

No. 635,625.

Patented Oct. 24, 1899.

C. WELLER.
VALVE GEAR.

(Application filed Aug. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.

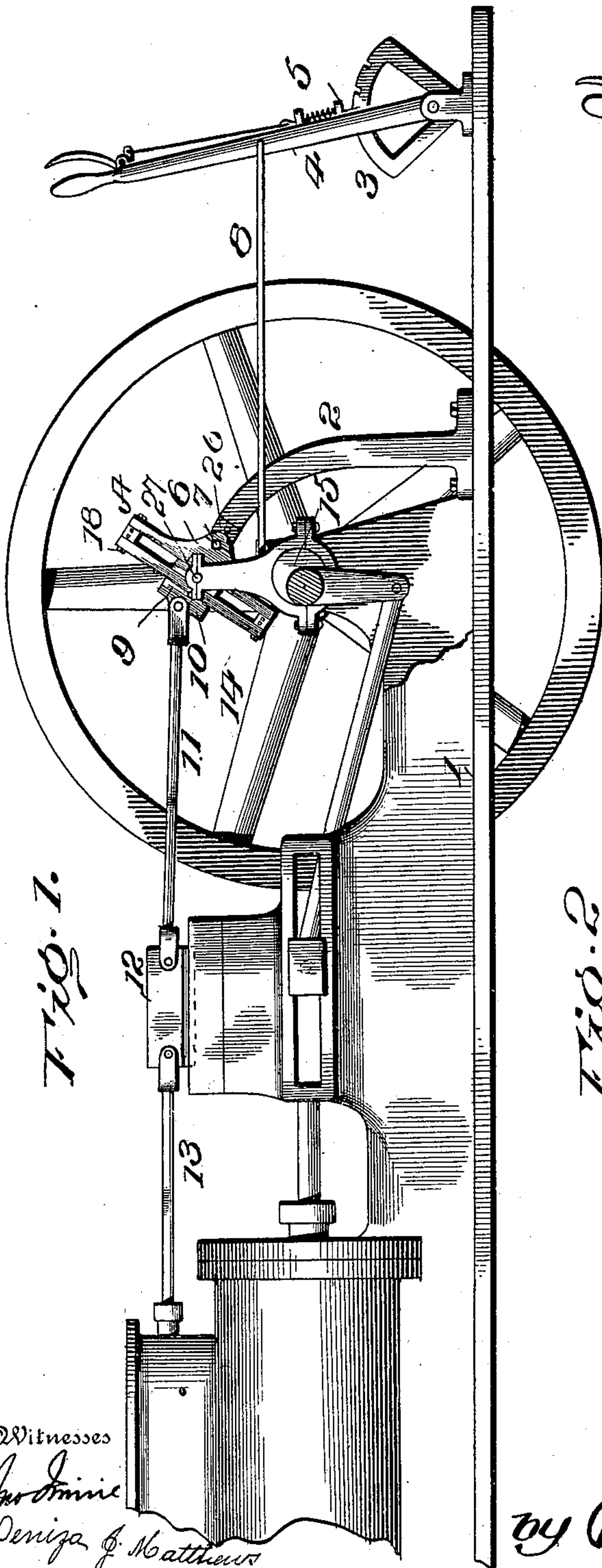


Fig. 1.

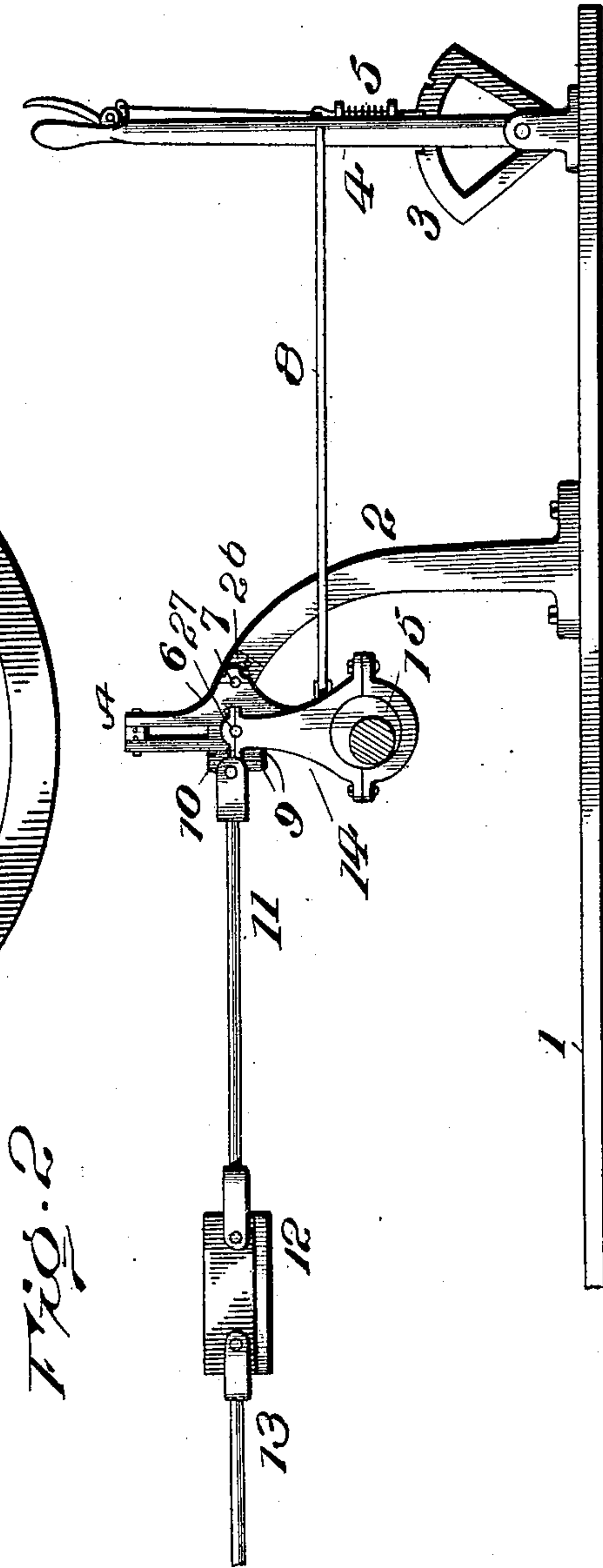


Fig. 2.

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VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 635,625, dated October 24, 1899.

Application filed August 23, 1899. Serial No. 728,224. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WELLER, a citizen of the United States, residing at Mount Pulaski, in the county of Logan and State of Illinois, have invented certain new and useful Improvements in Valve-Gear for Reversing Engines; and I 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 the motion of a direct-acting steam-engine, so as to cause it to drive the operating mechanism either forward or backward.

The improvement consists of the novel features, connections, and the combinations of the parts which hereinafter will be more fully set forth, illustrated, and claimed.

The valve-gear can be applied to the different styles of engines. Hence it is to be understood that in adapting the invention to any particular make of engine various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of the valve-gear and the adjunctive parts of an engine, showing the disposition of the elements when arranged for running the engine forward. Fig. 2 is an elevation of the valve-gear, showing the relation of the parts when the reverse is on a center. Fig. 3 is a view similar to Fig. 2, showing the parts adjusted for running the engine backward. Fig. 4 is a detail perspective view of the pivoted frame and the slide carried thereby. Fig. 5 is a central vertical section of the frame and parts intimately associated therewith. Fig. 6 is a detail view of the upper end of the standard. Fig. 7 is a detail view of the sectional end of the frame and a bar. Fig. 8 is a detail view of the slide-block.

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 or supporting-base for the mountings is indicated by the reference-numeral 1, and a standard or bracket-arm 2 and notched segment 3 rise therefrom. A lever 4 is ful-

crumed to the base of the segment and is provided with the usual hand-latch 5 to engage with the teeth of the segment and hold the lever and valve-gear in the required adjusted position.

An oblong frame A of skeleton formation is pivotally connected intermediate of its ends to the upper end of the standard 2 and is provided with offstanding ears 6, which embrace the sides of the standard 2 and receive the pin 7, pivotally connecting the frame therewith. A rod 8 is pivotally attached at one end to the lever 4 and has a similar connection at its opposite end with the lower end or corner of the frame A. This frame is adapted to be turned upon its pivotal connection 7 with the standard 2, so as to incline either forward or backward at its lower end, according to the required motion of the engine, as indicated in Figs. 1 and 3, the position being controlled by the lever 4, as will be readily comprehended.

A slide-block 9 is mounted to reciprocate in the frame A and is provided with an offstanding part 10, to which a rod 11 is pivotally connected, said rod having pivotal attachment with the cross-head 12, to which the valve-stem 13 is secured. The slide 9 is mounted in the space formed by the spaced bars 16, comprising the frame A, and is directed in its reciprocating movements thereby. The offstanding portion 10 projects through the space formed between the front bars of the frame. The arm 14, mounted upon the eccentric 15, has pivotal connection with the slide-block 9, so as to impart a reciprocating movement thereto when the engine is in operation.

When the lever 4 is thrown forward, as indicated in Fig. 1, the frame A is inclined forwardly at its lower end, thereby causing the engine to operate in such a manner as to drive the working parts forward. When the lever 4 is thrown backward, as shown in Fig. 3, the frame A is correspondingly inclined at its lower end and the engine is driven in a like direction. By moving the lever to an intermediate point, as indicated in Fig. 2, the valve-gear will be on a center, as will be readily comprehended. The frame A can be inclined more or less in either direction, thereby regulating the movement of the valve so as to cut

off the steam at any point in the length of the stroke of the piston.

The frame is of oblong form and is composed of four bars 16, spaced apart and arranged in parallel relation. These bars are connected at their ends by means of approximately T-shaped blocks 17 and bolts 18 and 19, right-angularly disposed and passing through corresponding openings formed in the terminals of the bars 16 and through the blocks 17. A pair of blocks 17 are provided at each end of the frame and constitute sectional end closures for the frame. These blocks are placed with their cross-heads opposite each other and spaced apart a short distance, so as to make provision for moving the frame-bars toward one another to compensate for wear between them and the slide-block 9. The securing-bolts 19 serve to adjustably connect the blocks 17 by passing through openings 20 formed therein. A slight space is left between the inner sides of the bar 16 and the offset portions of the blocks 17, whereby corresponding front and rear bars 15 are adapted to be adjusted in a direction at right angles to the adjustment of the blocks 17 to compensate for wear between said bars and the lateral extensions of the slide-block 9. The bolts 18 pass through openings 21 in lateral extensions of the blocks 17 and registering openings in the bars 16 and connect the parts in the manner set forth. The rear bars 16 are formed about midway of their ends with the ears 6, which have transversely-aligning openings 22 to receive the pin 7, by means of which the frame A is pivotally connected with the standard 2. These ears are divided parallel with the length of the bars and in line with the openings 22, forming cap-plates 23, which are secured to the main body of the ears by machine-screws and which admit of the frame A being detached from or applied to the pin 7 without necessitating the removal of said pin from the standard 2.

The slide-block 9 has its four corners cut away to receive the inner corners of the bars 16 and in plan view is approximately of cruciform. The projection 10 of the slide-block is transversely apertured to receive the pin 24, by means of which the rod 11 is connected therewith, the outer portion of the projection being removable and constituting a cap-plate, which is secured by machine-screws to the body of the block, as will be readily understood.

The upper end of the standard 2 is reduced, forming a tongue 25, and wear-plates 26 are fitted to opposite sides of the tongue 25 and come flush at their sides with the sides of the standard, and these wear-plates may be formed of any material suitable for the purpose to compensate for and prevent excessive wear between the standards and the ears 6 of the frame embracing the sides thereof. The wear-plates 26 can be adjusted laterally by interposing one or more thin sheets of metal or

other material between them and the tongue 25, so as to have the outer sides of the plates 26 bear snugly against the inner faces of the ears 6, thereby preventing any wobbling of the frame A when the valve-gear is in operation. A pin or stud 27 projects laterally from a side of the slide-block 9 and receives the upper end of the arm 14 and constitutes the pivotal connection between these parts. The bearings provided at the opposite ends of the arm 14 are closed by cap-plates in the well-known manner, thereby admitting of said arm being easily and readily placed in position and removed when required.

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

1. In valve-gear for steam-engines, a pivotally-mounted frame composed of four spaced bars disposed in parallel relation, means for adjustably connecting said bars to admit of their relative adjustment toward and from one another in right-angularly-disposed directions, a slide-block having portions entering the spaces formed between adjacent bars and adapted to be connected with the controlling-valve of the engine, means for imparting a reciprocating movement to the slide-block, and adjusting means for changing the relative inclination of the pivoted frame, as and for the purpose specified.

2. In valve-gear for steam-engines, a pivotally-mounted frame composed of four bars spaced apart and disposed in parallel relation, sectional end closures applied to the terminals of the bars, bolts connecting the bars and sections of the end closures in such a manner as to admit of the bars being relatively adjusted toward and from one another in right-angularly-disposed directions, a slide-block having portions entering the spaces formed between adjacent bars, means for connecting the slide-block with the controlling-valve of the engine, means for imparting a reciprocating movement to the slide-block, and adjusting means for changing the relative inclination of the pivoted frame, substantially as set forth.

3. In valve-gear for steam-engines, a standard having its end portions reduced, wear-plates applied to opposite sides of the reduced portions of the standard, a frame having rearwardly-extending ears embracing the sides of the standard and pivoted thereto, said frame comprising spaced bars adjustably connected, a slide-block mounted in the frame and adapted for connection with the controlling-valve of the engine, means for imparting reciprocating movement to the slide-block, and means for changing the relative inclination of the pivoted frame, substantially as set forth.

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

CHARLES WELLER. [L. S.]

Witnesses:

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