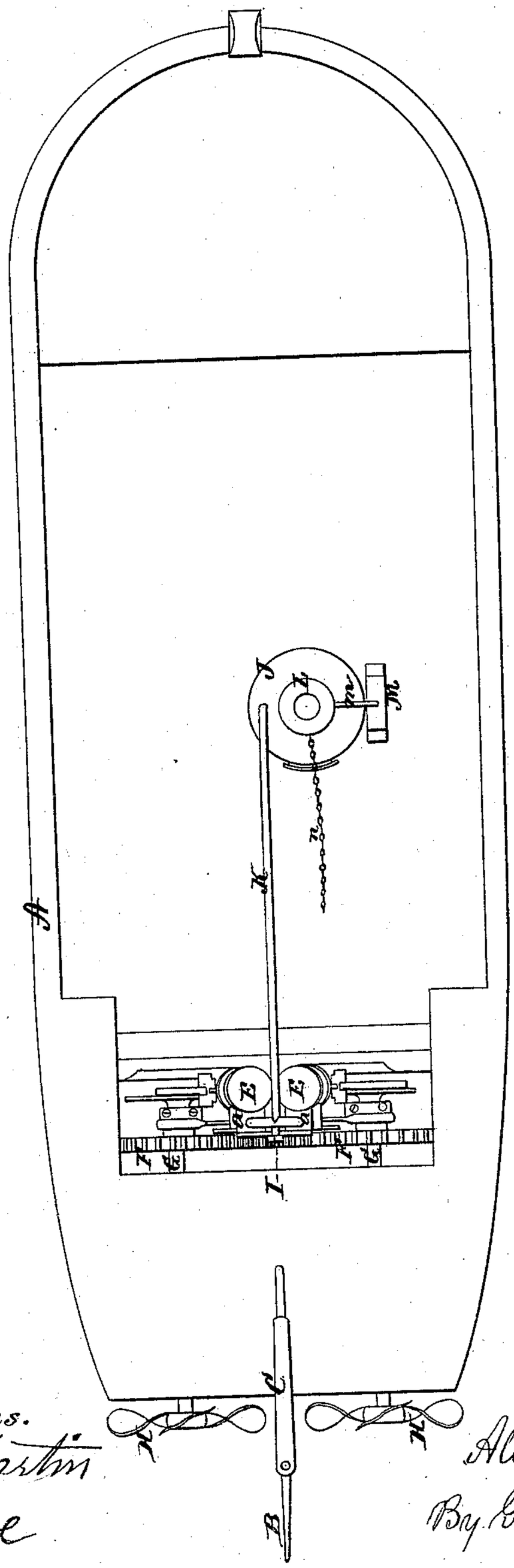
3 Sheets--Sheet 1.

A. T. NICHOLS.

Improvement in Steam Engines.

No. 125,838. Patented April 16, 1872.

Fig. 1.



Witnesses.
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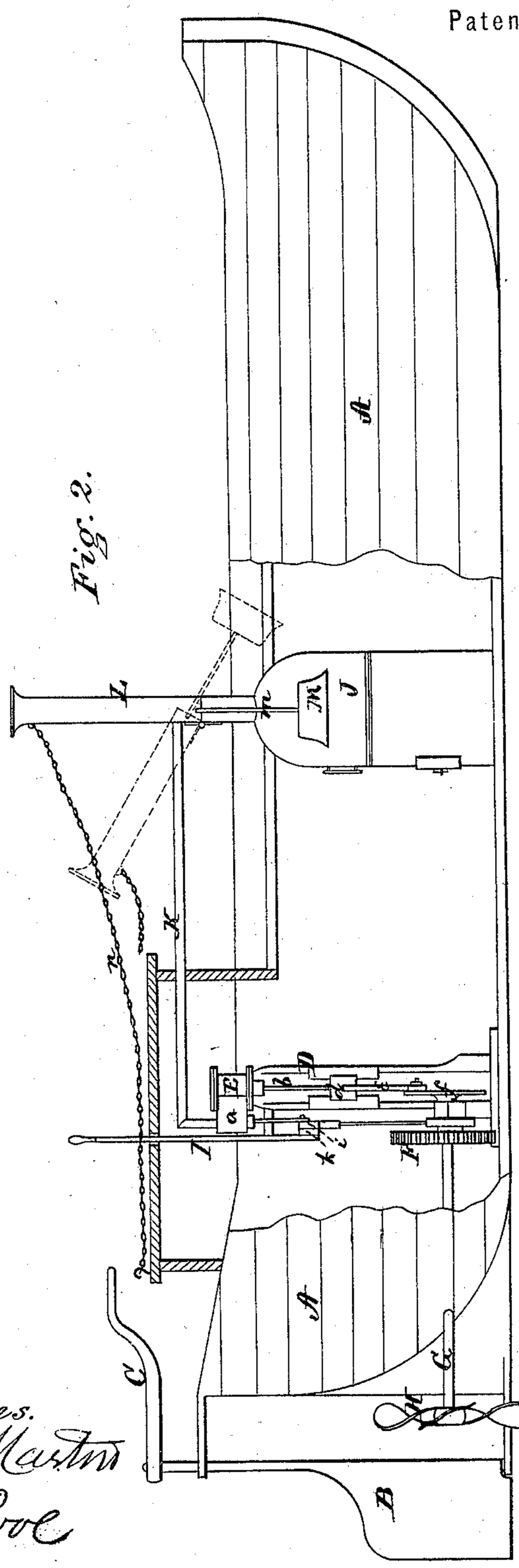
Fig. 2.



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3 Sheets--Sheet 3.

A. T. NICHOLS.

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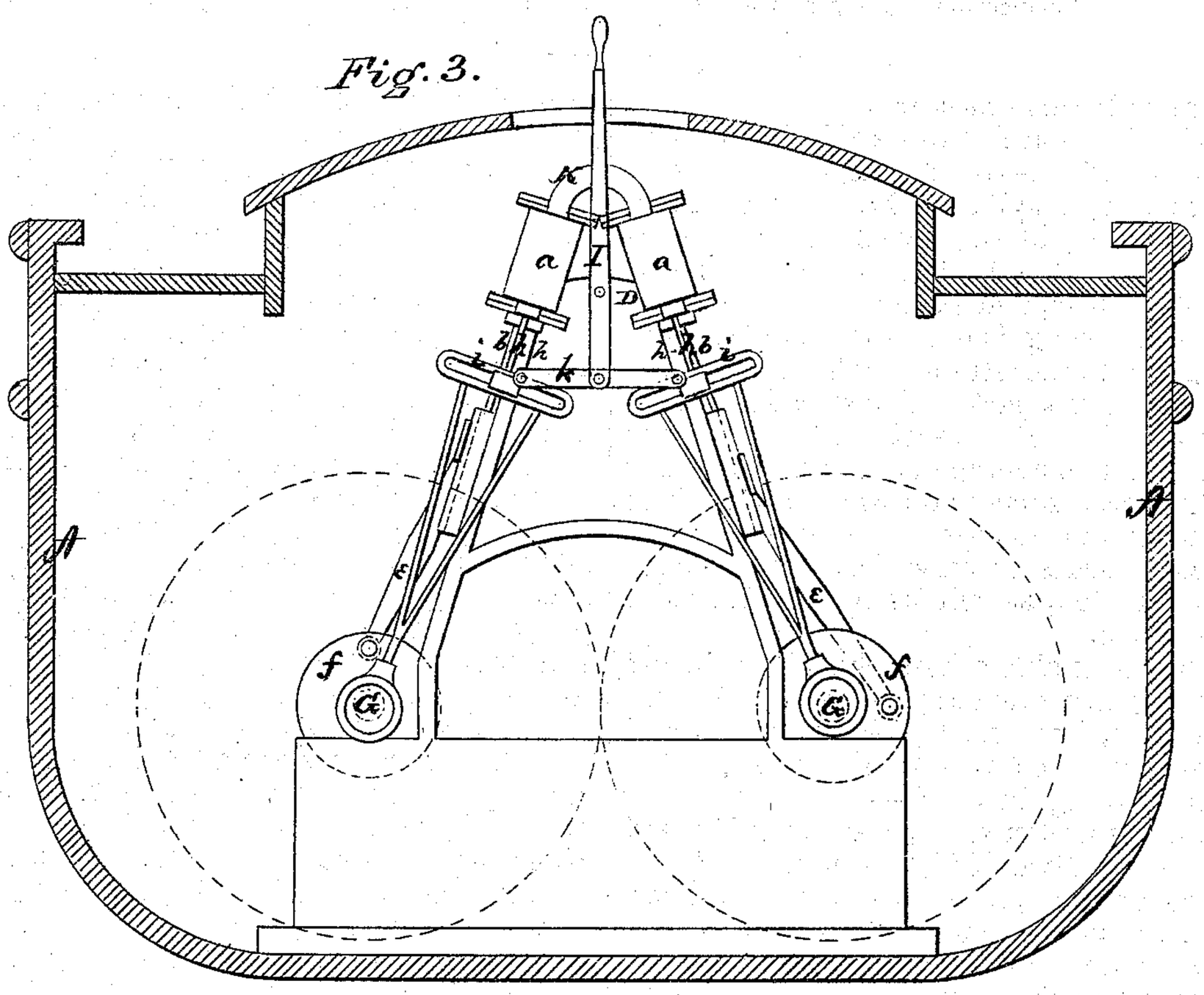
Fig. 3.



Witnesses.
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125,838

UNITED STATES PATENT OFFICE.

ALBERT T. NICHOLS, OF WILLIAMSPORT, PENNSYLVANIA.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 125,838, dated April 16, 1872.

To all whom it may concern:

Be it known that I, ALBERT T. NICHOLS, of Williamsport, in the county of Lycoming and in the State of Pennsylvania, have invented certain new and useful Improvements in Steam-Engines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of certain parts of the engines, frame upon which the engines are placed, and smoke-stack, especially adapted for canal-boats or other boats suitable for canal navigation, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view; Fig. 2, a side view, part in longitudinal vertical section; and Fig. 3, a transverse vertical section of a canal-boat, showing the various improvements in the machinery for propelling and handling the same.

A represents the hull of a canal-boat with the rudder B, and C the tiller of said rudder, by means of which the steersman guides the boat. Immediately in front of the place occupied by the steersman is an upright triangular frame, D, resting upon any suitable foundation in the bottom of the boat. This frame, although termed triangular, need not be exactly of this shape, only so that it is narrower at the top than at the bottom—in other words, approximate the shape of a triangle—and should be firmly secured and braced by any suitable and convenient means. Upon each side, at or near the top of this frame, are situated engines E E, provided with the usual steam-chests *a a*. From the piston within each engine E the piston-rod *b* connects with the cross-head *d*, and this, by a pitman or connecting-rod, *e*, with the crank or crank-wheel *f* on the propeller-shaft G. The two propeller-shafts G G run parallel or nearly parallel with each other, and have each a wheel, H, on its rear end. The two engines are so arranged with relation to each other that the wheels H H run toward each other at the top instead of outward at the top, as heretofore. By this arrangement the water is thrown into the center of the canal, preventing, in a very large degree, the washing of the banks of the canal. The two propeller-shafts G G are further, at their front ends, connected by two gear-wheels, F F, to insure regularity in their movement, and also, if desired, to use only one engine instead of two.

The valve-stems *h h* from the steam-chests *a a* are, in the usual manner, connected, by links *i i*, with the rods from the eccentrics on the propeller-shafts for admitting and exhausting the steam at the proper times in the same manner as always done. These links *i i* I connect by a bar, *k;* and to the center of this bar is pivoted the lower end of a lever, I, which is also pivoted to the triangular frame D, and extends up through a slot in the deck or housing over the engines. When this lever stands upright the engines are at a stand-still, while turning it one direction starts them ahead, and in the other backs them. Thus it will be seen that by the connection of the links *i i* both engines are operated with one lever at the same time; and from the position of the engines, as above described, immediately in front of the steersman, he can, in addition to steering the boat, also operate, or, rather, attend to the engines.

The engines and steam-chests are further so arranged that they will not make the stroke both at the same time—consequently lessening the strain on the boat by one-half, which is of great importance in flat-bottom boats.

J represents the steam-boiler, situated in any desired part of the boat, and having a pipe, K, conveying the steam to the steam-chests. L is the smoke-stack, made in two parts, as shown in Fig. 2, hinged together. The upper part of the smoke-stack is at or near its lower end provided with a downward-projecting rod, *m*, with a weight, M, attached. A rope or chain, *n*, attached to the upper end of the smoke-stack, leads backs to the steersman, so that he can, whenever necessary, by pulling on the same, lower the chimney, and as soon as he lets go of said rope or chain the weight M, overbalancing the weight of the hinged part of the stack, brings it back in position again.

By this means the steersman alone is ena-

bled, under ordinary circumstances, to do the work which has heretofore required a number of hands.

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

Two engines for operating the propeller-wheels of a canal-boat when they have their valve-links *i i* connected in such a manner that both engines may be operated at the same time with one lever, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of November, 1871.

ALBERT T. NICHOLS.

Witnesses:

HENRY W. WATSON,

EDWARD T. TREMAINE.