

O. WOODWARD.

TYPE WRITING MACHINE.

APPLICATION FILED FEB. 5, 1906.

Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.

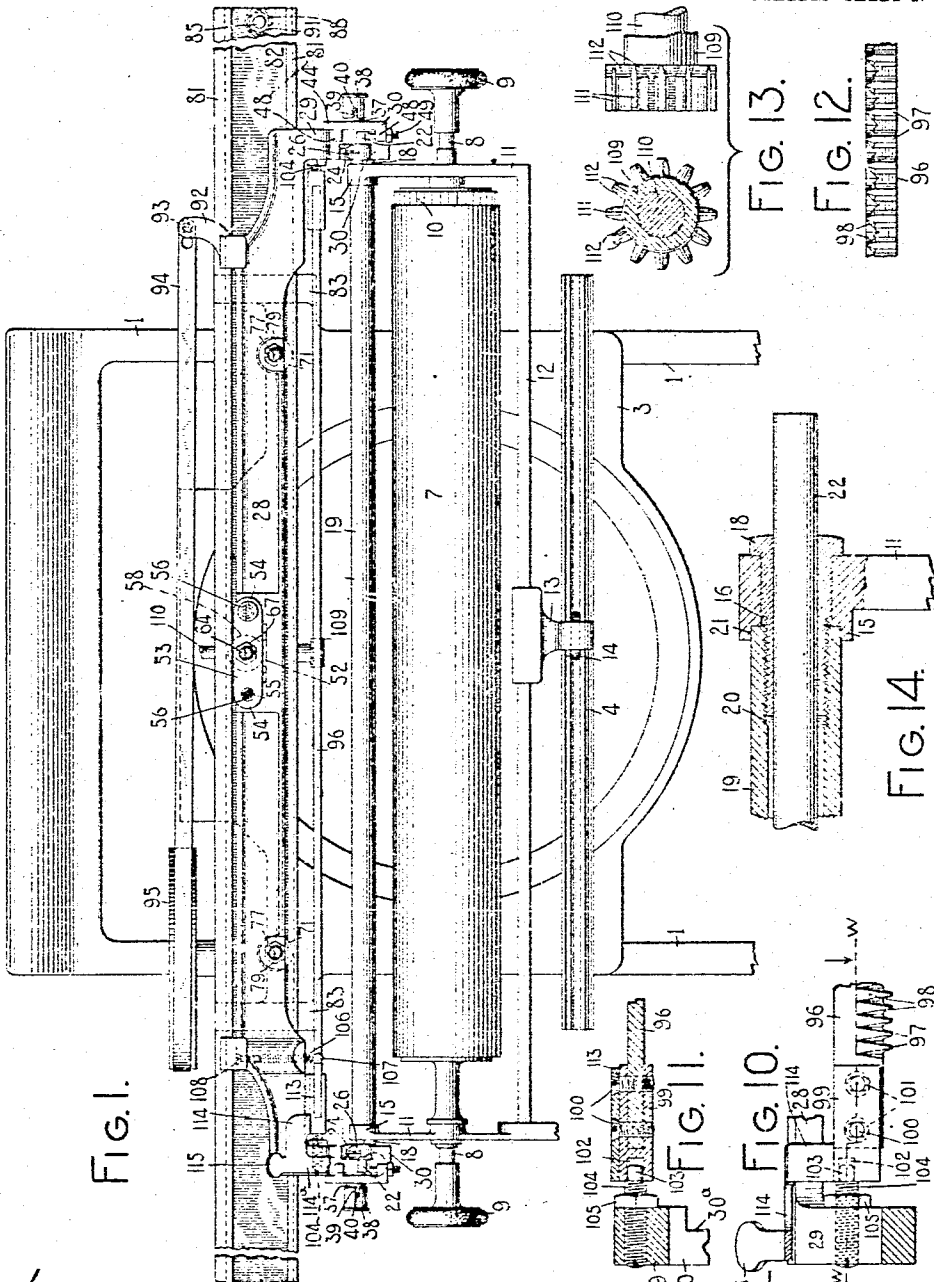


FIG. 1.

FIG. 13.

FIG. 12.

FIG. 14.

FIG. 10.

FIG. 11.

WITNESSES:

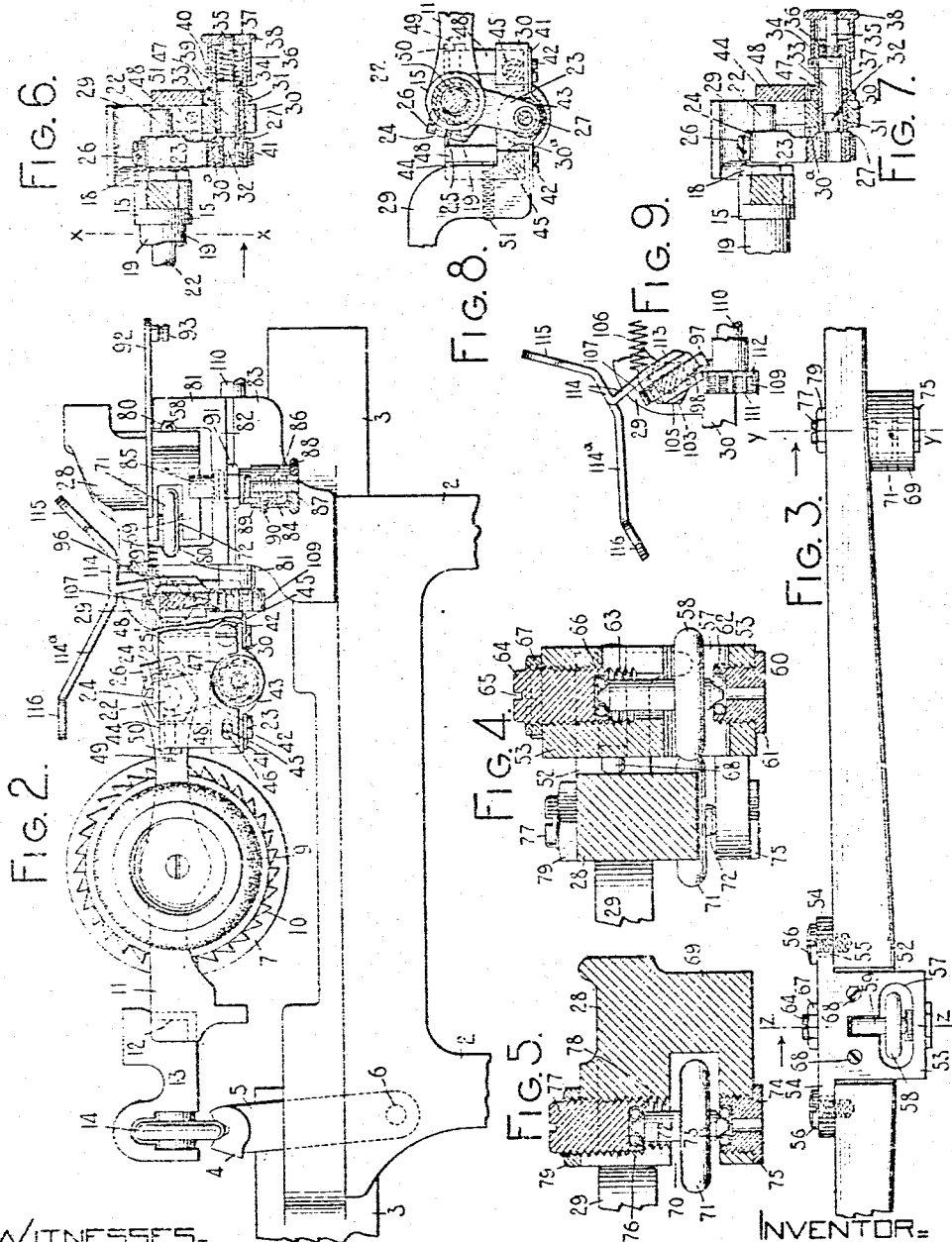
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By *James F. Hall*
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Patented Feb. 15, 1910.

2 SHEETS—SHEET 2.

949,105.



WITNESSES.

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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.

949,105.

Specification of Letters Patent.

Patented Feb. 15, 1910.

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To all whom it may concern:

Be it known that I, OSCAR WOODWARD, 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, stated generally, relates to carriages for typewriting machines, parts commonly associated with said carriages and to carriage mountings or bearings.

The main object of the invention is to improve generally devices of the class referred to.

Other objects will appear in the course of the following specification.

To the above 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 illustrated my improvements as applied to a machine resembling generally one style of the typewriter commercially known as the Densmore, but it is to be understood that said improvements may be applied in whole or in part to other forms of writing machines.

In the accompanying drawings, Figure 1 is a fragmentary top plan view of a typewriting machine embodying my invention, parts being broken away and other parts being omitted for the sake of clearness. Fig. 2 is an enlarged fragmentary side elevation of the upper part of the machine, parts being broken away and other parts being omitted for the sake of clearness. Fig. 3 is an enlarged fragmentary rear elevation of a part hereinafter called the carriage truck, and showing roller bearings for the carriage mounted in said truck. Fig. 4 is a sectional view, taken on a plane represented by the line $z-z$ in Fig. 3 and looking in the direction of the arrow, said Fig. 4 being drawn to a larger scale than Fig. 3. Fig. 5 is a sectional view taken on the line $y-y$ in Fig. 3 and looking in the direction of the arrow, said Fig. 5 being drawn to the same scale as Fig. 4. Fig. 6 is an enlarged fragmentary detail view at the right-hand of the carriage and looking from the front, said view being partly in section and show-

ing one of the connections between the two parts of the platen carriage, said two parts being hereinafter termed the platen truck and the platen frame. Fig. 7 is a view corresponding to Fig. 6 but showing some of the devices in different relations from those in which they appear in said Fig. 6. Fig. 8 is a view taken on a plane represented by the line $x-x$ in Fig. 6 and looking in the direction of the arrow. Fig. 9 is an enlarged fragmentary detail view showing the carriage feed rack and the carriage feed pinion as they appear when viewed from the right-hand side of the machine, the feed rack being shown in section and out of mesh with the feed pinion in position for releasing the carriage. Fig. 10 is an enlarged fragmentary front view, partly in section, showing the left-hand portion of the carriage feed rack and its mounting. Fig. 11 is a sectional view taken on a plane represented by the line $w-w$ in Fig. 10 and looking in the direction of the arrow. Fig. 12 is a fragmentary bottom plan view of the carriage feed rack on an enlarged scale. Fig. 13 shows in detail rear and side elevation the construction of the carriage feed pinion on an enlarged scale. Fig. 14 is an enlarged fragmentary horizontal sectional view taken through the longitudinal axis of the rear bar of the platen frame and showing the right-hand rear corner of said frame.

In the drawings, the main frame of the machine is shown in Figs. 1 and 2 as comprising a base frame 1, corner posts 2 and a top plate 3 secured at the top of the corner posts. A set of type bars (not shown) is mounted suitably on the top plate and key levers (not shown) are mounted in the base and suitably connected with the type bars. A shiftable rail or track-way 4 is arranged above the top plate and is supported at either side of the machine by arms 5 which are pivoted at 6 to the frame of the machine, said arms being connected with suitable mechanism for imparting a fore and aft movement to said rail 4 for shifting the platen of the machine to change the "case" position thereof. Said platen, represented by the reference character 7, is cylindrical and is provided with an axle 8, the ends of which have the usual finger wheels 9 secured to them. One end of the platen is suitably connected with a line spacing ratchet

wheel 10 which is adapted to cooperate with any suitable construction of line spacing mechanism. The platen axle 8 is journaled in horizontally disposed side bars 11 of a platen frame, the forward ends of said side bars being connected by a front bar 12. A bearing block 13, in which is pivoted a wheel 14, is suitably secured to the front bar 12 and said wheel 14 is guided and supported in the grooved shift rail 4. The rear end of each side bar is provided with a collar portion 15, which, as shown in Fig. 14, is formed with a perforation 16. A bushing 17, provided with a polygonal head 18 and with an externally threaded inner end portion, enters each perforation 16, the inner portion of the bushing screwing into the end of a hollow rod or bar 19, the ends of which are internally threaded at 20 to cooperate with the threaded portions of the bushings 17. The hollow bar 19, as will be best understood from Fig. 1, extends longitudinally of the platen and the ends of said bar are received in countersinks 21 in the collars 15 (Fig. 13). By tightening the screw bushings 17 the side bars 11 of the platen frame are clamped between the heads of said bushings and the ends of the hollow bar 19, the construction being such that the hollow bar 19 constitutes with the side bars 11 and the front bar 12 a rigid rectangular platen frame. A rod 22 is received in the bore of the hollow rod or bar 19 and extends throughout the length of the latter, being journaled in the screw bushings 17, as seen in Fig. 14. The ends of the rod 22 project laterally beyond the heads 18 of the bushings and receive arms 23. These arms are shown in Figs. 1, 2, 6, 8 and 9. Each arm is provided at its top with a collar portion 24 which surrounds the rod 22 and is split as indicated at 25, the split portions of the collars being connected by headed screws 26 which serve to secure the arms 23 in place on the ends of the rod 22. The construction is such that the arms 23 are adjustable both longitudinally of the rod 22 and also circumferentially thereof. The arms depend from the rod 22 and their lower ends are formed with holes into which are driven flanged bushings 27, said bushings providing bearings for the devices which serve to connect the platen frame with the carriage truck, which truck and which devices will now be described.

The carriage truck is disclosed in its entirety in Fig. 1; it comprises a bar-like portion 28 extending longitudinally of the platen in the rear thereof and arms at the ends of the bar, said arms projecting downwardly and forwardly from said bar and being best shown in Figs. 1, 2, 6, 7 and 8. Each arm comprises a forwardly and downwardly extending curved portion 29 and a horizontally disposed portion 30 which ex-

tends forwardly from the lower end of the curved portion 29. Midway of its length each of the horizontal portions 30 is provided with threaded openings which receive screw bushings 31, the inner ends of said bushings being close to the flanges of the bushings 27 in the arms 23, and the outer ends of said bushings 31 projecting beyond the faces of the portions 30 of the side arms. Each arm portion 30 is cut away as indicated at 30* to permit the associate arm 23 to extend downwardly close to the bushing 31. The bushings 31 provide bearings for pivot members or bolts which are most clearly disclosed in Figs. 6 and 7. Each pivot member comprises a pivot portion 32, a cylindrical bearing portion 33, bearing in the associate bushing 31, a head 34 and a stem 35. A helical wire-spring 36 is coiled around the stem 35. One end of said spring abuts against the head 34 and the other end against a cover 37 which is internally threaded and screwed on the outwardly projecting end of the associate bushing 31, the top of said cover being provided with an opening to permit of the passage therethrough of the stem 35 of the pivot member. The springs 36 tend constantly to press the pivot members inward toward each other and serve to maintain the pivot portions 32 of said members normally in engagement with the bushings 27 in the lower ends of the arms 23, as clearly shown in Fig. 6. Suitably secured to the outer end of each stem 35 is a cap piece 38 which surrounds and bears upon the outside of the associate cover 37. Each cap piece is provided with a slot 39 at its inner end, said slot normally cooperating with a screw stop 40 which is secured in the cover 37, as seen in Figs. 1 and 6. The pivot members, it will be understood, are in alinement and their pivot portions 32 cooperate with the arms 23, serving as pivots about which the arms swing when the platen carrier is moved back and forth to change "case". During this to-and-fro case shifting movement of the platen frame, it will be understood that a relative rotary movement takes place between the rod 22 and its bearings 17. When it is desired to detach the platen frame or carrier from the carriage truck in order to remove it from the machine, the caps 38 of the pivot members are pulled outward away from each other, disengaging the pivot portions 32 from their bearings in the arms 23. The parts are so proportioned that when a longitudinal movement sufficient to disengage the pivot portions 32 has been communicated to the pivot members, the slots 39 in the caps 38 will be disengaged from the associated stops or screws 40. A rotary movement may then be communicated to the pivot members by turning the caps 38, said rotary movement carrying the slots in said caps out

of register with the stops 40, so that when said caps are released their inner ends contact with the stops 40 and retain the pivot members locked in inoperative position, as indicated in Fig. 7. With the pivot members inoperative as shown in Fig. 7, the platen carrier is disconnected from the carriage truck and may be removed from the machine without disturbing said carriage truck.

As shown in Figs. 6, 7 and 8 a metal strip 41 is secured by screws 42 to the under side of each carriage arm portion 30, said metal strip bridging the bottom of the cut-away 30^a in said arm portion and being curved downwardly at 43 midway of its length. In replacing the platen carrier in the machine the strips 41 serve as guiding and centering means, the lower ends of the arms 23 being received in the downwardly curved portions 43 of the strips, and thereby properly centered, so that when the caps 36 are turned to release the pivot members to permit of their reengagement with the arm 23, the bearings 27 in said arms will be in alignment with the pivot portions 32.

In order to limit properly the to-and-fro case shifting movement of the platen carrier in the carriage truck, I provide means which will now be described. Said means comprise brackets 44, shown in Figs. 1, 2 6, 7 and 8. The brackets 44 are secured against the outer faces of the side arms of the carriage truck by headed screws 45 which pass freely through enlarged openings 46 (Fig. 2) in the brackets 44 and are received in threaded openings in the horizontal arm portions 30. Each bracket is cut away as indicated at 47 in order not to interfere with the outwardly projecting cover 37. Projecting inwardly at right angles from the body of each bracket 44 are walls 48 spaced apart as shown in Figs. 1 and 8. The forward wall receives a limiting screw 49 which is provided with a check nut 50. An adjusting screw 51 is threaded in each downwardly curved arm portion 29 of the carriage truck, the forward end of said screw abutting against the rear face of the rear wall 48 of the associate bracket 44. The ends of the rod 22 are adapted to contact with the rear wall 48 and with the end of the screw 49 in the front wall of the bracket 44, and thus serve as stops on the platen carrier which co-operate with stops on the carriage truck to limit the case shift movement of the platen carrier on the truck. By adjusting the screw 49 toward or away from the opposite wall 48 the amount of the case shift movement is regulated, this regulation, it will be noted, being obtained by a single operation. In assembling the parts, the screw 49 may be secured in proper position by the check nut 50 and thereafter the relation between the two stops on the carriage truck at each side

of the latter need not be altered. When it is desired to alter the positions at which the platen carrier is stopped for upper and lower case, this is accomplished by a single operation on each bracket 44. The screws 45 which secure the brackets 44 in place are loosened and thereafter the associate adjusting screws 51 are screwed in or out as desired. The brackets 44 are then brought into contact with the ends of said adjusting screws 51 and thereafter the securing screws 45 are tightened to retain the brackets in their new and adjusted positions. In one of its case positions, the platen carrier is disposed as shown in Figs. 1, 2 and 8 with the ends of the rod 22 in contact with the ends of the screws 49. When it is desired to change case, the shift rail 4 is swung rearwardly about its pivots by means of suitable actuating mechanism before referred to, thereby causing the platen carrier to be moved rearwardly, the arms 23 swinging on the pivotal members and the ends of the rod 22 moving away from the screw stops 49. The rearward movement of the platen carrier continues until the ends of the rod 22 contact with the rear walls 48 of the brackets 44. When this occurs the platen is in proper position for writing in the other case.

Referring now to the carriage truck and the means for guiding and supporting it, reference is to be had chiefly to Figs. 1, 2, 3, 4 and 5. The bar 28 is cut away or slotted midway of its length at the rear, as indicated at 52. Received within the slot 52 is a bracket 53. At its top said bracket is provided with laterally disposed ears 54 which are provided with perforations 55. Headed screws 56 pass freely through the openings 55 and are received in threaded openings in the top of the bar 28, thereby securing said bracket in place. The shanks of the screws 56 are smaller than the openings 55, the construction being such that when said screws are loosened said bracket has a limiting movement fore and aft of the machine by reason of the enlarged openings 55. As best shown in Figs. 3 and 4, the bracket is provided with an opening 57 which receives a wheel 58, the axle 59 whereof is vertically disposed and is coned at its ends. Below the axle 59 the bearing bracket 53 is provided with a threaded opening which receives an upwardly extending threaded ball-cup 60, the lower end of said ball-cup being provided with a polygonal adjusting head 61 and the upper end being cupped out to provide a seat for a set of anti-friction balls 62 which coöperates with the lower end of the axle 59. Above the wheel 58 the bracket 53 is provided with a threaded opening 63 in the lower portion of which the axle 59 turns. Screwed into the opening 63 from the top is a threaded ball cup 64, the top of which is provided with a nick 65 for an adjusting

tool and the bottom of which is formed with a ball seat which receives a set of anti-friction balls 66, said balls cooperating with the upper end of the axle 59. A locking nut 5 67 is screwed on the ball cup member 64 and serves to retain the latter in adjusted position. The adjustable cups 60 and 64 not only afford an adjustment for the bearing balls but they also afford a vertical adjustment of the wheel 58 relatively to the truck. 10 At either side of the threaded opening 66, the bracket 53 is provided with horizontal threaded openings which receive adjusting screws 68, the ends of said screws abutting 15 against the forward wall of the cut-away or slot 52 in the carriage bar 28. By loosening the securing screws 56 the adjusting screws 68 may be turned in or out to adjust the bracket 53 fore and aft of the machine transversely of the carriage bar. Near its ends 20 the carriage bar 28 is provided with downwardly extending lugs 69, said lugs being formed at their front sides with slots 70 (Fig. 5), which receive bearing wheels 71. 25 The wheels 71 have vertically disposed axles 72, the ends whereof are preferably coned, the lower end of each cooperating with anti-friction balls 73 which are seated in a ball cup 74 received in a threaded opening in the lug 69, said ball cup being entered in said 30 opening from the bottom and being provided with a polygonal head 75 by which it may be readily adjusted in place. The upper end of each axle 72 cooperates with anti-friction balls 76 which are seated in a screw-like ball cup 77, the latter screwing down 35 through a threaded opening 78 and being provided with a locking nut 79 which serves to hold it securely in place after it has been properly adjusted. 40 The peripheries of the wheel 58 and the wheels 71 mounted on the carriage truck are preferably rounded and cooperate with grooves 80 formed in the inner faces of 45 vertically disposed parallel walls 81 of a track-way, thereby providing a three-point bearing for the carriage. The walls 81 are connected at the bottom by a base portion 82. The track-way, comprising the horizontal bottom portion 82 and the parallel 50 vertically disposed walls 81, resembles a trough, as will be best understood from a consideration of Figs. 1 and 2. Said track-way is suitably secured to lugs 83 integral with and extending upwardly from the 55 top plate 3 of the machine. This construction provides a track or guide way for the roller bearings of the carriage which is exceptionally strong and rigid and the tracks 60 80 wherein may be readily formed in parallelism and will thereafter remain in parallelism. The wheels 71 cooperate with the front track-way 80 and the wheel 58 with the rear track-way 80. The adjusting 65 screws 68 provide means for effecting a

horizontal adjustment of the rollers 58 and 71 for taking up wear of the rollers in the bearings 80 while the adjustable ball cups which cooperate with the axles of each wheel provide means for adjusting the carriage truck vertically in respect of the track-way and also provide independent adjusting means for adjusting each wheel 58 or 71 70 relatively one to another to secure proper cooperation of the rollers with their tracks 75 80 and to prevent them from binding therein. The wheels, it will be noted, turn on ball bearings and the friction generated is reduced to a minimum. I desire it to be understood that where in the subjoined claims roller bearings are recited, said roller bearings may be either balls or wheels. Near the right-hand end the bottom 82 of the track-way is provided with a threaded opening which receives a screw cup 84 (Fig. 85 2) open at the top. A plunger stop 85 is seated in the cup and is normally projected upward into the path of the right-hand lug 69 on the carriage bar under the influence of a coiled spring 86 which surrounds the stem 87 of said plunger and is confined between the plunger head and the bottom of the screw cup 84. The stem of the plunger stop 85 projects downwardly through an opening in the bottom of the screw cup and is provided with a cap 88, said cap being 90 formed with a slot 89 which cooperates with a screw stop 90 fixed in the side of the screw cup 84. Said screw cup is provided with a polygonal adjusting portion 91. The construction resembles generally that of the pivot members and the associated parts shown in Figs. 6 and 7. Normally the plunger stop 85 will cooperate with the right-hand lug 69 to prevent the accidental withdrawal of the carriage truck from the track-way, when, however, it is desired to remove the carriage truck from the machine the cap 88 may be pulled down until its slot 89 100 disengages from the stop 90, whereupon the cap may be turned so that its top edge will cooperate with the stop 90 to maintain the plunger stop 85 lowered and out of the path of the carriage lug 69. An arm 92 (Figs. 1 and 2) projects rearwardly from the carriage truck near the right-hand end, said arm being provided with a downwardly projecting pin 93 over which is hooked the free end of a band or strap 94, the other end of said band or strap being connected with 120 the usual carriage spring drum 95. Under the influence of the spring drum the carriage comprising the platen carrier and carriage truck, is urged constantly leftward across the top plate. The leftward movement of the carriage under the influence of the spring drum, however, is normally controlled by a carriage feed rack and cooperating devices. 125

The carriage feed rack is indicated by the 130

reference numeral 96 and is shown in Figs. 1, 2, 9, 10, 11 and 12. Said feed rack is provided with downwardly projecting teeth 97. The front faces of said teeth are beveled, as indicated at 98, for a purpose presently to be described. The ends of the feed rack 96 are provided with bearing blocks 99. These bearing blocks are provided with slots or kerfs which enable the blocks to be fitted over the ends of the rack 96, as clearly shown in Fig. 11. The blocks are secured in place by screws 100 which are received in threaded openings in said blocks and pass through elongated holes 101 (Fig. 10) in the carriage rack. By loosening the screws the rack may be vertically adjusted in respect of its bearing blocks. The outer ends of said bearing blocks are provided with bearing openings 102 which cooperate with the pivot portions 103 of pivot screws 104, said pivot screws being received in threaded openings in the curved portions 29 of the side bars of the carriage truck. Locking nuts 105 serve to secure said pivot screws in adjusted position. By this construction it will be seen that the carriage feed rack 96 is pivotally mounted in the sides of the carriage truck. A horizontally disposed coiled spring 106 has its forward end hooked around a pin 107 on the top of the carriage feed rack, the rear end of said spring being adjustably secured to a screw 108 on the carriage truck. Said spring plays in a groove in the carriage bar 28 and constantly urges the toothed portion or lower edge of the feed rack 96 forwardly about its pivots and normally maintains said feed rack in engagement with a carriage feed pinion 109 fixed to the forward end of a horizontally disposed shaft 110. The shaft 110 rotates in fixed bearings and serves to connect said feed pinion with escapement devices (not shown) of suitable construction, which at printing operation are adapted to cooperate in a known manner to permit the carriage to be drawn a letter space leftward under the influence of the spring drum 95. As clearly shown in Fig. 13, the teeth 111 of the carriage feed pinion are beveled at the rear, as indicated at 112, so that the rear edges of said teeth are comparatively sharp. The platen carriage may be released from the escapement devices so that it may be moved freely from side to side of the machine across the top plate by means that are now to be described. Secured against the rear face of the left-hand bearing block 99 (Figs. 9, 10 and 11) is a releasing member comprising a body portion 113, and an angular arm extending from the body portion upwardly and laterally outward and indicated by the reference numeral 114, said arm having at its outer end a cross arm 114^a provided with finger pieces 115 and 116. The body portion 113 of the releasing member is perforated to per-

mit of the passage of the screws 100 which serve to secure the releasing member in place against the rear of the left-hand bearing block 99. When the platen carrier is in normal position and it is desired to free or release the carriage from the escapement devices, the finger piece or release key 116, which is the forwardly projecting key of the double keyed release member, is depressed. This serves to swing the rack 96 rearwardly against the force exerted by the spring 106, disengaging said rack from the feed pinion 109. The released position of the rack is indicated in Fig. 9 from which it will be seen that the rack is completely separated from the pinion so that the carriage may be moved freely in either direction across the top plate. When pressure is removed from the key 116, the spring 106 swings the lower end of the rack forwardly about its pivots and the bevels 98 on the rack teeth cooperate with the bevels 112 on the pinion teeth to effect an easy and certain reengagement between the carriage feed rack and the carriage feed pinion. If the platen carrier happens to be in raised position, exposing the writing and the under side of the platen, and it then be desired to release the carriage from the carriage feeding mechanism, the finger piece 115 will be found conveniently situated for the purpose. The finger of the operator engages the back of the key 115 and pulls it forward, thereby effecting the disengagement of the rack and pinion in the manner described above.

Various changes may be made without departing from the spirit and scope of my invention.

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

1. In a typewriting machine, the combination of a platen; a platen carriage comprising two parts, one shiftable on the other; a shaft extending longitudinally of the platen and bearing in the shiftable part, said shaft serving as an axle about which said shiftable part may be turned to expose the writing; and arms rigid with said shaft, said arms being pivoted on the non-shiftable part of said carriage.

2. In a typewriting machine, the combination of a platen; a platen carriage comprising two parts, one shiftable on the other; and connections between said parts, said connections comprising a shaft which serves as an axle about which the shiftable part may be turned to expose the writing and arms rigid with said shaft, said arms being pivotally connected with the non-shiftable part of said carriage.

3. In a typewriting machine, the combination of a platen; a shiftable platen frame comprising a hollow bar extending longitudinally of the platen; a shaft extending through the bore of said hollow bar; a car-

riage truck; and connections between said shaft and said carriage truck comprising arms fixed at the ends of said shaft and pivotally connected with said truck.

4. In a typewriting machine, the combination of a platen; a shiftable platen frame comprising a hollow bar extending longitudinally of the platen; a shaft extending through the bore of said hollow bar and journaled near its ends in bearings in the hollow bar; arms secured to said shaft outside its journals; and a carriage truck on which said arms are pivoted.

5. In a typewriting machine, the combination of a platen; a shiftable platen frame comprising a hollow bar extending longitudinally of the platen; screw bushings cooperating with the sides of said platen frame and the ends of said hollow bar; a shaft extending through the bore of said hollow bar and journaled in said bushings; a carriage truck; and connections between said shaft and said carriage truck.

6. In a typewriting machine, the combination of a platen; a shiftable platen frame comprising a hollow bar extending longitudinally of the platen; a shaft extending through the bore of said hollow bar and journaled near its ends in bearings in the hollow bar; arms, each provided with a split collar at one end and with a bearing at the other, the collar portions of said arms being secured on said shaft outside its journals; and a carriage truck provided with pivots cooperating with the bearings in the ends of said arms.

7. In a typewriting machine, the combination of a platen; a shiftable platen frame comprising a hollow bar extending longitudinally of the platen; screw bushings connecting the sides of said platen frame with the ends of said hollow bar; a shaft extending through said hollow bar and journaled in said bushings; arms, each provided with a split collar at one end and with an opening provided with a bushing at the other end; the collar portions of said arms being secured on said shaft outside said screw bushings; and a carriage truck provided with pivots cooperating with the bushings in said arms.

8. In a typewriting machine, the combination of a platen; a shiftable platen frame comprising a hollow bar extending longitudinally of the platen; a shaft extending through the bore of said hollow bar; a carriage truck; connections between said shaft and said carriage truck; and brackets on said carriage truck, said brackets cooperating with the end portions of said shaft.

9. In a typewriting machine, the combination of a platen; a shiftable platen frame therefor; a carriage truck with which said platen frame is connected; stops on said platen frame; and pairs of stops on said

carriage truck, each pair cooperative with one of the stops on said platen frame, and each of said pairs of stops being adjustable at a single operation.

10. In a typewriting machine, the combination of a platen; a shiftable platen frame therefor; a carriage truck with which said platen frame is connected; stops on said platen frame; and pairs of stops on said carriage truck, each pair cooperative with one of the stops on said platen frame and each of said pairs of stops being adjustable without varying the relation between the two stops comprising the pair.

11. In a typewriting machine, the combination of a platen; a shiftable platen frame therefor; a carriage truck with which said platen frame is connected; stops on said platen frame; and pairs of stops on said carriage truck, each pair cooperative with one of the stops on said platen frame and the stops of each pair of stops being relatively adjustable; and means for adjusting both stops of each pair at a single operation without altering the relation between them.

12. In a typewriting machine, the combination of a platen; a shiftable platen frame in which said platen is supported; a carriage truck with which said platen frame is connected; stops on said platen frame; brackets secured to said carriage truck, each of said brackets comprising oppositely disposed walls; a stop adjustable in one wall of each bracket, said last recited stop and the other wall of the associate bracket being cooperative with one of the stops on said platen frame; and means for varying the relation between the stop portions on each of said brackets and between the brackets and said platen frame.

13. In a typewriting machine, the combination of a platen; a shiftable platen frame in which said platen is supported; a carriage truck with which said platen frame is connected; stops on said platen frame; brackets on said carriage truck, screws securing said brackets to said carriage truck, each of said brackets comprising oppositely disposed walls; a stop adjustable in one wall of each bracket, said last recited stop and the other wall of the associate bracket being cooperative with one of the stops on said platen frame; and screws in said carriage truck, one of said screws abutting each bracket and being adjustable to vary the relation between said bracket and said carriage truck.

14. In a typewriting machine, the combination of a platen; a two-part platen carriage comprising a carriage truck and platen frame, the two parts being pivotally connected; pivot members in one part cooperating with bearings in the other part to enable one part to be turned on the other; screw bushings in which said pivot members slide;

covers screwed on said bushings; and coiled springs within said covers and cooperating with said pivot members.

15. In a typewriting machine, the combination of a platen; a two-part platen carriage comprising a carriage truck and platen frame, the two parts being pivotally connected; pivot members in one part cooperating with bearings in the other part to enable one part to be turned on the other, each member comprising a pivot portion, a bearing portion, a head and a stem; covers cooperating with the heads of said pivot members; and springs coiled on the stems and housed within said covers.

16. In a typewriting machine, the combination of a platen; a platen carriage comprising two parts pivotally connected; and pivot members in one part cooperating with bearings in the other part to enable one part to be turned on the other, the construction and arrangement of said pivot members being such that they are movable longitudinally to engage and disengage their bearings and are rotatable on their own axes to a position in which they are maintained inoperative.

17. In a typewriting machine, the combination of a platen, a platen carriage comprising two parts, one shiftable on the other for upper and lower case writing, connections between said parts comprising spring-pressed pivot members by means of which one part of the carriage may be detached from the other, and means for locking said pivot members in releasing positions.

18. In a typewriting machine, the combination of a platen, a platen carriage comprising two parts, one shiftable on the other for upper and lower case writing, connections between said parts comprising pivoted arms, certain of the pivots for said arms being spring-pressed and in the nature of aligned bolts that are movable to releasing positions to enable one part of the carriage to be detached from the other, and means for locking said spring pressed bolts in their releasing positions.

19. In a typewriting machine, the combination of a platen; a platen carriage comprising two parts, one shiftable on the other; connections between said parts comprising spring-pressed pivot members; and means for locking said members in inoperative position so that one part of the carriage may be detached from the other.

20. In a typewriting machine, the combination of a platen; a platen carriage comprising two parts pivotally connected, pivot members in one part cooperating with bearings in the other part to enable one part to be turned on the other; screw bushings in which said pivot members slide; covers screwed on said bushings; coiled springs within said covers and cooperating with said pivot members; caps on said members;

and portions on said covers cooperative with said caps to maintain said members inoperative.

21. In a typewriting machine, the combination of a platen; a two-part platen carriage comprising a carriage truck and platen frame, the two parts being pivotally connected; pivot members in one part cooperating with bearings in the other part to enable one part to be turned on the other, each member comprising a pivot portion, a bearing portion, a head and a stem; covers cooperating with the heads of said pivot members; springs coiled on the stems and housed within said covers; and caps on said stems cooperative with projections on said covers to maintain said members inoperative.

22. In a typewriting machine, the combination of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved; wheels mounted at the sides of said bar and cooperative with said grooves; axles on said wheels; ball-bearing cups adjustable on said carriage bar; and anti-friction balls in said cups, said balls cooperating with the axles of said wheels.

23. In a typewriting machine, the combination of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved; wheels mounted in ball bearings at the sides of said bar and cooperative with said grooves; means for adjusting said wheels longitudinally of their pivotal axes; and means for altering the relations between said wheels transversely of said bar.

24. In a typewriting machine, the combination of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved; wheels at one side of said carriage bar cooperating with one of said grooves; a bracket secured at the other side of said bar; a wheel in said bracket cooperative with the other groove in the track-way; and means for adjusting said bracket to take up wear in the bearings.

25. In a typewriting machine, the combination of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved; ball bearing cups adjustable in one side of said carriage bar; anti-friction balls in said cups; wheels bearing on said balls and cooperative with one of the grooves in said track-way; a bracket secured at the other side of said bar; ball cups adjustable on said bracket; anti-friction balls in said cups; a wheel bearing on said balls and cooperating with the other groove in the track-way; and means for adjusting said bracket for taking up wear in the bearings of the carriage.

26. In a typewriting machine, the combination of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved; wheels at one side of said carriage bar cooperating with one of said grooves; a bracket secured at the other side of said bar; a wheel in said bracket cooperative with the other groove in the track-way; and means for adjusting said bracket to take up wear in the bearings of the carriage.

5 nation of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved; a pair of wheels spaced apart at one side of
 10 said carriage bar and cooperating with one of said grooves; and a wheel at the other side of said bar and midway between said pair of wheels, said last recited wheel cooperating with the other groove in the track-
 15 way.

27. In a typewriting machine, the combination of a platen; a platen carriage comprising a bar; a trough-like track-way, the inner walls whereof are oppositely grooved;
 20 sets of ball cups adjustable at one side of said carriage bar; a pair of wheels spaced apart and cooperating with one of said grooves, each of said wheels bearing in one of said sets of ball cups; a bracket secured
 25 at the other side of said carriage bar and provided with adjustable ball cups; anti-friction balls therein; a wheel bearing on said balls and cooperating with the other groove in said track-way, said wheel being
 30 disposed midway between the first named pair of wheels and said bracket being adjustable to take up wear in the carriage bearing.

28. In a typewriting machine, the combination of a platen; a platen carriage; a carriage feed rack pivotally mounted on said carriage; a feed pinion on the frame of the machine with which said feed rack normally
 35 cooperates; means for giving rotary movement to said feed rack to disconnect it from said pinion to release the carriage; and means for causing said feed rack to reengage with said pinion, the teeth of said feed rack being beveled on the reengaging side.

29. In a typewriting machine, the combination of a platen; a platen carriage; a carriage feed rack pivotally mounted on said carriage; a feed pinion on the frame of the machine with which said feed rack normally
 40 cooperates; means for giving rotary movement to said feed rack to disconnect it from said pinion to release the carriage; and means for causing said feed rack to reengage with said pinion, the teeth of said feed rack being beveled on the reengaging side
 45 and the teeth of said feed pinion being beveled on the reengaging side.

30. In a typewriting machine, the combination of a platen; a platen carriage; pivot

pins adjustably mounted on said carriage; 55 a carriage feed rack; detachable bearing members provided with bearing openings for receiving said pivot pins; and means for securing said members to said feed rack.

31. In a typewriting machine, the combination of a platen; a platen carriage; screw pins on said carriage; a carriage feed rack; bearings suitably secured at the ends of said feed rack and cooperative with said screw pins; a double finger piece secured on said feed rack; and a feed pinion normally cooperative with said feed rack, said finger piece being operative to swing said rack out of engagement with said pinion, one portion of said finger piece being convenient for manipulation when said carriage is in normal position and the other portion of said finger piece being convenient for manipulation when the platen is raised to expose the line of writing.

32. In a typewriting machine, the combination of a platen; a platen carriage; a guide-way for said carriage secured on the frame of the machine, and a spring-pressed stop mounted on said guide-way and adapted to cooperate with said carriage to prevent the accidental withdrawal of the same from its guide-way, said spring stop being constructed so that it may be moved to and locked in inoperative position to permit of the removal of said carriage from the machine.

33. In a typewriting machine, the combination of a platen; a platen carriage; a carriage feed rack pivoted on said carriage and adapted to be rotated about an axis which passes through the feed rack itself; a feed pinion with which said rack normally meshes; and key actuated means for giving rotary movement to said rack to free it from said pinion, the releasing movement of the rack being transverse of the plane of rotation of the pinion, the teeth of both said rack and said pinion being beveled at their reengaging sides.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 3d day of February, A. D. 1906.

OSCAR WOODWARD.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.