

No. 765,457.

PATENTED JULY 19, 1904.

C. L. BUCKINGHAM & E. GERMANN.

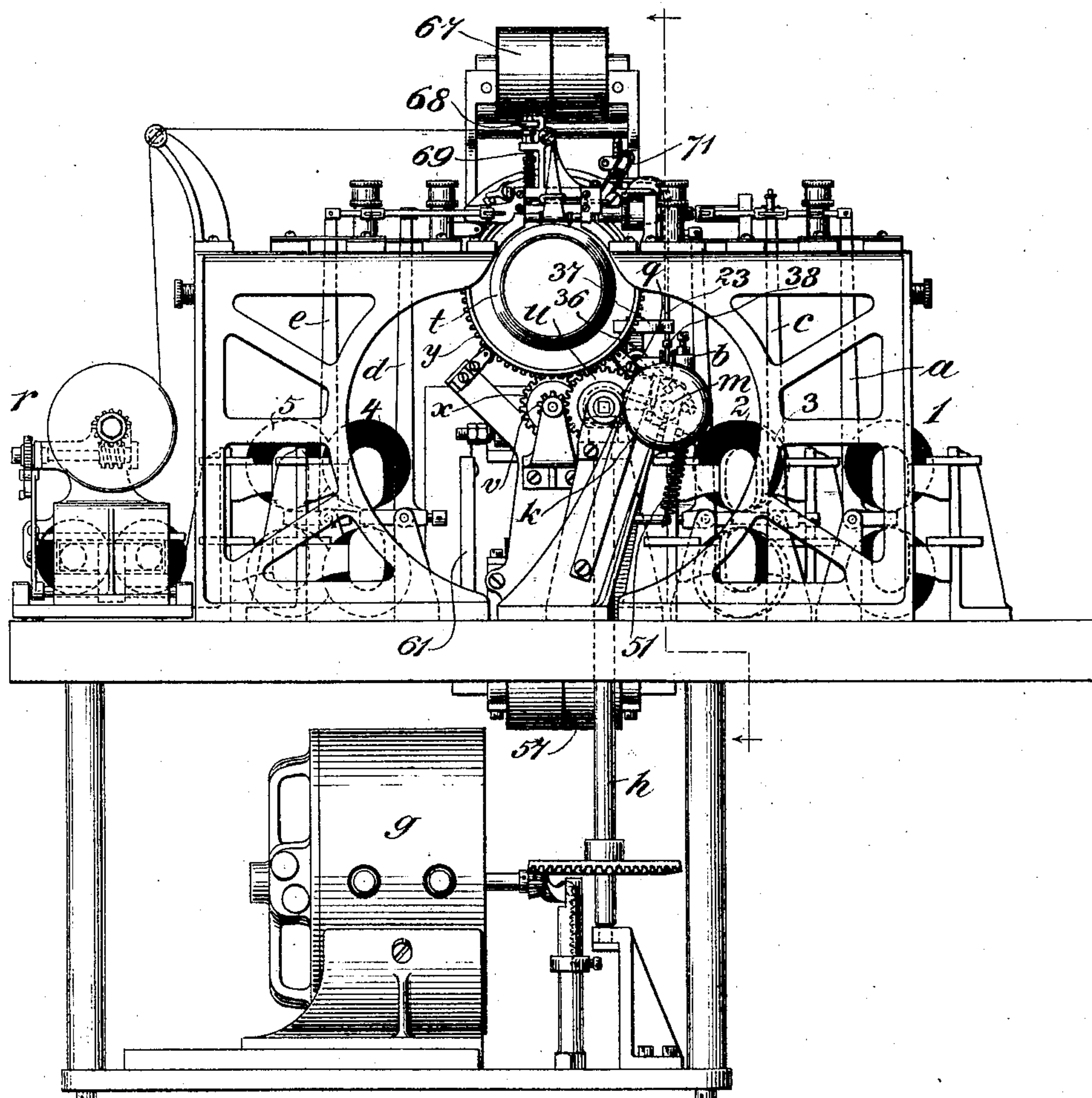
PAGE PRINTING TELEGRAPH.

APPLICATION FILED AUG. 25, 1902.

NO MODEL.

7 SHEETS--SHEET 1.

FIG. 1.



WITNESSES:

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INVENTORS:

*C. L. Buckingham*  
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By their Attorney  
*C. L. Buckingham*

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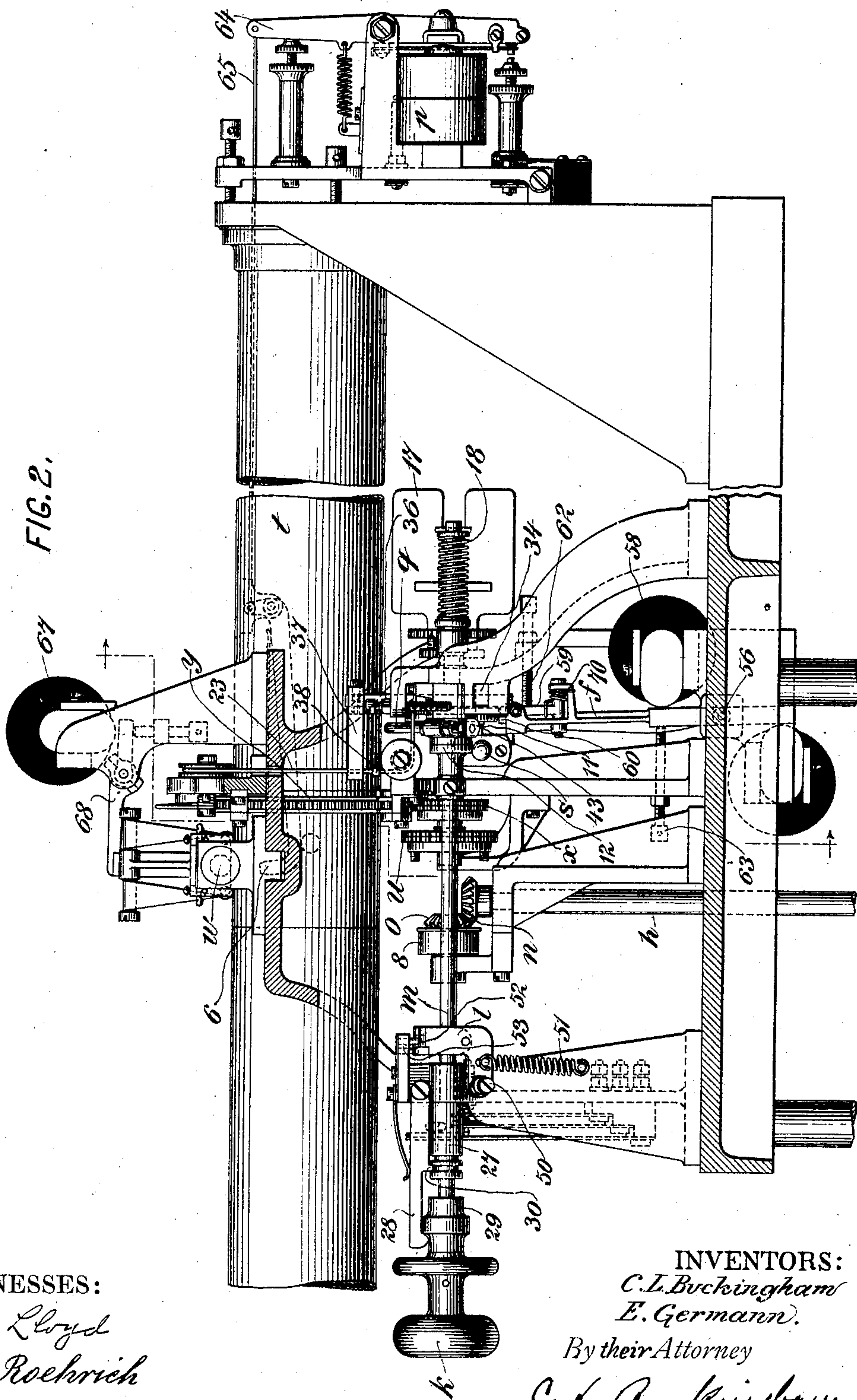
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7 SHEETS—SHEET 2.





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7 SHEETS—SHEET 3.

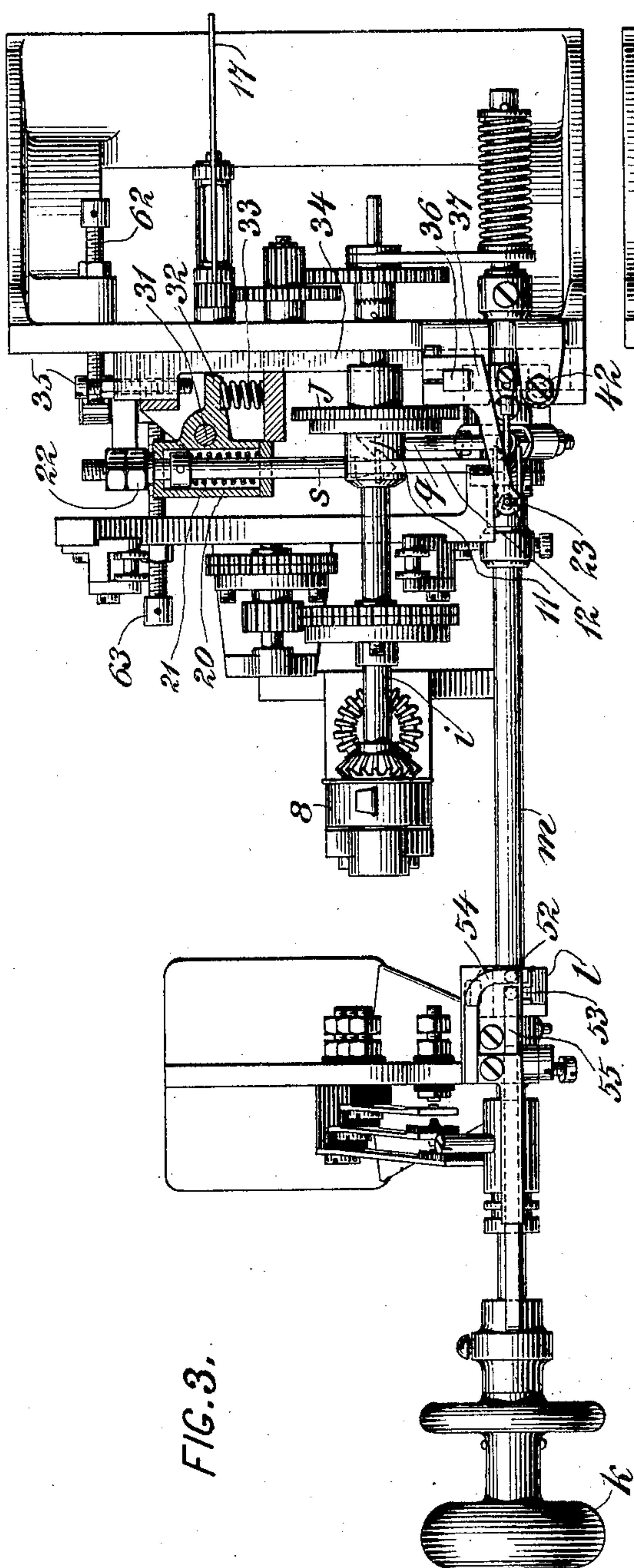


FIG. 3.

WITNESSES:  
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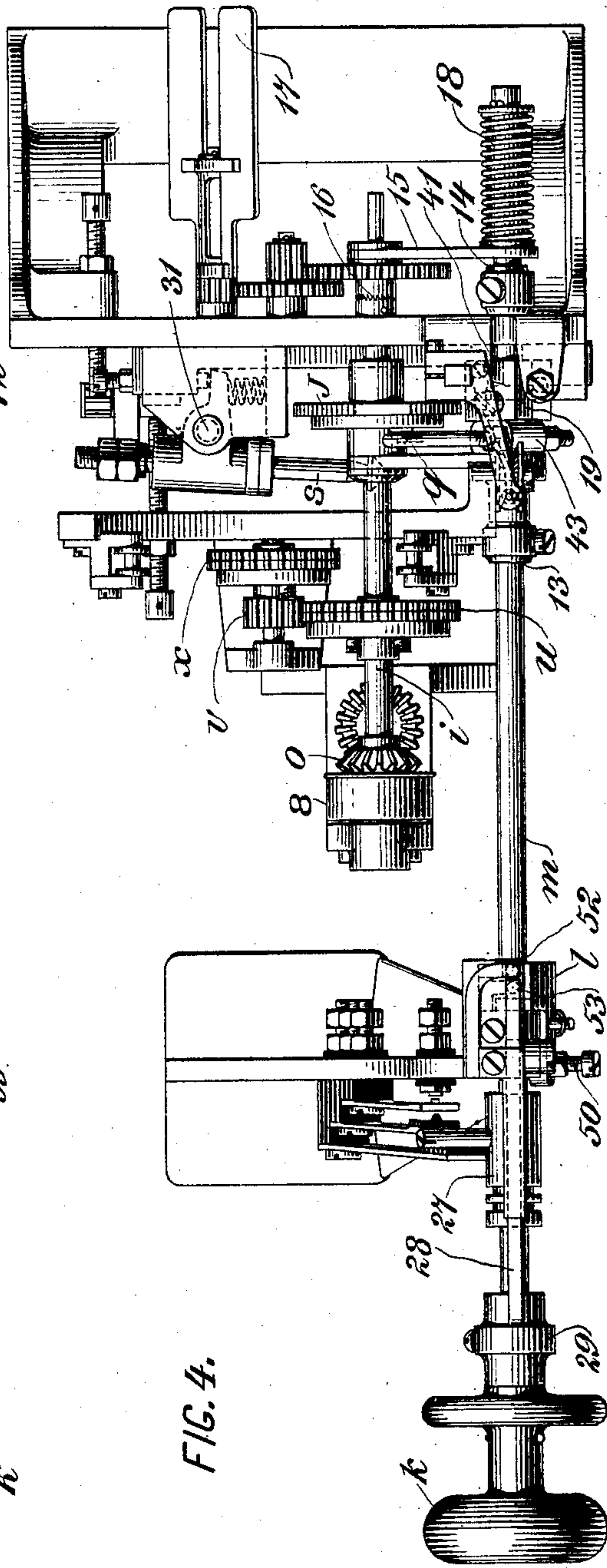


FIG. 4.

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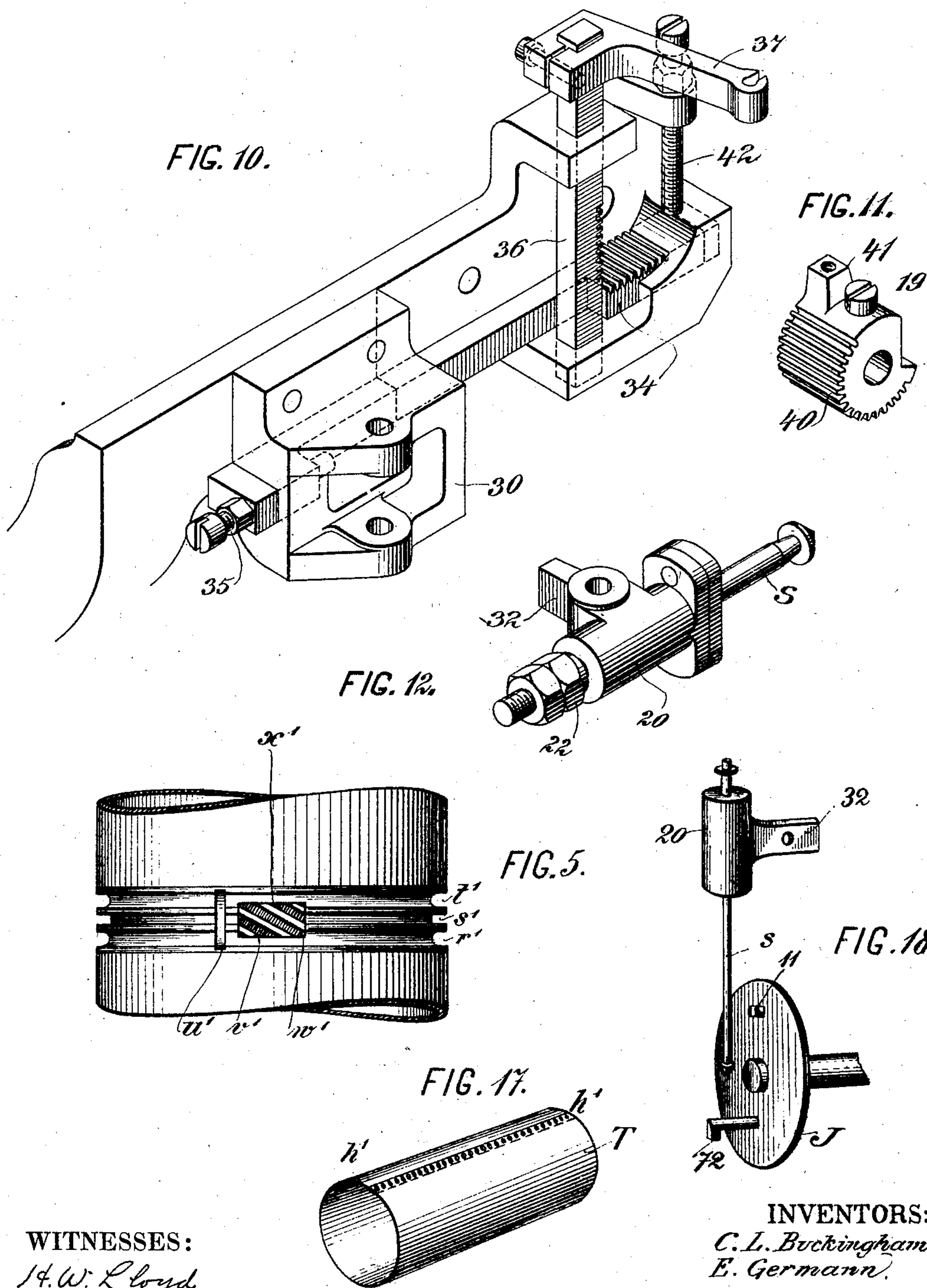
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NO MODEL.

7 SHEETS—SHEET 4.



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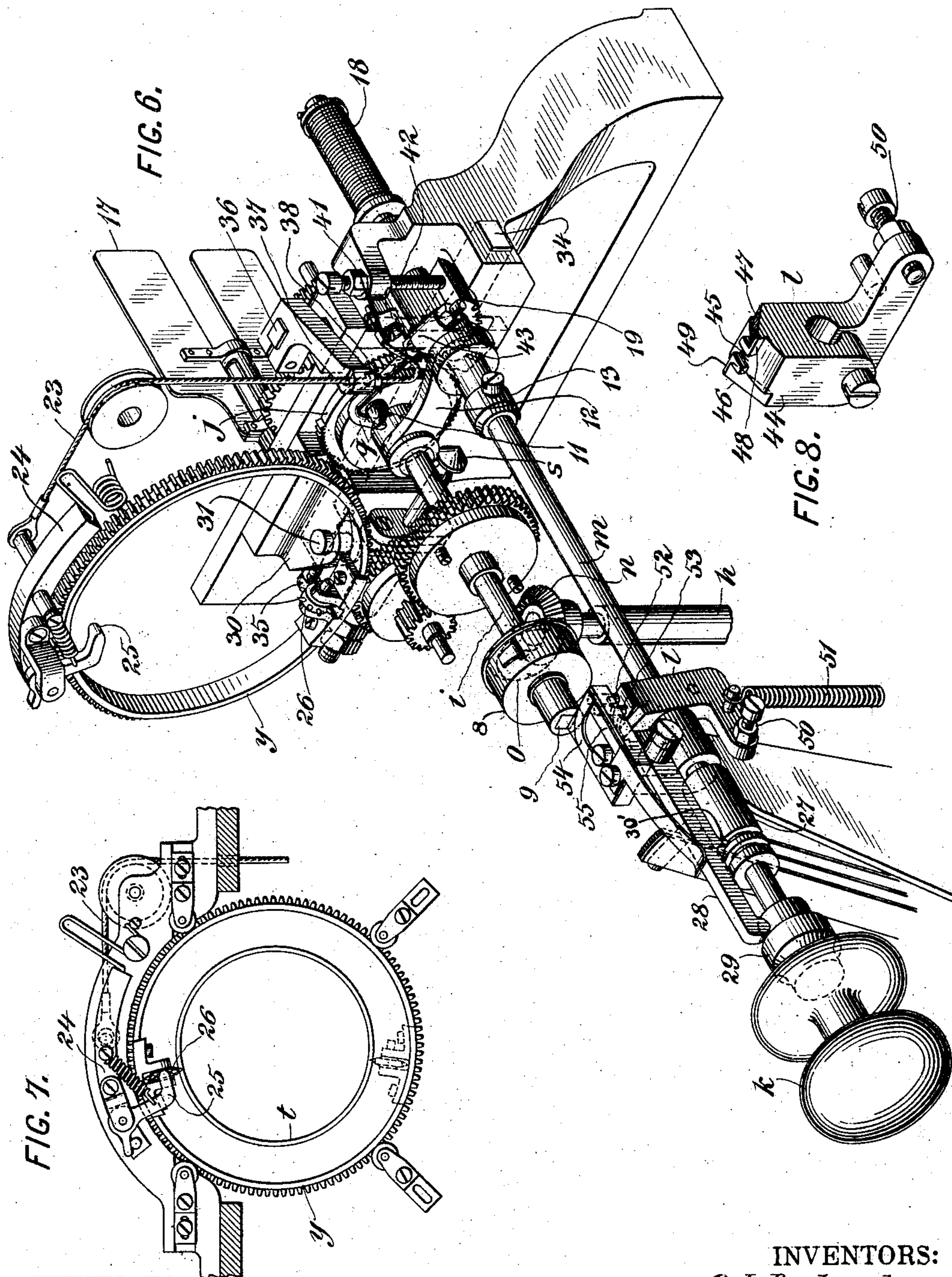
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PAGE PRINTING TELEGRAPH.

APPLICATION FILED AUG. 25, 1902.

NO MODEL.

7 SHEETS—SHEET 5.



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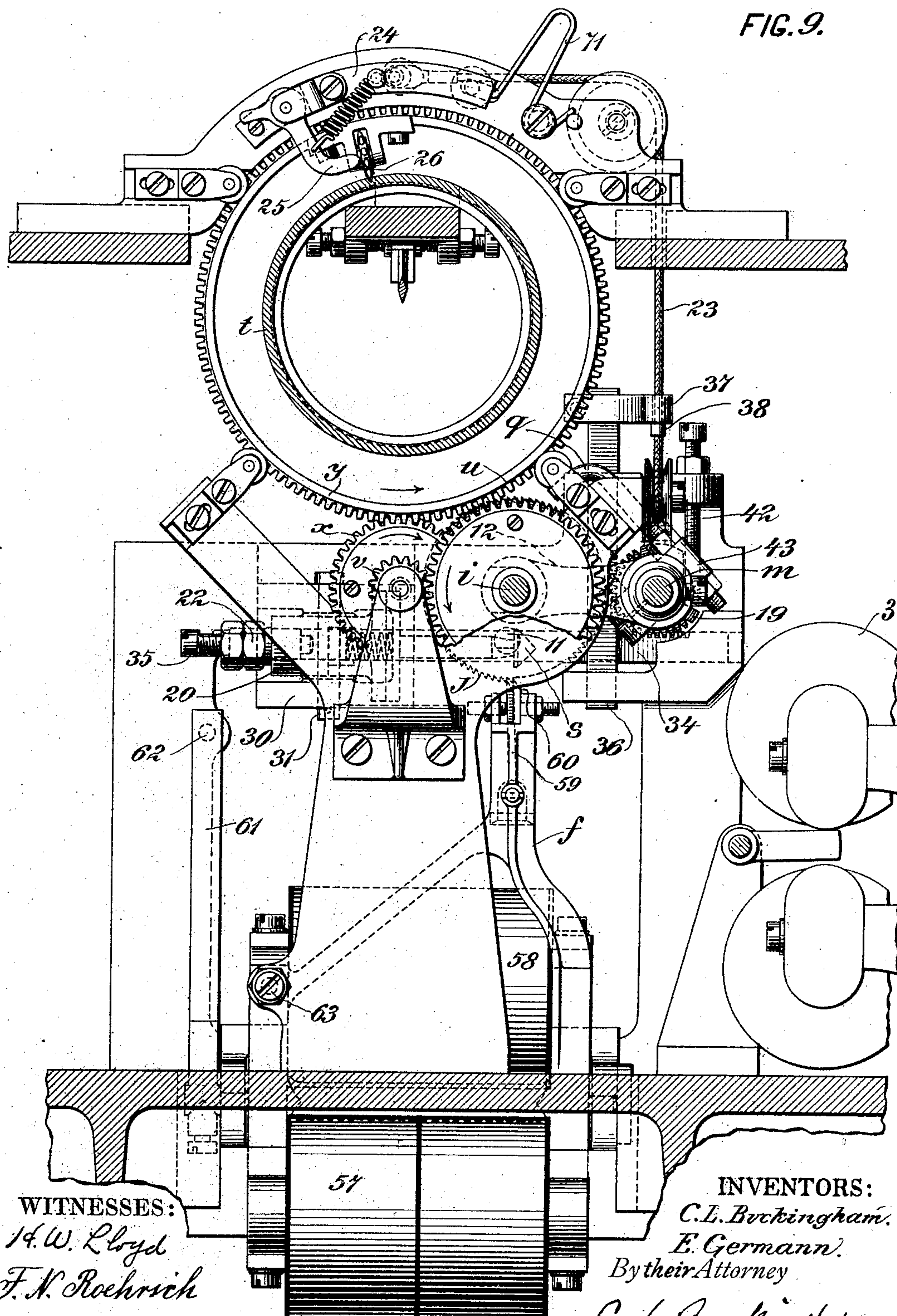
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7 SHEETS—SHEET 6.

FIG. 9.



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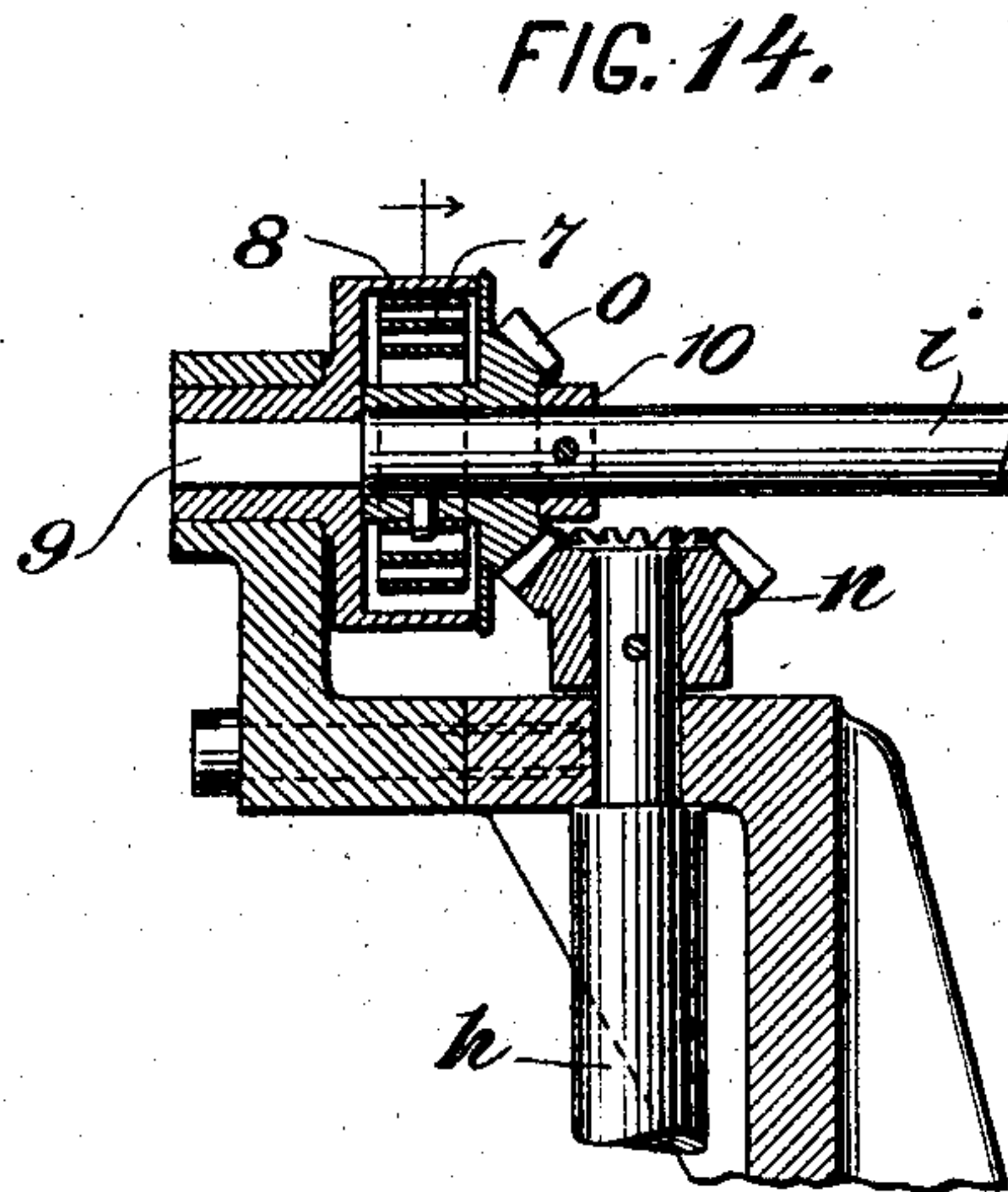
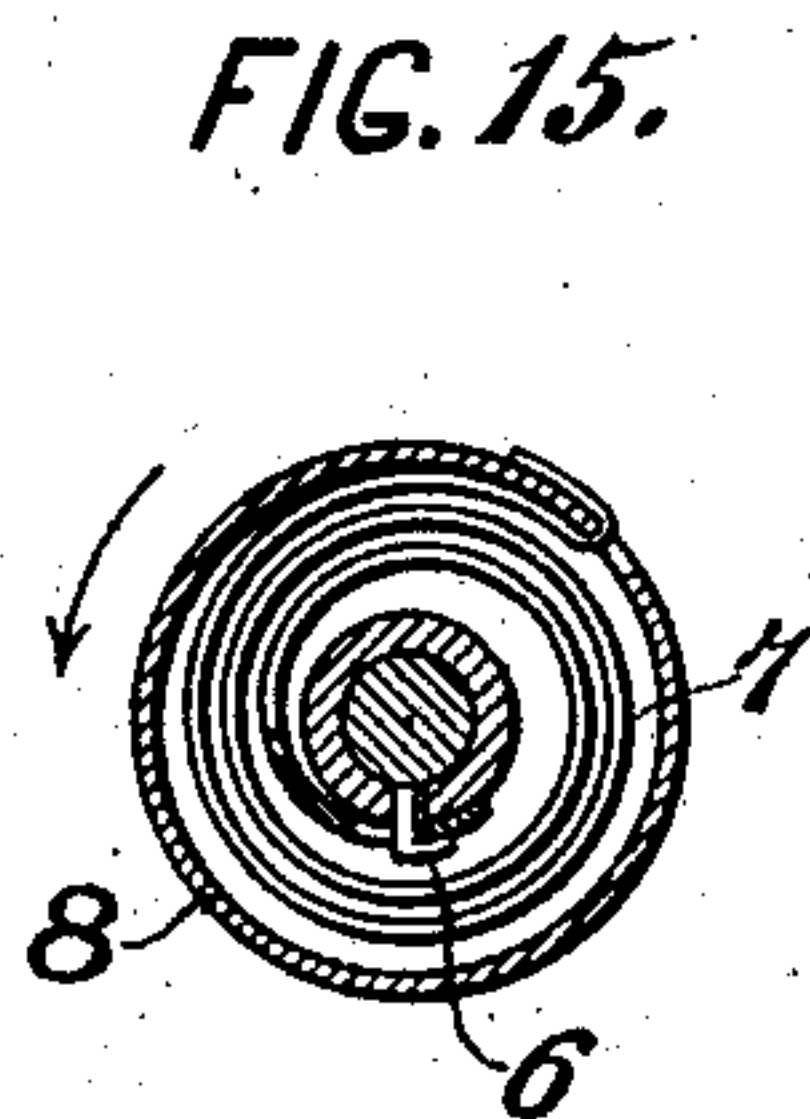
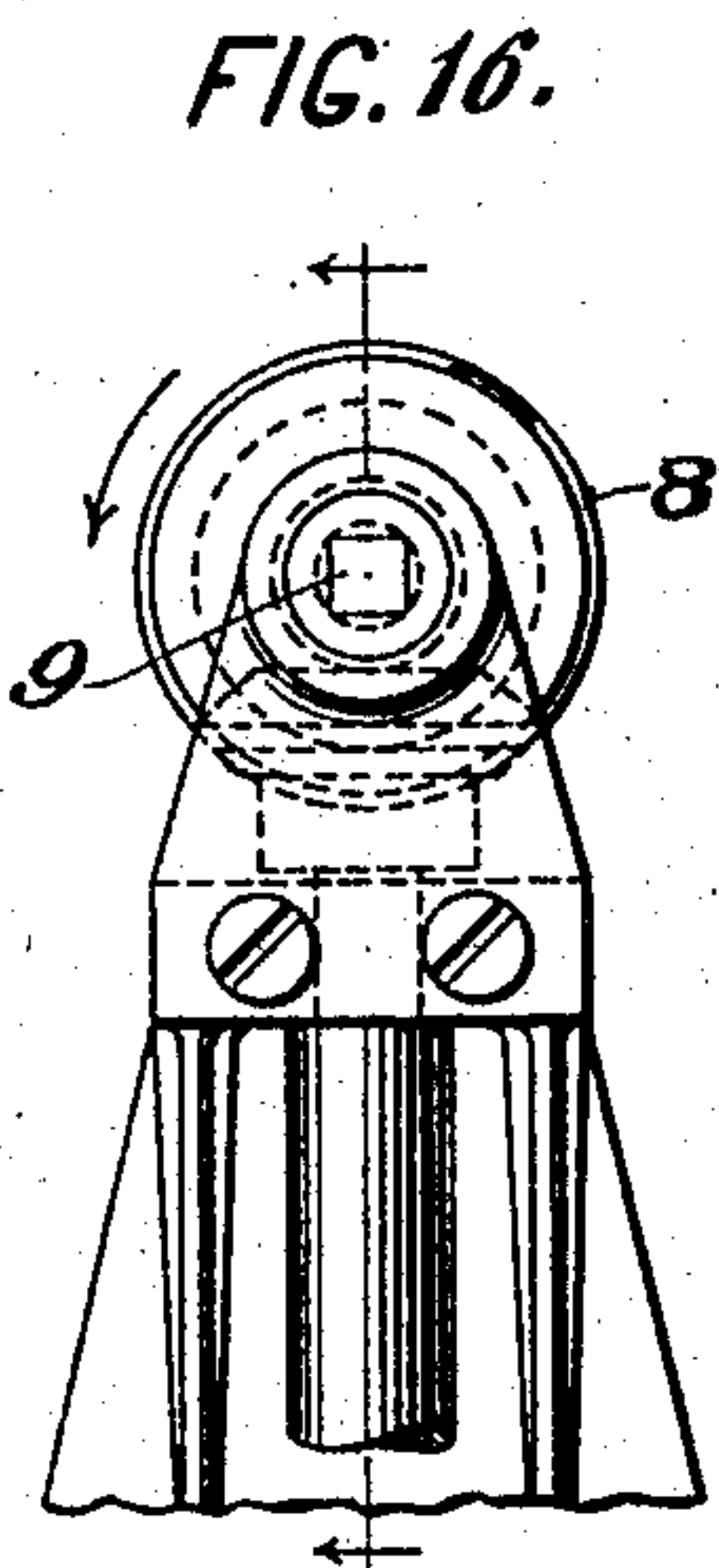
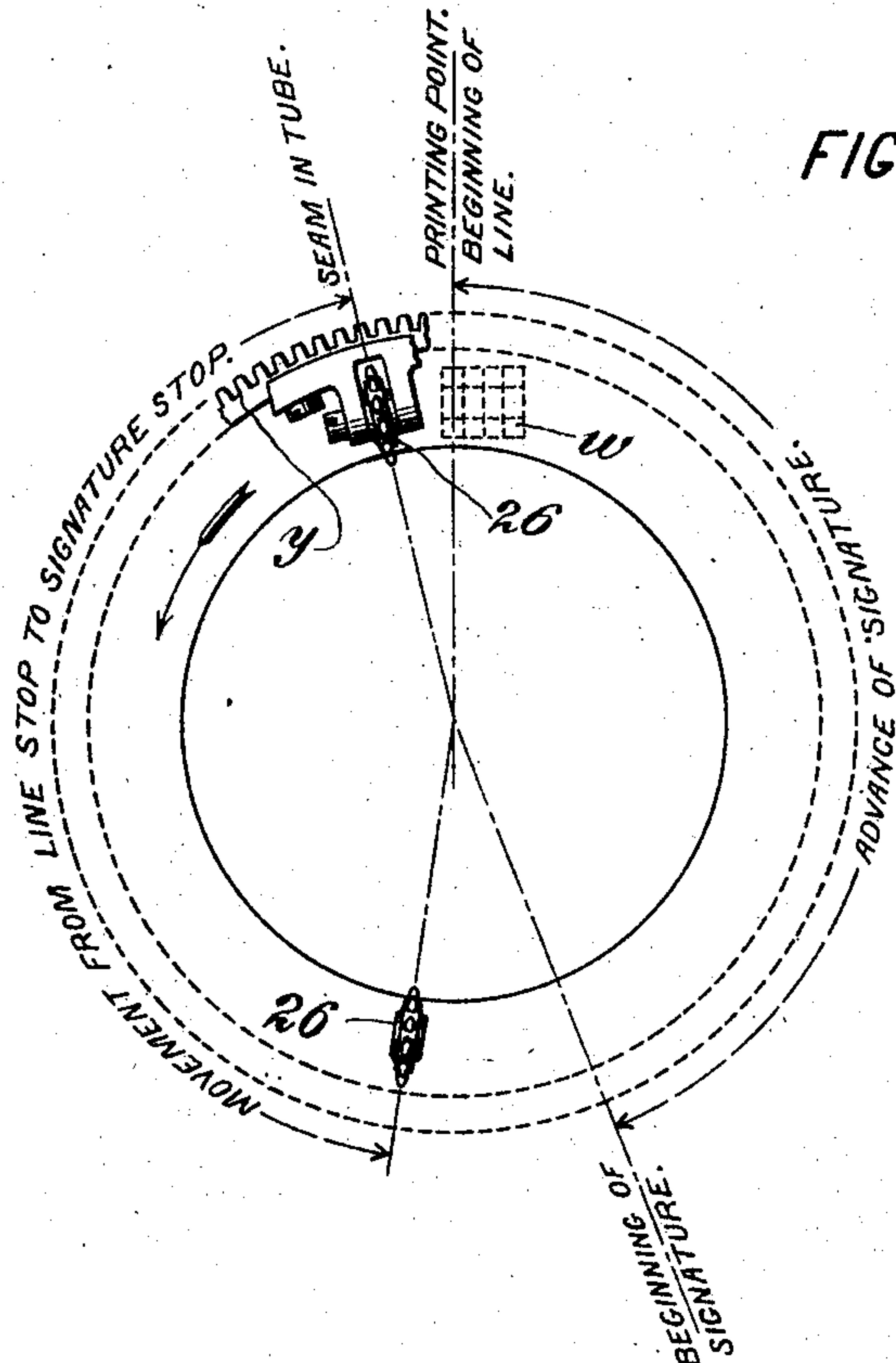
C. L. BUCKINGHAM & E. GERMANN.

PAGE PRINTING TELEGRAPH.

APPLICATION FILED AUG. 25, 1902.

NO MODEL.

7 SHEETS—SHEET 7.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

CHARLES L. BUCKINGHAM, OF NEW YORK, AND EMIL GERMANN, OF BROOKLYN, NEW YORK; SAID GERMANN ASSIGNOR TO SAID BUCKINGHAM.

## PAGE-PRINTING TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 765,457, dated July 19, 1904.

Application filed August 25, 1902. Serial No. 120,949. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES L. BUCKINGHAM, of the city and county of New York, and EMIL GERMANN, of Brooklyn, Kings county, State of New York, citizens of the United States, have made a new and useful Improvement in Page-Printing Telegraphs, of which the following is a specification.

Our present invention is an improvement upon the telegraphic page-printer of the Buckingham system whereby in the printing of a message or a section thereof it may be commenced not only at the extreme left margin, but without additional labor in its preparation or loss of time on the wire at any point across the page.

Hitherto to begin printing near the middle of a line it has been necessary in preparing a message to perforate in the tape a sufficient number of space characters to cause a step-by-step feed at the printer to bring that point of the page opposite the type-wheel at which printing is to be begun—an operation that is but slowly accomplished. In fact, to thus move the paper sheet requires almost the time that would be taken were a character transmitted over the wire and printed at each step.

By our present invention, however, the perforating operator need not even consider whether printing is to be begun at the left side or at the middle of the page, it being wholly a matter within the discretion and manipulation of the printer attendant. To begin printing at the left margin of the page, he merely pulls the disconnecting-rod, while to begin the message or any of its parts at or near the middle of the page he not only pulls the disconnecting-rod, but also turns it slightly in an anticlockwise direction, thereby performing the double function, first, of displacing or moving aside the stop which would normally arrest the escapement-wheel of the feeding apparatus when disengaged from its pallets, and, second, of bringing into position an auxiliary stop which serves to arrest the escapement-wheel in an advanced position, thereby enabling printing to be begun far over the page from its margin at the left.

Referring to the accompanying drawings,

Figure 1 is a front view of our improved telegraphic printer seen from the position of the printer attendant. Fig. 2 is a side view of the same machine, parts thereof being shown in section. Fig. 3 is a top view of the pull-rod, disconnecting mechanism, and stop arrangements whereby the operator is enabled to commence printing either at the left margin or at a point near the middle of the page. Fig. 4 shows the same mechanism, but with the stops in such position that printing may be begun not at the left margin, but near the middle of the page. Fig. 5 is a plan view showing that part of the tubular support which is provided with guiding-grooves by which the feed of the message sheet or tube is directed or controlled. Fig. 6 is a perspective view showing the pull-rod, driving mechanism, and disconnecting apparatus, and particularly the feeding mechanism whereby the printing of a message or a part thereof may be begun near the middle of the page. Fig. 7 is a sectional view showing parts of the page-feeding apparatus in position to begin the printing of a message or a part thereof at the left margin of the page. Fig. 8 shows a guide for controlling and determining the rotary action of the disengaging apparatus by which an auxiliary stop is thrown into position to arrest the escapement-wheel of the printer while the primary stop is at the same time thrown out of the path of the arresting-pin of said escapement-wheel. Fig. 9 is a sectional view of the printer, particularly showing the paper-feeding mechanism and the escapement by which it is controlled. Fig. 10 is a perspective view of the essential parts of apparatus for displacing the primary stop of the printer-escapement and for bringing into position an adjusting device for setting the feed-wheel. Fig. 11 is a perspective view of a spur-wheel which is rigidly placed upon the pull-rod, whose teeth mesh with the horizontal and vertical rack-bars seen in Fig. 10. Fig. 12 is a perspective view of the primary stop, which is adapted to swing from its arresting position. Fig. 13 diagrammatically represents the two positions of the feed-wheel, first, when the printing of a message is to be begun at the



left margin of the page, and, second, when it is to be begun at a point near the middle of the page. Fig. 14 is a view of a supporting-bracket and the gearing by which the page-feeding apparatus is connected with the motor. Fig. 15 shows a spring-barrel which is rigidly connected with the feeding apparatus of the printer, a vertical shaft which is connected with the driving-motor, and a spiral spring whose ends, respectively, connect said spring-barrel and shaft, whereby a resilient connection between the motor and feeding apparatus of the printer is established. Fig. 16 is an end view of the bracket and gearing of Fig. 14 by which the feeding apparatus is connected with the motor. Fig. 17 represents a message-blank formed into a paper tube whose edges are pasted or otherwise fastened together to form a lap within which is perforated row of holes. Fig. 18 is a modified form of primary and auxiliary stops already referred to.

The present invention is an improvement upon the printing-telegraph receiver described and claimed in our United States Patents Nos. 579,634 and 679,636, dated March 30, 1897.

In the improved machine all of the capacities of the old are retained; but by the modification of certain of the old parts and by the addition of others without additional work in preparing a message for transmission or loss of time on the line the printing of it may be begun at or near the middle of the page.

The message sheet or blank having been formed into a tube with the right and left margins pasted together with holes perforated along the lap the tube is placed upon a stationary mandrel or cylindrical support *t*, Figs. 1, 2, and 9, and is rotated step by step in an anticlockwise direction by a motor through a train of gearing. The teeth of wheel 26 project within the holes of the paper tube *T*, and said wheel is fastened within the interior of the large spur-wheel *y*, Figs. 6, 7, and 9, the latter being held in its rotating position by peripheral roller-supports. Wheel *y* is geared with the escapement-wheel *J*, which is under a constant tendency to rotate through spur-wheels *x v u*, and by this means wheel *y* is driven step by step to print one letter after another in the line of a page. The tendency of wheel *J* to rotate is effected by a motor *g*, which is geared with a vertical shaft *h*, whose upper end, through the bevel-gearing *n o* and volute spring 7, is connected with shaft *i*, upon which the escape-wheel is fixed, Figs. 1, 6, 14. The escape-wheel, however, is normally held against rotation and is only permitted to move when the escapement arm or frame *f*, pivoted at 56, is vibrated. The frame *f*, consisting, essentially, of two legs, Fig. 9, projecting upward from pivotal bearing 56, is vibrated by magnets 57 58, its movement in one direction being limited by stop-screw 63 and in the other by the poles of said

magnets. Upon the end of arm *f* are mounted two pallets 59 60, one being pivoted thereto, while the other is a rigid extension of said arm, and it is by this arrangement of pawls that wheel *J* is released to move step by step only during the vibration of the escapement in one direction. As may be gathered from Figs. 2 and 9, when escapement-arm *f* is being moved to the right by magnets 57 58 the fixed pallet 60 and movable pallet 59 are both in engagement with the same tooth of the escape-wheel; but when arm *f* has nearly completed its movement movable pallet 59 is thrown by its spring 70, Fig. 2, to a position to engage a succeeding tooth, Fig. 9, or to the left of 60, and when current is removed from said magnets and arm *f* is retracted to its back position by the tension of leaf-spring 61, whose upper end presses against stop 62, the movable pallet enters the serration in advance of that occupied by pallet 60, and as arm *f* completes its backward movement the fixed pallet is withdrawn from the escapement-wheel, whereupon the tension on said wheel forces the movable pallet backward into line with the fixed pallet. Again, when current is put into the escapement-magnets 57 58 the fixed pallet enters a serration, but now the one occupied by the movable pallet, and upon completion of the movement of arm *f* under the attraction of the magnets the movable pallet again moves beyond the teeth of wheel *J* and under the action of its spring 70 is forced forward into a position to enter the next serration, and in this manner the escapement-wheel is moved step by step, each serration thereof representing the space of a letter upon the message-blank, with which the teeth of wheel 26 engage. When a line has been completed, the lap of the paper tube will have reached a position upon the tube *t* about three-fourths of an inch to the right of the position of star-wheel 26, Fig. 9, and at this time pallet 60 engages with the tooth of the escapement-wheel *J*, preceding the section from which several teeth are cut away, Figs. 6, 9. When the pallets are next moved to their back position by retracting-spring 61, the fixed pallet will be disengaged from the tooth preceding the toothless section and wheel *J* will rapidly rotate until the first tooth beyond the toothless section is caught and arrested by the flexible pallet, and this long-step movement having been made the lap of the message-tube will have been moved to the left into the position occupied by the star-wheel 26, Figs. 7 and 9, and thereby the message-tube will have been moved a distance represented by that between the end of one line of print and the beginning of the next on the tube or page. In other words, the message-tube during such long step moves underneath the type-wheel a distance equal to the width of the pasted lap of the paper tube and such added distance as may be necessary to pro-



vide sufficient margins upon the page. That part of the stationary mandrel upon which the message-tube T, Fig. 17, is rotated and fed from one letter position to the next and from line to line throughout the page is shown in Fig. 5. When star-wheel 26 is in the position shown in Fig. 9, its teeth projecting through the holes  $h' h'$  of tube T are in the plane of a longitudinal slot  $u'$ , thus leaving said wheel free to rotate, and it is in this position and in this position only that a new message-blank may be pushed upon the tube  $t$  or that a blank upon which a message has been printed may be pushed from under the type-wheel toward the supported end of said tube to give place to another. Normally during the operation of printing the spur-teeth of wheel 26 project not only through holes  $h' h'$  of the message-tube, but within peripheral grooves  $r' s' t'$  of mandrel  $t$ , and thereby as the escapement-wheel is actuated the paper is circumferentially carried step by step with that precision that is required to print a straight line. When a line has been printed, wheel 26 will have reached a position slightly at the right of diagonal grooves  $x' w' v'$ , Fig. 5, and upon the long-step movement of escapement-wheel J the teeth of wheel 26 while swept through said diagonal grooves will rotate wheel 26 on its axis, and thereby paper tube T will be moved not only circumferentially, but lengthwise to a position for a new line. Normally in passing from the end of one line of print to the beginning of the next star-wheel 26 would pass into and out of the diagonal grooves to those which are in circular planes surrounding mandrel  $t$  without difficulty or derangement of the feed; but as wheel 26 must be stopped at  $u$ , Fig. 5, for the removal of one sheet of paper and the insertion of another there must be provision to insure against the catching of the teeth of wheel 26 upon the ends cut in the ridges between grooves  $r' s' t'$ —that is to say, the teeth of wheel 26 must be put in position to freely enter and travel within the circumferential grooves  $r' s' t'$ . This is accomplished by an adjusting-arm 25, which is flexibly mounted upon a supporting-bar 24, of crescent form, which may be moved to the right by a cord 23, attached to a manual pull-rod. Such cord, Figs. 2 and 9, passes over a pulley downward underneath a second pulley and horizontally to a bracket attached to the pull-rod  $m$ . Thus when rod  $m$  is pulled toward the operator facing the machine the bracket to which cord 23 is attached is pulled toward the lower pulley, thus releasing the tension upon said cord, whereupon a spring 71, Figs. 6, 7, 9, thrusts the crescent-bar 24 to the left and with it the guide-toe 25, whose free end may be pressed between or removed from the teeth of wheel 26 when the latter are within the plane of slot  $u'$ , Fig. 5. As shown in Fig. 7, rod  $m$  is in its normal position and toe 25 is pressed be-

tween the teeth of wheel 26, thereby adjusting them to enter the circumferential slots  $r' s' t'$ , while, as shown in Fig. 9, toe 25 has been moved to the left by the outward movement of rod  $m$  and by spring 71.

As heretofore constructed and used our printer has been provided with a disengaging device which is also controlled by a pull-rod  $m$ , and, as in this case, the escape-wheel J, while free to slide upon shaft  $i$ , is in rigid rotating relationship therewith. The hub of wheel J, Figs. 6, 9, is provided with a groove within which extend the arms of fork 12, the latter being attached in loose rotating connection with rod  $m$  by a collar 13, and thus it is that when rod  $m$  is pulled outward by the printer attendant arm 12 is moved therewith and with it the escape-wheel J, thereby disconnecting the teeth of said wheel from pallet 60, whereupon the escapement-wheel and the train of gearing for rotating the paper tube under the action of the driving-motor are rotated until pin 11 of feed-wheel J is arrested by a shoulder upon the end of rod  $s$ , which is supported within the end disks of a tube 20, inclosing a stiff spiral spring 21, placed between the closed head of tube 20 and a collar rigidly fixed upon said rod, while the opposite end of  $s$  beyond tube 20 is provided with a nut 22, which serves to limit its outward movement. When pin 11 of the escapement-wheel strikes stop  $s$ , spring 21 is slightly compressed, but only sufficiently so as to soften the impact of the blow between  $q$  and  $s$ . When pin 11 is thus arrested, star-wheel 26, Figs. 7 and 9, will have rotated into the plane of slot  $u'$ , Fig. 5, thereby allowing the removal of one sheet of paper and the insertion of another, for not only has wheel 26 been rotated into the plane of slot  $u'$ , but guiding-arm 25 has been thrust to the left, and thus it is that if a message or a part thereof has been completed at any point along the line the sheet may be moved into position to begin a new line at the left margin of the page or a sheet containing a printed message may be removed and replaced by a new blank. Spring 21 relieves much of the impact which would result from the blow between lug 11 and stop  $s$ ; but to still further provide against the severity of such blows a retarding device to slow the feed-train is also brought into action by pull-rod  $m$ . When  $m$  is pulled by the attendant, a forked bar 15, Figs. 3 and 4, is forced to the left by spring 18 and with it a spur-wheel and crown-ratchet (both normally loose upon the shaft of the escapement-wheel) into contact with corresponding teeth rigidly fixed thereto, and when thus engaged the spur-wheel, which is normally loose upon the escapement-shaft, is rotated therewith and drives a train of gear and with it a rotating fan 17, whose vanes encounter a sufficient atmospheric resistance to materially modify the speed of the escapement-wheel and feeding apparatus.



Having described the feeding apparatus and disconnecting mechanism of our printer with reference to its operation as heretofore used, we will now describe the auxiliary stop and the means for displacing the primary stop and at the same time actuating guide-toe 25 by pull-rod *m* when it is desired to begin a new line at an intermediate point across the page. To this end, as is shown in Fig. 6, pull-rod *m*, in addition to the devices already described and others yet to be noted, has rigidly fixed thereto a hub 43, within which is fastened a rod having a toe *q* so arranged that when said pull-rod is slightly turned in an anticlockwise direction (the escapement-wheel having been disengaged from its pallets) said toe will be thrown into the path of the pin 11 to arrest escapement-wheel J. In addition to this device, however, means must be supplied to displace primary stop *s*—that is to say, from a position where it would serve to arrest pin 11. This is accomplished by also fastening to the pull-rod a pinion 40, Fig. 11, whose teeth at all times mesh with the horizontal and vertical rack-bars 34 36, Figs. 3, 4, 10. When pull-rod *m* is slightly turned to the left to place stop *q* in an arresting position, the pinion has moved bar 34 to the right and the vertical bar 36 downward and the latter with it a horizontal arm 37, through which passes cord 23, to which below said arm is attached a collar 38. Said cord 23 is also attached to a pinion 40, its end being fastened within a lug 41. When the rod *m* is pulled without being turned in an anticlockwise direction, the end of cord 23 is carried with it, thereby leaving retracting-spring 71 free to push bracket 24 and toe 25 to the left and out of position to engage the teeth of spur-wheel 26. In this case there is an upward movement of cord 23, which is limited by collar 38 and arm 37. When, however, the pull-rod is so turned and pulled outward, arm 37 is lowered, carrying with it collar 38, thereby drawing bracket 24 to the right and into position where toe 25 is forced between the teeth of star-wheel 26, thus placing the teeth of the latter in such a rotary position that they may enter the circumferential grooves of the tubular support, Fig. 5. This manipulation of toe 25 is indispensable, because upon depressing stop *q* to an arresting position, primary stop *s* having released the escapement-wheel J, feed-wheel 26 must be enabled to at once enter grooves *r' s' t'* from its initial position in the plane of *u'*. The relation of primary stop *s* to auxiliary stop *q* and to the disengaging apparatus is particularly shown in Figs. 3, 4, 6, 10, 11, 12. Rack-bar 34 slides within a bracket 30, and its left end is provided with an inwardly-projecting rod 35, which latter upon turning the pull-rod is carried inward to the right. Bracket 30 is also provided with an upper and lower pivot-lug, between which is inserted a per-

forated projection extending from the cylinder 20 of stop-rod *s*, and thereby said stop *s* and its cylinder 20 are pivotally supported within bracket 30 and are pivoted thereto by pin 31, Figs. 3, 4, 6. Opposite its pivotal bearing cylinder 20 is provided with an arm 32, which normally stands at right angles to bar 34 and at some distance from the inner end of rod 35. Stop-rod *s* is shown in its normal position in Fig. 3 and in Fig. 4 in the position to which it is displaced by turning pull-rod *m*. Such displacement of rod *s* is effected when rod *m* is turned by the engagement of pin 35 with lug 32, thereby compressing spring 33 and swinging said lug and rod *s*, as shown. In this position rod *s* has been removed from the rotary path of pin 11 of the escapement-wheel; but at the same time toe *q* has been turned into the path of said pin. If when rod *m* was pulled it had not been turned, wheel 26 would have been arrested by the primary stop in the position shown in Fig. 9, with the guiding-toe 25 removed from its teeth. By turning rod *m*, however, as well as pulling it, the feed-wheel is not only disengaged from its pallets, but the primary stop is displaced, and stop *q* is placed in an arresting position to stop wheel 26 in its lowermost position, as seen in Fig. 6 and in dotted lines in Fig. 7; but in this case will have been inserted between the teeth of 26. Of course the fly-train is engaged with the feeding mechanism, and with it vanes 17, whenever rod *m* is pulled, whether the latter is turned or not.

The positions of feed-wheel 26 when the feeding apparatus is arrested first by the primary and next by the auxiliary stop is clearly shown in Fig. 13, in which *w* represents the type-wheel and *y* the spur-wheel surrounding the fixed tube. If rod *m* were merely pulled without being turned, wheel 26 would be arrested in the upper position, here represented and in a line indicated as "Seam in tube," Fig. 13, while the point of the sheet at which printing would be begun is at the right and directly under the type-wheel. If, however, rod *m* were pulled and also turned, the primary stop would be displaced from its engaging position and the auxiliary stop *q* would be put in position to arrest wheel 26 near its lowermost position, as shown in Fig. 13, and that part of the circle designated as "Movement from line-stop to signature-stop" represents the distance from the left margin of the page at which printing would be commenced, and the same distance is indicated by the part of the circle marked "Advance of signature."

Fig. 13 particularly shows the result attained by the auxiliary stop as used in beginning the signature of a message at some distance from the left margin of the page and that the relative arrangement of primary and auxiliary stops here shown has been adopted



with the idea of beginning the signature as far over on the page as would be possible, while in the ordinary case leaving sufficient room for it upon the remainder of the line.

5 Of course the primary and auxiliary stops could be arranged so as to begin the printing of a message, a part thereof, or the signature in the middle of a page or at any point by merely changing their relative angular  
10 positions.

The extent to which the pull-rod *m* may be rotated in one direction is determined by a stop-pin 42, with the lower end of which engages the notched surface 19 of pinion 40,  
15 and it is by this means that the anticlockwise rotation of rod *m*, by which the auxiliary stop is put into engaging position and the primary stop displaced therefrom, is limited and determined. The back turn of pull-rod *m* to  
20 displace stop *q* and replace the primary stop to its normal position is limited by a bracket *l*, rigidly attached to said rod, which has a lower right-angular extension whose movement is limited by the upright bracket supporting the outer end of bar *m*, and the amplitude of this movement is determined by  
25 adjusting-pin 50, while to maintain pull-rod *m* in its proper rotary position or against displacement the lower end of bar *l* is pulled  
30 downward and to the left against the stationary bracket-support by spring 51, Figs. 1, 2, 6. Bracket *l* of pull-rod *m*, Figs. 6 and 8, performs an additional function in that it affords means for determining the lengthwise  
35 position in which the rod may be rotated to bring into and throw out of action the primary and auxiliary stops.

Above the upper end of bracket *l*, in close proximity thereto, is mounted a stationary  
40 shelf, within which are two vertical apertures provided, respectively, with short loose pins 52 53, Figs. 3, 4, 6. The lower ends of these pins at all times find a support upon the upper irregular surface of *l* and are held downward upon *l* by independent springs 54 55.  
45 In one position pin 53 rests upon the upper left side of *l* against the vertical wall 48, while pin 52 rests upon the same surface, but against the left vertical surface of 44. Upon pulling  
50 rod *m* outward groove 45 is brought opposite pin 53, while the lower end of pin 52 rests upon the inclined surface 46. In this position the rod may be turned to the left or in an anticlockwise position and pin 53 will pass  
55 through groove 45, while the lower end of 52 will ride upward over the top of surface 46 and will drop downward by the side of vertical wall 49, thus allowing a sufficient rotation to effect the movements of the primary  
60 and secondary stops. When pushing rod *m* inward to disengage the auxiliary and replace the primary stop, the lower end of pin 52 will be brought opposite notch 45 and the lower end of pin 53 will rest upon inclined surface  
65 47. In this position of the rod it may be

turned to the right or in a clockwise direction, when the lower end of pin 53 will again fall by the side of the vertical surface 48 and 52 will drop opposite the vertical side of tooth 44. It has been found in practice, however,  
70 that such a guide is unnecessary, as the printer attendant may be relied upon to turn rod *m* at the proper time and place. The locking and limiting arrangement for determining the lengthwise pull of the rod is of the same construction as that heretofore employed on the  
75 Buckingham printer. The hand-knob *k* and cam-collar 29 have a central opening within which passes the outer end of rod *m* in such manner that the handle and cam-collar may  
80 be moved freely a short distance upon said rod, although the two are rigidly connected together with reference to rotary movement. Pivoted upon the fixed bracket of the rod *m* is the locking-arm 28, and during the normal  
85 operation of the machine the outer end of said arm engages the surface of collar 29 next to the attendant, while at the same time locking-lug 30' of arm 28 engages in that one of the two grooves formed upon the pull-rod which  
90 is at the left. In this position the escapement-wheel is in engagement with its pallets. Upon pulling handle *k* rod *m* is not at first moved; but as cam-collar 29 is pulled outward the free end of arm 28 is raised, and with it  
95 the locking-lug 30' is lifted from the left of collar 27; but as the cam-collar 29 is pulled beyond arm 28 lug 30' drops into the second of the two grooves, which is slightly to the right. In this position the escapement-wheel  
100 is disengaged from its pallets and adjusting-toe 25 is withheld from the teeth of feed-wheel 26. If, however, in addition to the pull of the rod it is turned anticlockwise, the escapement-wheel is disengaged from its pal-  
105 lets, the primary stop is displaced, and the auxiliary stop is turned into an arresting position, and with it adjusting-toe 25 is placed between the teeth of wheel 26.

Other parts of the Buckingham printer as  
110 heretofore used, but which are no part of the present invention, have been shown for the purpose of representing a complete structure to which our present invention is applicable.  
115

In Fig. 1 magnets 1 2 3 4 5 for actuating the type-wheel of the printer are shown. In the same figure *r* represents the apparatus for moving the ink-ribbon. In Fig. 2, *p* is the press-magnet, 64 the press-arm, and 65 the  
120 light filament, by which platen 6 is actuated by the press-magnet to strike type-wheel *w*, while above the latter is the dogging-magnet 67 and its arm 68, acting upon pin 69, by which the position of the type-wheel is ad-  
125 justed after having been moved approximately to a printing position.

We do not wish to confine our invention to two movable stops for arresting escapement-wheel *J*. The same result may be accom-  
130



plished by means of the single swinging stop *s*, as shown in Fig. 12, assuming escape-wheel J to be provided with two stop-pins 11 72 of different lengths, as seen in Fig. 18. In its normal position stop-pin *s* would arrest pin 11, while in its displaced position it would catch pin 72 and arrest J precisely as would stop *q*. By this means *q* may be and is wholly omitted.

10 What we claim, and desire to secure by Letters Patent, is—

1. In a page-printing machine, the combination of a motor-driven escapement, means for controlling the step-by-step movement of said escapement, an apparatus for disengaging said escapement and its step-by-step controlling apparatus, one from the other, two alternately-acting stop arrangements for arresting said escapement in one or the other of two positions according as it is desired to begin printing at the left margin of a page or at some point to the right thereof.

2. In a page-printing machine, the combination of a power-driven step-by-step escapement-wheel, pallets for controlling the step-by-step movement of said wheel, an apparatus for disconnecting said feed-wheel and its pallets, one from the other, two alternately-acting stop arrangements for arresting said wheel in one or the other of two positions of rotation according as it is desired to begin printing at the left margin of the page or at some point to the right thereof, a train of gearing connected with said escapement-wheel and means actuated thereby for feeding a sheet of paper step by step from one letter position to the next throughout a line of print and from line to line throughout the page.

3. In a page-printing machine, the combination of a power-driven step-by-step escapement, pallets for controlling the step-by-step movement of said escapement, an apparatus for disconnecting said escapement from its pallets, two alternately-acting stops, each adapted to arrest said escapement, one of said stops being normally in an arresting position while the other is not, and means whereby, as the second stop is brought into an arresting position, the first stop is removed therefrom, a train of gearing connected with said escapement-wheel and means actuated thereby for feeding a sheet of paper step by step from one letter position to the next of a line and from line to line throughout the page, the whole being so arranged that the first line of a message or part thereof may be commenced at any point between the two margins of the page.

4. In a page-printing machine, the combination of a power-driven step-by-step escapement, pallets for controlling a step-by-step movement of said escapement, a manual pull-rod for disconnecting said escapement from its pallets, a page-feeding mechanism controlled by said escapement for moving the

paper step by step from one letter position to the next throughout a line and from line to line throughout the page, a primary stop normally in position to arrest rotation of the escapement-wheel when disconnected from its pallets at a point whereby the printing of a message or part thereof may be commenced at the left margin of the page, automatic mechanism connected with said manual disconnecting device for displacing said primary stop from an arresting position, and an auxiliary stop actuated by said pull-rod, the same being so arranged as to arrest rotation of the escapement-wheel in a different position of rotation, whereby the printing of a message or a part thereof may be commenced at any intermediate point between the margins of the page.

5. In a page-printing machine, the combination of a power-driven step-by-step escapement, pallets for controlling the step-by-step movement of said escapement, two stops for arresting said wheel in one position of rotation or another according as one stop or the other is in arresting position, a manual pull-rod for disconnecting said escapement from its pallets which is adapted to be moved longitudinally and circumferentially—longitudinally to disconnect the escapement from its pallets and circumferentially to displace the primary and put into an arresting position the second or auxiliary stop, whereby the printing of a message or a part thereof may be begun either at the left margin of the page or at any intermediate point between the two margins.

6. In a page-printing machine, the combination of a power-driven escapement-wheel J, escapement-pallets for controlling the step-by-step rotation of said wheel; a train of gearing connecting said escapement with the spur-wheel *y* carrying feed-wheel 26; a stationary tube *t* for carrying a paper sheet upon which messages are printed; a pull-rod *m*, and means whereby as the latter is pulled the escapement-wheel is disconnected from the teeth of its pallets; an arresting-pin 11, upon said escapement-wheel, a primary stop *s*, an auxiliary stop *q*, and means whereby, as said rod *m* is rotated upon its axis to bring stop *q* into an arresting position, stop *s* is displaced from the rotary path of pin 11.

7. In a page-printing machine, the combination of a power-driven step-by-step escapement-wheel, pallets for controlling the step-by-step movement of said wheel, a train of gearing controlled by said escapement, a wheel *y* driven by said gearing on which is mounted the paper-feeding wheel 26, movable toe 25 for adjusting the teeth of wheel 26 into operative position, a movable bracket upon which said toe is mounted, cord 23, a collar 38, a longitudinally and rotatably movable pull-rod *m* to which said cord is connected, arm 12 by which movement is communicated from rod *m* to escapement-



wheel J to disconnect the latter from its pallets, stop-pin 11, primary stop *s* and auxiliary stop *q* which is brought into an arresting position upon rotating said rod *m*, a pinion 40, rigidly fixed upon said rod *m*, rack-bars 34 and 36 actuated by said pinion as rod *m* is turned in an anticlockwise direction, the bar 34 being adapted to remove stop *s* from an arresting position while stop *q* is lowered within the path of stop-pin 11, while bar 36 is at the same time lowered, thereby causing arm 37 to depress collar 38 or cord 23 to move bracket 24 and adjusting-toe 25 into position to set the teeth of wheel 26 into an operative position.

8. In a page-printing machine, the combination of a power-driven step-by-step escapement-wheel J, pallets for controlling the step-by-step movement of said wheel, a paper-feed wheel 26, mounted within a wheel *y*, the movement of the latter being controlled by said escapement-wheel, an adjusting-toe 25 and a bracket 24 upon which the latter is mounted, a cord 23 for moving said bracket to the right against the action of retracting-spring 71, a manual pull-rod *m*, an arm 12 connected with said pull-rod for disengaging escape-wheel J from its pallets, a stop *s*, pin 11 for arresting the escape-wheel when disengaged from its pallets at a position to begin the first line of a message or part thereof at the left margin

of the page, an auxiliary stop, *q*, and a pinion, 40, mounted upon said pull-rod, rack-bar 34, for displacing the primary stop at the same time that stop *q* is turned into an arresting position, and rack-bar 36, by which cord 23 is drawn downwardly to move toe 25 into an adjusting position, as and for the purpose set forth.

9. In a page-printing machine, the combination of a pull-rod *m* which is adapted to be moved longitudinally and given rotation, an escapement-wheel for giving rotation to a paper sheet upon which messages are to be printed and pallets for controlling the step-by-step action of said wheel from which said wheel is manually disengaged by said rod, a guiding-arm *l* attached to said rod upon whose upper end cam-surfaces are arranged, a stationary bracket carrying yielding pins, said cam-surfaces and pins being arranged in such relationship as to automatically determine the lengthwise position in which said pull-rod may be rotated.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES L. BUCKINGHAM.

EMIL GERMANN.

Witnesses:

G. R. BENJAMIN,

JOHN C. SANDERS.