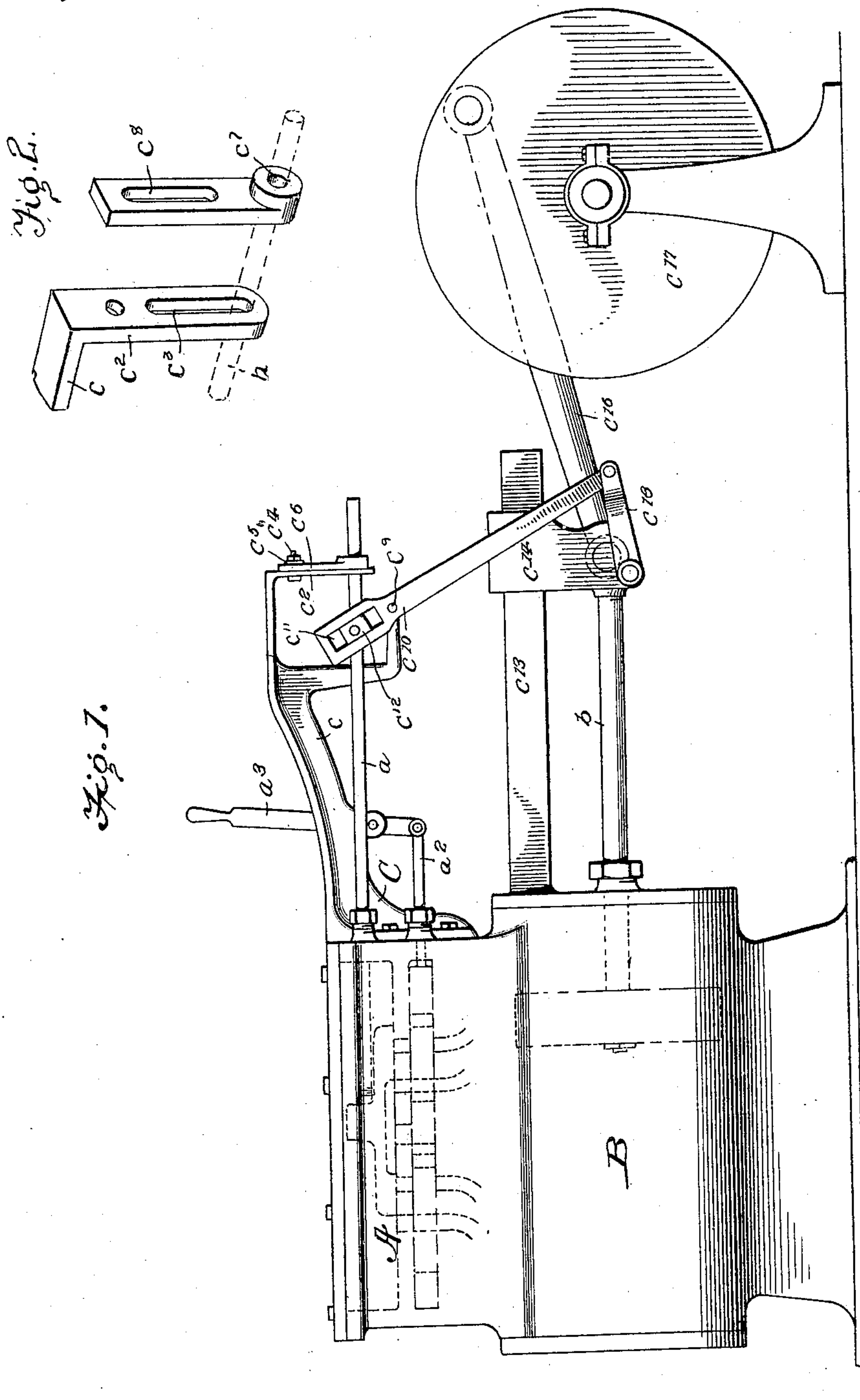


B. SMARTT.
VALVE GEAR.
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935,169.

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Inventor:

Witnesses

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UNITED STATES PATENT OFFICE.

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VALVE-GEAR.

935,169.

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To all whom it may concern:

Be it known that I, BRINAY SMARTT, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Valve-Gears; 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.

The fundamental object of this invention is the provision of a valve-gear by which it is possible to dispense with the eccentrics, the links, and their attachments, as usually employed in valve-gear; and, as auxiliary and complementary to this principal idea, a secondary object is to provide a form of valve-gear which shall be exceedingly simple of construction, extremely efficient and positive in operation, and highly durable in use.

With these objects in view, and others appearing as the specification proceeds, my invention comprehends the construction, combination, and arrangement of parts, as hereinafter fully described in the specification, summed up in the claims, and illustrated in the drawings, in which latter:

Figure 1 is a side elevation of one form of my valve-gear; Fig. 2 is likewise a perspective detail view of certain parts shown in side elevation in Fig. 1.

Referring to the drawings, it will be seen that I have embodied, in a stationary engine, the principles of my invention; but it is to be distinctly understood that the same principles are applicable equally well to a locomotive, or any other engine operated by steam, or the like.

A designates the valve-box, or chamber, and B the steam-cylinder, in which operates the piston (shown in dotted lines), having the usual piston-rod *b*.

Projecting through the valve-box will be seen the steam-valve rod *a* and, therebeneath, the reversing-valve rod *a*² actuated by the lever *a*³.

As the steam-valve and the reversing-valve form no part of the present invention, illustration (except in dotted line) thereof is omitted.

C is a standard which is attached to the valve-box B, although it may be made integral with the valve-box.

Carried by the standard C is a forward-extending arm *c*, carrying, in turn, a downward-extending member *c*², provided with a longitudinally-extending slot *c*³.

Secured to the member *c*², as by bolt *c*⁴ and washer *c*⁵, is a plate *c*⁶, provided with a lower guiding-opening *c*⁷ and an upper longitudinally-extending slot *c*⁸. Thus it will be seen that the steam-valve rod *a* passes through the slot *c*³ and the opening *c*⁷; and, by loosening the bolt *c*⁴, the plate *c*⁶ may be raised or lowered and secured in such adjusted position, as may be required.

Pivotally supported from the arm *c*, as upon a pivot-pin, or screw, *c*⁹, is a depending hanger *c*¹⁰ provided with an upper longitudinally-extending slot *c*¹¹, in which is disposed a block *c*¹², or the like, desirably removable from, and unsecured to, said hanger, and which is, in any suitable manner, secured to the rod *a*.

Projecting horizontally from the steam-cylinder B is a post *c*¹³, on which is mounted to slide a depending member, or crosshead, *c*¹⁴. Secured to the lower portion of said member is a piston-rod *b*.

Pivotally secured to the lower front portion of said member, as between ears *c*¹⁵, *c*¹⁵, is a connecting rod *c*¹⁶, eccentrically pivoted to a driving-wheel *c*¹⁷.

Pivotally secured to the lower end of the hanger *c*¹⁰ and to the lower portion of the member *c*¹⁴ is a link *c*¹⁸.

The operation of this form of valve-gear, though obvious, may be briefly stated as follows: Steam passing through the open, live-steam port in the steam-valve (not shown) drives the piston forward, in the well-known and customary manner. The piston-rod *b*, being secured to the member *c*¹⁴, moves the same forward, thereby partially rotating the driving-wheel and, simultaneously therewith, rocking the hanger *c*¹⁰, through the medium of the link *c*¹⁸. This movement will pull the steam-valve rod *a* forward, through the medium of the block *c*¹², thus simultaneously moving the steam-valve (not shown) forward to cover and close passage through said open port and to uncover and open passage through the remaining, previously closed, live-steam port. Steam now passing through this latter port, the operation is repeated, the only difference being, of course, that steam-valve rod *a*, hanger *c*¹⁰, link *c*¹⁸, member *c*¹⁴,

piston-rod *b*, and piston are caused to move in the opposite direction, or backward.

Having thus fully described my invention, what I claim as new and desire to secure by Letters-Patent is:

1. In a valve-gear, the combination with a valve-box, of a valve stem extending therefrom, a bracket secured to the valve-box and carrying a slotted arm, a plate having an opening of substantially the size of said valve-stem, and means for securing said plate to the aforementioned arm in position to allow the valve-stem to pass through the opening and be guided therein.

2. In a valve-gear, the combination with a valve-box, of a valve-stem extending therefrom, a bracket secured to the valve-box and carrying a slotted arm, a plate having an opening of substantially the size of said

valve stem, and means for adjusting the plate vertically upon said arm.

3. In a valve-gear, the combination with a valve-box, of a valve-stem extending therefrom, a bracket secured to the valve box and carrying a slotted arm, a plate having an opening through which said valve-stem is adapted to pass, and means for securing said plate to the arm in such position that the opening in the plate is coincident with a part of the slotted portion of the aforementioned arm.

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

BRINAY SMARTT.

Witnesses:

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F. M. STEGER.