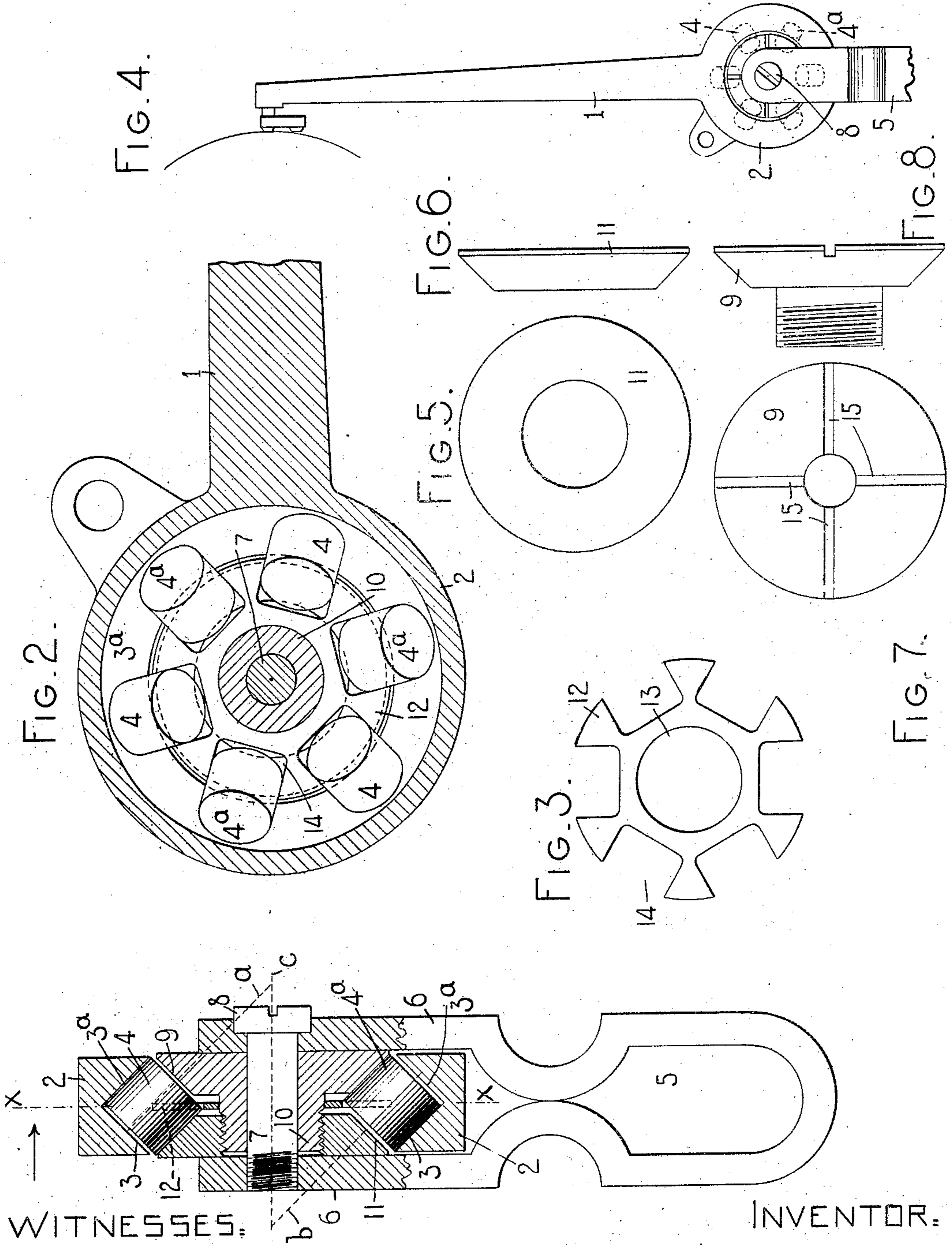


T. J. COO.  
TYPE WRITING MACHINE.  
APPLICATION FILED NOV. 6, 1907.



J. B. Reeves.  
E. M. Wells.

FIG. 1.

INVENTOR.  
Thomas J. Coe  
By Jacob Selbd  
HIS ATTORNEY

# UNITED STATES PATENT OFFICE.

THOMAS J. COO, OF TORONTO, ONTARIO, CANADA, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

## TYPE-WRITING MACHINE.

No. 877,909.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed November 6, 1907. Serial No. 400,944.

*To all whom it may concern:*

Be it known that I, THOMAS J. COO, subject of the King of England, and resident of Toronto, Province of Ontario, in the county of York and Dominion of Canada, 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 bearings for the type bars, and it has for its object to provide an improved roller bearing for the type bars.

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, Figure 1 is an enlarged sectional view taken through the axis of the type bar and showing the means for mounting the type bar on its hanger. Fig. 2 is an enlarged longitudinal sectional view of the same taken on the line  $x-x$  of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is an enlarged side view of a roller separator employed in the construction. Fig. 4 is a side elevation showing a type bar and hanger constructed in accordance with my invention, the type bar being shown at the printing point. Figs. 5 and 6 are enlarged detail side and edge views respectively of one of the cone bearings of the rollers. Figs. 7 and 8 are enlarged detail side and edge views respectively of the companion cone on which the anti-friction rollers are supported.

A type bar 1 is provided with an eye 2 formed with an internal V-shaped race-way having bearing walls 3 and 3<sup>a</sup> for coöperation with crossed anti-friction circularly arranged bearing rollers 4 and 4<sup>a</sup>. The type bar hanger 5 may be formed as shown in Fig. 1 and is bifurcated to provide hanger arms 6 between which the eye of the type bar is received. These arms are perforated to receive a screw 7 which passes between and connects the arms and is threaded at one end for coöperation with one of the openings in the arm, which opening is tapped to receive the screw. The opening in the other arm of the hanger is countersunk to receive the head 8 of the screw.

A bearing cone 9 has a central opening

therethrough in order that the cone may be supported on the screw 7 between the arms of the hanger as shown in Fig. 1. The cone 9 is provided with a projection or stem 10 threaded for coöperation with a central tapped opening in a companion bearing cone 11. The cone 9 is supported upon the screw 7 between the hanger arms and the cone 11 is supported on the cone 9, the hanger arms bearing at opposite sides on the cones to maintain them in their adjusted position with relation to each other. A roller separator 12, shown in detail in Fig. 3, has a central opening 13 to receive the stem 10 of the bearing cone 9 so that said stem constitutes a support on which the roller separator may turn with the bearing rollers 4 and 4<sup>a</sup>. The roller separator is formed with apertures 14 in the edge thereof, six apertures being shown in the present instance. Each of these apertures receives an anti-friction bearing roller 4 or 4<sup>a</sup> and the separator is contained between the bearing cones 9 and 11 and is limited in its axial movement by said cones. The bearing rollers 4 and 4<sup>a</sup> are circularly arranged and the axes of revolution of alternating rollers extend at angles to each other and the axis of each roller extends at an angle to the axis of revolution of the type bar. Either or both of the cones 9 and 11 may be provided with screw-driver nicks 15 whereby a relative axial adjustment between the cones in parallel planes may be effected. When the cones have been properly adjusted for coöperation with the crossed bearing rollers 4 and 4<sup>a</sup> the screw 8 may be tightened in order to force the hanger arms 6 against the cones in order to retain them against relative rotation and to hold them in the position to which they have been adjusted.

From an inspection of Fig. 1 it will be seen that the rollers 4, the axes of which extend in one direction, towards the axis  $c$  of the type bar and to the right of the type bar as shown by the dotted line  $a$ , have their peripheries coöperating with the cone 11 and with the bearing wall 3<sup>a</sup> formed by the V-shaped bearing groove in the surrounding eye 2 of the type bar so as to receive a lateral or axial thrust of the type bar in but one direction; and that the ends of said rollers do not receive a bearing or supporting contact against the cone 9 or the bearing wall 3 of the type bar. On the other hand, the

other rollers 4<sup>a</sup> which have their axes extending to the left of the type bar and towards the axis thereof as indicated by the dotted line *b*, bear at their peripheries on the cone 9 and the wall 3 in the eye of the type bar so as to receive the lateral or axial thrust of the type bar in an opposite direction. The rollers 4<sup>a</sup> do not receive a supporting bearing at their ends on the cone 11 and the bearing wall 3<sup>a</sup> in the eye of the type bar. In other words, the rollers 4 which have their axes extending in one direction as indicated by the dotted line *a* form a bearing support for the type bar only at the peripheries thereof, whereas the bearing rollers 4<sup>a</sup> which have their axes extending in the opposite direction as indicated by the dotted line *b* also form a bearing only at the peripheries thereof, the rollers 4 receiving a lateral thrust of the type bar in one direction and the rollers 4<sup>a</sup> receiving a lateral thrust of the type bar in the opposite direction.

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

1. The combination of a type bar, a hanger, one of said parts having an eye with a roller bearing in the eye and the other of said parts having a bearing, and bearing rollers between the bearings, the axes of alternating rollers extending at angles to each other and to the axis of revolution of the type bar.

2. The combination of a type bar, a hanger, one of said parts having an eye with a roller bearing in the eye and the other of said parts having a bearing, bearing rollers between the bearings, the axes of alternating rollers extending at angles to each other and to the axis of revolution of the type bar, and means for effecting a relative adjustment between certain of said bearings.

3. The combination of a type bar, a hanger, relatively adjustable bearing cones carried by one of said parts and a bearing eye on the other part, and bearing rollers between the bearings of the eye and cones, the axes of alternating rollers extending at angles to each other and to the axis of revolution of the type bar.

4. The combination of a type bar, a hanger, one of said parts having an eye with a roller bearing in the eye and the other of said parts having a bearing, bearing rollers between the bearings, the axes of alternating

rollers extending at angles to each other and to the axis of revolution of the type bar, and a roller separator that turns on the axis of the platen and coöperates with said rollers.

5. The combination of a bifurcated hanger, relatively adjustable bearing cones supported by said hanger between the arms thereof, a type bar having a bearing eye that surrounds said cones and rollers contained between the cones and bearing eye, the axes of certain of said rollers extending at angles to the axes of certain other of said rollers.

6. A type bar bearing comprising a series of circularly arranged rollers on which the type bar turns, the axes of certain of said rollers extending at angles to the axes of certain other of said rollers.

7. The combination of a bifurcated hanger, relatively adjustable bearing cones supported by said hanger between the arms thereof, a type bar having a bearing eye that surrounds said cones, a roller separator contained within said eye and between said cones, and rollers contained between the cones and bearing eye and coöperative with said separator, the axes of certain of said rollers extending at angles to the axes of certain other of said rollers.

8. The combination of a bifurcated hanger, a screw that passes between and connects the arms of the hanger, bearing cones supported on said screw between the hanger arms and held by said arms from turning on the screw, a type bar having a bearing eye, and rollers between said eye and cones, the axes of certain of said rollers extending at angles to the axes of certain other said rollers.

9. The combination of a type bar, a support therefor, and rollers between the type bar and its support and on which the type bar turns, said rollers bearing at their peripheries but not at their ends against the type bar and its support to support the type bar in place, the axes of certain of said rollers extending at angles to the axes of certain other of said rollers.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 2d day of November, A. D. 1907.

THOMAS J. COO.

Witnesses:

FRANK L. PIERCE,  
SILAS W. CRANDALL.