DAVID R. FRASER.

Improvement in Steam-Engines.

No. 114,125. Patented April 25, 1871.

Fig. 1

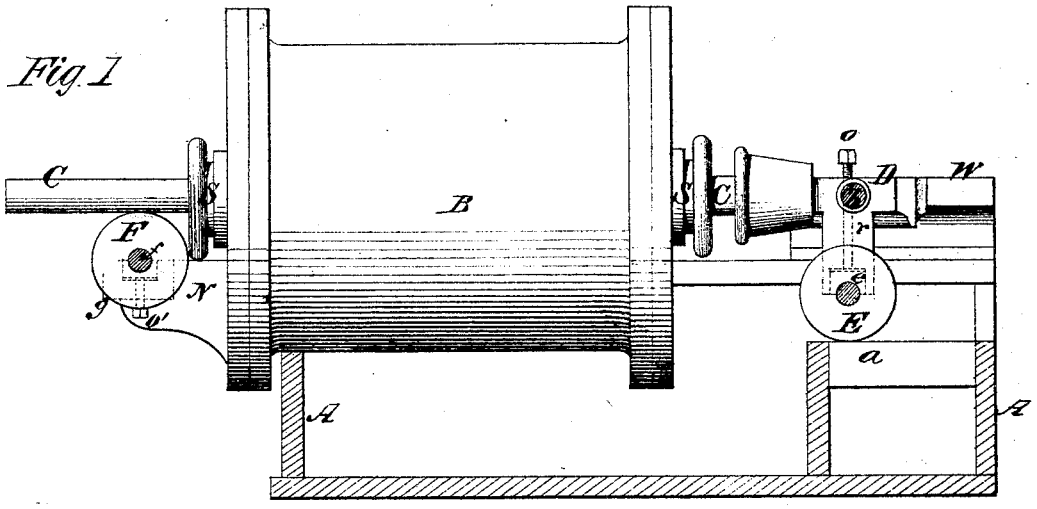


Fig. 2

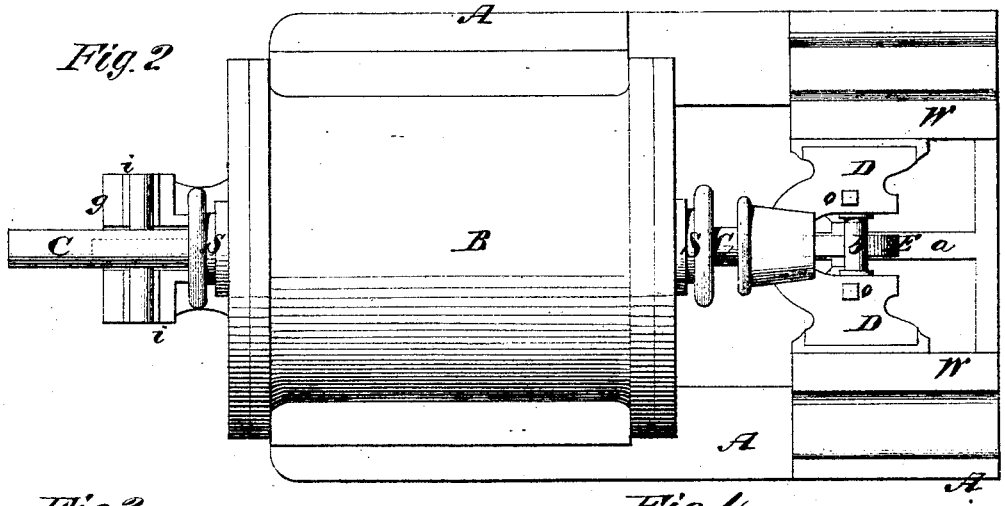


Fig. 3.

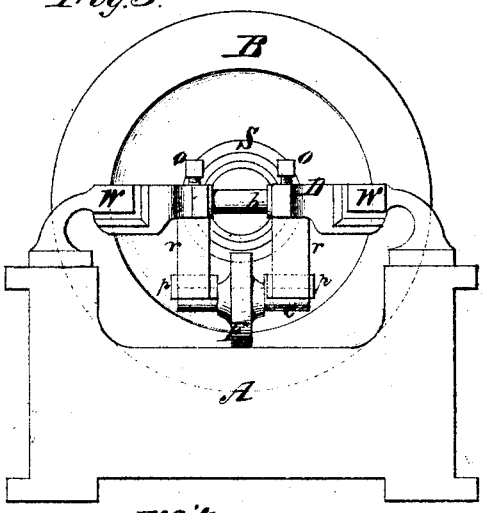
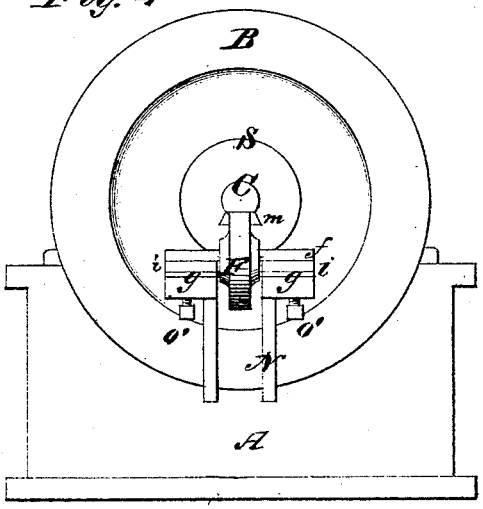


Fig. 4



Witnesses.
R. F. Campbell
F. N. Campbell

Inventor
D. R. Fraser
by
Munn, Fenwick & Lawrence.

UNITED STATES PATENT OFFICE.

DAVID R. FRASER, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND P. W. GATES, OF SAME PLACE.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. **114,125**, dated April 25, 1871.

To all whom it may concern:

Be it known that I, DAVID R. FRASER, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 is a side elevation, partly in section, of an engine having my invention applied to it. Fig. 2 is a top view. Fig. 3 is an elevation of one end, and Fig. 4 is an elevation of the other end.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to support both ends of the piston-rod of a horizontal engine in such manner that the piston and its rod and cross-head, and the surfaces on which they slide, are prevented from wearing untrue, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will explain its construction and operation.

In the accompanying drawing, A represents the bed or frame of a horizontal engine, and B represents a steam-cylinder, which is supported thereon, and which has a piston-rod, C, extended through stuffing-boxes S S, applied to both heads of this cylinder.

One end of the piston-rod C is applied to a cross-head, D, which works between slideways W W on the engine-frame A, and to this cross-head the pitman-rod is attached at *b*.

Depending from the cross-head D are two supports, *r r*, which have bearing-blocks *p p* inserted into their lower ends, which blocks receive beneath them the horizontal transverse axle *e* of an anti-friction wheel, E. This wheel E rolls upon a track, *a*, and supports the weight of the cross-head D and one end of the piston-rod on this track.

The bearing-blocks *p p* are vertically adjustable in the supports *r r*, and are adjusted by means of screws *o o*, which pass down through the cross-head and through said supports *r*.

At the opposite end of the cylinder B the piston-rod C is supported directly upon an anti-friction wheel, F, the axle *f* of which turns in bearing-blocks *i i*, which are fitted into recesses made into the upper sides of brackets N N.

By means of screws *o' o'*, the bearings *i i* can be adjusted upward.

In order to afford a good support for the rear end of the piston-rod C upon the periphery of the wheel F, the lower side of this rod is flattened, and the stuffing-box through which it slides is adapted to receive such flattened side.

By properly adjusting the bearing-blocks *p p* and *i i*, by means of the set-screws above described, the piston-rod C will be supported at both ends, together with the cross-head D, by rolling or anti-friction surfaces, thus relieving the stuffing-boxes and the cylinder from the friction which would be produced by the weight of the piston-rod and piston. Whatever wear there may be can be compensated for by the adjusting-screws *o o'*.

It will be seen from the above description that I not only greatly reduce the wear of the sliding surfaces, but I also provide for adjusting the rolling or anti-friction supports, so as to compensate for any wear which may result from long use of an engine.

The cross-head D does not rest upon the slideways W W, but is held up against the lower sides of said ways by the anti-friction roller or wheel E on the track *a*. This arrangement of the cross-head not only allows that end of the piston-rod which is attached to it to be supported by the wheel F, but also prevents any tendency of the cross-head to rise or rock in consequence of the oblique direction of the forces acting on it.

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

1. The piston-rod C, extended through both ends of the cylinder B, and supported by means of rolling-surfaces, in combination with adjusting-screws *o o'*, substantially as described.

2. The cross-head D, supported, together with its end of the piston-rod C, upon a track, *a*, by means of a wheel, E, and adjustable bearing-blocks *p p*, substantially as described.

3. The arrangement and combination of the front and rear rollers E and E, piston-rod C, extended through the cylinder B, cross-head D, and ways W W and *a*, whereby the piston-rod is supported at both ends upon friction-rollers, which are below and directly in line with it, substantially as and for the purpose set forth.

DAVID R. FRASER.

Witnesses:
F. H. SLOPER,
THOS. SUTTON.