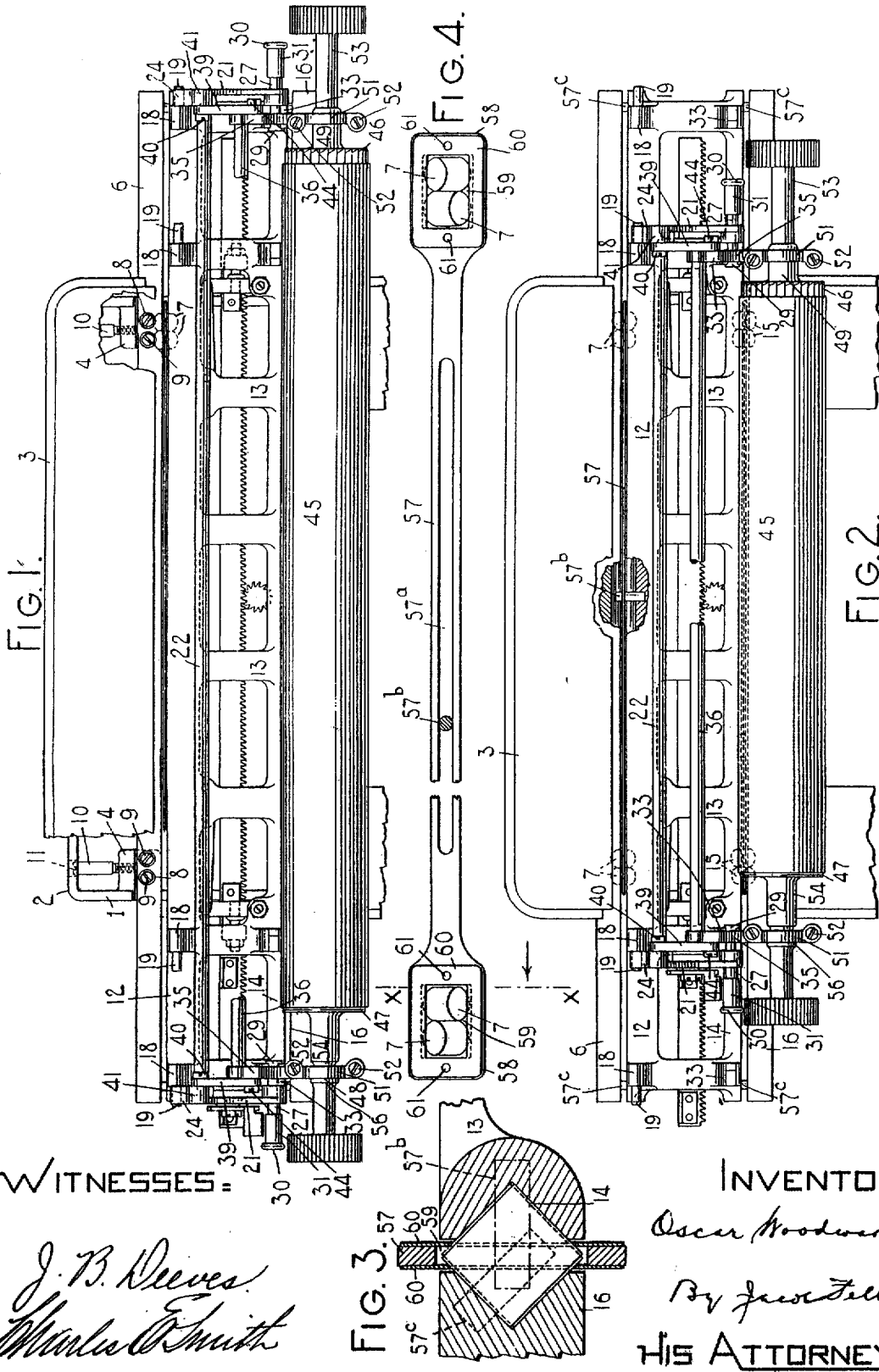


933,219.

Patented Sept. 7, 1909.
3 SHEETS—SHEET 1.



WITNESSES:

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3 SHEETS—SHEET 2.

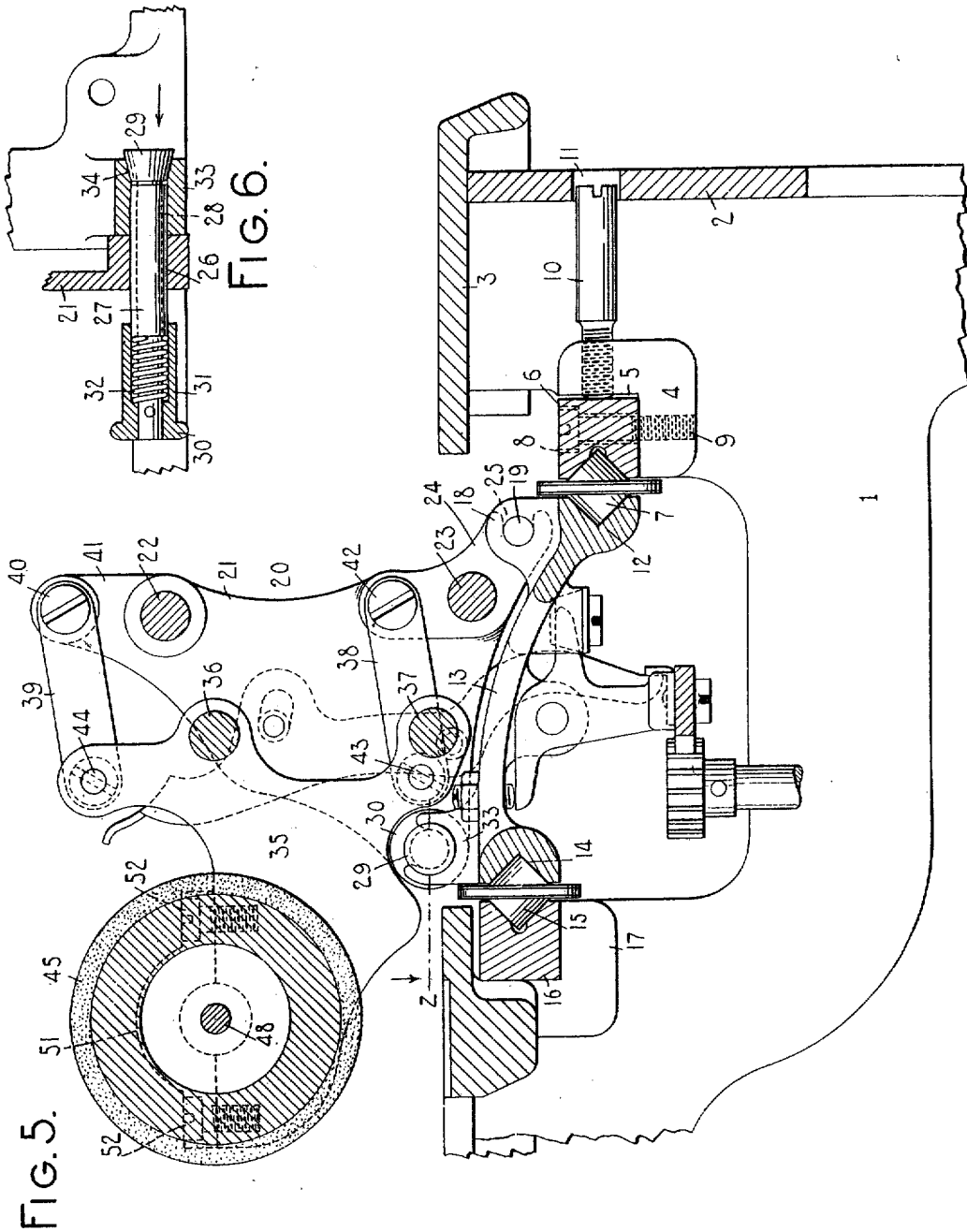


FIG. 5.

FIG. 6.

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FIG. 7.

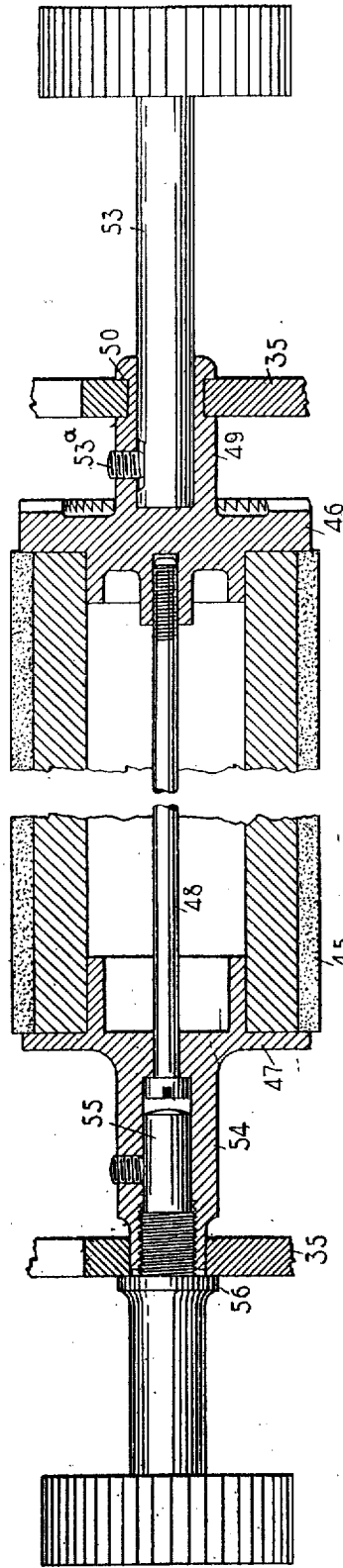


FIG. 9.

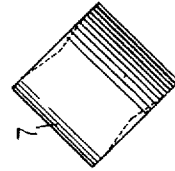
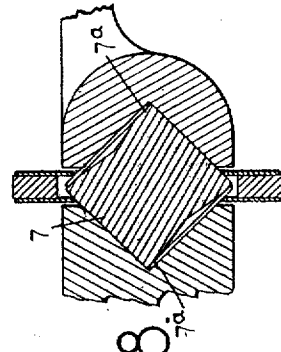


FIG. 8.



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UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF NEW YORK, N. Y., ASSIGNOR TO YOST WRITING MACHINE COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

933,219.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed March 16, 1907. Serial No. 362,734.

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 typewriting machines and more particularly to the carriages of such machines.

One object of my invention is to provide means whereby long or short platens and platen frames may be used interchangeably on the same carriage truck.

Another object of my invention is to provide simple and efficient anti-friction roller spacing means.

To the above and other ends which will hereinafter appear my invention consists of the features of construction, arrangements of parts and combinations of devices to be hereinafter set forth 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 top plan view of the carriage constructed and mounted in accordance with my invention, a long platen and platen frame being shown connected with the truck. Fig. 2 is a like view of the same except that a comparatively short platen and platen frame are shown connected with the truck. Fig. 3 is an enlarged detail transverse sectional view of the anti-friction roller spacer with the rollers in place, the section being taken on the line $x-x$ of Fig. 4 and looking in the direction of the arrow at said line. Fig. 4 is a face view of a spacer with the rollers in place therein. Fig. 5 is an enlarged vertical central front to rear sectional view of the carriage and the means for supporting the same. Fig. 6 is an enlarged detail sectional view showing one of the spring-pressed locking connections between the truck members, the section being taken on the line $z-z$ in Fig. 5 and looking in the direction of the arrow at said line. Fig. 7 is an enlarged detail sectional view taken centrally through the platen and showing the manner of mounting the platen.

Fig. 8 is an enlarged sectional detail of roller bearing for the carriage. Fig. 9 is a detail side view of one of the rollers.

While I have shown my invention in a front-strike typewriting machine, it will be understood that the invention may be embodied in other styles of machines.

The frame of the machine comprises side plates 1, a rear cross plate 2 and a top plate 3. Projecting inwardly from the side plates 1 are supporting lugs 4, as shown in Figs. 1 and 5. Each of these lugs is provided with an angular seat 5 for the reception of a carriage rail 6 which extends beyond the side plates of the frame. This rail is grooved at its forward face throughout the length thereof, the groove being substantially V-shaped for cooperation with cylindrical anti-friction rollers 7. The rail 6 has two perforations 8 extending therethrough at each of the supporting lugs 4. Headed screws 9 pass through these openings and are received at their lower threaded ends in tapped openings in the lugs 4. The openings 8 in the rail 6 are each larger in diameter than the diameter of the screw which is received therein in order to afford a slight adjustment of the rail relatively to said screws. The heads of the screws are received in counter-sinks in the rail and are adapted to bear against the lower wall of the counter-sunk portions in the rail when screwed down in order to secure the rail in its adjusted position. A screw 10 is received at its forward threaded end in a tapped opening in a lug 4, one of these screws being provided for each lug. The forward end of each screw 10 extends through a lug 4 and bears against the rail 6 in order to effect an adjustment thereof fore and aft of the machine. Each screw 10 is extended rearwardly to the rear cross plate of the machine which is perforated at 11 opposite the screw in order to give access to the screw through said opening, so that a screw-driver or like tool may be employed from the outside of the machine to readily effect an adjustment of each screw. It will be seen that the screws 6 and 10 extend at right angles to each other and that after a fore and aft adjustment of the rail has been secured by means of the screws 10 the rail may be secured in its adjusted position by

tightening the screws 9. These means likewise afford an individual adjustment near each end of the rail 6. The anti-friction rollers 7 likewise cooperate with a substantially V-shaped groove in a bearing or way 12 in one section 13 of the carriage truck. A like rail or way 14 is formed at the forward side of the truck section for cooperation with a second set of anti-friction rollers 15. These rollers are also received in the substantially V-shaped groove in a fixed carriage rail 16 secured to lugs 17 on the frame of the machine.

The truck section 13 is provided with a plurality of upwardly projecting lugs 18, four being shown in the present instance, near the rear side of the truck section. Each of these lugs carries an outwardly extending fixed pin 19. The companion truck section, designated as a whole by the reference numeral 20, comprises end plates 21 united by cross bars 22 and 23. Rearwardly and downwardly extending arms 24 on each of the end plates 21 of the truck section 20 are bifurcated at 25 in order to form open-mouth bearings for cooperation with the pins 19, the particular set of pins with which the bearings or connecting devices 25 co-act depending on the length of the platen frame. If a short platen frame be employed, as shown in Fig. 2, then the bearings 25 will cooperate with the two inner pins 19, whereas if a long platen frame is employed the bearings will co-act with the outer set of pins 19. From an inspection of Fig. 5 it will be seen that the bearings 25 open toward the rear of the machine and that the pins 19 and bearings 25 constitute, in certain circumstances which will hereinafter appear, pivotal connections whereby the truck section 20 may be turned back on the pins 19 as a center from the position shown in Fig. 5. It will also be seen upon reference to Figs. 1 and 2 that the downwardly projecting members 24 on the truck section 20 bear against the outer faces of the lugs 18 so that no relative longitudinal movement of the truck sections can take place when the members or engaging devices 19 and 25 are in operative relation. Upon reference to Figs. 1, 5 and 6, and more particularly to Fig. 6, it will be seen that each of the end plates 21 is apertured at 26 (see Fig. 6) for the reception of a bearing sleeve 27 which is rigidly secured in said openings. The sleeve 27 constitutes a bearing for a locking pin 28 provided with a conoidal head 29, the base of which is outermost or at the free end of the pin. The opposite end of the pin which extends through the bearing sleeve 27 is connected to a finger piece 30 provided with a sleeve 31, which surrounds a coiled expansion spring 32 which surrounds the pin 28 and bears at one end against the fixed sleeve 27 and at the other end against the bottom wall

of the opening in the finger piece 30. The pressure of the spring is thus exerted to move the locking pin in the direction of the arrow in Fig. 6.

Each of the bearing sleeves 27 is adapted to be received in an open-mouth bearing formed in an upwardly projecting lug 33 on the truck section 13 near the forward edge thereof. The mouth of the bearing opens upwardly so that when the truck section 20 is turned on the pivot pins 19 as a center, the bearing sleeves 27 are adapted to pass into and be supported within the open-mouth bearings in the lugs 33. The inner face of each bearing lug 33 is provided with a conoidal opening 34 shaped to conform to the conoidal head 29 of the associated locking bolt. The construction is such that when the locking head 29 is received within the conoidal opening 34 in the companion lug the truck section 20 will be rigidly and positively secured to the truck section 13. When, however, the locking bolts are each pressed inwardly or in a direction opposite to the arrow in Fig. 7 the locking heads 29 will be moved out of the openings 34 and out of engagement with the lugs 33 and the forward portion of the truck 20 is thus disengaged and said truck section may be readily detached from its companion truck section 13.

The platen frame comprises end plates 35 united at the rear end portions thereof by cross bars 36 and 37 so as to provide a substantially U-shaped platen frame which is connected by parallel links 38 and 39 to the truck section 20 in order to afford a shifting movement of the platen and platen frame on the truck to change the case position of the platen. The rear end of each link 39 is pivoted by a headed pivot screw 40 to an upwardly projecting arm 41 on an end plate 21 of the truck section 20. A like pivotal connection is made at 42 between the rear ends of the links 38 and the plates 21. The forward end of each link 38 is pivoted at 43 to an end plate 35 of the platen frame. The forward end of each link 39 is pivotally connected at 44 to an end plate 35 of the platen frame.

From an inspection of Figs. 5 and 7 it will be seen that a cylindrical platen 45 is provided with platen heads 46 and 47 united by a headed screw tie-rod 48, the stem of which passes through a central opening in the left-hand platen head 47 and engages at its threaded end in a tapped opening in the right-hand platen 46. The right-hand platen head has a sleeve-like projection, hub or spindle 49 formed with a circumferential groove 50 therein for cooperation with a two-part bearing on the platen frame such as that shown in Fig. 5 where the lower half of the bearing is formed in a side plate 35 of the platen frame and the upper part

of the bearing is formed in a bearing block 51 detachably held in place by screws 52. Parts 35 and 51 are received within the circumferential groove 50 and prevent a relative displacement between the platen and the right-hand end plate 35 longitudinally of the platen. A spindle 53 of the right-hand finger wheel is received within the sleeve-like projection or hub 49 and is secured in place therein by a set screw 53^a which takes into a threaded opening in the part 49 and bears at its inner end against a flattened cut-out in the spindle. The left-hand platen head has a sleeve-like projection, hub or spindle 54 provided with a reduced end which is seated in a two-part bearing in the left-hand members 35 and 51. The part 54 is internally threaded for cooperation with the threaded portion of a spindle 55 of the left-hand finger wheel of the platen. This spindle is provided outside of the left-hand members 51 and 35 with a circumferential shoulder 56 which bears against said members. A screw 56^a extends through a threaded opening in the sleeve 54 and bears at its inner end against the spindle 55 to hold it fixed in its adjusted position relatively to the part 54. It will be seen that the means for mounting the platen in the platen frame constitutes a constantly maintained perfectly rigid tie between the two end plates of the platen frame in the line of the axis of the platen and at a point where it is difficult to form a rigid connection between the plates. By a constantly maintained tie, I mean that the tie is at all times maintained during the use of the machine though it may be broken at will to remove the platen. It will also be seen that an adjustment of the spindle 55 will take up any lost motion that may exist between the end plates 35 of the platen frame.

From an inspection of Figs. 3, 4 and 5 it will be understood that the pivotal axes of the anti-friction rollers 7 and 15 are disposed diagonally and at substantial right angles to each other and diagonally to the plane of the spacer bar 57 with which they cooperate. This spacer bar is enlarged as at 58 near each end thereof and is apertured at 59 for the reception of a pair of anti-friction rollers 7 or 15. The length of each slot or aperture 59 is slightly greater than the diameter of two of the rollers 7 or 15 and the width of each aperture or slot 59 is slightly greater than the distance from one corner or edge of one of the anti-friction rollers to the opposite diagonal corner or edge thereof. The two cross rollers received in each aperture 59 are disposed with their diagonal corners in the plane of the bar and with the rollers abutting. Apertured plates 60 are secured by rivets 61 or otherwise upon opposite sides of the bar 57, the apertures in the plates 60 registering

with the apertures 59 in the bar. The length of the slot or aperture in each plate 60 coincides with the length of the associate aperture 59 in the bar. The width of each slot or aperture in the plate, however, is slightly less than that of the associate aperture 59 in the bar so that the plates 60 overlap the apertures 59 at the top and bottom thereof and on opposite sides of the bar 57 in order to receive diagonally opposite edges or corners of the rollers 7 and 15 so as to retain the rollers against displacement from the apertures 59 in the spacer bar. Adjacent sides of each set of rollers abut as shown in Fig. 4, whereas the outer sides of each set of rollers are adapted to contact with the end walls of the slot 59 in which they are received. I provide one of these spacer bars for each set of rollers 7 and 15 in order to maintain the rollers properly spaced apart.

From an inspection of Figs. 8 and 9 it will be understood that each of the rollers 7 and 15 is slightly concaved on its ends in order that the ends of the rollers will contact only at or near the edges with the rails. It has been found in practice that it is difficult to cut the rollers so that they will not leave burs, teats or enlargements near the center at each end of the roller which results in imperfect bearing surfaces being formed at the ends of the rollers. By concaving the rollers in the manner described this difficulty is eliminated and a true bearing face or edge at each end of the roller is provided.

A longitudinally extending slot 57^a is provided in each space bar 57 for cooperation with a horizontally disposed pin 57^b (see Figs. 2, 3 and 4) which projects through said slot. One of these pins is carried by each of the carriage rails 12 and 14 and assures the proper longitudinal positioning of the associated space bar at the limit of the travel of the carriage in each direction.

Inclined stop pins 57^c (see Figs. 1, 2 and 3) project from the fixed rails 6 and 16 near each end thereof and extend into the paths of the space bars 57 to limit the movements thereof and prevent the rollers 7 and 15 from passing beyond the ends of the fixed rails.

Various changes may be made in the details of construction and arrangements of parts without departing from the spirit and scope of my invention.

Certain of the features herein shown and not claimed are to form the subject of a separate application to be filed by me.

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

1. In a typewriting machine, the combination of a carriage truck made of two sections one wholly supported by the other, means rigidly and detachably connecting one of

said sections to the other, and a platen shiftably mounted on one of said sections to change the case position of the platen.

2. In a typewriting machine, the combination of a truck section having engaging means at different points in the length thereof for coöperation with engaging means on any of a plurality of coöperating truck sections of different lengths, a second truck section, means thereon for detachably connecting said second truck section with certain of the engaging means on the first mentioned truck section depending on the length of the second truck section, and a platen shiftably mounted on the second truck section.

3. In a typewriting machine, the combination of a truck section having engaging means at different points in the length thereof for coöperation with engaging means on any of a plurality of coöperating truck sections of different lengths, a second truck section, means thereon for rigidly and detachably connecting said second truck section with certain of the engaging means on the first mentioned truck section depending on the length of the second truck section, and a platen shiftably and detachably mounted on the second truck section.

4. In a typewriting machine, the combination of a truck section having engaging means at different points in the length thereof for coöperation with engaging means on any of a plurality of coöperating truck sections of different lengths, a second truck section, means thereon for detachably connecting said second truck section to certain of the engaging means on the first mentioned truck section depending on the length of the second truck section, a platen frame shiftably mounted on the second truck section to change the case position of the platen, and a platen mounted in said platen frame.

5. In a typewriting machine, the combination of a carriage truck made of two sections, means rigidly and detachably connecting one of said sections to the other, a platen frame shiftably mounted on the detachable truck section to change the case position of the platen, and a platen carried by said platen frame.

6. In a typewriting machine, the combination of a truck section mounted on the frame of the machine and provided with a plurality of sets of engaging devices at different points in the length thereof for engagement with means on any of a plurality of coöperating truck sections, a second truck section, connecting devices thereon for detachably connecting said second truck section to and rigidly holding it on said first mentioned truck section, said connecting devices coöperating with certain of the sets of engaging devices depending on the length of the second truck section, a platen frame carried by and shiftably connected with the

second truck section, and a platen carried by said platen frame.

7. In a typewriting machine, the combination of a truck section mounted on the frame of the machine and carrying at least four engaging devices thereon, a second truck section carrying at least four coöperative engaging devices for rigidly and detachably connecting said truck sections, and a platen carried by said second truck section.

8. In a typewriting machine, the combination of a truck section mounted on the frame of the machine and carrying at least four engaging devices thereon, a second truck section carrying at least four coöperative engaging devices for rigidly and detachably connecting said truck sections, a platen frame shiftable on the second truck section to change the case position of the platen, and a platen carried by said platen frame.

9. In a typewriting machine, the combination of a truck section mounted on the frame of the machine and carrying at least four engaging devices thereon, a second truck section carrying at least four coöperative engaging devices for rigidly and detachably connecting said truck sections, certain of said engaging devices being fixed pins which coöperate with and are seated in open-mouth bearings which constitute other of said engaging devices and certain other of said engaging devices comprising spring-pressed locking pins which engage in locking openings in companion engaging devices, and a platen carried by the said second truck section.

10. In a typewriting machine, the combination of two truck sections, means for detachably connecting said truck sections, said means comprising two fixed pins, open-mouth bearing coöperative with said pins, two spring-pressed headed locking pins, and open-mouth bearings with locking openings for the reception of said spring-pressed headed locking pins.

11. In a typewriting machine, the combination of two truck sections, means for detachably connecting said truck sections, said means comprising two fixed pins, open-mouth bearings coöperative with said pins, two spring-pressed headed locking pins, and open-mouth bearings with locking openings for the reception of said spring-pressed headed locking pins, the mouth of the bearings for the fixed pins opening in a different direction from the mouths of the bearings for the spring-pressed pins.

12. In a typewriting machine, the combination of a truck section having lugs with outwardly projecting fixed pins thereon, a second truck section with side plates that bear against the outer faces of said lugs and which has open-mouth bearings that co-act with said pins, spring-pressed pins that are carried by and moved longitudinally of one

of said truck sections, enlarged locking heads on said spring-pressed pins, and open-mouth bearings that receive said spring-pressed pins, each of said last mentioned
 5 open-mouth bearings having a locking recess for the reception of a locking head on one of said spring-pressed pins.

13. In a typewriting machine, the combination of a carriage truck comprising two
 10 detachably connected truck sections one of which is adapted to turn on the other on disconnectible connections, and locking pins that lock one section rigidly to the other.

14. In a typewriting machine, the combination of a carriage truck comprising two
 15 detachably connected truck sections, one of which is adapted to turn on the other on disconnectible connections, locking pins that lock one section rigidly to the other, a platen
 20 frame shiftably mounted on one of said truck sections for upper and lower case writing, and a platen carried by the platen frame.

15. In a typewriting machine, the combination of a carriage, anti-friction rollers
 25 therefor, and a spacer for said rollers, said spacer comprising a flat bar with apertures or cut-outs therein to receive said rollers, and plates on opposite sides of said bar and which constitute means to retain the rollers
 30 in said apertures.

16. In a typewriting machine, the combination of a carriage, cylindrical anti-friction rollers therefor, and a spacer for said rollers,
 35 said spacer comprising a bar with apertures to receive said rollers, and plates on opposite sides of said bar and coöperative with each roller on opposite sides of diagonally opposite corners or edges thereof to retain the rollers in said apertures.

17. In a typewriting machine, the combination of a carriage, cylindrical anti-friction rollers therefor, and a spacer for said rollers,
 40 said spacer comprising a bar with apertures to receive said rollers diagonally therein, and apertured plates on opposite sides of said bar to retain the rollers in said apertures, the width of the aperture in each plate being less in one direction than the diagonal axis of the roller received between
 50 said plates.

18. In a typewriting machine, the combination of a carriage, cylindrical friction rollers therefor, and a spacer for said rollers,
 55 said spacer comprising a bar with apertures near each end thereof to receive two diagonally disposed rollers with their axes of rotation at substantially right angles to each other, an apertured plate secured to the bar on each side of an aperture therein, the
 60 width of the aperture in each plate in one direction being less than the distance from one edge or corner of a roller to the opposite diagonal edge or corner, whereby the rollers are retained by said plates in the apertures
 65 in said bar.

19. In a typewriting machine, the combination of a carriage, cylindrical anti-friction rollers therefor, and a spacer for said rollers, said spacer comprising a bar with apertures near each end thereof to receive
 70 two abutting diagonally disposed rollers with their axes of rotation at substantially right angles to each other, the sides of the rollers adapted to bear against the end walls of each aperture, an apertured plate secured
 75 to the bar on each side thereof and at an aperture therein, the width of the aperture in each plate in one direction being less than the distance from one edge or corner of a roller to the opposite diagonal edge or corner, whereby the rollers are retained by said
 80 plates in the apertures in said bar.

20. In a typewriting machine, the combination of a carriage, anti-friction rollers therefor, and a spacer for said rollers, said
 85 spacer comprising a bar with apertures to receive said rollers, and plates on opposite sides of said bar which overlap the walls of the apertures to retain the rollers in said apertures.

21. In a typewriting machine, the combination of a substantially U-shaped platen frame comprising end plates united at the rear portions thereof, a platen, and constantly operative connecting means for enabling the platen to assist in providing a rigid tie between said end plates at the forward end portions thereof.

22. In a typewriting machine, the combination of a substantially U-shaped platen
 100 frame comprising end plates united at the rear portions thereof, a platen, and shoulders or abutments that are rigidly connected with the platen and constantly bear against the end plates at outer sides near the forward
 105 ends thereof to form a positive tie or connection between the end plates.

23. In a typewriting machine, the combination of a platen frame comprising end plates each having a two-part bearing, a
 110 platen, platen heads each having a bearing that is received in a two-part bearing in an end plate, and means associated with said platen heads and end plates for forming a positive connection or tie between the end
 115 plates.

24. In a typewriting machine, the combination of a platen frame comprising end plates, platen bearings in said end plates, a platen, and a platen head having a circumferential bearing groove in a part thereof,
 120 said groove receiving the bearing in one of the end plates, the construction and arrangement of the parts being such that the platen and one of said end plates are positively connected against relative displacement longitudinally of the platen.

25. In a typewriting machine, the combination of a platen frame comprising end plates, platen bearings in said end plates, a platen, 130

and a platen head having a circumferential bearing groove in a part thereof, said groove receiving the bearing in one of the end plates, a platen head at the opposite end of the platen, a spindle connected with said last mentioned platen head, and a shoulder formed on said spindle and bearing against the outer side of the associated end plate of the platen frame.

26. In a typewriting machine, the combination of a substantially U-shaped platen frame comprising end plates connected at the rear end portions thereof and having platen bearings in said end plates, a platen, and relatively adjustable rigid bearing faces connected with the platen and adapted to bear against the outer sides of the end plates near the forward ends thereof to constitute a rigid tie between the platen frame and platen.

27. In a typewriting machine, the combination of a platen frame comprising end plates with platen bearings therein, a platen having platen heads, one of said platen heads having a part thereof formed with a circumferential groove therein in which the bearing in one of the end plates is received, the other platen head having a sleeve-like spindle that is seated in the bearing of the other end plate, and a spindle with a shoulder thereon that is adapted to bear against the outer side of the associated end plate, said last mentioned spindle being adjustably connected with said sleeve-like spindle, whereby a rigid tie is formed between the platen and end plates.

28. In a typewriting machine, the combination of a carriage; bearing rails with oppositely disposed grooves therein; a spacer having apertures therein; and cylindrical bearing rollers loosely supported in the apertures in said spacer and having their axes at right angles one to another in said grooves, the diameter of each roller being slightly greater than the length thereof in the direction of its axis, the ends of the rollers being concave.

29. In a typewriting machine, the combination of a carriage; bearing rails with oppositely disposed grooves therein; cylindrical bearing rollers having their axes at right

angles one to another in said grooves, the diameter of each roller being slightly greater than the length thereof in the direction of its axis, the ends of the rollers being concave; and a spacer for said rollers, said spacer comprising a flat bar with apertures or cut-outs therein to receive said rollers, and plates on opposite sides of said bar and which constitute means for retaining the rollers in said apertures.

30. In a typewriting machine, the combination of a carriage; bearing rails with oppositely disposed grooves therein; cylindrical bearing rollers having their axes at right angles one to another in said grooves, the diameter of each roller being slightly greater than the length thereof in the direction of its axis, the ends of the rollers being concave; and a spacer for said rollers, said spacer comprising a bar with apertures to receive said rollers, and plates on opposite sides of said bar and coöperative with each roller on opposite sides of diagonally opposite corners or edges thereof to retain the rollers in said apertures.

31. In a typewriting machine, the combination of a carriage; bearing rails with oppositely disposed grooves therein; cylindrical bearing rollers having their axes at right angles one to another in said grooves, the diameter of each roller being slightly greater than the length thereof in the direction of its axis, the ends of the rollers being concave; and a spacer for said rollers, said spacer comprising a bar with apertures to receive said rollers diagonally therein, and apertured plates on opposite sides of said bar to retain the rollers in the apertures in said bar, the width of the apertures in each plate being less in one direction than the diagonal axis of the rollers received between the plates.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 15th day of March A. D. 1907.

OSCAR WOODWARD.

Witnesses;

E. M. WELLS,

M. F. HAUNWEBER.