A. T. BROWN.

TYPE WRITING MACHINE.

APPLICATION FILED JULY 22, 1907.

910,900. Patented Jan. 26, 1909.

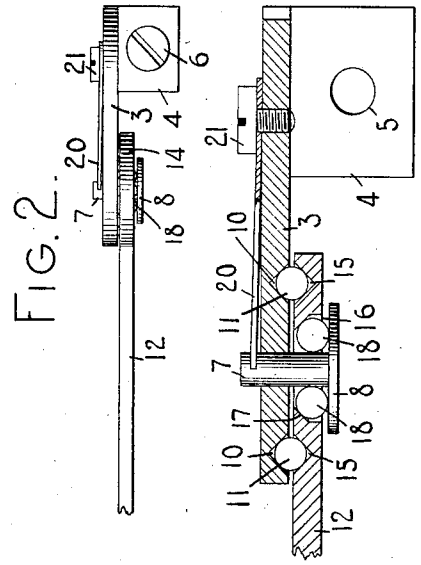


FIG. 2.

FIG. 3.

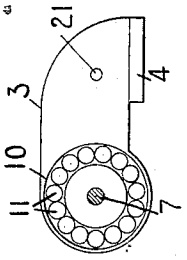


FIG. 6.

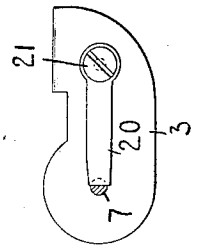


FIG. 7.

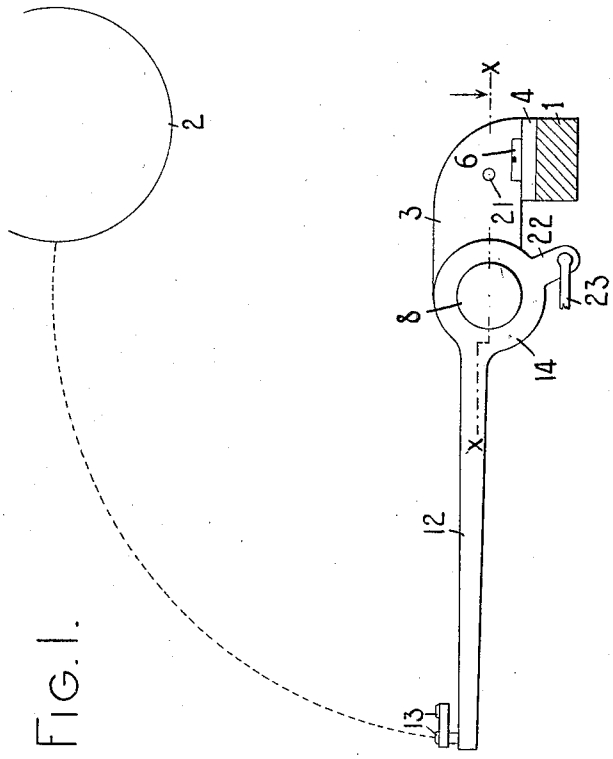


FIG. 1.

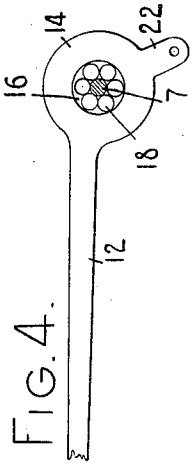


FIG. 4.

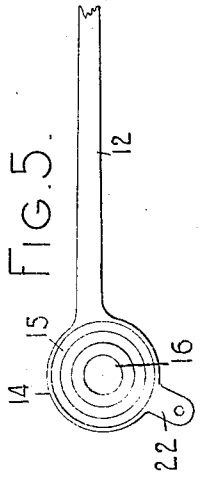


FIG. 5.

WITNESSES:

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ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

No. 910,900. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed July 22, 1907. Serial No. 384,926.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 it has for its principal object to provide an improved type bar pivotal bearing.

I provide a ball bearing pivot for a type bar with spring means which normally press the ball bearings together but which are adapted to yield in case one of the balls meets with some obstruction such as a particle of dirt, or in case of anything tending to deflect the type bar, such as two type bars colliding when two keys are struck at the same time or, in case of any rough handling, such as may occur when the types are being cleaned. The bearing is very readily assembled and it is self adjusting.

To the above and other ends which will hereinafter appear, my invention consists in certain features of construction and combination and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of a type bar and hanger made in accordance with my invention, a type bar segment being shown in section and a platen being shown diagrammatically. Fig. 2 is a top or edge view of the type bar and its hanger. Fig. 3 is an enlarged view in section on the line x—x of Fig. 1. Fig. 4 is a side view of the type bar with the head of the pivot pin sectioned away. Fig. 5 is a view of the opposite side of the type bar. Fig. 6 is a side view of the hanger with the pivot pin in section. Fig. 7 is a view of the hanger as seen from the opposite side.

My invention is applicable to typewriting machines generally, but in Fig. 1 I have shown a type bar and hanger mounted near the center of the segment of a front-strike typewriter. In this figure, 1 designates the segment and 2 the platen. The hanger comprises a hanger arm 3 having the form of a flat plate with its plane parallel to that in which the type bar swings, and a bent-off ear or foot 4 perforated at 5 for the reception of a screw 6 by which the hanger is secured to the segment 1. In the construction shown the foot 4 is secured to the inner or upper face of the segment, and the plate-like arm 3 projects toward the front of the machine; but this specific arrangement is not essential as the hanger may be secured to the segment in other ways and project from the segment in other directions without departing from my invention.

The forward part of the hanger arm 3 is perforated for the reception of a pivot pin 7 which, in the particular form thereof shown in the present instance, is formed or provided with a broad flat head 8. A V-groove 10 is formed in one face of the hanger arm 3 concentric with the pivot pin 7 and in this V-groove there runs a set of anti-friction balls 11. The type bar 12, having a type or types 13 on its free end, is formed at its pivotal end with a circular enlargement 14, one face of which lies against the grooved face of the hanger arm 3 and has formed in said face a V-groove 15 which, together with the groove 10 forms a race-way for the balls 11. Concentric with said groove 15 the type bar is formed with a central opening 16 having a tapered or conical bearing face 17 against which bear the inner set of balls 18, said balls coöperating with the periphery of the pivot pin 7 and with the inner flat face of the head 8 of said pin. The pivot pin 7 does not have a tight fit in the hanger arm 3 but has a working fit therein and said pin projects a short distance beyond the hanger arm where it is formed with a transverse slot into which fits the end of a flat spring 20, the opposite end of said spring being secured to the hanger arm 3 by a screw 21. The spring 20 exerts its tension away from the hanger arm so that said spring tends to press the head 8 of the pivot pin against the balls 18, thus forcing said balls against the inclined bearing surface 17 of the type bar and pressing the type bar itself against the outer set of balls 11. One of the walls of the slot serves as a shoulder or abutment on the pin against which the spring 20 acts. The balls and grooves are so proportioned that the type bar lies pretty close to the hanger arm but with sufficient space between for easy clearance, and the head 8 of the pivot pin is also but a short distance from the face of the type bar.

When the parts are assembled, the spring 20 does not lie flat against the hanger arm but stands out from it a short distance, as

best shown in Fig. 3 so that in case any unusual force is applied to the type bar tending to deflect it or to move it in a direction transverse to the plane in which it swings, the spring may yield a short distance without bending the type bar or placing undue strain on any of the parts. The spring 20 normally stands so close to the hanger arm, however, that the type bar cannot be deflected to a sufficient extent to allow the balls to become displaced from their grooves and when the extraneous force is removed the parts spring back instantly into their normal and proper relations. When the type bar is deflected to such an extent that the spring 20 is drawn down flat against the face of the hanger arm the parts are positively prevented from moving any further. Moreover, in case of wear in the bearing, said wear is automatically taken up by this spring 20. Furthermore, in case of dirt getting into the bearing and into the path of one of the balls, the ball can ride over the particle of dirt without putting undue strain on the parts, the spring permitting sufficient yielding of the bearing for the purpose. It will, of course, be understood that the spring is so adjusted as to place the bearing under a suitable amount of tension, great enough to insure that the type bar be guided accurately to the printing point and not so great as to place undue pressure on the ball bearing and thus cause it to work hard. It will be observed that the spring 20 which presses one member of the type bar pivotal bearing towards the coöperating member thereof, is separate from the type bar and from the hanger, although it is attached to one of them. I am thus enabled to employ a rigid type bar and a rigid hanger, and at the same time to press the members of the bearing together by spring pressure. The outer grooves 10 and 15 are of sufficient diameter to afford a wide bearing for the type bar and thus guide it accurately in its motion, this width of bearing being approximately in the plane in which the type bar swings. The grooves 10 and 15 being of the V-shape shown, prevent any bodily motion of the type bar across its axis of swinging motion and guide the type bar in a true circular path about the axis of the pivot pin 7.

The bearing may be readily taken apart and the type bar disconnected from the hanger by turning the spring 20 about the securing screw 21, thus slipping the end of the spring out of the slot in the pin 7, and then withdrawing said pin from the hole in the hanger arm. This operation is the work of but a moment and the parts may be very readily replaced by reversing this operation. It will be seen that when the hanger is assembled no adjusting of it is necessary, once the proper tension has been secured on the spring 20, as said spring keeps the bearing automatically in adjustment.

Any suitable means may be provided for actuating the type bar. As shown in the present instance said bar is formed with a depending arm 22 to which is pivoted a forwardly extending actuating link 23 which may be connected up with a key in any suitable manner.

The opening 17 in the type bar is so designed that the balls 18 project but a short distance beyond the face of the type bar, said balls being nearly included in said opening. It will be seen that both sets of balls run in circles the planes of which are parallel to and are nearly coincident with the plane of motion of the type bar itself, and that one of these circles is of greater diameter than the other.

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 type bar and a support therefor, a pivotal connection between said type bar and its support, said pivotal connection arranged to afford lateral movement of said type bar independently of its support, and spring means resisting such lateral movement.

2. In a typewriting machine, the combination of a type bar and a support therefor, a pivotal connection between said type bar and its support, said pivotal connection arranged to afford lateral movement of said type bar independently of its support, spring means resisting such lateral movement, and means for limiting the extent of such lateral movement.

3. In a typewriting machine, the combination of a type bar and a support therefor, ball bearings for said type bar, and spring means for pressing the ball bearing members together, said spring means being adapted to afford a material deflection of said type bar.

4. In a typewriting machine, the combination of a type bar and a support therefor, ball bearings for said type bar, spring means for pressing the ball bearing members together, said spring means being adapted to afford a material deflection of said type bar, and means for limiting the extent of such deflection.

5. In a typewriting machine, the combination of a type bar and a hanger arm arranged face to face, a ball bearing between the proximate faces of said type bar and hanger arm, and means for pressing said type bar toward said hanger arm, said means comprising a spring capable of yielding to a material extent.

6. In a typewriting machine, the combination of a type bar, a hanger arm for said type bar, a pivot pin passing through one of

said parts and having ball-bearing connection with the other, and a spring acting on said pin.

7. In a typewriting machine, the combination of a type bar and hanger arm arranged face to face and having ball bearing grooves in their proximate faces, anti-friction balls in said grooves, a pivot pin passing through said type bar and hanger and having ball bearing connection with one of them, and a spring acting on said pin and pressing said type bar toward said hanger.

8. In a typewriting machine, the combination of a type bar and a support therefor, a bearing for said type bar on said support, said bearing being wide approximately in the plane in which the type bar swings, and a yielding connection between said type bar and said support for yieldingly holding the members of said bearing together.

9. In a typewriting machine, the combination of a type bar, a support therefor, a ball bearing of wide diameter between said type bar and its support, said ball bearing being adapted to resist motion of said type bar across the pivotal axis thereof, and yielding means acting on said type bar near its pivotal axis for yieldingly holding the members of said ball bearing together.

10. In a typewriting machine, the combination of a type bar and a hanger arm arranged face to face, a pivot pin passing loosely through said parts, and a flat spring mounted on one of said parts and acting on said pin to press the type bar toward the hanger arm.

11. In a typewriting machine, the combination of a type bar, a hanger arm, a pivotal connection between said parts comprising a pin having an abutment, and a plate spring acting against said abutment to hold the pin in place.

12. In a typewriting machine, the combination of a hanger, a type bar having a pivotal bearing thereon, and a spring separate from the type bar and hanger and which presses one member of the pivotal bearing towards a coöperating member thereof.

13. In a typewriting machine, the combination of a type bar, a support for said type bar, a pivot pin for said type bar having an abutment, and a pivoted retaining device for said pin, said device normally engaging said abutment and adapted to be turned about its pivot to free said pin.

14. In a typewriting machine, the combination of a type bar, a support for said type bar, a pivot pin for said type bar having an abutment, and a pivoted plate spring normally engaging said abutment and retaining said pin in place, said spring being adapted to be turned about its pivot to free said pin.

15. In a typewriting machine, the combination of a type bar and a hanger arm arranged face to face, and a spring acting to press said type bar toward said hanger arm.

16. In a typewriting machine, the combination of a type bar, a hanger, and a spring acting to press said type bar toward the hanger arm.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 12 day of July A. D. 1907.

ALEXANDER T. BROWN.

Witnesses:
ARTHUR J. BRIGGS,
C. E. TOMLINSON.