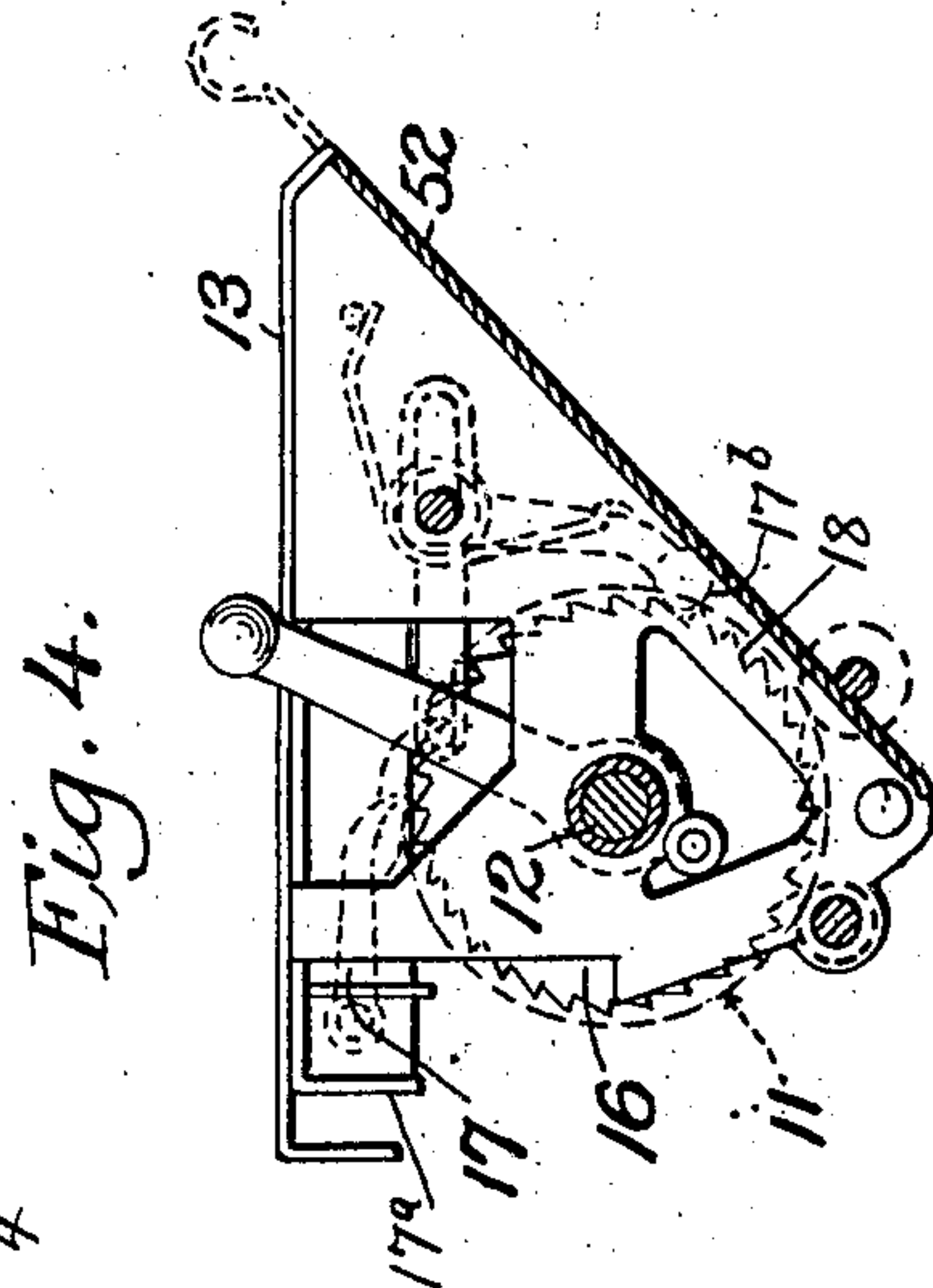
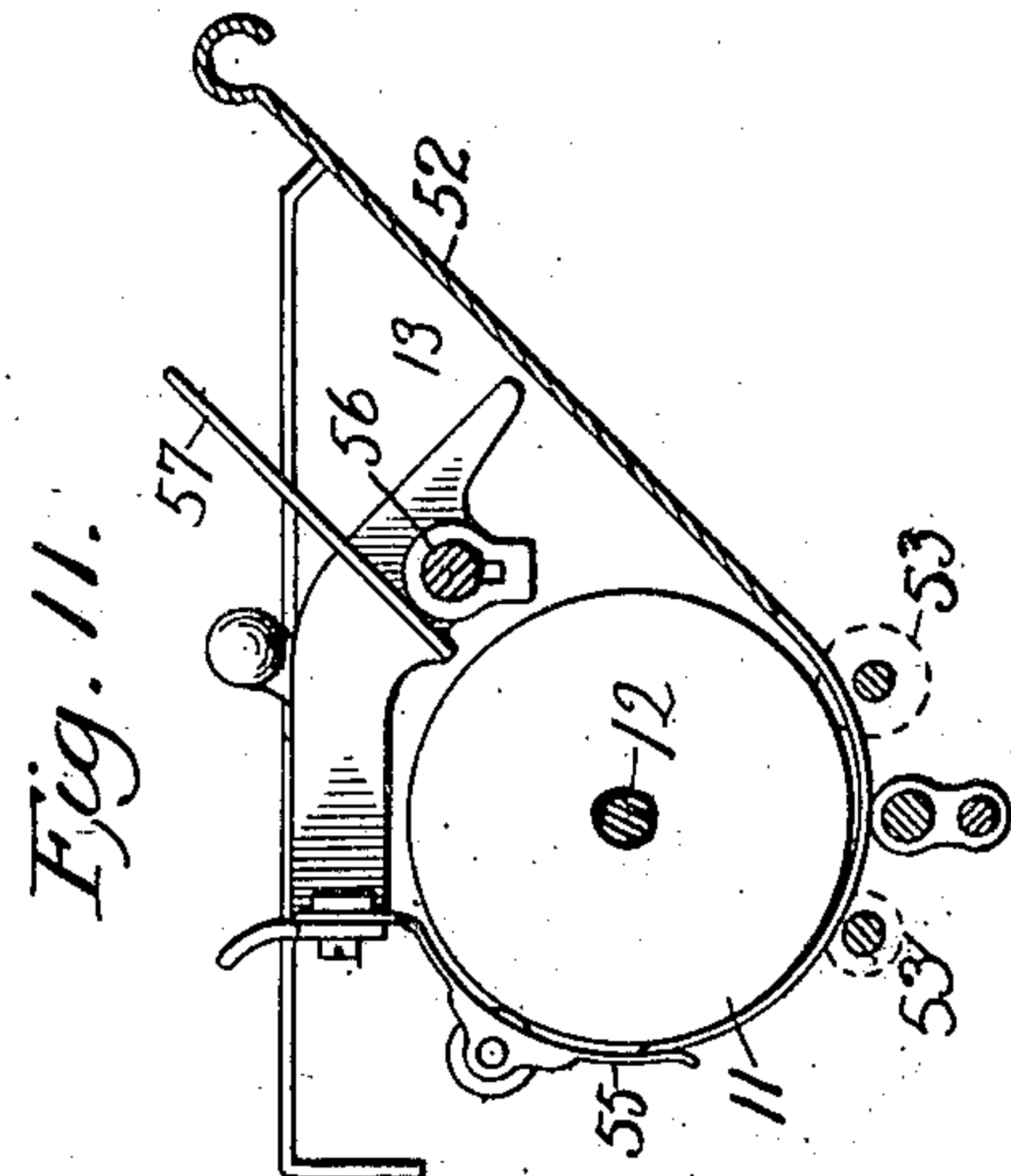
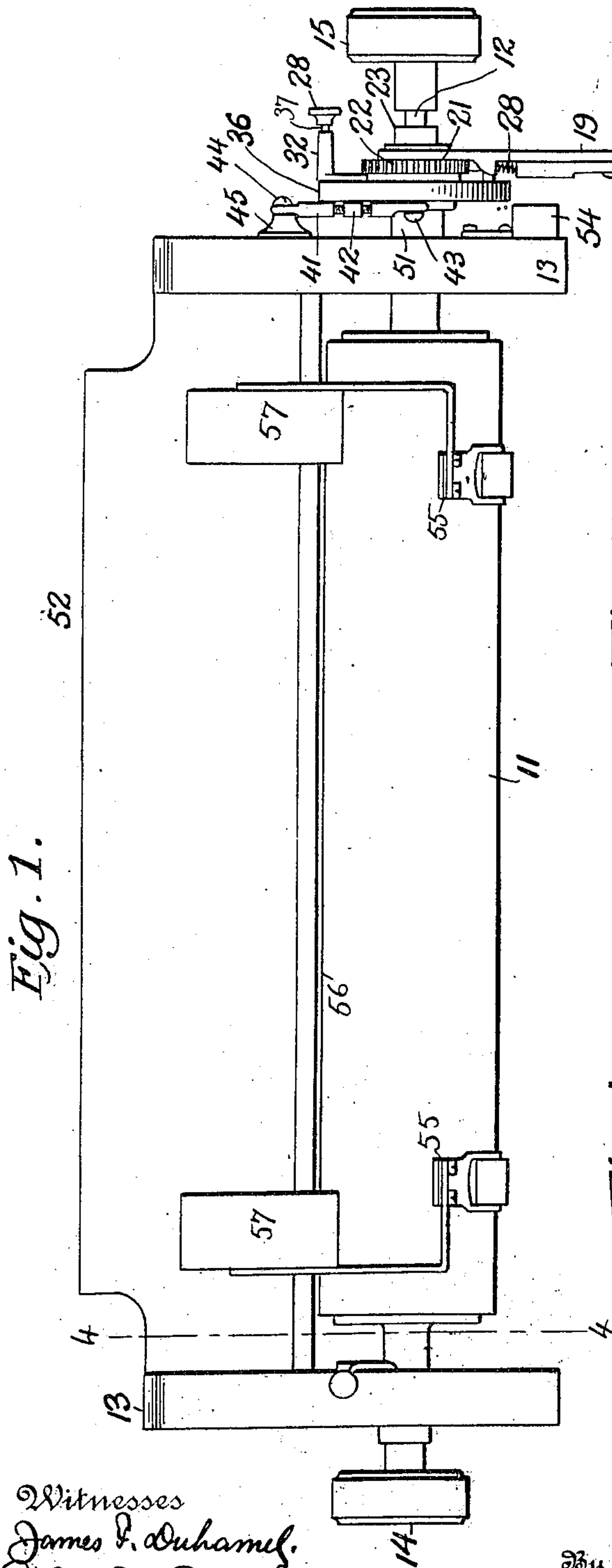


No. 819,785

PATENTED MAY 8, 1906.

H. S. McCORMACK.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 11, 1904.

3 SHEETS—SHEET 1.



Witnesses
James P. Duhamel.
Wm. W. MacLean.

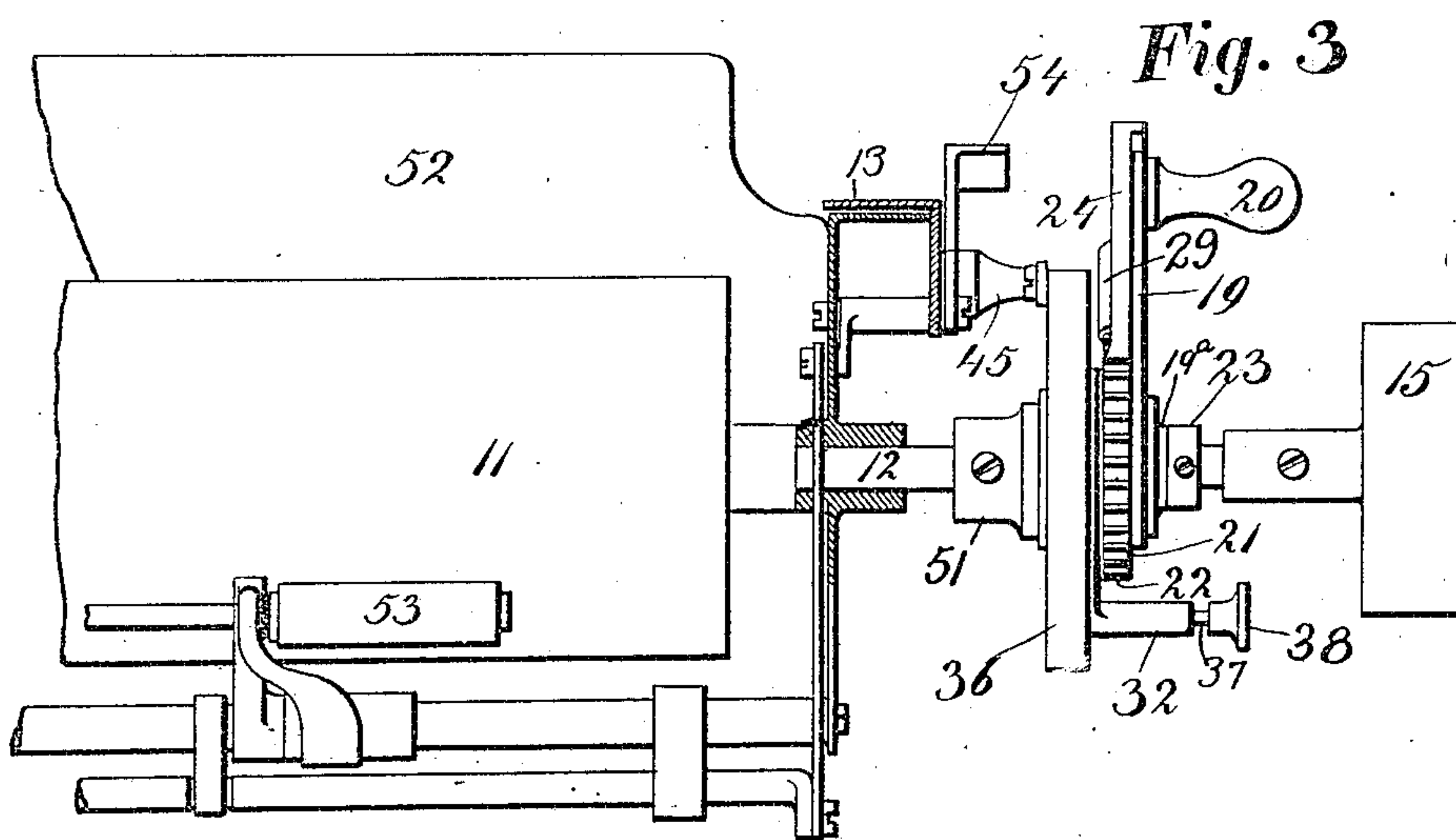
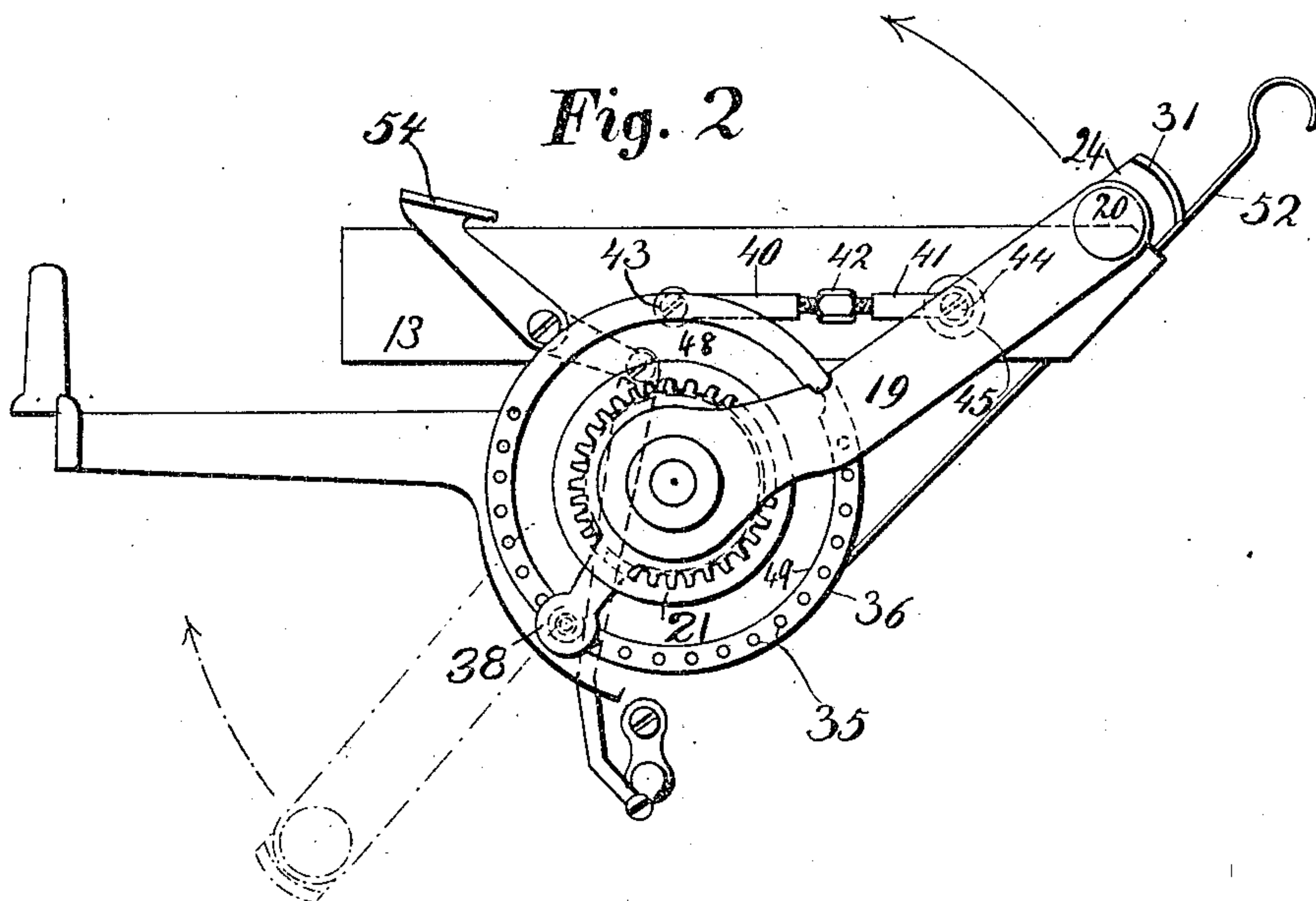
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TYPE WRITING MACHINE.
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5

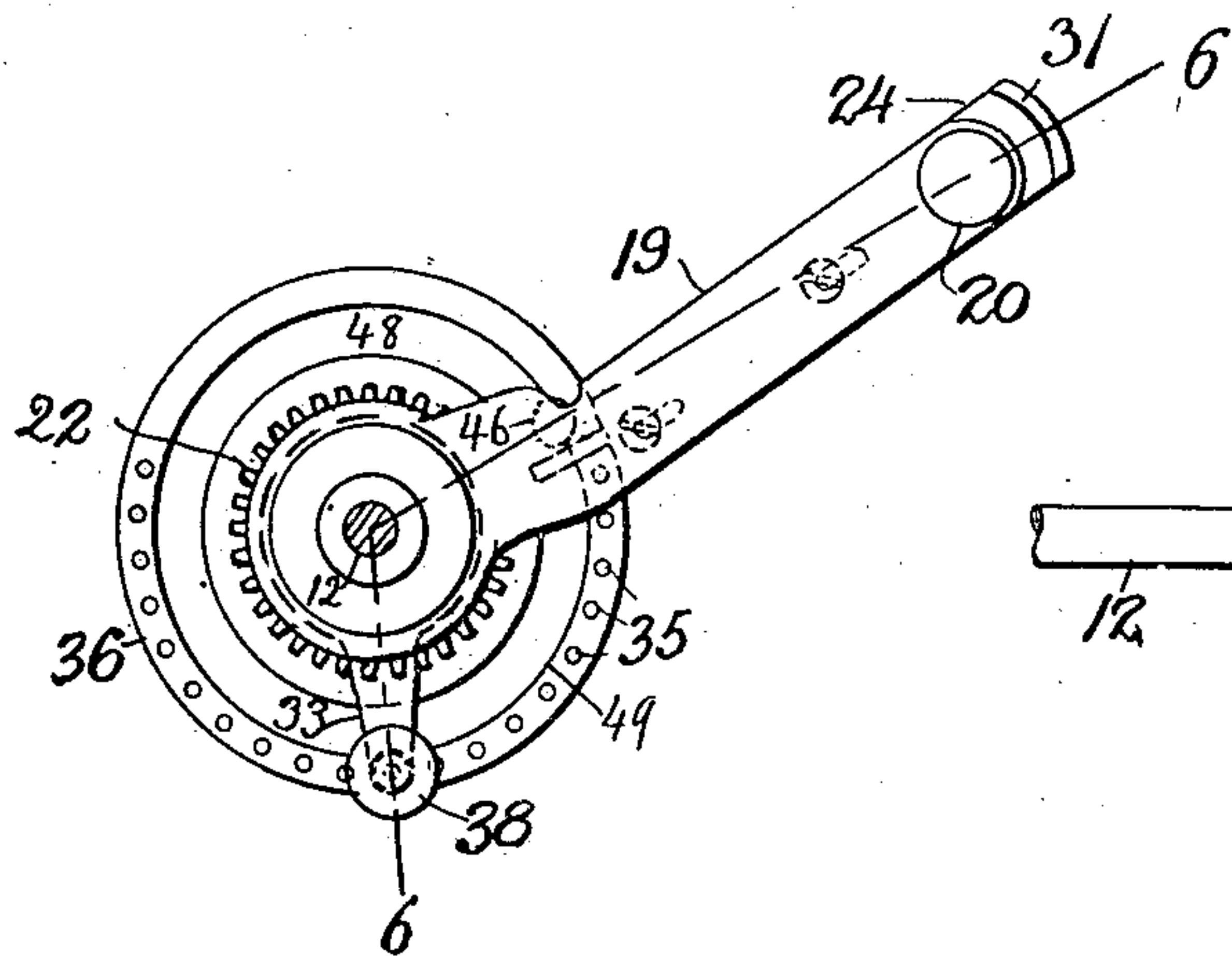


Fig. 6

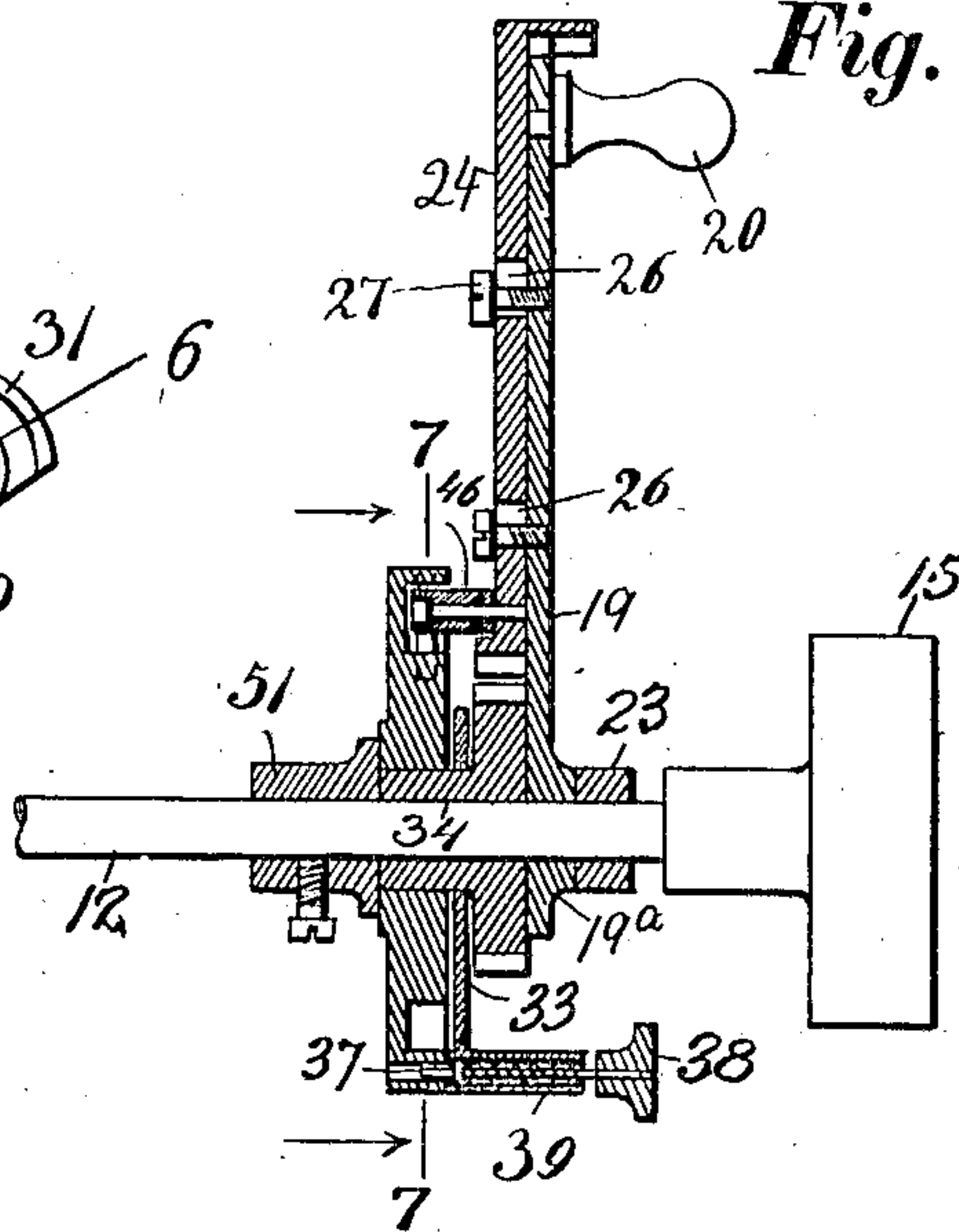


Fig. 7

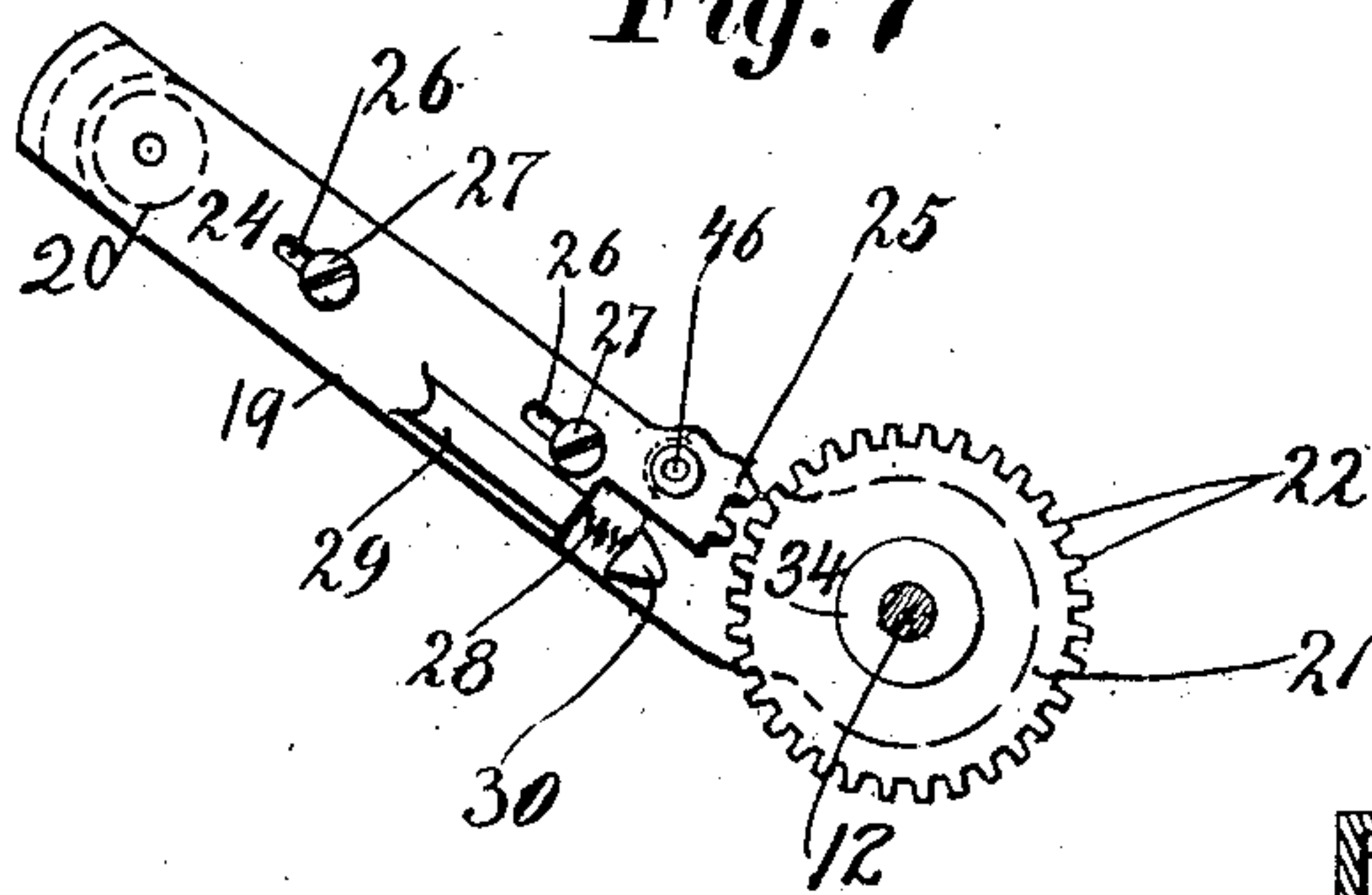


Fig. 8

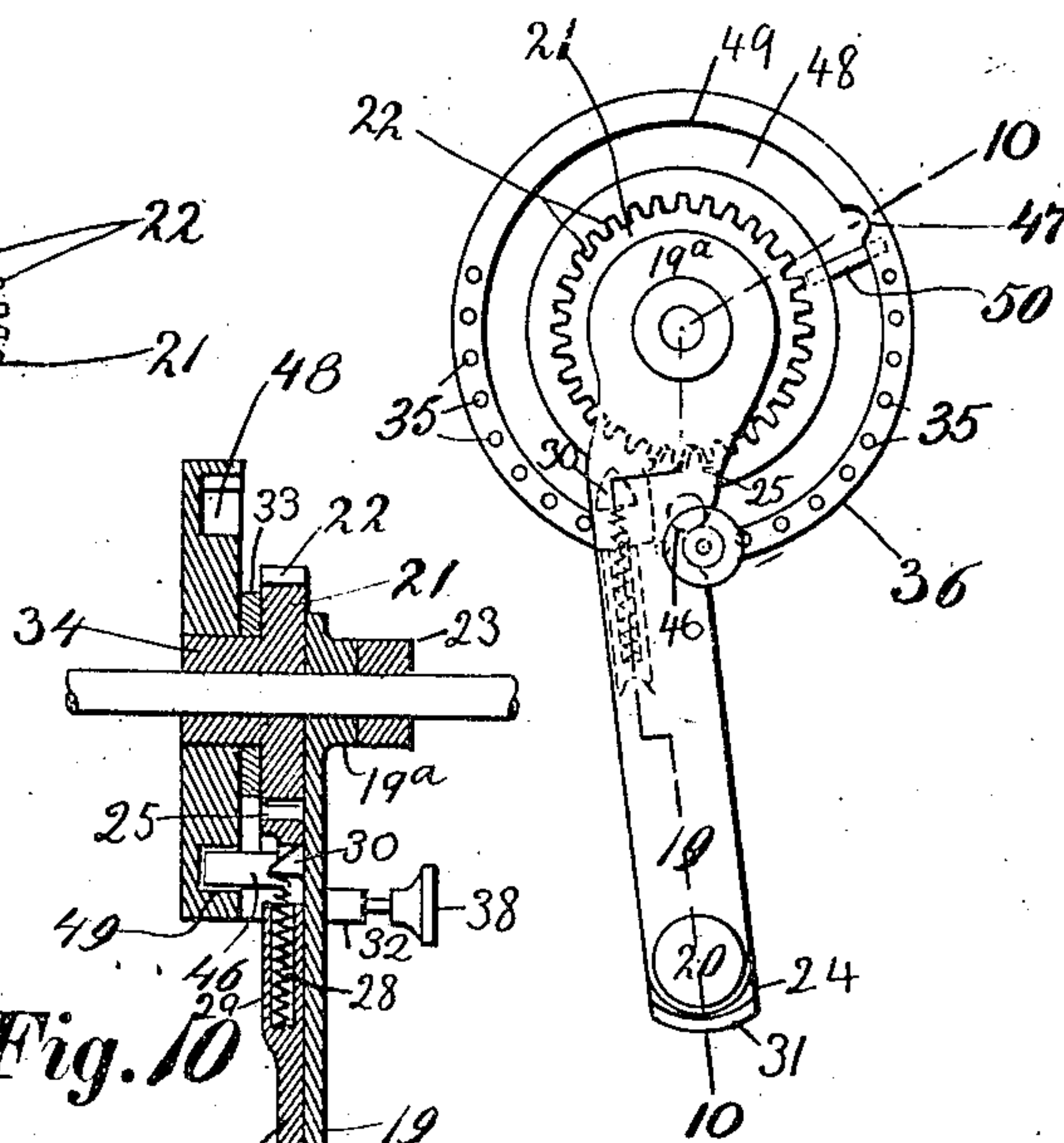


Fig. 9

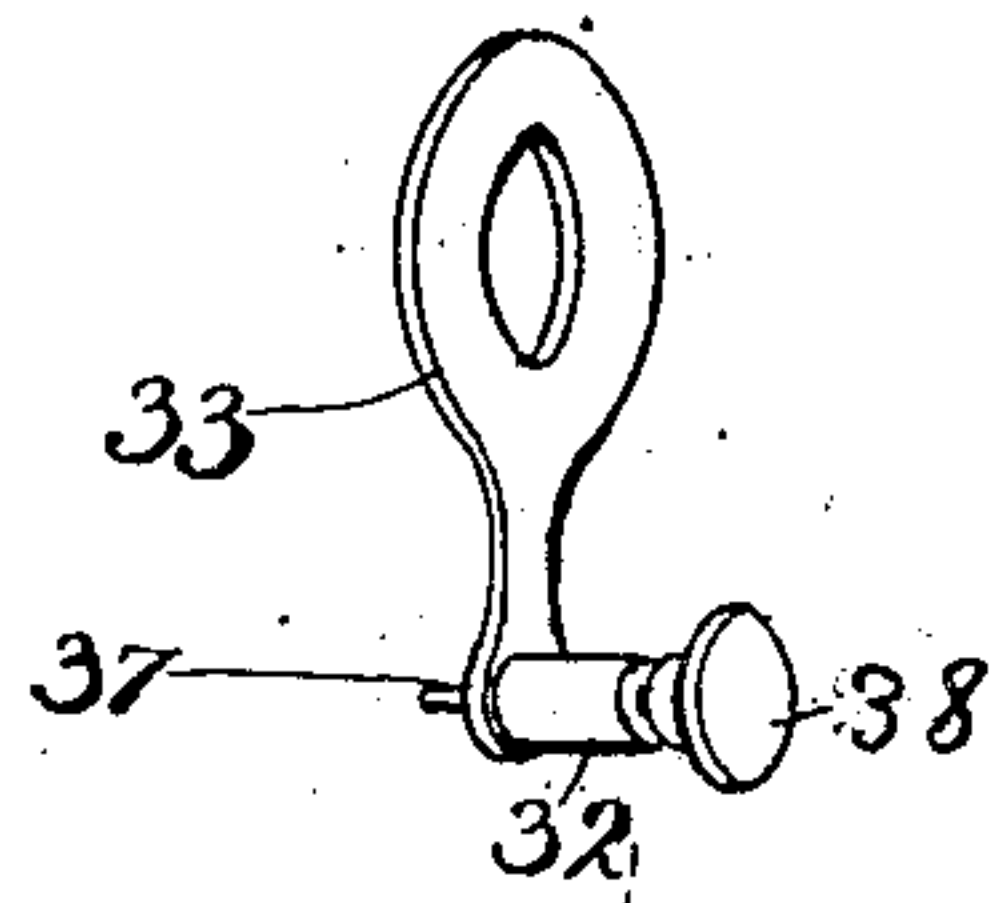
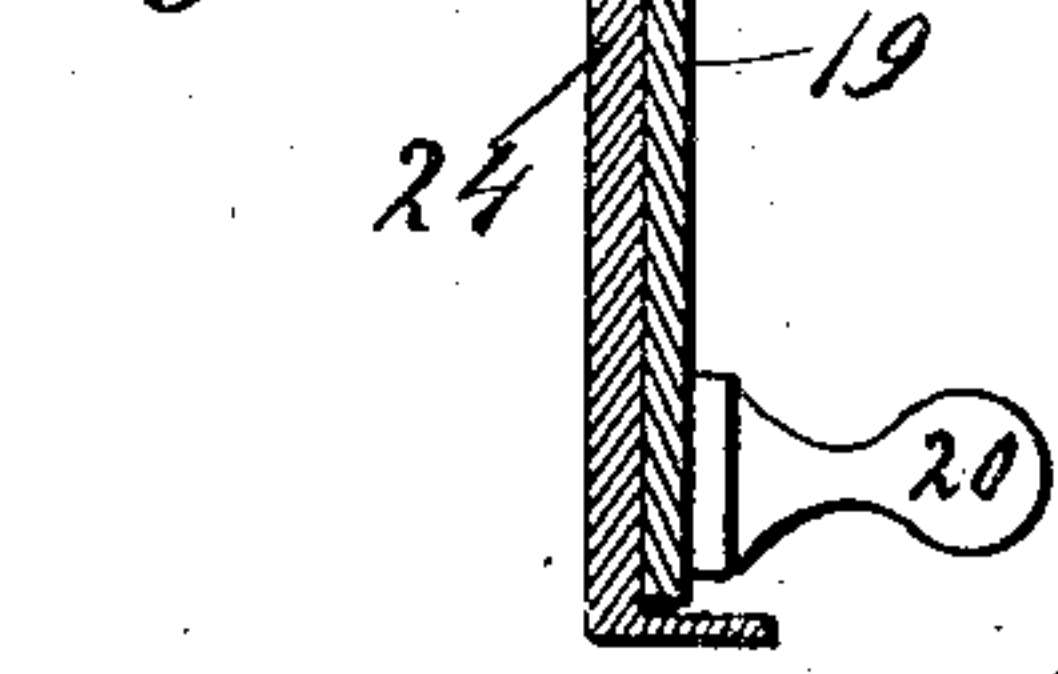


Fig. 10



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UNITED STATES PATENT OFFICE.

HARRY S. McCORMACK, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A COR-
PORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 819,785.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed October 11, 1904. Serial No. 227,998.

To all whom it may concern:

Be it known that I, HARRY S. McCORMACK, a citizen of the United States, residing in Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to the paper-feeding devices of type-writing machines; and one of its objects is to facilitate the recording of invoices or bills by the use of carbon-sheets in such a manner that carbon copies of several bills may succeed one another upon a single record-sheet without, however, leaving great spaces between the copies of the several bills. This operation is commonly known as "condensed charging," the bill, carbon, and record-sheet being inserted in the machine together, the bill type-written and removed, the carbon and the record-sheet remaining in the machine, and a fresh bill being inserted and type-written and then removed, and so on until the record-sheet is filled. It is usual to turn the platen backwardly, together with the record-sheet and carbon, to receive the new bill-head and then to turn the platen forwardly until it is in position for writing the first line upon the bill, which first line will properly succeed the lines theretofore written upon the record-sheet. In order to determine how far to turn the platen backward and forward, it is usual to employ a pair of coöperative line-scales, one adjustable relatively to the other, in connection with an index; but this necessitates frequent consultation of the scale, which is a tax upon the operator, and mistakes are likely to happen.

In using my improvements the platen may be rotated either by means of the usual line-spacing mechanism or by means of the usual platen-knobs, either forwardly or backwardly to an unlimited extent, while at any time by manipulating a special crank or lever the platen may be rotated back to receive a new bill and forwardly to bring the same to printing position, the limits of both back and forward movements of the platen being mechanically determined. Provision is also made whereby the back and forth rotation of the crank and platen may be varied at will to suit different kinds of bills.

A further object of my invention is to pre-

vent the record and carbon sheets from accidentally wrapping around the platen a second time—that is, to prevent the leading edges of said sheets after they feed up in front of and back over the platen from reëntering between the paper-shelf and the platen to pass around the platen again.

Other objects will hereinafter appear.

In the accompanying drawings, Figure 1 is a plan of platen and platen-frame of an Underwood type-writing machine, showing my improvements applied thereto. Fig. 2 is an end elevation of the parts seen at Fig. 1, the platen-actuating crank being shown in its normal idle position in full lines and in dotted lines at the limit of its throw. Fig. 3 is a front elevation, partly in section, of the right-hand end of the platen and platen frame or carriage with the parts in the positions seen at Fig. 2. Fig. 4 is a sectional elevation of the right-hand end of the platen-frame, showing the usual line-spacing devices. Fig. 5 is a side elevation of the crank and its appurtenances. Fig. 6 is a section taken at about the line 6 6 of Fig. 5. Fig. 7 is a section taken at about the line 7 7 of Fig. 6 and showing the reverse side of the crank. Fig. 8 is a view similar to Fig. 5, but showing the crank at the other end of its stroke. Fig. 9 is a perspective view of an adjustable stop-arm. Fig. 10 is a section taken at about the line 10 10 of Fig. 8. Fig. 11 is a sectional elevation of the platen, showing the improved paper-guiding fingers.

11 designates the usual cylindrical platen of an Underwood type-writing machine, fixed upon an axle 12, journaled in a platen-frame 13, the ends of the axle projecting from the platen-frame and having finger-wheels 14 fixed thereon. By means of either finger-wheel the platen may be rotated forwardly or backwardly to an unlimited extent. The platen is also provided with the usual line-spacing devices, including a line-spacing wheel 16, rigid with the platen and advanced intermittently by a pawl 17, which is operated in the usual manner by a slide 17^a and a lever, (not shown,) a spring-detent 17^b being employed to retain the line-space wheel by engaging the notches thereof and being adapted to ride over the teeth 18, with which said wheel is usually provided.

Mounted loosely upon the platen-axle 12

by means of a hub 19^a is a crank 19 of greater radius than the platen, and extending from said axle upwardly and rearwardly, so as not to be liable to be struck accidentally by the operator during the ordinary use of the machine and provided with a finger-piece or handle 20. Fixed to the platen-axle 12 is a wheel 21, having the same number of teeth 22 as the line-space wheel 16, the hub 19^a of the crank being confined between said wheel 21 and a collar 23, fixed upon the platen-axle. Extending along said crank is a bar 24, having at its lower or inner end teeth 25, Fig. 7, normally out of engagement with the teeth 22, but adapted to engage or clutch the same, said bar having longitudinal slots 26, whereby it is mounted upon shoulder-screws 27, screwed into the crank 19, a compression-spring 28 normally holding said bar out of engagement with said wheel 21, the bar being provided with a housing 29 for the spring and the latter bearing against a lug 30 upon the inner end of the crank.

Since the crank is normally unclutched to the wheel 21, the platen may be rotated forwardly or backwardly any desired distance, while said crank remains motionless or idle; but at any time the bar 24 may be pressed inwardly by means of a finger-piece 31, provided upon the outer end thereof, so that the teeth 25 engage the teeth of wheel 21, whereupon the crank may be swung forwardly by means of the finger-piece 20 and then back to normal position, the platen of course being caused to turn or oscillate with the crank.

The forward and downward throw of the crank may be limited by a stop 32, carried by an arm 33, that is pivoted loosely upon the hub 34 of wheel 21, whereby the stop may be swung to any desired position concentrically with the platen-axle. To hold the stop where adjusted, a circular rack is provided concentric with the platen-axle and consisting of a circular series or row of holes 35, formed in a disk 36 near its edge, the disk being fixed and the holes or notches being engageable by a stud or pin 37, which passes longitudinally through the stop 32 and is provided at its outer end with a head 38, whereby it may be withdrawn from the rack, a suitable spring 39, Fig. 6, surrounding said pin within said stop and serving to hold the pin in engagement with the selected hole 35. As many holes 35 may be provided as desired; but since the adjustment of the platen is usually less than an entire revolution it is not necessary in all cases to have the row of holes extend all the way around the disk, while the first hole (seen at the left-hand side of the disk at Fig. 5) may be quite a distance from the normal position of the crank, since in a front-strike machine the platen usually turns through about a third of a revolution from the feeding-in point to the printing-point.

The rack or disk 36 is stationary. It is

mounted upon the hub 34 of wheel 21; but the hub fits loosely in the bore of the disk, and the latter is prevented from rotating by means of a rod, Fig. 2, preferably consisting of two end pieces 40 41, connected by a turnbuckle 42 and attached by screw 43 to the disk and by screw 44 to a stud 45, projecting from the end of the platen-frame. By means of the turnbuckle the disk may be given fine rotative adjustment, so that when the crank and platen are arrested the usual line-space-wheel detent may be in full engagement with a notch in the line-space wheel, thus securing certainty of operation of the mechanism. The crank is clutched to the platen without causing either to rotate, and then by swinging the crank until arrested by the stop 32 the platen is rotated through an arc exactly equal to a predetermined number of line-spaces without liability of either overthrow or underthrow of the platen.

While the finger-piece 31 serves to engage teeth 25 with wheel 21 and may in some cases be depended upon for maintaining the engagement, I prefer to provide means for maintaining such engagement mechanically, and to this end I fix upon the bar 24 a stud—preferably a roller-stud—46, which normally occupies a notch 47, formed in the circular rack 36, and prevents the crank from moving, the stud being held in the notch by the spring 28. When the finger-piece 31 is pressed in, the stud 46 is moved out of the notch, and during the swinging of the crank the stud runs in a groove 48, formed in the disk, the outer wall 49 of the groove forming an interior circular bearing concentric with the platen-axle, against which the stud 46 constantly bears to maintain the engagement of teeth 25 and 22. This manner of maintaining the engagement is a great convenience, since after the crank is started the finger-piece 31 may be released, and when the crank is arrested by the stop 32 the crank may also be released without disturbing the locking of the crank to the platen, and hence it is insured that the latter shall be returned by the crank to exact initial position. A stop 50 may be provided to limit the return stroke of the platen and crank, said stop preferably adjacent to the notch 47 and in position to be struck by the stud 46.

It will be observed that the stop-arm 33 is confined between the wheel 21 and the disk 36 and that disk, wheel, and crank are confined between the fixed collars 23 and 51, the latter adjoining the right-hand end bar of the platen-frame and fixed to the platen-axle.

The record-sheet, bill, and interleaved carbon may be inserted together between the platen 11 and the usual paper-shelf 52. They are then carried around by the usual pressure-rolls 53, Fig. 3, until the proper blank line upon the bill is brought to the printing-point. The bill is then written line by line,

the usual line-spacing devices being employed to advance the sheets until the last line is written. Thereupon the pressure-roller-release key 54 may be depressed to cast off the rollers 53 in the usual manner, and the bill may be withdrawn by pulling it up in front of the platen, while the record and carbon sheets remain in the machine undisturbed. The key 54 is then released, and the operator grasps the handle 20 of the crank, simultaneously depressing the finger-piece 31, and pulls the crank forwardly as far as it will go. By this operation the carbon and record sheets are rolled back for a distance equal to the space occupied by the printed matter on the bill-head. Then a fresh bill is inserted and the crank is turned back as far as it will go, being arrested by the stop 50 and the spring 28 serving to disengage the teeth 25 from the teeth 22, thereby permitting free rotation of the platen in either direction. By the last movement of the crank the fresh bill is brought to the front of the platen and is then written, the carbon copy thereof succeeding the copy of the first-written bill upon the record-sheet. The second bill may then be withdrawn and a fresh bill inserted in the described manner and the operations repeated for successive bills until the record-sheet is filled.

The position to which the stop 32 should be set may be determined by first inserting a bill (or letter-head) in the machine and turning the platen until the first writing-line on the bill reaches the printing-point. Then the platen is turned backwardly by means of the crank until the bill passes back of the usual rear feed-roll, and hence is released from the machine. When the crank is at this point, the stop is set so that the stroke of the crank thereafter shall be the same length as the stroke just made.

In practice after the length of stroke of the crank is thus ascertained the stop should be set forward two notches, so as to shorten the throw of the crank to that extent. It follows that when a new bill is inserted the movement of the crank will not quite bring the first line of the bill to the printing-point, which the operator will notice. The operator will then operate the line-spacing devices in the usual way to advance the platen two spaces, thereby not only bringing the first line on the bill to the printing-point, but also insuring a proper space upon the record-sheet between the bill-records. It thus becomes unnecessary to put upon the mind of the operator the burden of remembering to line-space the record-sheet between bills, and the danger of superposing the first line of the new bill upon the last line of the prior record is avoided.

The paper-shelf 52, which is seen at Figs. 1 and 4, in rear of the platen inclines downwardly and forwardly to the platen to guide

the paper thereto as usual, and in front of the platen the paper is guided by the usual fingers 55, which are adjustable along a rod 56, mounted upon the platen-frame over the rear portion of the platen, each finger being adjustable independently of the other to any position along the rod. Upon said fingers I provide a pair of sheet deflectors or supports 57, which extend rearwardly above said rod to sustain the leading edge of the sheets as they feed rearwardly over the platen. During the extensive backward and forward movements of the record and carbon sheets usual in "condensed charging" these sheets have heretofore been apt to curl down between the paper-shelf and the platen and wrap around the platen a second time; but by the provision of the additional supports 57, which extend backwardly and upwardly toward the paper-shelf, this liability is avoided.

Variations may be resorted to within the scope of my invention and portions of my improvements may be used without others.

Having thus described my invention, I claim—

1. In a type-writing machine, the combination with a revoluble platen, a line-space wheel, and a platen-frame, of a crank of greater radius than the platen and normally disconnected from the platen and mounted to turn about the platen-axis, means for maintaining the crank in normal position during the rotation of the platen for usual line-spacing, means for connecting the crank at will to the platen, so that it can rotate the platen both forwardly and backwardly, and an adjustable stop to limit the movement of the crank away from its normal position.

2. In a type-writing machine, the combination with a revoluble platen, line-spacing devices, and a platen-frame, of a crank normally disconnected from the platen and mounted to turn about the platen-axis, said crank extending upwardly and rearwardly from the platen-axis and being of greater radius than the platen, means for maintaining the crank in normal position during the rotation of the platen for usual line-spacing, means for connecting the crank at will to the platen, so that it can rotate the platen both forwardly and backwardly, and a stop adjustable about the platen-axis, for limiting the movement of the crank away from its normal position.

3. In a type-writing machine, the combination with a revoluble platen, line-spacing devices including a toothed line-space wheel, and a platen-frame, of a crank having greater radius than the platen and normally disconnected from the platen and mounted to turn about the platen-axis, a second wheel fixed to the platen and having as many teeth as the line-space wheel, means upon said crank for engaging the teeth of said second wheel for

locking the crank thereto, so that the crank can rotate the platen both forwardly and backwardly, and stops for limiting the movements of said crank in both directions.

4. In a type-writing machine, the combination with a revoluble platen, line-spacing devices including a toothed line-space wheel, and a platen-frame, of a crank having greater radius than the platen, means for maintaining said crank in normal position during the usual rotation of the platen by the line-spacing devices, a second wheel connected to the platen and having the same number of teeth as the line-space wheel, means upon said crank for engaging the teeth of said second wheel for locking the crank thereto, in such a manner that the crank may effect nearly an entire revolution of the platen both forwardly and backwardly, and an adjustable stop for limiting the movement of said crank away from normal position.

5. In a type-writing machine, the combination with a platen-frame, of a platen, a platen-axle mounted in said frame, finger-wheels upon the ends of said axle, line-spacing devices including a toothed wheel, a second wheel fixed to said axle and having the same number of teeth as said line-space wheel, a crank mounted to turn about said axle and having greater radius than the platen and normally disconnected from said second wheel, toothed means for clutching said crank to said second wheel at will, so that the crank can rotate the platen both forwardly and backwardly, and relatively adjustable stops for limiting the movements of said crank in opposite directions.

6. In a type-writing machine, the combination with a platen, of a platen-axle, a frame whereon said axle is journaled, finger-wheels fixed upon the ends of said axle, a platen-actuating member mounted to turn about said axle but normally disengaged from the platen so that the platen may be freely turned in either direction while said actuating member remains stationary, means for clutching said actuating member at will to the platen so that it can rotate the platen both forwardly and backwardly, and adjustable means for limiting the movements of said actuating member.

7. In a type-writing machine, the combination with a platen, of a platen-axle, a frame whereon said axle is journaled, finger-wheels fixed upon the ends of said axle, a platen-actuating member mounted to turn about said axle but normally disengaged from the platen so that the platen may freely turn in either direction while said actuating member remains stationary, means for clutching said actuating member at will to the platen so that it can rotate the platen both forwardly and backwardly, a stop for limiting the movement of said actuating member from normal position, and a circular rack fixed upon the

platen-frame concentrically with the platen-axle and cooperating with said stop.

8. In a type-writing machine, the combination with a platen, of a platen-axle, a frame whereon said axle is journaled, finger-wheels fixed upon the ends of said axles, line-spacing devices including a toothed line-space wheel, a second wheel fixed to said axle and having the same number of teeth as said line-space wheel, a platen-actuating member having a normally disengaged toothed device to clutch the teeth of said second wheel, so that said platen-actuating member can rotate the platen both forwardly and backwardly, means for maintaining said platen-actuating member stationary during the usual line-spacing movements of the platen, a stop for limiting the movements of said platen-actuating member from normal position, and a circular rack fixed upon the platen-frame and cooperating with said stop.

9. In a type-writing machine, the combination with a platen, of a platen-axle, a frame whereon said axle is journaled, finger-wheels fixed upon the ends of said axle, line-spacing devices including a toothed line-space wheel, a second wheel fixed to said axle and having the same number of teeth as said line-space wheel, a crank of greater radius than the platen and mounted for revolution about said axle, means for maintaining said crank stationary in normal position during the usual line-spacing movements of the platen, a manually-operable clutch connected to said crank and having a tooth to engage said second wheel, so that said crank can rotate the platen both forwardly and backwardly, a rack having a fixed relation to said platen-frame and concentric with said platen-axle, and an arm adjustable about said axle independently thereof and having a stop to engage said rack, for limiting the movement of said crank from normal position.

10. In a type-writing machine, the combination with a platen, of a platen-axle, a frame whereon said axle is journaled, finger-wheels fixed upon the ends of said axle outside of said frame, line-spacing devices including a toothed line-space wheel, a second wheel fixed to said axle outside of said frame and having the same number of teeth as said line-space wheel, a circular rack concentric with said platen-axle and fixed to said frame between the latter and said second wheel, a crank having greater radius than the platen and mounted to turn about said platen-axle and provided with a normally disengaged clutch for engaging the teeth of said second wheel, means for detaining said crank in normal position during the usual line-spacing movements of the platen, and a stop-arm mounted to turn about said platen-axle and having both means to engage said rack and a part in the path of said crank.

11. In a type-writing machine, the combination with a platen, of a platen-axle, a frame whereon said axle is journaled, finger-wheels fixed upon the ends of said axle outside of said frame, line-spacing devices including a toothed line-space wheel, a second wheel fixed to said axle outside of said frame and having the same number of teeth as said line-space wheel, a circular rack concentric with said platen-axle and fixed to said frame between the latter and said second wheel, a crank having greater radius than the platen and mounted to turn about said platen-axle and provided with a normally disengaged clutch for engaging the teeth of said second wheel, means for detaining said crank in normal position during the usual line-spacing movements of the platen, and a stop-arm mounted to turn about said platen-axle and having both means to engage said rack and a part in the path of said crank.

5 nation with a platen and line-spacing devices inclusive of a toothed line-space wheel, of a second wheel connected to the platen and having the same number of teeth as said line-space wheel, a crank, means for maintaining said crank in normal position during the rotation of the platen by said line-spacing devices, a bar extending along said crank and having a finger-piece and provided with a
10 tooth to engage said second wheel, a spring holding said bar out of engagement with said second wheel, and an adjustable stop for said crank.

12. In a type-writing machine, the combination with a platen of a wheel connected thereto and provided with teeth, a crank having greater radius than the platen and mounted concentrically with said wheel but normally disengaged therefrom, a member
20 actuatable by said crank and having a tooth to engage said wheel so that said crank can rotate the platen both forwardly and backwardly, means normally holding said tooth out of engagement with said wheel, and means for limiting the forward and backward movements of said crank.

13. In a type-writing machine, the combination with a platen of a toothed wheel connected thereto, a member provided with a crank and also provided with teeth to engage said toothed wheel but normally out of engagement therewith, means maintaining said crank member in normal position, and an adjustable stop for limiting the movements of
35 said crank member from normal position; said crank member being capable of rotating said toothed wheel together with the platen both forwardly and backwardly, and the platen being freely rotatable independently of said crank member when the latter is stationary in normal position.

14. In a type-writing machine, the combination with a platen, of a clutch member connected thereto, a normally stationary clutch member, means for engaging said clutch
45 members at will for rotating the platen to and fro, and means mechanically maintaining the engagement of said clutch members during the excursion of the normally stationary clutch member away from and back to normal position.

15. In a type-writing machine, the combination with a revoluble platen, of a clutch member connected thereto, a second clutch member, means normally maintaining the second clutch member out of engagement with the first and stationary during the usual revolutions of the platen, means for engaging said clutch members at will, a finger-piece
55 connected to the second clutch member for enabling the latter to rotate the platen, means for mechanically maintaining the engagement of said clutch members during the excursion of the second clutch member away
65 from and back to normal position, and an ad-

justable stop for limiting the movement of the second clutch member away from normal position.

16. In a type-writing machine, the combination with a platen, of a clutch member connected thereto, a second clutch member normally disengaged from the first and provided with a finger-piece for rotating the platen, means for enabling said clutch members to be engaged at will, adjustable means for limiting
75 the rotation of the platen by means of said second clutch member, and means mechanically maintaining the engagement of said clutch members until the platen is returned to its initial position.

17. In a type-writing machine, the combination with a revoluble platen, of a toothed clutch member connected thereto, a second toothed clutch member concentric with and normally disengaged from the first and provided with a finger-piece for rotating the platen, means for enabling said clutch members to be engaged at will, so that said finger-piece can rotate the platen both forwardly and backwardly, and means capable of maintaining mechanically the engagement of said
85 clutch members during the movement of the platen through nearly an entire revolution.

18. In a type-writing machine, the combination with a revoluble platen, of a toothed clutch member connected thereto, a second toothed clutch member concentric with and normally disengaged from the first and provided with a finger-piece for rotating the platen, means for maintaining said second
95 clutch member stationary during the usual revolution of the platen, means for enabling said clutch members to be engaged at will so that the platen may be rotated by means of said finger-piece, adjustable means for limiting the movement of said second clutch member away from normal position, and means mechanically maintaining the engagement of said clutch members while said second clutch member is moving away from and
105 returning to normal position.

19. In a type-writing machine, the combination with a revoluble platen, of normally disengaged clutch members, means for effecting their engagement at will, one of said
115 clutch members being connected to the platen and the other being provided with a finger-piece for rotating the platen, stops for limiting both forward and backward rotations of the clutch members and platen by means of said finger-piece, and means for mechanically maintaining the engagement of said clutch members only while effecting rotation of the platen through the arc determined by said stops.

20. In a type-writing machine, the combination with a revoluble platen, of a finger-piece normally disconnected from the platen, means maintaining said finger-piece normally stationary during the usual rotations
125 130

of the platen, means for connecting said finger-piece to the platen at will so that it may rotate the platen in opposite directions, a stop for limiting the movement of said finger-piece away from normal position, and means mechanically maintaining the connection of said finger-piece to the platen while the former is away from normal position.

21. In a type-writing machine, the combination with a revoluble platen, of a crank normally disconnected from the platen, means maintaining the crank stationary in normal position during the usual rotation of the platen, means for connecting the crank at will to the platen, so that the crank can rotate the platen both forwardly and backwardly, an adjustable stop to limit the movement of the crank away from its normal position, and means mechanically maintaining the connection of said crank to the platen during the movement of the crank both to said stop and back to normal position.

22. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of a toothed wheel connected to said platen, a crank having a toothed member, which is normally out of engagement with said wheel, means for maintaining said crank stationary in normal position during the usual rotations of the platen, means for enabling said toothed member to engage said toothed wheel, a projection upon said toothed member, and a bearing concentric with said wheel and engageable by said projection, for maintaining the engagement of said toothed member with said wheel during their rotation.

23. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of a toothed wheel fixed to the platen, a crank mounted to turn about the platen-axis and having a toothed member engageable with said toothed wheel but normally out of engagement therewith, a projection upon said toothed member, a bearing concentric with said wheel and platen and engageable by said projection, for maintaining the engagement of said toothed member with said wheel during their rotation, and stops limiting both forward and backward movements of said crank.

24. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of a toothed wheel fixed to the platen, a crank normally stationary during the usual line-spacing movements of the platen, and mounted to turn about the platen-axis, a member provided with a finger-piece for connecting said crank at will to said toothed wheel, so that the crank can rotate the platen both forwardly and backwardly, means cooperating with said connecting member for mechanically maintaining it in working position while said crank is away from normal position, and an adjustable stop for limiting

the movement of said crank away from normal position.

25. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of line-spacing devices including a toothed line-space wheel, a second wheel concentric with the platen and fixed thereto and having the same number of teeth as the line-space wheel, a crank having greater radius than the platen and normally stationary during the usual line-spacing movements of the platen and mounted to turn about the platen-axis, a toothed member mounted upon said crank and provided with a finger-piece for connecting said crank at will to said second wheel, a bearing concentric with the platen-axis, a part being provided upon said connecting member for engaging said bearing so as to maintain the connection mechanically between said crank and said second wheel during the excursion of said crank from normal position, a stop determining the normal position of said crank, and an adjustable stop for limiting its movement away from normal position.

26. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of line-spacing devices including a toothed line-space wheel, a second wheel concentric with the platen and fixed thereto and having the same number of teeth as the line-space wheel, a crank having greater radius than the platen and normally stationary during the usual line-spacing movements of the platen and mounted to turn about the platen-axis, a toothed member mounted upon said crank and provided with a finger-piece for connecting said crank at will to said second wheel, a projection upon said connecting member, a part fixed to the platen-frame and having a circular bearing concentric with the platen-axis and also having a notch normally engaged by said projection for maintaining said crank stationary in normal position, said projection being constructed to cooperate with said circular bearing to maintain said connecting member in working position during the movement of said crank away from normal position, a stop for limiting the movement of the crank away from normal position, and means for enabling said stop to be adjusted concentrically with the platen-axis.

27. In a type-writing machine, the combination with a platen and a platen-axle of a frame whereon said axle is journaled, finger-wheels secured to the ends of said axle outside of said frame, line-spacing devices including a toothed line-space wheel, a second wheel mounted upon said axle and secured thereto outside of said platen-frame and having the same number of teeth as the line-space wheel, a crank having greater radius than the platen and normally stationary during the usual line-spacing movements of the

platen and mounted to turn about the platen-axis and extending upwardly and rearwardly from said axis, a toothed bar extending longitudinally of said crank and mounted to slide endwise thereon and provided with both a spring and a finger-piece, said spring normally holding said toothed bar out of engagement with said second wheel, and the bar being engageable with said second wheel by means of pressure upon said finger-piece, a stud or projection upon said bar, a disk mounted concentrically with the platen-axle between said second wheel and the end of the platen-frame and fixed to the latter and having a circular interior bearing concentric with the platen-axle, and also having a notch in which said projection is held by the action of said spring, said projection being adapted to engage said circular bearing during the rotation of said crank, to maintain said bar in engagement with said second wheel, a circular row of notches provided in said disk exteriorly of said circular bearing, an arm and stop loosely mounted to turn about said platen-axle, said stop in the path of said crank, and a pin or tooth upon said arm to engage any of said notches in said circular row.

28. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of two clutching members one connected to the platen and the other provided with a finger-piece for rotating the platen, stops for limiting the forward and backward rotation of the finger-piece, means whereby the clutching members may be maintained in positive engagement during the rotation of the finger-piece both away from and back to normal position, and means for effecting automatic release of said clutching members upon the return of said finger-piece to normal rotative position.

29. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of two clutching members one connected to the platen and the other provided with a finger-piece for rotating the platen, means for maintaining said clutching members in positive engagement during the rotation of the platen thereby both forwardly and backwardly, means rendered effective through the rotation of said finger-piece, for effecting the release of said clutching members, and stops for limiting the forward and backward rotation of the platen effected by said finger-piece.

30. In a type-writing machine, the combination with a revoluble platen and a platen-frame, of line-spacing devices including a line-space wheel, said wheel being provided with teeth, a second wheel connected to the platen and provided with the same number of teeth, a member having a finger-piece for rotating the platen and provided with a tooth engageable with said second wheel at

will, means for arresting the forward and backward movements of said finger-piece, said arresting means including a circular rack fixed to the platen-frame and a stop adjustable along said rack, and means for effecting fine adjustments of said rack about the platen-axis.

31. In a type-writing machine, the combination with a platen and a platen-axle of a frame whereon said axle is journaled, line-spacing devices including a toothed line-space wheel, a second wheel having the same number of teeth as the line-space wheel and connected to the platen, a crank normally stationary during the usual line-spacing movements of the platen and mounted to turn about the platen-axle, a toothed member connected to said crank and engageable at will with said second wheel but normally disengaged therefrom, a circular rack mounted concentrically with the platen-axle, means for arresting the forward and backward movements of said crank, said arresting means including a stop adjustable along said rack, and an adjustable device whereby said rack is fixed to the platen-frame in a manner to permit fine rotative adjustment of the rack.

32. In a type-writing machine, the combination with a platen and a platen-axle of a frame whereon said axle is journaled, line-spacing devices including a toothed line-space wheel, a second wheel having the same number of teeth as the line-space wheel and connected to the platen, a crank or finger-piece normally stationary, a toothed member for engaging said second wheel to connect the same to said crank, a circular rack mounted concentrically with the platen-axle, a connecting-rod between said circular rack and the platen-frame and including a turnbuckle for enabling fine rotative adjustments of said rack, and means for arresting the forward and backward movements of said crank, said arresting means including a stop adjustable along said rack.

33. In a type-writing machine, the combination with a revoluble platen provided with a finger-wheel, and a platen-frame, of a revoluble member concentric with the platen and normally stationary during the revolution of the platen but connectible at will to the platen to rotate therewith, means for mechanically maintaining such connection during nearly an entire revolution of the platen both forwardly and backwardly, and a stop in the path of said member for arresting the same together with the platen.

34. In a type-writing machine, the combination with a revoluble platen provided with a finger-wheel, of a platen-frame, line-spacing devices including a toothed line-space wheel, a second wheel revoluble with the platen and connected thereto and having the same number of teeth as the line-space wheel,

a revoluble member normally stationary during the revolution of the platen but provided with a tooth engageable at will with said second wheel, whereby said revoluble member is
 5 positively connected to the platen to rotate therewith in both directions, means for mechanically maintaining the engagement of said revoluble member with said second wheel, and an adjustable stop in the path of
 10 said revoluble member for arresting the same together with the platen.

35. In a type-writing machine, the combination with a revoluble platen provided with a finger-wheel, of a revoluble member normally stationary during the revolution of the
 15 platen but connectible at will to the platen to rotate therewith, means for mechanically maintaining such connection during both forward and backward revolution of the platen,
 20 a stop determining the normal position of said revoluble member, and a stop for limiting the movement of said revoluble member from normal position; one of said stops being adjustable.

25 36. In a type-writing machine, the combination with a revoluble platen provided with a finger-wheel, of a normally ineffective revoluble platen-arresting member and stops for limiting the rotation of said member in opposite
 30 directions, said stops being relatively adjustable, means being provided for both rendering said member effective at will and mechanically maintaining the same in effective relation to the platen during both backward
 35 and forward revolution of the latter, and means automatically effecting the release of said member from the platen when the member is arrested by one of said stops.

40 37. In a type-writing machine, the combination with a revoluble platen, a line-space wheel, and a platen-frame, of a circular rack concentric with the platen and fixed to the
 45 platen-frame, a stop adjustable along said rack independently of the platen, a revoluble device which is normally stationary during the usual rotation of the platen but which is provided with means whereby it may become
 50 locked to the platen during both backward and forward rotation of the latter, said revoluble device being constructed to cooperate with said stop for arresting the revolution of the platen in one direction, and means for arresting the revolution in the opposite direction
 55 of both the revoluble device and the platen.

38. In a type-writing machine, the combination with a revoluble platen and platen-axle, a line-space wheel, and a platen-frame, of a circular rack concentric with the platen-axle and fixed to the platen-frame, a stop adjustable along said rack independently of the
 60 platen-axle, a second stop, and a revoluble member normally disconnected from the platen-axis but provided with means whereby
 65 by it may be positively connected thereto so

as to rotate both forwardly and backwardly therewith, said revoluble member being engageable with said stops to arrest the forward and backward revolutions of the platen.

39. In a type-writing machine, the combination with a revoluble platen, of two fixed
 70 stops, whereof one is provided with means whereby it may be adjusted concentrically with the platen, and a member normally disengaged with the platen but connectible positively thereto, for cooperation with said fixed
 75 stops to arrest both the forward and backward revolutions of the platen.

40. In a type-writing machine, the combination with a revoluble platen, line-spacing
 80 devices, and a platen-frame, of a platen-axle mounted upon said frame, finger-wheels fixed to the ends of said axle, stops for arresting both forward and backward revolutions of the platen, and a crank with which said
 85 stops coact; said crank being of greater radius than the platen and rotatable about said axle but normally disconnected therefrom, and being provided with means whereby it may be locked to said axle at will so as to rotate forwardly and backwardly therewith.
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41. In a type-writing machine, the combination with a revoluble platen, of a crank of greater radius than the platen and mounted to turn about the platen-axis but normally
 95 disconnected from the platen, means for maintaining the crank in normal position, means for connecting said crank to the platen at will in such a manner as to enable the crank to rotate the platen both forwardly
 100 and backwardly, and means for mechanically maintaining the connection of said crank to the platen during the entire excursion of the crank away from and back to normal position, so that the platen must rotate both
 105 forwardly and backwardly with the crank.

42. In a type-writing machine, the combination with a revoluble platen, line-spacing
 110 devices, and a platen-frame, of a platen-axle mounted in said frame, finger-wheels fixed to the ends of said axle without said frame, a circular rack concentric with the platen, a stop adjustable along said rack for arresting the revolution of the platen in one direction,
 115 a stop for arresting the revolution of the platen in the opposite direction, the platen being normally free to rotate in either direction independently of said stops, and a manually-operable device mounted independently of said finger-wheels and capable of rotating
 120 the platen either forward or backward at will and also capable of rendering said stops effective to arrest the platen.

43. In combination, a revoluble type-writer platen provided at its ends with finger-
 125 wheels whereby it may be rotated in either direction at will to an unlimited extent at any time, and also provided with a crank whereby the platen may be rotated in either direction at will at any time through any line-space
 130

arc of predetermined extent within nearly an entire revolution, means being provided for mechanically limiting the movements of said platen by said crank.

44. In combination, a revoluble type-writer platen provided with a line-space wheel and also provided with finger-wheels at its ends whereby the platen may be rotated through an unlimited number of line-spaces in either direction, and a crank provided with means whereby it may turn the platen at any time forwardly and backwardly through a predetermined number of line-spaces, stops being provided for limiting the strokes of the crank and platen, and said stops being relatively adjustable, their relative adjustment being limited to line-space intervals.

45. In a type-writing machine, the combination with a revoluble platen and line-spacing devices, of a crank normally stationary during the movements of the platen effected by said line-spacing devices, and means for enabling said crank to oscillate the platen at will through a predetermined number of line-spaces from any point to which the platen may be turned by said line-spacing devices; means being provided for mechanically limiting the extent of such oscillation in each direction, said limiting means including an adjustable member and a rack along which it may be adjusted, said rack having notches or the like at line-space intervals, for engagement by said adjustable member.

46. In a type-writing machine, the combination with a revoluble platen and line-spacing devices therefor, of a clutch capable of rotating the platen in either direction through nearly an entire revolution, and stops for limiting the movement of said clutch in each rotative direction; said clutch comprising a member fixed to the platen and a member normally stationary during the revolution of the platen by means of said line-spacing devices, and said members being normally disengaged, and a finger-piece being provided for effecting their engagement at will.

47. In a type-writing machine, the combination with a platen and a line-space wheel, of a crank normally disconnected from the platen and locked against accidental rotation, means for releasing the crank so that it may rotate, and for connecting the crank to

the platen, and stops for limiting the forward and backward rotation of the crank.

48. In a type-writing machine, the combination with a platen and a line-space wheel, of a crank normally disconnected from the platen and locked against accidental rotation, mean for releasing the crank so that it may rotate, and for connecting the crank to the platen, and temporarily maintaining such connection, a stop for limiting the movement of the crank and means dependent upon the turning of the crank, for mechanically releasing the platen from the control of said crank.

49. In a type-writing machine, the combination with a platen; of a manually-operable device normally disconnected from the platen, means for connecting said device to the platen, stops for limiting the forward and backward strokes of said manually-operable device, a rack along which one of said stops is adjustable, and a scale and index for said adjustable stop.

50. In a type-writing machine, the combination with a platen, of a manually-operable device normally disconnected from the platen, means for connecting said device to the platen, stops for limiting the forward and backward strokes of said manually-operable device, a rack along which one of said stops is adjustable, a scale and index for said adjustable stop, and an arm whereon said adjustable stop is mounted; said arm being pivoted concentrically with said manually-operable device, and said stop having a tooth to engage said rack and a spring for maintaining engagement of said tooth with said rack.

51. In a type-writing machine, the combination with a platen, of a normally disconnected manually-operable device for rotating the platen, means for connecting said manually-operable device to the platen at will, stops for limiting the forward and backward movements of said manually-operable device, a rack fixed upon the framework of the carriage upon which said stops are mounted, and means for enabling circular adjustment of said rack and stops.

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Witnesses:

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