

O. WOODWARD.  
TYPE WRITING MACHINE.  
APPLICATION FILED JAN. 31, 1906.

978,255.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

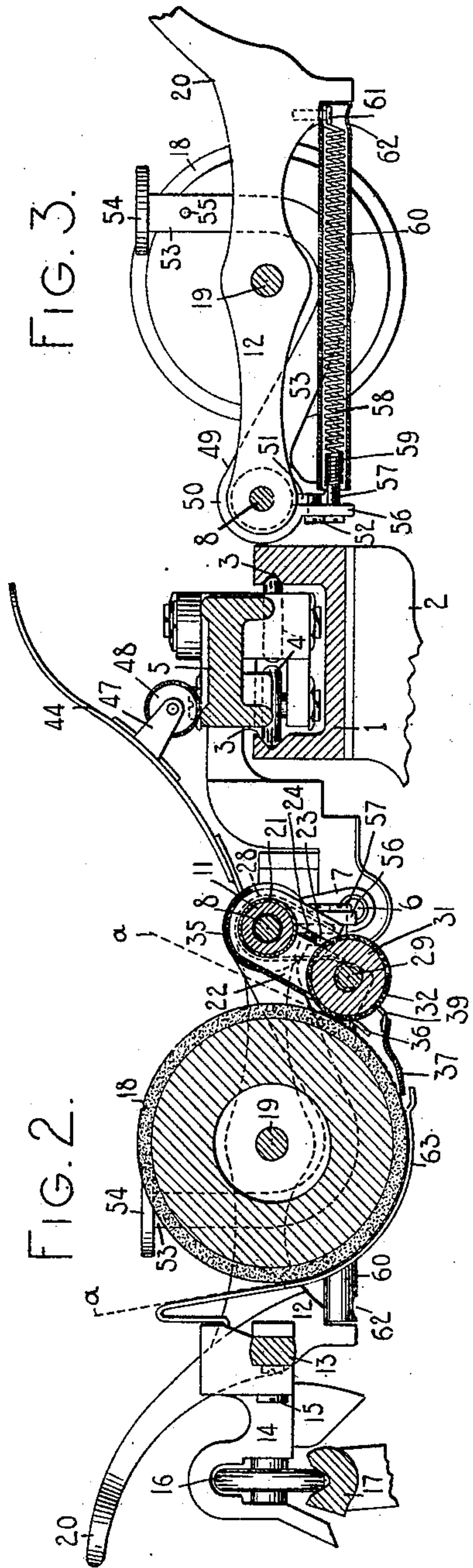


FIG. 2.

FIG. 3.

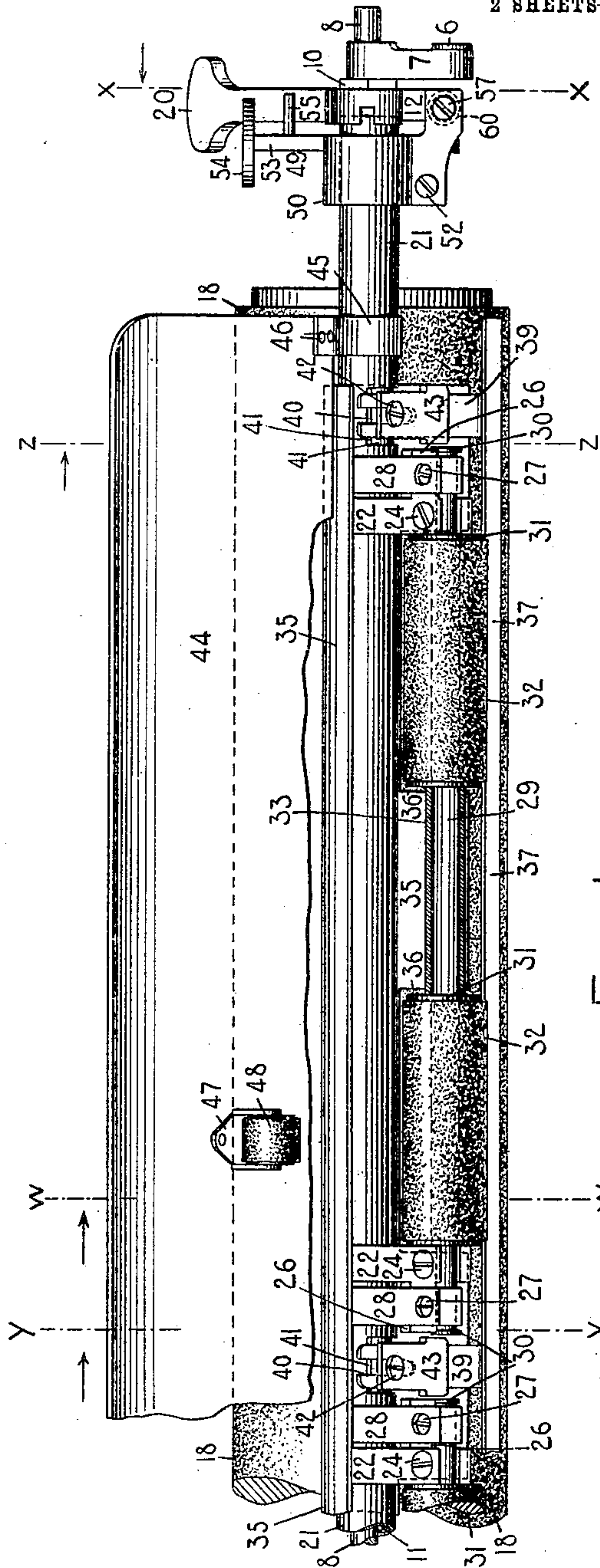


FIG. 1.

WITNESSES:

E. M. Wells.

m. w. Pool

INVENTOR:

Oscar Woodward

By Jacob F. Fabel

HIS ATTORNEY

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2 SHEETS-SHEET 2.

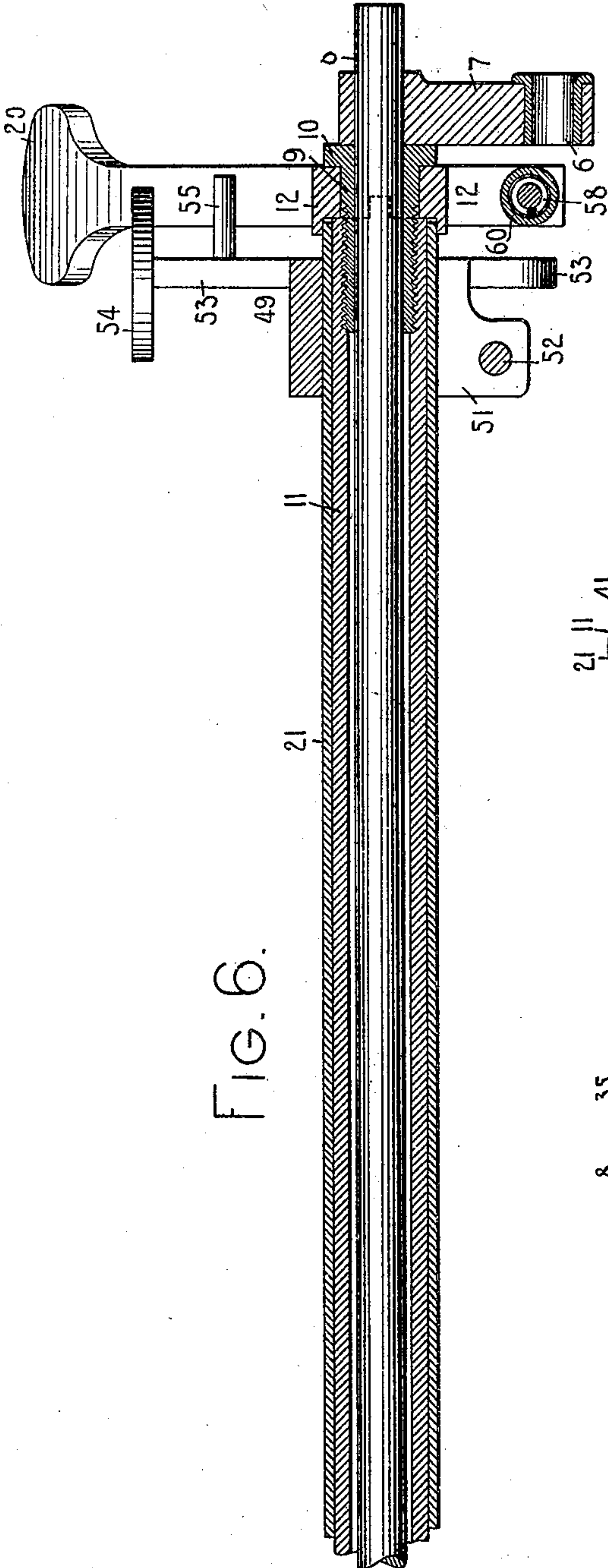


FIG. 6.

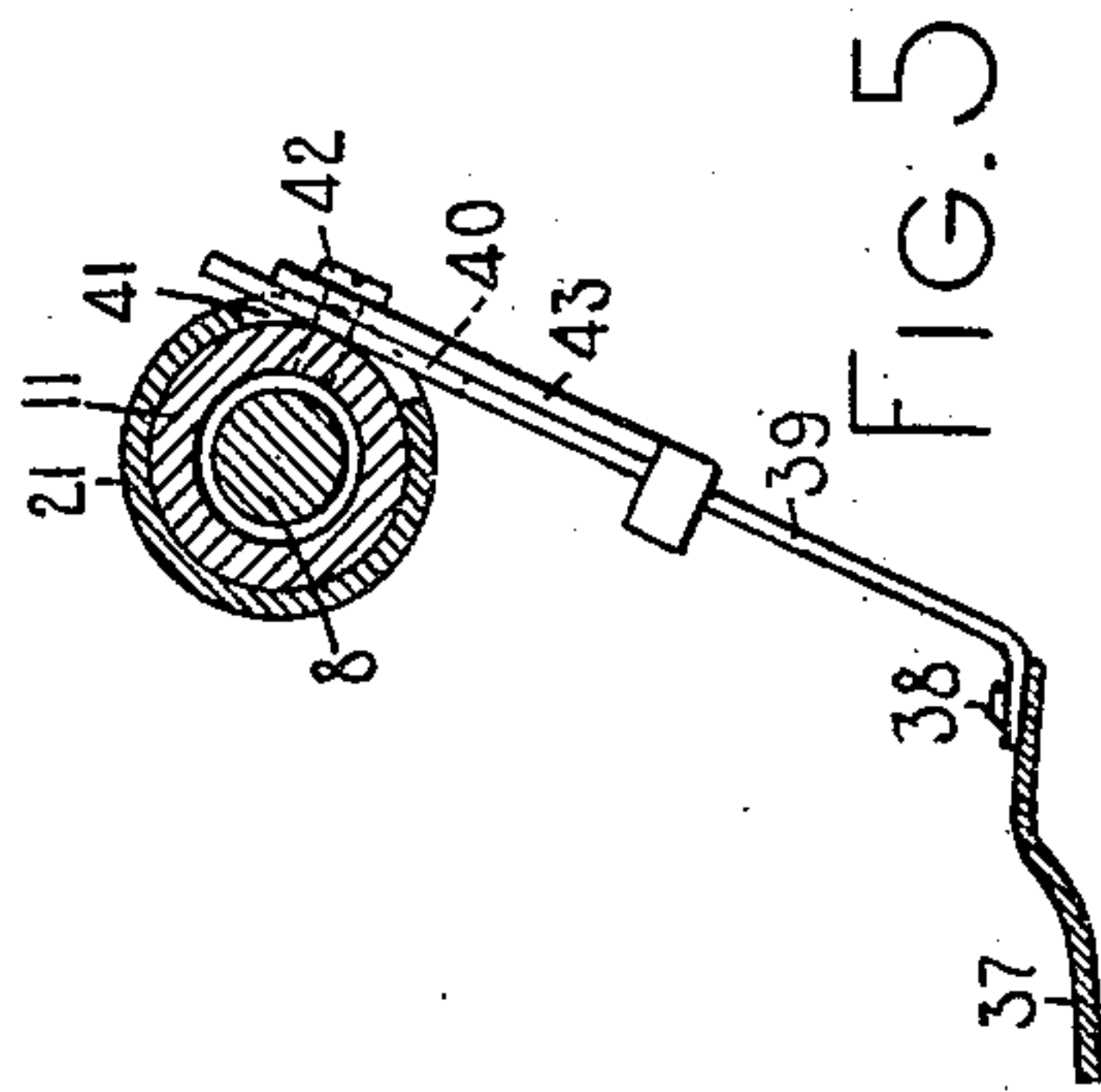


FIG. 5.

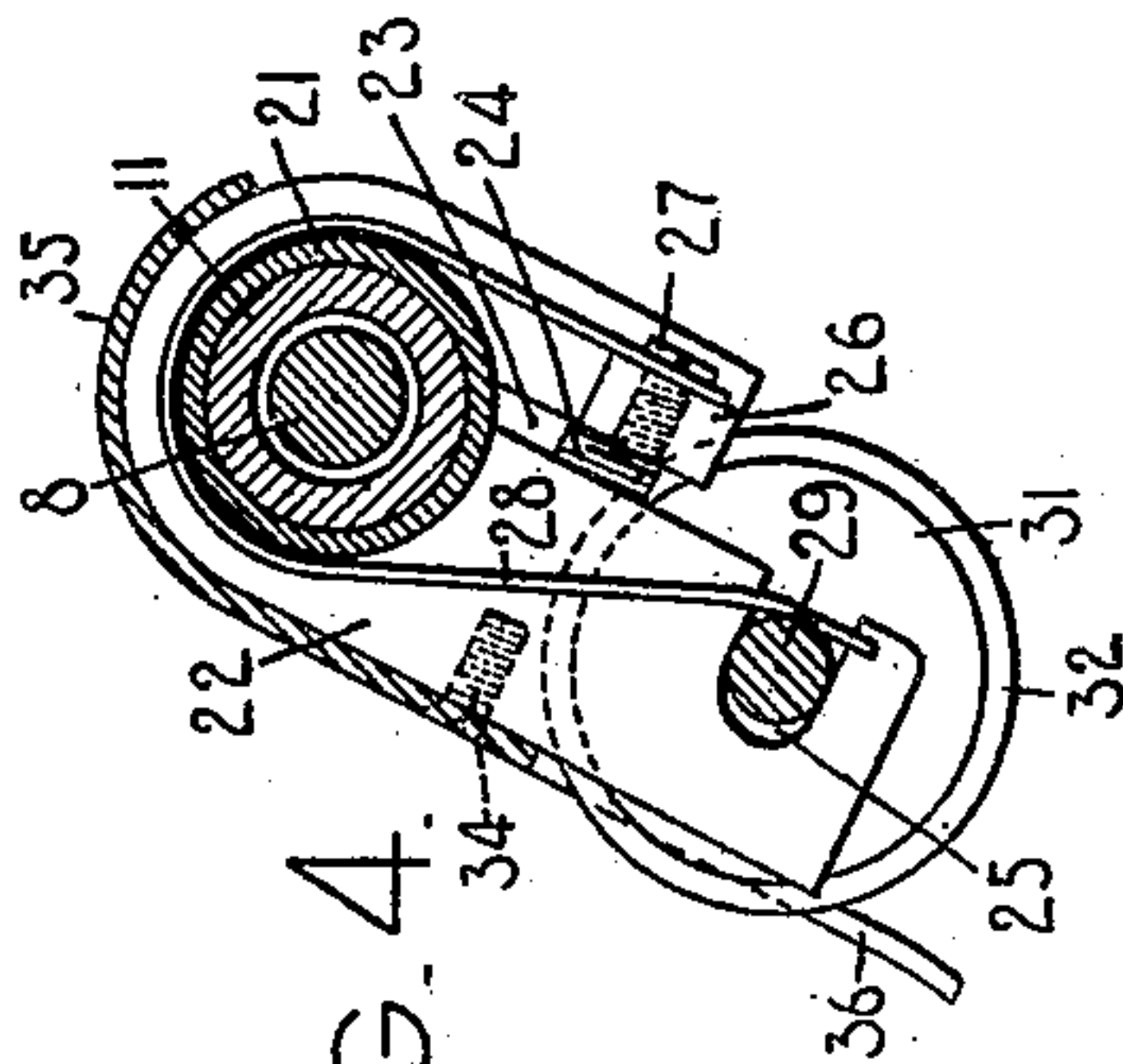


FIG. 4.

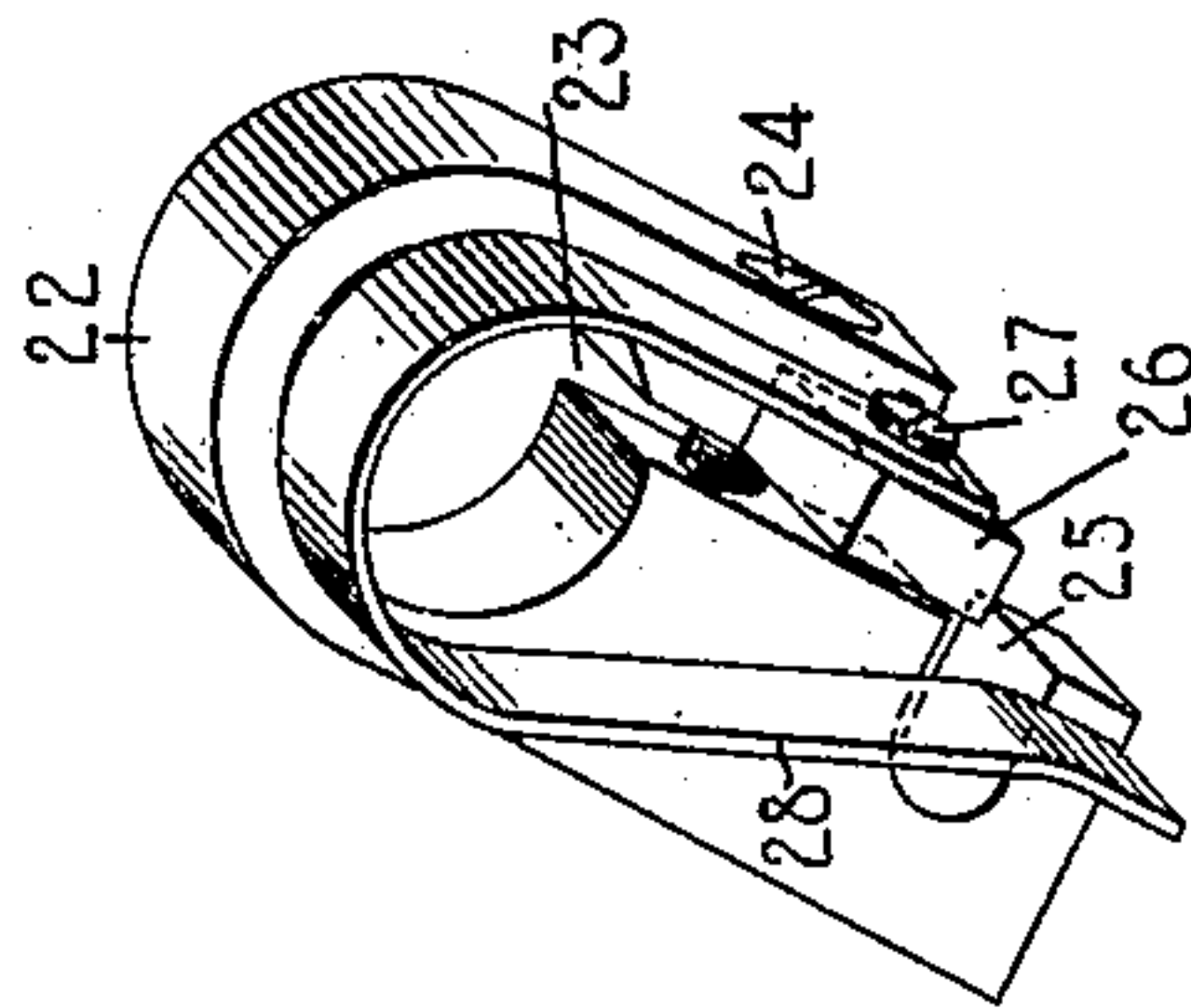


FIG. 7.

WITNESSES.

E. M. Wells.  
m. w. Pool

INVENTOR:

Oscar Woodward

By Jacob F. Felt

HIS ATTORNEY



# UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF NEW YORK, N. Y., ASSIGNOR TO DENSMORE TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

## TYPE-WRITING MACHINE.

978,255.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed January 31, 1906. Serial No. 298,796.

*To all whom it may concern:*

Be it known that I, OSCAR WOODWARD, a 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 the paper feeding mechanism of typewriting machines and has for its main object to provide improved devices of the class specified.

To the above and other ends, the invention resides in the features of construction, combinations of devices and arrangements of parts hereinafter fully described and particularly pointed out in the claims.

I have shown my invention applied to a machine resembling generally one style of the Densmore typewriter and have not, therefore, deemed it necessary to show and describe parts of said machine other than those requisite to a complete understanding of my invention. It is to be understood, however, that said invention may be adapted to other constructions of writing machines.

In the accompanying drawings, Figure 1 is a fragmentary rear elevation of the platen and platen frame of a typewriting machine showing my invention applied thereto, parts being omitted and a part being broken away for the sake of clearness. Fig. 2 is a transverse sectional view taken on the line *w—w* in Fig. 1 and looking in the direction of the arrow at said line, a section of the carriage truck and its bearing being also shown in said Fig. 2. Fig. 3 is a detail transverse sectional view taken on the line *x—x* of Fig. 1 and looking in the direction of the arrow at said line. Fig. 4 is an enlarged detail transverse sectional view showing one of the hanger arms of the paper feed roller and showing the support for the hanger arms, the view being taken on a plane represented by the line *y—y* in Fig. 1 and looking in the direction of the arrow at said line. Fig. 5 is an enlarged detail transverse sectional view taken on a plane represented by the line *z—z* in Fig. 1, and showing the platen scale and its mounting. Fig. 6 is an enlarged fragmentary vertical longitudinal sectional view taken through the rear bar of the platen

frame and looking from the rear of the machine. Fig. 7 is an enlarged perspective view of one of the parts hereinafter called a hanger arm.

Referring to the drawings, a trough-like track-way 1 is supported on brackets 2 secured on the top plate of the machine, the inner walls of said track-way being provided with oppositely disposed grooves 3 which cooperate with rollers 4 carried by a carriage truck 5. Pivoted at 6 in said carriage truck are links 7, the upper ends whereof are perforated to permit of the passage of a shaft 8 to which, near its ends, said links 7 are secured. As best seen in Fig. 6, the shaft 8 is provided with bushings 9 abutting the links 7, said bushings being provided at their outer ends with hexagonal heads 10 and having their inner portions formed externally with threads which cooperate with the internally threaded ends of a hollow bar or rod 11. Each bushing 9 passes through and is seated in an opening in a side bar or plate 12 of the platen frame, said side bar 12 being received between the head 10 of the bushing and the end of the hollow bar 11, said bar 11 and side plates 12 being thus clamped together. The side plates 12 extend forwardly from the bushing and are connected at their front ends by a bar 13 (Fig. 2) arranged parallel with the hollow rod 11. The front bar 13, the side bars or plates 12, the bushings 9 and the hollow bar or rod 11 constitute a platen carrier or frame. The shaft 8 extends through the bore of the hollow rod 11 and by means of the links 7 pivotally connects the platen carrier or frame with the carriage truck 5, said truck and said platen carrier or frame together constituting a platen carriage. A bearing block 14 is secured by screws 15 to the front of the bar 13, said block providing a bearing for a roller 16 which cooperates with a shiftable guide rail 17 (Fig. 2). A cylindrical platen 18 is mounted on an axle 19 which has bearings in the side bars 12 of the platen frame. A finger piece 20 extends upwardly and forwardly from the left-hand side bar 12, said finger piece being convenient for moving the platen endwise, and for raising it to expose the line of writing.



The platen carriage, as above briefly described, is not claimed herein as it comprises the subject-matter of a companion application. It is to be understood that  
 5 for the purposes of my present invention it is immaterial whether or not the platen carrier be associated with a carriage truck as described.

Referring to my novel paper feeding devices, a sleeve 21 surrounds and is adapted to turn on the hollow bar or rod 11 which extends longitudinally of the platen at its rear, said sleeve extending throughout or substantially throughout the length of the rod 11  
 15 and having its ends housed within the side bars 12 of the platen frame as indicated in Fig. 6. It is to be understood that any bar extending longitudinally of the platen and secured to the frame thereof, other than the bar 11, may serve as a bearing for the sleeve 21, and that any other such bar is comprehended within the scope of those of the subjoined claims which recite a platen carrier comprising a bar extending longitudinally of the platen. Secured on the sleeve 21 are hanger arms 22, said hanger arms being most clearly disclosed in Figs. 1, 4 and 7. Each hanger arm is split as indicated at 23 and is bored out to admit  
 25 the passage of the sleeve 21 along and around which said hanger arms are adjustable and to which they are secured by screws 24 connecting the split portions. The detachable hanger arms 22 depend from the sleeve and at their lower ends are provided with slots 25 opening rearwardly. As indicated in the rear view (Fig. 1), the hanger arms 22 are arranged in pairs on the sleeve, the left-hand pair being shown  
 40 in said Fig. 1 with the left-hand one of the right hand pair. Each hanger arm is provided with an off-set portion 26, the off-set portions of each pair of hanger arms being oppositely disposed. Secured to the off-set portion 26 of each hanger by a screw 27, is a flat spring 28, said flat spring extending upwardly from its securing screw, curving over and in front of the sleeve 21 and thence downwardly as indicated in Figs. 1 and 4, the free end of said spring extending downward past the mouth of the slot 25 in the associate hanger arm 22.

Each pair of hanger arms serves to support a paper feed roller shaft 29, said shaft  
 55 extending longitudinally of the platen and its end portions being received in the slots 25 in the hanger arms. The ends of each shaft are headed, as indicated at 30 (Fig. 1), in order to prevent longitudinal displacement of said shaft, and the free ends of the springs 28 cooperate with said shaft to retain it in position in the bearing slots 25, one side edge of each spring cooperating with an adjacent head 30 on the shaft 29 to prevent longitudinal displacement thereof.  
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Mounted upon each shaft 29 so as to turn freely thereon, are feed rollers 31 provided with sheaths 32 of rubber or other suitable material, said feed rollers being adapted to cooperate with the platen 18. Two of such  
 70 feed rollers are preferably arranged on each feed roller shaft 29 and are maintained spaced apart by a sleeve 33 which surrounds the shaft 29 between the feed rollers and abuts against their opposing ends, the length  
 75 of said sleeve 33 being such that the other ends of said feed rollers are close to the neighboring hanger arms 22.

Secured on the front face of the hanger arms 22 by screws 34 is a paper apron 35, said paper apron curving over the tops of the hanger arms and over the sleeve 21, as best shown in Figs. 1, 2 and 4, and extending downwardly and forwardly between the feed rollers 31 and the platen 18. The paper  
 80 apron is cut away as indicated at 36 to provide openings through which the feed rollers 31 protrude to cooperate with the platen. A platen scale plate 37 provided with the usual scale, is arranged longitudinally of the  
 85 platen below the lower edge of the paper apron 35. The scale plate is suitably secured as by rivets 38, (Fig. 5) to the lower ends of arms 39, said arms extending downwardly and forwardly from the back rod 11. Preferably there are three of these arms 39,  
 90 one at or near each end of the scale plate 37 and one near the middle thereof and between the two sets of hanger arms 22. The upper end of each arm 39 is slotted as indicated at  
 95 40 and opposite the upper end of each arm the sleeve 21 is cut away as indicated at 41 so as to permit of a contacting engagement between the arm and the back rod 11, to which said arm is secured by a headed screw  
 100 42 which passes through the slot 40 and is received in a threaded opening in the rod 11. Between the head of each screw 42 and its associate arm 39 I preferably interpose a spring washer 43 which is adapted to cooperate with said arm 39 to maintain the scale  
 105 plate 37 in engagement with the platen or the paper thereon. By loosening the screws 42 the arms 39 may be adjusted longitudinally to position properly the scale plate 37. A  
 110 paper table 44 is provided at its ends with spring clips 45 which are suitably secured to said paper table as by rivets 46. The spring clips embrace the sleeve 21 on opposite sides thereof and outside the hanger arms 22 and the paper table is thereby pivotally connected with said sleeve 21 and may be readily detached therefrom when desired. The paper table is adapted normally to extend upwardly and rearwardly from said  
 115 sleeve. The rear face of the paper table has secured to it a bearing bracket 47 in which is pivoted a bearing roller 48, said bearing roller normally contacting with the top of the carriage truck 5 to maintain the  
 120  
 125  
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paper table in normal position irrespective of the "case" position of the platen frame or whether it is swung back to inspect the writing.

5 In order to throw the feed rollers out of coöperation with the platen and to apply pressure to the feed rollers, I provide means which will now be described.

10 Secured on the rotary sleeve 21 near the left-hand end of the latter is an angled lever 49, said lever being provided with a collar portion 50, split as indicated at 51 (Fig. 3), and bored out to surround the sleeve 21. The two portions of the split portion are  
15 connected by a headed screw 52 which, when tightened, causes the collar to grip the sleeve 21 so that when the lever 49 is operated it will rotate said sleeve. One arm 53 of the angled lever extends forwardly and down-  
20 wardly from the collar portion 50, passing under the platen axle 19 and having a vertically disposed portion which is capped or topped by a finger piece 54, the latter serving as a release key for the paper feed roll-  
25 ers. A limiting pin 55 projects laterally from the arm 53 above the left-hand side bar 12 of the platen frame in position to coöperate with the latter when the finger piece or key 54 is depressed. The other arm 56 of  
30 the angled lever 49 extends downwardly from the collar portion 50 and is off-set laterally outward, as best shown in Fig. 1. The arm 56 is perforated to receive a headed screw 57, which screw is entered from the  
35 rear. The threaded shank of the screw 57 screws into the rear end of a helical draw spring 58 which is horizontally disposed transversely of the platen. The rearmost coils 59 of the spring are preferably soldered  
40 together and coöperate with the screw 57 which screws into the coils 59 as into a nut. A light tubular housing 60 surrounds the helical spring 58 throughout its length, said housing being secured to the under side of  
45 the left-hand bar 12 of the platen frame by a headed screw 61. This screw, as appears in Fig. 3, is seated in position through an opening 62 in the bottom of the forward end of the tube 60 and screws upward into the  
50 side bar 12, passing through an opening in the top of the tube 60. The forward end of the spring 58 is hooked around the shank of the screw 61 and is confined between the head of said screw and the inner face of the  
55 tube 60. The tension of the spring 58 is transferred through the lever 49, sleeve 21 and hanger arms 22 to the feed rollers 31 and tends constantly to pull or draw said feed rollers forwardly into contact with the  
60 platen. The tension of the spring 58 may be regulated by means of the screw 57. The construction is such, however, that the pressure of the feed rollers against the platen can never become too strong, because the  
65 pressure of the spring 58 is transmitted to

the feed rollers through the springs 28. Thus, the free ends of the springs 28 which coöperate with the feed roll shafts 29 will yield after the feed rollers contact with the platen, permitting additional movement for-  
70 ward of the hanger arms 22 while at the same time the feed rollers 31 and their shafts 29 remain stationary.

The paper, which is represented by the dotted line *a* in Fig. 2, is entered in the ma-  
75 chine between the paper apron 35 and the platen, and when the platen is given rotary movement by suitable line spacing or rotating devices, said paper is fed between the  
80 platen and the feed rollers 31, passing around toward the front of the machine between the platen and the scale plate 37 and thence between the platen and suitable paper  
85 fingers 63 which are secured at the front of the platen frame in any desired manner. The bottom portion of the sheet of paper may drop back rearwardly into contact with  
90 the paper table 44. Said paper table, it will be observed, is hinged to the sleeve 21 so that it may be swung forwardly about said sleeve to expose the carriage truck and the devices  
at the rear of the machine.

When it may be desired to free the paper from the control of the novel paper feeding and controlling devices above described, the  
95 finger piece 54 may be depressed until the stop 55 contacts with the top of the side bar 12. The depression of the finger piece or key 54 operates through the feed roller release lever 49 to rotate the sleeve 21 on the  
100 hollow back rod 11 and to extend the helical draw spring 58. As the sleeve is rotated it swings the hanger arms 22 rearwardly away from the platen, said hanger arms carrying  
105 with them the feed rollers 31 and thereby freeing the paper from the control of the latter, so that said paper may be freely adjusted or withdrawn. When pressure is  
110 withdrawn from the release key 54 the draw spring 58 contracts and restores the parts to normal position, causing the paper feed rolls to again coöperate with the platen to control  
115 the paper. In practice I prefer to provide two draw springs like 58, one at each side of the machine, although, of course, the influ-  
ence of one of said springs is exerted on the sleeve 21 throughout the length of the latter and by said sleeve will be transferred to all the hanger arms secured thereto.

Various changes may be made without de-  
120 parting from the spirit of my invention.

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

1. In a typewriting machine, the combina-  
125 tion of a platen, a platen carrier comprising a longitudinally extending bar, a sleeve mounted on said bar, slotted hanger arms on said sleeve, means for affording variation in the normal relationship between said  
130 hanger arms and said sleeve, a shaft sup-



ported in slots in said hanger arms, a feed roll on said shaft, springs on said hanger arms engaging said shaft, and means tending constantly to turn said sleeve.

5 2. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally thereof, a sleeve on said bar, slotted hanger arms on said sleeve, said hanger arms being adjustable both longitudinally of and circumferentially of said sleeve, a shaft supported in the slots of said hanger arms, a feed roller on said shaft, springs cooperative with said shaft and with said hanger arms, and a draw spring connected with said sleeve and with the platen carrier and tending constantly to turn said sleeve and urge said hanger arms toward the platen.

3. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, hanger arms fixed on said sleeve and depending therefrom, said hanger arms being provided with slots at their lower ends, a shaft bearing in said slots and carrying a paper feed roller, springs on said hangers cooperative with said shaft to maintain it in its bearings and press it toward the platen, and a draw spring having one end connected with said sleeve and the other end secured at the opposite side of said platen carrier.

4. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, hanger arms fixed on said sleeve and depending therefrom, said hanger arms being provided with slots at their lower ends, a shaft bearing in said slots and carrying a paper feed roller, springs on said hangers cooperative with said shaft to maintain it in its bearings and press it toward the platen, a draw spring having one end connected with said sleeve and the other end secured at the opposite side of said platen carrier, and a tubular housing for said draw spring fixed to the platen frame.

5. In a typewriting machine, the combination of a platen, a platen carrier comprising a longitudinal bar, a sleeve on said bar, hanger arms adjustable on said sleeve, a feed roller supported by said hanger arms, a paper apron supported on said hanger arms and provided with an opening for said feed roller, and means tending constantly to turn said sleeve and urge said feed roller and paper apron toward the platen.

6. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, hanger arms fixed on said sleeve and depending therefrom, a paper feed roller supported at the lower ends of said hanger arms, a paper

apron secured on said hanger arms and provided with an opening through which said paper feed roller protrudes to cooperate with said platen, and a paper table connected with said sleeve.

7. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar, a sleeve mounted on said bar, hanger arms supported on said sleeve and adjustable both lengthwise and circumferentially thereof, a feed roller supported by said hanger arms, a paper apron supported by said hanger arms, a platen scale secured to said bar and independent of said hanger arms, and means for turning said sleeve and pressing said feed roller and paper apron toward the platen.

8. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, hanger arms fixed on said sleeve, a paper feed roller supported on said hanger arms, a paper apron fixed to said hanger arms and provided with an opening through which said feed roller protrudes to cooperate with said platen, a platen scale provided with arms secured to said longitudinal bar, said scale arms cooperating with said bar through openings in said sleeve, and a paper table provided with spring clips bearing on said sleeve.

9. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, split hanger arms adjustable on said sleeve, screws cooperating with said hanger arms to maintain them fixed relatively to said sleeve, said hanger arms being provided with slots at their lower ends, a shaft bearing in said slots and carrying a paper feed roller, and springs secured to said hanger arms and cooperating with said shaft to maintain it in the slots in said hanger arms and press it toward the platen.

10. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, split hanger arms adjustable on said sleeve, screws cooperating with said hanger arms to maintain them fixed relatively to said sleeve, said hanger arms being provided with slots at their lower ends, a shaft bearing in said slots and carrying a paper feed roller, springs secured to said hanger arms and cooperating with said shaft to maintain it in the slots in said hanger arms and press it toward the platen, and a helical draw spring having one end operatively connected with said sleeve and the other end secured at the opposite side of said platen carrier.

11. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the

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platen, a sleeve rotatable on said bar, hanger arms fixed on said sleeve, a paper feed roller supported on said hanger arms, a lever secured to said sleeve, and a draw spring having one end secured to one arm of said lever and the other end secured at the opposite side of the platen carrier, the other arm of said lever being provided with a finger piece for operating it to release said paper feed roller.

12. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, sets of hanger arms secured to said sleeve, the lower ends of said hanger arms being provided with slots, feed roll shafts, each shaft coöperative at its ends with one of said sets of hanger arms, a pair of feed rollers rotatably mounted on each of said shafts, and a sleeve on each of said shafts between said feed rollers and serving to maintain the latter spaced apart.

13. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, sets of hanger arms secured to said sleeve, the lower ends of said hanger arms being provided with slots, feed roll shafts, each shaft coöperative at its ends with one of said sets of hanger arms, a pair of feed rollers rotatably mounted on each of said shafts, a sleeve on each of said shafts between said feed rollers and serving to maintain the latter spaced apart, and a draw spring extending transversely of the platen and having one end connected with said sleeve and the other end secured to said platen carrier.

14. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, sets of hanger arms secured to said sleeve, the lower ends of said hanger arms being provided with slots, feed roll shafts, each shaft coöperative at its ends with one of said sets of hanger arms, a pair of feed rollers rotatably mounted on each of said shafts, a sleeve on each of said shafts between said feed rollers and serving to maintain the latter spaced apart, a draw spring extending transversely of the platen and having one end connected with said sleeve and the other end secured to said platen carrier, and a tubular housing for said draw spring.

15. In a typewriting machine, the combination of a platen, a platen carrier comprising a bar extending longitudinally of the platen, a sleeve rotatable on said bar, a plurality of split hanger arms adjustably secured on said sleeve and arranged in pairs, the lower ends of said hanger arms being slotted, a shaft bearing at its ends in the slots in each of said pairs of hanger arms, a

plurality of paper feed rollers mounted on each of said shafts, a spacing sleeve on each shaft between said feed rollers, flat springs secured to said hanger arms and coöperating with the ends of said shafts to maintain said shafts in their bearings and press them toward the platen, a lever provided with a split collar secured on said sleeve at one end, and a draw spring having one end secured to one arm of said lever and the other end secured at the opposite side of the platen carrier, the other arm of said lever being provided with a finger piece operative to release said paper feed rollers.

16. In a typewriting machine, the combination of a platen, a platen carrier, a carriage truck on which said carrier is rotatable and shiftable, and a paper table pivotally connected with said carrier and normally resting on said carriage truck, said paper table being constructed to remain in normal feeding position when said carrier is either shifted or is rotated to expose the line of writing and being adapted normally to be swung toward the platen and away from the track.

17. In a typewriting machine, the combination of a platen, a platen carriage, a paper table, spring clips normally pivotally connecting said paper table with said carriage, and means independent of said spring clips for supporting said paper table and maintaining it in normal relationship with said carriage.

18. In a typewriting machine, the combination of a platen, a sleeve that extends substantially throughout the length of the platen, hangers which are secured to said sleeve to rotate therewith, feed rollers carried by said hangers, and a finger piece secured to said sleeve for turning it and thereby forcing the feed rollers out of contact with the platen.

19. In a typewriting machine, the combination of a platen, a platen frame, a rod carried by or formed as a part of the platen frame, a sleeve which extends substantially throughout the length of the platen and which is supported to turn on said rod, hangers adjustably secured to said sleeve, feed rollers carried by said hangers, a finger piece connected to said sleeve, and a spring for turning the sleeve and the parts connected thereto in one direction.

20. In a typewriting machine, the combination of a platen, a platen frame, a rod carried by or formed as a part of said platen frame, a sleeve connected to turn on said rod, hangers carried by said sleeve, feed rollers carried by said hangers, a spring carried by each of said hangers and adapted to force the feed rollers toward the platen, a spring which tends to turn the sleeve and force the feed rollers toward the platen through said first mentioned springs, and



a finger piece connected to said sleeve for moving the feed rollers away from the platen.

21. In a typewriting machine, the combination of a platen, hangers, feed rollers carried by said hangers, springs carried by said hangers which tend to force the feed rollers toward the platen, and a spring operatively connected to said hangers to force the feed rollers against said platen through said first mentioned springs.

22. In a typewriting machine, the combination of a platen, a platen frame, a pivotal support which extends substantially

throughout the length of the platen and which is mounted in the platen frame, hangers carried by said pivotal support and adjustable around the support and longitudinally thereof, and feed rollers supported by said hangers.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 30th day of January, A. D. 1905.

OSCAR WOODWARD.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.