

963,956.

3 SHEETS--SHEET 1.

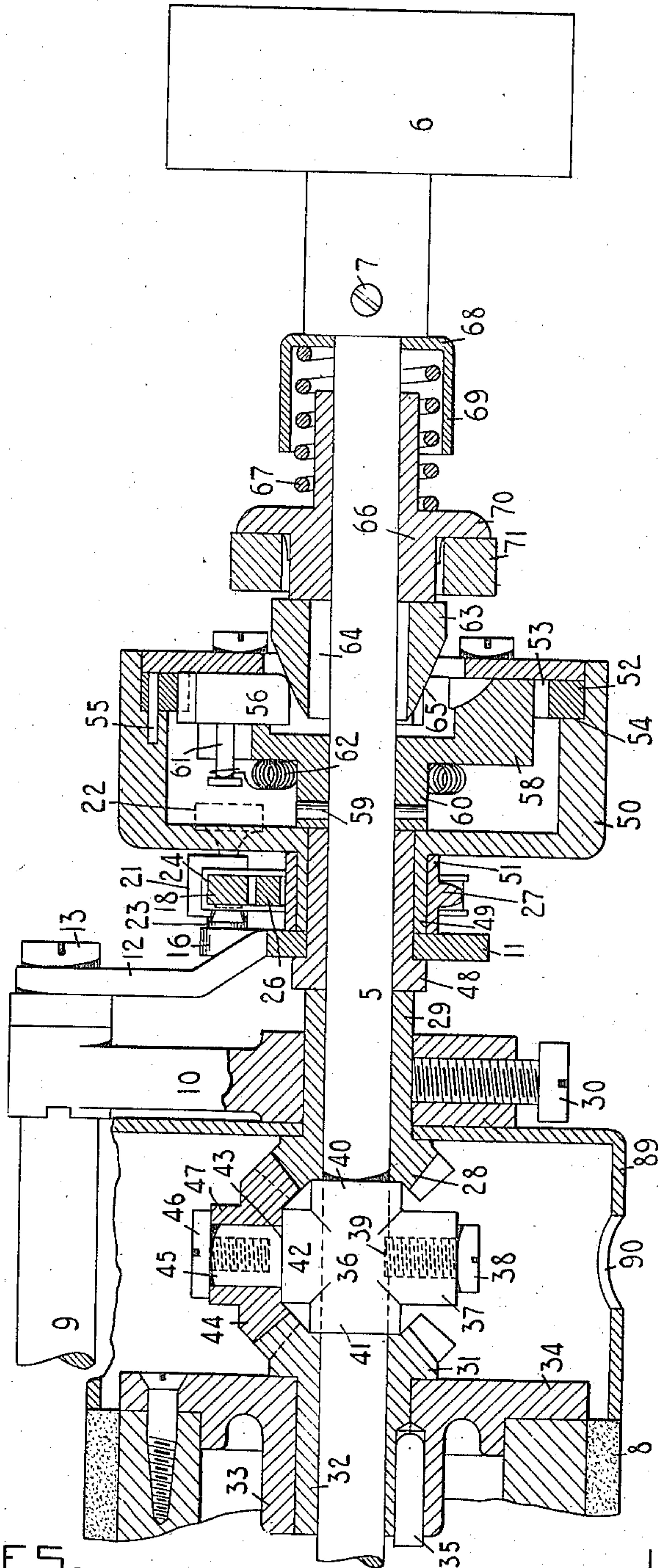


FIG. 1

E. M. Wells.

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My atty Jacob Felbel

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H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 18, 1910.

963,956.

Patented July 12, 1910.

3 SHEETS—SHEET 2.

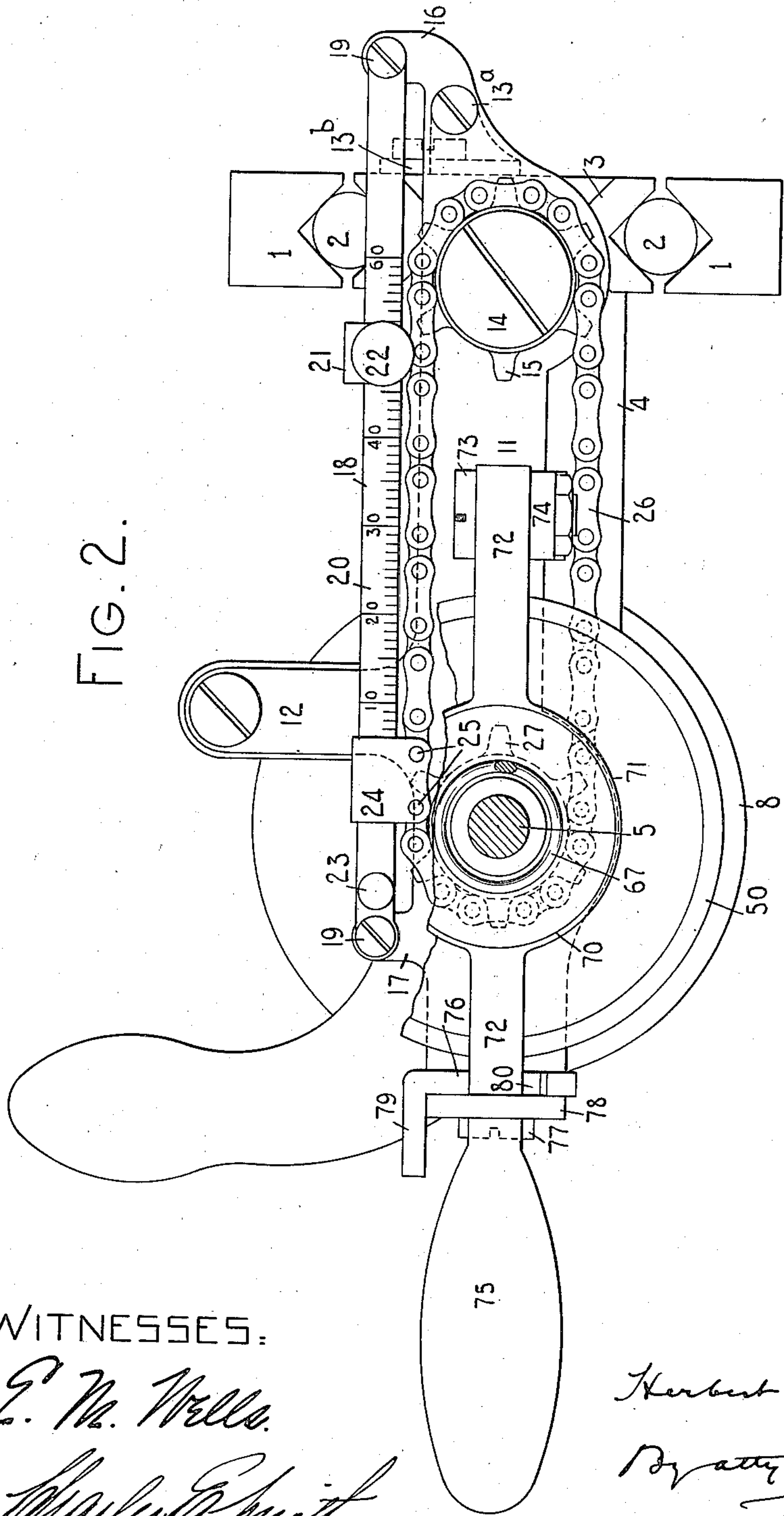


FIG. 2.

WITNESSES:

E. M. Wells.

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3 SHEETS—SHEET 3.

FIG. 4.

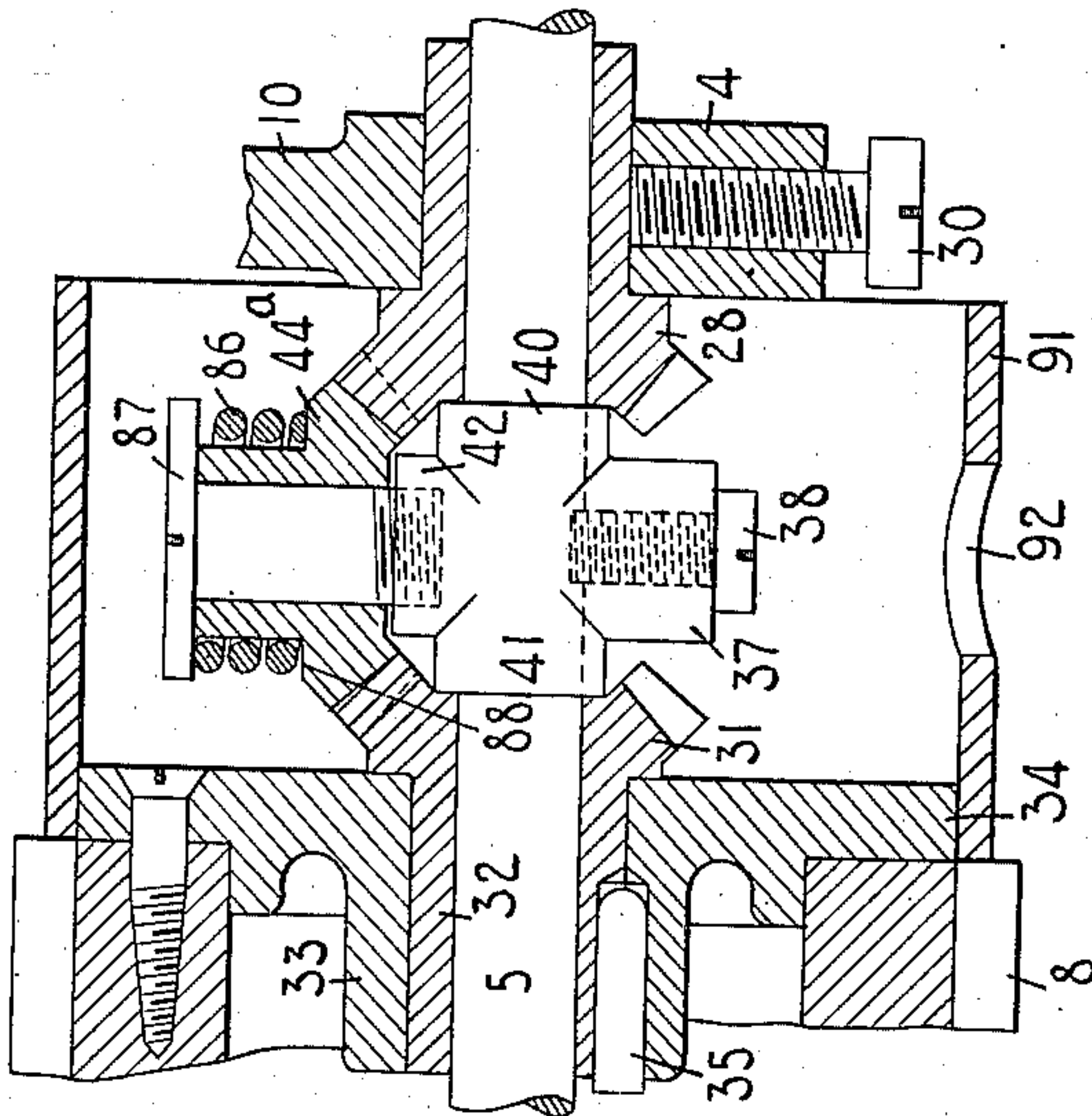


FIG. 3.

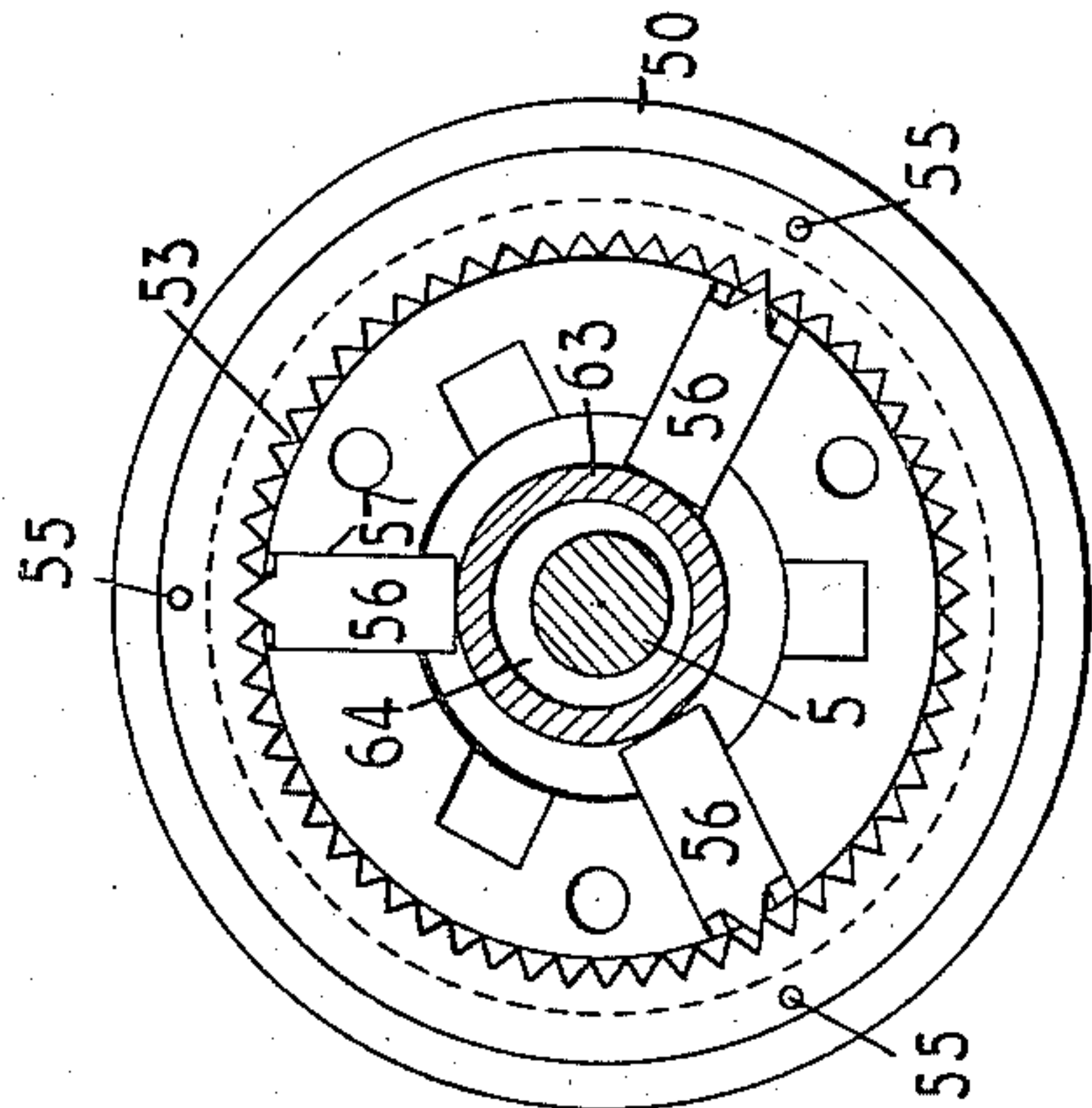
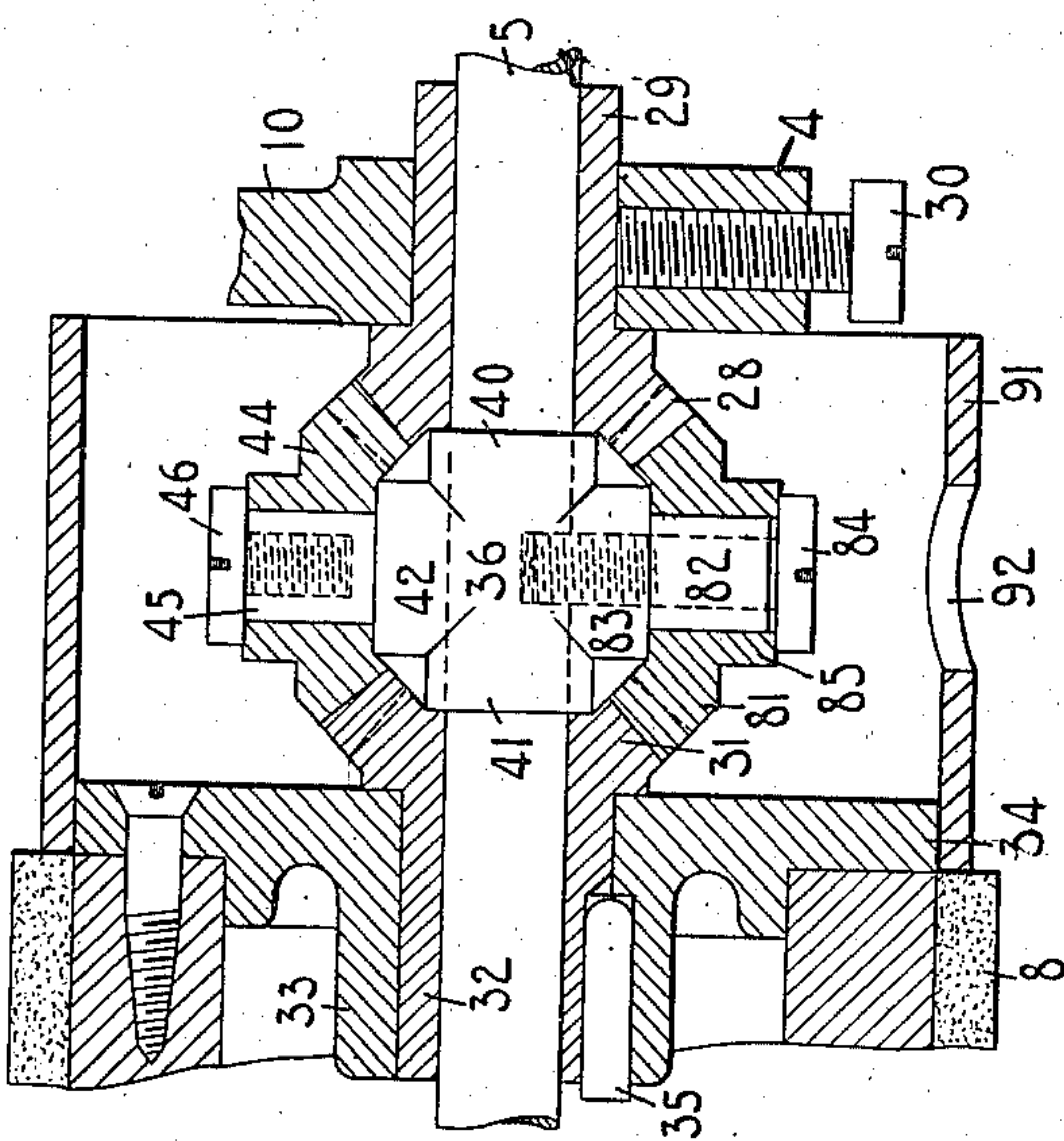


FIG. 5.

WITNESSES:

E. M. Wells.

Charles Smith

INVENTOR:

Herbert H. Steele

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UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF MARCELLUS, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

963,956.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed March 18, 1910. Serial No. 550,130.

To all whom it may concern:

Be it known that I, HERBERT H. STEELE, a citizen of the United States, and resident of Marcellus, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to billing mechanism.

In most instances condensed record billing work does not require more than a single rotation of the platen in order to bring a newly introduced invoice sheet to proper position to receive the first line of writing. However, it sometimes occurs that the printed headings on the invoice sheets are so deep that it requires more than a rotation of the platen to bring a newly introduced sheet in proper position.

The main object of my present invention is to provide a comparatively simple and efficient mechanism that will afford more or less than one rotation of the platen, as may be desired, before it is arrested by the billing stops.

The present invention is shown applied to a billing typewriter in which the turning of the platen to introduce the new sheets of paper is effected by means of the ordinary finger wheels at the end of the platen shaft. Where the heading of the bill is of such depth as to require the platen to be turned more than half of a rotation it requires two operations to turn the platen in these devices as heretofore constructed. The operator cannot turn the platen much more than half of a turn at one gripping of the hand on the finger wheel. By the present invention nearly or quite a complete rotation can be imparted to the platen by one gripping of the finger wheel. This is a matter of a good deal of convenience and it saves a good deal of time.

A further object of my invention is to provide mechanism of the character specified which is applicable to existing forms of typewriting machines without modifying, or materially modifying, the structural features of such machines as they now exist.

A still further object of my invention is to embody the features thereof in existing forms of billing mechanism without modify-

ing, or materially modifying, the structural features of said billing mechanism, thereby adding to the efficiency of said mechanisms without detracting from the advantages thereof.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary vertical sectional view taken through one end of the platen and the associated billing devices. Fig. 2 is an end view of a carriage with parts broken away, the carriage being shown equipped with the billing devices of my invention. Fig. 3 is a view corresponding in part to Fig. 1 but showing a modified form of construction. Fig. 4 is a view which corresponds to Fig. 3 but shows a still further modification of the invention. Fig. 5 is a detail end view with parts in section, the view showing portions of the clutch mechanism by which the billing stops are rendered operative or inoperative to arrest the platen.

The invention in the present instance is shown embodied in a Monarch typewriting machine and may be said to be in the nature of an improvement upon the construction disclosed in the patent to Jacob Felbel No. 902,527, dated November 3rd, 1908 and also upon the construction disclosed in my application Serial No. 520,684, filed October 22, 1909. It should be understood, however, that the invention may be embodied in various styles of typewriting machines and that various changes may be made to facilitate such embodiment.

Fixed oppositely grooved guide rails 1 are secured to the top plate of the machine in the usual manner and receive anti-friction balls or rollers 2. The supporting guide rollers 2 are likewise received in oppositely grooved faces of a slide or guide bar 3 which constitutes the rear cross bar of the carriage. End plates or bars 4 extend forwardly from the guide bar 3 at opposite ends thereof, the end bars being apertured to receive a platen shaft 5 which extends therethrough and which is provided at its

ends with finger wheels 6 secured thereto by set screws 7. A cylindrical rotative platen 8 is mounted on and operatively connected to the platen shaft in a manner to be hereinafter described. A cross bar 9 extends above the platen and is connected at its ends to upwardly extending bracket arms 10 formed on the end plates 4 of the carriage. A bracket plate 11 is provided with an upwardly extending ear 12 secured to the frame of the carriage by a screw 13 which is received in a tapped opening in the end of the rod 9 and is operative to secure one end of the rod in place on the bracket 10 as well as to secure the plate-like bracket 11 in position. The rear end of the plate-like bracket 11 is secured to the right-hand end plate 4 by a screw 13^a and a bracket 13^b. A shouldered screw 14 passes through the bracket plate 11 and into a tapped opening in the right-hand end plate and constitutes a spindle or arbor for a sprocket wheel 15. The bracket plate 11 is provided with upwardly extending arms 16 and 17 to which a stop carrying bar or rod 18 is secured by screws 19. The rod or bar 18 is or may be, provided with a scale 20 to facilitate the adjustment of an adjustable stop 21 which is carried by the stop bar 18 and is secured in its adjusted position thereon by a set screw 22. The forward end portion of the bar 18 is provided with a fixed stop 23 which projects from the right-hand face thereof. A sliding stop 24 surrounds the stop bar and is connected at 25 to an endless band or chain 26 that extends around and coöperates with the sprocket wheel 15. The sprocket chain also extends around a driving sprocket wheel 27 adapted to be operatively connected with the platen shaft in a manner which will hereinafter more clearly appear. It will be understood that when the endless band or chain is operatively connected to the platen shaft a like connection is effected between the platen shaft and the movable stop 24 so that as the platen shaft rotates a rectilinear movement will be transmitted to the traveling stop 24 to move it between the fixed stop 23 and the adjustable stop 21.

Operative connection between the platen shaft and platen is effected through a train of covered reduction gearing, which in the present instance, transmits from the platen shaft to the platen two complete rotations of the platen for one rotation of the shaft. This reduction gearing comprises a bevel gear 28 provided with a hub 29 received in an opening in the right-hand end plate 4 of the carriage and fixed in position in the end plate by a set screw 30 which is received in a tapped opening in the end plate and bears at its free end against the hub of the gear. This gear is therefore fixed to the carriage and is concentric with the platen and receives and constitutes a bearing for the

platen shaft 5 which extends therethrough. A corresponding bevel gear 31 is likewise arranged concentric with the platen and is provided with a hub 32 received in an inwardly extending hub-like portion 33 on the right-hand platen head 34. A feather or pin 35 is received in registering openings formed in the hubs 32 and 33 to lock the gear 31 to rotate with the platen. The platen shaft 5 extends centrally through the gear 31 and receives a bearing therein so that the platen and platen shaft may turn one relatively to the other. A cruciform carrier 36 is mounted on the shaft 5 and has one of its hub-like arms 37 tapped to receive a set screw 38, which at its inner end, engages a flattened portion 39 on the platen shaft to connect the carrier rigidly with the platen shaft. The hub-like arms 40 and 41 of the carrier receive the platen shaft which extends through the carrier and is surrounded by it. The fourth arm 42 of the carrier is provided with an annular shoulder 43 against which one face of a beveled planetary gear 44 is adapted to bear. The arm 42 is likewise provided with a reduced portion 45 which constitutes a spindle on which the gear 44 is adapted to turn. A headed screw 46 is received in a tapped opening in the spindle of the arm 42, the head of the screw overlapping the end of the hub 47 of the gear to hold it in place on the spindle. This gear 44 meshes with and constantly engages the two coöperating gears 28 and 31 so that a rotation of the platen shaft is effective to turn the carrier 36 and thereby carry the planetary gear 44 around the platen shaft as a center. This movement of the planetary gear likewise produces a turning movement of said gear on its spindle 45 by reason of its engagement with the fixed gear 28. The rotative movement of the planetary gear 44 around its spindle 45 produces a rotative movement of the platen around the platen shaft. As hereinbefore pointed out this rotative movement of the platen in the present instance is as two to one, two revolutions of the platen being effected for a single revolution of the shaft.

The means whereby the platen shaft is operatively connected to and disconnected from the sprocket chain or the traveling stop 24, may be of any suitable construction. Any suitable two-part clutch for instance, may be employed for this purpose. The construction disclosed in the present instance is one such as is shown in my application hereinbefore referred to and in practice I prefer to employ such a clutch. A shouldered sleeve 48 is received in an opening in the bracket plate 11 and is secured therein by a "drive fit" or otherwise. This sleeve constitutes a bearing for the platen shaft which extends therethrough and the outside of said sleeve likewise constitutes a

bearing for a hub 49 formed as a part of a shell or housing 50 which surrounds the co-operative clutch members. The hub 51 of the driving sprocket wheel 27 surrounds the hub 49 of the housing 50, the hubs 51 and 49 being secured together by any suitable means. The housing 50 is formed with an annular cut-out to receive a ring 52 provided with inwardly extending oppositely beveled clutch teeth 53. The ring 52 bears against a shoulder or flange 54 to which the ring is secured by pins 55. Radially disposed sliding clutch members or pawls 56 are received and slide in grooves 57 formed in a member 58 secured to the platen shaft by a pin 59 which extends through an opening in a hub 60 of the member 58 and through the platen shaft, to fixedly connect the two to rotate together. Each pawl 56 is provided with an inwardly extending pin 61. Three triangularly arranged coiled springs 62 are connected at their ends to these pins and tend to draw them inwardly. A frusto-conical actuating device or wedge 63 is provided with an enlarged central opening 64 through which the platen shaft 5 extends. The inclined face 65 of the actuating device coöperates with and is supported by the inner ends of the radially disposed pawls 56 and when pressure is exerted upon the wedge or actuating device the pawls will be forced outwardly into engagement with the teeth 53, thus rigidly connecting the member 58, which is fixed to the platen shaft, with the member 50, which is fixed to the driving wheel 27. At this time, therefore, the driving wheel is locked to the platen shaft to rotate therewith and to cause a movement of the traveling stop 24 between the stops 21 and 23.

Pressure is maintained upon the wedging or actuating device 63 by a spring-pressed slide 66 which is mounted to slide longitudinally along the platen shaft and bears at one end against the wedge 63. A coiled expansion spring 67 surrounds the platen shaft and bears at one end against the slide 66 and at its opposite end against the bottom of a cup-like member 68, the cylindrical portion 69 of which surrounds the coiled spring. The bottom of the member 68 bears against the hub of the right-hand finger wheel to limit the movement of the member 68 to the right. The slide 66 is provided with a circumferential flange 70 against which one side of a circular portion 71 of a lever 72, is adapted to bear. The circular portion of the lever 72 enables the platen shaft and the slide to extend through the lever and provides an effective engagement for the lever on the slide 66. The rear end of the lever is pivoted by a bolt 73 to a bracket arm 74 which projects to the right from the bracket plate 11. The forward end of the lever 72 is provided with a finger

piece 75 by which it may be actuated to shift the slide 66 to the right against the pressure of its spring. This relieves the pressure of the spring 67 on the pawls 56 which latter are then withdrawn from engagement with the teeth 53 by the retracting springs 62. This frees the clutch members from engagement with each other to permit the members 58 and 50 to turn independently one of the other and to permit the platen to be rotated independently of the driving gear 27 and the movable stop 24 controlled thereby. A latch 76 is pivoted by a headed shouldered screw 77 to an extension 78 on the forward end of the bracket plate 11. The latch is provided with a finger piece 79 by which it may be depressed against the pressure of a suitable spring (not shown) in order to disengage the engaging portion 80 of the latch from the release lever 72. When the latch engages the release lever the latch is effective to lock the lever in its clutch-releasing position so that the platen may be turned indefinitely independently of the stop devices.

Referring to the modification shown in Fig. 3 it will be observed that in addition to the parts previously described I have provided a fourth bevel gear 81 which is situated opposite the gear 44 and like the gear 44 is adapted to turn on a spindle 82 formed on an arm 83 which corresponds to the arm 37 in the construction previously described. A headed screw 84 is received in a tapped opening in the shaft 5 and performs a two-fold function, the inner threaded end of the screw engaging the shaft to lock the carrier to rotate therewith and the head of the screw overlapping the end of the hub 85 of the gear 81 to prevent a displacement of the gear 81 from its spindle and at the same time to provide means for effecting an adjustment of the gear 81 toward the oppositely disposed gear 44 in order to compensate for any lost motion or back lash that may take place between the gears 28, 31 and 44. This arrangement also provides for a better distribution of the forces on opposite sides of the platen shaft in transmitting movement from the shaft to the platen. Moreover, the arrangement greatly reduces the liability of any looseness or lost motion in the train of gearing.

In the construction disclosed in Fig. 4 a coiled expansion spring 86 is interposed between the head of a screw 87 and a shoulder 88 on the gear 44^a so as to exert a pressure on the gear 44^a toward its companion gears 28 and 31 and thus automatically take up or compensate for any lost motion that may be produced between the coöperative gears due to wear or to inaccuracies in the cutting of the gears.

The operation of the billing device is so well understood that there is no necessity,

it is believed, for describing the operation thereof further than to point out that when the clutch members are in engagement the platen will be arrested in its backward movement by the engagement of the traveling stop 24 with the forward stop 23. A bill or invoice sheet is then introduced and a forward rotation of the platen is effected, thereby producing a rearward movement of the traveling stop 24 along the bar 18 until the traveling stop engages and is arrested by the adjustable or back stop 21, thus arresting the platen in position to receive the first line of writing on the newly introduced invoice or bill sheet. The clutch may then be disengaged and the writing proceeded with. During the operation of the usual line spacing mechanism the platen will be rotated at successive line spacing movements and the effect of these movements is to turn the planetary gear and effect a corresponding movement of the platen shaft. The clutch sections at this time, however, are disconnected, and the turning of the platen will not affect the stop devices.

The gearing may be protected from dirt by a cylindrical cover 89 having an opening 90 for the insertion of the bit of a screw driver when it is desired to turn the screw 38 for any purpose. (See Fig. 1.) In this figure the cover has a head that is supported on the sleeve or bushing 29. Cylindrical covers 91 are also provided at Figs. 3 and 4. These covers are headless and are each supported on the right hand platen head, and provided with an opening 92 for a screw driver. All the covers are preferably mounted to be rotated by hand independently of the platen so as to obtain register of the holes with the screws of the gearing. The cover may however be fixed and the platen rotated to bring the screw into alinement with the hole.

While I have referred to the train of gearing between the platen and stops, and between the platen and platen shaft or the finger wheel thereon, as reduction gearing, inasmuch as there is a reduction of the speed of two to one between the platen and said parts, it will be understood that regarded the other way about or from the traveling stop or from the shaft to the platen, the intermediate gearing may be regarded as multiplying gearing which increases the speed of the platen two to one with reference to the traveling stop or the finger wheel.

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

1. In a typewriting machine and billing mechanism, the combination of a rotative platen, a hand actuated device, constantly engaged reduction gearing between said platen and said hand actuated device, stop devices for arresting the platen, and means operable at will for effecting a connection

or disconnection between certain of said stop devices and the platen.

2. In a typewriting machine and billing mechanism, the combination of a rotative platen, a hand actuated device, constantly engaged reduction gearing between said platen and said hand actuated device, stop devices for arresting the platen, and means operable at will for effecting a connection or disconnection between certain of said stop devices and the platen and between said certain of the stop devices and said reduction gearing.

3. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, a chain for moving certain of said stops, means for enabling the platen to rotate independently of said stops, and reduction gearing between said platen and said chain.

4. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, a chain for moving certain of said stops, means for operatively connecting said chain to and disconnecting it from the platen, and reduction gearing between said platen and said chain.

5. In a typewriting machine, the combination of a rotative platen, a platen frame, a chain, stops for arresting said platen, certain of said stops being held against movement on the platen frame and certain of them being moved by the chain, means for effecting a relative adjustment between certain of said stops, means which enable the platen to be turned to any desired extent without being arrested by said stops, and reduction gearing between said platen and said chain.

6. In a typewriting machine, the combination of a rotative platen, a platen frame, relatively adjustable stops carried by the platen frame and held against movement thereon, a chain, a stop fixed to said chain and adapted to move between said first mentioned stops to determine the extent of rotation of the platen, hand actuated means operable at will for operatively connecting the chain to and for disconnecting it from said platen, and reduction gearing between said platen and said chain.

7. In a typewriting machine, the combination of a rotative platen, a platen frame, a bar carried by said platen frame, a stop which slides along said bar, a co-acting stop, means for operatively connecting said sliding stop to and for disconnecting it from the platen, whereby rotation of the platen may cause the sliding stop to slide along said bar and whereby the platen may be rotated without transmitting movement to said sliding stop, and reduction gearing between said platen and said sliding stop.

8. In a typewriting machine, the combination of a rotative platen, a movable stop that has a rectilinear movement, a coöperating

stop, means for operatively connecting the movable stop to the platen to be moved therewith and for disconnecting said movable stop from the platen to enable the platen to be rotated indefinitely independently of said movable stop, and constantly engaged reduction gearing between said platen and said movable stop.

9. In a typewriting machine, the combination of a rotative platen, a platen frame, a movable stop that has a rectilinear movement, cooperating relatively adjustable stops carried by the platen frame, means for operatively connecting the movable stop to the platen to be moved therewith between said relatively adjustable stops and for disconnecting said movable stop from the platen to enable the platen to move independently of said movable stop, and constantly engaged reduction gearing between said platen and said movable stop.

10. In a typewriting machine, the combination of a rotative platen, cooperating stops to arrest the platen, certain of said stops having a rectilinear movement and certain of said stops being relatively adjustable to an extent to enable the platen to make more or less than a full revolution as may be desired before it is arrested by said stops, means whereby the stops are rendered inoperative to arrest the platen and the platen is left free to be rotated indefinitely, and reduction gearing between said platen and said rectilinearly movable stop or stops.

11. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen after it has made more or less than a full revolution as may be desired, a chain for moving certain of said stops, means for enabling the platen to rotate independently of said stops, and constantly engaged reduction gearing between said platen and said chain.

12. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, means for effecting a relative adjustment between certain of said stops to enable the platen to be turned for more or less than a full revolution as may be desired before the platen is arrested by said stops, a chain for moving certain of said stops, means for enabling the platen to rotate independently of said stops, and reduction gearing between said platen and said chain.

13. In a typewriting machine, the combination of a rotative platen, two wheels one of which is adapted to be turned with the platen, an endless band which passes around said wheels, a stop that is moved by said band, means cooperative with said stop to arrest the platen, means whereby the platen may continue its movement after it is arrested by said stop and its cooperative means, and reduction gearing between said platen and said band.

14. In a typewriting machine, the combination of a rotative platen, two wheels one of which is a driving wheel, reduction gearing between said platen and said driving wheel, an endless band which passes around said wheels, a stop that is moved by said band, means cooperative with said stop to arrest the platen, and means whereby the platen may continue its movement after it is arrested by said stop and its cooperative means.

15. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, gearing between the platen shaft and platen for moving the platen relatively to the platen shaft when the latter is turned, stop devices for arresting the platen, and means operable at will for operatively connecting certain of said stops to the platen shaft, the gearing being such that when said connection is made the platen is caused to move at a greater speed than the connected stop.

16. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, gearing between the platen shaft and platen for moving the platen relatively to the platen shaft when the latter is turned, stop devices for arresting the platen, a clutch section connected to the platen shaft, and a cooperating clutch section operatively connected with certain of said stop devices, said gearing being such that when a stop device is connected to the platen the platen is caused to move at a greater relative speed than said stop device.

17. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, a gear secured to the platen, a gear fixed at all times against rotative movement, a gear operatively connected to the platen shaft and meshing with the two first mentioned gears, stop devices for arresting the platen, and means operable at will to operatively connect certain of said stop devices with the platen shaft.

18. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, a gear secured to the platen, a gear fixed at all times against rotative movement, a planetary gear carried around with the platen shaft and meshing with said two first mentioned gears to effect a relative movement between the platen and platen shaft whenever the platen shaft is turned, stop devices for arresting the platen, and means operable at will for operatively connecting certain of said stop devices with the platen shaft.

19. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, a gear secured to the platen, a gear fixed at all times against rotative movement, a planetary gear carried around with the platen shaft and meshing

with said two first mentioned gears to effect a relative movement between the platen and platen shaft whenever the platen shaft is turned, stop devices for arresting the platen, and a hand actuated clutch between certain of said stops and the platen shaft.

20. In a typewriting machine, the combination of a rotative platen, a platen shaft movable independently of the platen, a fixed bevel gear, a bevel gear secured to the platen, a bevel planetary gear carried around with the platen shaft and meshing with said two first mentioned bevel gears, stop devices for arresting the platen, and means operable at will for operatively connecting certain of said stop devices with the platen shaft.

21. In a typewriting machine, the combination of a rotative platen, a platen shaft movable independently of the platen, a fixed bevel gear, a bevel gear secured to the platen, a bevel planetary gear carried around with the platen shaft and meshing with said two first mentioned bevel gears, stop devices for arresting the platen, and a hand actuated clutch, one section of the clutch being operatively connected to the platen shaft and the other section being operatively connected to certain of said stop devices.

22. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, gearing between the platen shaft and platen for moving the platen relatively to the platen shaft when the latter is turned, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and means operable at will for operatively connecting said endless band with the platen shaft, said gearing being such that when said endless band is connected with the platen shaft and the platen, the endless band is caused to move at a lower rate of speed than the platen.

23. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, gearing between the platen shaft and platen for moving the platen relatively to the platen shaft when the latter is turned, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and a hand actuated clutch comprising two members one connected with the platen shaft and the other operatively connected with said endless band, said gearing being such that when said endless band is connected with the platen shaft and the platen, the endless band is caused to move at a lower rate of speed than the platen.

24. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, a gear secured to the platen, a gear fixed at all times against rotative movement, a gear operatively con-

nected to the platen shaft and meshing with the two first mentioned gears, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and means operable at will for operatively connecting said endless band with the platen shaft.

25. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, a gear secured to the platen, a gear fixed at all times against rotative movement, a planetary gear carried around with the platen shaft and meshing with said two first mentioned gears to effect a relative movement between the platen and platen shaft whenever the platen shaft is turned, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and means operable at will for operatively connecting the endless band with the platen shaft.

26. In a typewriting machine and billing mechanism, the combination of a rotative platen, a platen shaft, a gear secured to the platen, a gear fixed at all times against rotative movement, a planetary gear carried around with the platen shaft and meshing with said two first mentioned gears to effect a relative movement between the platen and platen shaft whenever the platen shaft is turned, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and a hand actuated clutch comprising two members one connected with the platen shaft and the other operatively connected with said endless band.

27. In a typewriting machine, the combination of a rotative platen, a platen shaft movable independently of the platen, a fixed bevel gear, a bevel gear secured to the platen, a bevel planetary gear carried around with the platen shaft and meshing with said two first mentioned bevel gears, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and means operable at will for operatively connecting the platen shaft and said band to turn together.

28. In a typewriting machine, the combination of a rotative platen, a platen shaft movable independently of the platen, a fixed bevel gear, a bevel gear secured to the platen, a bevel planetary gear carried around with the platen shaft and meshing with said two first mentioned bevel gears, stop devices for arresting the platen, an endless band connected to certain of said stop devices, and a hand actuated clutch comprising two members one connected with the platen shaft and the other operatively connected with said endless band.

29. In a typewriting machine and billing mechanism, the combination of a carriage, a rotative platen, a platen shaft adapted to turn relatively to the platen, a gear fixed

to the platen and arranged concentrically therewith and through which the platen shaft extends, a second gear fixed at all times to the carriage, said second gear being
 5 arranged concentrically with the platen and through which the platen shaft extends, a carrier fixed to the platen shaft, a third gear mounted to turn on said carrier and adapted to mesh with said two first mentioned gears,
 10 stops for arresting the platen, and means operable at will for connecting certain of said stops with the platen shaft.

30. In a typewriting machine and billing mechanism, the combination of a carriage, a
 15 rotative platen, a platen shaft adapted to turn relatively to the platen, a gear fixed to the platen and arranged concentrically therewith and through which the platen shaft extends, a second gear fixed at all
 20 times to the carriage, said second gear being arranged concentrically with the platen and through which the platen shaft extends, a carrier fixed to the platen shaft, a third gear mounted to turn on said carrier and
 25 adapted to mesh with said two fixed mentioned gears, stops for arresting the platen, and a hand actuated clutch for connecting certain of said stops with the platen shaft to render the stops operative to arrest the
 30 platen.

31. In a typewriting machine, the combination of a carriage, a rotative platen, a
 35 platen shaft adapted to turn relatively to the platen, a bevel gear fixed to the platen and arranged concentrically therewith and through which the platen shaft extends, a second bevel gear fixed to the carriage, said second gear being arranged concentrically
 40 with the platen and through which the platen shaft extends, a carrier fixed to the platen shaft to rotate therewith, a third planetary bevel gear mounted to turn on said carrier and meshing with said two first mentioned bevel gears, stops for arresting
 45 the platen, a hand actuated clutch for connecting certain of said stops with the platen shaft to render the stops operative to arrest the platen, and a finger wheel fixed to the platen shaft for turning the platen through
 50 said gears and for moving the stop or stops connected with the platen shaft.

32. In a typewriting machine, the combination of a rotative platen, stop devices for
 55 arresting the platen, intermediate gearing between said stop devices and platen, means for taking up lost motion in the gearing, and means for rendering said stop devices operative and inoperative to arrest the
 60 platen.

33. In a typewriting machine, the combination of a rotative platen, stop devices for
 65 arresting the rotation of the platen, intermediate reduction gearing between the platen and said stop devices, said gearing being maintained constantly in mesh, means

for taking up lost motion in the gearing, and means operable at will to render said stop devices operative and inoperative to arrest the platen.

34. In a typewriting machine, the combination of a rotative platen, a hand actuated
 70 device, constantly engaged reduction gearing between said platen and said hand actuated device, means for taking up lost motion in said constantly engaged reduction gearing,
 75 stop devices for arresting the platen, and means operable at will for effecting a connection or disconnection between certain of said stop devices and the platen.

35. In a typewriting machine, the combination of a rotative platen, stop devices for
 80 arresting the rotation of the platen, reduction gearing between the platen and said stop devices, automatically acting means for taking up lost motion in said gearing, and
 85 hand actuated means operable at will for rendering said stop devices operative or inoperative to arrest the platen.

36. In a typewriting machine, the combination of a rotative platen, stops for arrest-
 90 ing the platen, an endless band for moving certain of said stops, means for enabling the platen to rotate independently of said band, reduction gearing between said platen and
 95 said endless band, and means for taking up lost motion in said gearing.

37. In a typewriting machine, the combination of a rotative platen, a platen frame, a
 100 bar carried by said platen frame, a stop which slides along said bar, a coöperating stop, means for operatively connecting said sliding stop to and for disconnecting it from the platen, whereby the rotation of the
 105 platen may cause the sliding stop to slide along said bar, and whereby the platen may be rotated without transmitting movement to said sliding stop, reduction gearing between said sliding stop and the platen, and
 110 means for taking up lost motion in said gearing.

38. In a typewriting machine, the combination of a rotative platen, a platen shaft,
 115 a gear secured to the platen, a fixed gear, a gear operatively connected to the platen shaft and meshing with the two first-mentioned gears, means for taking up lost motion between said gears, stop devices for arresting the platen, and means operable at
 120 will to operatively connect certain of said stop devices with the platen shaft.

39. In a typewriting machine, the combination of a rotative platen, a platen shaft,
 125 a gear secured to the platen, a fixed gear, a planetary gear carried around with the platen shaft and meshing with said two first-mentioned gears to effect a relative movement between the platen and platen
 130 shaft, means for taking up lost motion between the planetary gear and the said gears with which it coöperates, stop devices for

arresting the platen, and means operable at will for operatively connecting said stop devices with the platen shaft.

40. In a typewriting machine, the combination of a rotative platen, a platen shaft movable independently of the platen, a fixed bevel gear, a bevel gear secured to the platen, a bevel planetary gear carried around with the platen shaft and meshing with said two first-mentioned bevel gears, means for taking up lost motion between the bevel gear and its two coöperative gears, stop devices for arresting the platen, and a hand actuated clutch, one section of the clutch being operatively connected to the platen shaft and the other section of the clutch being operatively connected to certain of said stop devices.

41. In a type writing machine, the combination of a carriage, a rotative platen, a platen shaft adapted to turn relatively to the platen, a gear fixed to the platen and ar-

ranged concentrically therewith and through which the platen shaft extends, a second gear fixed to the carriage, said second gear being arranged 'concentrically' with the platen and through which the platen shaft extends, a carrier fixed to the platen shaft, a third gear mounted to turn on said carrier and adapted to mesh with said two first-mentioned gears, means for taking up lost motion between said gears, stops for arresting the platen, and means operable at will for connecting certain of said stops with the platen shaft.

Signed at Syracuse in the county of Onondaga and State of New York this 15th day of March A. D. 1910.

HERBERT H. STEELE.

Witnesses:

ANNA T. LYNCH,
BESSIE G. KITTEL.