T. J. YOUNG.

Vertical Steam-Engines.

No. 156,072. Patented Oct. 20, 1874.

Fig 1

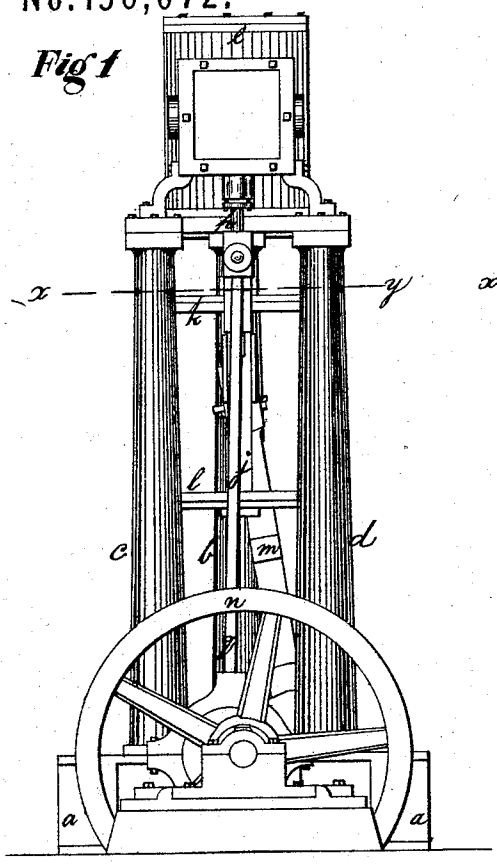


Fig 2

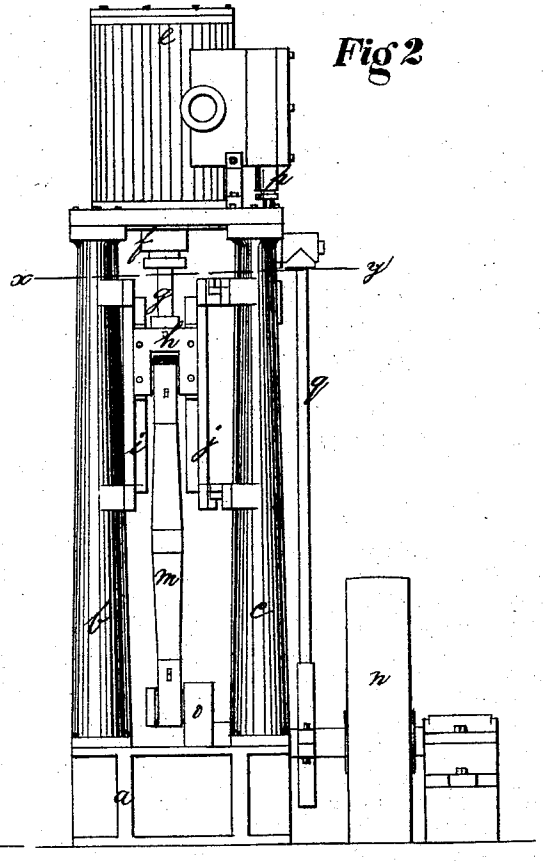
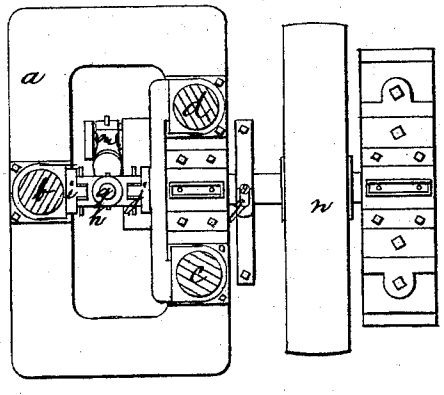


Fig 3



Witnesses:

Wm. E. Moore

J. E. Shaw.

Inventor:

Thomas J. Young

UNITED STATES PATENT OFFICE.

THOMAS J. YOUNG, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN VERTICAL STEAM-ENGINES.

Specification forming part of Letters Patent No. **156,072**, dated October 20, 1874; application filed May 22, 1873.

To all whom it may concern:

Be it known that I, THOMAS J. YOUNG, of Philadelphia, Pennsylvania, have invented an Improvement in Vertical Steam-Engines, of which the following is a specification:

I have in view two principal objects in the construction of my engine, viz: First, to construct it so that it shall occupy a minimum of space as compared with other vertical engines of like power, and shall, therefore, be adapted for use in tug-boats, and in buildings where space is a material object; second, to construct it so that the stuffing-box can be easily got at for repacking and repairs and the cross-heads and guides easily removed for repairs without in any case disturbing the cylinder.

The several working parts of my engine separately considered are constructed as usual. My invention consists of a combination of these parts with three (3) columns arranged with the two-fold purpose of supporting the cylinder, and inclosing a triangular space below the cylinder for the piston-rod, cross-head, guides, and connecting-rod.

Figures 1 and 2 are, respectively, rear and end elevations of the engine; and Fig. 3, a horizontal section of the same on the line *x y* of the other views.

Referring to the drawings, *a* is the bed-plate; *b c d*, the three columns employed to support the cylinder and steam-chest. *e f* is the cylinder stuffing-box; *g*, the piston-rod; *h*, the cross-head; *i* and *j*, the guides; *k* and *l*, the braces attached to the back columns *c* and *d* for supporting the guide *j*. *m* is the connecting-rod; *n*, the fly-wheel; *o*, the crank; *p*, the valve-stem, and *q* the eccentric-rod.

I do not, broadly, claim the provision of three columns instead of two or four, as, without any peculiarity of arrangement, there would, I admit, be neither invention nor merit displayed; but

What I do claim as new, and desire to secure by Letters Patent, is—

In an upright steam-engine, the improved arrangement of parts, comprising the three columns *b c d*, standing upon the base *a*, in the relation of the angles of a triangle, and connected together at the extremities only; the cylinder and valve-chest supported above and upon said columns; the transverse bars or braces *k l* connecting the columns *c d;* the guides *i j* attached, respectively, to the column *b* and bars *k l*, and the head *h*, traveling between said guides in the center of the space included by the three columns, all combined substantially as shown and described, and for the purpose specified.

THOMAS J. YOUNG.

Witnesses:

WM. E. MOORE,

J. E. SHAW.