

No. 656,785.

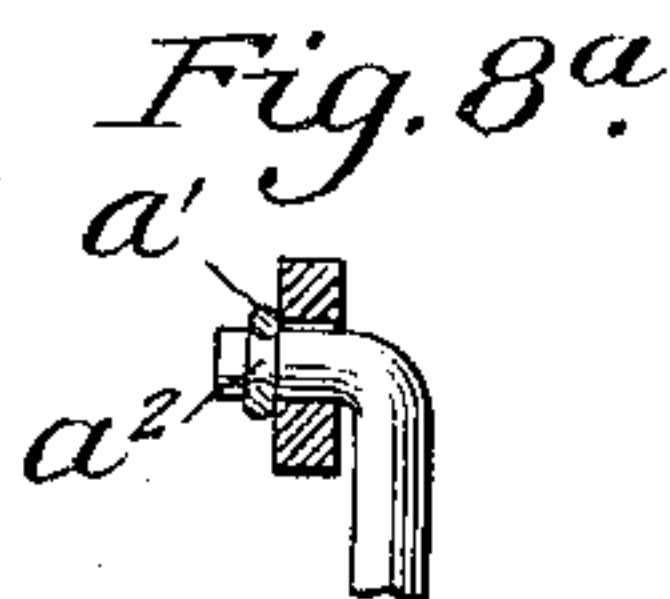
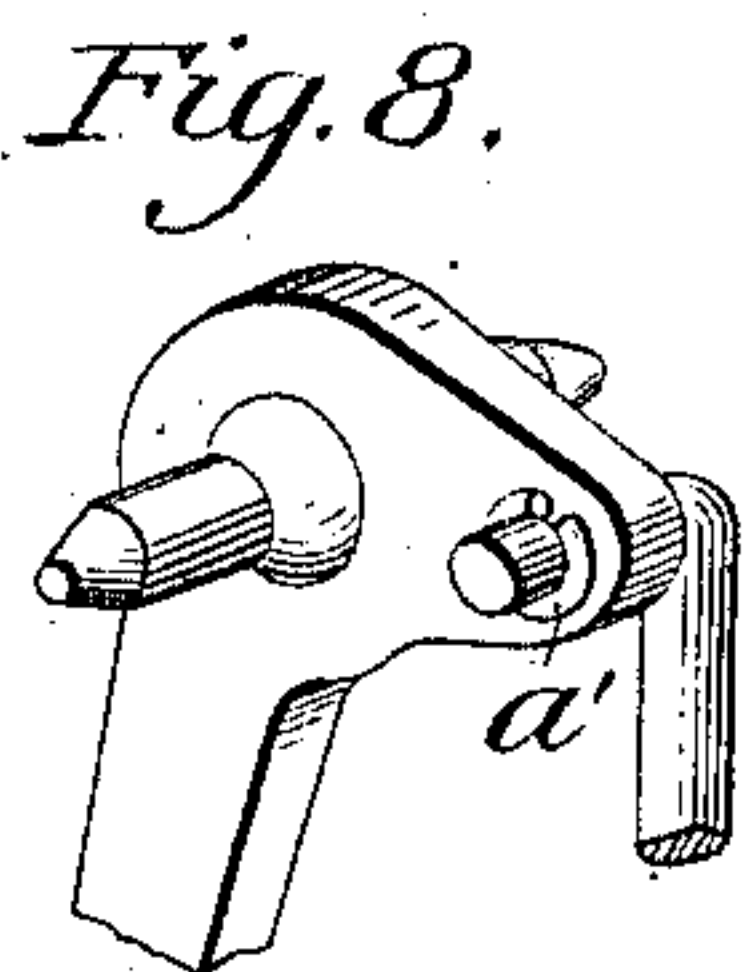
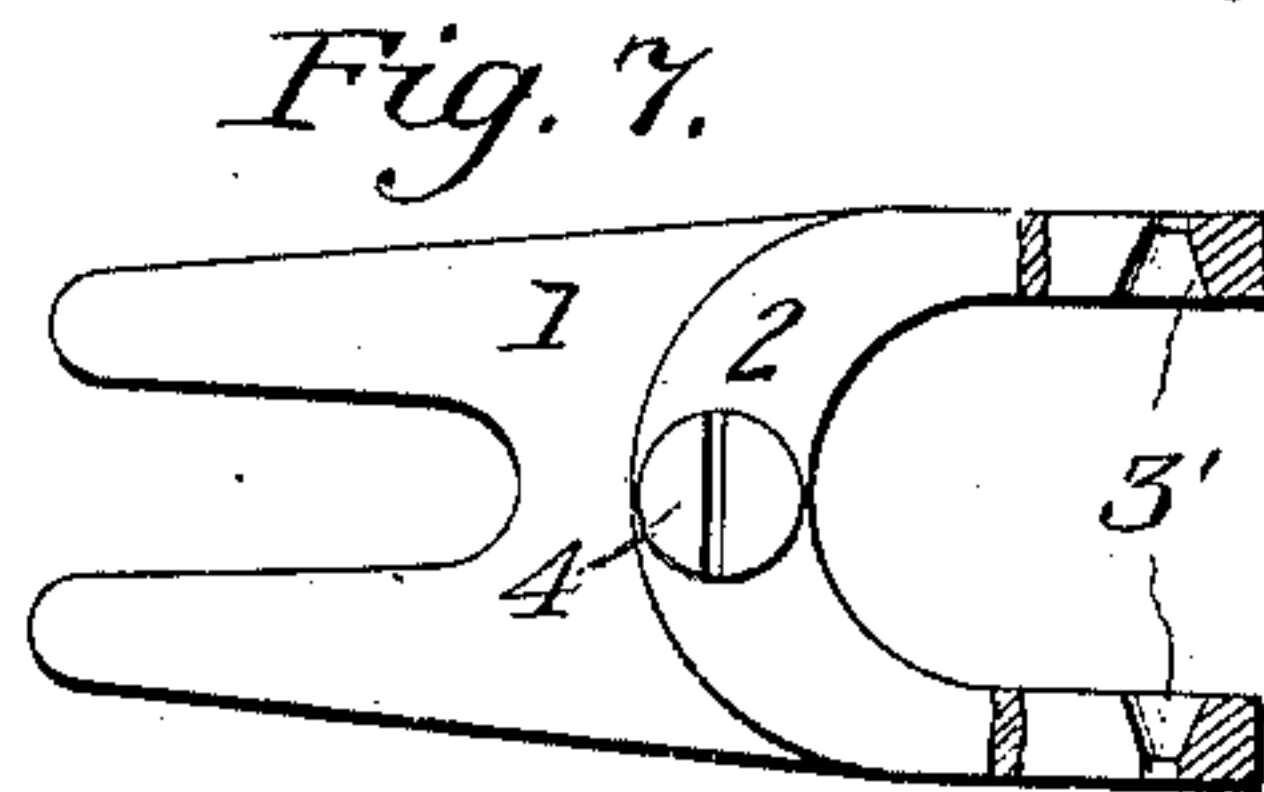
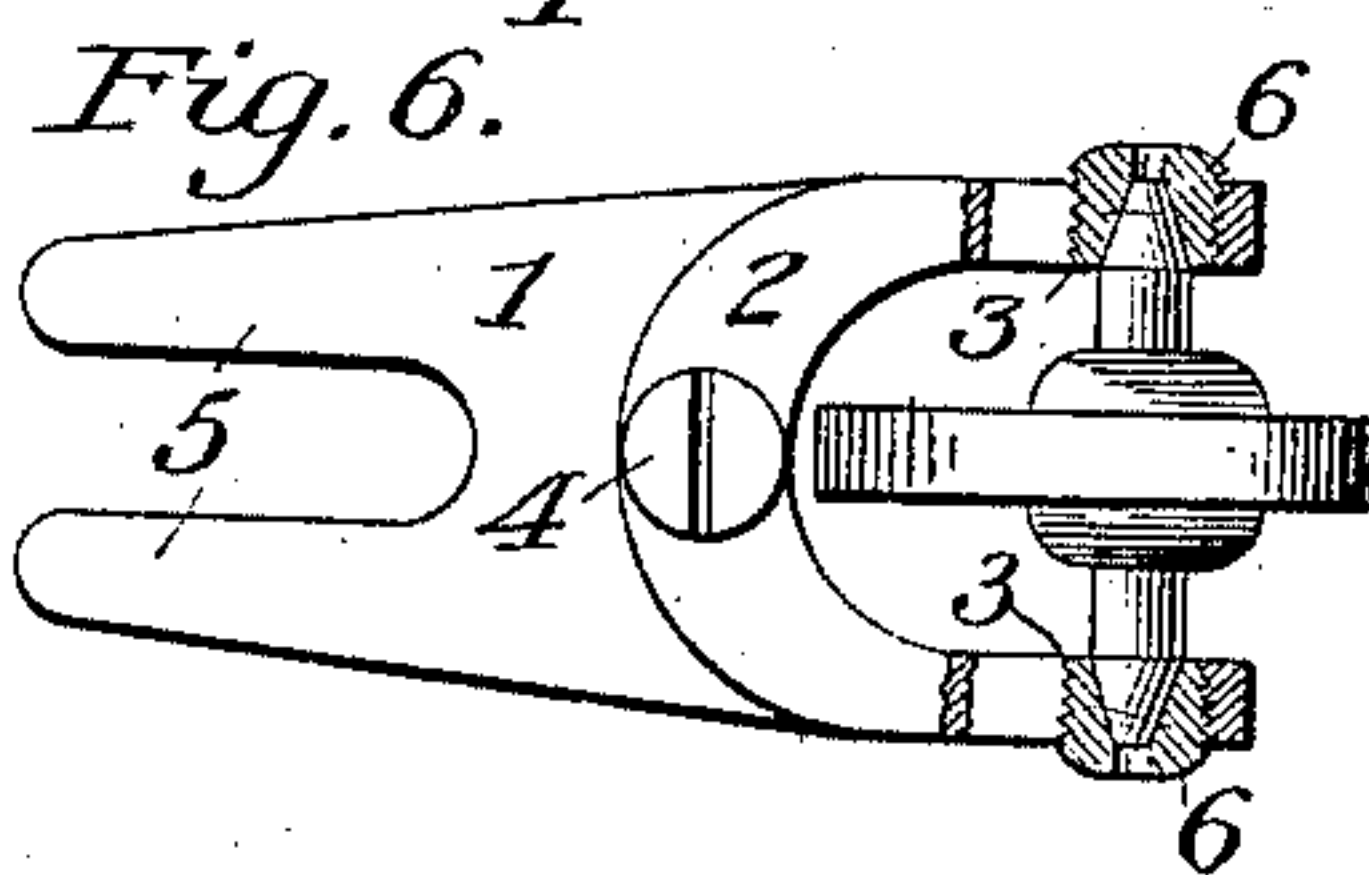
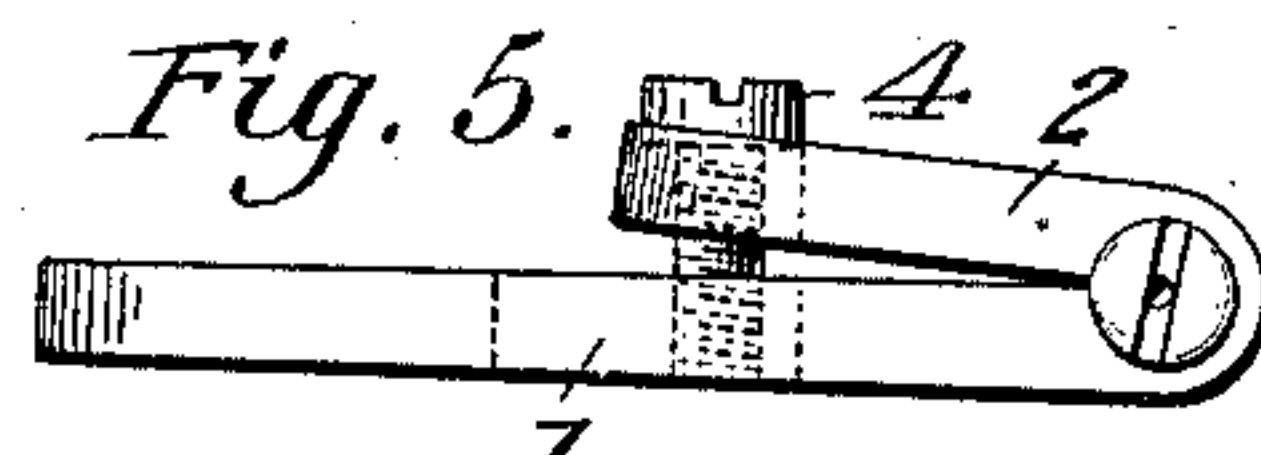
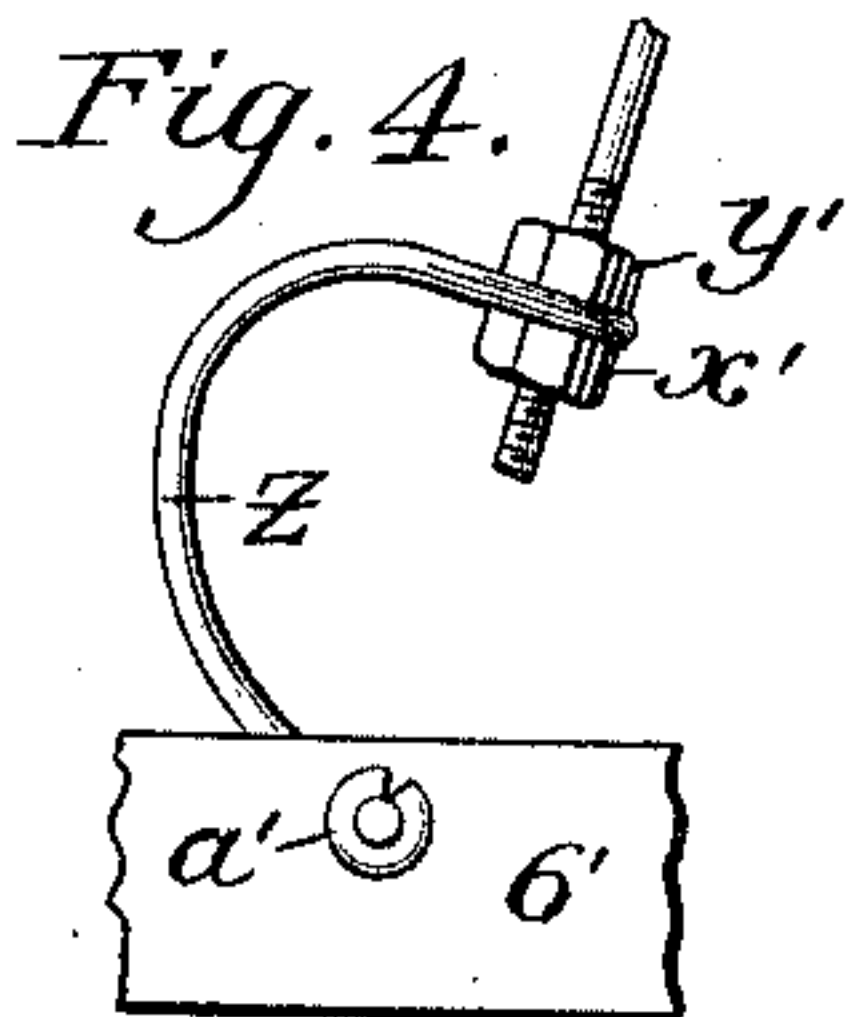
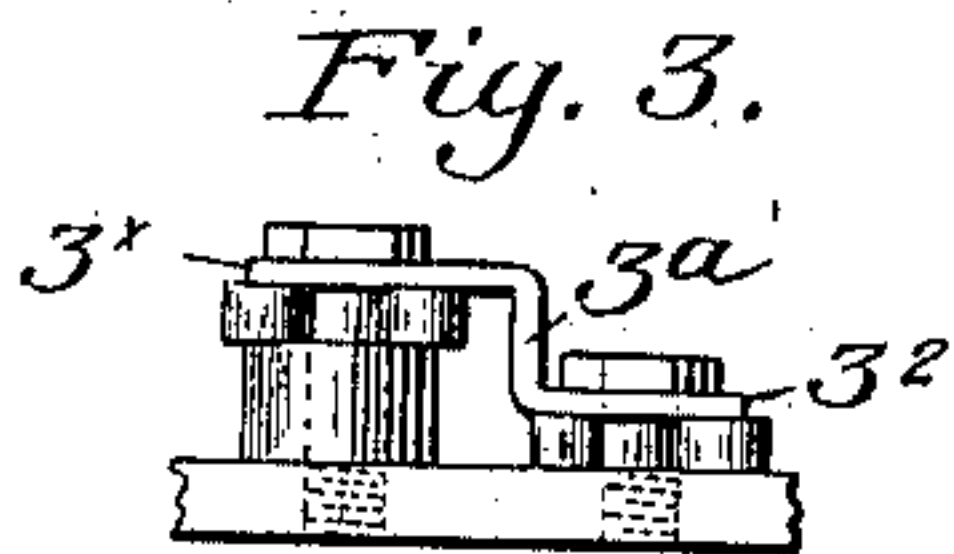
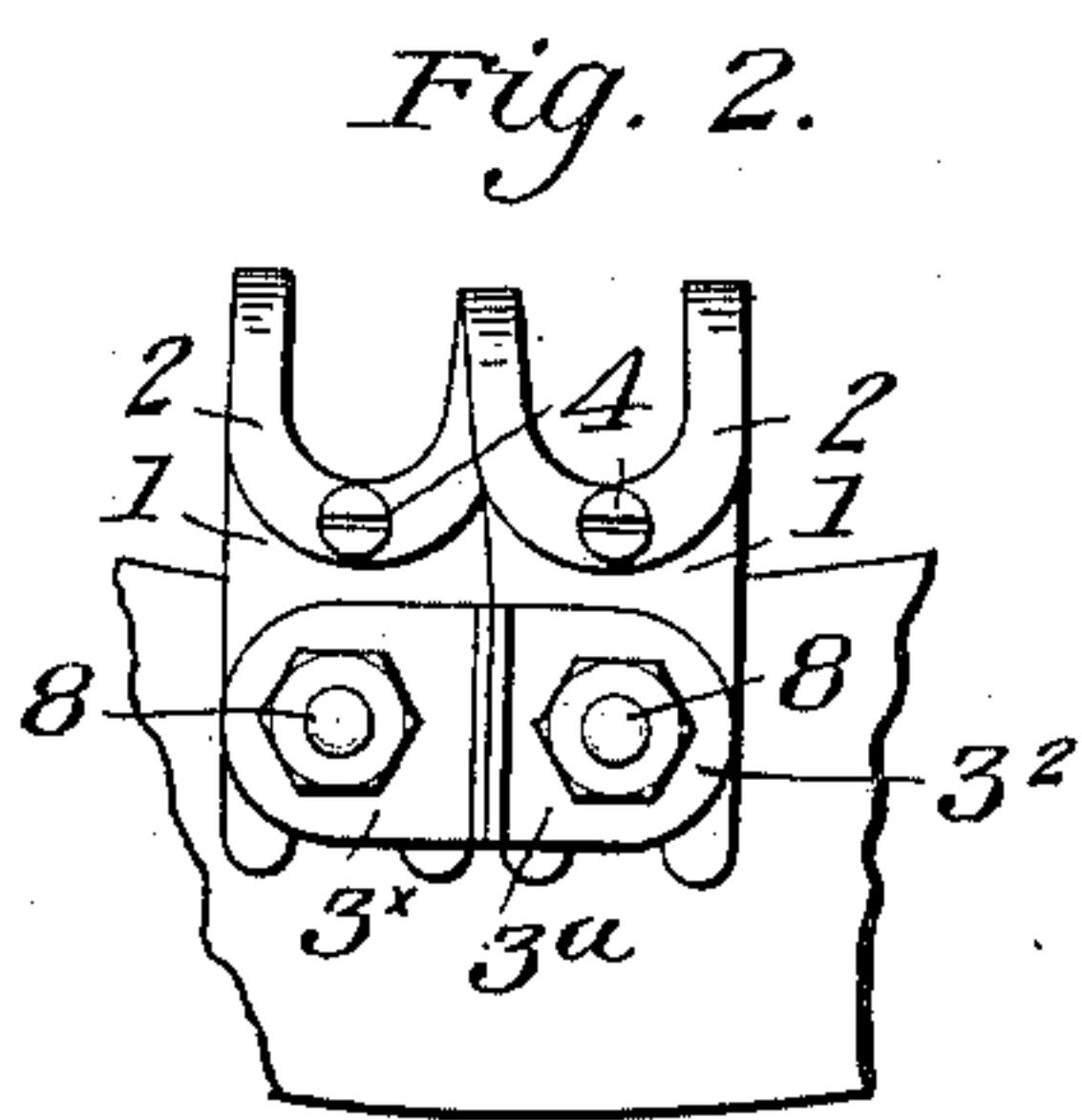
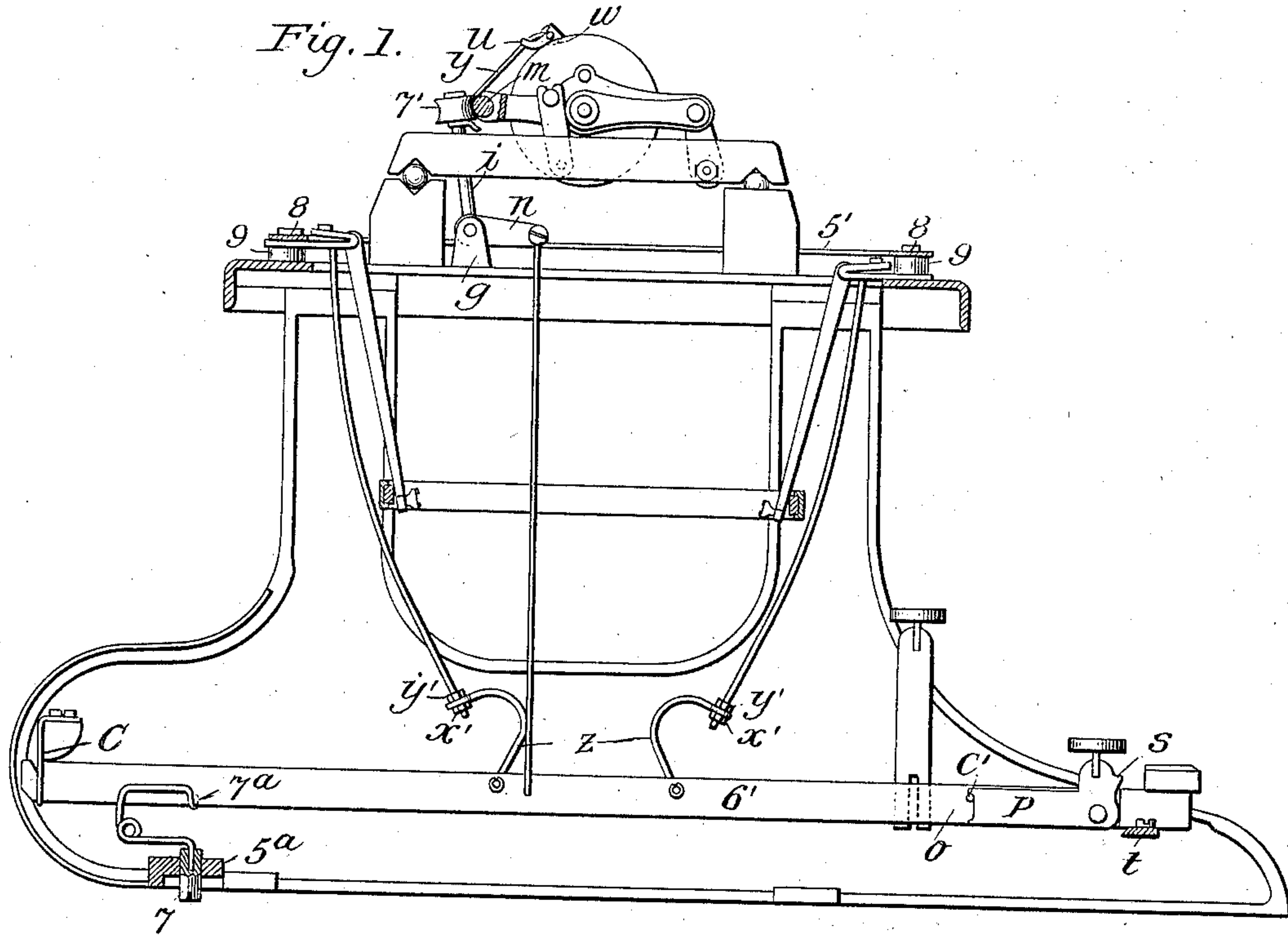
Patented Aug. 28, 1900.

W. R. FOX, G. J. BARRETT & A. D. RAY.

TYPE WRITING MACHINE.

(Application filed Mar. 9, 1899.)

(No Model.)



Witnesses.

Wm. F. Hall.
F. L. Underhill.

Inventors.

Wm. R. Fox
Glenn J. Barrett
Albert D. Ray
by *Wm. R. Fox* Atty.

UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, GLENN J. BARRETT, AND ALBERT D. RAY, OF GRAND RAPIDS, MICHIGAN, ASSIGNORS TO THE FOX MACHINE COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,785, dated August 28, 1900.

Application filed March 9, 1899. Serial No. 708,418. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. FOX, GLENN J. BARRETT, and ALBERT D. RAY, citizens of the United States, residing at Grand Rapids, Michigan, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to type-writing machines; and the objects thereof are to improve the general construction and arrangement of the same, to cheapen the cost of manufacture thereof, and to simplify it and increase its effectiveness.

To this end the invention includes a type-hanger having its bearings wide apart, but the bearings of each hanger only the minimum distance out of alinement with the bearings of its adjacent hanger.

It also includes the means for adjusting the degree of tension exerted on each key-lever and the construction of the links connecting said levers to the type-bars.

It also includes the detail of construction, as will be hereinafter described, and particularly pointed out in the claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of a type-writer, showing only the parts of the same necessary to illustrate the invention. Figs. 2, 3, and 4 are detail views. Figs. 5 and 6 are details of the type-hanger. Fig. 7 is a detail of a modification of the same. Figs. 8 and 8^a are views of the connection between the type-lever and the link.

As is well known, it is desirable to have the bearings of the several type-lever hangers as nearly in horizontal alinement with each other as possible and to use as many hangers as can be placed in position to secure the maximum number of type-levers and to leave the hangers with their bearings as far apart as possible to provide wide bearings for the type-lever pivots. In the present case this object is obtained by constructing each hanger of a sheet-metal plate 1, having a slot therein, which when the plate is doubled back upon itself centrally of said slot forms a yoke, the doubled-over ends of the prongs of which are

bored out to provide sockets or bearings 3 for the type-bar cones. The intermediate portion of the bent-over part 2 receives a screw 4, which is threaded into the main portion of the hanger, so said part 2 may be adjusted to vary the size of the socket 3. The end of each hanger opposite the yoke is forked at 5 for the passage of the bolts which secure the same in place.

As shown in Fig. 6, hardened bushings 6 are threaded in the sockets 3, which receive the cones of the type-bar pivots, and after the proper adjustment of said bushings they are securely clamped by tightening the screw 4. In the modification shown in Fig. 7 the ends of the pivot-pin find bearings directly in the sockets 3', and the proper adjustment is secured through the screw 4.

To place the requisite number of hangers, it is necessary that they should overlap, as shown, which necessitates the bearings of the hangers being in staggered relation or each alternate hanger out of alinement with the hanger arranged next thereto. This, as before stated, is objectionable, and in the present invention by making the hanger of the minimum thickness the bearings will be only the minimum distance out of alinement and every one of the hangers may be arranged with the same side uppermost, so that the adjusting-screw 4 is readily accessible. The hangers may be held in place by a ring 5', which is retained by bolts 8, which pass through the same and through the forks 5 of the hangers. As the hangers overlap alternately, this necessitates a space-block being used in securing each hanger. In holding the lowermost hangers the blocks are interposed between the same and the ring 5' and in holding the raised hangers between the under side of the same and the frame. To dispense with the use of one-half of these blocks, the hangers may be held in pairs, as shown in Figs. 2 and 3, in which a clip 3^a is used, having an angular bend centrally thereof to provide two binding portions 3² 3^x. The part 3² clamps the underlying hanger directly to the frame, no space-block being used, while the upper hanger is held by the part 3^x, a space-block being interposed between said

hangers and the frame. The end of each link engaging the type-levers is bent at right angles and extended through the opening in the end of the lever, where it is retained by means of the split ring α' , seated in the recess α^2 in said end.

We claim—

1. In combination, a type-lever hanger comprising a plate having one end thereof turned back upon the face of said plate and the bearings for the lever located at the turned-over portion of the plate, substantially as described.

2. In combination, a type-lever hanger comprising a doubled plate having the sockets for the type-lever bearing located at the turned-over portion of the plate, and means for drawing the doubled-over portion of the plate toward the main portion thereof to adjust the socket, substantially as described.

3. In combination, a type-bar hanger comprising a doubled-over plate having sockets bored at the turned-over portion of the plate to provide bearings and an adjusting-screw for adjusting said turned-over portion to open or contract the socket.

4. In combination, a type-bar hanger comprising a doubled-over plate having sockets bored at the turned-over portion of the plate to provide bearings, and an adjusting-screw extending transversely through the turned-over portion of the plate centrally thereof threaded in the main portion of the plate, substantially as described.

5. A type-bar hanger comprising a slotted plate doubled intermediately of said slot to provide a yoke having bearings formed in each prong of the yoke at the turned-over portion and means for adjusting said sockets.

6. The combination with a type-writer having the type-levers arranged in basket form, of hangers for said levers comprising flat plates, a retaining-plate, bolts for clamping the plate, said hanger-plates having their main portions forked to straddle said bolts and the forward portion of yoke shape and doubled over with sockets or bearings formed by the bent-over end of each prong of the yoke, said lever resting between said prongs of the yoke, the yoked end of each alternate hanger overlapping the adjacent hanger.

7. The combination with a type-writing machine having the type-levers arranged in basket form, a retaining-plate, bolts for clamping said plate and hangers comprising flat plates having their rear ends slotted to straddle said bolts and their forward portions doubled over and forming a yoke, said lever being placed between the prongs of the yoke and the pivot-pins thereof finding bearings in the doubled ends of the prongs, each alternate hanger overlapping the adjacent hanger and space-blocks located between each alternate hanger and the frame.

8. A type-bar hanger comprising a plate having a slot confined within the edges of the

plate, the plate being doubled over centrally of the slotted portion whereby a yoke is provided and bearings in each end of the yoke.

9. In combination, a type-bar hanger comprising a flat plate having a slot therein, a yoke formed in the plate, bearings in the end of said yoke, the yoke being formed by doubling the plate centrally of the slotted portion in a plane parallel with the axis of said bearings, substantially as described.

10. The combination in a type-writing machine, the type-lever hangers, each comprising a flat plate with adjustable bearings for the type-levers, retaining means for said hangers arranged above the same, and means for adjusting said bearings exposed above the face of the hangers so as to be readily accessible, substantially as described.

11. The combination with a pivoted type-bar lever having an opening through the end thereof, of a link having an angular end extending through said opening, a recess in said end and a split ring seated in said recess providing an enlargement to prevent the withdrawal of said end, substantially as described.

12. In combination in a type-writer, the key-levers, a bar extending transversely of the machine beneath said key-levers, an individual spring for each key-lever, and a socket for each spring adjustable in said transverse bar.

13. In combination, in a type-writer, the type-bars, the key-levers and the links connecting the same, each link comprising two sections, the upper section being formed of a rod secured at its upper end to its respective type-bar and the lower section being formed by a loop secured at one end to the lower end of said rod and at its opposite end to its respective key-lever at a point in direct line with the longitudinal axis of the lower part of said rod, the bail of the loop extending laterally of said axis, substantially as described.

14. In combination in a type-writing machine, the type-bar hangers arranged in staggered relation and an angular clip having the holding parts thereof bearing on said hangers in different planes.

15. In combination in a type-writing machine, the type-hangers arranged in pairs having the ends thereof secured to the machine-frame in different horizontal planes, a clip for holding a pair of hangers having an angular bend centrally thereof to bring the holding portions thereof in the planes of said ends to bear thereon, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM R. FOX.

GLENN J. BARRETT.

ALBERT D. RAY.

Witnesses:

WM. C. HOERTZ,

GEO. K. McMULLEN.