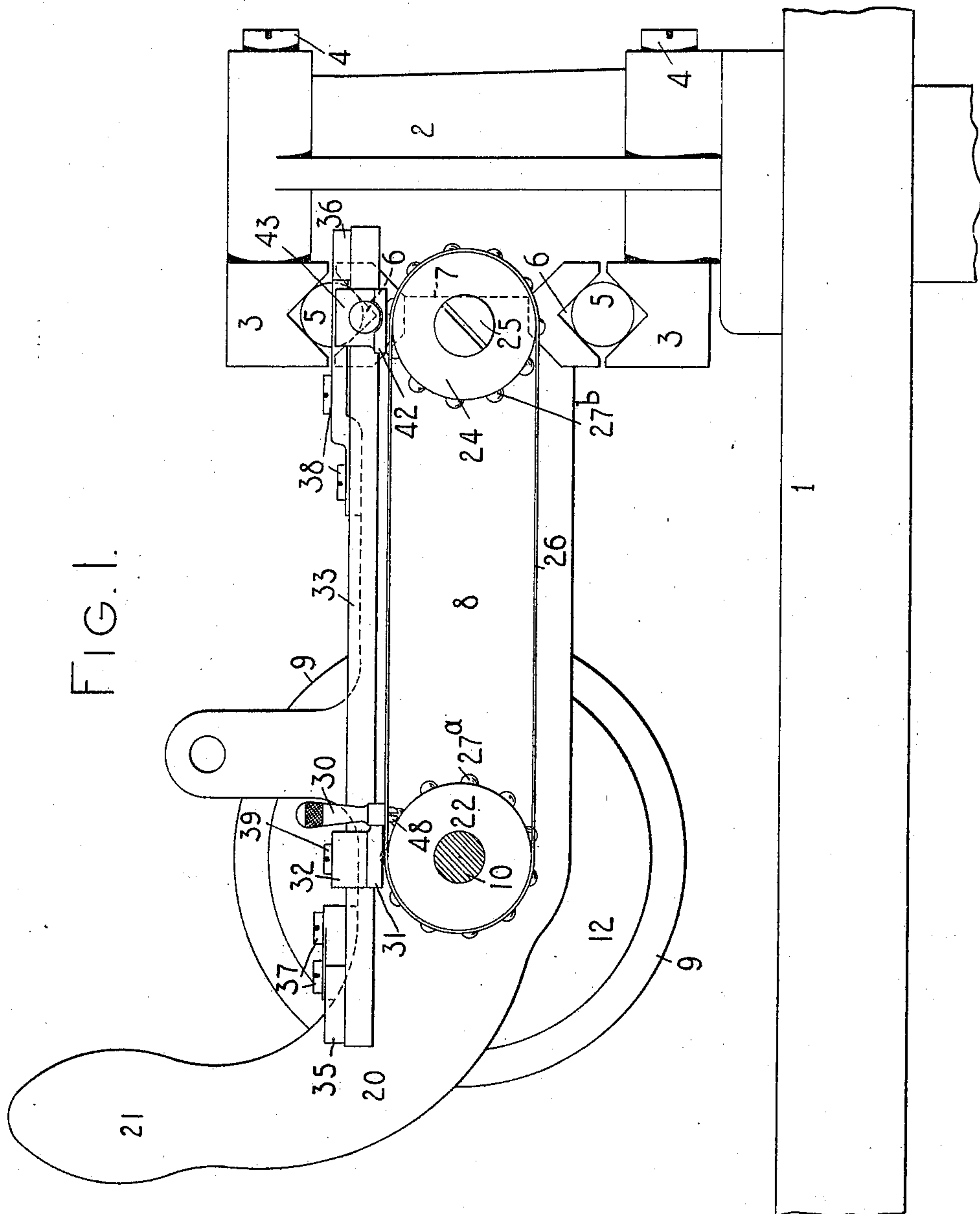


975,027.

J. FELBEL.  
TYPE WRITING MACHINE.  
APPLICATION FILED SEPT. 12, 1908.

Patented Nov. 8, 1910.

3 SHEETS-SHEET 1.



WITNESSES

E. M. Wells.

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INVENTOR.

Jacob Felbel

975,027.

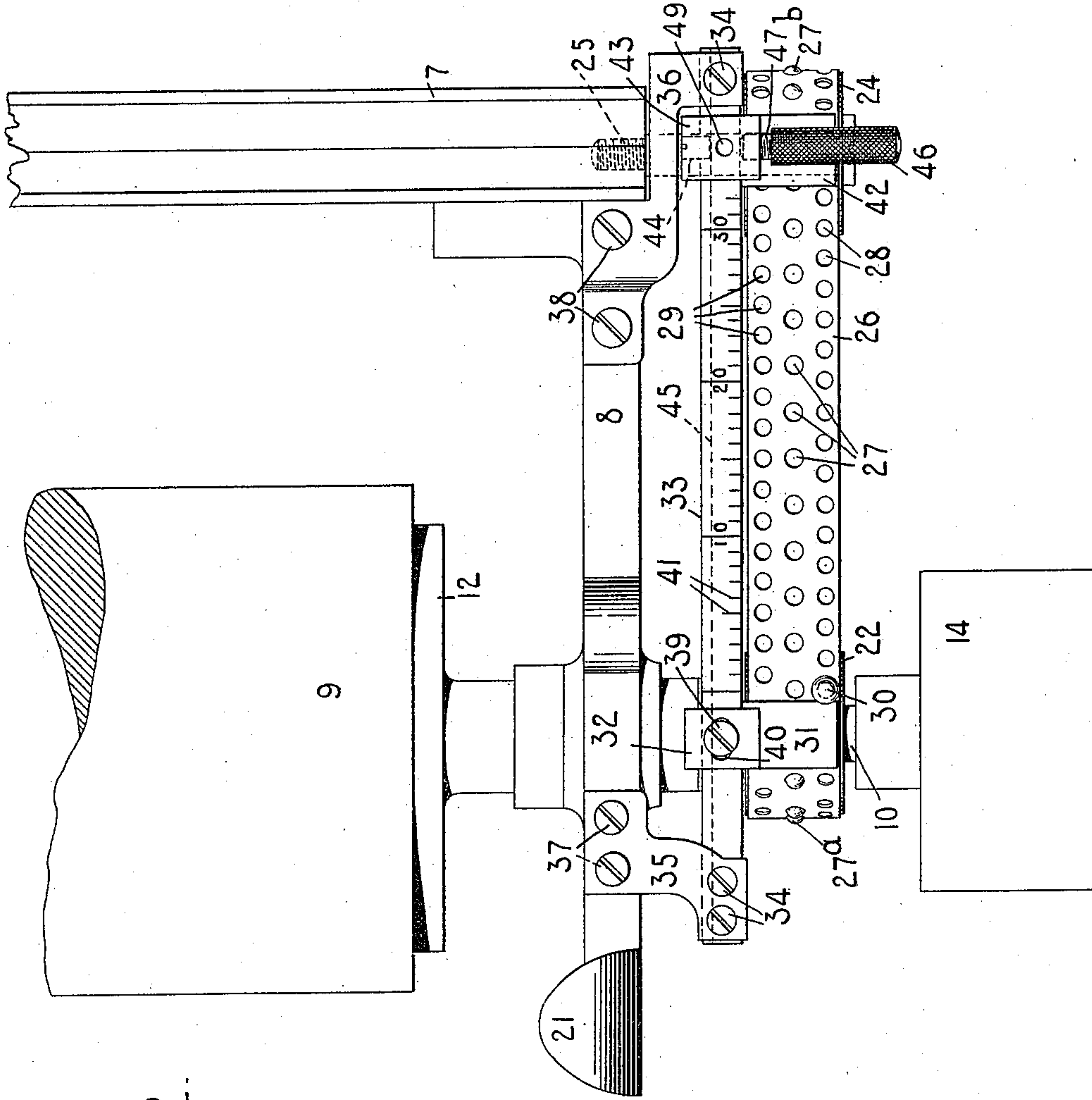


FIG. 2.

WITNESSES:

*E. M. Wells.*

*Charles E. Smith*

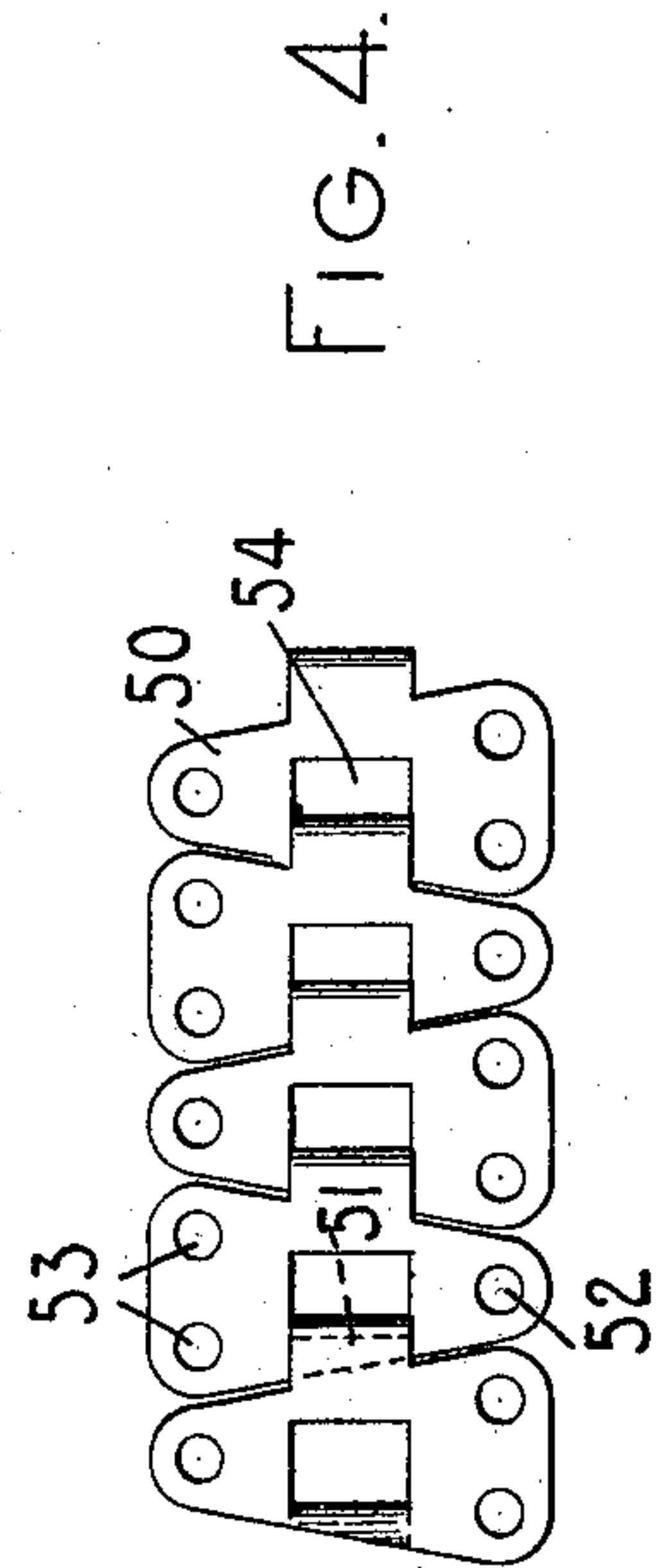
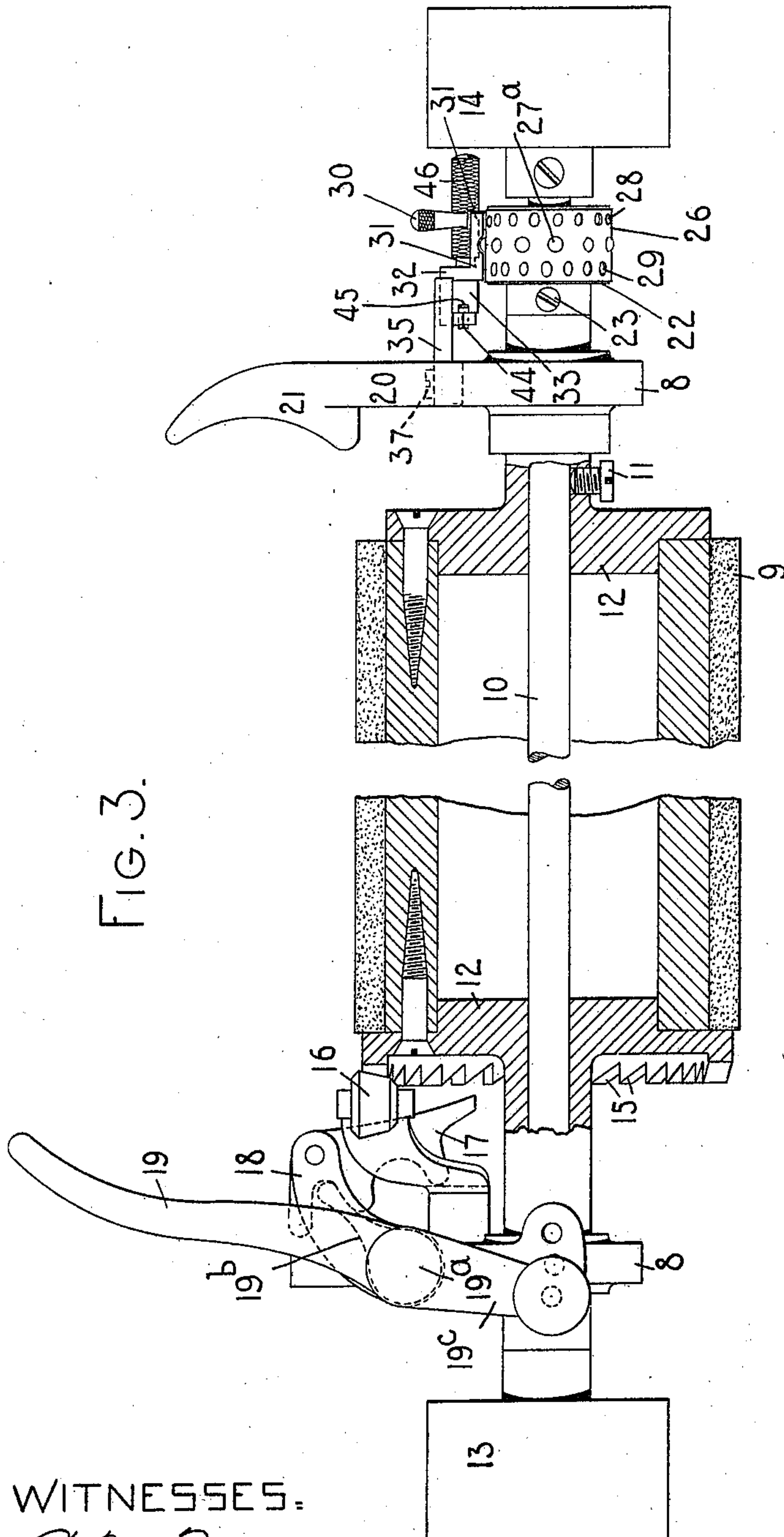
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3 SHEETS—SHEET 3.



WITNESSES:

E. M. Wells.

Charles Smith

INVENTOR.

Jacob Felbel



# UNITED STATES PATENT OFFICE.

JACOB FELBEL, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## TYPE-WRITING MACHINE.

975,027.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed September 12, 1908. Serial No. 452,785.

*To all whom it may concern:*

Be it known that I, JACOB FELBEL, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York 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 stop devices for arresting the platen at predetermined points in its rotation, the mechanism being devised more especially for use in preparing condensed billing records.

The main objects of the invention are to provide simple and efficient means and also stop devices which may be readily applied to existing typewriting machines without materially modifying the regular structure of said machines.

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 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 an end elevation on an enlarged scale of part of a typewriting machine embodying my invention, the right-hand platen finger wheel being sectioned away. Fig. 2 is an enlarged detail top plan view of the same with the right-hand finger wheel in place. Fig. 3 is an enlarged detail front elevation with parts in section showing a portion of a typewriter carriage embodying my invention. Fig. 4 is an enlarged detail top plan view of a portion of a modified form of band or chain.

In the present instance I have shown my invention embodied in a Monarch typewriting machine and to which my invention is especially applicable.

The top plate 1 supports standards 2 to which fixed guide rails 3 are secured by screws 4. The rails 3 are oppositely grooved and receive anti-friction balls or rollers 5 which also run in opposite grooves 6 formed in a rear cross bar or traverse bar 7 constituting part of the paper carriage. Projecting forwardly from the rear bar 7 are end bars 8, these several bars forming in the

main the platen frame or carriage. A cylindrical rotative platen 9 is secured to a platen shaft 10 by a set screw 11 which enters a threaded hole in the hub of the right-hand platen head 12 and bears against the platen shaft. The platen shaft extends through and is journaled in bearings in the end plates or bars 8 and is provided at its opposite ends with finger wheels 13 and 14 secured to the shaft by screws in the usual manner. The left-hand platen head 12 is formed with line spacing ratchet teeth 15 with which a spring-pressed roller detent 16 coöperates. A line spacing pawl 17 is pivoted to a rocker arm 18 and co-acts with the line spacing wheel. The pawl is operated by a hand piece 19 having a horizontal axis 19<sup>a</sup> and connected with said hand piece is a finger 19<sup>b</sup> which meshes with the pivoted line space pawl in the usual manner, a spring being provided as customary to return the parts after a line space movement. 19<sup>c</sup> designates the usual Monarch line space regulator. The right-hand end plate 8 of the carriage is formed with an upwardly extending arm 20 provided with a finger piece 21 by which the carriage may be moved to the right and by which it may be controlled when released from the spring drum for rapid movement toward the left. The parts thus far described are of the usual construction embodied in the Monarch typewriter and a further description thereof is deemed unnecessary.

The right-hand end of the platen shaft 10, where it extends beyond the right-hand end plate 8, has secured thereto a band or sprocket wheel 22. This sprocket wheel may be secured to the shaft by a set screw 23 which extends through a threaded opening in the hub of the wheel 22 and bears against the platen shaft. The wheel 22 is thus operatively and rigidly connected with the platen to rotate therewith and constitutes a driving wheel, as will hereinafter more clearly appear. A second band wheel or sprocket wheel 24 is mounted to turn on a shouldered screw 25, the threaded end of which enters a tapped hole in the right hand side bar 8, as shown by dotted lines in Fig. 1. A flexible stop-carrier, band, or chain 26 passes around the driving wheel 22 and the driven wheel 24 and is perforated at 27 to co-operate with the sprockets or projections 27<sup>a</sup> and 27<sup>b</sup> on the band wheels 22 and 24



respectively, and in the present instance positively connects the wheels to turn together. Inasmuch, however, as the wheel 24 is a mere idler, it is not essential that this wheel  
 5 be toothed to positively engage the band. In addition to the central line of apertures 27, the band 26 is provided with two parallel rows of apertures 28 and 29. Upon reference to Fig. 2 it will be observed that each  
 10 of the apertures 29 is situated transversely of the band opposite the space between two adjacent apertures 28 to provide a staggered arrangement of the apertures 28 and 29. By these means I am enabled to provide  
 15 openings 28 and 29 which follow each other closely in their longitudinal arrangement in the band; but nevertheless they may be made considerably larger than if the apertures of the two series were arranged in a single line.  
 20 This staggering arrangement of the openings 28 and 29 enables a stop or pin 30 to be properly connected to the band by inserting it in one of the openings 28 and 29, no matter what line space position the platen  
 25 may be arrested at in its rotative movement. The contact or arresting portion of the stop 31 projects over the band for coöperation with the stop 30, whether the latter be in one of the openings 28 or in one of the openings  
 30 29. A carrying portion 32 of the stop 31 projects over and straddles a bar 33 which extends fore and aft of the machine and is secured at its ends by screws 34 to brackets 35 and 36. The bracket 35, situated at the  
 35 forward end of the bar 33, is connected by screws 37 to the right-hand end bar of the carriage. The bracket 36 is secured to the same end bar in a like manner by screws 38. The stop 31 is fixed to the bar 33 by a headed  
 40 screw 39 which extends through an elongated opening 40 in the carrying portion of the stop 31 and engages a threaded opening in the bar 33. While the stop 31 is maintained fixed it nevertheless, by these means,  
 45 is capable of a slight adjustment longitudinally of the bar 33 in order to properly position it with reference to line indicating indices 41 provided on the upper side of the bar 33 so that the stop 31 may be positioned  
 50 to coöperate with the traveling stop or pin 30 at the zero position on the line indicating scale. A third rear stop 42 extends over the upper side of the endless band 26 and coöperates with the traveling stop 30 in the  
 55 same manner as the stop 31. The carrying portion 43 of the stop 42 straddles and is supported upon the stop bar 33 and is tapped to receive a screw 44 which projects into a longitudinally extending undercut groove  
 60 45 in the bar 33 in order to avoid accidental detachment of this stop 42 from the bar. An outwardly extending knurled finger piece 46 forms part of a screw 47 received in a hole in the carrying portion of the stop  
 65 42, the inner end of said screw being adapt-

ed to bear against the outer face of the bar 33 in order to hold the stop 42 in its adjusted position on said bar. In the present instance it has been assumed that the line spacing ratchet wheel is provided with thirty-three  
 70 teeth. It will be observed from an inspection of Fig. 2 that the scale on the bar 33 provides for an adjustment of the stop 42 as far rearwardly as the graduation "33" on said scale, so that the stop 42 may be ad-  
 75 justed for coöperation with a traveling stop 30 at any point up to a full revolution of the platen. If desired, however, the parts may be proportioned and arranged so as to provide for an adjustment of the stop 42 to en-  
 80 able the platen to rotate for more than a full revolution before being arrested. The construction of the parts is such that this may be readily accomplished as will hereinafter more clearly appear. The traveling  
 85 stop 30 is preferably in the form of a pin having a band-engaging member 48 in the nature of a split sphere, the parts of which have a slight outward spring and also a contracted neck portion, so that the stop  
 90 may be securely connected to the band and yet may be readily withdrawn from one of the holes 28 or 29 and inserted in another, as occasion may require. The stop 30 may be detached from the band when the condensed  
 95 record mechanism is not desired for use and may be inserted in an opening 49 in the upper side of the adjustable stop 42, and stored there for the time being.

From the foregoing description it will be  
 100 understood that the traveling stop 30 in its movement with the band 26 travels in a rectilinear path between the stops 31 and 42 and during the backward rotation of the platen will contact with the forward stop  
 105 31 to arrest the platen in its backward movement, whereas the stop 30 will contact with the rear relatively fixed stop 42 during the forward rotation of the platen to arrest the latter in its forward movement.  
 110

In using the devices for condensed record billing work the stop devices are first set for the particular character of bill heads to be employed. This is accomplished by first  
 115 moving the adjustable stop to the rearward limit of its adjustment and placing the stop 30 in contact with the stop 31 and effecting an engagement of the stop 30 with the band while the stop is so positioned. An invoice  
 120 or bill sheet is then introduced into the machine and the platen is rotated forwardly until it is in a position to receive the first line of writing at, say, the date line thereon. During this forward rotation of the platen  
 125 a backward rectilinear movement of the stop 30 takes place. If, for instance, it required a rotation of the platen equivalent to twenty-five teeth of the line spacing wheel to bring the bill to the proper position to receive the first line of writing, then the  
 130



stop 30 would be moved to register with the graduation indicating the point "25" on the stop bar. The adjustable stop 42 should then be slid forward to contact with the traveling stop 30 while in the position last mentioned, and the finger piece 46 should then be turned to secure the adjustable stop in this position. The platen should then be given a reverse or backward rotation by either of the finger wheels 13 and 14 until it is arrested by the engagement of the traveling stop 30 with the forward fixed stop 31. The carbon and record sheets may then be introduced into the machine, the record sheet being next to the platen and the carbon sheet being interposed between the invoice and record sheets. The platen may then be turned forwardly by either of the finger wheels 13 or 14 until it is arrested by the engagement of the traveling stop 30 with the adjustable stop 42. The detachable stop 30 will then be removed and may be for convenience placed in the opening 49. The removal or detachment of the stop 30 enables the band and platen to turn independently of the stop devices to any desired extent so that the operator may proceed with the writing, the sprocket wheels and the band moving with the platen during the line spacing movements of the platen. After the bill has been completed the operator may line space twice in order to provide for proper spacing between the last line of the copy of the invoice just completed on the record sheet and the first line of the next manifold copy of the invoice to be written. The detachable stop 30 should then be placed contiguous to the contact face of the adjustable stop 42 and inserted in one of the engaging openings 28 and 29 in the band 26 in order to connect the stop 30 to the band as before. The platen should then be rotated rearwardly by means of either of the finger wheels 13 and 14 until the stop 30 has been brought into engagement with the forward fixed stop 31 and the platen is arrested. The invoice sheet may then be removed without disturbing the carbon and record sheets and a new invoice sheet may be introduced into the machine. The platen should then be turned forwardly until it is arrested by the contact of the traveling stop 30 with the adjustable stop 42. The traveling stop should then be removed and placed in the opening 49 and the writing may be proceeded with as before. In this manner carbon copies of successive bills or invoices may be made upon the condensed record sheets, so that a large number of copies of different bills or other matter may be made in condensed form or close arrangement on a single record sheet.

While I have referred to the use of a scale on the stop carrying bar it should be understood that this scale is not absolutely nec-

essary as the adjustable stop may be set without the aid of the scale, as will be understood from the foregoing description.

In order to provide for more than a single revolution of the platen during the movement of the stop 30 between the two stops 31 and 42, smaller wheels and a correspondingly shorter band may be substituted for those shown. Or, if desired, the centers of the two wheels 22 and 24 may be spaced apart at a greater distance than that shown and the stop rod be made correspondingly longer. Of course, the construction may be made in the first instance to afford more than a complete revolution of the platen and it is then merely a matter of adjusting the stop 42 to provide for shorter headings than those which require more than a full revolution of the platen. It will be seen therefore that the construction is such that the parts may be proportioned and arranged to enable more than a single revolution to be given the platen if desired; that is to say, the devices are capable of handling bills varying from very short printed heads to very long printed heads, in which latter cases it may be necessary to turn the platen more than a complete revolution in order to bring the first line of writing on the invoice or bill sheet to the printing line, although in most instances a construction which provides for less than a full revolution of the platen will be found sufficient.

While I have described one method of using my devices and for setting them for condensed record work it should be understood that the work may be performed in a different manner. In a front-strike or visible writing machine it may be necessary or desirable at times to arrest the platen only during its backward rotation. This may be done by removing the stop 30 from the band after it has reached the forward stop 31 in which case the operator will note visually when the proper point on the invoice sheet has been brought to the printing line and will then proceed with the writing. The rear stop 43 in this event will merely act as an indicating point at which to insert the detachable stop 30 in order to determine the proper rearward extent of rotation to be given the platen when it is moved backwardly to receive a new invoice sheet.

Instead of using an endless band or flexible stop carrier of the character shown in Figs. 1, 2 and 3 of the drawings it may be found desirable to use an endless band of chain-link construction as illustrated at Fig. 4 for instance. In this figure separate links are pivoted together at their adjacent edges as at 51 and each link is provided with apertures 52 and 53 near the side edges thereof for coöperation with the engaging means 48 of the detachable stop 30. The central openings 54 in the chain are to re-



ceive suitable projections or teeth arranged centrally of the sprocket wheels. This band or chain like that shown in the other figures is not connected with and disconnected from the platen by clutch or shifter mechanism but is constantly connected with the platen and runs when the platen rotates for all kinds of work.

Certain of the features herein shown and described are claimed broadly in my application Serial No. 427,914, the claims in the present case being restricted to features not disclosed in the said application.

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

1. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, a band for moving certain of said stops, and a constantly maintained operative connection between said band and platen, said stops being adapted to be set to arrest the platen or to permit it to be rotated indefinitely in either direction.

2. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, a band for moving certain of said stops, and a constantly maintained operative connection between said band and platen, one of said stops being adapted to be moved into and out of co-operative relationship with another of said stops, whereby the platen may be turned freely to any desired extent or may be arrested by said stops.

3. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, a band, and a constantly maintained operative connection between said band and platen, certain of said stops being removably carried by said band.

4. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained operative connection between said band and platen, and stops for arresting said platen, certain of said stops being normally held against movement on the platen frame and certain of said stops being adapted to be moved by said band.

5. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained operative connection between said band and platen, and stops for arresting said platen, certain of said stops being normally held against movement on the platen frame and certain of said stops being adapted to be moved by said band, certain of said stops being detachable from the band at will.

6. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained operative connection between said band and platen, stops for arresting said platen, certain of said stops being normally held against move-

ment on the platen frame, and a band stop removably attachable to the band at different points in the length thereof.

7. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained operative connection between said band and platen, relatively adjustable stops held against movement on the platen frame, and a stop moved by said band between said first mentioned stops, said band stop being movable into and out of operative position.

8. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained operative connection between said band and platen, relatively adjustable stops held against movement on the platen frame, a stop moved by said band between said first mentioned stops, and means for detaching the band stop from and attaching it to the band at various points in the length of the band.

9. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained operative connection between said band and platen, relatively adjustable stops held against movement on the platen frame, a stop moved by said band between said first mentioned stops, and means for connecting the band stop to the band at any line space position of the platen.

10. In a typewriting machine, the combination of a rotative platen, a band, a constantly maintained connection between said band and the platen, a stop that receives a rectilinear movement from said band, and a coöperative stop.

11. In a typewriting machine, the combination of a rotative platen, a band, a constantly maintained connection between said band and the platen, a stop that receives a rectilinear movement from said band, and a coöperative stop, said stops being engageable and disengageable whereby the platen may be arrested or may be turned indefinitely in either direction at will.

12. In a typewriting machine, the combination of a rotative platen, a platen frame, a band, a constantly maintained connection between said band and the platen, a stop that receives a rectilinear movement from said band, and relatively adjustable stops on the platen frame, said stops being adapted to be set to arrest the platen or to permit it to be rotated indefinitely in either direction.

13. In a typewriting machine, the combination of a rotative platen, stops for arresting said platen, a band, and a constantly maintained operative connection between said band and platen, one of said stops being removably carried by said band.

14. In a typewriting machine, the combination of a rotative platen, two wheels one of which is turned by the platen through a



constantly maintained operative connection with the platen, an endless band which passes around said wheels, a stop that is moved by said band, and means coöperative with said stop to arrest the platen, the relationship between the stopping devices being adapted to be changed so that the platen may be rotated indefinitely in either direction.

15. In a typewriting machine, the combination of a rotative platen, two wheels one of which is a driving wheel turned by the platen through a constantly maintained operative connection with the platen, an endless band which passes around said wheels, a stop that is moved by said band, and means coöperative with said stop to arrest the platen.

16. In a typewriting machine, the combination of a rotative platen, a platen shaft, band wheels one of which is a toothed driving wheel mounted on said shaft and constantly connected therewith, a band that passes around and coöperates with said wheels, a stop carried by said band, and relatively adjustable means coöperative with said stop to arrest the platen.

17. In a typewriting machine, the combination of a rotative platen, a platen frame, band wheels one of which is a toothed driving wheel operatively connected with the platen by a constantly maintained connection, an endless band that passes around and coöperates with said wheels, a stop carried by said band, and two relatively adjustable stops carried by the platen frame and coöperative with the band stop to arrest the backward and forward rotation of the platen, said band stop being adapted to be moved to an inoperative position so as to permit the platen to be turned to any desired extent without being arrested.

18. In a typewriting machine, the combination of a rotative platen, a platen frame, band wheels one of which is a toothed driving wheel operatively connected with the platen by a constantly maintained connection, an endless band that passes around and coöperates with said wheels, a stop carried by said band, two relatively adjustable stops carried by the platen frame and coöperative with the band stop to arrest the backward and forward rotation of the platen, and means whereby the band stop may be connected to the band at different points along the length thereof.

19. In a typewriting machine, the combination of a rotative platen, a platen frame, band wheels one of which is a toothed driving wheel constantly connected with the platen, an endless band that passes around and coöperates with said wheels, a stop carried by said band, two relatively adjustable stops carried by the platen frame and co-

operative with the band stop to arrest the backward and forward rotation of the platen, and means for bringing the band stop into coöperation with one of said relatively adjustable stops irrespective of the line spacing position of the platen and for detachably connecting the band stop to the band at such point.

20. In a typewriting machine, the combination of a rotative platen, a pair of wheels adapted always to rotate therewith, an endless band which passes around said wheels, a rod or bar which extends parallel with said band where it passes from one wheel to another, relatively adjustable stops carried by said bar, and a stop carried by said band and movable therewith between the relatively adjustable stops, said stops being adapted to be thrown out of operative relation so as to permit indefinite movement of the platen and said connected endless band.

21. In a typewriting machine, the combination of a rotative platen, a pair of wheels adapted always to rotate therewith, an endless band which passes around said wheels and which carries a stop, a rod or bar which extends parallel with said band where it passes from one wheel to another, relatively adjustable stops carried by said bar, and indicating means to aid in properly effecting a relative setting of said stops.

22. In a typewriting machine, the combination of a rotative platen, a platen frame, a pair of band wheels one of which is a toothed driving wheel mounted to rotate constantly with the platen, a band which passes around said wheels, and coöperating stops which arrest the rotative movement of the platen, two of said stops being carried by and relatively adjustable on the platen frame and a third stop being detachably carried by said band and moving between the stops on the platen frame.

23. In a typewriting machine, the combination of a rotative platen, a flexible rectilinearly moving endless band operatively connected to be always moved when the platen is rotated for any purpose, a stop adjustable to different positions along said band, and means coöperative with said stop to arrest the platen.

24. In a typewriting machine, the combination of a rotative platen, a perforated flexible fore and aft traveling band operatively connected to be moved when the platen is rotated, a stop adjustable to different positions along said band and to different perforations therein, and means coöperative with said stop to arrest the platen.

25. In a typewriting machine, the combination of a rotative platen, a perforated fore and aft traveling band operatively connected to be moved when the platen is ro-



tated, a detachable stop adjustable to different positions along said band, said stop having a spring member adapted to engage the perforations in said band, and means co-  
5 operative with said stop to arrest the platen.

26. In a typewriting machine, the combination of a rotative platen, an endless flexible band traveling over suitable supports and connected to travel constantly with the  
10 platen, an adjustable stop carried by said band, and a coöperative stop for arresting the backward rotation of the platen.

27. In a typewriting machine, the combination of a rotative platen, an endless  
15 flexible band traveling over suitable supports and connected to travel constantly with the platen, an adjustable stop carried by said band, a coöperative stop for arresting the backward rotation of the platen, and

a coöperative stop for arresting the forward 20 rotation of the platen.

28. In a typewriting machine, the combination of a rotative platen, an endless flexible band traveling over suitable supports and connected to travel constantly 25 with said platen, an attachable stop adapted to be connected to said band at any desired point, and a coöperative stop on the framework for arresting the rotation of said platen. 30

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this eleventh day of September A. D. 1908.

JACOB FELBEL.

Witnesses:

CHARLES E. SMITH,  
E. M. WELLS.