

No. 658,690.

Patented Sept. 25, 1900.

C. WELLER & W. ROMMEL.
REVERSING VALVE GEAR.

(Application filed Jan. 16, 1900.)

(No Model.)

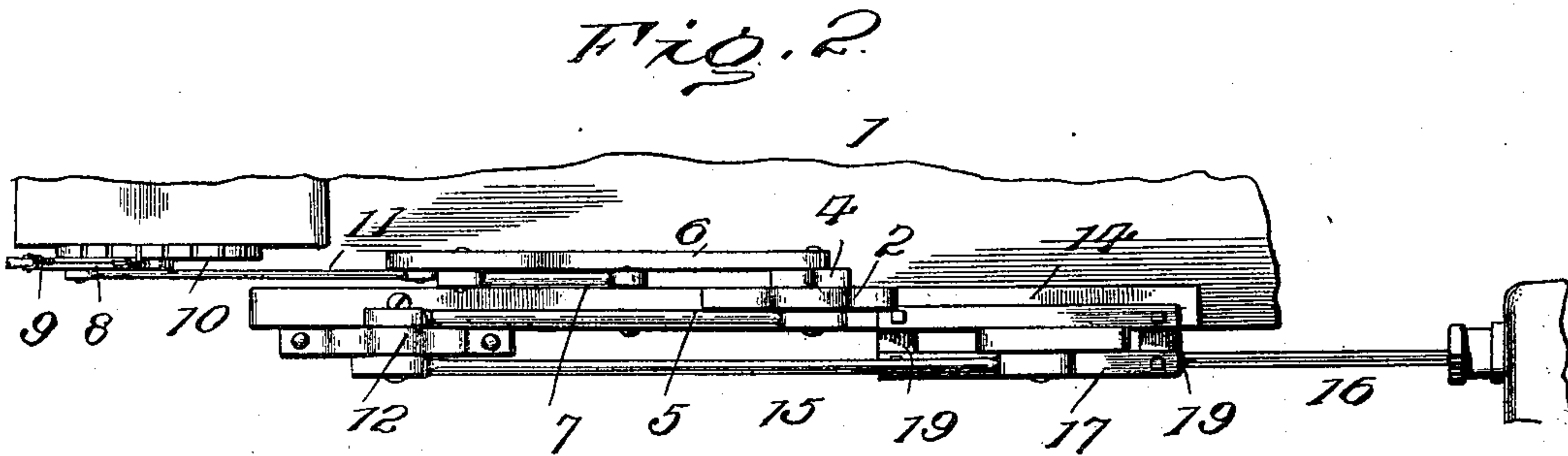
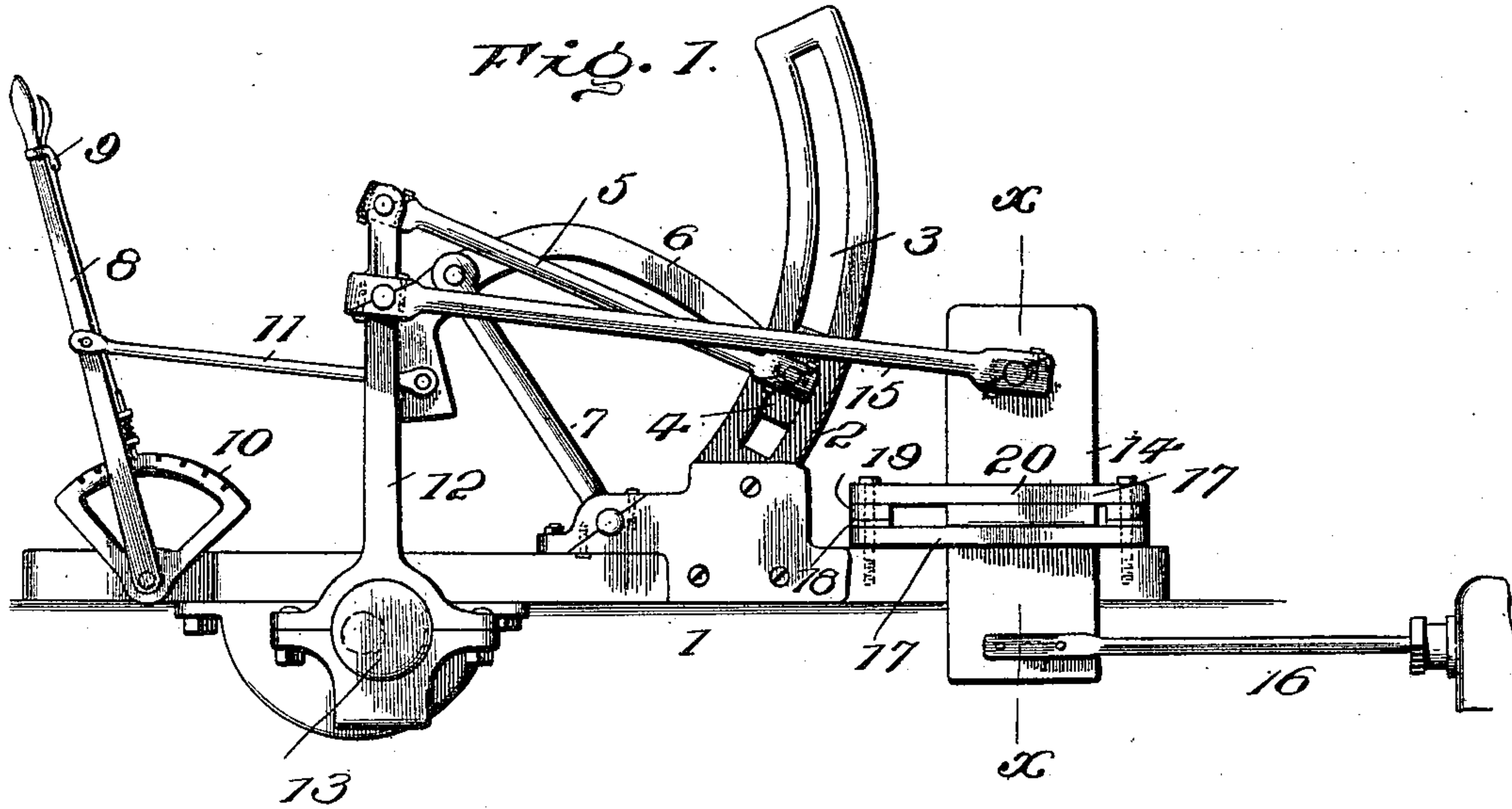


Fig. 3.

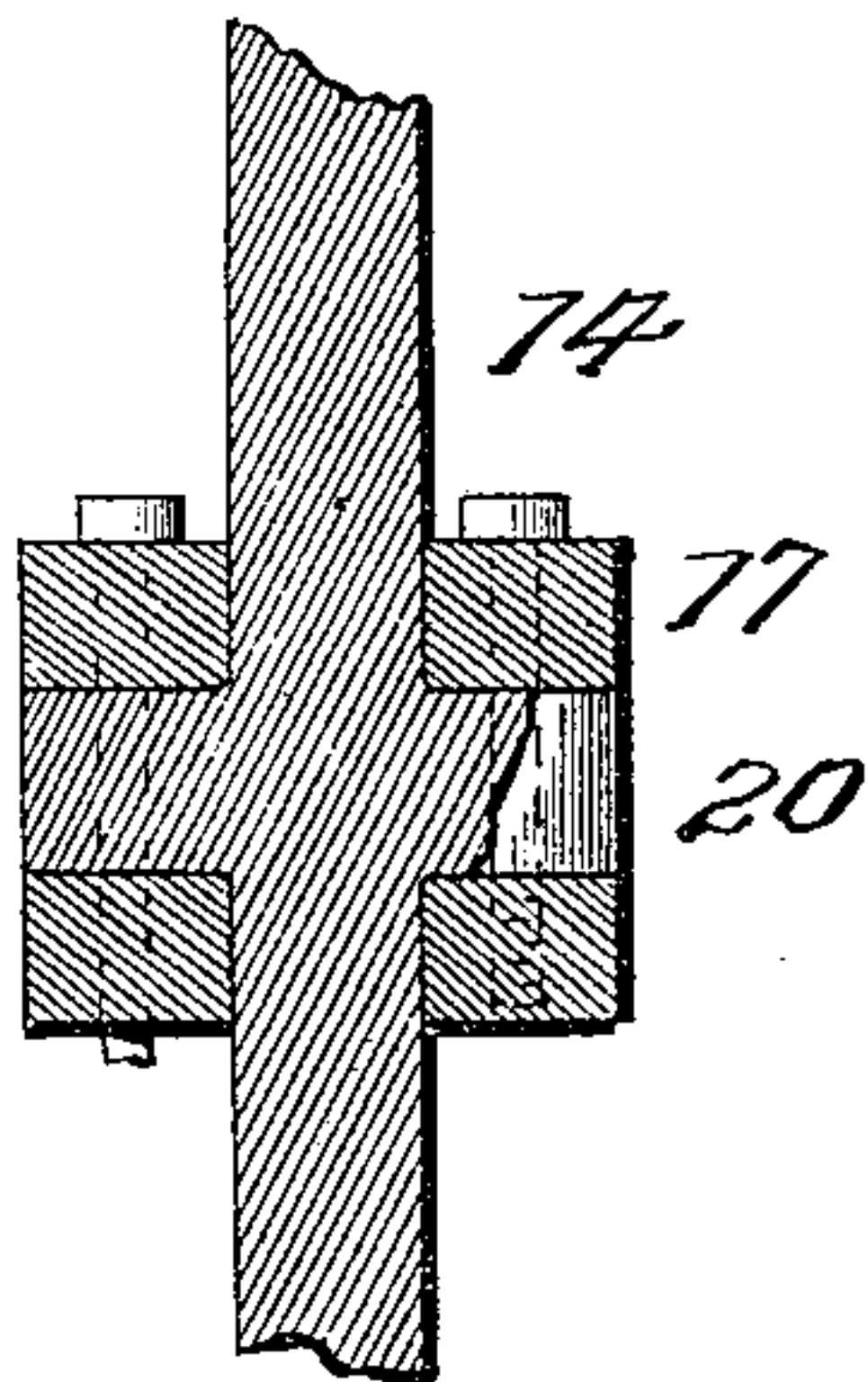
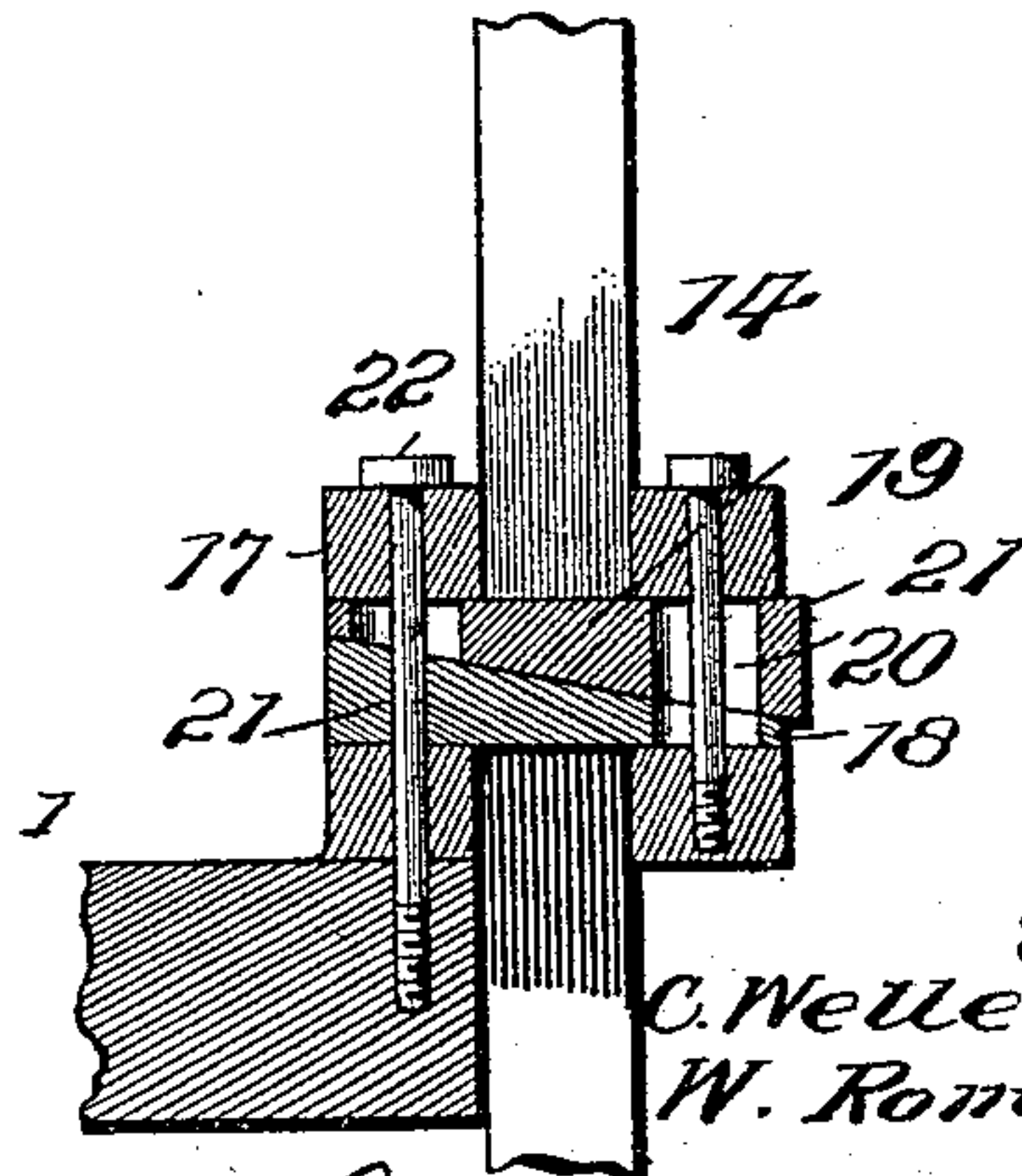


Fig. 4.



Witnesses

J. M. D. Lacey
A. B. Lacey

Inventors

C. Weller
W. Rommel

by R. L. & A. W. Bracey
his Attorneys

UNITED STATES PATENT OFFICE.

CHARLES WELLER, OF MOUNT PULASKI, AND WILLIAM ROMMEL, OF
LATHAM, ILLINOIS.

REVERSING VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 658,690, dated September 25, 1900.

Application filed January 16, 1900. Serial No. 1,673. (No model.)

To all whom it may concern:

Be it known that we, CHARLES WELLER, residing at Mount Pulaski, and WILLIAM ROMMEL, residing at Latham, in the county of Logan and State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Reversing Valve-Gear for Engines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to valve-gear for reversing steam and other engines run by a fluid-power medium controlled in its admission to the cylinder and its exhaustion therefrom by means of an alternately or reversely actuated valve.

The sole purpose of the invention is the provision of simple, easily-operable, positive, compact, and efficient means for effecting a shifting of the fluid-medium-controlling valve so as to drive the engine in a reverse direction.

An essential feature of the invention is a pivoted arm supporting a crooked or substantially elbow-shaped lever, by means of which the fulcrum-block is moved in its curved guideway.

The improvement consists, essentially, of the novel features, details of construction, and combinations of parts, which hereinafter will be more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a side elevation of a valve-gear constructed in accordance with the principles of the invention. Fig. 2 is a detail top plan view. Fig. 3 is a section on the line X X, looking in the direction of the arrow. Fig. 4 is a detail end view of the guide for the slide, parts being broken away.

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 bed 1 or support for the operating parts of the valve-gear mechanism may be any convenient portion of the engine or specially constructed for the purpose. A standard 2 is secured at its lower end to the bed 1 and rises vertically therefrom and is formed with an arcuate slot 3, constituting a guideway for

the fulcrum-block 4, which is adjustable therein and has a bar 5 and curved lever 6 pivotally attached to opposite sides thereof. An arm 7 is pivoted at its lower end to the bed 1 and projects upwardly therefrom and has the curved or elbow-shaped lever 6, pivoted thereto, and for compactness of arrangement this arm 7 is located as near to the standard 2 as possible. The hand or operating lever 8 is fulcrumed at its lower end to the bed 1 and is provided with the ordinary hand-latch 9, which coöperates with the teeth of a notched segment 10 to hold said lever in an adjusted position. A bar 11 connects the lever 8 with the adjacent end of the crooked lever 6. An oscillating arm 12 is mounted upon the eccentric 13, being attached thereto by means of a yoke, which extends vertically and has its upper end pivotally connected with the bar 5, the pivotal fastening between the parts 12 and 5 constituting, in effect, the fulcrum for the arm 12 in its oscillatory movements. A slide 14 is connected with the upper portion of the arm 12 by means of a pitman 15 and is reciprocated in conformity to the oscillating motion of said arm. The slide 14 has its lower end connected with the valve-stem 16 in such a manner as to impart a reciprocating movement thereto and is mounted in a guideway composed of a series of four bars 17, arranged in parallel relation and spaced apart vertically and laterally and connected at their ends by means of interposed filling-pieces comprising a block 18 and a laterally-movable wedge 19, the meeting faces of the block and wedge being correspondingly inclined and the outer faces parallel. Each wedge 19 is movable upon the corresponding block 18 so as to vary the distance between the relatively upper and lower bars 17, whereby provision is had for taking up wear between the lateral extensions 20 of the slide 14 and the said bars. The bars 17 at one side of the slide 14 are laterally adjustable to compensate for wear between the slide and the pairs of side bars. This is effected in the simplest form of construction by having corresponding ends of the blocks 18 and wedges 19 longitudinally slotted, as shown at 21, to receive the bolts 22, by means of which the bars 17 are con-

connected and clamped against the upper and lower sides of the interposed spacing and transversely-connecting pieces. It is obvious that any well-known means may be resorted to for adjustably connecting the parts comprising the guideway and slide 14 in order to compensate for wear and prevent any appreciable play of said slide.

The slide 14 consists of a plate and is provided at a point intermediate of its ends with lateral extensions 20, which constitute guides to travel and operate in spaces formed between corresponding side bars 17 and prevent relative vertical movements of the slide. The slide is located in the space between the side bars, and the latter, as previously stated, are capable of being relatively adjusted to prevent play or lost movement. By having the pitman 15 connected with the upper end of the slide and the valve-stem 16 attached to the lower end of said slide the strain upon the guideway is equalized, which is of material advantage. This arrangement, moreover, provides for locating the valve-gear at a relatively-higher point than the engine.

The operating-lever 8 can be adjusted to a central position or to either extreme position, as required, and when moved from one extreme position to the other the direction of rotation of the engine is reversed. In the operation of the lever 8 the pivoted arm 17 is actuated simultaneously with the elbow-shaped lever 6 and the fulcrum-block 4, the arm 7 turning to accommodate the changing relation of the pivotal connection between the parts 6 and 7, whereby the fulcrum-block may be moved in the guideway 3 with the least friction. In order to equalize the strain, the lever 7 and bar 5 are attached to opposite sides of the fulcrum-block and the bar 5 and pitman 15 are located upon opposite sides of the oscillating arm 12. The bearings at the ends of the several bars and arms are adjustable in order to take up wear between them and the pivot connections, as clearly indicated.

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

1. In reversing valve-gear for engines, a pivoted arm, a lever of approximately elbow form fulcrumed intermediate of said ends to the said pivoted arm, a hand-lever connected with one end of the elbow-lever, a fulcrum-block carried by the opposite end of said elbow-lever, a curved guideway for the fulcrum-

block, and intermediate connections between the fulcrum-block and a valve-stem for changing the relation of the valve, substantially as set forth.

2. In reversing valve-gear for engines, a standard provided with a curved guideway, a pivoted arm, a lever of approximately elbow shape fulcrumed intermediate of its ends to the pivoted arm, a fulcrum-block carried by one end of the elbow-lever and cooperating with the aforesaid curved guideway, an operating-lever connected with the opposite end of said elbow-lever, an oscillating arm, a bar pivotally connecting one end of the oscillating arm with the aforementioned fulcrum-block, a slide having the valve-stem attached thereto, and a pitman connecting said slide with the oscillating arm, substantially as set forth.

3. In reversing valve-gear for engines, a guideway composed of four bars or members vertically and laterally spaced, and capable of vertical and lateral adjustment, means for securing said bars in an adjusted position, a slide operating in the vertical space formed between corresponding side bars and having lateral extensions disposed to operate in the horizontal space formed between said corresponding side bars, said slide having a valve-stem connected therewith, and a valve-gear attached to said slide for imparting a reciprocating movement thereto, substantially as set forth.

4. In valve-gear for engines, a guideway composed of four bars or members vertically and laterally spaced, transversely-connecting end pieces interposed between the upper and lower bars and composed of a block and wedge, each having corresponding longitudinal slots at one end, the wedge being adjustable, fastenings adjustably clamping corresponding side bars to the extremities of the transversely-connecting pieces in an adjusted position, said slide having the valve-stem connected therewith, and actuating mechanism for imparting a reciprocating movement to the slide, substantially as specified.

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

CHARLES WELLER. [L. S.]
WILLIAM ROMMEL. [L. S.]

Witnesses:

ROBERT AUCHISON,
C. EDWARD ROTH.