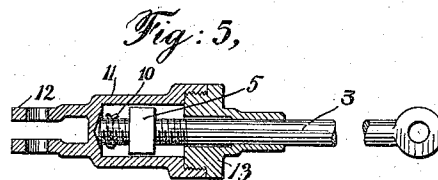
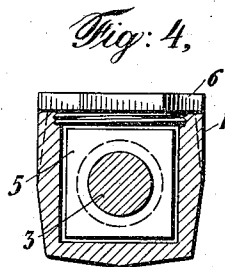
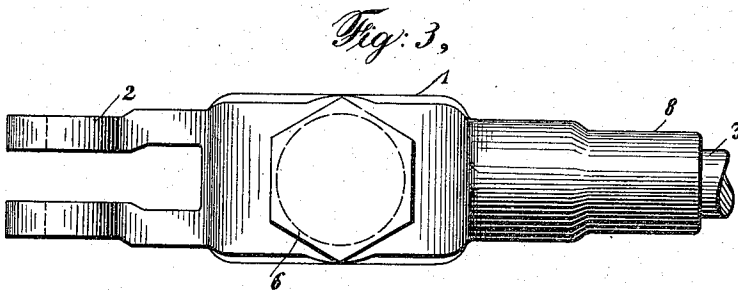
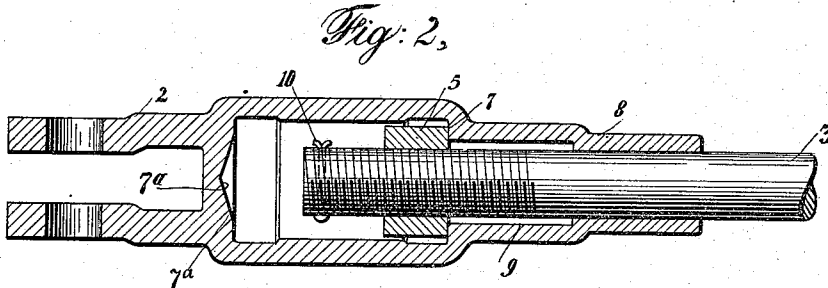
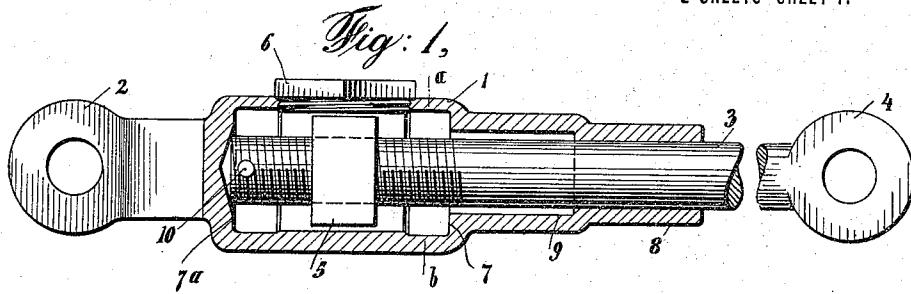


S. W. HAYES.
CONNECTION ADJUSTMENT.
APPLICATION FILED DEC. 16, 1908.

1,156,997.

Patented Oct. 19, 1915.

2 SHEETS—SHEET 1.



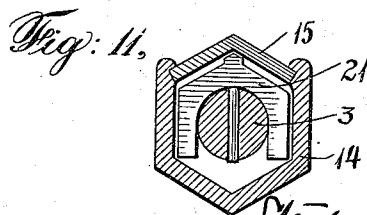
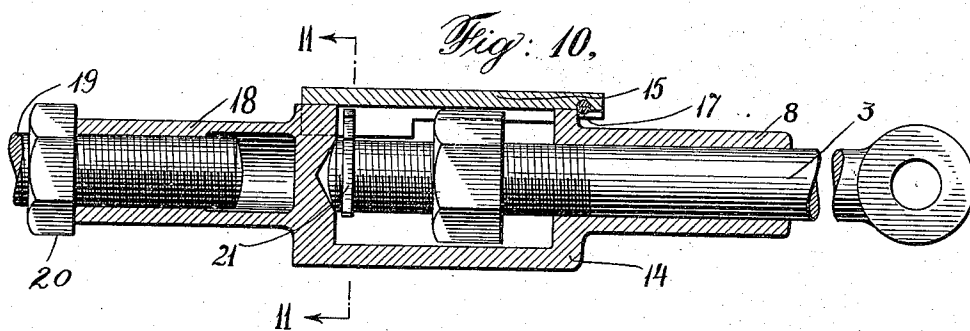
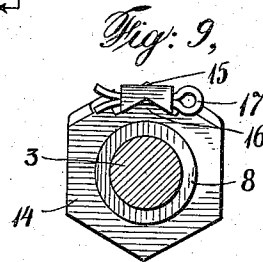
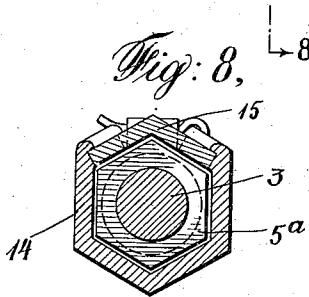
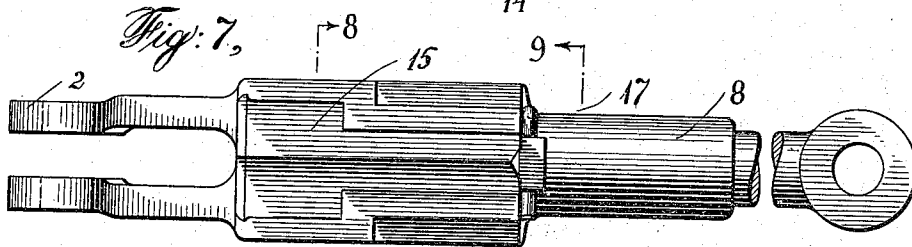
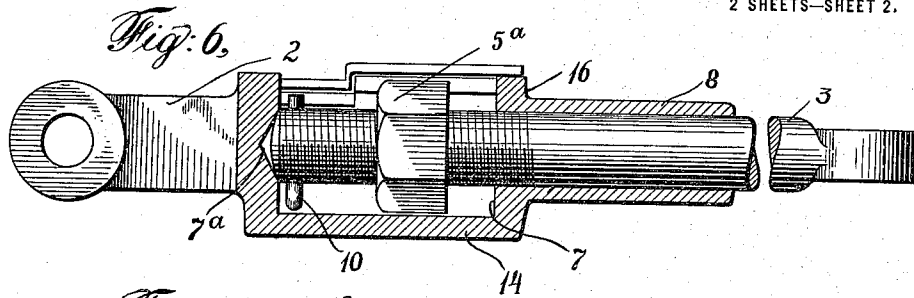
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

STANLEY W. HAYES, OF GENEVA, NEW YORK.

CONNECTION ADJUSTMENT.

1,156,997.

Specification of Letters Patent.

Patented Oct. 19, 1915.

Application filed December 16, 1908. Serial No. 467,908.

To all whom it may concern:

Be it known that I, STANLEY W. HAYES, a citizen of the United States, residing at Geneva, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Connection Adjustments, of which the following, taken in conjunction with the accompanying drawings, forming a part hereof, is a full, true, and concise specification.

This invention is an adjustable connection device for the operating lines of track or signal appliances adapted for insertion between the operating and operated elements of such lines, for introducing therein a certain variable amount of lost motion, whereby the stroke movement of the operating element can be adjustably reduced to conform with the stroke limits of the switch point or other track device operated.

The invention also involves provisions for the adjustment of the total effective length of the operating line, as will be more fully described below.

Simplification of the structure and facility of adjustment of such devices are among the objects of the invention.

The drawings forming a part hereof illustrate the principle of the invention and several preferred modes in which I have contemplated embodying the same.

Figure 1 is a longitudinal sectional view; Fig. 2 a horizontal section; and Fig. 3 a top plan, of a connection device embodying the invention; Fig. 4 a transverse section on the line *a-b* of Fig. 1; Fig. 5 is an alternative form, in longitudinal section; Fig. 6 is a central longitudinal section of a further embodiment of the invention with the cover removed; Fig. 7 is a top plan thereof, and Figs. 8 and 9 are respectively cross-sections, on lines 8—8 and 9—9 of Fig. 7; Fig. 10 is a central longitudinal section of a further form showing the provisions for adjustment of the length of the operating line as well as of the lost motion therein; and Fig. 11 is a cross-section of Fig. 10 in the line 11—11.

The device comprises a frame or casing 1, which has suitable provisions for attachment to either the operated or the operating element of the operating line, as the case may be. Such provisions may consist of a connection jaw 2, formed integrally on the

end of the casing, as indicated in the drawings, or the form of the attachment may be modified according to the nature or construction of the apparatus with which used, or the said attachment means may be formed as the coöperative part of the provisions for adjustment of the length of the operating line, as later described. The device is connected with the other elements of the operating line by means of the rod 3, which terminates with a connection-eye 4 or other suitable connection means, desirably one that will hold the rod against rotation, when connected in the line. The said rod is supported for longitudinal movement within the frame or casing, and is threaded at its terminal portion to receive an adjustable collar or nut 5, which latter has a limited longitudinal movement with respect to said casing but is held thereby against rotation upon the rod. Adjustment of the device may be accomplished by rotating the rod within the relatively stationary nut and casing, or revolving the latter about the rod, according to which end of the device has been disconnected for the purpose.

The casing is by preference a closed receptacle or inclosure for the nut and rod, and the latter enters the interior chamber through a boss 8, which affords an appropriate bearing therefor and holds the rod in axial alinement with the rest of the device. The bearing in the boss is of sufficient length to render unlikely the entrance of dirt therethrough to the interior chamber. The said chamber has preferably an angular cross-sectional shape to conform to the shape of the nut, and thus hold it against rotation. In the form shown in Figs. 1 to 4 the nut is square and the chamber is shaped accordingly, the enlargements shown at the ends of the chamber being merely to avoid sticking from imperfectly cored castings. The end wall of the interior chamber that is nearest the entrance of the rod and marked 7, constitutes an abutment for the nut, to limit the relative outward movement of the rod, as indicated in Fig. 2. The opposite end wall is dished with a central conical recess 7^a which is adapted to receive the end of the rod 3 and form a direct abutment for limiting the extent of its inward movement, the conical recess serving at such times to centralize the rod and preserve it

against lateral distortion within the chamber. By adjusting the nut or collar longitudinally along the threaded rod, in the manner above indicated, the effective distance between the abutment surface of the nut and the end of the rod may be so varied with reference to the casing abutments with which they respectively co-act, as to provide any desired amount of lost motion within the predetermined limits of the device. The bore through the bearing boss 8 is preferably somewhat larger at its inner end than at its outer extremity, as indicated at 9, so as to afford sufficient clearance for the threads on the rod and prevent their mutilation during their reciprocating movement therein; and as a further safeguard against injury to the threaded rod, the nut is confined thereon by a linch-pin 10 secured in a hole bored through the end of the rod, thereby preventing over-adjustment of the device to such a point that the number of threads left in engagement with the nut would be insufficient to resist the strain thereon.

In order to assemble the foregoing structure, the closed casing is formed in two separable parts, one of which may be regarded as the cover to the other, as, for example, the screw cover 6 shown in the form of Figs. 1-4, which closes a lateral opening into the interior chamber of sufficient diameter to allow the nut and its securing means to be easily inserted.

In the form shown in Fig. 5, the main part 11 of the separable closed casing therein shown, has suitable attachment provisions 12, as above described, but its interior chamber opens at the end instead of at the side, being closed by the cover part 13, which, in this case, carries the bearing or support for the longitudinally movable rod 3. The cover part 13 screws into the other, and its interior face within the chamber constitutes the abutment for the nut 5, as will be plain from the drawing. In its operation this device is manifestly similar to the form first above described.

In the form illustrated by Figs. 6-9 inclusive, the frame or casing 14 has the attachment means 2, the tubular bearing 8 for the threaded rod 3 and the opposite interior casing abutments 7 and 7^a as above described, but the removable or cover part of this casing is in the form of a slide marked 15 which covers and uncovers an opening in the side wall of the casing, suitable for the introduction of the nut 5^a and the linch pin 10. The nut in this form is an ordinary hexagon nut and the body of the casing is correspondingly shaped, in cross section, for producing the non-rotatory engagement therewith above referred to. The opening in the casing is located near to the end of the interior chamber so

that the nut cannot reach a position in registry with it, after the linch pin has been inserted, which renders the use of the cover part 15 quite unnecessary except in so far as it is preferred for the protection it affords against the entrance of dirt to the interior chamber, and the additional resistance it may offer to the turning of the nut on the rod. The said opening in the casing is preferably extended as a narrow slot so as to expose the full length of the interior chamber, for facility in cleansing the same, and the cover is correspondingly formed to close the entire opening when in place, and also to project somewhat beyond the shoulder 16 of the casing, so that a linch pin 17 or equivalent locking device can be applied to its overhanging end to fasten the cover in place, as clearly shown in Figs. 7 and 9. The manner of forming the sliding connection between the casing and the cover will be plain from the drawings.

Figs. 10 and 11 illustrate with the same reference numerals, the form of the invention last above described combined with means, substituted for the connection jaw 2, which permits the adjustment of the length of the operating line. The said means comprises a tubular boss 18 formed on the end of the casing, and screw-threaded in its interior to receive the threaded end of the connection rod 19 which may be a switch rod or any other member of the operating pipe line. A lock nut 20 may be used for tightening the rod in its adjusted position within the boss. By rotating the rod 19 relatively to the casing the operating line may be properly adjusted to the distance between the operated and operating elements in obvious manner.

Combined with any of the above forms the invention includes a locking means functioned to hold the threaded rod 3 against rotating within the casing, during the normal use of the device, although permitting the free reciprocation thereof as above described. This means consists of a key shown at 21 in Figs. 10 and 11 adapted to be non-rotatably connected to the end of the rod and having, in whole or in part, an angular shape corresponding to the shape of the lost motion chamber so as to be non-rotatable therein. This key may be used in place of the linch pin 10, being similarly held in a cross-hole in the end of that rod, and confined in place by the cover. When used with the form of Figs. 10 and 11 it serves to prevent rotation of the casing relatively to both of the threaded connection rods and hence insures the permanence of both adjustments.

I claim the following as my invention:

1. A connection adjustment for the operating lines of track appliances, comprising a frame or casing having provisions for

attachment to one of the elements of the operating line, a nut non-rotatably held by said casing and having limited longitudinal movement with respect thereto, and a longitudinally movable rod threaded to said nut and provided with means for attachment to the other of said elements.

2. A connection adjustment for the operating lines of track appliances, comprising a frame or casing provided with opposing abutments, a rod longitudinally and rotatably movable with respect to said abutments, a nut held against rotation by said frame or casing, and threaded to said rod between the abutments thereof.

3. A connection adjustment for the operating lines of track appliances, comprising a closed casing or inclosure provided with interior abutments, a rod longitudinally and rotatably movable within said inclosure and a nut threaded to said rod and movable longitudinally therewith within said casing and having non-rotatable engagement with the latter.

4. A connection adjustment for the operating lines of track appliances, comprising a frame or casing provided with opposing abutments, a rod co-acting endwise with one of said abutments and a device adjustably carried on said rod and co-acting with the other abutment.

5. A connection adjustment for the operating lines of track appliances, comprising a closed casing having provisions for attachment to one of the elements of the operating line and further provided with interior, fixed and opposing abutments and with a bearing at one end, and means for alternate engagement with the said abutments consisting of a longitudinally movable rod entering and terminating within said casing, said rod having an unthreaded portion working in said bearing and a threaded portion within the casing, and a nut adjustably carried by the threaded portion of said rod and designed to move therewith longitudinally in the casing.

6. A connection adjustment for the operating lines of track appliances, comprising a frame or casing provided with means for attachment to one of the elements of the line and having an interior space or chamber of angular cross-section, a longitudinally movable threaded rod entering said chamber, and provided with means for attachment to the other element of the line, and a nut on the rod within the chamber conforming to the angular section thereof, having limited longitudinal movement therein.

7. As a connection adjustment for the operating lines of track appliances, an inclosure formed in two parts adapted to be opened to receive a nut and adapted to hold the same therein against rotation, but with freedom for limited longitudinal movement

therein, in combination with a threaded rod entering and longitudinally movable within said inclosure and threaded into said nut.

8. In a connection adjustment of the kind described, a frame or casing provided with opposing abutments, one of said abutments being provided with a centralizing formation, a rod co-acting endwise therewith and adapted to be centered thereby, and an adjustable collar on said rod co-acting with the other of said abutments.

9. A connection adjustment for the operating lines of track appliances, comprising a frame or casing in two parts, screwed together and provided with means for attachment to one of the elements of the operating line, a nut non-rotatably held by said casing and having limited longitudinal movement therein, and a longitudinally movable rod, threaded to said nut and provided with means of attachment to the other element of the operating line.

10. A connection adjustment of the kind described, comprising a closed nut-containing casing formed with a relatively long tubular boss, the diameter of the outer extremity of said boss being smaller than the diameter of its inner extremity and a longitudinally movable rod slidingly supported in said part of smaller diameter and having a threaded nut-engaging terminal portion within said casing adapted to enter said part of larger diameter.

11. In a connection device of the kind described, a hollow casing having a chamber of angular cross-section and a nut of corresponding angular formation, held against rotation thereby and having longitudinal movement in said chamber, in combination with a longitudinally movable rod threaded in said nut and means for confining said nut upon the rod.

12. In a connection device of the kind described, a hollow casing adapted for connection to one element of the operating line and having a lateral aperture suitable for the reception of an abutment collar, in combination with a rod slidingly mounted on said casing and adapted for connection to the other line element, and an abutment collar adjustably carried on said rod within the casing and removable through said aperture.

13. In a connection device of the kind described, a closed hollow casing having a lateral aperture, a screw cap normally closing said aperture, a nut adapted to be inserted through said aperture and having limited longitudinal movement within the said casing and a longitudinally movable rod threaded in said nut, said casing and rod being adapted for connection in an operating line.

14. In a connection device of the kind described, a hollow casing, adapted for con-

nection to one of the operating line elements
and a nut in said casing having limited
longitudinal movement therein, in combina-
tion with a rod longitudinally movable in
said casing and threaded in said nut, and a
pin in the end of said rod confining said
nut thereon.

In testimony whereof, I have signed my
name to the specification in the presence of
two subscribing witnesses.

STANLEY W. HAYES.

Witnesses:

R. M. BRADEN,
H. F. NESTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."