

(No Model.)

J. GRIME.
VALVE GEAR FOR ENGINES.

No. 335,578.

Patented Feb. 9, 1886.

Fig. 1.

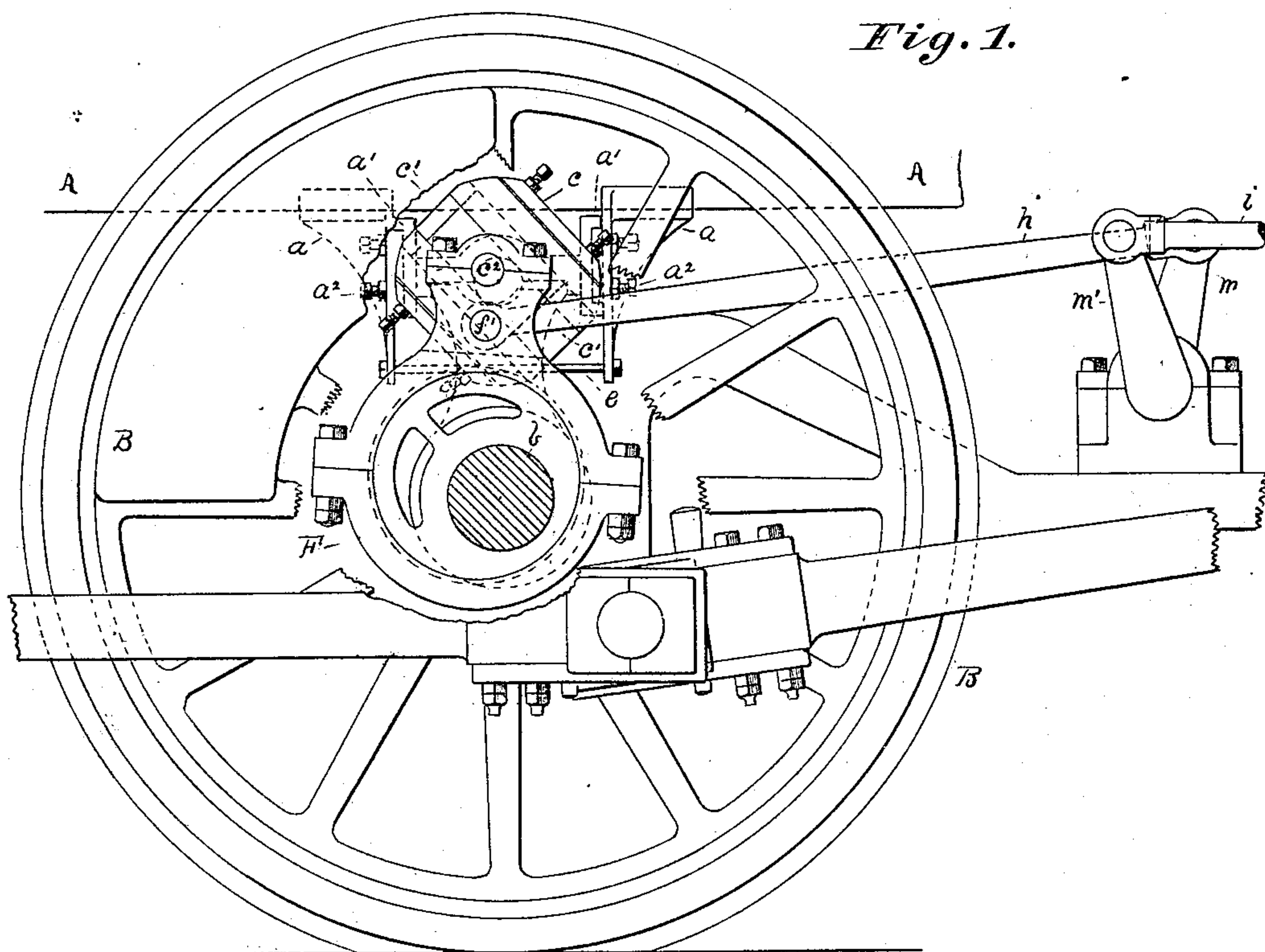


Fig. 2.

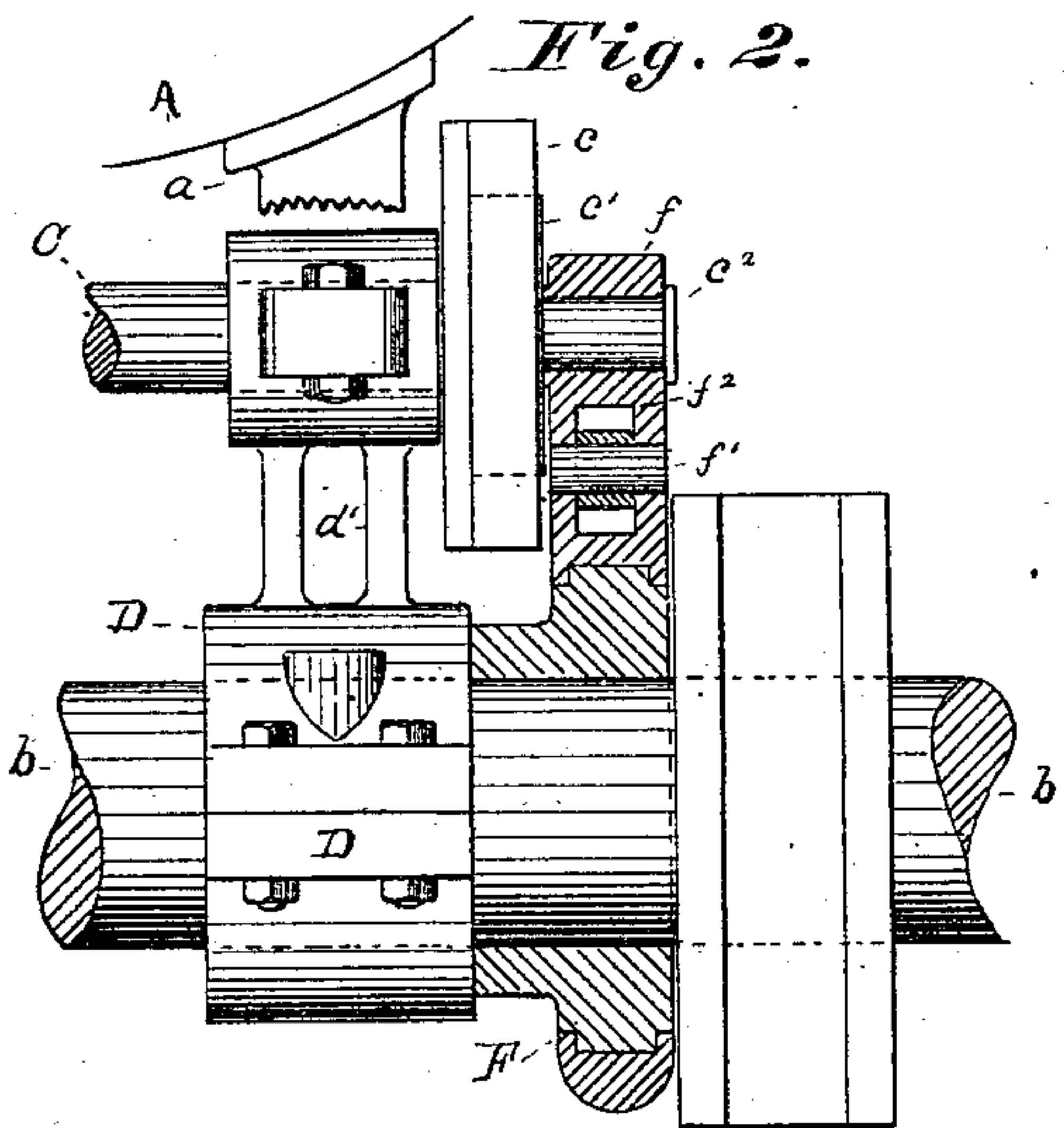
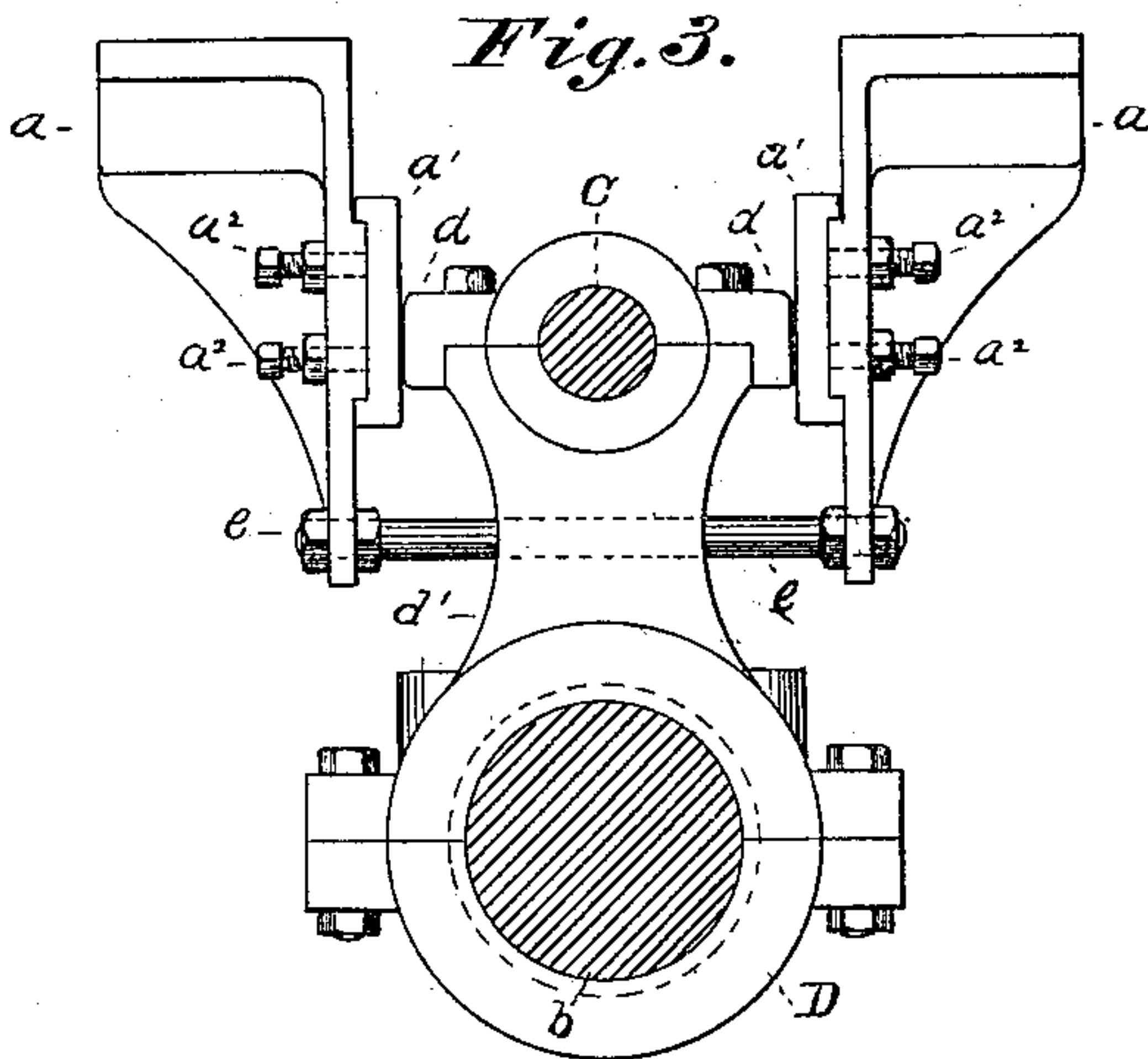


Fig. 3.



Witnesses

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JOHN GRIME, OF MINNEAPOLIS, MINNESOTA.

VALVE-GEAR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 335,578, dated February 9, 1886.

Application filed November 12, 1885. Serial No. 182,562. (No model.)

To all whom it may concern:

Be it known that I, JOHN GRIME, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Valve-Gear for Engines, of which the following is a specification.

My invention relates to valve-gear for locomotive-engines; and its objects are, first, the providing of devices for operating the valves by means of eccentrics on the axle of the driver; second, the construction and arrangement of mechanism for producing equal port-openings and admitting equal volumes of steam for both forward and backward throws of the valves; and, third, the construction of devices for adapting to a locomotive the class of valve-gear described in the patent granted to L. C. Lugmayr and myself October 28, 1884, No. 307,128. These objects are accomplished by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of a driving-wheel and a portion of a locomotive provided with my improvements, and Figs. 2 and 3 are detached views of the parts connected with the boiler and driver-axle for supporting and actuating the valve-operating rods.

A represents the boiler; B, one of the driving-wheels of a locomotive, and *b* the driver-axle.

C is the rock-shaft, connected to and operated by levers in the engine-cab in the usual manner.

c c' are respectively a guide and slide-block similar to that shown and described in an application for Letters Patent of the United States filed by myself in the Patent Office August 15, 1885, and of the same class as that shown in the patent to Lugmayr and myself, above mentioned. The guide *c* is fastened to the end of the rock-shaft C, and this shaft is supported above the axle *b* by a standard, D, boxed on the axle *b*.

To prevent the standard D from turning, and at the same time to permit it to have vertical movement to correspond with the up and down movements of the axle, there are provided on the upper portion of the standard the slides *d*, operating between guides *a'*. These guides are on brackets *a*, which are secured to the lower side of the boiler; or

they may be supported from the engine-frame when convenient, and the guides are adjustable horizontally by means of the set-screws *a*². The middle portion of the standard D may be composed of two posts, *d'*, and a rod, *e*, passed between them, with its ends secured to the lower portions of the brackets *a*. By this means the brackets will be made firmer, and the standard D prevented from sliding laterally on the axle *b*.

It will be apparent that by the arrangement described the rock-shaft and parts connected to it will be allowed to follow the upward and downward movements of the driver-axle occasioned by unevenness of the road-bed, while the parts are prevented from shifting laterally by the brackets fixed to the boiler or frame.

F is an eccentric on the axle *b*, and its arm *f* is connected to the slide-block *c'* by the pin *c*².

h is the eccentric-rod, connected to the arm *f* by a pin, *f'*, in a slot, *f*², and its forward end is connected to the inner rocker-arm, *m*, and *i* is the valve-rod, connected to the outer rocker-arm, *m'*. The rocker-arm *m'*, to which the valve-rod is connected, is preferably set in a vertical or nearly vertical position at mid-stroke of the valve, while the arm *m*, to which the eccentric-rod is connected, should incline from the arm *m'* at an angle, which will cause the valves to allow admission of equal volumes of steam through the ports for both the forward and backward throws of the valves.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a valve-gear, the combination, with the driver-axle of a locomotive, of an eccentric on said axle, a standard boxed to said axle, a rock-shaft supported by said standard and carrying a guide, a slide-block operated in said guide by said eccentric, and guides for said standard supported independently of said axle, for permitting up and down movement corresponding with said axle and preventing lateral movement of said standard, substantially as and for the purpose set forth.

2. In a locomotive valve-gear, the combination, with the driver-axle, of a standard boxed thereon, guides for preventing lateral

displacement of said standard, a rocker-shaft
supported by said standard, a guide and slide-
block carried by said rock-shaft, an eccentric
on said driver-axle and connected to said slide-
5 block, a rocker having arms set at an angle to
each other, a rod connecting said eccentric
with one of said arms, and a rod connecting

the other of said arms with the valves, sub-
stantially as described.

JOHN GRIME.

Witnesses:

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