

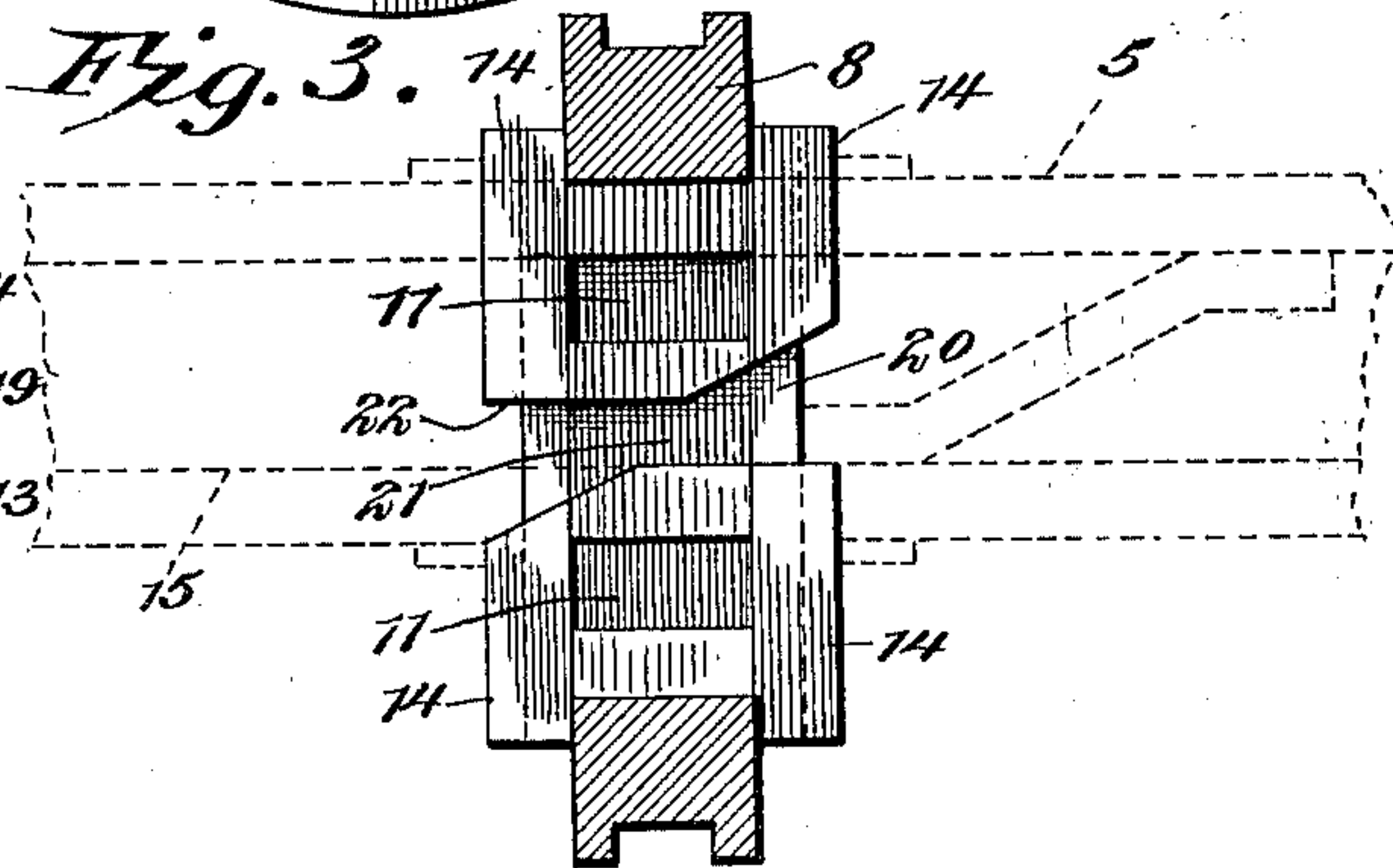
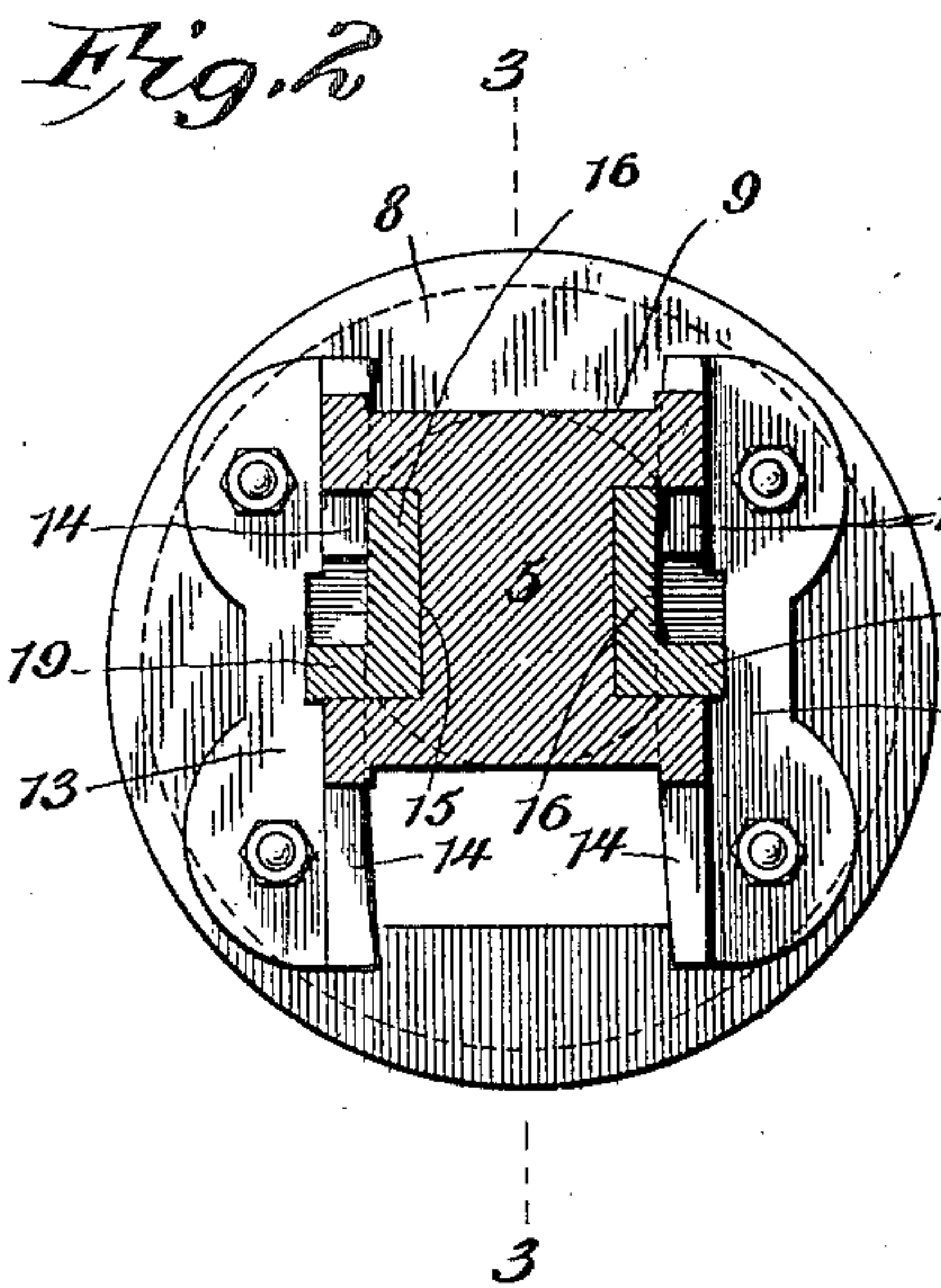
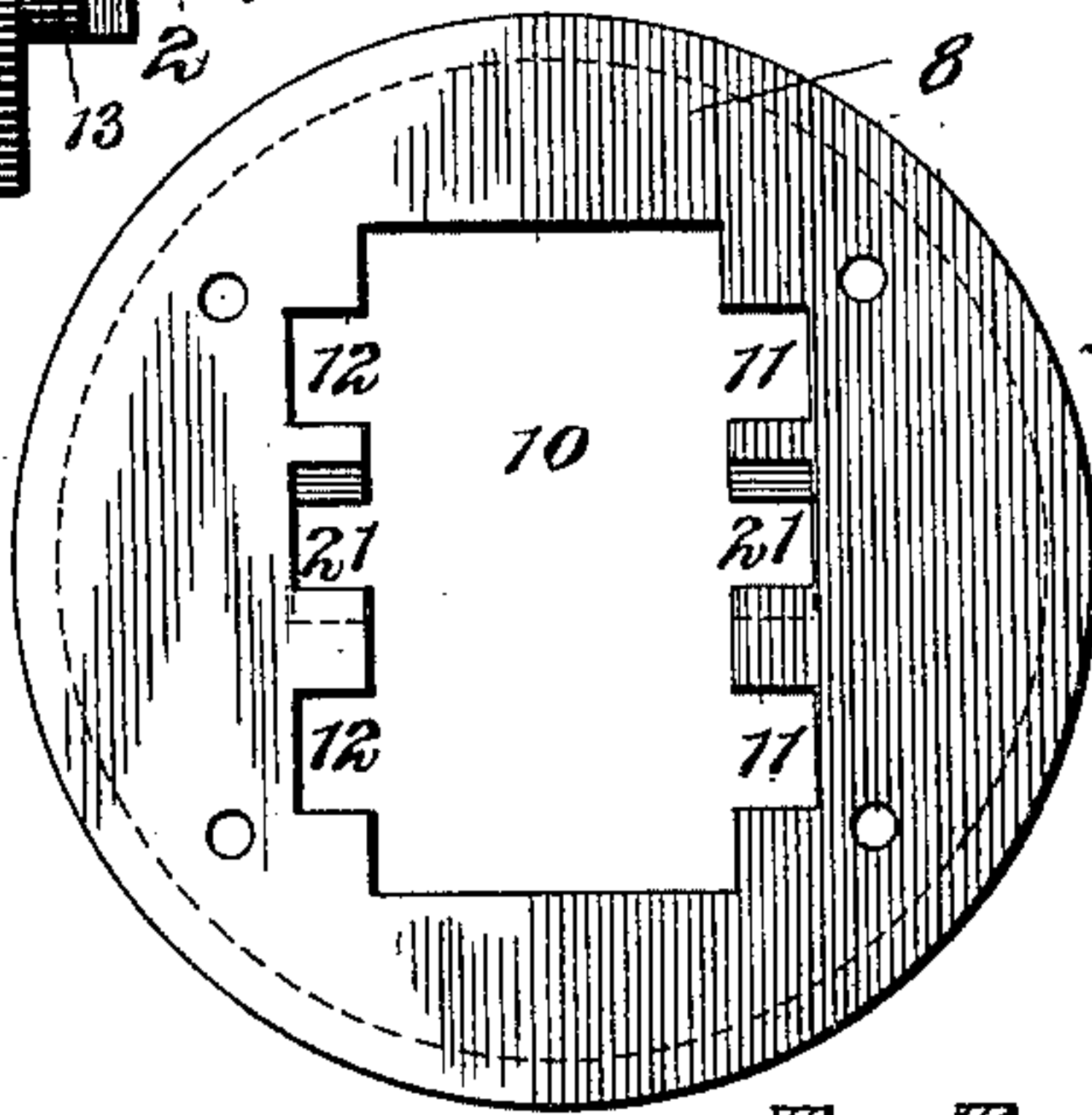
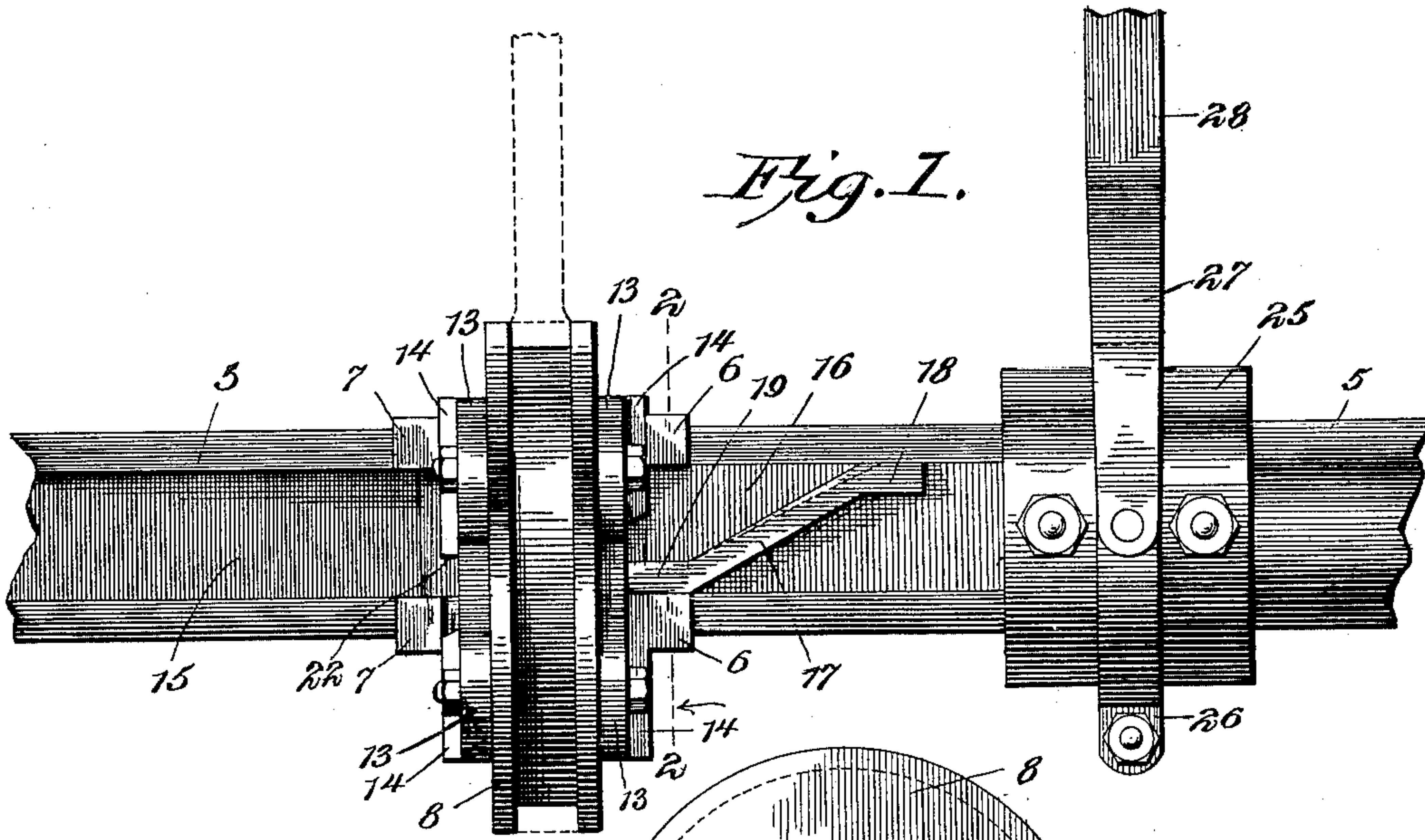
No. 657,909.

Patented Sept. 18, 1900.

G. W. ANDERSON.
REVERSING MECHANISM FOR ENGINES.

(Application filed Nov. 23, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. ANDERSON, OF HOLLANSBURG, OHIO.

REVERSING MECHANISM FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 657,909, dated September 18, 1900.

Application filed November 23, 1899. Serial No. 738,083. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. ANDERSON, a citizen of the United States, residing at Hollansburg, in the county of Darke and State of Ohio, have invented a new and useful Reversing Mechanism for Engines, of which the following is a specification.

This invention relates to steam-engines in general, and more particularly to the reversing mechanism therefor; and it has for its object to provide a construction in which is used only a single eccentric and in connection with which eccentric there is employed means for shifting it from one side to the other of the engine-shaft as distinguished from the usual link-motion commonly employed in connection with two eccentrics.

In the drawings forming a portion of the specification, and in which similar numerals of reference refer to like and corresponding parts in the several views, Figure 1 is a side elevation showing a portion of the engine-shaft with the eccentric and its shifting mechanism thereon. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 2. Fig. 4 is a side elevation of the eccentric detached.

Referring now to the drawings, 5 represents the drive-shaft of the engine, having radially-extending lugs 6 and 7, arranged in two transverse series and forming guideways for a shiftable eccentric 8, which is disposed upon the shaft. That portion of the shaft carrying the projections 6 and 7 has two of its faces straight and parallel, as shown at 9, while the other two faces are curved and parallel, as indicated in dotted lines in Fig. 2 of the drawings, and which portion of the shaft is adapted to enter an oblong opening 10 through the eccentric 8, the shape of the shaft and of the opening of the eccentric acting to hold the eccentric against complete rotation. The opening 10, however, is sufficiently large to permit a slight play of the shaft therein, for a purpose which will be presently explained. In the sides of the opening 10 are formed recesses 11 and 12, which are adapted to receive the projections 6 and 7, and thus to permit the passage of the eccentric onto its seat upon the shaft. After the eccentric has been thus placed in position reinforcing-plates 13 are bolted upon opposite sides thereof in pairs,

and upon the outer faces of these plates are flanges 14, which are in direct contact with the projections 6 and 7 and against which they slide.

As shown in Fig. 2 of the drawings, one pair of plates 13 have their inner edges concaved to conform to the convexed face of the seat for the eccentric, the edges of the opposite pair of plates 13 being convexed to lie in the corresponding face of the eccentric-seat. Thus if the eccentric be shifted to cause the shaft to lie at the opposite end of the slot 10 from the position shown in Fig. 2 of the drawings the eccentric will be given a slight rotary movement, the object of this rotary movement being to throw the eccentric sufficiently far to give it the proper lead.

In order to slide the eccentric from one limit to the other of its movement transversely of the shaft, longitudinal grooves 15 are formed in the shaft, and in these grooves are disposed slides 16, upon which are fixed two substantially-parallel ribs 17, one of which is at a slightly-greater angle to the axis of the shaft than is the other. From the ends of these ribs 17 project oppositely-disposed extensions 18 and 19, the extensions of each rib being parallel.

When the eccentric 8 is at one limit of its movement, as shown at Fig. 1, the extensions 19 of the ribs 17 lie with their outer faces against the inner faces of blocks 6 and also against the inner faces of slots 20, formed in the plates 13 at the adjacent side of the eccentric. These slots 20 communicate with angularly-disposed slots 21 in the walls of the opening 10 of the eccentric, and which latter slots 21 lead to additional slots 22 in the second pair of plates 13. If the slide 16 is then shifted to move the ribs in the direction of the eccentric, the extensions 19 will pass inwardly of the eccentric, and when the slanting portions of the ribs 17 engage the walls of the slots 21 the ribs will act to move the eccentric in the opposite direction, as will be readily understood. The slides 16 are continued in this movement until the ribs are passed entirely through the eccentric and rest with the extensions 18 against the walls of the passages 22. If the slides then be turned, the eccentric will be moved again and will assume the position shown in Fig. 1. By ar-

ranging the ribs 17 at different angles to the axis of the shaft when the eccentric is moved from one position to the other these ribs hold the eccentric in a position to give the proper
 5 lead. In order to thus move the slides 16, a collar 25 is connected therewith, and which collar encircles the shaft 5. This collar has a peripheral groove, in which is engaged a strap 26, having an elliptical inclosure. This
 10 strap has a yoke 27 connected therewith and provided with a shifting lever 28, the major axis of the inclosure of the strap 26 lying in the direction of the axis of the lever 28, so that as the lever is operated the strap will
 15 compensate for the movement of the end of the yoke in the direction of the shaft 5.

An eccentric-rod (shown in dotted lines in Fig. 1) is connected with the eccentric in the usual manner and has connection with the
 20 slide-valve of the steam-chest of the engine in the usual manner.

With this construction it will be seen that a single eccentric is all that is necessary, and, moreover, the noise incident to loose parts in
 25 the link-motion is entirely eliminated, for the reason that the pressure upon the loose parts is constant and in the same direction, so that there is no lost motion.

It will be readily understood that the present invention may be applied to an engine for any purpose and that any desired materials and proportions may be used for the various parts without departing from the spirit of the invention.

35 What is claimed is—

1. The combination with a shaft, of an eccentric mounted thereon and adapted for movement radially thereof, passages through the eccentric, slides mounted upon the shaft,
 40 ribs carried by the slides and adapted for engagement with the passages to shift the eccentric, and means for moving the slides, said ribs being arranged at different angles to the shaft.

45 2. The combination with a shaft having a squared portion and projections, of an eccentric mounted upon the squared portions between the projections and adapted for movement radially of the shaft, passages through
 50 the eccentric, slides mounted upon the shaft,

ribs mounted upon the slides and adapted for engagement with the passages to shift the eccentric, and means for moving the slides, said ribs being arranged at different angles to the shaft.

55 3. The combination with a shaft having a slideway comprising radial projections, of an eccentric mounted in the slideway between the projections, passages through the eccentric, slides upon the shaft having ribs engaging the passages and means for operating the slides to shift the eccentric, said ribs being
 60 arranged at different angles to the shaft.

4. The combination with a shaft having a squared portion provided with radial projections forming a guideway, of an eccentric disposed in the guideway upon the squared portion and having passages to receive the projections, and permit application and removal of the eccentric, reinforcing-plates upon the
 65 eccentric, additional passages through the plates and the eccentric, slides having ribs disposed at an angle to the axis of the shaft and adapted for engagement with the last-named passages to shift the eccentric, and
 70 means for moving the slides.

5. The combination with a shaft having a squared portion and radial projections forming an intermediate guideway, of an eccentric disposed in the guideway upon the squared
 80 portion and having passages to receive the projections and permit application and removal of the eccentric, plates secured to the eccentric and covering said passages, additional passages formed through the eccentric
 85 and the plates, slides upon the shaft, ribs mounted upon the slides and adapted to engage the last-named passages to shift the eccentrics, a collar connected with the slide and having a peripheral groove, an elliptical strap
 90 engaging the groove, a yoke pivoted to the strap, and means for operating the yoke to shift the slides.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
 95 the presence of two witnesses.

GEORGE W. ANDERSON.

Witnesses:

C. L. LOCKE,

L. G. TURNER.