

B. C. STICKNEY.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 27, 1897.

914,612.

Patented Mar. 9, 1909.
2 SHEETS—SHEET 1.

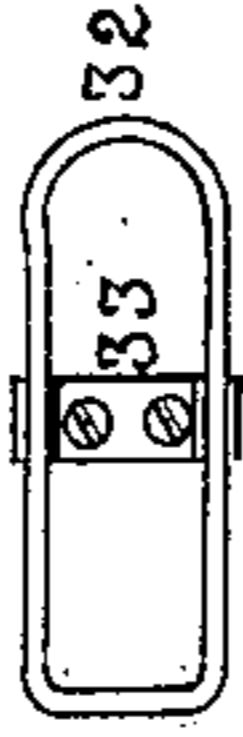
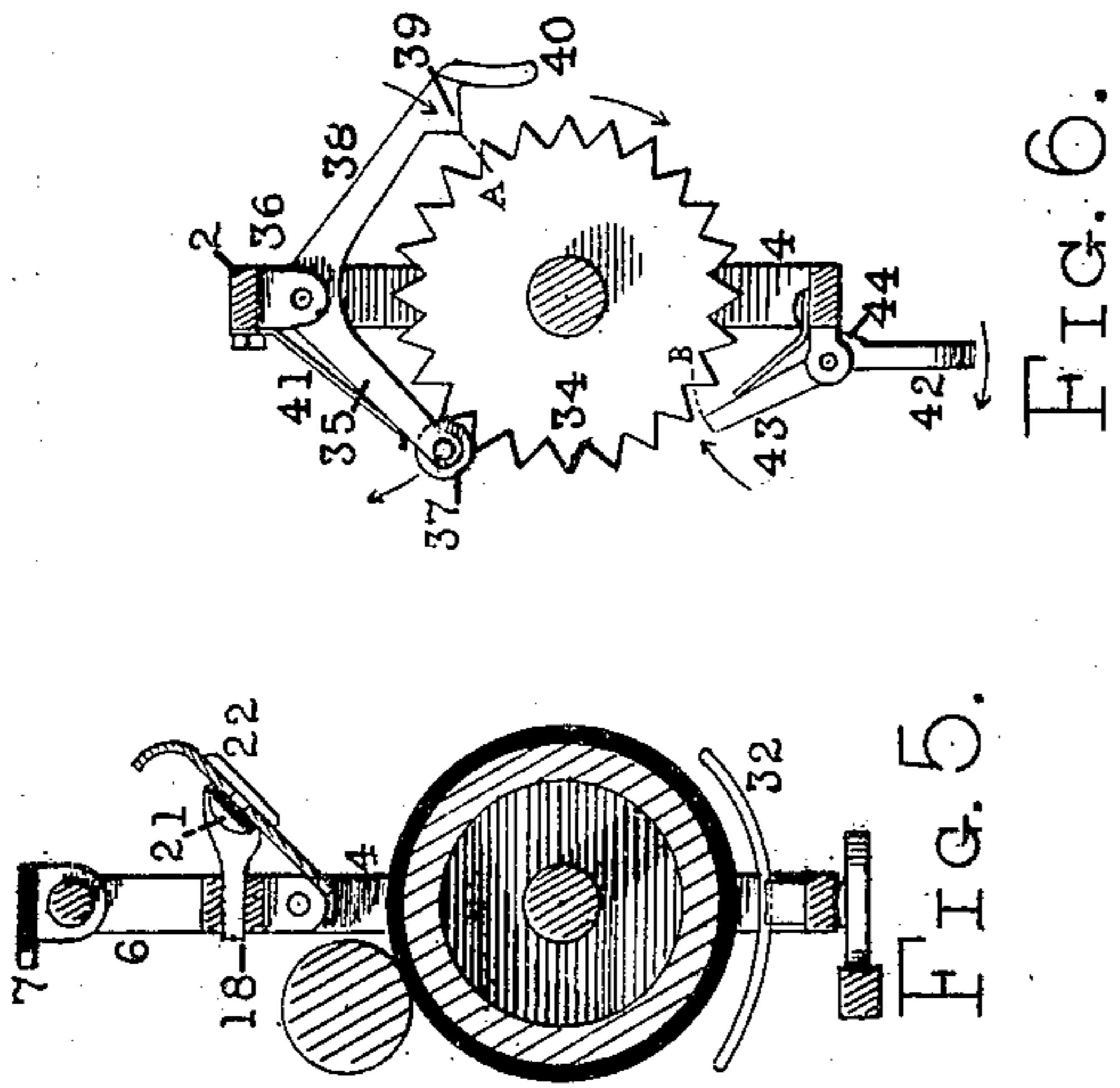


FIG. 7.

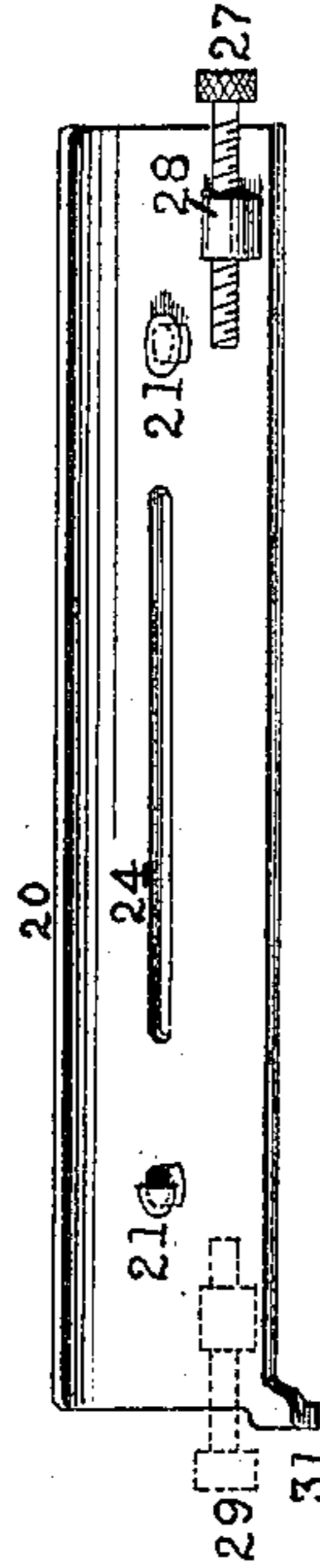


FIG. 8.

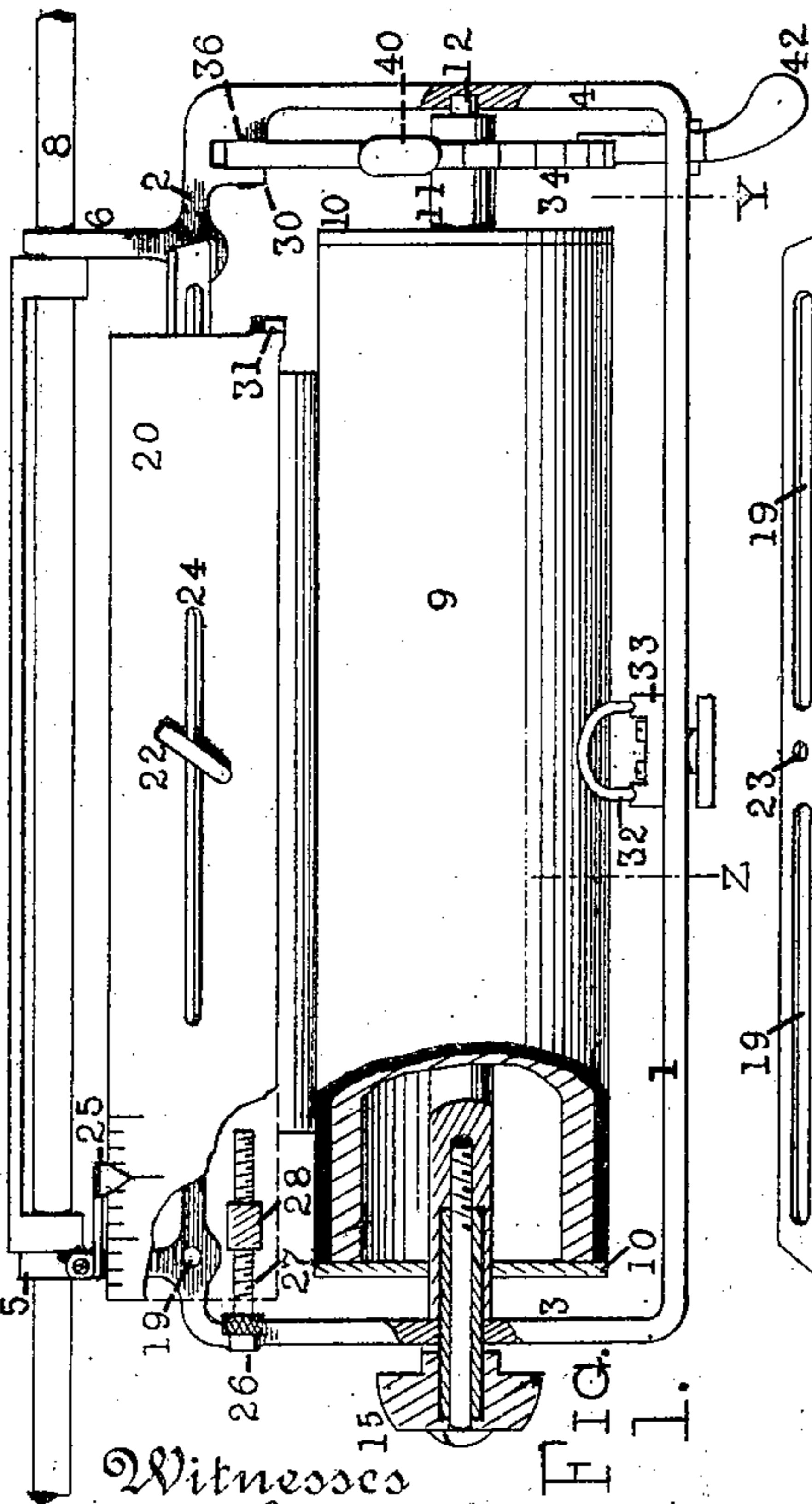


FIG. 1.

2.



FIG. 3.

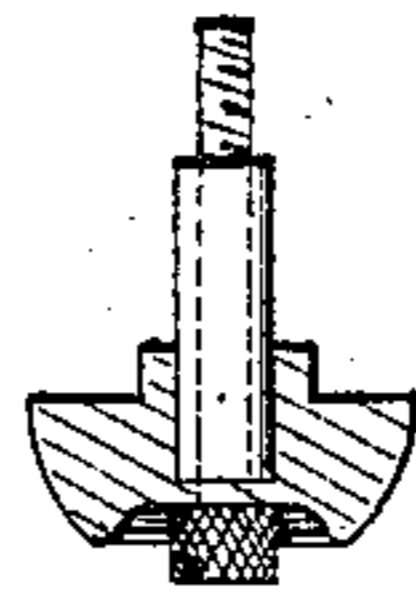


FIG. 4.

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2 SHEETS—SHEET 2.

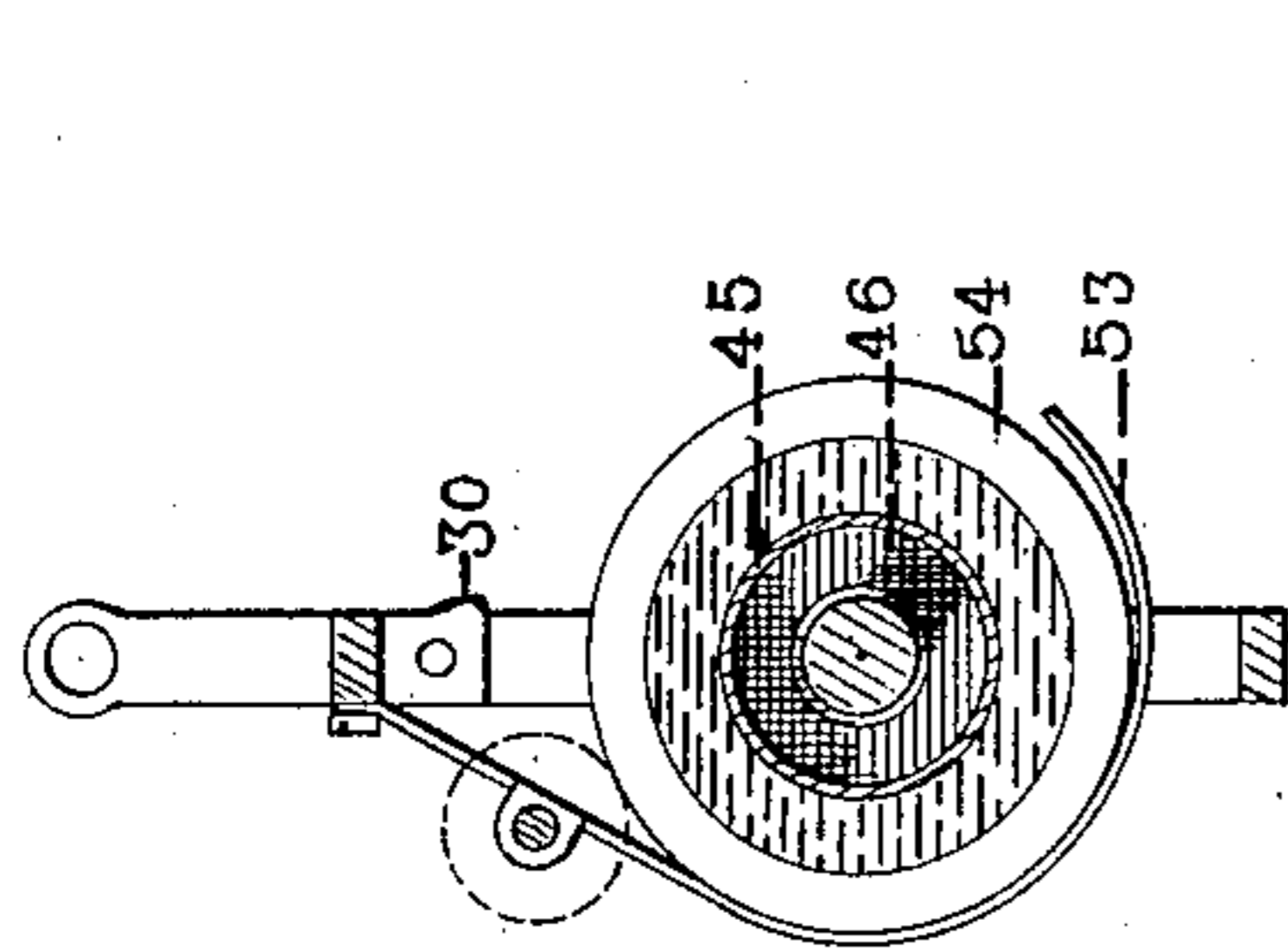


FIG. 13.

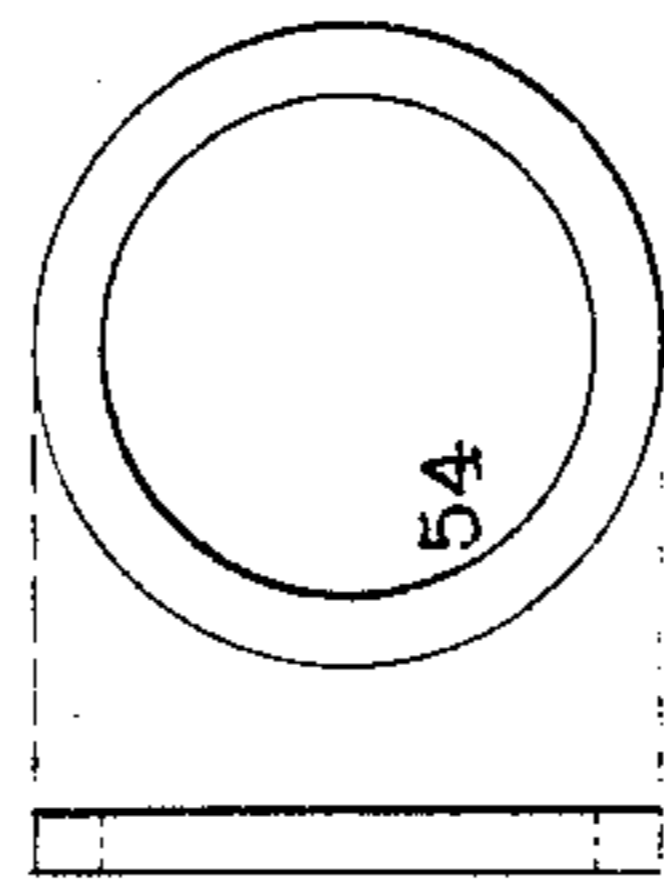


FIG. 14.

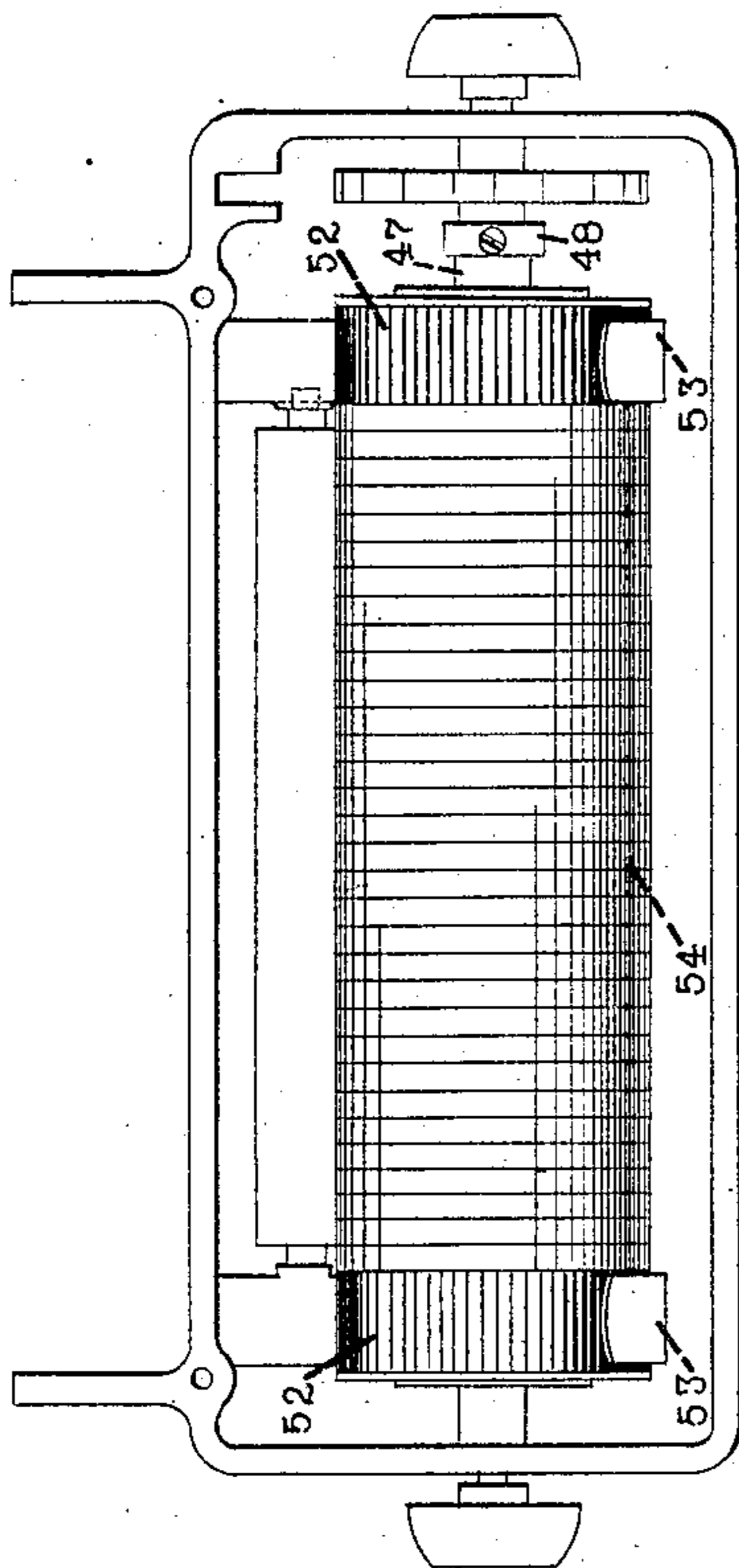


FIG. 9.

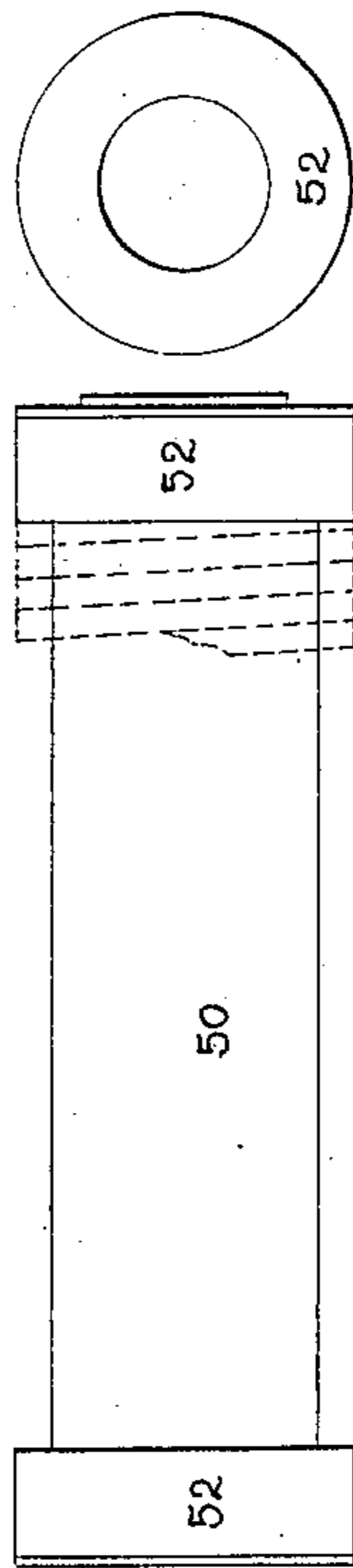


FIG. 10.

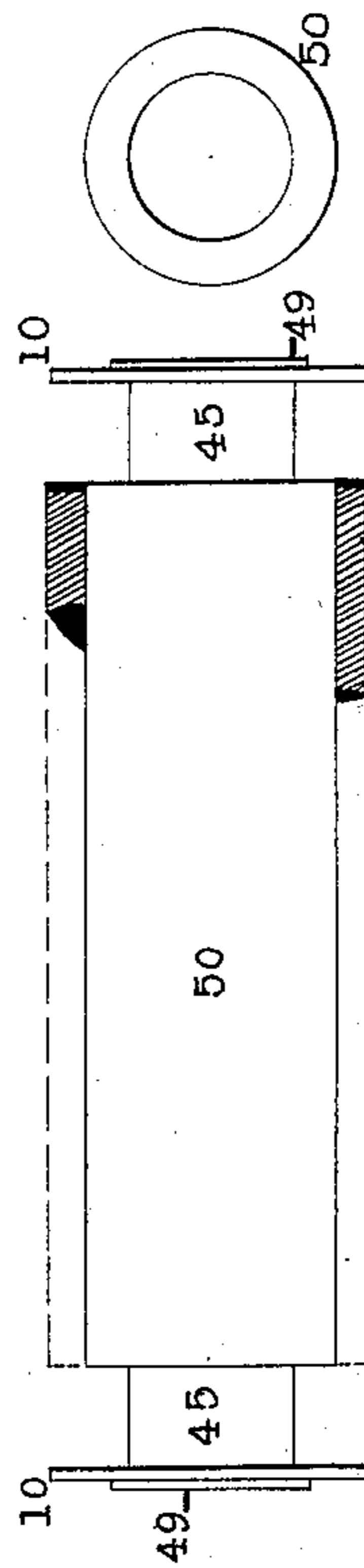


FIG. 11.

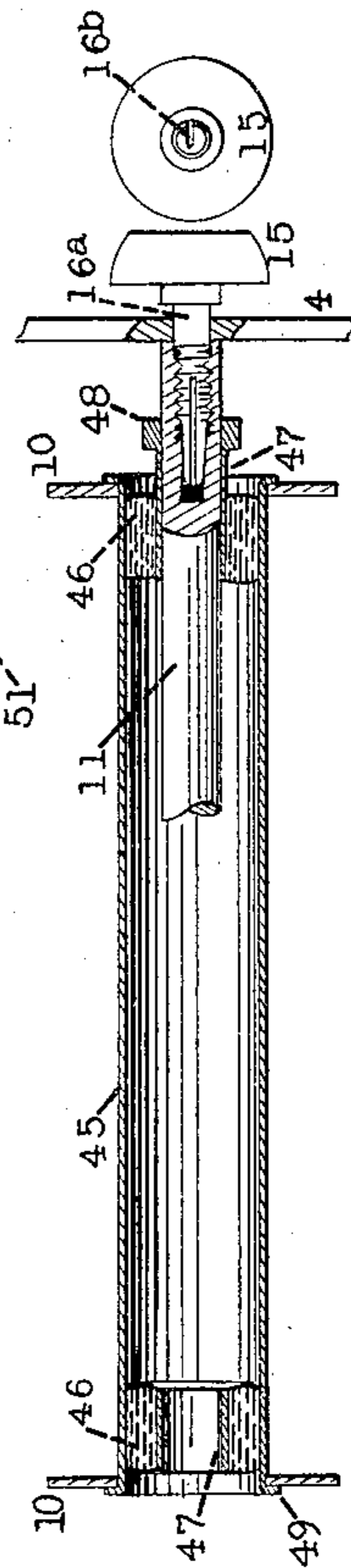


FIG. 12.

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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

No. 914,612.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed March 27, 1897. Serial No. 629,482.

To all whom it may concern:

Be it known that I, BURNHAM C. STICKNEY, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type writing machines. Its object is to provide an improved construction whereby the platen may be readily detached from and replaced in the platen frame; an adjustable paper-shelf, whereby the operator is enabled to preserve a uniform margin upon successive written sheets; an improved front paper-guide; improved means for effecting a relative backward or forward line spacing movement between the printing instrumentalities and platen, or for slightly rotating the platen so that figures and other characters may be written above or below the line of writing; and a practicable construction of muffled platen, whereby the noise arising from the blows of the types is materially diminished.

To these and other ends which will hereinafter appear, my invention consists in the various features of construction and combinations of devices hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a plan of a paper-carriage, some parts being omitted and others broken away, to more clearly exhibit the improvements. In this view the platen is of the usual construction. Fig. 2 shows a front elevation and a plan of the paper-shelf stand; Fig. 3 shows detached views of the platen shaft, the thumb-wheel, and the screw by which the wheel may be secured to the shaft; Fig. 4 is a sectional view of one form of thumb-wheel; Fig. 5 is a sectional elevation taken at line Z of Fig. 1; Fig. 6 is a like view, taken at line Y; Fig. 7 is the front paper-guide, viewed from the rear; Fig. 8 is the paper-shelf, viewed from beneath; Fig. 9 is a like view to Fig. 1, omitting the paper-shelf and various other parts for the sake of clearness, and showing the muffled platen, which in this view is provided with a thumb-wheel at each end; Fig. 10 exhibits the platen after the tympan has been removed, showing the bed of sound-deadening material in which the tympan rests, as well as a side view of one of the rubber rings

52 that are secured at each end of the platen-cover or tympan; Fig. 11 is a like view to Fig. 10, the rubber rings 52, however, having been removed; at this figure is also shown an end view of the sound-deadening tube 50; Fig. 12 is a sectional plan, illustrating the manner of supporting the platen upon the shaft. This figure gives also a modified construction of thumb-wheel, showing an end view of the latter; Fig. 13 is a like view to Fig. 5, but presenting a sectional view of the muffled platen; and Fig. 14 presents both edge and side views of one of the leather washers of which the tympan is preferably made up.

Throughout the several views similar parts are designated by similar numerals of reference.

The platen frame, which may be of any usual or desired construction, is illustrated as consisting of a front bar 1, rear bar 2, and end bars 3, 4; from the rear bar 2 arms 5, 6 extend rearwardly, to pivotally engage the platen frame to the usual spacing rack 7 and to also support the platen frame upon the usual hinge-and-guide rail 8.

Detachable platen.—Referring to Figs. 1 and 3, the platen is shown as constructed in the usual manner with a wooden core, surrounded by a rubber tube of suitable hardness, which may be termed the "tympan," as it forms a backing for the paper when being impressed by the types. As usual the platen is capped at each end by a plate or platen head 10, which may be secured to the platen shaft 11 in any suitable manner, so that the platen will be rotated by the shaft. At its right-hand end the shaft is preferably provided with a nipple 12, that turns in a socket formed in the end-bar 4. In the left-hand end of the shaft is formed a socket 13, for receiving the inner end of a short tubular stem, hollow spindle or journal 14, which is journaled in the platen frame and to the outer end of which is rigidly secured a thumb-wheel 15. The thumb-wheel and tube are secured to the shaft by a long screw 16, which passes axially through the finger wheel and the tube and enters a threaded depression 17 at the bottom of the socket 13. This screw may be provided with a milled head, so that it may be removed and replaced without the aid of a tool, as illustrated at Fig. 4. To detach the platen, the screw 16 and thumb-wheel are first removed; then the left-hand end of the shaft is raised until

it clears the end bar 3, and the platen is moved lengthwise to withdraw the nipple 12 from its seat.

As shown in the modification at Fig. 12, the tube 14 may be omitted, and a screw 16^a, preferably provided with a tapering nipple, rigidly secured to the thumb-wheel 15. A socket is formed in the end of shaft 11, the inner extremity whereof is tapered to match the nipple, and the outer end whereof is threaded. A longitudinal groove or slot 16^b may be cut in the screw, whereby it is enabled to yield as it is screwed into its seat, thus securing a better hold upon the shaft. This construction may be used at the left-hand end of the platen-shaft, if desired. For the right-hand end of the shaft I prefer the construction shown at Fig. 1, as the nipple 12 may be made of very small diameter, thereby minimizing the rotary friction of the platen arising from the pressure of the usual platen check spring 41, which is generally placed at this end of the platen.

To prevent endwise shake of the platen, the nipple 12 is arranged to bear against the bottom of its socket, while the other end of the shaft bears against the inner side of the bar 3. In the modifications shown at Figs. 9 and 12, the right-hand end of the shaft bears against the inner side of the bar 4.

Adjustable paper-shelf.—Usually the paper-shelf and its supporting stand are made integrally; but I prefer to make them separately, so that the paper-shelf may slide upon the stand. Referring to Fig. 2, the stand may be made of a strip of sheet metal, bent downwardly at its ends, the bent portions being formed into tubular legs 18, which fit in the holes 19 usually provided for this purpose in the rear bar 2 of the platen frame. The tubular portions may be left open at the sides, to enable them to yield when forced into the holes 19, thus securing a firm hold against accidental displacement while permitting easy withdrawal when desired.

The horizontal portion of the stand is illustrated as provided with two longitudinal slots 19. On the under side of the paper-shelf 20 are secured a pair of headed studs 21 (Fig. 8), the shanks of which pass through the slots 19, and the headed portions of which overlap the edges of the slots. By this means the paper-shelf may be firmly secured to the stand, and permitted to move endwise thereon. The studs should be constructed to fit tightly in the slots, or the heads should bind slightly upon the stand, to cause frictional opposition to the movement of the paper-shelf. If preferred, the studs may be allowed to fit loosely, and the stand or the paper-shelf or both may be slightly bowed before being assembled, as is the common practice in constructing machinery, so as to cause them when assembled to bind one upon the other with sufficient

force to prevent the paper-shelf from creeping in consequence of the jarring of the paper-carriage in operation. Any usual friction device may be used for this purpose. If a stationary stand is used, it may be otherwise constructed and serve equally well.

If desired, a thumb-screw 22 may be provided, the threaded end of which enters a threaded hole 23 about midway of the table or horizontal portion of the stand. After the paper-shelf has been adjusted to the desired position, the thumb-screw may be used to lock the shelf to the stand; or it may be turned just sufficiently to bind the shelf slightly, to prevent creeping, but so that by the application of force the shelf may be re-adjusted without manipulating the screw. The shelf may be provided with a longitudinal slot 24, to permit the adjustment thereof independently of the screw-stem.

As illustrated at Fig. 1, the upper left-hand corner of the shelf may be provided with a series of graduations (corresponding preferably to those used in common linear measurement), and an index 25 may be secured upon the arm 5 of the platen frame, to coöperate with the series of graduations for the purpose of indicating the width of the left-hand margin upon the sheet when full length lines are written. If the scale and index be used, it is immaterial how they are constructed, or which is secured to the shelf.

In operation, a sheet of paper is inserted in the machine and adjusted widthwise in the usual manner. Then the paper-shelf is moved longitudinally in either direction, until its left-hand edge (preferably) is brought to coincide with the left-hand edge of the paper. Thereafter the sheets are inserted with their left-hand edges likewise coinciding with the edge of the paper-shelf, whereby a uniform margin is secured upon the several sheets. It will be understood that this device will be especially useful when writing upon sheets provided with ruled marginal lines.

As illustrated at Figs. 1 and 8, the shelf may be provided at its left-hand end with an adjustable abutment, preferably in the form of a screw, adapted to coöperate with an abutment 26 formed at the rear portion of the end bar 3 of the platen frame, to mechanically determine the position to which the paper-shelf shall be adjusted. This device would prove useful in cases where the operator has frequent occasion to adjust the shelf to a single predetermined position. The screw 27 may be provided with a milled head, for ready manipulation, and passed through a threaded hole in a block 28 secured to the under side of the shelf. The screw should fit tightly in the hole, to prevent accidental rotation; or any of the usual devices may be employed for the purpose. Other constructions of adjustable abutment may be

made to serve the purpose. If desired, a duplicate adjustable abutment may be provided at the other end of the paper-shelf, as indicated by dotted lines 29 at Fig. 8, to co-
 5 operate with the lug 30 (Fig. 13) on the platen-frame, which would be useful in cases where the operator has frequent occasion to adjust the shelf from one to another of two predetermined positions, as such adjust-
 10 ment may be obtained by simply pushing the shelf in either direction as far it will go. When narrow sheets are used, they may if desired be inserted at the right-hand end of the platen, and the right-hand edge of the
 15 shelf be brought to coincide with the right-hand edge of the sheet.

To remove the paper-shelf from the machine, it is simply lifted to withdraw the legs 18 from the holes 19; but if the index
 20 25 be employed, the shelf must be pushed to the right until it clears the index, before lifting.

Other constructions of paper-shelf may be made to serve the purpose. It is not essen-
 25 tial that the shelf should slide, if it be desired to use other than a sliding movement to carry out the purpose of this portion of the invention; it is not essential that the shelf should move in a line parallel with the platen
 30 axis, or that it should move in a straight line, so long as it is adjustable relatively to the platen in a manner to enable the operator to secure a uniform or predetermined margin upon the written sheets. It is not essential
 35 that the shelf be provided with a stand, or that it be made adjustable with reference to the stand, so long as it is adjustable relatively to the platen.

It will be perceived that the paper-shelf
 40 constitutes a gage or register, and if desired it may be provided at either or both ends with an upturned lip or stop, as shown at 31, against which the edge of the paper may be laid. This lip may be omitted, as the paper
 45 can readily be brought to coincide with the edge of the shelf without its aid.

The provision of an adjustable abutment for a paper-gage, whereby the position of the gage may be mechanically determined, I be-
 50 lieve to be broadly new, and this feature may be applied to constructions of gage not involving the adjustment of the paper-shelf.

I do not deem it essential that the paper-shelf or stand be made detachable from the
 55 platen frame, although I prefer to so construct them. Obviously the paper-shelf may be otherwise detachably secured to the platen frame; and it may be constructed of any preferred shape or material, and applied
 60 to any construction of platen frame or paper-carriage.

Front paper guide.—Heretofore this guide has been made in the form of a metal plate, which in practice has been found to unduly
 65 obscure the writing; and if made so narrow

as to afford a view of the writing, it is weak and liable to injury. I construct the guide of wire, bent so as to form an open vertically elongated frame, as shown at Fig. 7. It may be secured to the front bar 1 of the platen
 70 frame in any suitable manner; for instance, by first securing it to a block 33, and then screwing the block to the bar. By this construction sufficient strength is secured, and the view is practically unobstructed. As
 75 illustrated in Fig. 5, the guide extends below and above a horizontal line drawn through the axis of the platen and the guide at its lower end stands well away from the platen, in a suitable position to catch the leading
 80 edge of the paper; while at the upper end it is curved about concentrically with the platen, so as to turn the sheet back over the platen.

Writing above or below the line.—The line-
 85 space wheel 34 may be actuated by any suitable mechanism (not shown), to rotate the platen with a step-by-step-motion in the usual manner. To guard against accidental rotation of the platen, I provide preferably
 90 a spring-pressed check-bar 35, which is pivoted at its rear end to the platen-frame at 36, and provided at its forward end with an anti-friction roll 37, which engages the under side of the line-space wheel. The check-
 95 bar may be provided with an upwardly and forwardly extending arm 38, the free end thereof being provided with a tooth 39, and a finger-piece or key 40 (Figs. 1 and 6). In operation the finger-piece is depressed, the
 100 roll 37 swinging out of engagement with the line-space wheel, and the tooth 39 into engagement therewith, the relative position of the tooth 39 being such that the wheel is forced to rotate slightly in the direction of
 105 the arrow, until the tooth 39 becomes seated between two adjacent wheel-teeth, thereby automatically or mechanically determining the extent of rotation of the platen, which preferably is less than half the usual line-
 110 space distance. The path pursued by the point of the tooth 39 is indicated by the curved dotted line A. As long as the key 40 is depressed, the types will strike slightly above the line of writing. When the key is
 115 released, the spring 41 will operate to lift the check-bar, the roll 37 reengaging the wheel and forcing it to resume its original position. This device is useful when writing the numerators of fractions, and in other in-
 120 stances. Provision may also be made for rotating the platen slightly in the reverse direction, for writing the denominators of fractions, etc. For this purpose I preferably construct a lever, and pivot it in ears
 125 depending from the right-hand end of the front bar 1 of the platen frame, in proximity to the line-space wheel. The forward end 42 of such lever is shaped as a finger-piece, upon depression of which the rear arm 43 is ele- 130

vated, the point thereof swinging in the arc B and causing the platen to rotate slightly in the reverse direction, until the point or tooth of arm 43 becomes seated between two adjacent wheel-teeth. By this operation the roll 37 is forced outwardly. As long as key 42 is depressed, the types will strike a trifle below the line of writing. Upon its release, the spring shown at Fig. 6 secured to the inner side of the platen frame will cause it to resume its normal position, the shoulder 44 serving as a stop; and the check-spring 41 will, through the arm 35 and roll 37, force the line-space wheel and platen to resume their initial positions. Other constructions may be made to serve the purpose and the invention may be applied to other types of machines than that shown. It is not essential that the tooth 39 or its equivalent be mounted upon a lever, or that the extent of the platen rotation be determined by the tooth becoming seated between adjacent wheel teeth, as it may be determined by other means. It is only essential that the device, however constructed, be capable of effecting a relative backward or forward line feed movement between the printing instrumentalities and the platen, or of rotating the platen to a mechanically determined extent, less than a line-space distance. It is not necessary to provide for returning the platen mechanically to original position, although I deem this a valuable feature.

Muffled platen.—Referring now to Figs. 12 and 13, it will be observed that I have replaced the usual wooden platen core with a tubular core 45, made of suitable metal, such as copper, to give the required stiffness without being sonorous. A core formed of wood or other suitable material may be used if desired, as the gist of the invention does not reside in the employment of a metallic core. Into each end of the tube or core I preferably force a bushing 46, made of a sound-deadening substance, such as soft rubber. Each bushing may be perforated axially, and a metallic bushing 47 forced into the perforation, so that the shaft 11 may be more readily slipped out and replaced. One of the metallic bushings may be provided with a head or collar 48, so that it may be secured to the shaft by a pin or screw (Fig. 9). It will be understood that the rubber bushing is of somewhat larger external diameter than the bore of the tube or core 45, and also that the diameter of the metallic bushing is slightly in excess of that of the perforation, so that when the parts are assembled the rubber bushing is in a state of compression, whereby a sufficiently rigid support for the tube or core is afforded, while there is no metallic or other sound-propagating communication between the core and the shaft. The metallic bushings are not essential. If the central support for the platen be of other construction than a

shaft, the rubber bushings or intermediaries may be otherwise constructed to effect the purpose of the invention. It is obvious that the sound deadening bushings may be applied to platens otherwise constructed in the usual manner. It will also be obvious that other features of the muffled platen herein described may be used without the rubber bushings; but I prefer to use the entire combination. It will be perceived that the bushings 46 may be made of any suitable length, or may be made in one piece; and it is not of course essential that the rubber be compressed, so long as the core is suitably sustained upon the central support. The tube or core 45 may be provided with flanges 49, suitable for holding the end plates 10 in position. Surrounding the core 45 is a sound-deadening bed 50, preferably a soft rubber tube. It may be otherwise constructed, as for instance by winding a band of felt, asbestos, soft rubber or other suitable material a sufficient number of times about the core. At Fig. 11 are shown both plan and end views of the tube 50, which as illustrated extends nearly the whole length of the core, as it is preferably equal in length to the tympan.

The usual tubular rubber tympan or platen cover 51 may be fitted over the sound deadening bed 50, as shown partly in section and partly in dotted lines at Fig. 11. At this figure it will be noticed that at each end a space is left between the extremity of the tympan and the metallic platen head 10. In this space I insert a sound deadening ring, tube or washer 52, of the same external diameter as the tympan, or in other words, flush with the periphery of the tympan, thus presenting a continuous cylindrical surface from end to end of the platen. At Fig. 10 is given an end view of one of the rings 52, also a view of the platen with the tympan removed. It will be perceived that the tympan is embedded in sound deadening material at all points, except its periphery. Obviously the tube or bed 50 may be lengthened so as to fill up all the space between the end plates 10, and the rings 52 may then be made of the same internal diameter or bore as the tympan, so as to fit over the bed 50. The core 45 and the rubber or other material surrounding it taken together may be termed a "platen body," said platen body being sustained upon the shaft 11 by the sound-deadening or insulating cushions 46.

Besides serving to subdue the sound, the rings 52 may be utilized for another purpose, which is to insure the true feed of the paper in passing around the platen. To this end the rings 52 may be made preferably of soft rubber (too soft to serve as tympan), which is a well known sound-subduing material, while the paper clings to it more readily than to the hard rubber usually employed for platen covers. The paper-guides 53—which

may be of any usual or suitable construction and arrangement, and may if desired be provided with the usual small pressure rollers either in front or in rear of the printing point—are arranged so as to press the paper directly upon or against the friction rings 52, thereby effectually preventing it from skewing upon the platen. It will be obvious to those versed in the art that the rings 52, of soft rubber, and the tympan 51, of a harder grade of rubber, may be vulcanized together.

If desired, the tubular tympan may be sawed or cut into a number of layers, sections or rings, for instance as illustrated at Fig. 9. If rings are used, they may be made of such size as to fit snugly over the tube 50, and in assembling the rings they should be set lightly one against another. This materially diminishes the noise arising from the blows of the types, without detracting from the appearance of the work. It will be understood that if the rings should be crowded or jammed closely together, the tympan would be as noisy as the original single tube 51. By cutting the tympan into layers, the tympan is rendered flexible, or at least the vibrations are not so readily communicated from one part of the tympan to another, so that its sounding qualities are minimized, while at the same time it continues to form a suitable backing for the paper while being impressed by the metallic types. So long as this purpose is effected, various ways may be adopted for cutting or dividing the tympan into sections or layers, as it is not essential that the tympan be made up of a series of rings. For instance, the tympan may be cut spirally, as indicated by dotted lines at Fig. 10. The tympan and its soft rubber bed 50 may be vulcanized together, and then divided up into sections. The friction rings 52, the soft bed 50 and the tympan 51 may be vulcanized together, and if desired the tympan and bed may be cut into rings or otherwise, and the whole properly assembled upon the core 45.

I prefer to construct the tympan of a series of leather rings or layers 54, principally for the reason that the usual rubber platen covers become so hard within a short period of their manufacture as to be unfit for use, while the leather remains unaffected by age. By compression, hammering or other suitable treatment, the leather should be rendered of sufficient density for the purpose. In constructing the platen, I prefer to make the washers 54 and rings 52 of an excessive diameter, and then reduce the platen to the required size by turning or grinding off the excess of material, it being understood that the rings and washers fit tightly over the bed 50, so that they remain firm when being trimmed by the turning tool.

I do not claim broadly herein a cylindrical tympan or platen cover for type-writing ma-

chines composed of a series of leather washers, as that is made the subject-matter of my Letters Patent No. 635,609, Oct. 24, 1899.

It is not essential that all portions of my invention be used in the same machine; for instance the friction rings 52 may be used without the other novel features.

The details of construction and arrangement may be widely varied without discarding the essence of the various features of the invention or sacrificing the advantages secured thereby.

I disclaim a typewriter platen constructed at or near its ends with means for producing an increased friction at the sides, edges, or margins of the paper; a type-writer platen constructed at or near its ends with portions which are softer than the working field or portion of the platen; a typewriter platen composed of a hard and smooth working field and a softer and rougher band at each end thereof; and a type-writer platen composed of a comparatively hard rubber shield provided with depressions and softer rubber bands seated in said depressions; as I am not the first inventor thereof.

What I claim herein as new and desire to secure by Letters Patent, is as follows:

1. In a type-writing machine, the combination of a platen shaft provided at one end with a socket; a platen frame provided with a hole of less diameter than the platen shaft; and a thumb-wheel provided with a stem adapted to pass through the hole in the platen frame and to be detachably secured in the socket; the said end of the shaft being constructed to bear against the inner side of the platen frame, to prevent endwise movement of the shaft in one direction, and the other end of the shaft being detachably mounted in the other end of the platen frame, and also being adapted to bear against the inner side thereof to prevent endwise movement of the shaft in the other direction.

2. In a type-writing machine, the combination with a platen shaft provided at one end with a nipple of reduced diameter and at the other end with a socket, of a thumb-wheel provided with a stem of less diameter than the shaft and adapted to be detachably secured in the socket, and a platen frame provided at one end with a hole to receive the nipple and at the other end with a hole to receive the stem, said shaft being constructed to bear against the platen frame.

3. In a type-writing machine, the combination with a platen frame of a platen shaft provided with a threaded and tapered socket; a detachable journal of less diameter than the shaft and adapted to screw into the socket and also to extend outside of the platen frame; and a thumb-wheel secured to the outer end of the journal.

4. In a type-writing machine, the combination with a platen frame of a platen shaft pro-

- vided with a threaded and tapered socket; a detachable journal of less diameter than the shaft and adapted to screw into the socket and also to extend outside of the platen frame; the inner end of the journal being slotted longitudinally to permit it to yield as it is screwed into the socket; and a thumb-wheel secured to the outer end of the journal.
5. In a typewriting machine, the combination with a platen and platen frame, of an adjustable paper gage free to slide to different positions, and means for limiting the extent of such sliding movement, said limiting means being adjustable for different pieces of work.
6. In a type-writing machine, the combination with the platen and platen frame of an adjustable paper-gage and an adjustable abutment for determining the extent of the adjustment of said paper-gage.
7. In a type-writing machine, the combination with the platen and platen frame of an adjustable paper-gage and adjustable abutments for determining the extent of the adjustment of said paper-gage in either direction.
8. In a typewriting machine, the combination with a platen and platen frame, of an endwise adjustable paper shelf, and means for limiting the extent of such adjustment, said limiting means being adjustable for different pieces of work.
9. In a type-writing machine, the combination with the platen and platen frame of an adjustable paper-shelf and an adjustable abutment for variably limiting the extent of adjustment of said paper shelf.
10. In a type-writing machine, the combination with the platen and platen frame of an adjustable paper-shelf and adjustable abutments for variably limiting the extent of the adjustment of said paper shelf in either direction.
11. In a typewriting machine, the combination with a platen and platen frame, of a stand detachably connected to and supported by the platen frame, and an endwise adjustable paper shelf which supports the paper and directs it to the platen, said paper shelf being adjustable as a whole on said stand in the direction of the travel of the platen.
12. In a typewriting machine, the combination with a platen and platen frame, of a stand detachably connected to and supported by the platen frame, an endwise adjustable paper shelf which supports the paper and directs it to the platen, said paper shelf being adjustable as a whole on said stand, and an adjustable abutment for limiting the bodily movement of the paper shelf.
13. In a type-writing machine, as a means for guiding the leading edge of the paper and turning it back over the platen without unduly obscuring the writing, the combination with the platen of an open vertically elongated wire frame, substantially as described, suitably supported upon the platen frame, in front of the platen and extending below and above a horizontal line drawn through the axis of the platen.
14. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of means auxiliary to the regular line spacing mechanism for rotating the wheel and platen less than a line-space distance, and means for automatically limiting the extent of such rotation.
15. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of means auxiliary to the regular line spacing mechanism for rotating the wheel and platen less than a line-space distance and automatically checking their further rotation.
16. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of means auxiliary to the regular line spacing mechanism for rotating the wheel and platen less than a line-space distance, means for automatically limiting the extent of such rotation, and means for automatically restoring them to their original position.
17. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of a suitable spring-pressed checking device for holding the platen against accidental rotation; means auxiliary to the regular line spacing mechanism for rotating the wheel and platen less than a line-space distance; and means for automatically limiting the extent of such rotation; the construction and arrangement being such that upon the release of the line-space wheel from the control of the rotating device the spring-pressed checking device will operate to restore the wheel and platen to original position.
18. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of means for rotating the wheel and platen less than a line-space distance in either direction from their original positions, and means for mechanically determining the extent of such rotation.
19. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of a spring-pressed bar provided with a check-roll normally in engagement with the line-space wheel to hold it against accidental rotation, and also provided with a toothed arm whereby the roll may be moved out of engagement with the wheel and the wheel and platen may also be rotated, and means for limiting the rotation of the platen to a distance less than a full or regular line space.
20. In a type-writing machine, the combination with the cylindrical platen and line-space wheel of a spring-pressed bar provided

with a check-roll normally in engagement with the line-space wheel to hold it against accidental rotation; and also provided with a toothed arm whereby the roll may be moved out of engagement with the wheel and the wheel and platen may also be rotated; the construction and arrangement being such that upon being released the spring-pressed bar and roll will reengage the line-space wheel and restore it and the platen to original position.

21. In a type-writing machine, the combination of a suitable central platen-support, such as a shaft; a cylindrical platen-body including a rigid core; and a suitable sound-deadening device, such as a bushing, arranged at each end of the platen-body and serving to sustain the platen-body upon the central support.

22. In a type-writing machine, the combination of a suitable central platen-support, such as a shaft; a cylindrical platen-body, including a rigid core; and soft rubber bushings arranged between the core and the central support, and serving to sustain the platen-body upon the central support.

23. In a type-writing machine, the combination of a suitable central platen-support, such as a shaft; a cylindrical platen-body, including a rigid core; and compressed soft rubber bushings arranged between the core and the central support, and serving to sustain the platen-body upon the central support.

24. In a type-writing machine, the combination of a cylindrical platen-body, including a rigid core; sound-deadening bushings arranged at each end of the core; a suitable central support, such as a shaft; and metallic bushings arranged between the sound-deadening bushings and the central support.

25. In a type-writing machine, the combination of a cylindrical platen-body provided with a metallic core, a platen shaft, and sound-deadening material arranged between the core and the shaft and adapted to sustain the platen upon the shaft.

26. In a type-writing machine, the combination of a platen shaft; a rigid core; sound-deadening material arranged between the core and the shaft and adapted to sustain the core upon the shaft; sound-deadening material surrounding the core; and a tympan surrounding the last mentioned sound-deadening material.

27. In a type-writing machine, the combination of a cylindrical tympan; rings of sound-deadening material arranged at each end of the tympan and flush with the periphery thereof; and interiorly provided sound-deadening means for supporting the tympan and the rings.

28. In a type-writing machine, the combination of a cylindrical tympan surrounding a bed of sound-deadening material;

sound-deadening rings arranged at each end of the tympan and flush with the periphery thereof; and suitable supporting means.

29. In a type-writing machine, the combination of a cylindrical tympan; sound-deadening rings flush with the periphery of the tympan and arranged at each end thereof; a bed of sound-deadening material arranged within the tympan; a metallic tubular core arranged within the bed of sound-deadening material and provided with end plates for confining the rings, tympan and bed; and suitable means for supporting the core.

30. In a type-writing machine, as a means for diminishing the noise arising from the blows of the types, the combination of a cylindrical tympan divided into a series of layers; a smooth and even cylindrical sound-deadening bed upon which said tympan is closely fitted and a suitable support for the bed.

31. In a type-writing machine, the combination of a tympan made up of a series of rings; a cylindrical sound-deadening bed upon which said rings are sleeved and closely fitted; and a suitable support for the bed.

32. In a type-writing machine, the combination of a cylindrical tympan divided into a series of layers; a sound-deadening bed arranged within the tympan; sound-deadening rings arranged at the ends of the tympan and flush with the periphery thereof; and a suitable support.

33. In a type-writing machine, the combination of a cylindrical tympan made up of layers; a sound-deadening bed arranged within the tympan and provided with a tubular core; a suitable central support, such as a shaft; and sound-deadening material arranged between the central support and the core and adapted to sustain the core upon the central support.

34. In a type-writing machine, the combination of a tympan built up of a series of leather rings; a sound-deadening bed arranged within the rings; and a suitable support.

35. In a type-writing machine, the combination of a tympan built up of a series of leather rings; a sound-deadening bed arranged within the rings; a ring of soft rubber arranged at each end of the tympan and flush with the periphery thereof; and a suitable support.

36. In a typewriting machine, the combination of a platen, a paper shelf for directing the paper to said platen, means for affording a free movement of the paper shelf longitudinally of the platen to adjust the paper shelf for different pieces of work, and adjustable means for limiting the extent of adjustment of the paper-shelf.

37. In a typewriting machine, the combination of a platen, a paper shelf for directing the paper to said platen, a finger or abut-

ment carried by said paper shelf and with which a side edge of the paper is adapted to contact as the paper is introduced into the machine, means for rendering the paper shelf free to be moved longitudinally of the platen to adjust the paper shelf to different pieces of work, adjustable means for limiting the extent of adjusting movement of the paper shelf, and indicating means for determining the proper adjustment of the paper shelf.

38. In a typewriting machine, the combination with a platen and platen frame, of an adjustable paper gage free to slide to different positions, means for limiting the extent of such sliding movements, said limiting means being adjustable for different pieces of work, and scale and pointer parts, one of said scale and pointer parts being movable with the gage and the other being fixed to the platen frame.

39. In a typewriting machine, the combination with a platen and platen frame, of an endwise adjustable paper shelf, means for limiting the extent of such adjustment, said limiting means being adjustable for different pieces of work, and scale and pointer parts, one of said scale and pointer parts being on the paper shelf and the other fixed relatively thereto.

40. In a typewriting machine, the combination with a platen and platen frame, of an adjustable paper gage, adjustable abutments for determining the extent of adjustment of said paper gage in either direction, and scale and pointer parts, one of said scale and pointer parts being movable with the adjustable gage and the other being fixed relatively thereto.

41. In a typewriting machine, the combination with a platen and platen frame, of an adjustable paper shelf, adjustable abutments for variably determining the extent of adjustment of said paper shelf in either direction, and scale and pointer parts, one of said scale and pointer parts being carried by the paper shelf and the other being fixed relatively thereto.

42. In a typewriting machine, the combination of a platen, and means cooperative therewith to effect a movement of the platen in either direction at will, each actuation of said means being effective to move the platen a given extent.

43. In a typewriting machine, the combination of a platen, means cooperative therewith to effect a movement of the platen in either direction at will, each actuation of said means being effective to move the platen a given extent, and means for automatically turning the platen in an opposite direction to that which it was moved by said moving means.

44. In a typewriting machine, the combination with a platen and line spacing means

therefor, of means cooperative with the platen to effect a fractional spacing of the platen to permit writing to be effected above the printing line determined by the line spacing means, and means for automatically returning the platen to the writing line position determined by said line spacing means.

45. In a typewriting machine, the combination with a platen and line spacing means therefor, of means cooperative with the platen to effect a fractional spacing of the platen above or below the printing line determined by the line spacing means, and means for automatically returning the platen to the writing line position determined by said line spacing means.

46. In a typewriting machine, the combination with a platen, of a line-space wheel, means for rotating said wheel, a fractional device for independently effecting rotative adjustments of said wheel and for mechanically limiting each rotative adjustment of the platen when effected by said fractional device.

47. In a typewriting machine, the combination with a platen, a line space wheel, and its ordinary operating means, of a fractional line spacing device having a limited throw and operated independently of said ordinary operating means, for causing special rotative adjustments of the platen and the line space wheel and for mechanically limiting the movement thereof.

48. In a typewriting machine, the combination with a platen and its usual or ordinary line spacing mechanism, of a fractional line space mechanism constructed to turn the platen and paper fractional line spaces which differ in width from those afforded by the main line spacing mechanism, and for mechanically limiting the width of such fractional line spaces to distances intermediate successive tooth spaces of the main line spacing mechanism.

49. In a typewriting machine, the combination of a revoluble platen, an ordinary line-feeding mechanism including a platen-positioning ratchet wheel, a cooperating spring detent normally engaging said ratchet wheel, an independent oscillatory device having a fixed throw for rotating the platen so as to produce special line-feeding movements of the paper and for automatically releasing the detent when said oscillatory device is actuated.

50. An auxiliary line spacing device for typewriting machines, comprising an actuating device normally out of operative engagement with the platen, means cooperating with said actuating device for rotating the platen independently of the line spacing mechanism of the machine and for limiting in scope the movement of the platen under the influence of said actuating device to a distance less than a normal line space,

and means for automatically returning the platen to its original position.

51. An auxiliary line spacing device for typewriting machines comprising an actuating device normally out of operative engagement with the paper cylinder, adapted to rotate the latter in the direction opposite to the normal rotation for spacing the lines, and means operatively connected with the paper cylinder and with which said actuating device coöperates to rotate the cylinder a mechanically determined extent in the aforesaid direction independently of the line spacing mechanism of the machine.

52. An auxiliary line spacing device for typewriting machines comprising an actuating device normally out of operative engagement with the paper cylinder, adapted to rotate the latter in the direction opposite to the normal rotation for spacing the lines, means for affording an operative engagement of said actuating device with the paper cylinder and for rotating the cylinder in the aforesaid direction independently of the line spacing mechanism of the machine and for limiting in scope the movement of the cylinder to a distance less than a normal line space.

53. In a typewriting machine, the combination of a platen, a pawl and ratchet line spacing mechanism coöperating with the platen for effecting line spacing movements of the platen through given distances corresponding to the distances between two or more teeth of the ratchet, and auxiliary fractional line spacing mechanism coöperating operatively with the platen and effective to move the platen a given distance at each operation.

54. In a typewriting machine, the combination of a platen, a pawl and ratchet line spacing mechanism coöperating with the platen for effecting line spacing movements of the platen through given distances corresponding to the distances between two or more teeth of the ratchet, and fractional line spacing devices that are adapted to move the platen a fraction of the distance between two teeth of the ratchet at each operation.

55. In a typewriting machine, the combination of a platen, a pawl and ratchet line spacing mechanism coöperating with the platen for effecting line spacing movements of the platen through given distances corresponding to the distances between two or more teeth of the ratchet, auxiliary or fractional line spacing mechanism coöperating operatively with the platen and effective to move the platen a given distance at each operation, a detent coöperating with said ratchet, and means for throwing said detent out of coöperation with the ratchet.

56. In a typewriting machine, the combination of a platen, means for moving the platen predetermined line space distances,

means for moving the platen a mechanically determined fraction of a line space distance as determined by said first mentioned means, and means for automatically returning the platen to the writing line position determined by said first mentioned moving means.

57. In a typewriting machine, the combination of a platen, means for moving the platen a predetermined line space distance at each operation, and means for moving the platen a mechanically determined fractional extent of the distance it is capable of being moved at each operation by said first mentioned means.

58. In a typewriting machine, the combination of a platen, and means for effecting a fractional predetermined backward movement of the platen for producing exponent work.

59. In a typewriting machine, the combination of a platen, and means for effecting a fractional predetermined backward movement of the platen for producing exponent work, said means being operative to mechanically limit the backward movement of the platen when such movement is effected by said means.

60. In a typewriting machine, the combination of a platen, and key actuated means operable at each actuation of the key to effect a predetermined fraction of a line space movement of the platen.

61. In a typewriting machine, the combination of a rotative platen, line spacing mechanism therefor, and key actuated means operable at each actuation of the key to effect a backward fractional spacing of the platen for a predetermined extent less than a line space distance.

62. In a typewriting machine, the combination of a cylindrical platen, normally disengaged means for turning the same forward step by step, manual devices to turn the platen instantly backward a fixed distance, and a spring for instantly restoring the platen to its original position when the manual devices are released.

63. In a typewriting machine, the combination of a platen, a finger wheel therefor, a platen frame, and a screw that takes into a part carried by the platen and extends axially thereof through said finger wheel and which is provided with a thumb head by which said screw may be screwed into place and unscrewed, said screw constituting means for preventing the platen from being dismounted from the platen frame.

64. In a typewriting machine, the combination of a platen, a finger wheel therefor, and a screw carried by said finger wheel and mounted so that it is free to rotate therein, said screw extending axially of the platen and adapted to be connected therewith to retain the platen in the platen frame.

65. In a typewriting machine, the combination of a platen, means for moving the platen a mechanically determined fraction of a line space distance as determined by said first mentioned means, and means for automatically returning the platen to the writing line position determined by said first mentioned moving means.

nation of a platen, a platen frame, a finger wheel having a hollow spindle, and a screw which passes through said hollow spindle and engages with a part carried by the platen
5 to maintain the finger wheel and its spindle connected with the platen and to prevent the platen from being dismounted.

66. In a typewriting machine, the combination of a platen frame, a platen, a sleeve
10 which receives a bearing in the platen frame, a finger wheel connected with said sleeve, and a screw rod that passes through said sleeve longitudinally and connects it to the platen.

15 67. In a typewriting machine, the combination of a platen, a platen frame, a threaded part connected with the platen, a sleeve having a bearing in the platen frame, a finger wheel connected to said sleeve, and a screw
20 rod that passes through the finger wheel and sleeve and engages said threaded part.

68. In a typewriting machine, the combination of a platen, a platen frame, a platen shaft having an internally threaded opening,

a sleeve having a bearing in the platen 25 frame, a finger wheel connected to said sleeve, and a screw which passes through the finger wheel and sleeve and engages said internally threaded opening in the shaft.

69. In a typewriting machine, the combination of a platen frame, a platen shaft jour- 30 naled at one end in the platen frame and formed at the other end with a central opening, a hollow spindle projecting through a part of the platen frame into said opening, 35 a finger wheel connected with said spindle, and a connecting device that passes through said finger wheel and spindle and connects the spindle to the platen shaft and enables the platen to be removed from the platen 40 frame when desired.

Signed at Elizabeth, in the county of Union, and State of New Jersey, this 25th day of March, A. D. 1897.

BURNHAM C. STICKNEY.

Witnesses:

JOSEPH F. JAQUITH,

WM. E. ALLEN.