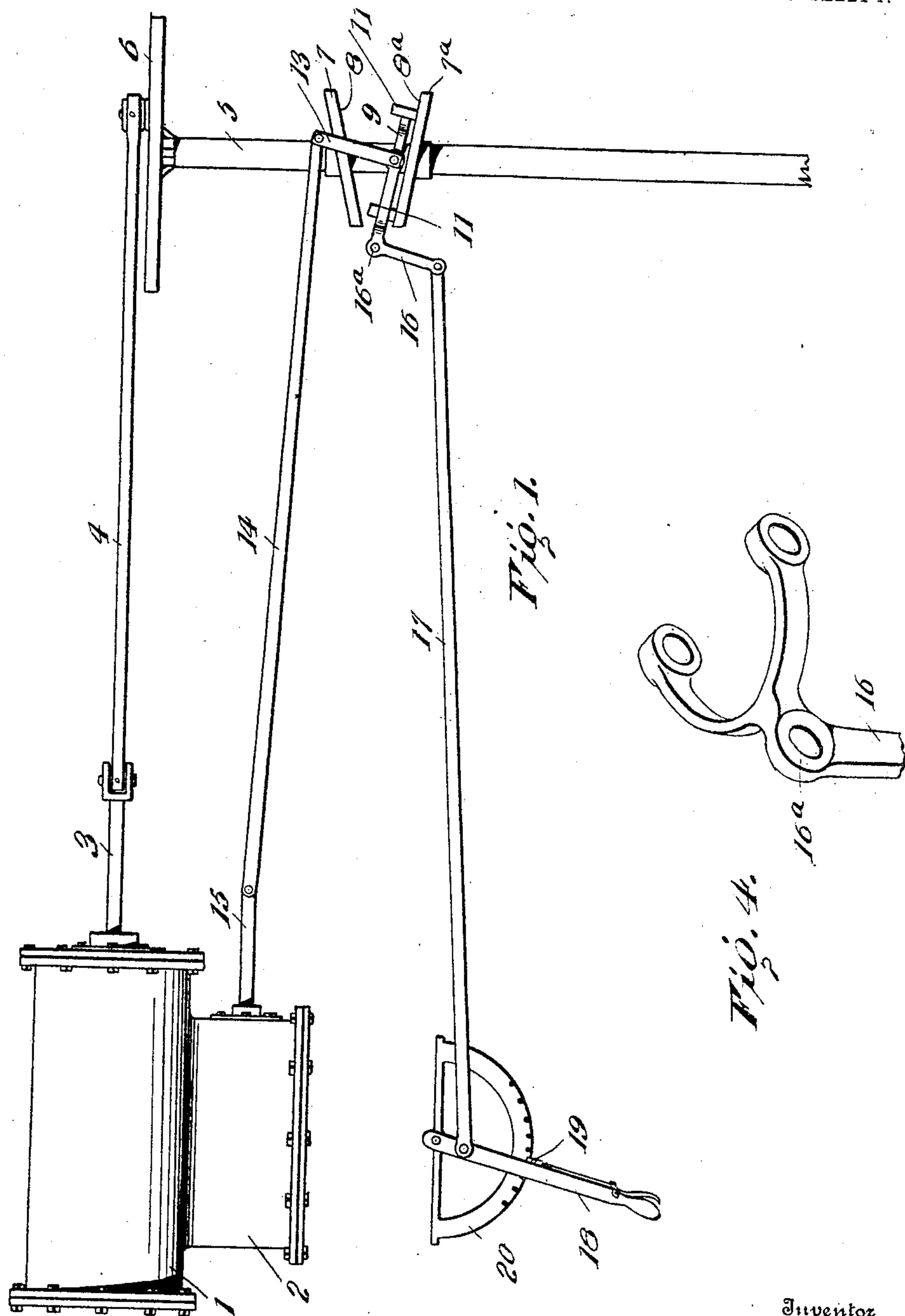


No. 824,657.

PATENTED JUNE 26, 1906.

H. W. JONES.
REVERSIBLE VALVE GEAR.
APPLICATION FILED DEC. 19, 1905.

2 SHEETS—SHEET 1.



Witnesses

M. J. M. M. M.
H. W. Jones

Inventor

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By

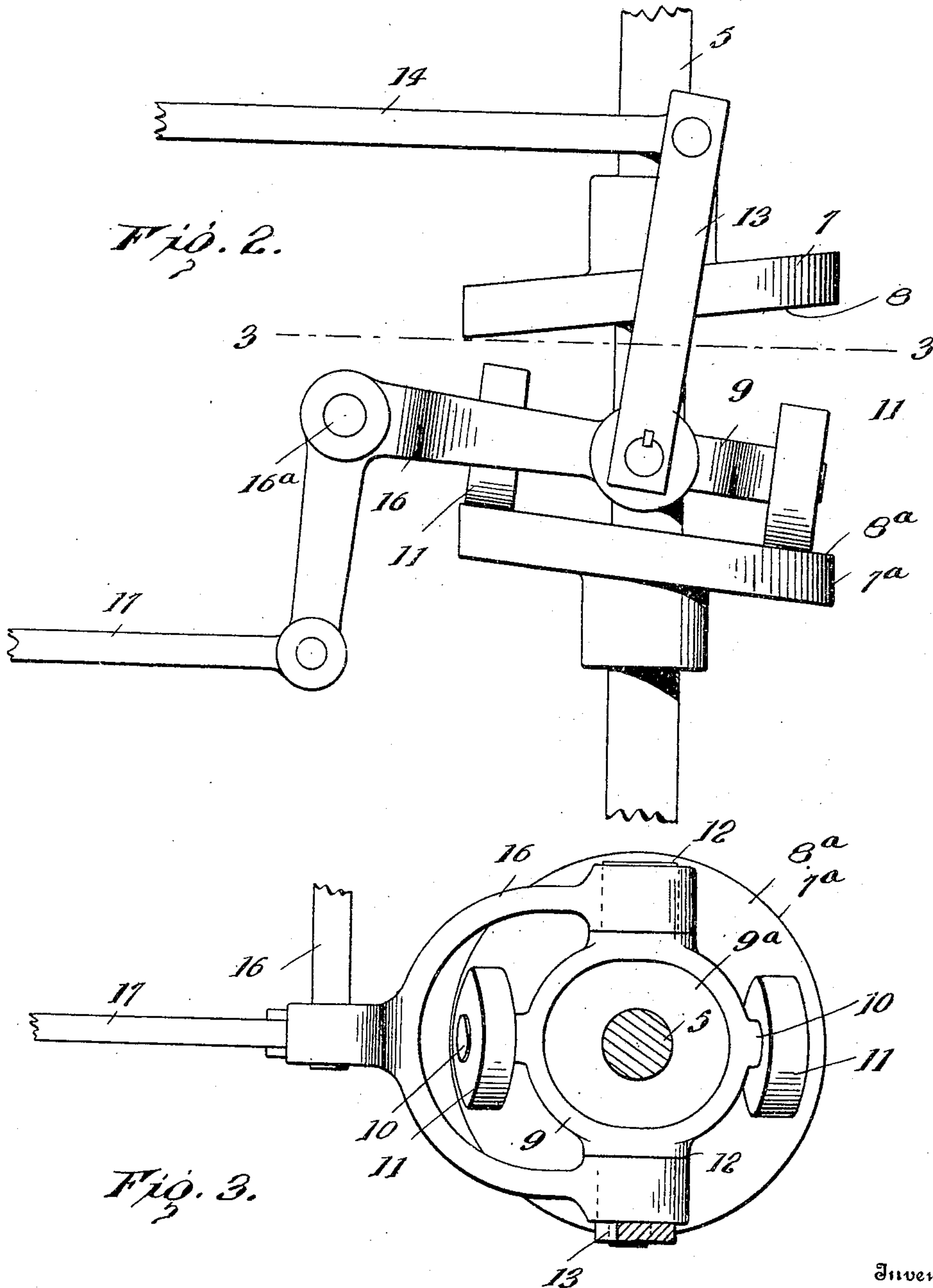
Pha. M. M. M., Attorneys

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Witnesses
W. V. Woodson

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UNITED STATES PATENT OFFICE.

HARRY W. JONES, OF BATTLE CREEK, MICHIGAN.

REVERSIBLE VALVE-GEAR.

No. 824,657.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed December 19, 1905. Serial No. 292,509.

To all whom it may concern:

Be it known that I, HARRY W. JONES, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Reversible Valve-Gear, of which the following is a specification.

My invention contemplates certain new and useful improvements in reversible valve-gear; and it consists of the novel features of construction and arrangement of the parts hereinafter described, and specifically pointed out in the appended claims.

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, in which—

Figure 1 is a plan view in the nature of a diagrammatic view, illustrating my improved reversible valve-gear. Fig. 2 is a plan view, on an enlarged scale, illustrating the shifting parts of the mechanism. Fig. 3 is a sectional view on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of the actuating-lever for shifting the sleeve from one position to another.

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.

Referring to the drawings, the numeral 1 designates conventionally the cylinder of an engine containing a reciprocating piston. (Not shown.) 2 designates the valve-chest, 3 the piston-rod, connected by the pitman 4 to the shaft 5, and 6 designates the eccentric on said shaft. The shaft 5 carries two disks 7 and 7^a, which are arranged on the shaft, as shown, in spaced relation, with their opposing bearing-faces 8 and 8^a obliquely disposed. Between the two disks 7 and 7^a there is located a sleeve 9, formed with an elongated opening 9^a, through which the shaft 5 extends. The sleeve 9 is formed with two oppositely-extending stub-arms 10, on each of which is journaled a roller 11, and the said rollers are designed to be moved simultaneously into frictional engagement with the face 8 of the disk 7 or the face 8^a of the disk 7^a. The sleeve 9 is also provided with two other oppositely-extending arms 12 at right angles to the arms 10, and to one of said arms 12 there is rigidly secured a lever 13. The

other end of said lever 13 is pivotally connected to a link 14, which in turn is connected to the stem 15 of the slide-valve (not shown) within the steam-chest 2. A preferably bifurcated bell-crank lever 16 has its fork members embracing the stub-arms 12 of the sleeve 9, and said lever is fulcrumed at 16^a. One end of said lever is connected by a link-rod 17 to a hand-lever 18, provided with a detent 19, designed for engagement with different teeth on a segment 20.

To reverse the valve, the sleeve 9 is rocked by means of the hand-lever 18, link-rods 17, and bell-crank lever 16, so as to bring the two rollers simultaneously into frictional engagement with either of the two oblique bearing-faces of the said two disks of the shaft 5, it being manifest that the motion of the valve will be thereby changed from one direction to another, according to the disk against which the rollers bear. The rollers may be held in their adjusted positions against either of the bearing-faces before described by means of the locking engagement between the detent 19 and the quadrant 20. It is to be understood that the sleeve 9 does not bear upon the shaft 5, but moves freely thereon, and it is provided with its oblong opening 9^a, so that it may assume the two proper oblique positions with respect to the longitudinal axis of the shaft without frictional bearing against the latter.

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

1. The combination with an engine-cylinder, steam-chest, and shaft, of two obliquely-disposed disks secured on said shaft in spaced relation, a sleeve mounted on said shaft and provided with oblong openings whereby it may assume different oblique positions with respect to the shaft, a connection between said sleeve and the valve-stem, rollers carried by said sleeve and designed for frictional engagement with either of said disks, and means for moving said sleeve.

2. The combination with an engine-cylinder, shaft, and valve-rod designed to receive its reciprocation from said shaft of two obliquely-disposed disks mounted on said shaft in spaced relation, a sleeve loosely mounted between said disks and provided with oppositely-extending arms, rollers journaled on said arms and designed to be carried by said sleeve into engagement with either of said disks, a lever rigidly mounted on said sleeve and having a link connection with the valve-

stem, and a hand-lever secured to said sleeve and designed to hold the same in different oblique positions with respect to the shaft with the rollers in engagement with their disks.

5 3. The combination with an engine-cylinder, steam-chest, shaft, and valve-stem, of two obliquely-disposed disks secured on said shaft in spaced relation, a sleeve mounted between said disks and provided with an oblique opening through which the shaft extends, said sleeve being provided with two oppositely-extending arms, rollers journaled on said arms, the said sleeve being provided with two other arms extending oppositely at
10 right angles to the first-named arms, a lever attached at one end to one of said last-named

arms and having a link connection with the valve-stem, a bell-crank lever having one arm bifurcated and secured to both of said last-named arms of the sleeve, and a hand-operated link-rod secured to the other arm of said bell-crank lever and designed to move and hold the sleeve in different oblique positions with respect to the shaft and with the rollers in engagement with either of the said oblique disks. 20 25

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

HARRY W. JONES. [L. s.]

Witnesses:

ROY M. LUDLUM,
JOSEPH L. HOOPER.