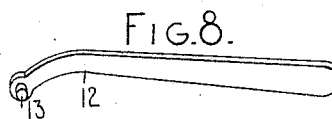
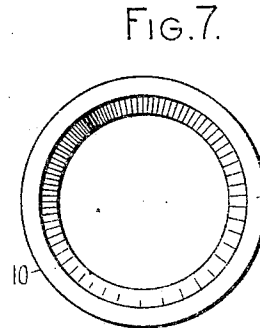
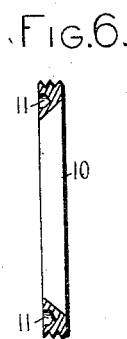
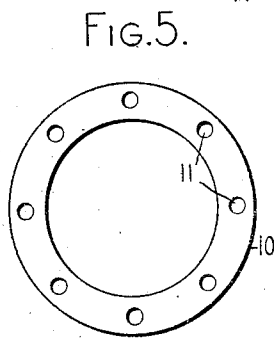
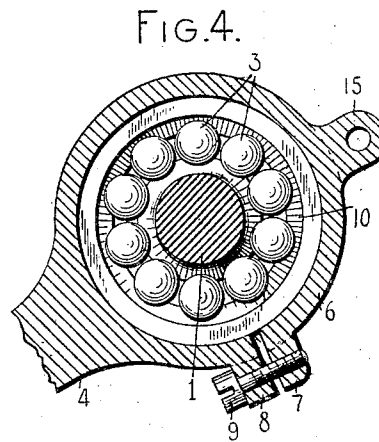
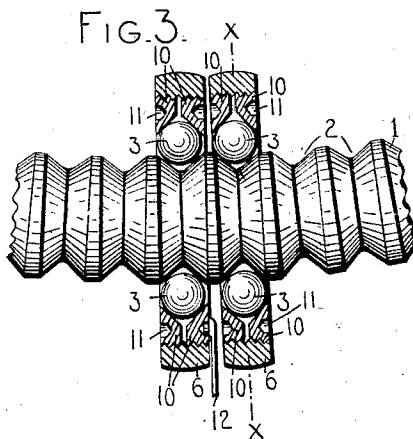
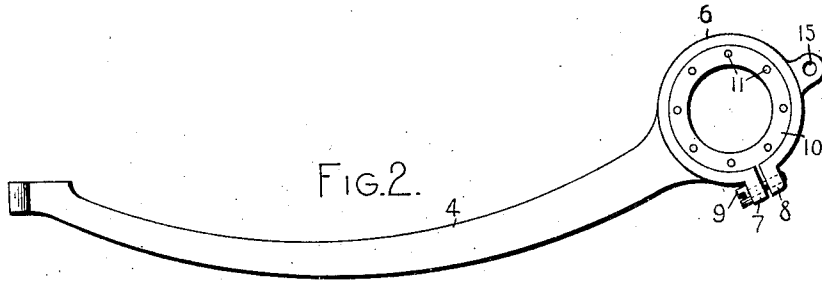
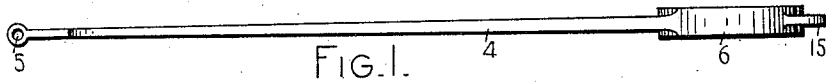


J. H. BARR.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 16, 1906.

943,643.

Patented Dec. 21, 1909.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN H. BARR, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE SMITH PREMIER TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

943,643.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed March 16, 1905. Serial No. 250,444.

To all whom it may concern:

Be it known that I, JOHN H. BARR, 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 object to provide a ball bearing pivot for a type bar.

My invention consists in certain features of construction and combinations and arrangements of parts which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an edge view and Fig. 2 a face view of a type bar. Fig. 3 is a view of a type bar segment having two type bars mounted thereon, said type bars being shown in section. Fig. 4 is a sectional view on the line $x-x$ of Fig. 3. Figs. 5, 6 and 7 are an outside face view, a transverse sectional view and an inside face view respectively, of a ring used in my construction. Fig. 8 is a view of a tool used for adjusting the ball bearing.

I have shown the type bars mounted on a segment 1 which consists of a curved rod of circular cross section having cut in its surface a series of peripheral grooves 2 which constitute ball races for anti-friction balls 3. The type bar 4 has at its free end an enlargement in which is a hole 5 for the reception of a type block. At its pivotal end the type bar is enlarged to form an eye which surrounds the segment 1. Said pivotal end of the type bar consists essentially of an annular strap 6 which is integral with the type bar. Said annular strap is cut through at one point at an angle to the shank of the type bar and the ends thereof are formed into outstanding lugs 7 and 8, and a headed screw 9 passes through one of said lugs and is threaded into the other for the purpose of tightening the strap. The eye formed by the strap 6 is internally threaded for the reception of two rings 10, each of which is threaded on its periphery so as to be screwed into the eye in the type bar, and the interior surface of each of said rings is beveled or cone shaped, as shown and both rings being wholly within the eye of the type bar.

As shown in Fig. 3, the two rings 10 in each type bar have their beveled or conical

faces turned toward each other so that these two rings together form an interior groove which constitutes a ball race. The balls 3 run in the ball race thus formed and in the grooves 2 in the segment 1, so that each type bar is connected with the segment 1 by a ball bearing. Obviously this ball bearing may be adjusted by loosening or tightening one or the other of the rings 10. To this end each of said rings has formed in its outer flat face a series of depressions 11 for the reception of a suitable tool. A tool suitable for the purpose is shown in Figs. 3 and 8 and consists of a strip or bar of sheet metal 12 having projecting from one end thereof a pin 13 which is adapted to be inserted in one of the depressions 11 as shown in Fig. 3. The curvature of the segment 1 results in separating two adjacent type bars farther apart on their lower edges than on their upper edges, as shown in Fig. 3. This leaves sufficient room between the two type bars for the insertion of the adjusting tool.

When any of the ball bearings has been adjusted by turning the rings 10, these rings may be secured against accidental turning by tightening the screw 9, thus tightening the strap 6 about the rings 10. I prefer to construct the parts as shown so that when the bearing is assembled the flat outer faces of the rings 10 are approximately flush with the corresponding faces of the strap 6 so that the entire bearing of the type bar is no wider than said strap.

Each of the type bars is connected with some suitable operating mechanism. In the present case I have shown projecting from the strap 6 an ear 15 having an opening therein for an operating link which may be connected with key lever mechanism in any suitable manner.

By screwing both rings to corresponding extents in the same direction, the type bar may be shifted bodily in a lateral direction relative to the fixed ball bearing.

Various modifications may be made in the details of construction and arrangements without departing from 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 support having a race way formed therein, a type bar having an eye comprising an integral peripheral strap, two rings threaded into said eye and together

forming an adjustable race-way, means for tightening said strap about said rings, and anti-friction rollers running in said race ways.

5 2. In a typewriting machine, the combination of a type bar support having a race-way formed therein, a type bar having an eye surrounding said race-way, two rings threaded into said eye and together forming
10 a race-way, and anti-friction rollers running in said cooperating race-ways, said eye in the type bar comprising a strap which at a point at an angle with the shank of the type bar is cut across, and a screw passing
15 through one end of said strap and threaded into the other whereby said strap may be tightened about said rings.

3. In a typewriting machine, the combination of a segmental type bar support having
20 a plurality of race-ways formed therein, a plurality of type bars each having an eye encircling one of said race-ways, two rings threaded into each of said eyes and both wholly within said eye, said rings together
25 forming a race-way which cooperates with a race-way in the type bar support, means for adjusting said rings with relation to each other, and means for clamping said rings in adjusted position.

30 4. In a typewriting machine, the combination of a type bar support having a race-way formed therein, a type bar having an internally threaded eye comprising a strap which at one point is cut through, two rings threaded
35 into said eye and together forming a race-way, said rings being capable of being turned to adjust them toward and away from each other, anti-friction rollers running in said cooperating race-ways, said strap having
40 outstanding lugs 7 and 8, and a screw passing through said lugs whereby said strap may be tightened about said rings to retain them in adjusted position.

5. The combination of a type bar segment
45 having a series of race-ways formed in its periphery, a series of type bars, each having an integral interiorly threaded eye encircling said segment, two rings screwed into each of said eyes and both wholly within the
50 eye, said two rings together constituting a race-way which cooperates with one of said race-ways in the segment, and anti-friction rollers running in said cooperating race-ways.

55 6. The combination of a type bar segment having a series of race-ways formed in its periphery, a series of type bars, each hav-

ing an integral interiorly threaded eye encircling said segment, two rings screwed into each of said eyes and both wholly within the
60 eye, said two rings together constituting a race-way, which cooperates with one of said race-ways in the segment, anti-friction rollers running in said cooperating race-ways, and means for tightening the eye of each of
65 said type bars about said rings.

7. A fixed support having a peripheral ball race therein, a type bar having an integral eye which surrounds said peripheral bearing and is divided transversely, internal
70 threads in said eye, externally threaded rings both wholly within the eye and that are adjustable toward and away from each other in said eye and forming a ball race between them, a series of balls contained within the
75 races formed by said rings and said peripheral bearing, and means for drawing the free ends of the divided eye together to tighten the eye on said rings and hold them in the adjusted position in the eye.
80

8. In a typewriting machine, the combination with a fixed support having a ball bearing groove, of a type bar having an interiorly screw-threaded eye, two similar ring-like cones, exteriorly threaded and fitted
85 within said eye, and having means for adjusting them laterally for shifting the type bar laterally relatively to the fixed ball bearing groove, and means for tightening said eye about said rings.
90

9. In a typewriting machine, the combination of a type bar support having a series of non-parallel ball races cut peripherally therein, a series of type bars set close together along said support and each having
95 an interiorly threaded eye encircling said support, a pair of thin coned rings threaded into the eye of each type bar and together forming a companion ball race with one of the non-parallel ball races in the support, and anti-friction balls in said ball races,
100 means for clamping the eye of each of said type bars about said rings, the rings being so threaded into the type bars that any type bar can be adjusted along the support and
105 relatively to adjacent type bars by turning both rings in the same direction.

Signed at Syracuse, in the county of Onondaga and State of New York, this 14th day of March A. D. 1905.

JOHN H. BARR.

Witnesses:

E. E. CORY,
A. L. HILMAN.