

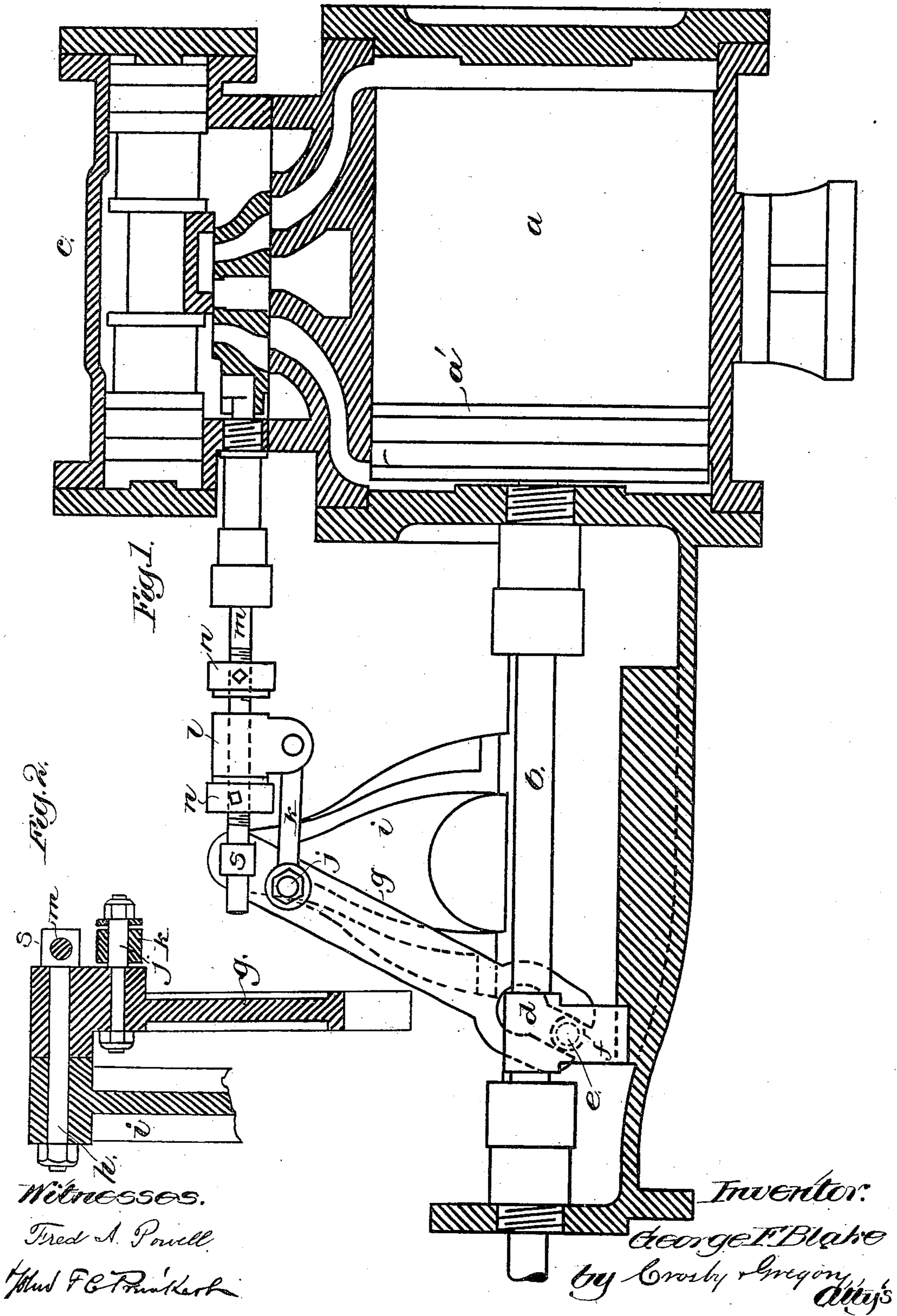
(No Model.)

2 Sheets—Sheet 1.

G. F. BLAKE.  
STEAM PUMPING ENGINE.

No. 270,574.

Patented Jan. 16, 1883.



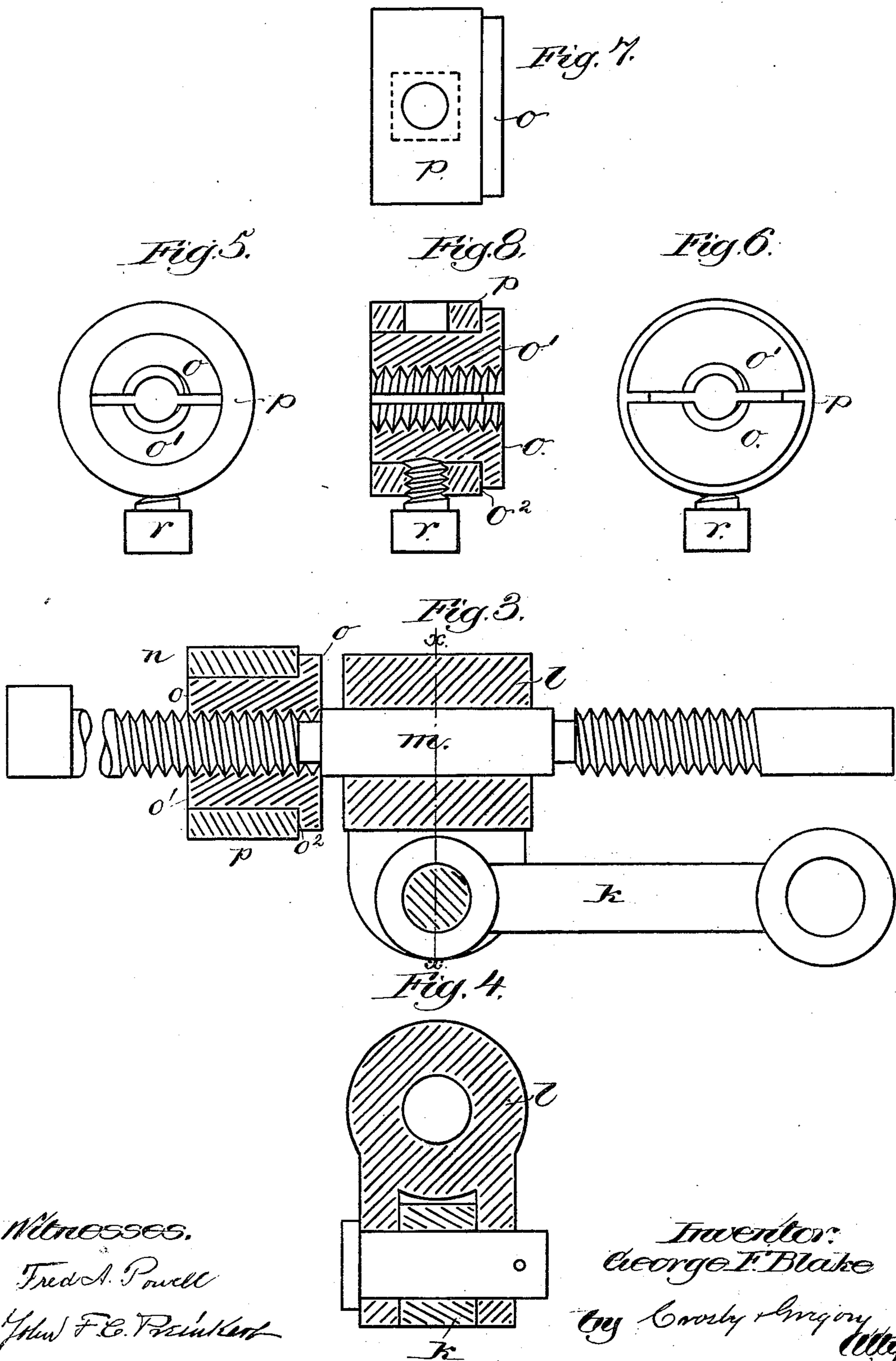
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# UNITED STATES PATENT OFFICE.

GEORGE F. BLAKE, OF BELMONT, MASSACHUSETTS.

## STEAM PUMPING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 270,574, dated January 16, 1883.

Application filed September 26, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. BLAKE, of Belmont, county of Middlesex, State of Massachusetts, have invented an Improvement in Steam Pumping-Engines, of which the following description, in connection with the accompanying drawings, is a specification.

My invention relating to steam-pumps has for its object to simplify the construction of certain parts of the valve-operating mechanism.

Figure 1 is a side elevation of a pump, a portion of the frame-work being broken away; Fig. 2, a transverse section of a portion thereof; Fig. 3, a longitudinal section of the valve-stem, valve rod collars, and sliding tappet; Fig. 4, a cross-section thereof on the dotted line *x x*; Figs. 5 and 6, opposite end views of the adjustable valve-rod collars for the valve-stem; Fig. 7, a plan view, and Fig. 8 a longitudinal section thereof.

The steam-cylinder *a*, piston *a'*, with its rod *b*, and the valve-actuating engine *c* are of any suitable construction—such, for example, as shown in Letters Patent No. 123,764, granted to me February 20, 1872, to which reference may be had.

The piston-rod *b* is provided with a collar, *d*, having a laterally-projecting stud, *e*, carrying a friction-roller, *f*, that enters a slot or fork at the end of a lever, *g*, having a bearing on a fulcrum-pin, *h*, fixed upon a bracket, *i*, forming a part of the frame-work.

The lever *g* is provided with a wrist-pin, *j*, connected by a link, *k*, with a tappet, *l*, loose on the valve-stem *m*, the said tappet sliding along the valve-stem until it strikes one of the valve-rod collars *n*, after which the valve-stem moves with the tappet, thus reversing the flow of steam to and from the ends of the auxiliary engine and causing it to operate the valve for the main engine.

In order to regulate the time of the movement of the valve-stem relative to that of the piston and piston-rod of the engine, the valve-rod collars *n* are made adjustable along the said valve-stem, which is screw-threaded for this purpose, the said collars being internally threaded.

In order to obviate the necessity of threading the valve-stem for its entire length, or reducing its diameter sufficiently to enable an ordinary solid nut to be passed over it to the

threaded portion, the said collars are made, as shown in Figs. 2 to 8, of a nut divided longitudinally into two half-nuts, *o o'*, which can be placed together on the threaded portion of the valve-stem, after which they are inclosed in a band or ring, *p*, of sufficient size to pass over the unthreaded portion of the valve-stem, and are thus operatively held together, so that they may be adjusted along the threaded portion of the valve-stem like a solid nut. The said half-nuts are shown as shouldered at *o<sup>2</sup>* upon their outside, where they connect with the end of the ring *p*, though this is not necessary, and said ring *p* is held in place upon them by a set-screw, *r*. The ring *p* might have wrench-faces, if desired, and it might have internal angular faces to fit upon the outside of the halves of a nut of ordinary shape.

The fulcrum-pin *h* for the valve-actuating lever *g* is extended through the said lever, and provided with a guide, *s*, for the valve-stem *m*; but in some instances the said guide might be omitted and a suitable guide be erected at some other point on the frame-work.

I claim—

1. In a steam-pump, the combination, with the piston-rod, of the valve-actuating lever *g*, operated thereby, the fixed fulcrum-pin *h* therefor, the wrist-pin *j*, mounted upon the said lever, and tappet *l*, connected therewith, substantially as and for the purpose described.

2. In a steam-pump, the valve-actuating lever and its fulcrum-pin *h*, fixed upon the frame-work, combined with the valve-stem and guide therefor mounted upon the said fulcrum-pin, substantially as described.

3. The combination, with a valve stem or rod threaded for a portion of its length, of the half-nuts and their inclosing band, substantially as described.

4. The half-nuts, shouldered upon their outside, as shown, combined with their inclosing band, whereby they are operatively held together when mounted on a threaded rod, substantially as described.

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

GEO. F. BLAKE.

Witnesses:

G. W. GREGORY,  
JOS. P. LIVERMORE.