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DRAFTSMAN

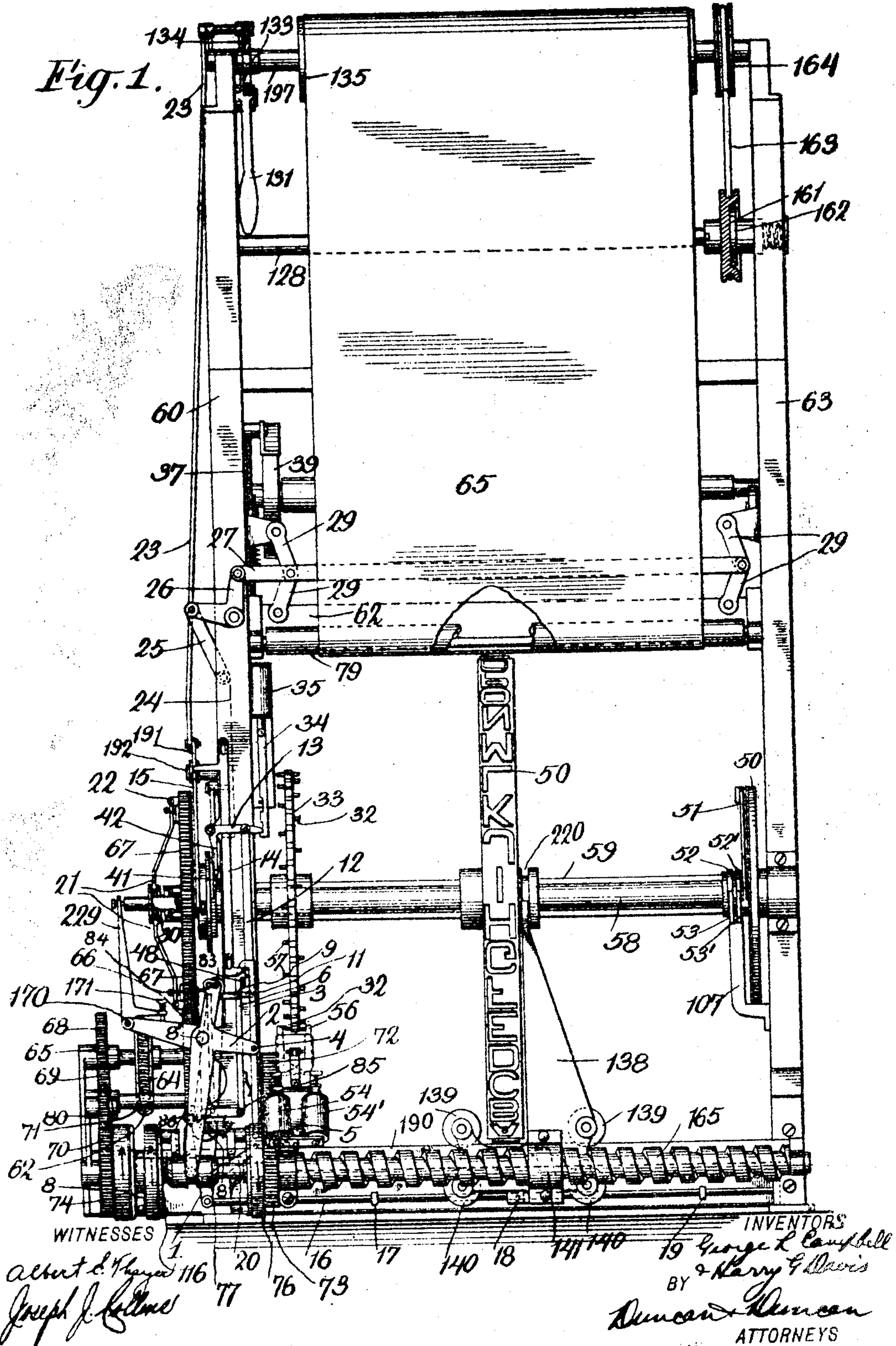
G. L. CAMPBELL & H. G. DAVIS.  
TELEGRAPH BULLETIN PRINTER.  
APPLICATION FILED NOV. 11, 1908.

950,473.

Patented Mar. 1, 1910.

5 SHEETS—SHEET 1.

Fig. 1.



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5 SHEETS—SHEET 2.

Fig. 2.

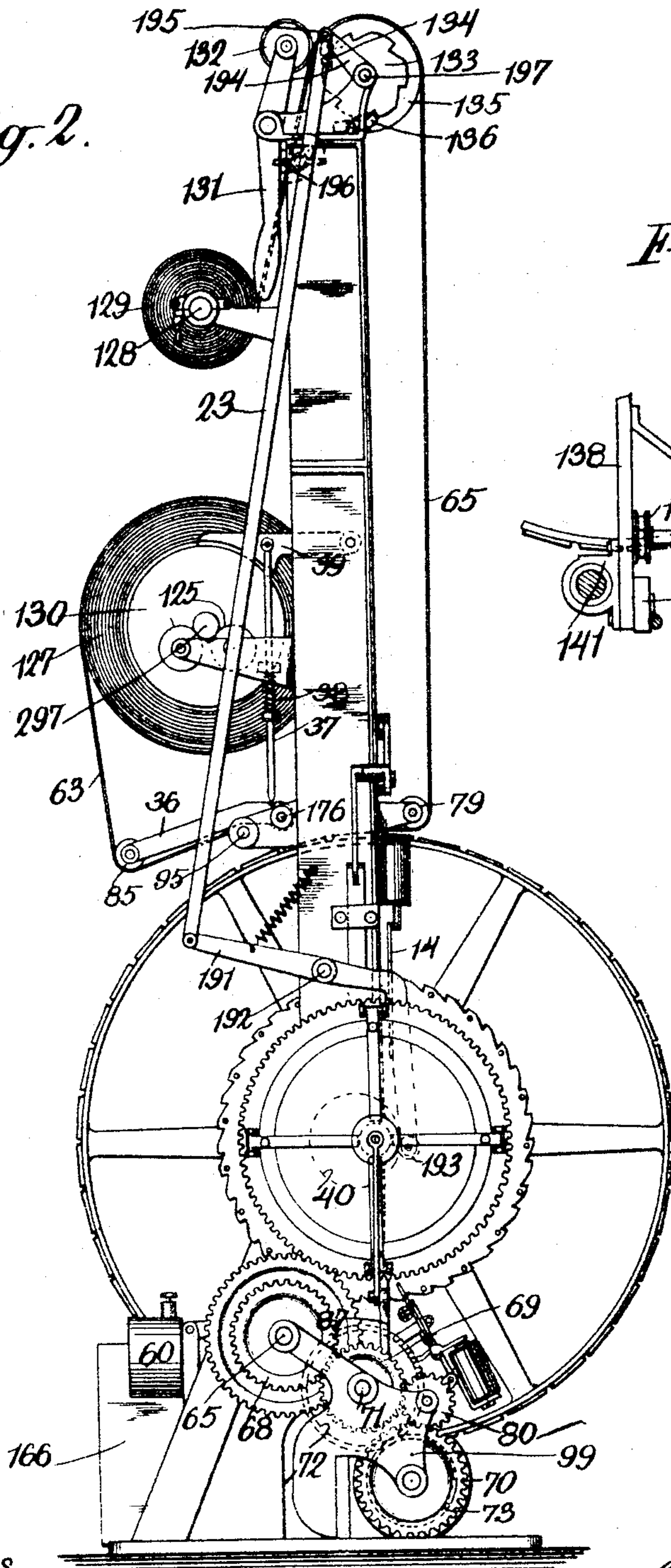
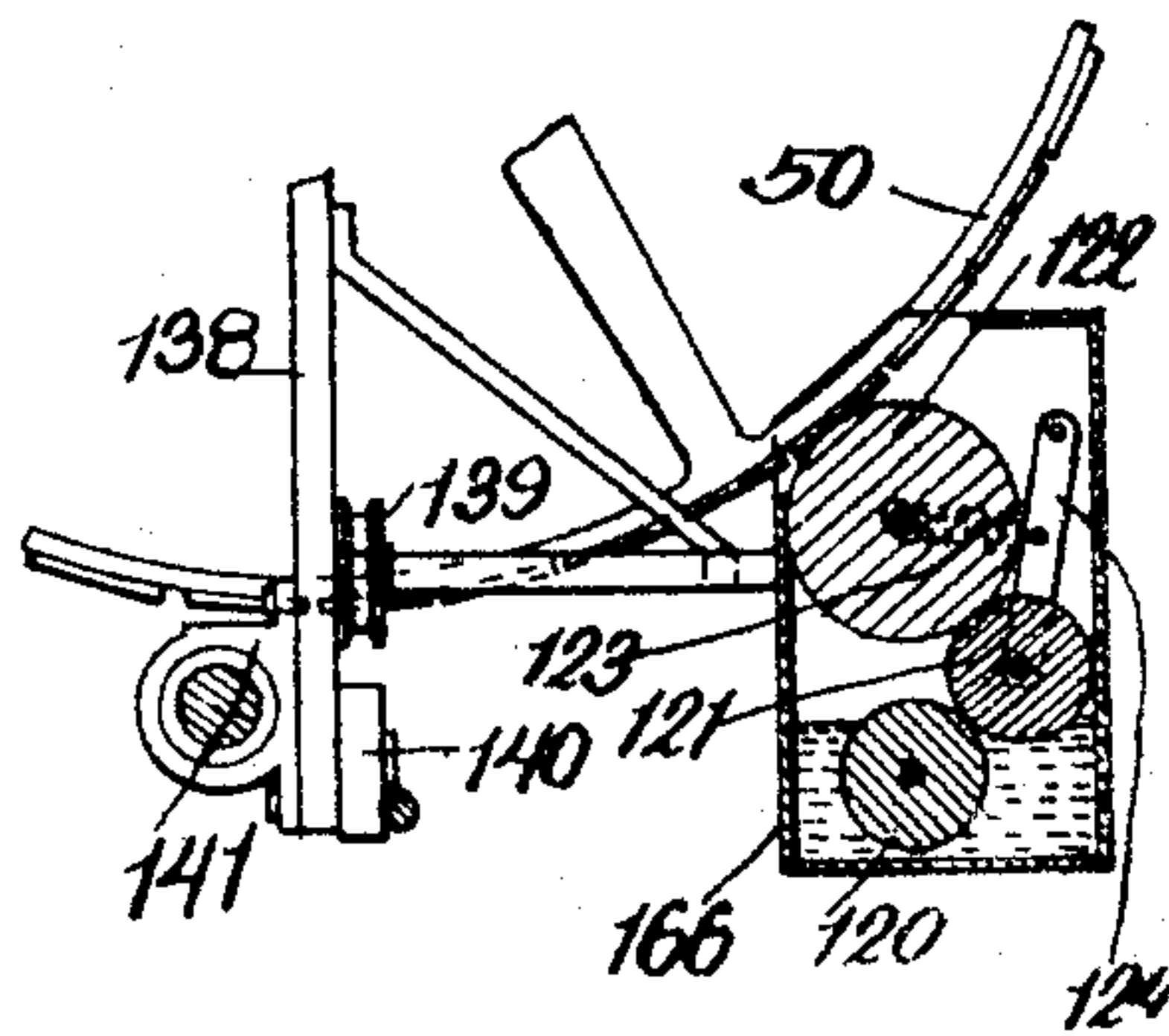


Fig. 3.



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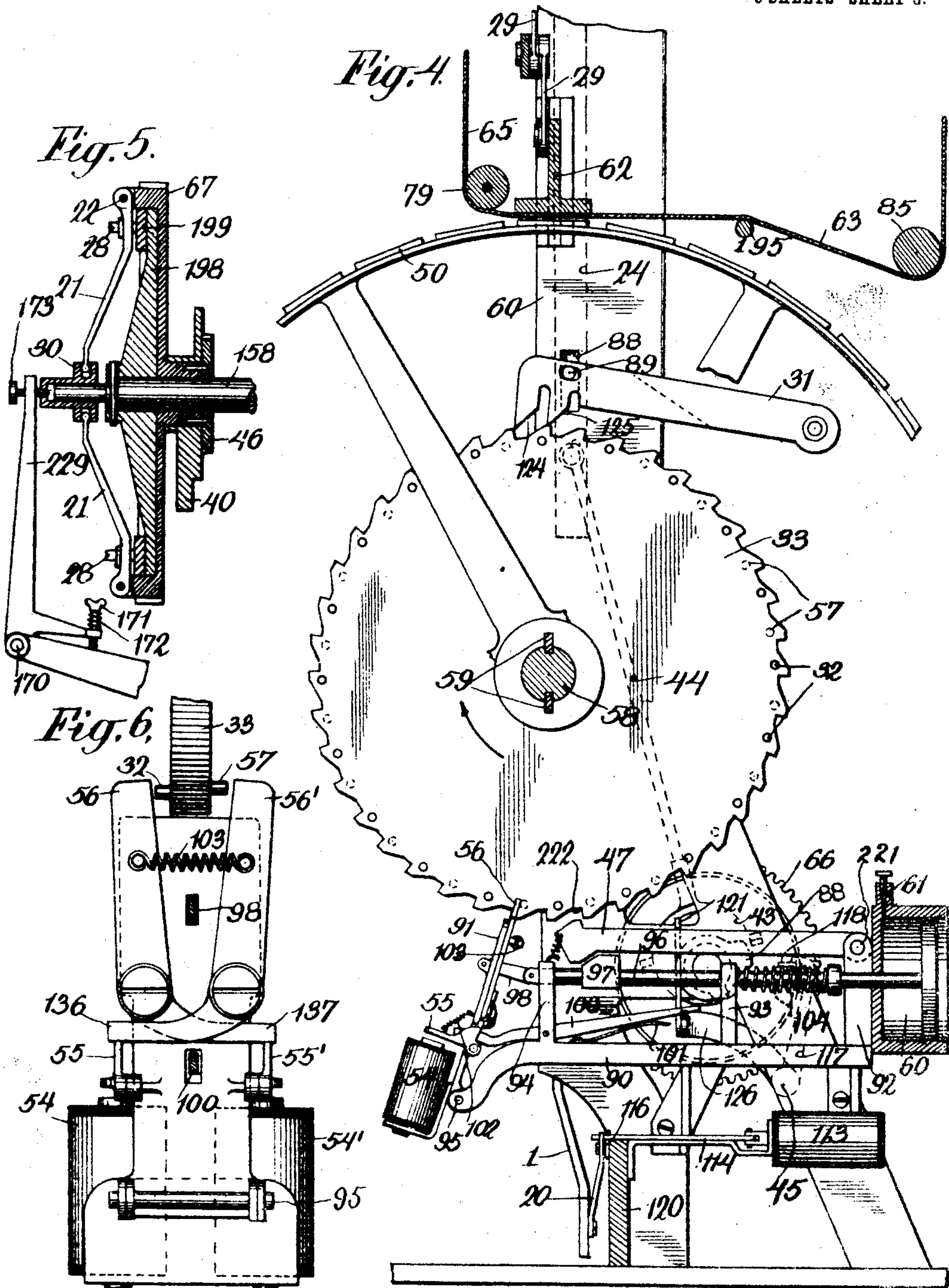
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5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

Fig. 7.

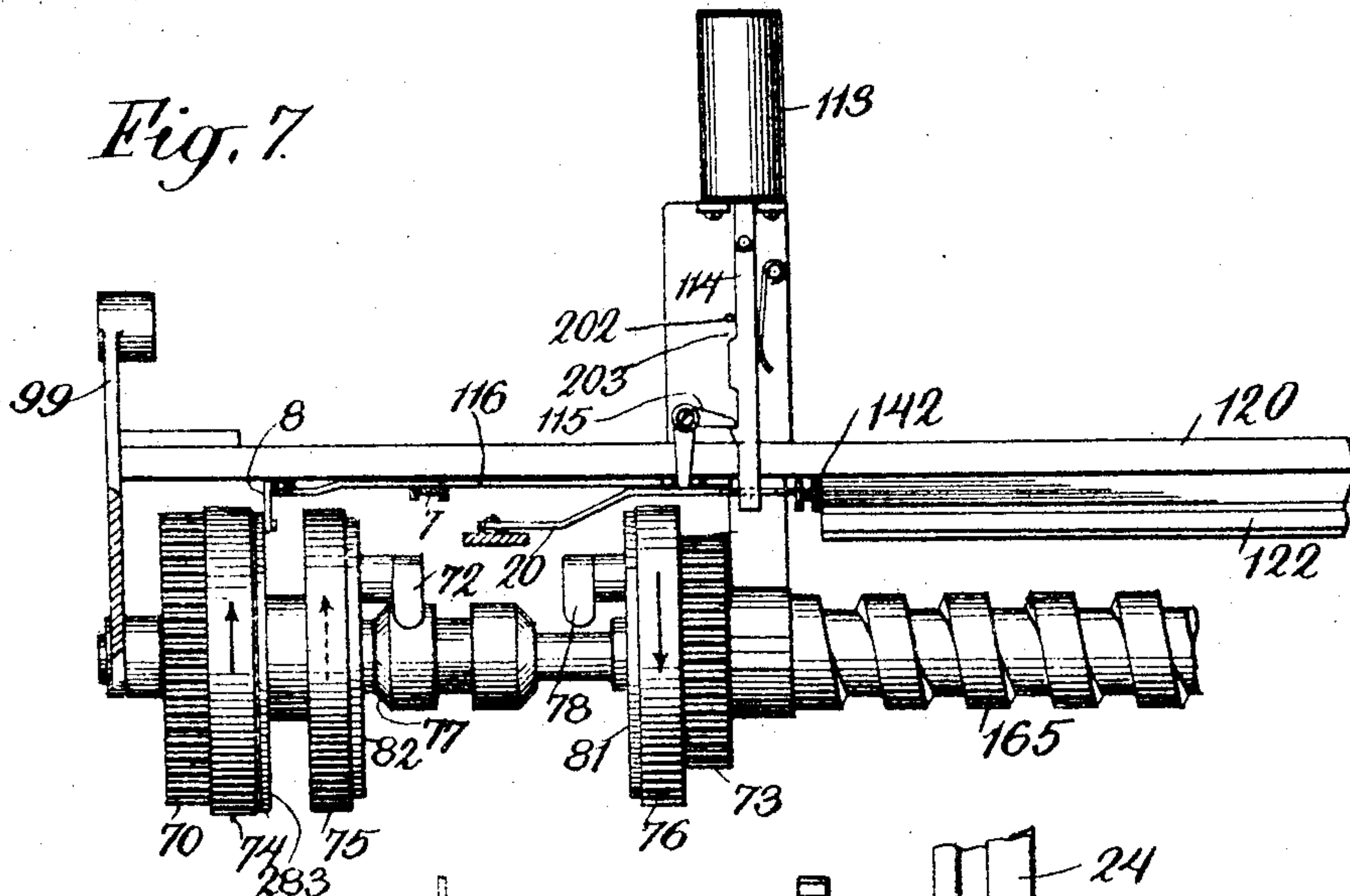


Fig. 8.

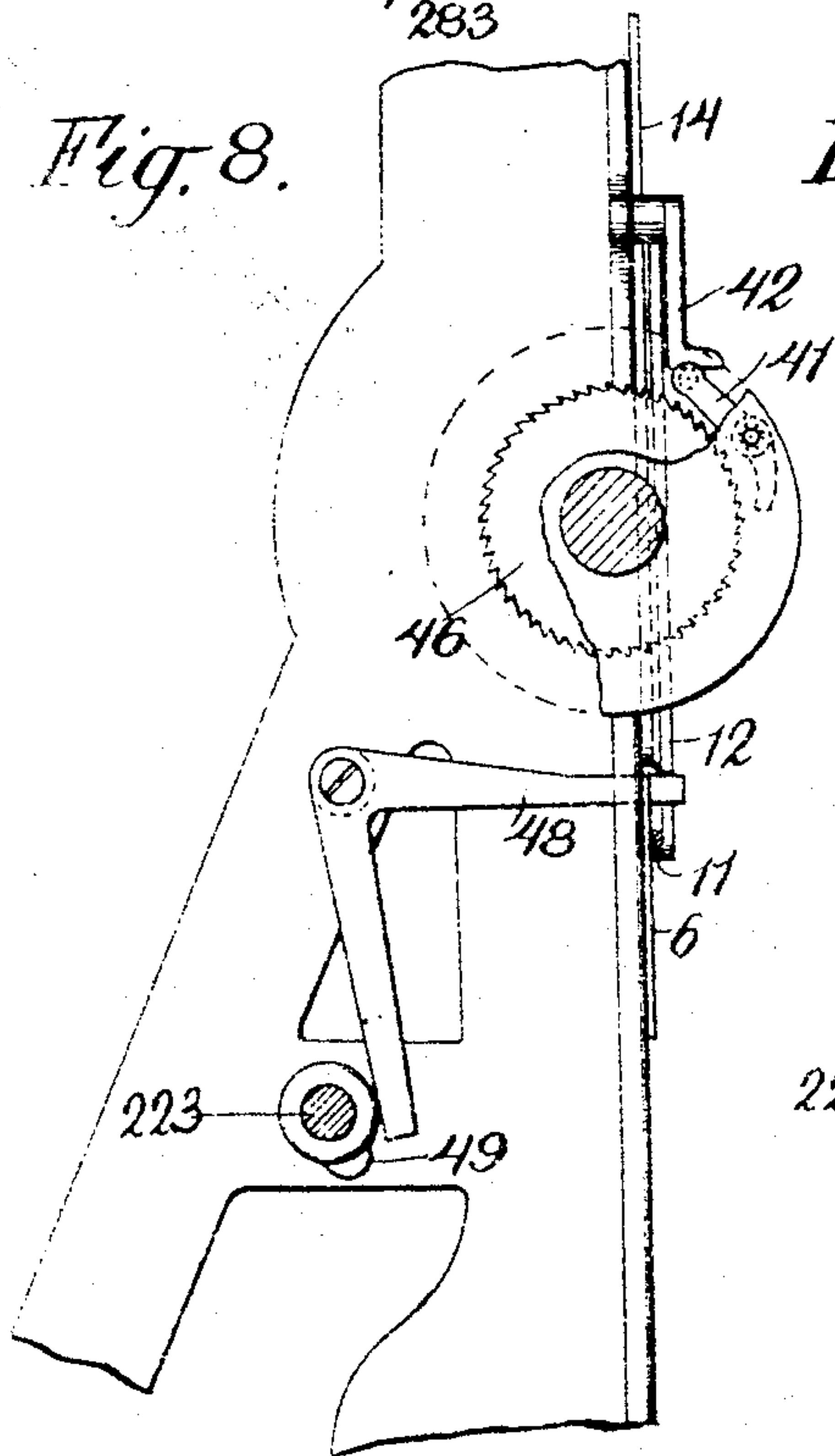
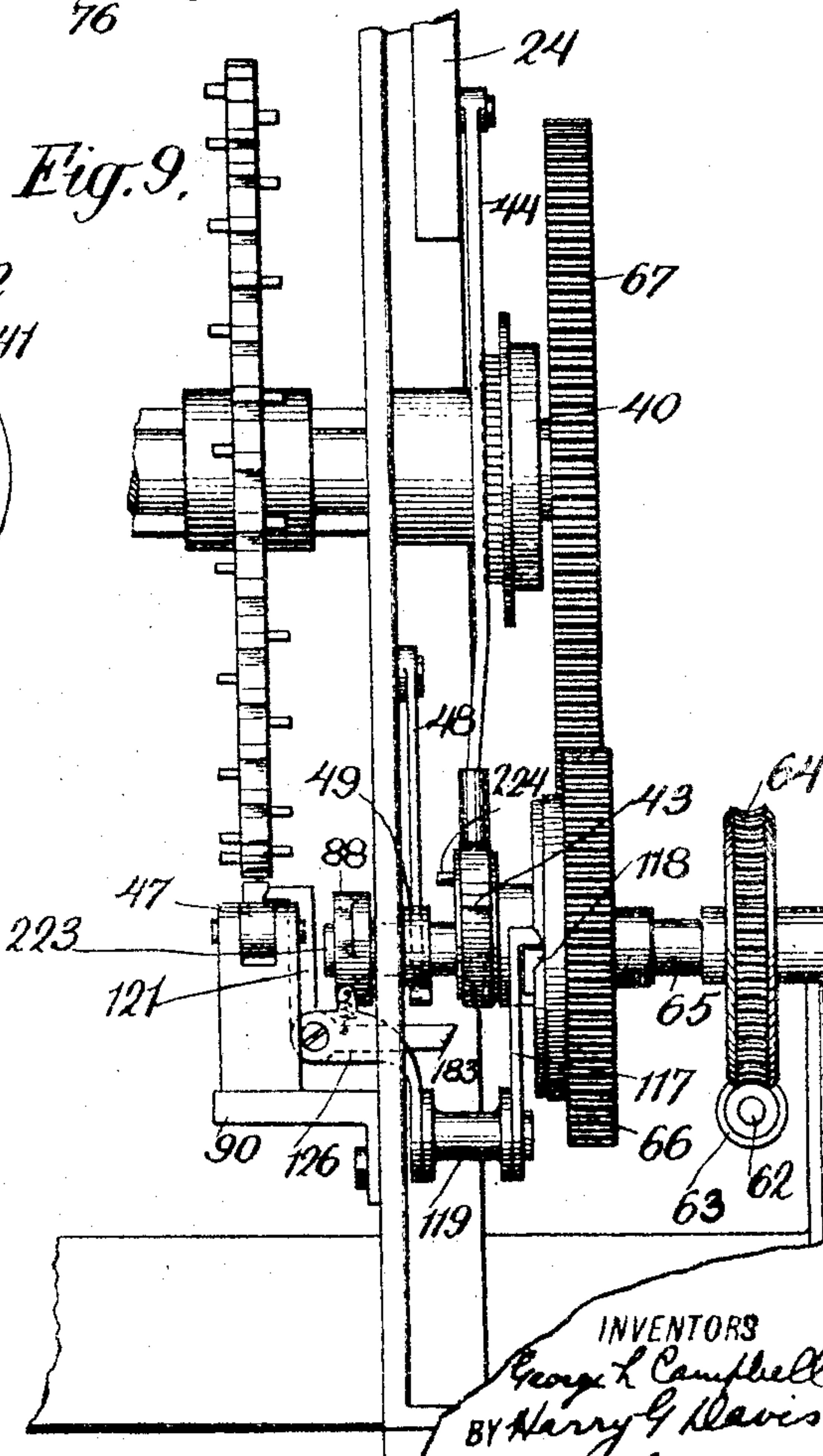


Fig. 9.



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5 SHEETS—SHEET 5.

Fig. 11.

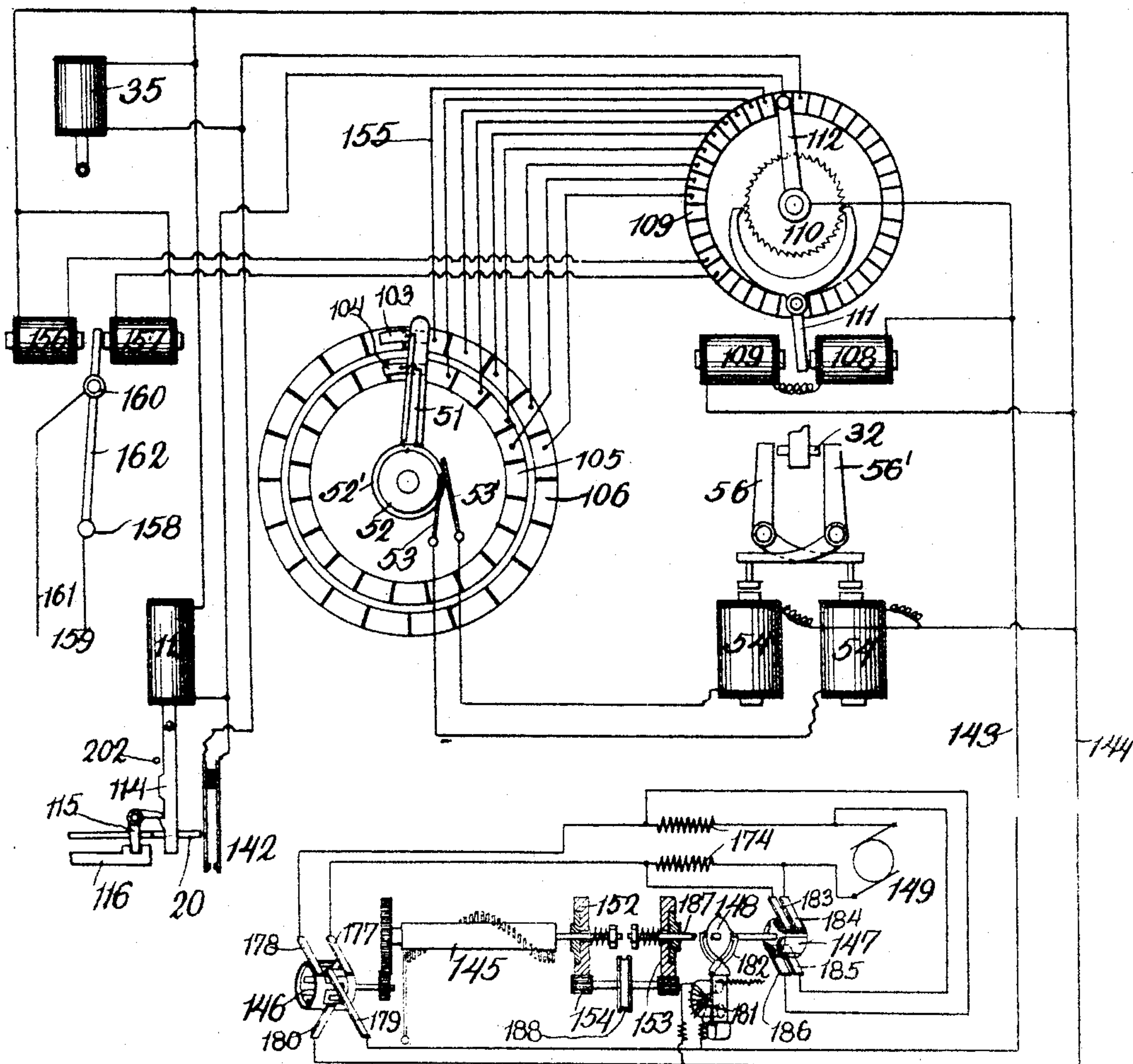
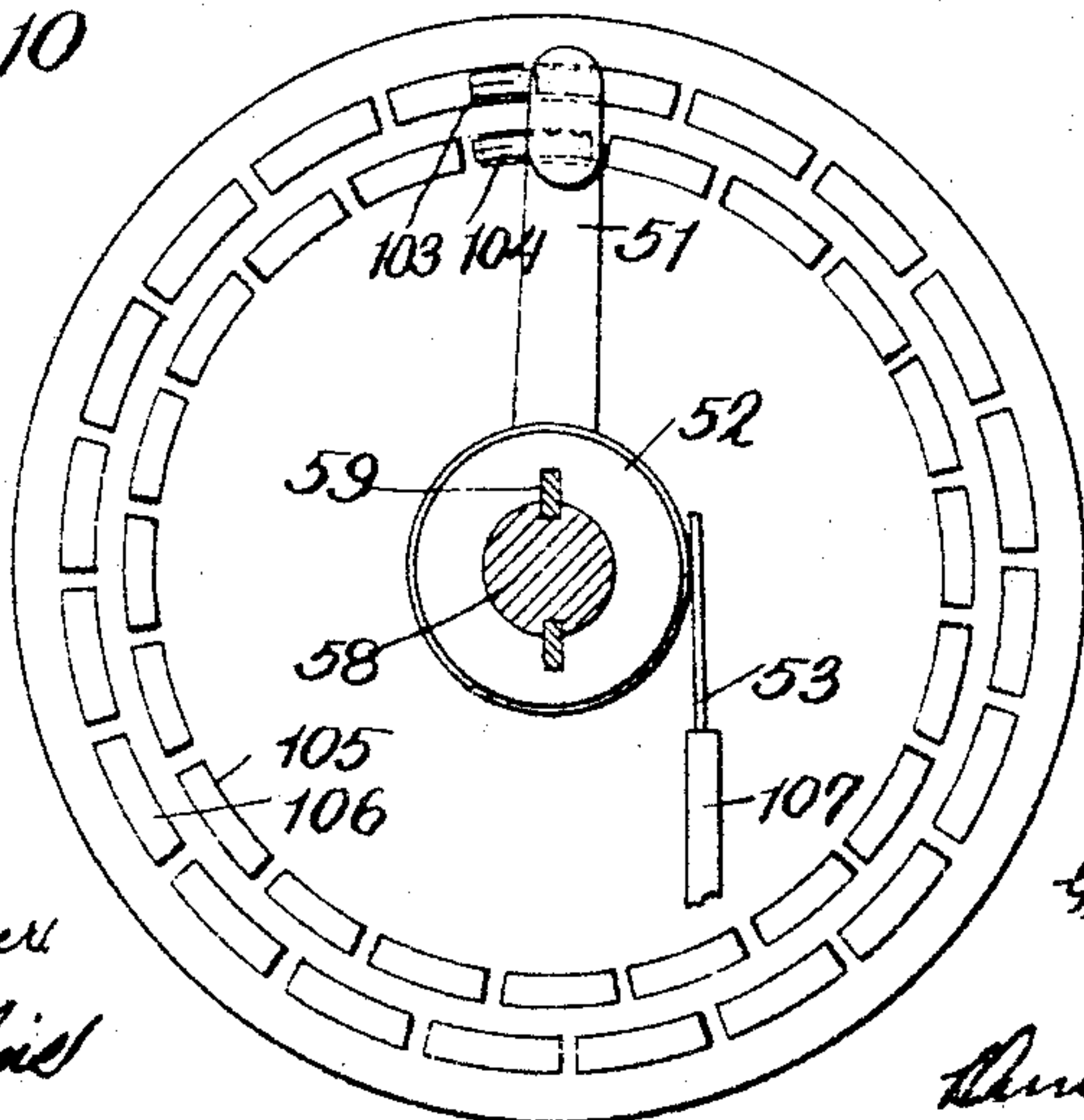


Fig. 10.



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# UNITED STATES PATENT OFFICE.

GEORGE L. CAMPBELL AND HARRY G. DAVIS, OF WILLIAMSPORT, PENNSYLVANIA,  
ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO ELECTRIC PRESS BULLETIN  
COMPANY, OF WILLIAMSPORT, PENNSYLVANIA, A CORPORATION OF DELAWARE.

TELEGRAPH BULLETIN-PRINTER.

950,473.

Specification of Letters Patent.

Patented Mar. 1, 1910.

Application filed November 11, 1908. Serial No. 462,059.

*To all whom it may concern:*

Be it known that we, GEORGE L. CAMPBELL and HARRY G. DAVIS, citizens of the United States, and residents of Williamsport, Lycoming county, Pennsylvania, have made certain new and useful Inventions Relating to Telegraph Bulletin-Printers, of which the following is a specification, taken in connection with the accompanying drawings, forming part of the same.

This invention relates to telegraph bulletin printers and relates especially to telegraph printers suitable for use in printing newspaper bulletins and the like in page form on a continuous web of paper and in which the type may be as large as several inches in height, such printers being controlled if desired by a single electrical circuit over which well known alternating or other electrical impulses are sent out from a transmitting instrument.

In the accompanying drawings showing in a somewhat diagrammatic manner an illustrative embodiment of this invention and in which the same reference numeral refers to similar parts in the several figures, Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a partial side sectional view showing the inking devices. Fig. 4 is an enlarged transverse sectional view showing the index latching and printing devices. Fig. 5 is a detail view showing the type shaft friction clutch. Fig. 6 is a detail view showing the latching devices. Fig. 7 is a detail view showing the feed and return gear. Fig. 8 is a detail side section showing printing and actuating devices. Fig. 9 is a partial front view thereof. Fig. 10 is a detail showing the contact plate and arm; and Fig. 11 is a circuit diagram.

In the illustrative embodiment of this invention shown in the drawings a rigid frame for the machine may be formed of the side pieces 60, 63 connected by suitable transverse braces, including the feed rail 190 adjacent the bottom, as shown in Fig. 1. The shaft 297 of the web roll 127 may as indicated in Fig. 2 be mounted on suitable bearings such as the friction rolls 125 supported in brackets on the frame. The continuous paper web 63 which may have a width of several feet if desired is preferably led around a suitable floating or other tension device, such for example, as the tension roll

85 mounted in suitable arms 36 on the shaft 176 which may be loosely mounted in bearings in the frame so as to allow this floating roll to oscillate freely in the web loop. A brake 39 of any desired description may be mounted to cooperate with a suitable brake drum 130 on the web roll shaft 297 and the brake rod 37 may be pivotally or otherwise connected with the brake and have a suitable adjustable spring 38 normally holding the brake in engagement with the drum with the desired force. As the paper web 63 is withdrawn by suitable feeding devices the loop in which the floating tension roll 85 rests is shortened and the tension roll raised until its swinging arm 36 engages the brake rod and lifts the rod and connected brake free from the drum, whereupon the weight of the tension roll withdraws additional paper from the web roll until the brake again comes into engagement. In this way the paper is always kept under a definite tension and the undesirable strains incident to starting a large roll of paper are avoided.

As is indicated in Fig. 4, the paper web may be passed over the guide rod 195 and under the printing platen 62 cooperating with the type wheel 50 carrying the printing characters. Then the paper web after passing around the roll 79 may be carried upward to form an exposed bulletin face of the desired extent and then pass over the feed roll 135. The shaft 197 of this roll mounted adjacent the upper end of the frame may carry the feeding ratchet 133 with which the holding pawl 136 may engage and also the feeding pawl 134 mounted on a feed arm 194 swinging about the shaft 197 so as to intermittently feed the paper forward an amount corresponding to a line of the printed matter. A gripping roll 132 may be mounted in suitable grip levers 131 on the frame and forced against the feed roll to the desired extent to give a good gripping action thereto, this gripping roll being held in adjustment by a suitable wing nut 196 shown in dotted lines in Fig. 2. The paper web may if desired be disposed of by being wound upon the winding roll 129 having the winding shaft 128 mounted in the frame and provided with a suitable frictional drive connected with the feed roll or other part of the machine.

The winding pulley 161 loose on the winding



shaft 128 is indicated in Fig. 1 as having the friction clutch or disk 162 pressed into engagement therewith by a suitable spring so that the belt 163 connecting this winding pulley with a corresponding pulley 164 on the shaft 197 of the feed roll tends to over-wind the winding shaft and roll, suitable slip taking place at the friction clutch so that the web is always wound on the winding roll 129 as fast as delivered by the feed roll and kept at the desired tension.

The type shaft 58 may be mounted in suitable bearings in the machine frame and carry rigidly secured thereto the index wheel 33 adjacent one end and a suitable contact arm 51 adjacent the other if desired, this arm as indicated in Figs. 10 and 11 being provided with the desired number of suitable contact springs to cooperate with the annular rows of contacts on the contact plate or selector. A plurality of rings of contacts and contact springs are preferably mounted so that each contact may occupy a greater angular space and thus permit the more rapid operation of the machine. For the same reason the index devices are also preferably provided with a plurality of annularly arranged rows of stop devices, such as the stop pins 32 and 57, for example, which as indicated may be arranged on either side of a single index wheel if desired, which may also be provided with a corresponding number of notches 222 adjacent its periphery as indicated in Fig. 4.

As indicated in Fig. 11 the contact spring 104 may cooperate with the inner ring of contacts 105 and the contact spring 103 also mounted on the contact arm 51 may similarly cooperate with the outer ring of contacts 106 of the selector. The spring 103 may as indicated be connected with the commutator ring 52 with which the brush 53 engages to energize the latch magnet 54 and in a similar way the contact spring 104 may be connected with the commutator ring 52' with which the brush 53' engages to energize the latch magnet 54' at the desired time.

As indicated in Fig. 1, the type wheel 50 may be slidingly mounted on the type shaft 58 and be rotated in unison therewith by the splines 59 cooperating with corresponding slots in the hub of the type wheel, as shown in Fig. 4, this wheel being preferably of the lightest possible construction and material to properly support the characters on its periphery. It is of course apparent, however, that when the letters are as much as a couple of inches in height the type wheel must have considerable size and weight to carry forty or more such characters as is necessary in ordinary printing.

The number of characters on the type wheel preferably correspond with the number of contacts on the selector and with the number of stop pins, notches or other stop

devices on the index wheel. The sunflower controller, however, is preferably provided with several additional control contacts which may as indicated in Fig. 11 be wired directly to the control devices of the machine, such for example, as the motor controlling magnets 156 and 157 for holding the switch lever 162 in such position as to complete the circuit between suitable contacts 158 and 160 in the motor power or control circuit 159, 161. Similar contacts from the controller may also operate the paper feed magnet 35, the spacing magnet 113 and so forth. This controller is of the regular sunflower construction employed in printing telegraphy having the escapement ratchet 110 to operate the controller arm 112 engaging the ring of contacts 109, all the contacts of the selector or contact plates being of course connected by the wires 155 with the corresponding number of the controller contacts. Suitable escapement magnets, such as 108, 109 may of course operate the escapement pawl 111 to allow the controller arm 112 to rotate around the contacts when the escapement magnets are actuated by the intermittent or alternating electrical impulses usually employed. Such impulses may be sent out over the line wires 143, 144 connected to a number of printers to be simultaneously actuated by transmitting mechanism diagrammatically indicated in Fig. 11 as comprising a pin cylinder 145 having a spirally arranged series of pins on its periphery corresponding to the number of contacts on the controller. This cylinder is connected with a drive pulley 188 through the pinion 154 and gear 152 having a friction clutch connection with the shaft of the pin cylinder so that this cylinder normally tends to rotate and is continuously rotated except when one of its pins is engaged by the corresponding key of the key-board, only one key being indicated. This pin cylinder may be geared or otherwise connected with a suitable commutator 146 engaged by the brushes 177, 178 supplied with current from a generator 149 through a circuit in which the resistances 174 are normally included. The brushes 179, 180 bearing on this commutator 146 thus normally send out over the line wires 143, 144 alternating impulses of moderate intensity sufficient to actuate the sunflower controllers on each instrument connected with the line. The pulley 188 also may be similarly connected with the operating shaft 187 on which the commutator 147 and detent wheel 148 are mounted and normally tend to rotate. The operating magnet 181 in the line circuit is connected with the spring-actuated pawl 182 cooperating with the detent so as to accurately stop the detent and commutator at intervals of a partial revolution. The brushes 183, 184 as indicated are connected in shunt around the



resistance 174 in the generator lead connect-  
ed with the brush 177 and the brushes 185,  
186 are similarly connected in shunt around  
the resistance 174 in the generator lead con-  
nected with the brush 178. In the position  
indicated these brushes 183, 184, and so  
forth, are in engagement with insulating  
portions or sectors on the commutator 147.  
When, however, the pin cylinder is brought  
to rest the prolonged electrical impulse in  
the line wires with which the operating mag-  
net 181 is connected energizes that magnet  
and attracts its armature and the connected  
pawl 182 allowing the detent 148 to rotate  
through a partial revolution so as to bring  
a conducting portion of the commutator 147  
into engagement with the brushes 183 and  
so forth, thus short-circuiting the resistances  
174 and sending a correspondingly stronger  
operating electrical impulse through the line  
wires to the controller of each instrument,  
this impulse also passing through the con-  
troller arm which is then on the proper con-  
tact to the corresponding contact of the se-  
lector or control device in that particular  
circuit.

Each printer may be operated by an elec-  
tric or other motor having a worm 63 on its  
shaft 62 as indicated in Figs. 1 and 9, this  
worm engaging a cooperating worm wheel  
64 on the drive shaft 65. This drive shaft  
which is thus uniformly rotated as long  
as the motor is operated by the motor con-  
trol magnets may be provided with a  
gear 66 meshing with a cooperating gear 67  
loosely mounted on the type shaft 58 and co-  
operating with a clutch spider 198 keyed  
on this shaft, as indicated in Fig. 5. Any  
desired form of adjustable friction clutch  
may be used to give the type shaft a con-  
stant torque from the drive-shaft and con-  
nections indicated, a suitable clutch com-  
prising the clutch arms 21 pivoted about  
the pins 22 and provided with the adjust-  
able studs 28 to engage and force the clutch  
ring 199 home against the opposing face of  
the gear wheel 67. These arms may be si-  
multaneously operated by the connected  
clutch head 30 supported on the end of the  
type shaft 58 and held in the proper posi-  
tion by the adjustable screw 173 in the end  
of the tightening lever 229 which may be  
pivoted about the pin 170 supported from  
the frame and this lever may have its free  
end engaged by a suitable tightening nut  
171 and interposed spring 172, as indicated  
in Figs. 1 and 5. In this way the rotative  
force on the type shaft may be readily ad-  
justed while the machine is in operation by  
operating the tightening nut 171.

The feed shaft 165 may be provided with  
a long pitch screw, as indicated in Fig. 1,  
and mounted in the lower portion of the  
frame so as to cooperate with the nut 141  
on the feed carriage 138. This feed car-

riage as indicated may be mounted on the  
feed rail 190 with which suitable guide  
wheels 139, 140 may cooperate and may feed  
the type wheel 50 longitudinally along its  
shaft by a suitable lug or flange cooperating  
with the annular recess 220 in the hub  
of the type wheel. The drive-shaft 65 may  
be provided with the gear 68 meshing with  
the gear 69 on the counter-shaft 71 as indi-  
cated in Figs. 1 and 2, the gear 69 also  
meshing with the intermediate pinion 80  
engaging the gear 70 on the clutch shell 74  
rotating in the direction of the arrows in  
Figs. 1 and 7 and loosely mounted on the  
feed shaft 165. The counter-shaft 71 car-  
ries at its other end the gear 72 shown in  
dotted lines in Fig. 2 meshing with the gear  
73 on the return clutch shell 76, thus rotated  
at higher speed in the direction of the ar-  
rows in Figs. 1 and 7 and loosely mounted  
on the feed shaft 165. The clutch spider  
283 of the one-revolution stop clutch of any  
desired form is loosely mounted on the feed  
shaft 165 and carries the feed clutch shell  
75 which is rotated in the direction of the  
dotted arrows in Figs. 1 and 7 whenever  
the feed clutch latch 8 is disengaged. The  
clutch spiders 81, 82 are rigidly mounted on  
the feed shaft 165 and carry the clutch le-  
vers 72, 78 of these friction clutches of ex-  
panding ring or any other desired well  
known form. The clutch shifter 77 is  
adapted to engage one or the other of these  
clutch levers and throw the corresponding  
clutch shell into driving engagement with  
the feed shaft, in this case the feed clutch  
shell 75 being thus engaged so that the feed  
shaft 165 will be rotated through one revo-  
lution when the feed clutch latch 8 is disen-  
gaged to allow the stop motion clutch 74 to  
operate through one revolution, thus ad-  
vancing the feed carriage and connected  
type wheel through the space correspond-  
ing to one letter. The control bar 16 is  
slidingly mounted in the frame and car-  
ries the collars 17, 19 cooperating with the  
stop 18 on the feed carriage. This control  
bar 16 may be pivotally connected to the  
lower end of the control lever 1 which may  
be pivoted about the pin 81 in the frame  
and be connected with the return clutch le-  
ver 2 mounted on the pin 8' by any desired  
means, preferably allowing a slight free-  
dom of movement between these parts, the  
control lever being provided with the pin  
83 operating in a suitable slot 84 in the  
clutch lever 2 for this purpose if desired.

As indicated in Fig. 1 the lower end of  
the return clutch lever 2 engages the clutch  
shifter 77 so that when the type wheel and  
its feed carriage reach the end of the line  
the collar 19 and control bar 16 are oper-  
ated, thus operating the control lever 1 and  
loosely connected return clutch lever 2 so  
that the shifter is disengaged from the feed



clutch lever and brought into engagement with the clutch lever on the return clutch operatively engaging the return clutch shell 76 with the feed shaft 165 and rotating the same in the direction indicated by the arrow to rapidly return the type wheel and its feed carriage to the beginning of the line. Thereupon the engagement of the collar 17 by the stop 18 throws the control bar and control lever in the other direction, returning the clutch lever 2 to the position indicated in the drawings so that the shifter 77 is brought back into engagement with the feed clutch shell 75 which is once more clutched to the feed shaft 165 for regular feeding when the feed clutch latch 8 is detached.

The stopping or latching devices cooperating with the index wheel may comprise the latch plate 91 pivoted about the pin 95 in the extension or bracket 94 of the frame, as indicated in Figs. 4 and 6. This latch plate may carry one or more latches 56, 56' pivoted thereto and yieldingly pressed inward by a suitable spring, such as 103. Suitable latch magnets 54, 54' may be mounted on the latch plate and provided with pivoted armatures 55, 55' normally held up in retracted position by suitable springs, such as 102, in which position the upward extensions of the armatures rest below the lower extensions or tails 136, 137 of the latches so as to hold them in the disengaged inoperative position shown in Fig. 6. The latch plate may be connected with any desired cushioning device such as the cushioning cylinder 60, the piston in which may have its connected cushioning rod 96 connected with the latch plate by the pivoted link 98 shown in Fig. 4, a suitable spring 104 engaging the outlet end 93 and normally tending to return the cushioning rod and connected piston into the position indicated, the cushioning action on the piston being of course adjusted by the throttling or adjusting valve 61.

When through the controller and selector devices previously described in connection with Fig. 11 one of the selector contacts 106 for instance is energized, the spring 103 carried by the contact arm 51 and the connected latch magnet 54 is correspondingly energized when the contact spring passes into engagement with the energized contact. This latch magnet thereupon instantly draws down its armature 55, releasing the latch 56' which immediately swings inward into the path of the stop pin 32 on that side of the index wheel 33. The stop pin swings the latch and connected latch plate outward, the inertia of the index and type wheels and connected parts being absorbed in the cushioning devices, so that the type wheel is quickly brought to a stop without undesirable shock, any desired form

of connection between the cushioning devices, such as the cam 97 on the cushioning rod 96, serving to force upward into the corresponding notch 222 in the index wheel the locking pawl 47 which may be pivotally mounted on the pin 221 in the projection 92 of the frame. As the locking pawl 47 rises it carries up the printing hook 121 normally loosely hooked over this pawl as indicated in Figs. 4 and 9, this hook being pivotally or otherwise loosely connected with the hook lever 126 as shown in Figs. 4 and 9, this lever 126 being secured to the sleeve 119, the other end of which carries the printing latch 117 cooperating with the one-revolution stop printing clutch 118 cooperating with the drive shaft 65. When this latch is released the stop clutch automatically clutches the loose extension or cam shaft 223 with the drive shaft so as to make one revolution therewith, the cam 88 on this shaft engaging and forcing down the inner end of the latch detacher 100 against its setting spring 101 so that its outer end rises and engages the tail of the latch which has been operated and forces the same upward so as to swing the corresponding latch outward into the inoperative position indicated in Fig. 6, so that the corresponding armature can swing upward and hold it in this position. The releasing pin 224 mounted on this cam shaft thereupon engages the hook finger 183 swinging the hook 121 outward away from the locking pawl, the cam 49 on this cam shaft also oscillating the lever actuator 48 shown in Figs. 8 and 9. The printing eccentric 43 on the cam shaft is also simultaneously operated oscillating the eccentric rod 44 and connected printing bar 24 mounted in the frame as indicated in Figs. 1 and 4. The link 25 serves to connect the upper end of this bar 24 with the rock lever 26 pivoted to the printing rod 27 to operate the toggle levers 29 connected with the printing platen 62 at various points along the same so as to force this printing platen and the paper beneath the same as indicated in Fig. 4 down into printing engagement with the cooperating type on the type wheel 50. If desired, a suitable aliner may be employed to insure the accurate alinement of the index and type wheels and if desired a pivoted aliner 31 may be used for this purpose and may be operated by a suitable connection, such as the pin 89 on the printing bar 24 projecting through a suitable slot 88 in the frame member and cooperating with a suitable slot in the aliner to force the same downward so that the inclined notches 124, 125 on either side of the wheel are adapted to cooperate with the stop pins 32, 57 thereon and force them into the narrow upper portions of these notches in which they lie when the printing contact takes place. The latch plate, after the release of the operating latch as indi-



cated, is of course forced backward into its normal position indicated in Fig. 4 by the cushioning spring 104 and the locking pawl 47 descends after the cam 97 has been dis-  
 5 engaged therefrom so that the printing hook 121 may be swung into place over the same as indicated in Fig. 9 by a suitable spring shown in dotted lines.

The actuating lever 48 which as indicated  
 10 is oscillated every time a character is printed is provided with a free end normally projecting beneath the feed hook 6 shown in Fig. 1 and somewhat diagrammatically in Fig. 8. This feed hook is pivoted at its  
 15 lower end to the feed hook lever 7 loosely engaging at its lower end the feed bar 116 shown in Figs. 1 and 7, this feed bar carrying at its outer end the feed clutch latch 8 and thus withdrawing the same from en-  
 20 gagement with the feed stop clutch 283 when the actuating lever 48 is oscillated, so as to feed forward the type wheel and its carriage one space every time a character is printed. The spacing magnet 113 indicated  
 25 in Fig. 7 also causes a similar spacing when actuated by the corresponding contact on the sunflower controller. This magnet or solenoid may have its armature pivotally connected with the spacing bar 114 normally  
 30 pressed into engagement with the detaching pin 202 and spacing lever 115 having its other end loosely connected with the feed bar 116 by being located in a suitable notch or slot therein, as illustrated in Fig. 11.  
 35 The feed bar is thus longitudinally moved to cause the type wheel and carriage to be carried forward one space when the spacing magnet is actuated, the spacing bar 114 being disengaged from the spacing lever when  
 40 the detaching incline 203 engages the detaching pin 202 so as to swing the bar outward against the action of its spring.

In order to prevent the actuation of the spacing magnet and connections just de-  
 45 scribed when the type wheel and carriage are at the end of the line a suitable safety device may be employed in the form of the feed safety bar 20 indicated in Figs. 1, 7 and 11, as being pivotally connected to the control lever 1. This bar 20 may be provided  
 50 with suitable projections or lugs loosely engaging the lower end of the spacing bar 114 so as to swing the same out of engagement with the spacing lever 115 when the control  
 55 lever has been swung outward by the control bar 16 as the feed carriage and type wheel reach the end of the line. Under these circumstances, the safety feed bar 20 will also engage and close the spring contacts  
 60 142 so that if under these conditions the controller arm 112 assumed the position indicated in Fig. 11 to actuate the spacing magnet, the spacing bar actuated by this magnet would be prevented from operating the feed  
 65 bar and space feed and the closure of the

contacts 142 would thereupon energize the paper feed magnet 35 to feed the paper up one line and return the feed carriage and type wheel to the beginning of the line as will be described.

The oscillating feed arm 194 described in  
 70 connection with Fig. 2 as intermittently rotating the feed roll 135 is pivoted by the pin 195 to the connector 23 which may be piv-  
 75 oted at its lower end to the feed lever 191 mounted on the pin 192 in the frame and carrying a suitable cam follower 193 at its lower end to cooperate with the feed cam 40  
 80 so that for every revolution of the feed cam the feed arm will be oscillated and the feed roll advanced through the space of one printed line. The feed cam 40 as indicated  
 85 in Figs. 8 and 9 is operated by a one-revolution stop clutch 46 of any desired construction whenever the paper feed clutch lever  
 42 is withdrawn from the pawl 41 of the clutch. The arm 13 of this lever 42 pivoted  
 90 to the frame cooperates as indicated in Fig. 1 with the paper feed bar 34 having if desired a pivotal connection with the armature  
 95 of the paper feed magnet 35 so as to give it a momentary oscillation when the magnet is energized in the same general way as the spacing magnet described. The upper lateral  
 100 extension of the hook bar 14 indicated in Fig. 1 as slidably mounted on the frame member 60 rests, as is indicated over the paper feed lever 191 so that when this lever  
 105 is actuated the hook bar is raised and similarly raises the clutch lever hook 3 pivoted  
 110 by the pin 4 to the extension of the return clutch lever 2. In this way when the paper is fed up a line the return clutch is operated by its lever and the type wheel and carriage  
 115 return to the beginning of the line. In order to prevent a feed of the carriage in this direction when the feed carriage has already  
 120 been returned to the beginning of the line as when the paper is being fed up a number of lines to exhibit the printed matter thereon,  
 125 a suitable return guard may be provided in the form, for instance, of the projecting guard or finger 5 shown in dotted lines in Fig. 1 secured to the lower depending end of  
 130 the clutch lever hook 3 and in the path of the feed carriage. Thus when the feed carriage is at the beginning of the line the re-  
 135 turn guard is engaged thereby and the clutch lever hook swung about its pin 4 so that its upper end is swung out of the path of the  
 140 hook bar 14 and kept in this inoperative position so long as the feed carriage is at the beginning of the line.

In the position indicated in Fig. 1, the  
 145 end of the actuating lever 48 lies as indicated beneath the feed hook 6 so that as described the oscillation of this actuating  
 150 lever when any letter is printed raises the feed hook and advances the feed carriage and type wheel one space along the line.



When, however, the carriage has reached the last space in the line the collar 19 on the control bar is engaged by the stop 18, thereby slightly moving the control bar 16 and connected control lever 1, the pin 83 swinging in the slot 84 in the return clutch lever 2 without moving the lever. This movement of the control lever correspondingly moves the links 9 and 11 pivoted to the feed hook 6 and to the paper feed hook 12 whose upper end is pivoted to the paper feed clutch lever 42, 13. In this way these hooks are laterally displaced to a sufficient extent so that the end of the actuating lever 48 when it rises engages the paper feed hook 12 instead of the feed hook 6. Thus when a character is printed at the end of the line instead of feeding forward the type wheel and carriage another space, the paper feed mechanism is actuated by the actuating lever 48 through the connections described and the return clutch mechanism is also operated through hook bar 14, clutch lever hook 3 and return clutch lever 2 so as to return the carriage to the beginning of the line.

Any desired inking mechanism may be employed to properly ink the character printed upon the web. If desired, this may be accomplished by keeping the characters on the type wheel constantly inked by suitable inking devices mounted on the carriage and indicated in Fig. 3. The ink fountain 166 is shown as supported from the carriage 138 and provided with a supply roll 120 journaled within the same. The inking roll 122 may as indicated be loosely journaled in the fountain by having its journals mounted in suitable slots therein so that it can properly engage the type wheel characters whenever for example the doctor roll 121 engages the same, this doctor roll being if desired mounted in suitable swinging arms 124 and pressed between the supply and inking rolls by the springs 123.

Having described this invention in connection with an illustrative embodiment thereof, to the details of which disclosure the invention is not of course to be limited, what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. In telegraph printers, a paper web supply, a paper feeding device to feed said paper and form an exposed face thereon, a drive shaft, a type shaft, frictional gearing normally tending to rotate said type shaft from said drive shaft, an index wheel provided with notches on said type shaft, rows of stop pins on both sides of said index wheel, a type wheel provided with characters mounted on said type shaft to rotate therewith and longitudinally movable thereon, a selector cooperating with said type shaft and having a plurality of rows of con-

tacts, a contact arm having a plurality of contact springs mounted on said type shaft to engage said selector contacts, a sunflower controller adapted to be connected with line wires energized by electrical impulses, the contacts of said controller being electrically connected with said selector contacts, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a pivoted latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding selector contact spring, a detacher to detach said latches from said stops and reset the same, a pneumatic cushioning cylinder, a piston in said cylinder connected with said latch plate and a connected locking pawl cooperating with the notches of said index wheel, a printing hook cooperating with said locking pawl, a printing stop clutch operated by said printing hook, a cam shaft controlled by said clutch, releasing connections between said printing hook and said clutch, a lever actuator operated from said shaft and means on said cam shaft to operate the resetting device, a printing platen cooperating with said paper web and connections to operate said platen from the printing clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said feed bar, control means operated from said carriage to bring said feed hook and said paper feed hook selectively into cooperation with the actuator, and return guard means operated at the beginning of a line to prevent the return gear being operated.

2. In telegraph printers, a paper web supply, a paper feeding device to feed said paper and form an exposed face thereon, a drive shaft, a type shaft, frictional gearing normally tending to rotate said type shaft from said drive shaft, an index wheel provided with notches on said type shaft, rows of stop pins on both sides of said index wheel, a type wheel provided with characters mounted on said type shaft to rotate therewith and longitudinally movable thereon, a selector cooperating with said type shaft and having a plurality of rows of contacts, a contact arm having a plurality of contact springs mounted on said type shaft to engage said selector contacts, a sunflower controller adapted to be connected with line wires energized by electrical impulses, the contacts of said controller being electrically connected with said selector contacts, a feed shaft, a carriage connected to said feed shaft and the type wheel to longitudinally move



said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a movable latch plate, a plurality of latches on said latch plate each co-  
 5 operating with a set of stops on the index wheel, a latch magnet controlling each latch and connected with a corresponding selector contact device and a cushioning device connected with said latch plate, a printing  
 10 clutch, connections operating said clutch on the operation of the latch mechanism, an actuator operated from said clutch, a printing platen coöperating with said paper web, connections to operate said platen from the  
 15 printing clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said feed  
 20 bar, and control means operated from said carriage to bring said feed hook and said paper feed hook selectively into coöperation with the actuator.

3. In telegraph printers, a drive shaft, a  
 25 type shaft, frictional gearing normally tending to rotate said type shaft from said drive shaft, an index wheel provided with notches on said type shaft, rows of stop pins on both sides of said index wheel, a type wheel  
 30 provided with characters mounted on said type shaft to rotate therewith and longitudinally move thereon, a selector coöperating with said type shaft and having a plurality of rows of contacts, a contact arm  
 35 having a plurality of contact springs mounted on said type shaft to engage said selector contacts, a sunflower controller adapted to be connected with line wires energized by electrical impulses, the contacts of said con-  
 40 troller being electrically connected with said selector contacts, a pivoted latch plate, a plurality of latches on said latch plate each coöperating with a set of stops on the index wheel, a latch magnet actuating each latch  
 45 and connected with the corresponding selector contact device, a detacher to detach said latches from said stops and reset the same, a pneumatic cushioning cylinder co-  
 50 operating with said latch plate, a piston in said cylinder connected with said latch plate and a locking pawl connected with and actuated by said cushioning cylinder.

4. In telegraph printers, a drive shaft, a  
 55 type shaft, frictional gearing normally tending to rotate said type shaft from said drive shaft, an index wheel provided with notches on said type shaft, rows of stop pins on both sides of said index wheel, a type wheel provided with characters mounted on said type  
 60 shaft to rotate therewith and longitudinally move thereon, a selector having a plurality of sets of contacts, a contact member connected with said type shaft and carrying a plurality of contact devices to coöperate  
 65 with said sets of contacts, a controller con-

nected with said selector and adapted to be energized by electrical impulses, a pivoted latch plate, a plurality of latches on said latch plate each coöperating with a set of stops on the index wheel, a latch magnet  
 70 actuating each latch and connected with the corresponding selector contact device, a detacher to detach said latches from said stops and reset the same, a pneumatic cushion cylinder coöperating with said latch plate, a  
 75 piston in said cylinder connected with said latch plate and a locking pawl connected with and actuated by said cushioning cylinder.

5. In telegraph printers, a drive shaft, a  
 80 type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said type shaft, a type wheel provided with char-  
 85 acters mounted on said type shaft to rotate therewith and be longitudinally moveable thereon, a selector having a plurality of sets of contacts, a contact member connected with said type shaft and carrying a plural-  
 90 ity of contact devices to coöperate with said sets of contacts, a controller connected with said selector and adapted to be energized by electrical impulses, a pivoted latch plate, a plurality of latches on said latch plate  
 95 each coöperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding selector contact device, a detacher to detach said latches from said stops and reset the  
 100 same, a pneumatic cushioning cylinder co- operating with said latch plate, a piston in said cylinder connected with said latch plate and a locking pawl connected with and actuated by said cushioning cylinder.

6. In telegraph printers, a drive shaft, a  
 105 type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said  
 110 type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and be longitudinally moveable thereon, a selector having a plurality of sets of contacts, a contact member connected  
 115 with said type shaft and carrying a plurality of contact devices to coöperate with said sets of contacts, a controller connected with said selector and adapted to be energized by electrical impulses, a movable latch plate,  
 120 a plurality of latches on said latch plate each coöperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding contact device of the selector, a cushioning  
 125 member connected with said latch plate and a locking pawl to engage the index wheel operatively connected with said cushioning device.

7. In telegraph printers, a drive shaft, a 130



type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and be longitudinally movable thereon, a selector having a plurality of sets of contacts, a contact member connected with said type shaft and carrying a plurality of contact devices to cooperate with said sets of contacts, a controller connected with said selector and adapted to be energized by electrical impulses, a movable latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet controlling each latch and connected with a corresponding selector contact device and a cushioning device connected with said latch plate.

8. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and be longitudinally movable thereon, a selector having a plurality of sets of contacts corresponding in number with the stops on the index wheel and the characters on the type wheel, a contact member connected with said type shaft and carrying a plurality of contact devices to cooperate with said sets of contacts, a controller connected with said selector and having a number of contacts in excess of said selector contacts to provide control contacts and circuits for the spacing, paper feeding and motor control devices, a movable latch plate a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding contact device of the selector, a cushioning member connected with said latch plate and a locking pawl to engage the index wheel operatively connected with said cushioning device.

9. In telegraph printers, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to be rotated thereby and move longitudinally thereof, a selector having a plurality of sets of contacts corresponding in number with the stops on the index wheel and the characters on the type wheel, a contact member connected with said type shaft and carrying a plurality of contact devices to cooperate with said sets of contacts, a controller connected with said selector and having a number of contacts in excess of said

selector contacts to provide control contacts and circuits for the printer, a movable latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet controlling each latch and connected with a corresponding selector contact device and a cushioning device connected with said latch plate.

10. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a selector having contacts corresponding in number with the type wheel characters, a contact member connected with the type shaft and cooperating with the selector contacts, a controller connected with said selector and having a number of contacts in excess of the selector contacts to provide control contacts and circuits for the printer, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate and a locking pawl engaging said index wheel and operatively connected with said cushioning device.

11. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a selector having contacts, a contact member connected with said type shaft and cooperating with said contacts, and a controller having contacts connected to the selector contacts and adapted to be actuated by electrical impulses, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate and a locking pawl engaging said index wheel and operatively connected with said cushioning device.

12. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a selector having contacts, a contact member connected with said type shaft and cooperating with said contacts, and a controller having contacts connected to the selector contacts and adapted to be actuated by electrical impulses, a latch plate, a latch on said latch plate cooperating with the stops on the index wheel and normally tending to move



into engagement therewith, means connected with the selector to actuate said latch, and resetting means to disengage said latch from said stops and reset the same.

13. In telegraph printers, a drive shaft, a web roll supplying a web of paper, a tension device for said web, a paper feed device operated from said drive shaft to feed said web and form an exposed bulletin face, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft to rotate therewith and move longitudinally thereon, an electrical controller and connected means engaging said stops for selectively controlling said type wheel and printing characters therefrom.

14. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft to rotate therewith and move longitudinally thereon, a selector having contacts adapted to be selectively energized, a contact device connected to said type shaft to cooperate with said contacts, a latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, and resetting means to disengage said latch from said stops and reset the same.

15. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft to rotate therewith and move longitudinally thereon, a selector having contacts adapted to be selectively energized, a contact device connected to said type shaft to cooperate with said contacts, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate and a locking pawl engaging said index wheel and operatively connected with said cushioning device.

16. In telegraph printers, a drive shaft, a web roll supplying a web of paper, a tension device for said web, a paper feed device operated from said drive shaft to feed said web and form an exposed bulletin face, a type shaft, connections normally tending to rotate said type shaft, an index wheel provided with stops connected with said type shaft, a controller and means for selectively

controlling said type wheel and printing characters therefrom.

17. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, a selector having contacts adapted to be selectively energized, a contact device connected to said type shaft to cooperate with said contacts, a latch plate, a latch on said latch plate cooperating with the stops on the index wheel and normally tending to move into engagement therewith, means connected with the selector to actuate said latch, and resetting means to disengage said latch from said stops and reset the same.

18. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, a selector having contacts adapted to be selectively energized, a contact device connected to said type shaft to cooperate with said contacts, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate and a locking pawl engaging said index wheel and operatively connected with said cushioning device.

19. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, a selector having contacts corresponding in number with the type wheel characters, a contact member connected with the type shaft and cooperating with the selector contacts, a controller connected with said selector and having a number of contacts in excess of the selector contacts to provide control contacts and circuits for the printer, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate and a locking pawl engaging said index wheel and operatively connected with said cushioning device.

20. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a



large type wheel having bulletin characters thereon mounted on said type shaft to rotate therewith and move longitudinally thereon, a selector having contacts corresponding in number with the type wheel characters, a contact member connected with the type shaft and cooperating with the selector contacts, a controller connected with said selector and having a number of contacts in excess of the selector contacts to provide control contacts and circuits for the printer, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate, a locking pawl engaging said index wheel and operatively connected with said cushioning device, a printing platen cooperating with the paper web and type wheel characters, a printing rod and toggle connections between said rod and printing platen, means to operate said printing rod from the printing means and an aliner operated by said means to engage the stops on said index wheel and holding said type wheel in alinement while said printing platen is in engagement.

21. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft to rotate therewith and move longitudinally thereon, a selector having contacts corresponding in number with the type wheel characters, a contact member connected with the type shaft and cooperating with the selector contacts, a controller connected with said selector and having a number of contacts in excess of the selector contacts to provide control contacts and circuits for the printer, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate, a locking pawl engaging said index wheel and operatively connected with said cushioning device, a printing platen cooperating with the paper web, and connections to operate said platen from the printing means and an aliner operated by said connections to hold said type wheel in alinement while said platen is in engagement.

22. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, a selector having contacts adapted to be selectively

energized, a contact device connected to said type shaft to cooperate with said contact, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means connected with the selector to actuate said latch, a cushioning device connected with said latch plate, a locking pawl engaging said index wheel and operatively connected with said cushioning device, a printing platen cooperating with the paper web, connections to operate said platen from the printing means and an aliner operated by said connections to hold said type wheel in alinement while said platen is in engagement.

23. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, a selector having contacts adapted to be selectively energized, a contact device connected to said type shaft to cooperate with said contacts, a latch cooperating with the stops on said index wheel and means actuated by the selector to operate said latch, a printing platen cooperating with the paper web, connections to operate said platen and an aliner operated by said connections to hold said type wheel in alinement while said platen is in engagement.

24. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, a selector having contacts adapted to be selectively energized, a contact device connected to said type shaft to cooperate with said contacts, a fluid cushioned latch cooperating with the stops on said index wheel, means actuated by the selector to operate said latch, a printing platen cooperating with said paper web and connections to operate said platen.

25. In telegraph printers, a drive shaft, a type shaft, frictional gearing normally tending to rotate said type shaft from said drive shaft, an index wheel provided with notches on said type shaft, rows of stop pins on each side of said index wheel, electrical selector contact devices connected with said type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and longitudinally movable thereon, a pivoted latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding selector contact device, a detacher to detach said latches from said stops and reset the same, a pneumatic



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cushioning cylinder cooperating with said latch plate, a piston in said cylinder connected with said latch plate, and a locking pawl connected with and actuated by said cushioning cylinder.

26. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and be longitudinally movable thereon, electrical selector contact devices connected with said type shaft, a pivoted latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding selector contact device, a detacher to detach said latches from said stops and reset the same, a pneumatic cushioning cylinder cooperating with said latch plate, a piston in said cylinder connected with said latch plate, and a locking pawl connected with and actuated by said cushioning cylinder.

27. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and be longitudinally movable thereon, electrical selector contact devices connected with said type shaft, a movable latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet actuating each latch and connected with the corresponding contact device of the selector, a cushioning member connected with said latch plate and a locking pawl to engage the index wheel operatively connected with said cushioning device.

28. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having notches and a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to rotate therewith and be longitudinally movable thereon, electrical selector contact devices connected with said type shaft, a movable latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet controlling each latch and connected with a corresponding selector contact device and a cushioning device connected with said latch plate.

29. In telegraph printers, a drive shaft, a type shaft, connections normally tending to

rotate said type shaft from said drive shaft, an index wheel having a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to be rotated thereby and move longitudinally thereof, electrical selector contact devices connected with said type shaft, a movable latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet controlling each latch and connected with a corresponding selector contact device and a cushioning device connected with said latch plate.

30. In telegraph printers, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel having a plurality of rows of stops connected with said type shaft, a type wheel provided with characters mounted on said type shaft to be rotated thereby and move longitudinally thereof, a movable latch plate, a plurality of latches on said latch plate each cooperating with a set of stops on the index wheel, a latch magnet actuating each latch, a cushioning member connected with said latch plate and a locking pawl to engage the index wheel operatively connected with said cushioning device.

31. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a movable latch plate, a latch on said latch plate cooperating with the stops on the index wheel, means to actuate said latch, a cushioning device connected with said latch plate and a locking pawl engaging said index wheel and operatively connected with said cushioning device.

32. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a latch plate, a latch on said latch plate normally tending to move into engagement with the stops on the index wheel, means to actuate said latch, and resetting means to disengage said latch from said stops and reset the same.

33. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with a plurality of sets of separately positioned and independently acting stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a plurality of latches



each coöperating with the corresponding set of stops on said index wheel, a controller and selector means actuated by said controller to operate said latches.

34. In telegraph printers, a paper feed device, a type shaft and connected drive shaft, a type wheel on said type shaft, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and the type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook and magnet to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said feed bar, control means operated from said carriage to bring said feed hook and said paper feed hook selectively into coöperation with the actuator, a return guard connected with said feed hook and lying in the path of said carriage to hold said hook out of engagement while the carriage is at the beginning of a line and a feed safety bar connected with the control means to restrain the operation of the spacing magnet and actuate the paper feed magnet when the carriage is at the end of a line.

35. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said feed bar, control means operated from said carriage to bring said feed hook and said paper feed hook selectively into coöperation with the actuator, and a feed safety bar to restrain the operation of the spacing magnet when the carriage is at the end of a line and instead actuate the paper feeder.

36. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and the type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the se-

lecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said feed bar, control means operated from said carriage to bring said feed hook and said paper feed hook selectively into coöperation with the actuator, and a feed safety device having means to actuate the same adjacent the end of a line and restraining the forward operation of the feed gear.

37. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said bar, control means operated from said carriage to bring said feed hook and said paper feed hook selectively into coöperation with the actuator, and safety devices operated at the end of a line to prevent further advance feed of the carriage.

38. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selector means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, means comprising a feed hook to operate said feed bar, control means operated from said carriage to bring said feed hook and said paper feed hook selectively into coöperation with the actuator, and return guard means operated at the beginning of a line to prevent the return gear being operated.

39. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, a controller and connected means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and the type wheel to longitudinally move said type wheel from said feed shaft, feed gear to op-



erate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook and a paper feed magnet to operate said paper feeder, a feed bar to operate the feed gear, a spacing magnet actuated from said controller and a feed hook to operate said feed bar, control means operated from the carriage to selectively bring said feed hook and said paper feed hook into coöperation with the actuator, a return guard connected with said feed hook and lying in the path of said carriage to hold said hook out of engagement while the carriage is at the beginning of a line and a feed safety device connected with the control lever to restrain the operation of the spacing magnet and actuate the paper feed magnet when the carriage is at the end of a line.

40. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, a controller and connected means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook and magnet to operate said paper feeder, a feed bar to operate the feed gear, a spacing magnet actuated from said controller and a feed hook to operate said feed bar, control means operated from the carriage to selectively bring said feed hook and said paper feed hook into coöperation with the actuator, and a feed safety bar to restrain the operation of the spacing magnet when the carriage is at the end of a line and instead actuate the paper feed magnet.

41. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selector means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, a spacing magnet and a feed hook to operate said feed bar, control means operated from the carriage to selectively bring said feed hook and said paper

feed hook into coöperation with the actuator, and a safety device having means to actuate the same adjacent the end of a line and restraining the operation of the spacing magnet.

42. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, a controller, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, a spacing magnet actuated from said controller and a feed hook to operate said feed bar, control means operated from the carriage to selectively bring said feed hook and said paper feed hook into coöperation with the actuator, and a safety device operated at the end of a line to prevent further advance feed of the carriage.

43. In telegraph printers, a drive shaft, a paper feed device, a type shaft, a type wheel on said type shaft, a controller, means for selectively operating said type wheel, a feed shaft, a carriage connected to said feed shaft and type wheel to longitudinally move said type wheel from said feed shaft, feed gear to operate said feed shaft from the drive shaft, a printing clutch, connections operating said clutch on the operation of the selecting means, an actuator operated from said clutch, a paper feeder to actuate the paper feed device, means comprising a paper feed hook to operate said paper feeder, a feed bar to operate the feed gear, a spacing magnet actuated from said controller and a feed hook to operate said feed bar, control means operated from the carriage to selectively bring said feed hook and said paper feed hook into coöperation with the actuator, and return guard means operated at the beginning of a line to prevent the return gear being operated.

44. In telegraph printers, a web roll, a tension roll floating in a loop of the web from said web roll, swinging arms in which said tension roll is mounted, a brake restraining said web roll and a brake rod to be engaged by one of said tension roll arms when said loop is decreased to thereby release said brake, guides around which said paper web passes, a feed roll and frictionally connected winding roll to rewind said web and form an exposed bulletin face thereon, a feeding pawl and feeding arm coöperating with said feed roll, a drive shaft, a type shaft, frictional connections normally tending to ro-



tate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon  
5 mounted on said type shaft to rotate therewith and move longitudinally thereon, and means for selectively operating said type wheel and printing characters therefrom.

45. In telegraph printers, a web roll, a  
10 tension roll floating in a loop of the web from said web roll, swinging arms in which said tension roll is mounted, a brake restraining said web roll and a brake rod to be engaged by one of said tension roll arms  
15 when said loop is decreased to thereby release said brake, guides around which said paper web passes, a feed roll and frictionally connected winding roll to rewind said web and form an exposed bulletin face thereon, a feeding  
20 pawl and feeding arm cooperating with said feed roll, a drive shaft, a type shaft, connections normally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said  
25 type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft, and means for selectively operating said type wheel and printing characters therefrom.

30 46. In telegraph printers, a web roll, a brake cooperating with said roll, a tension roll in a loop of the web from said web roll and controlling said brake, a feed roll and winding roll to rewind said web and form  
35 an exposed bulletin face thereon, paper feeding means cooperating with said feed roll, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said drive shaft, an index wheel  
40 provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft to rotate therewith and move longitudinally thereon, and means for se-  
45 lectively operating said type wheel and printing characters therefrom.

47. In telegraph printers, a web roll, a brake cooperating with said roll, a tension roll in a loop of the web from said web roll  
50 and controlling said brake, a feed roll and winding roll to rewind said web and form an exposed bulletin face thereon, paper feeding means cooperating with said feed roll, a drive shaft, a type shaft, connections nor-  
55 mally tending to rotate said type shaft from said drive shaft, an index wheel provided with stops connected with said type shaft and a large type wheel having bulletin characters thereon mounted on said type shaft,  
60 and means for selectively operating said type wheel and printing characters therefrom.

48. In telegraph printers, a drive shaft, a type shaft, frictional connections normally  
65 tending to rotate said type shaft from said

drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a latch  
70 cooperating with the stops on said index wheel, a selecting device, means controlled by said selecting device to operate said latch and a fluid cushioning device connected with said latch.

49. In telegraph printers, an index wheel  
75 provided with stops, a connected type wheel having characters, a fluid cushioned latch device cooperating with the stops on said index wheel, a selector and connected means to actuate said latch device.  
80

50. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said  
85 drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a latch plate, a latch on said latch plate cooperating with the stops on the index wheel and nor-  
90 mally tending to move into engagement therewith, a selector, means connected with said selector to actuate said latch, a cushioning member connected with said latch plate, and resetting means to disengage said latch from said stops and reset the same.  
95

51. In telegraph printers, a drive shaft, a type shaft, frictional connections normally tending to rotate said type shaft from said  
100 drive shaft, an index wheel provided with stops connected with said type shaft and a type wheel having characters mounted on said type shaft to be rotated thereby, a latch cooperating with the stops on said index wheel, a selecting device, means actuated by  
105 said selecting device to operate said latch and a cushioning device positively connected with said latch.

52. In telegraph printers, an index wheel provided with stops, a connected type wheel having characters, a latch device coop-  
110 erating with the stops on said index wheel, a cushioning device positively connected with said latch device, a selector and means connected with said selector to actuate said latch device.  
115

53. In telegraph printers, an index wheel provided with stops, a large type wheel hav-  
120 ing bulletin characters thereon connected with said index wheel, a latch device cooperating with the stops on said index wheel, a cushioning device positively connected with said latch device, a selector and means connected with said selector to actuate said latch device.  
125

54. In telegraph printers, an index wheel,  
130 a connected type wheel having characters, a pneumatically cushioned latch device cooperating with said index wheel, a selector and means connected with said selector to actuate said latch device.  
135



55. In telegraph printers, an index wheel provided with stops, a connected type wheel having characters, a pneumatically cushioned latch device cooperating with the stops on the index wheel, a selector and means connected with said selector to actuate said latch device.

56. In telegraph printers, an index wheel, a connected type wheel having characters, a pneumatically cushioned latch device cooperating with said index wheel, means to selectively actuate said latch device and printing means to print from the selected characters on said type wheel.

57. In telegraph printers, an index wheel provided with stops, a connected type wheel having characters, a pneumatically cushioned latch device cooperating with the stops on the index wheel, means to selectively actuate said latch device, printing means to print from the selected characters on said type wheel, and an aliner operated by said printing means to hold said type wheel in alinement.

58. In telegraph printers, an index wheel provided with stops, a connected type wheel

having characters, a cushioned latch device cooperating with the stops on the index wheel, means to selectively actuate said latch device, printing means to print from the selected characters on said type wheel and an aliner engaging and holding said type wheel in alinement when said printing means operates.

59. In telegraph printers, an index wheel provided with stops, a connected large type wheel having bulletin characters, a latch device cooperating with the stops on said index wheel, a fluid cushioning device cooperating with said latch device and means to actuate said latch device.

60. In telegraph printers, an index wheel, a connected type wheel having characters, a fluid cushioned latch device cooperating with said index wheel and means to actuate said latch device.

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