

Nov. 24, 1936.

H. SCHÜLER

2,062,236

TYPEWRITING MACHINE

Filed Jan. 2, 1935

2 Sheets-Sheet 1

Fig. 1

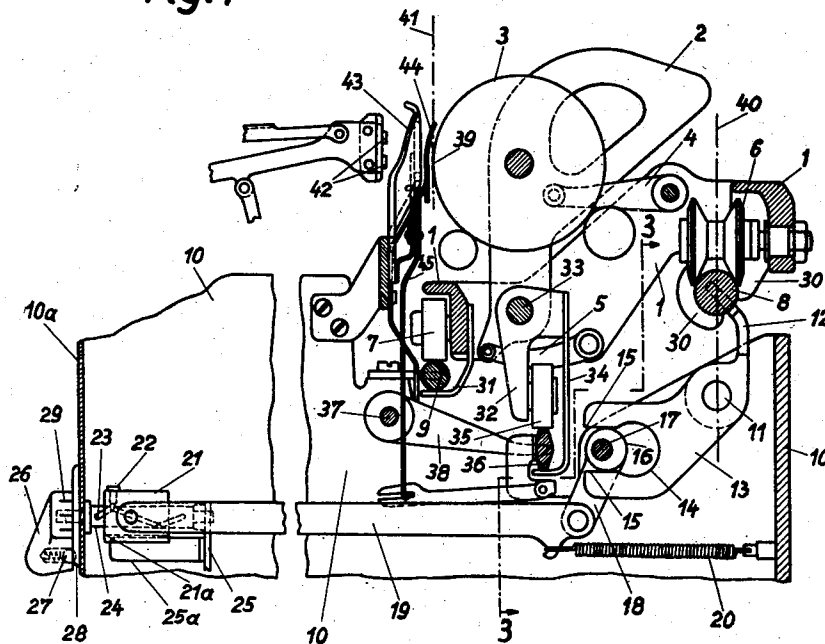
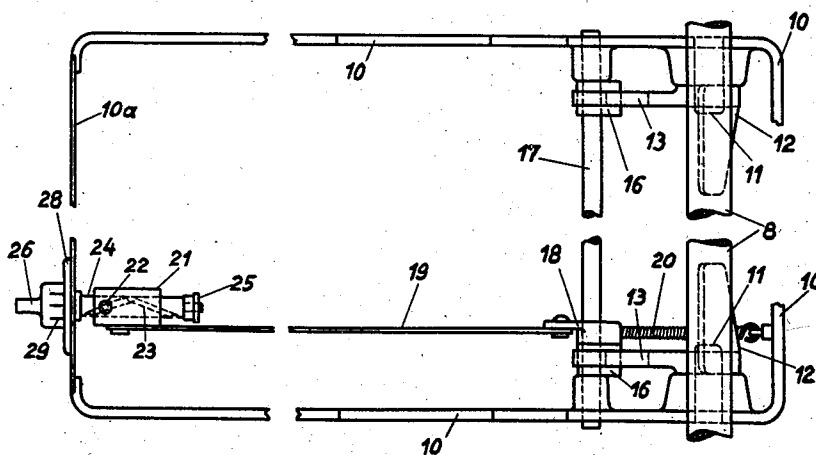


Fig. 2



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Fig. 3

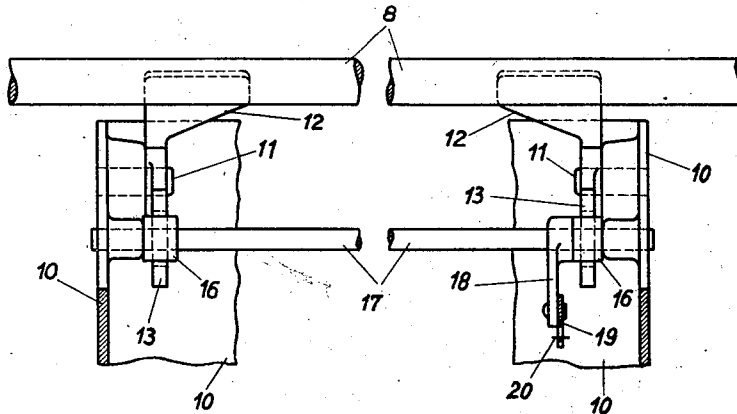
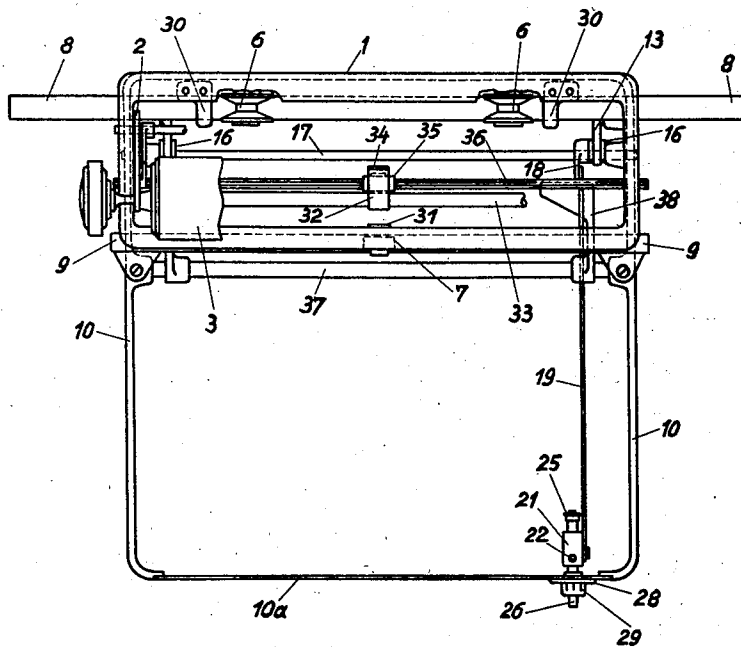


Fig. 4



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UNITED STATES PATENT OFFICE

2,062,236

TYPEWRITING MACHINE

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16 Claims. (Cl. 197—149)

This invention relates to a typewriter, particularly of the type bar class, provided with means for adjusting the platen forward or backward in the striking direction of the type.

5 In the known typewriters of this class the platen adjusting devices interfere with sure and accurate guiding and moving of the platen in longitudinal direction. To adjust the platen its carriage, with the complete guiding mechanism, is
10 disposed in known machines on a displaceable slide held in a narrow groove-like guide in the center of the machine and guided so as to be displaceable forward or backward in the striking direction of the type faces. This construction is,
15 however, open to the objection that the platen carriage cannot be safely held against torsional stress and tilting in horizontal and vertical directions. In case of long and heavy carriages these troubles will naturally be considerably increased.

20 The invention purports to eliminate these troubles and to provide a typewriter, in which the carriage can be easily and accurately adjusted forward or backward and yet be simply and safely supported and guided with respect to all
25 stresses. According to the invention, this object is attained by rendering one of a plurality of rails guiding the carriage adjustable to and fro and thereby permitting the adjustment of the platen
30 in the striking direction of the type faces.

By way of example, one form of the invention is illustrated in the accompanying drawings, in which Figure 1 is a section of the typewriter with all the parts omitted which are not required for
35 understanding the invention; Fig. 2, a partial top view of the machine according to Fig. 1, with the carriage removed; Fig. 3, a section on the line 3—3, of Fig. 1; and Fig. 4, a top view of the machine equipped with the carriage.

40 Referring to the drawings, on the frame of the carriage 1 a member 2 carrying the platen 3 is reversibly disposed by means of the pairs of links 4 and 5. The carriage 1 is also provided with the rollers 6 and 7 by means of which it is guided on
45 the rear rail 8 and the front rail 9 so as to be movable in its longitudinal direction, guiding being preferably effected on the rear rail 8 by two equal rollers 6 and on the front rail 9 by the roller 7 arranged in the center of the carriage,
50 as shown in Fig. 4.

The rear rail 8 is carried by two arms 12, 13 swingingly arranged on the machine frame 10 by means of the pivot 11. At the free lever arm 13 of each carrying arm 12, 13 a slot-like opening 14
55 is provided with two oppositely disposed parallel

guide faces 15 between which an eccentric 16 is guided, both eccentrics 16 being firmly connected with a shaft 17. The shaft 17 carries further a firmly attached lever arm 18 which is engaged by the transmission rod 19.

5 The other end of the transmission rod 19 is connected with an adjusting member 21 which can be moved to and fro in longitudinal direction by a handle 26 in the front wall 10a of the machine by means of a short shaft 24 provided with a spiral guide groove 23 and a guide pin 22 guided in the groove 23. The adjusting member 21 has a longitudinal guide 21a which is engaged by the projection 25a secured to the bearing bracket 25
15 for protecting the member 21 against rotation. The shaft 24 is rotatably disposed in the bracket 25 and the front wall 10a of the machine, but protected against longitudinal displacement. In the various positions the handle 26 and thus the adjusting member 21 are secured by a spring
20 member 27 which engages corresponding recesses of a disc 28 attached to the front wall 10a of the machine. The different positions are indicated by graduation marks on the handle 26 and preferably correspond to the positions of the platen
25 3 according to the number of copies wanted.

On the rear rail 8 the carriage 1 is guided by means of the rollers 6 and special slide members 30 so that it can move in longitudinal direction and also cooperate in the motions of the rail 8.
30 To secure the carriage 1 against displacement on the rail 8 transversely to the longitudinal direction thereof the two rear rollers 6 are provided with tracks having preferably a trapeziform cross section, so that double conical running faces are provided for the rollers 6 and transverse displacements of the carriage 1 relative to the rail 8 are prevented, which insures safe transmission of the motions of the rail 8 to the carriage 1.

40 The front roller 7 has a cylindrical running face and can thus slide on the front rail 9 forward and backward in striking direction of the type faces during adjustment of the carriage 1. The carriage 1 is secured against being lifted from the front rail 9 by a slide guide 31 which passes
45 under the rail 9, the face of the guide 31 extending parallel to the surface line of the cylindrical roller 7.

The member 2 and thus the platen 3 are shifted from lower to upper writing position by means of an actuating rail 36 which during the depressing of the usual shift key, not shown, is moved about the shaft 37 by means of the shaft 37 and two arms 38. The operating rail 36 acts at any position of the carriage 1 upon a roller
55

35 firmly connected with the shift member 2 by a rod 33 and an intermediate member 32 and secured against being lifted from the rail 36 by a slide member 34. The roller 35 and the face of the slide guide 34 are also constructed so that during adjustment of the carriage 1 they can be displaced on the operating rail 36 in the striking direction of the type faces and transversely to the longitudinal direction of the rail.

In the central position of the carriage 1 shown in Fig. 1 the middle axis of the movable rail 8 is located vertically above the central axis of the pivots 11 of the carrying arms 12, 13, so that a plane passing through the middle axis of the rail 8 and the pivots 11 will extend parallel to a plane passing through the writing line 39, i. e., through the point where the type faces 42 strike the platen 3. In this manner, uniform adjustment of the platen 3 from central position, according to Fig. 1, to extreme left or right-hand positions is attained.

The transmission rod 19 is engaged by a tension spring 20 whose other end is secured to the machine frame 10. The spring 20 constantly tends to draw the rod 19 to the right, as indicated in Fig. 1, to move the eccentrics 16 anticlockwise and the arms 12, 13 clockwise and thus to keep the rail 8 always in rearmost position. In doing so it serves the special purpose of avoiding play in the joints and in the guides of the parts transmitting the adjusting motion.

The invention makes it further possible to effect in a simple manner fine and accurate adjustment of the platen 3, also with respect to the type guide 43, the member 44 indicating the height of the line and the ribbon or ribbon carrier 45 from the front side of the machine. These parts 43, 44, 45, of which the line indicator 44 and the ribbon carrier 45 participate in the shift movement of the platen 3, are so arranged on the machine frame that they are not affected by the adjusting motion of the carriage 1 in the striking direction of the type faces. This affords the special advantage that the carriage 1 and thus the platen 3 can be accurately and reliably adjusted in the striking direction of the type faces according to the number and thickness of the sheets. The top sheet, independently of the number of copies, can therefore always be adjusted to approximately the same position relative to the type guide 43 and the type faces 42 as well as to the ribbon and the member 44 indicating the height of the line, so that the free motion of these parts will not be impeded, even in case of a large number of copies.

The arrangement of the movably disposed rail 8 and stationary rail 9 permits the supporting of the carriage 1 at least at three widely separated points to secure it, notwithstanding its adjustability, against tilting and torsional stresses in all directions. Furthermore, owing to the peculiar arrangement of the two rails 8 and 9 and that of the actuating rail 36, the small space available for the carriage guide in machines of this class on account of their extensive type driving mechanism is most favorably utilized for sure and broad guiding of the carriage 1, which is unusual in such typewriters.

I claim:—

1. In a typewriting machine, particularly of the class using type bars, the combination with a machine frame and a carriage carrying a platen, of a plurality of parallel rails for guiding the carriage, arms constructed as double levers connected at one end with one of the rails and

slotted at the other end, pivots mounted in the machine frame for movably holding said arms intermediate their ends, said arms being distributed over the length of the rail and positioned parallel to one another, slide members and grooved rollers for guiding the carriage on the adjustable rail and preventing its displacement transversely to the longitudinal direction of the rail, and means engaging the slotted ends of said arms to impart a rocking movement thereto and fro in striking direction of the type faces.

2. A typewriting machine according to claim 1 in which the means for rocking the arms includes a rotatable shaft and eccentrics firmly secured to said shaft and guided in the slotted ends of the arms to swing them about their pivots.

3. In a typewriting machine, particularly of the class using type bars, the combination with a machine frame and a carriage carrying a platen, of a plurality of parallel rails for guiding the carriage, arms constructed as double levers connected at one end with one of the rails and slotted at the other end, pivots mounted in the machine frame for movably holding said arms, said arms being distributed over the length of the rail rendered adjustable and positioned parallel to one another, slide members and rollers formed with tracks for guiding the carriage on the adjustable rail and preventing its displacement transversely to the longitudinal direction of the rail, a rotatable shaft, eccentrics firmly secured to said shaft and guided in the slotted ends of the arms for swinging them about their pivots, a lever arm firmly attached to said shaft, a transmission rod engaging said lever arm with one end, an adjusting member connecting with the other end of said rod and directly actuating it, a graduated handle for said adjusting member in the machine wall for moving said member into adjusting positions, means for securing the adjusting member against rotation, a grooved shaft rotatably arranged in said securing means and the wall of the machine, a pin guided in the groove of said shaft for longitudinally moving the adjusting member to and fro on actuation by said handle, a recessed disc secured to the wall of the machine, and a spring member adapted to engage the recessed disc and thereby hold said handle and adjusting member in position according to the graduations on said handle.

4. In a typewriting machine, the combination with a machine frame and a carriage carrying a platen, of a plurality of parallel rails for guiding the carriage, arms constructed as double levers connected at one end with one of the rails and slotted at the other end, pivots mounted in the machine frame for movably holding said arms, said arms being distributed over the length of the rail rendered adjustable and positioned parallel to one another, slide members and rollers formed with tracks for guiding the carriage on the adjustable rail and preventing its displacement transversely to the longitudinal direction of the rail, a rotatable shaft, eccentrics firmly secured to said shaft and guided in the slotted ends of the arms for swinging them about their pivots, a lever arm firmly attached to said shaft, a transmission rod engaging said lever arm with one end, an adjusting member connecting with the other end of said rod and directly actuating it, and a spring engaging the transmission rod with one end and secured to the machine frame with the other end, said spring tending constantly to move the adjustable

rail rearwards in the striking direction of the type faces.

5. In a typewriting machine according to claim 1, means for guiding the platen and shifting it from lower to upper writing position, said means comprising a movable actuating rail disposed parallel to the longitudinal axis of the platen and at least one cylindrical roller running on said actuating rail in all positions of adjustment of the carriage relatively to the type faces.

6. In a typewriting machine according to claim 1, at least one cylindrical roller running on another of said rails for guiding the paper carriage in all positions of the carriage relatively to the type faces, said other rail being stationary and said cylindrical roller being so arranged relatively to the grooved rollers as to form therewith a three point support for the carriage.

7. In a typewriting machine according to claim 1, means for guiding the platen and shifting it from lower to upper writing position said means comprising a movable actuating rail disposed parallel to the longitudinal axis of the platen and at least one cylindrical roller running on said actuating rail in any position of adjustment of the carriage relatively to the type faces, a guide member embracing the actuating rail to retain the carriage thereon, means for indicating the height of the line and ribbon carrying means, said two last-mentioned means being independent of any of the mechanism for adjusting the carriage in the striking direction of the type faces.

8. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, and means engaging the other ends of both said levers for turning them about said pivots to move said last-mentioned rail and carriage transversely to the printing plane.

9. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, a pair of eccentrics mounted on a common shaft and respectively engaging slots in the other ends of both said levers, and means including an operating member mounted at the front of the machine for turning said eccentrics.

10. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, a pair of eccentrics mounted on a common shaft and respectively engaging open fronted slots in the other ends of both said le-

vers, and means including an operating member mounted at the front of the machine for turning said eccentrics.

11. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to one of said rails near opposite ends thereof, and having at their other ends an open fronted slot enlarged at its inner end, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, a pair of eccentrics mounted on a common shaft and respectively engaging slots in the other ends of both said levers, and means including an operating member mounted at the front of the machine for turning said eccentrics.

12. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, a pair of eccentrics mounted on a common shaft and respectively engaging slots in the other ends of both said levers, and means for turning said eccentrics including a knob rotatably mounted in the front of the machine, link mechanism between said knob and the eccentric shaft, and a device between the knob and the link of said mechanism for converting rotation of the knob into longitudinal movement of the link.

13. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, a pair of eccentrics mounted on a common shaft and respectively engaging slots in the other ends of both said levers, and means for turning said eccentrics including a knob rotatably mounted in the front of the machine, link mechanism between said knob and the eccentric shaft, a device between the knob and the link of said mechanism for converting rotation of the knob into longitudinal movement of the link, and a spring operative on said link mechanism, said spring acting in the direction to retract the platen from the printing plane.

14. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage on said frame, one of said rails being of substantially round cross-section, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to said round rail near opposite ends thereof, grooved rollers on the carriage engaging the round rail, slide bearings on said carriage embracing said round rail, cylindrical rollers on said carriage running on said other

rails with capacity for limited transverse movement thereon, and means engaging the other ends of both said levers for turning them about their pivots to move said round rail and the carriage transversely to the printing plane.

- 5 15. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, and means engaging the other ends of both said levers for turning them about said pivots to move said last-mentioned rail and carriage transversely to the printing plane, 10 the axis of the rail when the latter is in the middle of its range of transverse movement and the common axis of the lever pivots lying in a plane parallel to the printing plane. 15 20

16. A typewriter comprising a frame, a platen carriage, a plurality of rails parallel to the platen axis for supporting and guiding said carriage in said frame, a plurality of levers pivotally mounted on co-axial pivots intermediate their ends, 5 said levers being connected each at one end to one of said rails near opposite ends thereof, guide means on the carriage engaging the last-mentioned rail in a manner preventing movement of the carriage transversely to said last-mentioned rail, means engaging the other ends of both said levers for turning them about said pivots to move said last-mentioned rail and carriage transversely to the printing plane, and ribbon shifting and line height indicating devices non-slidably arranged in front of the platen, 10 said devices being supported independently of any of the parts for moving the carriage relatively to the printing plane. 15 20

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