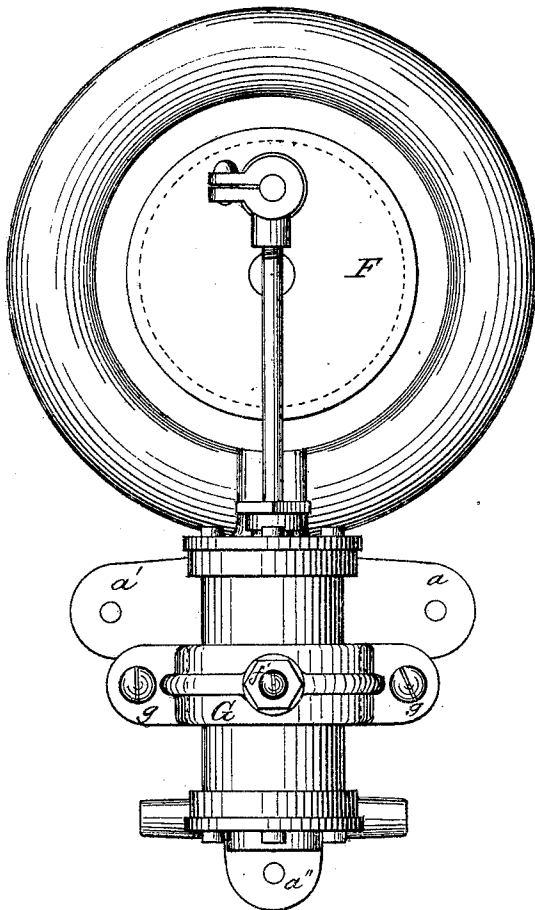
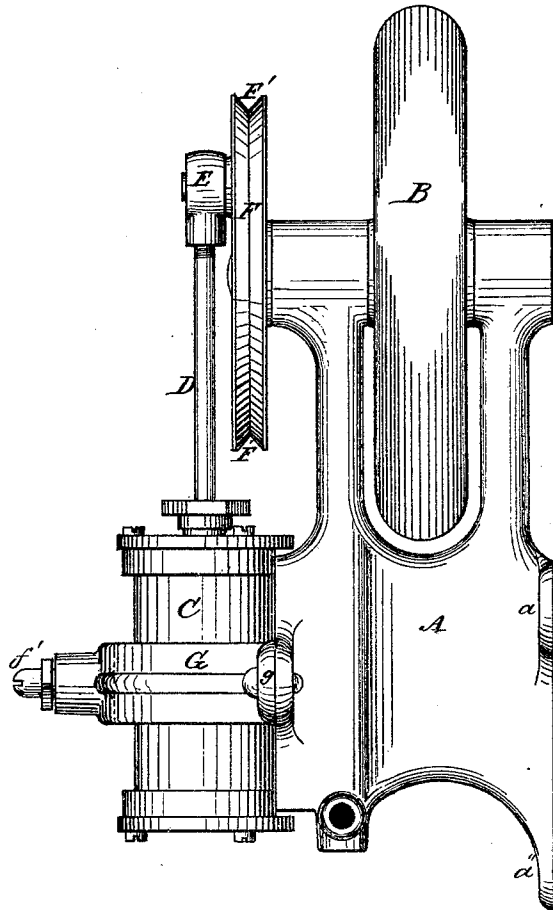


EZRA NICHOLSON.

Improvement in Steam Engines.

No. 121,891.

Patented Dec. 12, 1871.

Fig. 1.*Fig. 2.*

Witnesses:

L. Mygatt.
R. H. Whittlesay

Inventor:

E. Nicholson
by his atty
Chas B. Hill

UNITED STATES PATENT OFFICE.

EZRA NICHOLSON, OF CLEVELAND, OHIO, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO CHARLES B. STILWELL AND JOHN J. CLAUSE, OF SAME PLACE.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 121,891, dated December 12, 1871.

To all whom it may concern:

Be it known that I, EZRA NICHOLSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain Improvements in Steam-Engines, of which the following is a specification:

The first part of my invention relates to the construction of a practical steam-engine in such manner that the cost of manufacture shall be small, the operation of the machine simple in all its parts, and the wearing parts so arranged as to make it next to impossible to get out of order. The second part of my invention relates to the attachment of the engine to a sewing-machine, small lathe, or other light-running machinery, in such manner as to require no stand or frame-work other than that belonging to the engine and the machine to which the power is applied.

Figure 1 is a front view of the engine. Fig. 2 is a side view of the same. Fig. 3 is a front view of the frame of the engine with the cylinder and face-plate or crank-wheel removed. Fig. 4 is a vertical cross-section of Fig. 1. Fig. 5 is a horizontal cross-section through the cylinder and yoke or supporting-strap.

A is the frame of the engine, having suitable lugs *a a' a''*, by which the engine may be attached to the frame-work of the sewing-machine, lathe, &c. *b b'* are pillars, having the bearings *c c'* for the shaft H, upon which the balance-wheel B and crank-wheel F are arranged. I is the front or face of the frame forming the valve-seat, having suitable ports *i i'* drilled or bored to meet the vertical steam-passages *i''*, which connect with the horizontal passages *i'''*, to which the steam and exhaust-pipes are attached. C is the cylin-

der, having solid trunnions *f f*, one of which is journaled in the face I of the frame, and the other in a yoke, G, which is secured to the frame by the lugs *g g*. A set-screw, *f'*, is arranged in a boss in the yoke G, by which the cylinder is adjusted to compensate for the wear. The piston-rod D, having a piston-head, D', is connected to a wrist-pin, *d*, on the crank-wheel, by a suitable connection, E. The crank-wheel F is provided with a groove, F', by which it may be connected to the machinery to be run by a suitable belt.

This engine is designed to drive light machinery, more particularly sewing-machines and light lathes. The advantages are great simplicity and economy, and that it is not liable to get out of order. It may also be readily attached to the frame-work of any light machine, either with or without a suitable bracket, and in connection with the different styles of sewing-machines this great advantage will be apparent.

Having thus described my invention, I claim—

1. The frame A, having pillars *b b'*, journals *c c'*, and ports *i i' i''*, when constructed as herein shown and described.

2. The crank-wheel F, having wrist-pin *d* and groove F', in combination with the engine herein described, as and for the purpose set forth.

3. The combination of the frame A, cylinder C, shaft H, balance-wheel B, and crank-wheel F, when constructed and arranged substantially as set forth.

E. NICHOLSON.

Witnesses:

CHARLES A. STIBB,
AUG. G. KIEL.

(150)