JOSEPH M. COALE.

Improvement in Slide-Valves.

No. 128,117. Patented June 18, 1872.

Fig. 1.

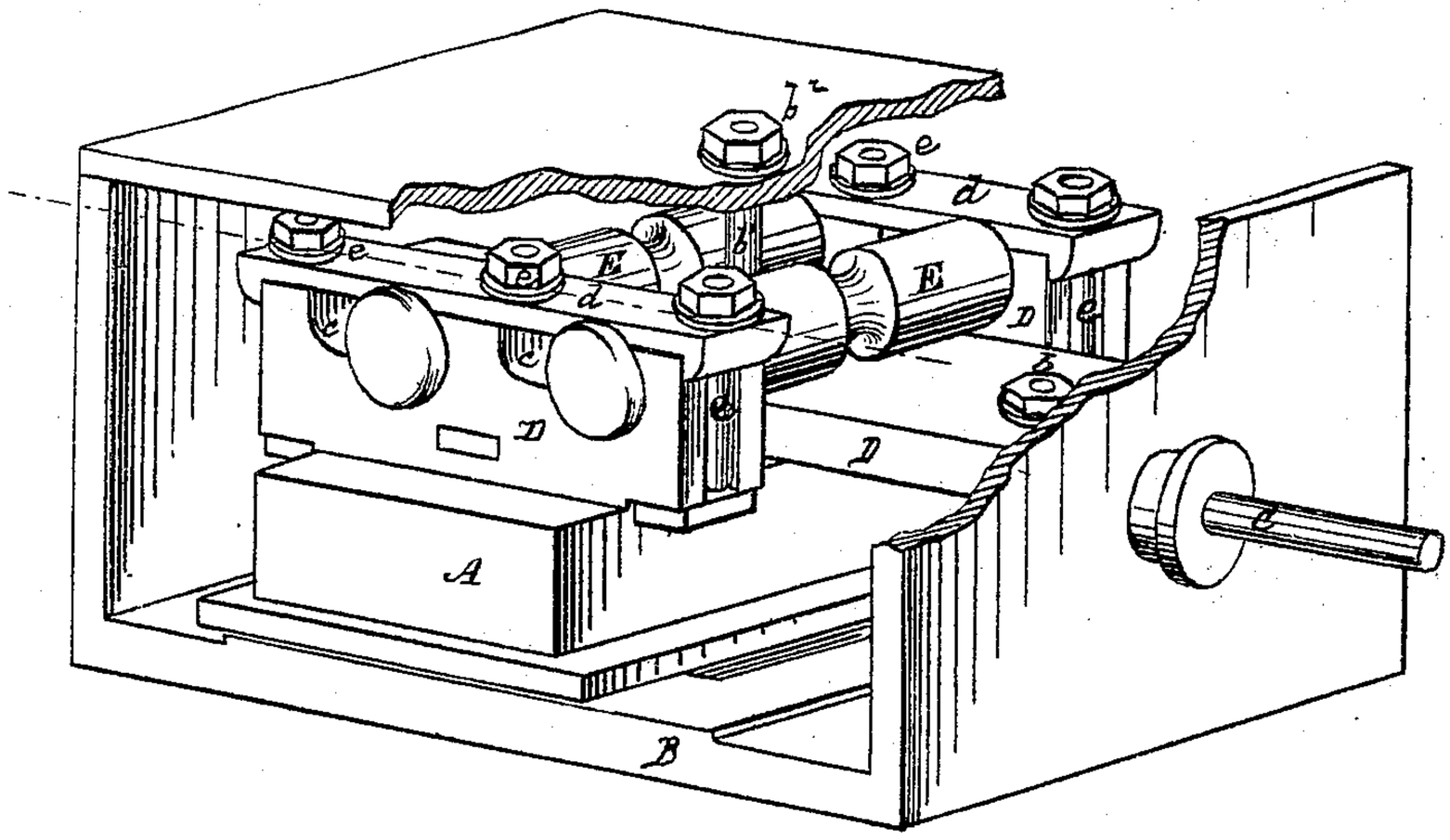
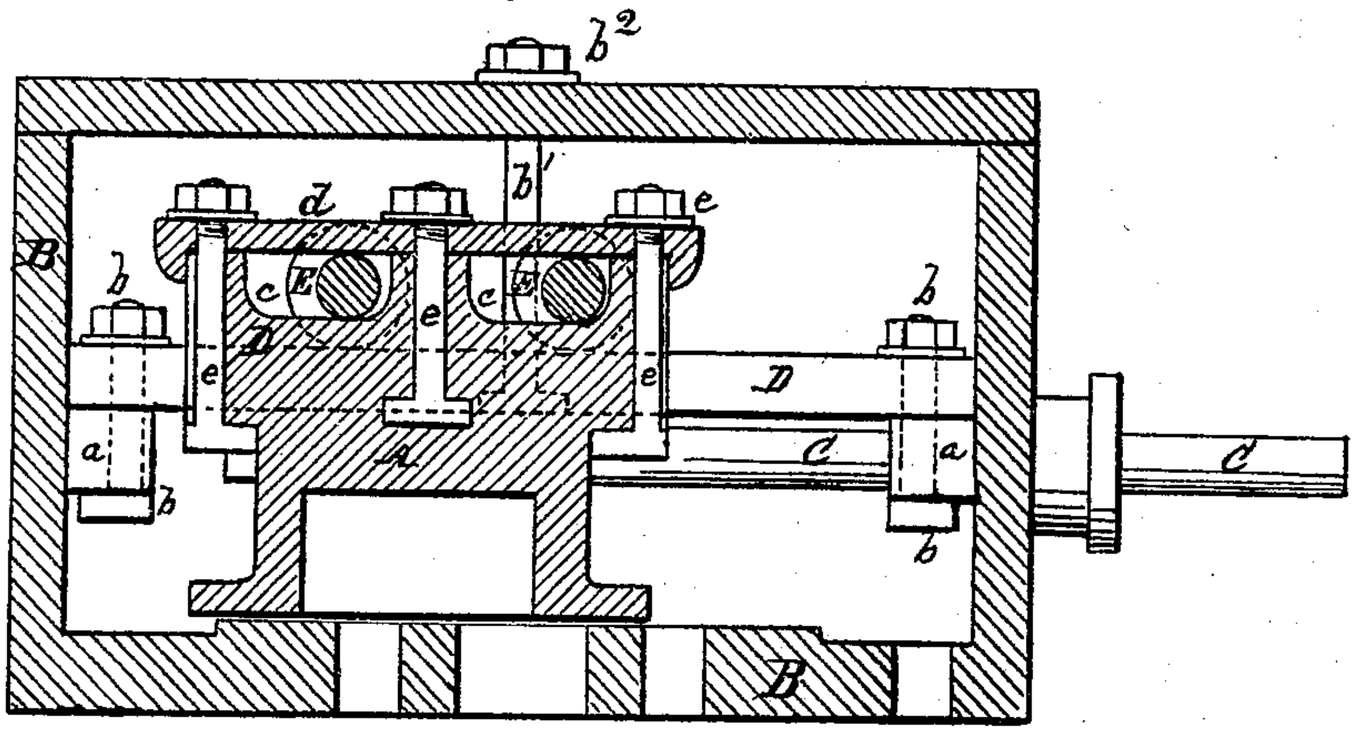


Fig. 2.



Witnesses

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Joseph M. Coale

by atty Adolph

UNITED STATES PATENT OFFICE.

JOSEPH M. COALE, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN SLIDE-VALVES.

Specification forming part of Letters Patent No. 128,117, dated June 18, 1872.

To whom it may concern:

Be it known that I, JOSEPH M. COALE, of the city and county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Slide-Valves for Steam-Engines, of which the following is a specification:

My invention relates to that class of slide-valves in which the valve-piece is carried by anti-friction rollers, for the purpose of, as far as possible, reducing friction and wear.

In Letters Patent No. 115,706, June 6, 1871, I have described and claimed a valve in which a series of loose rollers are interposed between the bridge and a cap-plate connected at the ends with the valve-piece. This valve operates well, but I have, in using the same, devised certain improvements, which tend to simplify the construction and facilitate the operation of the valve.

I now dispense with the cap-plate, which is productive of several advantages, for, when the rollers are independent and loose, as they must be to operate properly, they sometimes, by slight variations in the surface of the bridge, assume positions diagonal to the top plate, and thus cause friction and wear, which is not the case when there is no cap-plate; and, further, the surface with which the rollers are in contact, and over which they travel during the movements of the valve, is materially reduced. In lieu of the cap-plate I mount the journals of the rollers in elongated bearings attached to the valve-piece and arranged on each side of the bridge. By this arrangement the valve is hung on the spindles or journals of the rollers on each side of the bridge with which the bodies of the rollers are in contact, and the top pressure of the valve on the rollers is therefore transferred to points on each side of and outside the point where the rollers press upon the bridge. The bodies of the rollers being uncovered, and not combined with a cap-plate, can be made much larger than under the previous arrangement. Where in my former valve I would employ a roller of thirteen-sixteenths of an inch diameter, I can now use one of two-inch diameter. Another advantage is that, by mounting each roller in separate bearings, which, although elongated to allow the movement of the roller to and fro, is of such size as to keep the several rollers away from contact with each other, the rollers are not liable to rub against one another as they are when arranged loosely, and without bearings, between the cap-plate and bridge.

The nature of my invention and the manner in which the same is or may be carried into effect will, however, be better understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of a valve made in accordance with my invention, the sides and a portion of the top of the chest being removed. Fig. 2 is a longitudinal vertical section of the same.

A represents the valve-piece; B, the valve-chest; and C, the valve-stem. These parts are constructed in any ordinary or suitable manner, and require no further description. Within, and extending the length of the valve-chest, is a bridge, D, supported by and secured to ledges *a* at the ends of the chest, and arranged at the proper height above the bottom of the same. The bridge is held in place in any suitable manner, in this instance by bolts *b*. In case the bridge is of any considerable length, or is liable to spring, I stiffen it in the center by means of a bolt, b^1, passing up through the bridge and the top of the valve-chest, at which latter point it is held by means of a tightening-nut, b^2. The valve-piece A is considerably wider than the bridge, and has formed on or secured to its projecting ends upright blocks, or their equivalent, D, in which are formed elongated bearings *c* to receive the journals of the anti-friction supporting-rollers E. On the top of the blocks, and extending over the bearings *c* therein, are covering-plates *d* bolted to the blocks by bolts *e*. The bearings *c* are of such length as to allow the journals of the rollers E to move freely back and forth therein a distance equal to the length of movement of the valve, and, at the same time, they are at such distance apart as to keep the bodies of the rollers from rubbing together whatever may be their position. The bodies of the rollers are of much greater diameter than their journals, and being uncovered, and not pressed upon by a cap-plate, they have the improved action hereinbefore specified. With a valve thus constructed the friction and wear are reduced to a minimum, and much less power is required to operate it than has hitherto been necessary.

The number of rollers employed will depend, in a measure, upon the size of the valve. Two, three, or more may be employed, according to the necessities of the case.

Having now described my invention and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the central bridge and sliding valve-piece, two or more rollers arranged to bear upon and travel over said bridge, and elongated bearings formed on or attached to the valve-piece, and extending up on each side of and above the bridge to receive the journals of the said rollers, the whole arranged to operate substantially as shown and described.

2. In combination with the central bridge, supported at its ends within the valve-chest, substantially as described, and carrying the rollers of the valve-piece, the stiffening-bolt for upholding the central portion of the bridge extending up through the top of the valve-chest and provided with a tightening-nut, as and for the purposes herein shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

JOSEPH M. COALE.

Witnesses:
A. POLLOK,
M. BAILEY.