

J. W. HILL.

Frame for Portable Steam-Engines.

No. 160,189.

Patented Feb. 23, 1875.

Fig. 1.

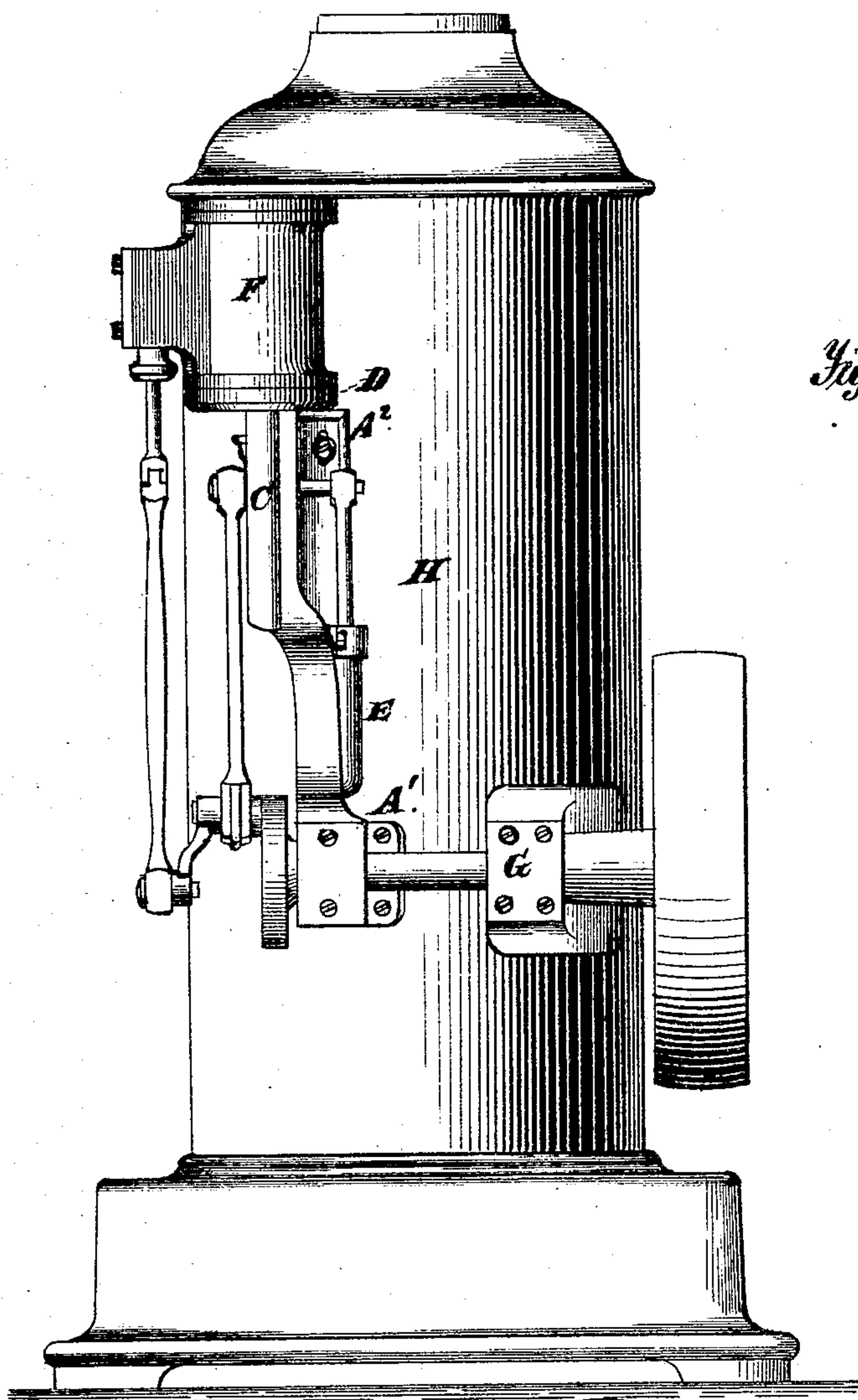


Fig. 2.

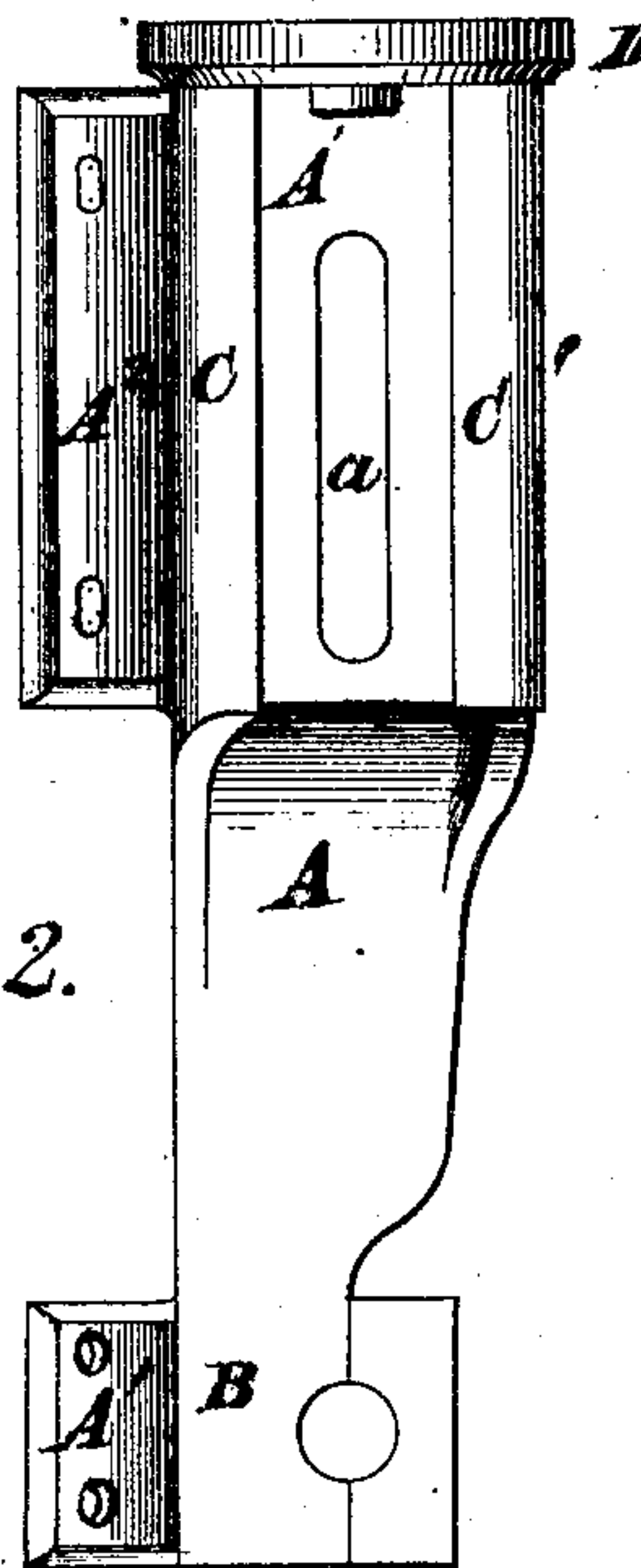


Fig. 3.

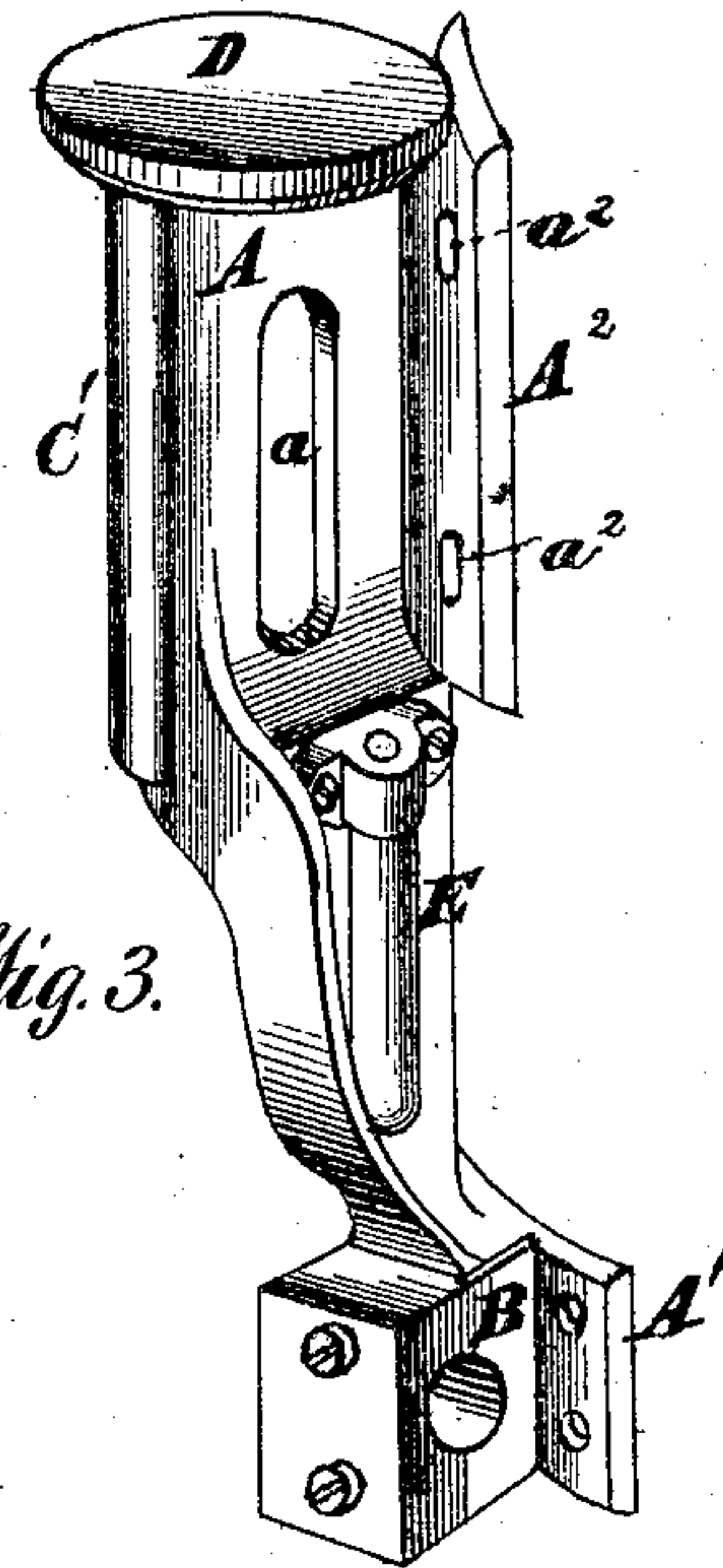
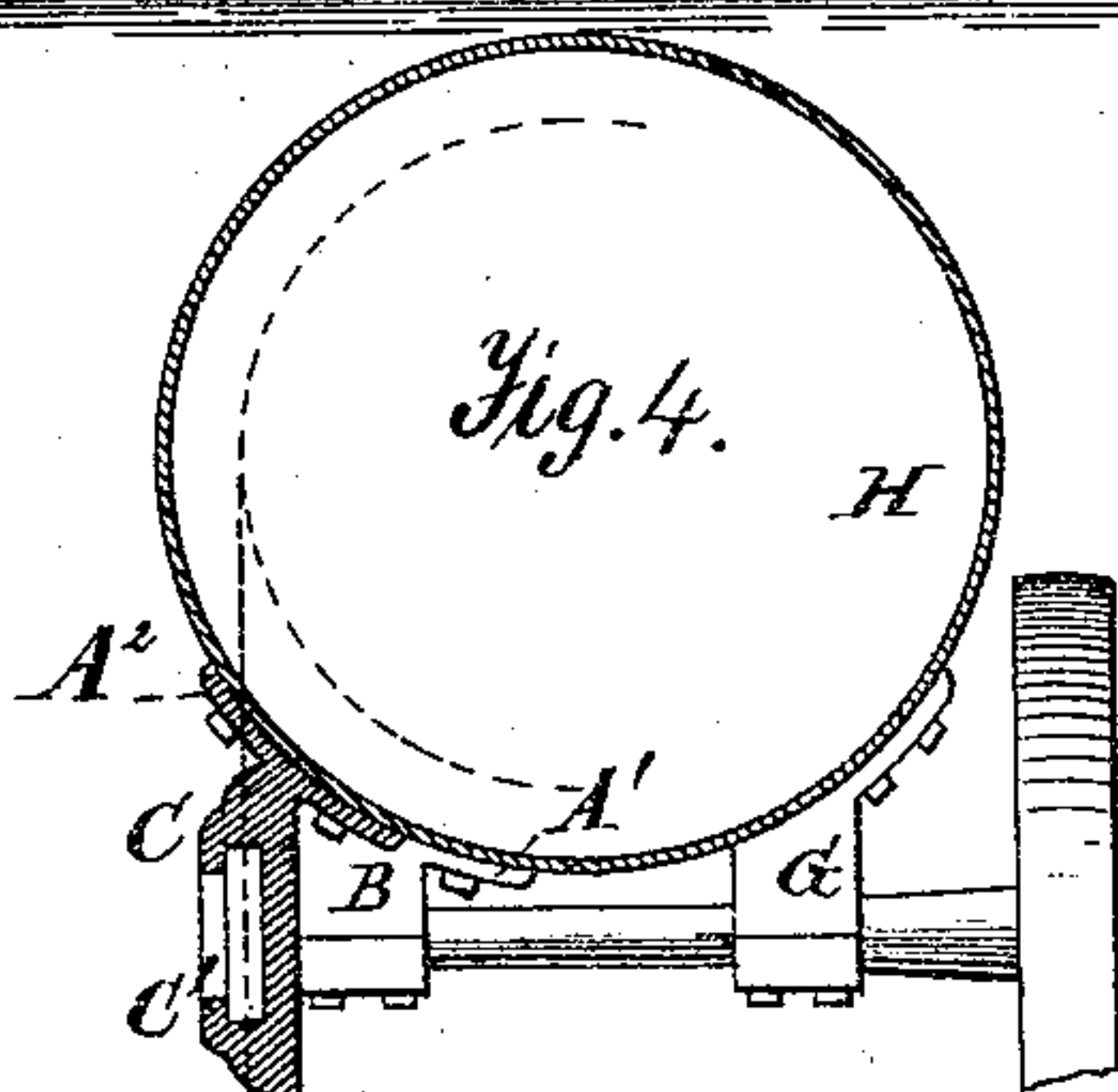


Fig. 4.



Witnesses.

A. Ruppert.
H. C. Quinn

John W. Hill
Inventor.
per E. H. C. Eile
his atty

UNITED STATES PATENT OFFICE.

JOHN W. HILL, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF TO CHRISTIAN HERCHELRODE, OF SAME PLACE.

IMPROVEMENT IN FRAMES FOR PORTABLE STEAM-ENGINES.

Specification forming part of Letters Patent No. **160,189**, dated February 23, 1875; application filed July 2, 1874.

To all whom it may concern :

Be it known that I, JOHN W. HILL, of Dayton, in the county of Montgomery and State of Ohio, have invented certain Improvements in the Construction of the Frames of Portable Steam-Engines, and the manner of securing them to the boiler, of which the following is a specification:

This invention relates to a portable steam-engine, composed of an upright cylindrical boiler, and an engine secured to the side of the boiler in a vertical position, the main frame of the engine forming part of a casting, which also provides a suitable support for the feed-pump, the pedestal for the inboard bearing, the guides for the cross-head, and the lower head or cover of the cylinder.

My improvement consists in giving the flanges by means of which this casting is secured to the boiler a position oblique to the plane of the guides transversely, so that the axis of the cross-head will be a tangent of an imaginary circle within the compass of the boiler. The crank-shaft, being arranged at right angles to the axis of the cross-head, must, in consequence of this construction and disposition of the parts, first approach the shell of the boiler on leaving the inboard bearing to reach the outboard bearing. Thus both the bearings of the crank-shaft need project only a comparatively short distance from the shell of the boiler, and still the fly-wheel, though hung close to the outboard bearing, will clear the boiler. By this improved construction I attain greater compactness and strength, always desirable, but especially so in portable engines, so called.

In the annexed drawings, Figure 1 is a side view of my improved semi-portable engine. Fig. 2 illustrates a front elevation of the piece of casting spoken of. Fig. 3 is a rear perspective elevation thereof, showing the manner of attaching the feed-pump. Fig. 4 is a horizontal section.

The same letters of reference are used in all the figures in the designation of identical parts.

The piece of casting mentioned as combining several stated parts of the engine has a strong web, A, stiffened by ribs along the edges, which extends from the pedestal B of the inboard bearing to the guide-bars C C' in about a straight line, and, being at the lower ends of the guides slightly curved, and immediately again continued in a straight line, to connect at the top with the lower cylinder-head D, throws the guides the required distance forward of the face of the inboard bearing. This web, standing in planes parallel with the face of the inboard bearing, forms the main frame of the engine, on the front side of which the guides are formed. An elongated slot, *a*, is formed in this frame between the guides, through which a wrist of the cross-head projects to take hold of and operate the piston of the feed-pump E, which is secured upon the back of the frame A, between the inboard bearing and the guides, without having any direct connection with the shell of the boiler H. The cylinder F stands upon the head D, cast on the frame A, and is firmly bolted thereto, and is otherwise separate from the boiler. A flange, A¹, suitably curved to fit the shell of the boiler, is formed under the pedestal of the inboard bearing, by means of which the compound casting is rigidly bolted to the shell of the boiler at this end. Another similarly-curved flange, A², is cast on beneath the inner guide-bar C; but the holes *a*² therein, through which the bolts for securing it to the shell of the boiler pass, are elongated, as clearly shown, so that this piece of casting may move on the bolts fixed to the boiler, if there happens to be at any time any difference in the degree of expansion or contraction between the shell of the boiler and the casting. In this manner all strain consequent upon such difference is obviated, and the alignment of the engine, so essential to it, is always preserved.

The flanges A¹ and A², in a transverse direction, stand obliquely to the plane of the guides or the axis of the cross-head, having the effect already clearly pointed out.

The outboard bearing G may be a separate device, as shown, without any perceptible detrimental results.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the upright cylindrical boiler H and the herein-described compound casting of the engine, having flanges $A^1 A^2$, standing in position oblique transversely to

the plane of the guides C C', substantially as and for the purpose specified.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

JOHN W. HILL.

Witnesses:

WALES ALDRICH,
GEORGE FLEISCHEL.