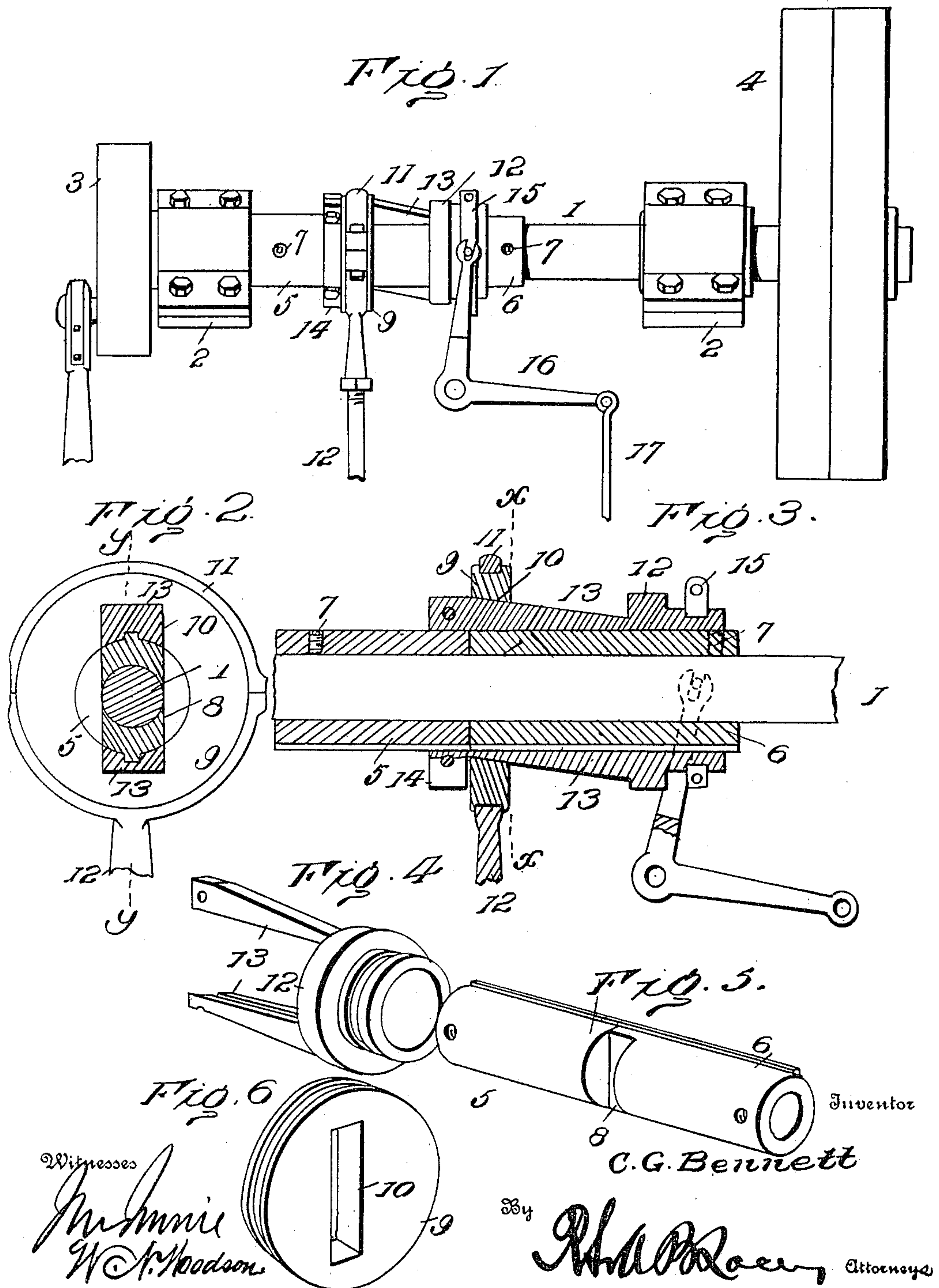


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PATENTED APR. 24, 1906.

C. G. BENNETT.
SHIFTING ECCENTRIC FOR ENGINE VALVES.
APPLICATION FILED JUNE 16, 1905.



UNITED STATES PATENT OFFICE.

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ONE-HALF TO GUY A. RICH, OF MELVILLE, NORTH DAKOTA.

SHIFTING ECCENTRIC FOR ENGINE-VALVES.

No. 818,934.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed June 16, 1905. Serial No. 265,598.

To all whom it may concern:

Be it known that I, CLARENCE G. BENNETT, a citizen of the United States, residing at Melville, in the county of Foster and State of North Dakota, have invented certain new and useful Improvements in Shifting Eccentrics for Steam-Engine Valves, of which the following is a specification.

This invention aims to devise a novel mechanism for shifting the eccentric by means of which the valve controlling the admission of steam to engines is actuated, so that any lead desired may be readily obtained.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which—

Figure 1 is a view in elevation of the main shaft of a steam-engine, embodying means for shifting the eccentric in accordance with this invention. Fig. 2 is a transverse section thereof on the line $x x$ of Fig. 3. Fig. 3 is a longitudinal section of the invention on the line $y y$ of Fig. 2. Fig. 4 is a perspective view of the eccentric-actuator. Fig. 5 is a perspective view of the support upon which the operating parts are mounted. Fig. 6 is a detail perspective view of the eccentric.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The main shaft of the engine is indicated by the reference-numeral 1 and is mounted in pillow-blocks 2 in any ordinary manner and is provided with a crank-wheel 3 and band-pulley or fly-wheel 4. A sleeve is fitted upon the shaft 1 and is preferably composed of sections 5 and 6, each being secured to the shaft 1 in any manner, so as to rotate therewith, and, as shown, a set-screw 7 is provided for securing the parts of the sleeve when properly positioned. One of the sections has opposite sides of its inner end flattened, as shown at 8, to receive the eccentric 9, which

is formed with a diametrical slot 10 of a width to snugly embrace opposite sides of the flattened portion 8, the slot 10 being of a length to admit of diametrical adjustment of the eccentric with reference to the shaft 1. The eccentric 9 is grooved in its periphery to form a seat for reception of the usual eccentric yoke 11, which is connected by rod 12 with the valve (not shown) in any well-known manner.

The eccentric-actuator is slidably mounted upon the sleeve and comprises a collar 12 and arms 13, the latter being arranged upon opposite sides of the shaft at diametrically opposite points, so as to pass through opposite end portions of the slot 10. The inner faces of the arms 13 are parallel with each other and with the axis of the shaft 1, whereas their other faces are inclined to the axis of the shaft 1 and are parallel to each other. The outer inclined faces of the arms 13 are spaced apart a uniform distance which corresponds to the length of the slot 10, and the inner ends of the slot 10 incline to correspond with the inclination of the outer faces of the said arms. While the eccentric-actuator is longitudinally movable upon the shaft 1 or the sleeve fitted thereto, it is connected with said sleeve, so as to rotate with the shaft, and in order to obviate binding between the arms 13 and the eccentric said actuator has a feather-and-spline connection with the sleeve, so as to rotate therewith and with the shaft. The free ends of the arms 13 after being passed through the slot 10 of the eccentric 9 are connected by means of a gland 14 or other form of tie or yoke, whereby the strain is more uniformly distributed and the arms serve to mutually brace each other.

To effect longitudinal movement of the eccentric-actuator, a shipper-yoke 15 is fitted to a grooved extension of the collar 12 and is provided at opposite points with offstanding trunnions which are engaged by the forked arms of a shipper-lever 16, which is adapted to be operated from any convenient point by means of a rod 17. A longitudinal movement of the eccentric-actuator effects a diametrical movement of the eccentric, as will be readily understood, this result being accomplished by the inclined faces of the arms 13 riding upon the inner ends of the slot 10 and pushing the eccentric one way or the other, according to the direction of movement of said

actuator. While the eccentric is adapted to have a diametrical movement imparted thereto, it is maintained in the same relative plane by reason of its being confined between the shoulders at opposite ends of the flattened portions 8 of the sleeve secured to the shaft 1. By having the sleeve made in sections the eccentric may be readily placed in position. Obviously the same result may be attained by constructing the eccentric in sections and having the sleeve of a single piece, or said sleeve may form a part of the shaft, such details being within the purview of the mechanic.

It is to be understood that the lead to valve is obtained by having the slot in the eccentric placed a little to one side of the center of said eccentric, this to vary, of course, according to build of engine, and when the eccentric is thus fashioned to give lead this decided advantage is, in effect, when engine is running either forward or reversed.

Having thus described the invention, what is claimed as new is—

In means of the class described, the combination of a shaft, a sectional sleeve disposed on said shaft and comprising the sections 5 and 6 abutting at one end, the inner end of the section 6 being flattened upon opposite

sides as shown at 8, the eccentric 9 provided with the diametrical slot 10 at one side of a central point thereof and fitted upon the flat-sided portion of the sleeve between the sections 5 and 6 aforesaid, an eccentric-actuator consisting of the collar 12 and the spaced arms 13 disposed upon the sleeve and slidable longitudinally thereof, the arms 13 being arranged upon opposite sides of said sleeve and having their outer faces parallel and inclined with reference to the axis of the shaft, the gland 14 connecting the outermost ends of the arms 13, one of the arms 13 being grooved upon its inner side, the sleeve having a rib longitudinally thereof to enter the groove of the arm 13 aforesaid and afford a feather-and-spline connection between the sleeve and the eccentric-actuator, the eccentric being shiftable by longitudinal movement of the arms 13, the shipper-yoke 15 fitted to the collar and connecting the arms 13 at one end; and the shipper-lever 16 operatively connected with the yoke above mentioned.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE G. BENNETT. [L. S.]

Witnesses.

J. P. KIDDER,
GUY A. RICH.