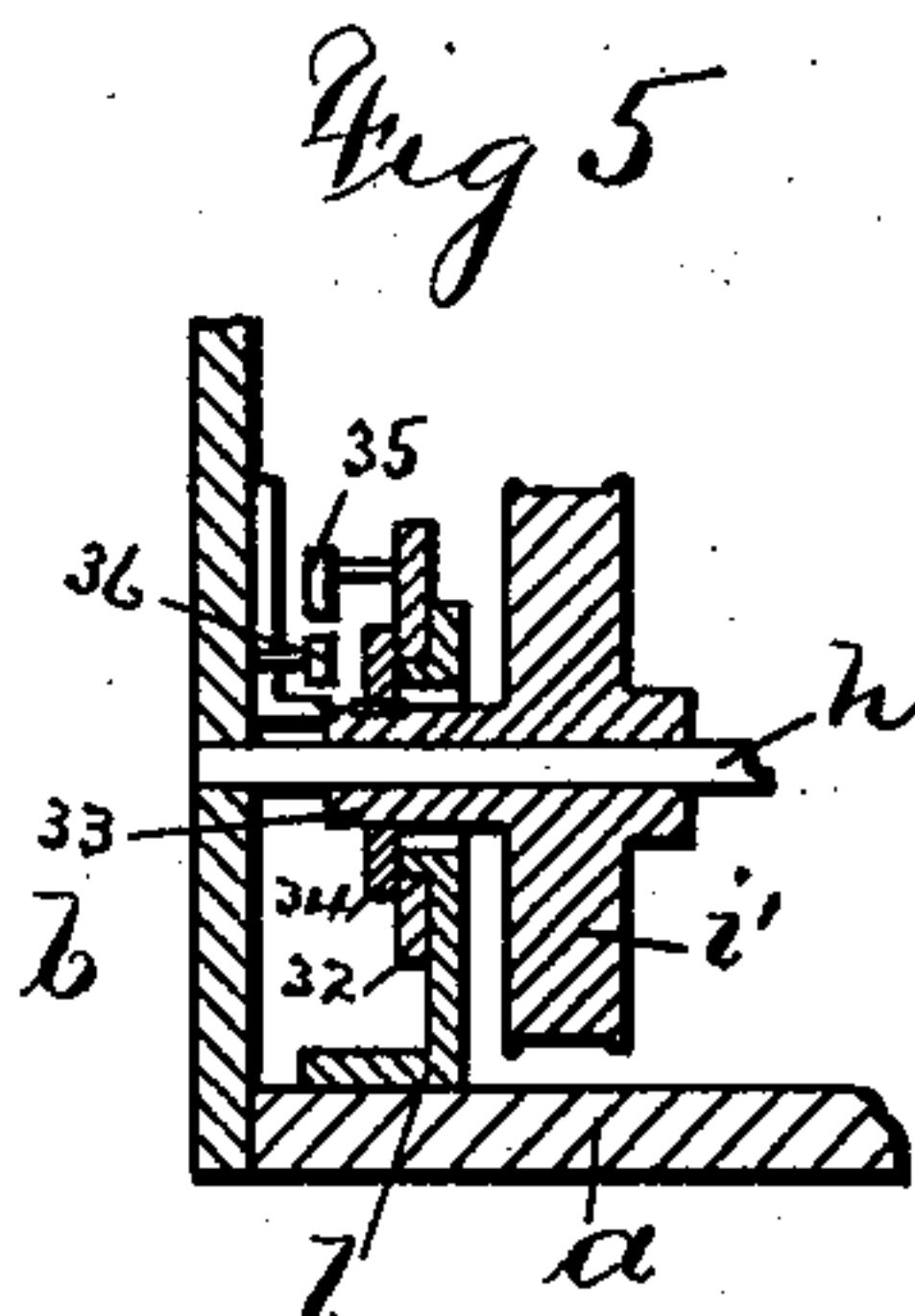
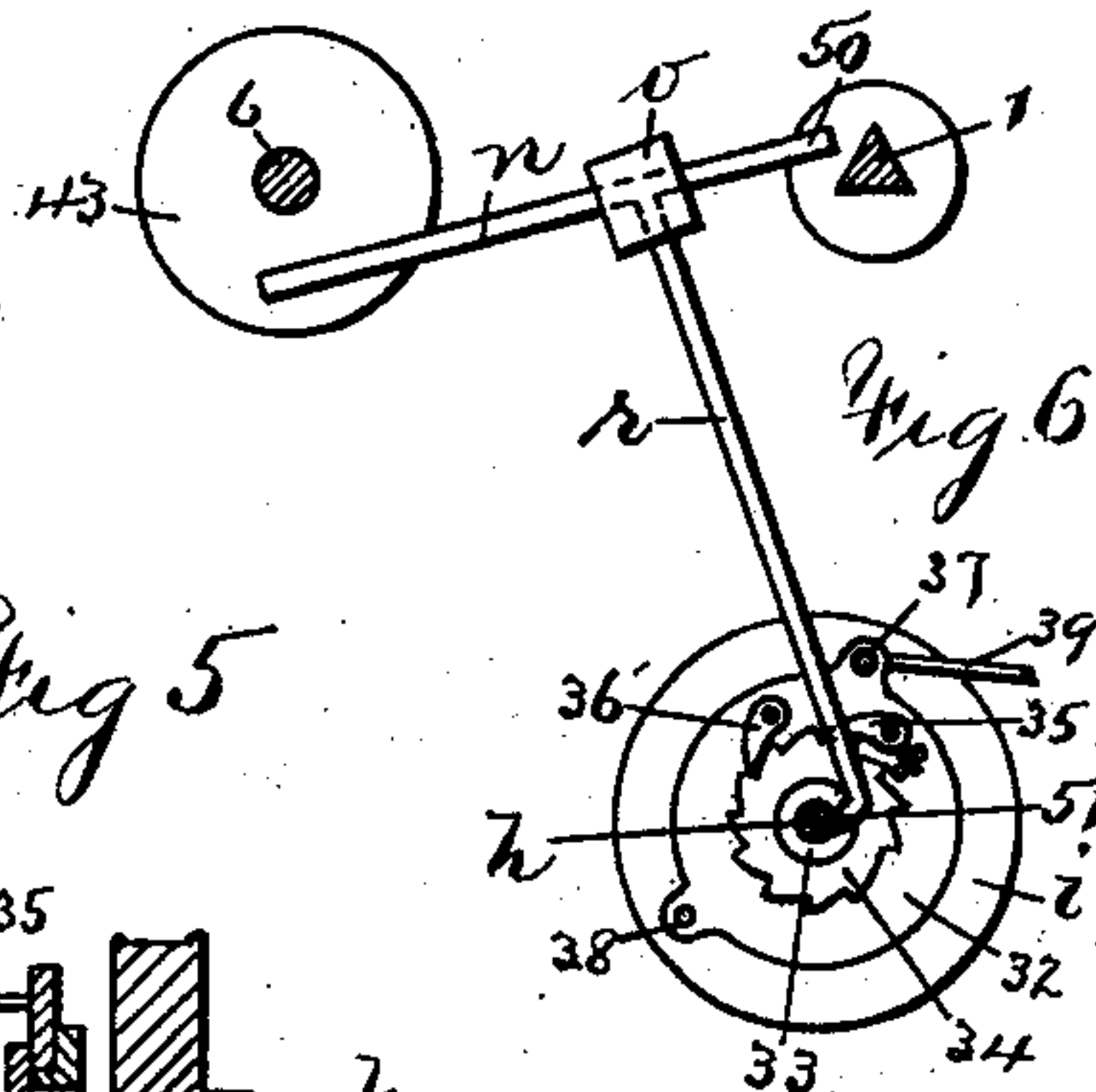
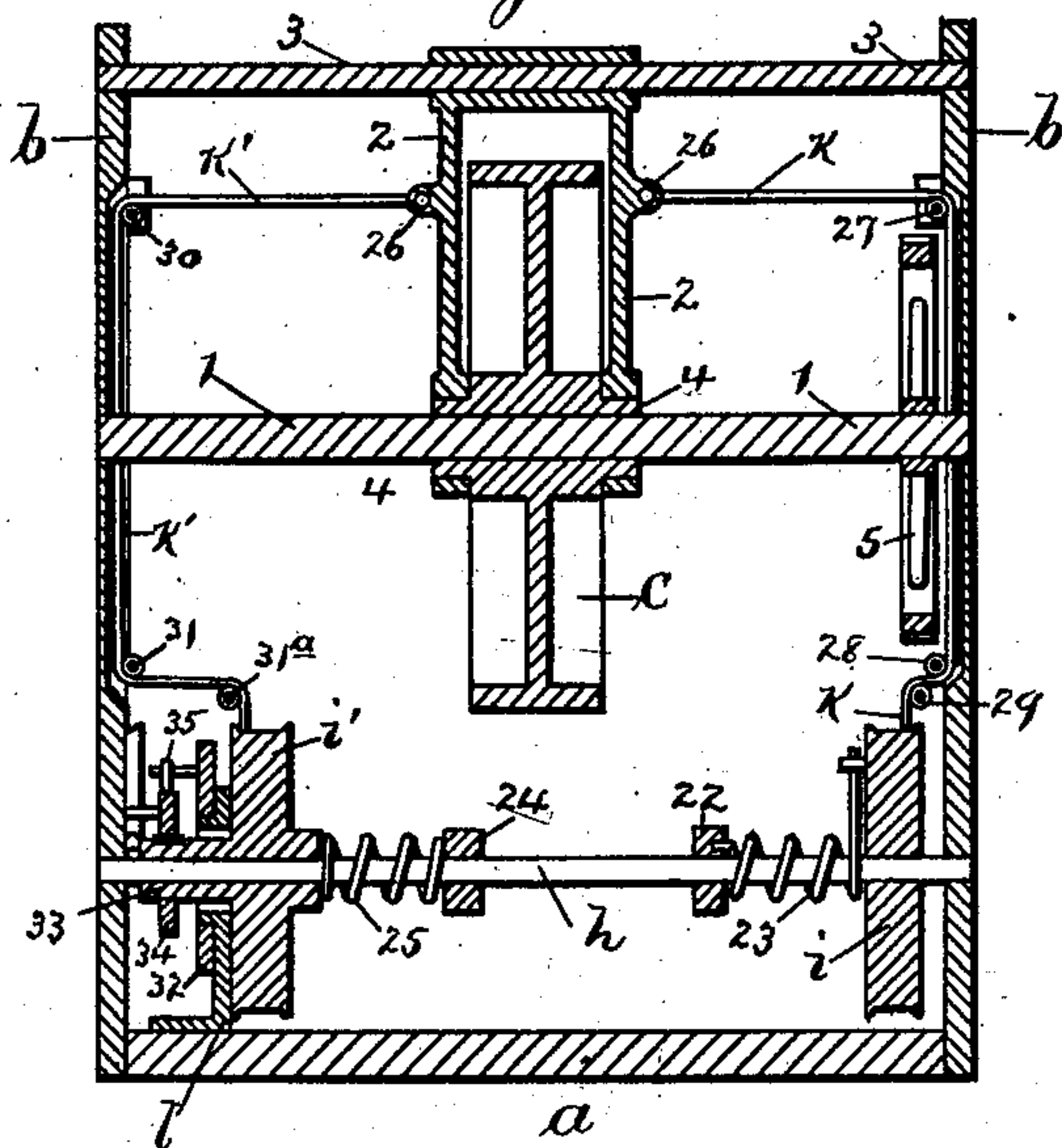


Fig. 7.

WITNESSES
Adams
Chas. H. Smith

INVENTOR
George S. Gallagher
PER *David H. Hurrell*
ATTY.

UNITED STATES PATENT OFFICE.

GEORGE STAGG 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. 753,872, dated March 8, 1904.

Application filed April 29, 1903. Serial No. 154,782. (No model.)

To all whom it may concern:

Be it known that I, GEORGE STAGG 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; and the object thereof is to produce an electric printing-machine particularly adapted for use in printing stock-quotations on stock-boards.

In carrying out my invention I employ a type-wheel, a printing-hammer, means for revolving the type-wheel, which under normal conditions is continuously revolving, means for stopping the type-wheel in any given position, means for actuating the printing-hammer simultaneously with the stopping of the type-wheel, means for shifting the type-wheel longitudinally every time a character is printed, means for automatically returning the type-wheel to its initial position every time it completes its longitudinal travel, a paper tape, and means for shifting the paper tape every time the type-wheel is returned to its initial position.

In the drawings, Figure 1 is an elevation and partial section of my improved electric printing-machine. Fig. 2 is a plan of the same. Fig. 3 is a horizontal partial section on line x , Fig. 1. Fig. 4 is a vertical transverse section on line $y y$, Fig. 1. Fig. 5 is a vertical section showing the released position of the pulley i' . Fig. 6 is an elevation of the release mechanism, and Fig. 7 is a diagrammatic view of the electrical circuits.

a represents a base to which are secured suitable side frames b . I employ a type-wheel c , mounted on a shaft 1, which is journaled in the side frames b , the shaft being preferably triangular in cross-section.

2 represents a frame mounted on a shaft 3, journaled in the side frames b . The frame 2 extends at either side of the type-wheel c and is journaled on reduced ends 4 of the hub thereof, so that the shaft 1 and type-wheel c are

free to revolve through the frame. The frame 2 is provided with arms a' , which carry an inking-roller b' , adapted to bear on the face of the type-roll. The shaft 1 is also provided with a gear-wheel 5.

6 represents a shaft journaled in the side frames b and provided at one end with a sleeve 7, free to turn thereon. A gear-wheel 8, meshing with the gear-wheel 5, is secured to the sleeve 7, as are also a cam-wheel 9 and a star-wheel 10. A clutch 11 is also loose on the shaft 6 and is maintained in position against the sleeve 7 by a spring 12, power being imparted to the shaft through the bevel-gears 13 and power-shaft 14. I employ a lever e , pivoted at 15 to a bracket e' . One end of the lever e bears upon the cam-wheel 9, and a vertical vibrating movement is imparted to the other end 16 of the lever e by means of the cam-wheel 9, a spring 17 causing the end 16 to come alternately into contact with a stop 18 and a contact 19.

d represents an electromagnet secured to the base a , and d' an arm actuated by the magnet d and having a tapering end adapted to enter the notches in the star-wheel 10 when the magnet is energized.

f is the striking-hammer, secured to a bar 20, extending between the side frames b , the hammer-arm extending considerably below the bar 20 and carrying an armature 21, which is actuated by an electromagnet g to cause the hammer to strike.

h represents a shaft fixed in the side frames b and carries loosely mounted thereon drums i and i' . The drum i is connected to a block 22 by a spring 23, and the drum i' is separated from a block 24 and maintained in position laterally by a spring 25, acting between these parts. The drum i is connected with the frame 2 by a cord k , one end of which is secured in an eye 26 on the frame 2, the cord k passing over pulleys 27, 28, and 29 and having its other end secured in the periphery of the drum i , and the drum i' is connected with the frame 2 by a cord k' , one end of which is secured in an eye 26 on the opposite side of

the frame, the cord k' passing over pulleys 30, 31, and 31^a, with its other end secured in the periphery of the drum i' .

Adjacent to the drum i' I employ a support-frame l , carrying an annular disk 32, adapted to turn on said frame exteriorly of and free from an integral sleeve projection 33 of the drum i' . A ratchet-wheel 34 is fixed on the sleeve projection 33, and a pawl 35, carried by the annular disk 32, and a pawl 36, carried by a pin in the frame l , are both adapted to engage the ratchet 34. The annular disk 32 is provided with lugs 37 and 38, the lug 37 being connected to the lower end of the hammer-arm by means of a cord 39 and a bar 40, and the annular disk 32 is normally held in position by means of a spring 41, extending between the lug 38 and the base of the support-frame l .

On the end of the shaft 6 opposite to that on which the gear-wheel 8 is fixed I secure a hollow sleeve 42. A pulley 43 is loose on the shaft 6 and is provided with a flange fitting over the shaft 6 and passing within the hollow sleeve 42, the pulley 43 being held in position away from the sleeve 42 by a spring 45 and is normally prevented from turning by means of a pin 44, fixed in the frame b and adapted to enter a recess in the pulley 43. I also employ a shaft 46, carrying pulleys 47 and 48, the pulley 47 being connected with the pulley 43 by a belt or cord 55 and the pulley 48 with a drum 49 by a belt 56. The drum 49 is adapted to receive and have a paper tape m wound upon it. I also employ a bracket o , fixed to the frame b and to which arms n and r are pivoted, a portion of the arm r being the pivot upon which the arms turn. One end of the arm n is provided with a head 50, adapted to be engaged by the end of the type-wheel hub, and the other end of the arm n is adapted to contact with the pulley 43. The arm r is carried down, and the end 51 thereof is turned at an angle to bear upon the sleeve 33 of the drum i' .

In Fig. 7, 52 represents a generator, and 53 and 54 the leads to a circuit-selector such as described and claimed in my copending application, Serial No. 154,781, for Letters Patent for an improvement in operating devices for electrically-controlled mechanisms.

The number of indentations on the cam-wheel 9 is the same as the number of notches in the star-wheel 10, and this number corresponds with the number of characters employed on the type-wheel, and in the operation of the device the shaft 6 is continuously revolving, transmitting its motion to the type-wheel c by means of the gears 5 and 8 and sleeve 7. The closing of a circuit energizes the magnet d and actuates the arm d' , causing the same to enter the notch in the wheel 10 corresponding to the position in which the circuit is closed. The end of the arm d' entering

a notch in the wheel 10 causes the sleeve 7 and type-wheel c to stop in such a place that the character on the type-wheel corresponding to the position in which the circuit is closed will be in a position to be struck by the hammer f , causing an imprint on the paper tape or strip m , which lies between the type-wheel and the face of the hammer. When the parts are stopped, the clutch 11 is thrown out and the end 16 of the lever e is against the stop 18, thereby closing the circuit of the magnet g sufficiently long to energize the same and cause it to actuate the hammer f . When the hammer strikes, the disk 32 is partially rotated, causing the pawl 35 to slip a tooth of the ratchet 34, and when the magnet g is deenergized the disk 32 is returned to its original position by the spring 41, thereby imparting a partial revolution to the drum i' and winding the cord k' thereon, unwinding the cord k from the drum i against the spring 23, and causing the type-wheel through the frame to be moved laterally on the shaft 1, and the type-wheel is moved in this way every time an imprint is made. When the type-wheel reaches the end of its travel, the hub strikes the head 50 of the arm n , causing the arm r to turn, thereby moving the drum i' to the position shown in Fig. 5 and throwing the ratchet out of connection with the pawls 35 and 36. This permits the spring 23 to turn the pulley i and rewind the cord k , so returning the type-wheel to its original position. The type-wheel is maintained in any of its positions by the tension on the spring 23. As the head 50 is struck by the hub of the type-wheel the other end of the arm n releases the pulley 43 from the pin 44 and causes the pulley to be engaged by the end of the sleeve 42 and turned a complete revolution thereby, the motion of the pulley being transmitted through the pulley 47, shaft 46, and pulley 48 to the drum 49, upon which the paper is wound.

The apparatus is particularly adapted to print a series of characters in a horizontal line, and it will be apparent that this line must be completed before the type-wheel returns to its initial position and that the paper strip is shifted every time a line is completed.

I claim as my invention—

1. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel, and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, means for stopping the type-wheel and means independent of the continuously-revolving shaft for actuating the hammer.

2. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel,

a cam-wheel and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, means for stopping the type-wheel, means independent of the continuously-revolving shaft for actuating the hammer, means independent of the continuously-revolving shaft for shifting the type-wheel every time the hammer is actuated, and means independent of the continuously-revolving shaft for returning the type-wheel to its initial longitudinal position when the type-wheel reaches its extreme position.

3. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, means for stopping the type-wheel, means independent of the continuously-revolving shaft for actuating the hammer, means independent of the continuously-revolving shaft for automatically shifting the type-wheel every time the hammer is actuated, means independent of the continuously-revolving shaft for automatically returning the type-wheel to its initial longitudinal position when the type-wheel reaches its extreme position, a paper strip and means for automatically moving the same progressively forward when the type-wheel reaches its extreme position.

4. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a drum on the other end of said shaft, means connected with said drums and actuated thereby and by the striking-hammer for shifting the type-wheel laterally every time the striking-hammer is actuated, and means independent of the continuously-revolving shaft for returning the type-wheel to its initial longitudinal position only after having reached its extreme position.

5. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a drum on the other end of said shaft, connections from both the said drums to the said frame, means independent of the continuously-revolving shaft for actuating one of said drums to shift the type-wheel and

frame laterally every time the hammer is actuated, and means for returning the type-wheel to its initial longitudinal position only after having reached its extreme position.

6. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a second drum on the other end of said shaft, connections from both the said drums to the said frame, a support-frame, an annular disk carried thereby, a ratchet-wheel secured to said second drum, a pawl secured to said disk and adapted to engage said ratchet, a fixed pawl also adapted to engage said ratchet, and a connection from said disk to the arm of said striking-hammer whereby the said second drum is moved to shift the frame and type-wheel every time the hammer is actuated.

7. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a second drum on the other end of said shaft, connections from both the said drums to the said frame, a support-frame, an annular disk carried thereby, a ratchet-wheel secured to said second drum, a pawl secured to said disk and adapted to engage said ratchet, a fixed pawl also adapted to engage said ratchet, a connection from said disk to the arm of said striking-hammer whereby the said second drum is moved to shift the frame and type-wheel every time the hammer is actuated, and means for returning the type-wheel to its initial longitudinal position only after it reaches its extreme position.

8. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a second drum on the other end of said shaft, connections from both the said drums to the said frame, a support-frame, an annular disk carried thereby, a ratchet-wheel secured to said second drum, a pawl secured to said disk and adapted to engage said ratchet, a fixed pawl also adapted to engage said ratchet, a connection from said disk to the arm of said striking-hammer whereby the said second drum is moved to shift the frame and type-wheel every time the hammer is actuated,

an arm adapted to be actuated by the type-wheel hub to release the said second drum, and a spring to actuate the said drum to return the type-wheel to its initial position only
5 after having reached its extreme position.

9. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel and a star-wheel secured to said
10 sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a

striking-hammer, an electromagnet, an arm actuated thereby and adapted to contact with the notches of the star-wheel to stop the sleeve 15 and thereby the type-wheel, and an electromagnet to actuate the striking-hammer simultaneously with the stopping of the type-wheel.

Signed by me this 25th day of March, 1903.

GEORGE STAGG GALLAGHER.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.