S. E. STOKES, Jr.

STEAM-ENGINE AND DRIVING APPLIANCE.

No. 171,187. Patented Dec. 14, 1875.

Fig. 1.

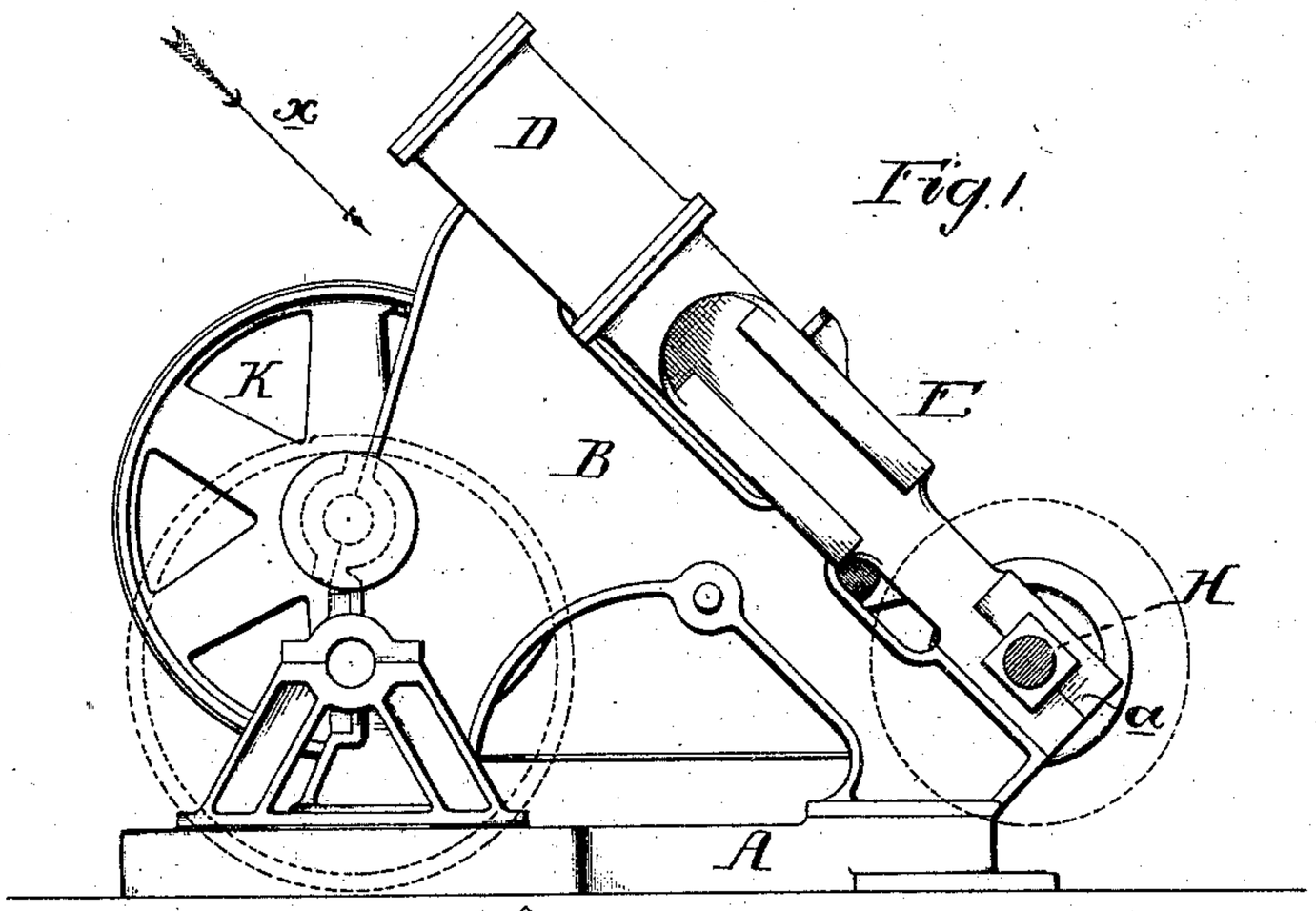


Fig. 2.

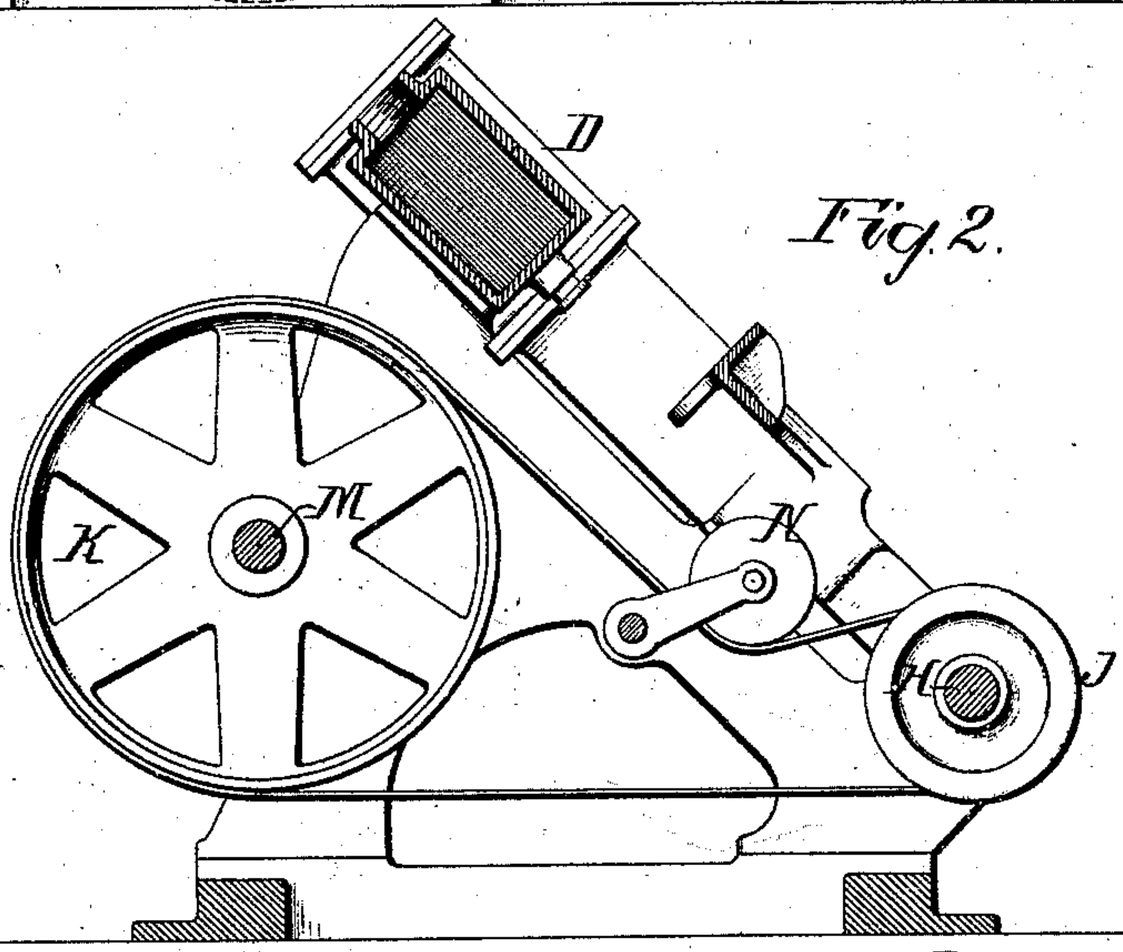
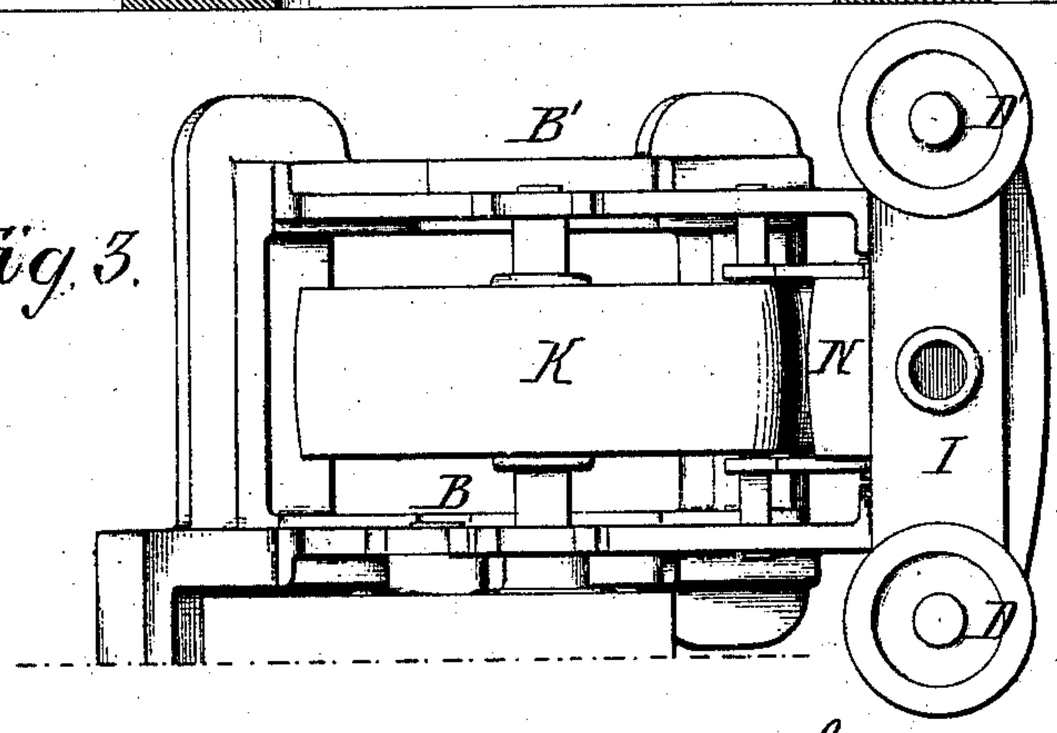


Fig. 3.



Witnesses. Harry Smith
Thomas McGraw

Samuel E. Stokes Jr
by his attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

SAMUEL E. STOKES, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STEAM-ENGINES AND DRIVING APPLIANCES.

Specification forming part of Letters Patent No. **171,187**, dated December 14, 1875; application filed November 30, 1875.

To all whom it may concern:

Be it known that I, SAMUEL E. STOKES, Jr., of Philadelphia, Pennsylvania, have invented an Improved Steam-Engines and Driving Appliances, of which the following is a specification:

The object of my invention is to construct a simple, portable, compact, and economical self-contained steam-engine and driving appliances; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a side view of my improved engine; Fig. 2, a vertical section; and Fig. 3, a plan view, looking in the inclined direction indicated by the arrow *x*, Fig. 1.

A is the base-plate of the engine, and to this base are secured the two frames B and B′, of a character substantially as shown in the drawing; and these frames are connected together by a downwardly-inclined double-cylinder engine, each engine having a cylinder, D, and guides E for the cross-head, which is connected by usual rod to the pin of a crank on the crank-shaft H. The cylinders of the two engines are connected together by the steam-chest I, which is furnished with the usual valves, driven by eccentrics on the crank-shaft.

It has not been deemed necessary to illustrate or describe the detailed portions of the engines proper, as they may be similar to those in common use, the cranks being at right angles to each other, as in other double-cylinder engines.

The bearings *a* of the crank-shaft are carried by the frames B and B′, and may be connected to or form part of the guides of the engine; but the manner of arranging and securing these bearings is immaterial, providing they be near the base, and below and in proper line with the inclined cylinder and guides.

To the crank-shaft, and between the bearings of the same, is secured the small driving-pulley J, a belt from which passes round the large pulley K on the shaft M, the latter having its bearings in, and being situated between, the opposite frames B and B′, and the belt being maintained in a proper tight condition by an idler-pulley, N, hung to arms, which are hinged to the frames. The shaft M may be connected to any system of gearing which the duty of the engine may suggest.

It will be observed that, by the arrangement illustrated and described of the downwardly-inclined double-cylinder engine and crank-shaft, sufficient space is afforded between the cylinders of the engine and the base-plate for the introduction of a pulley, K, of comparatively large diameter, the elevated cylinders also permitting the shaft M of the pulley to occupy such a position that its bearings can form a part of, or can be secured directly to, comparatively short frames. At the same time the situation of this shaft, in respect to the crank shaft J, is such that a driving-belt of appropriate length can be used in connection with the pulleys J and K. In fact, the peculiar combination of parts results in a self-contained engine, which is of peculiarly compact and economical character, and at the same time as effective in its operation as an engine occupying a much larger space.

I claim as my invention—

An engine in which are combined the base A, the two frames B and B′, the downwardly-inclined double-cylinder engine, the crank-shaft H, its pulley J situated between the frames, and the shaft M, with its pulley K, all substantially as set forth.

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

SAMUEL E. STOKES, JR.

Witnesses:

HARRY HOWSON, Jr.,

HARRY SMITH.