(No Model.) 2 Sheets—Sheet 1.

E. W. NAYLOR.

VALVE.

No. 462,727. Patented Nov. 10, 1891.

Fig. 1

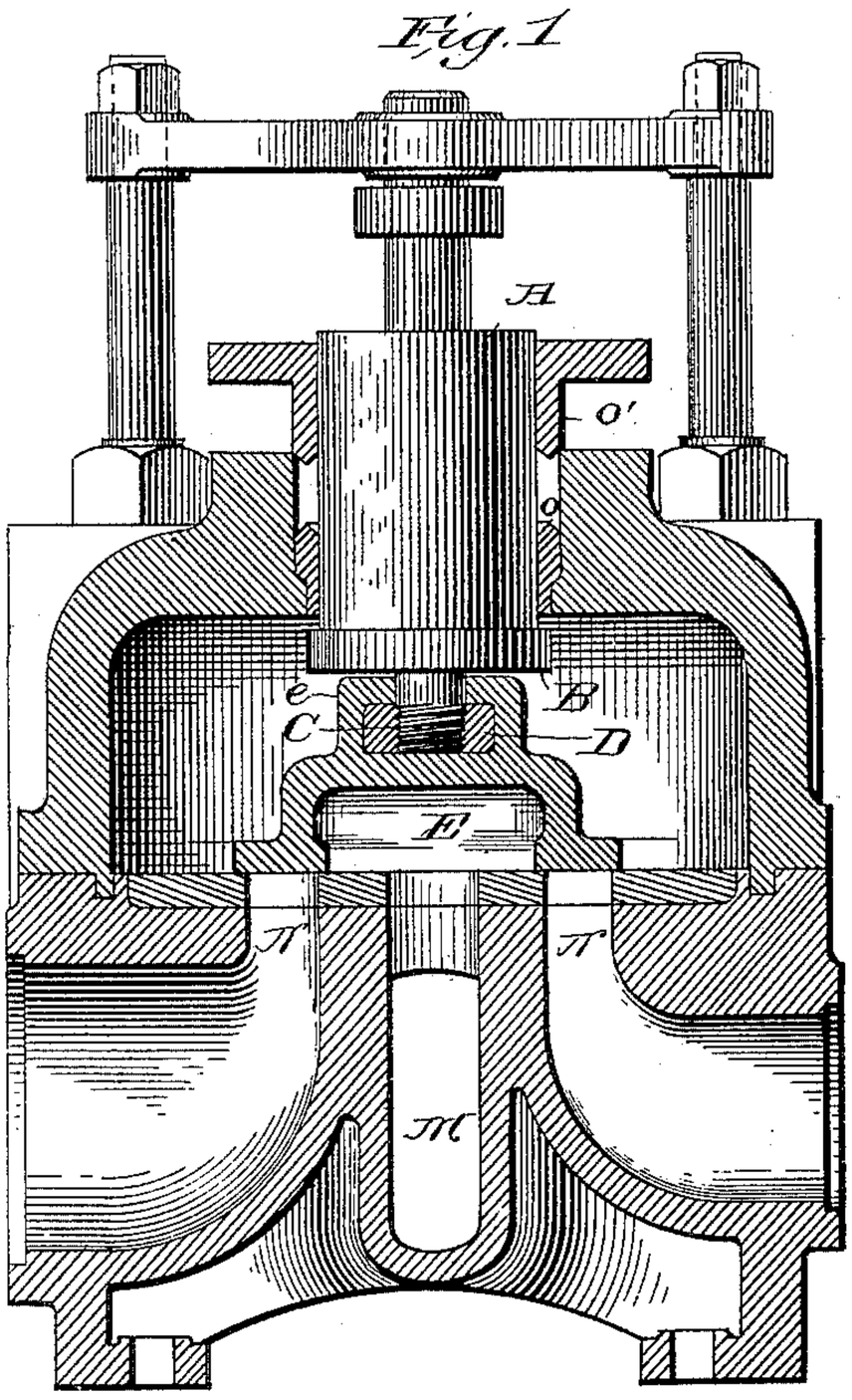


Fig. 2.

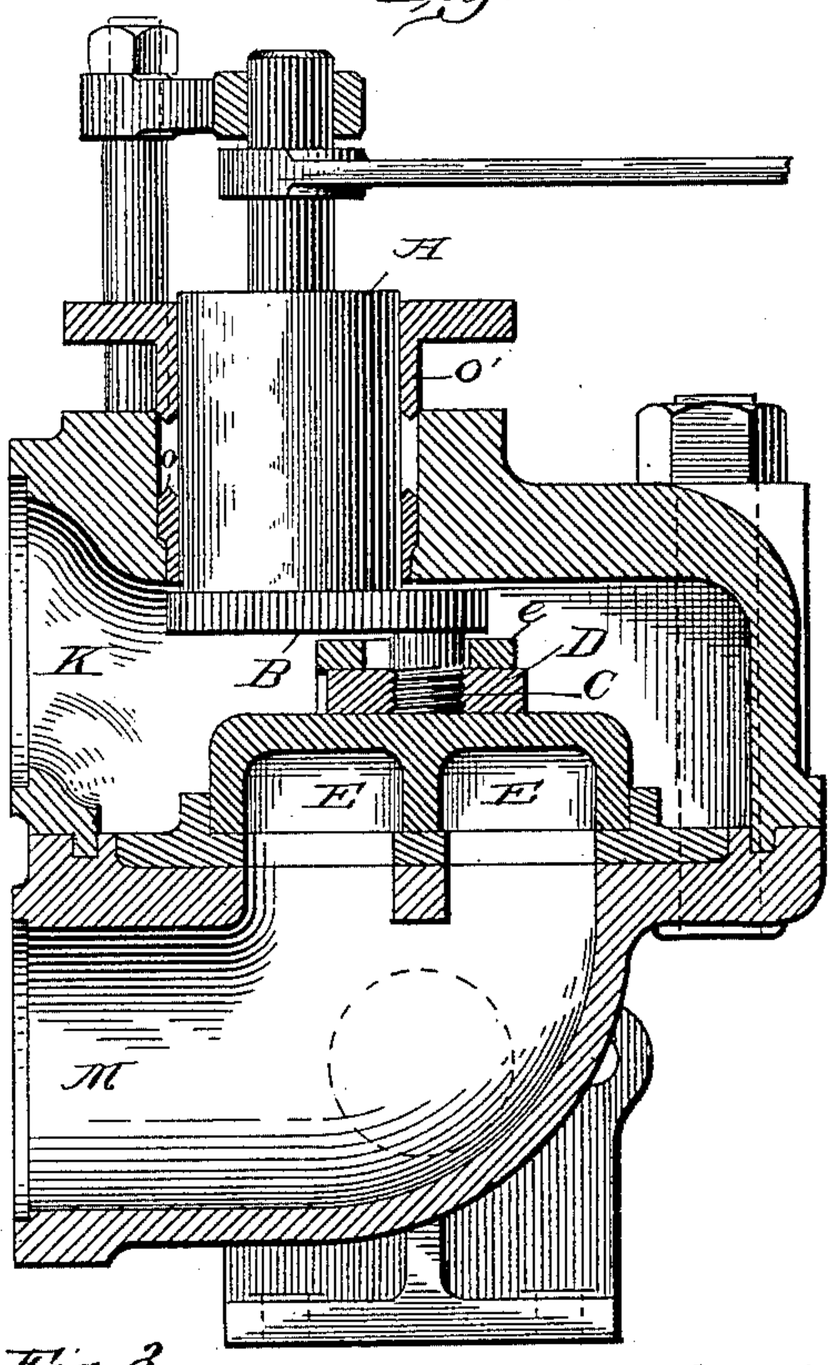
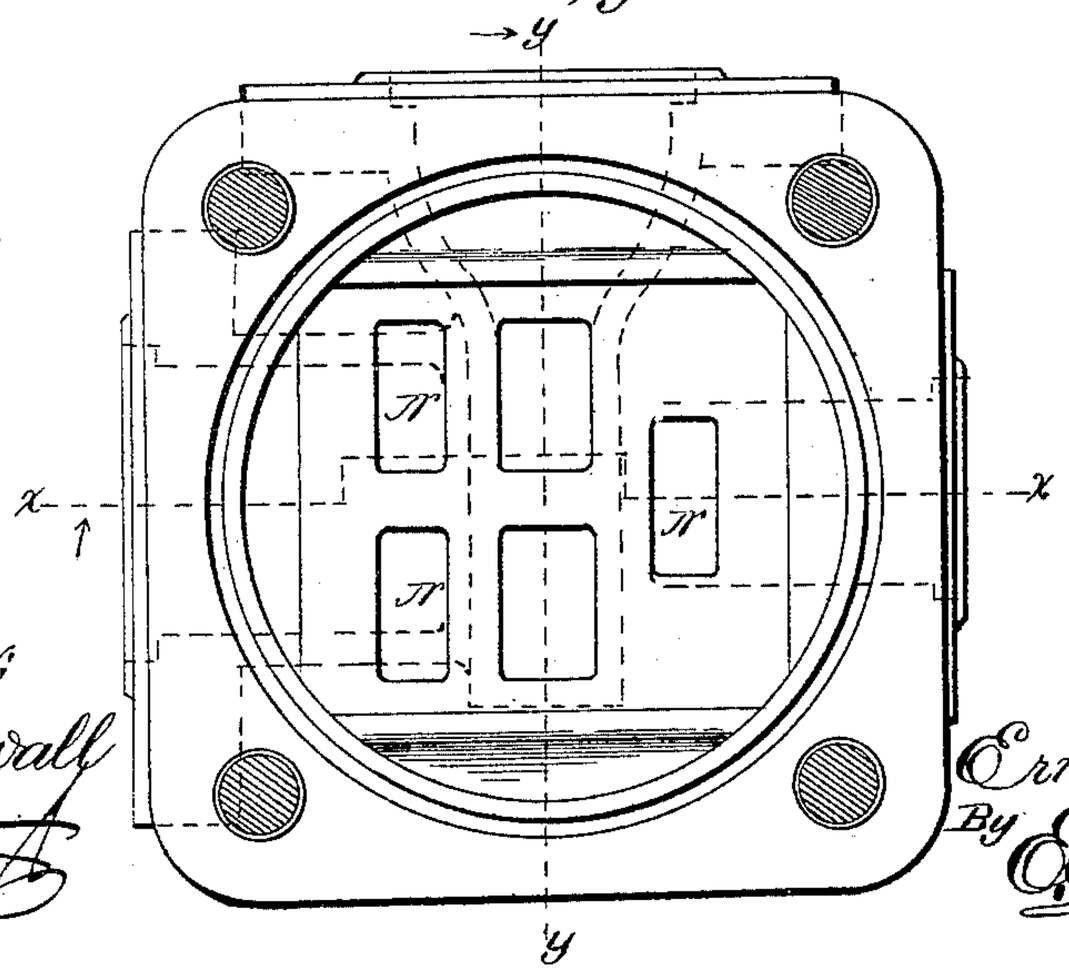


Fig. 3



Witnesses:
F. R. Cornwall
F. W. Ritter

Inventor
Ernest W. Naylor
By E. D. Walker
Attorney.

(No Model.) 2 Sheets—Sheet 2.

E. W. NAYLOR.

VALVE.

No. 462,727. Patented Nov. 10, 1891.

Fig. 4.

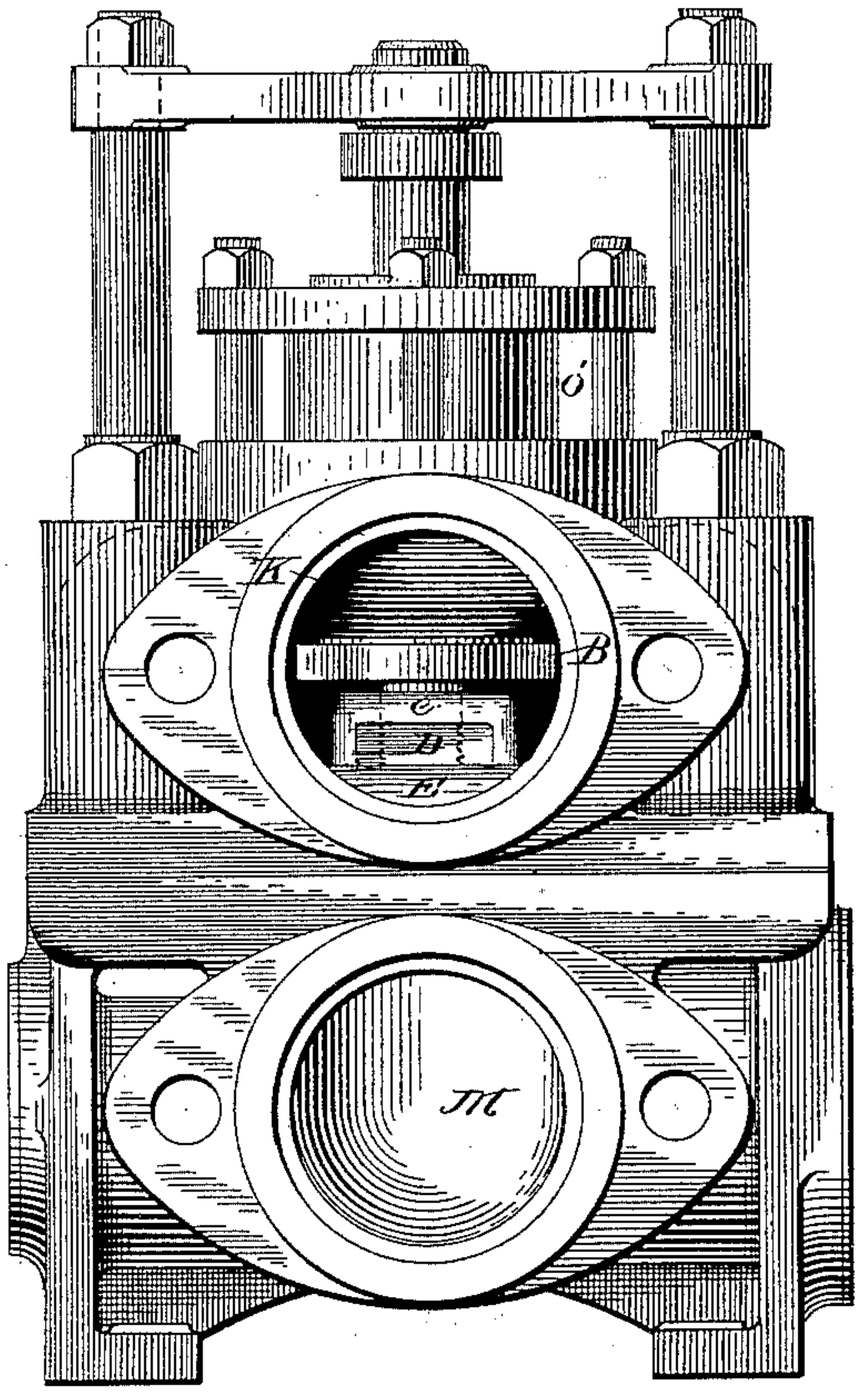
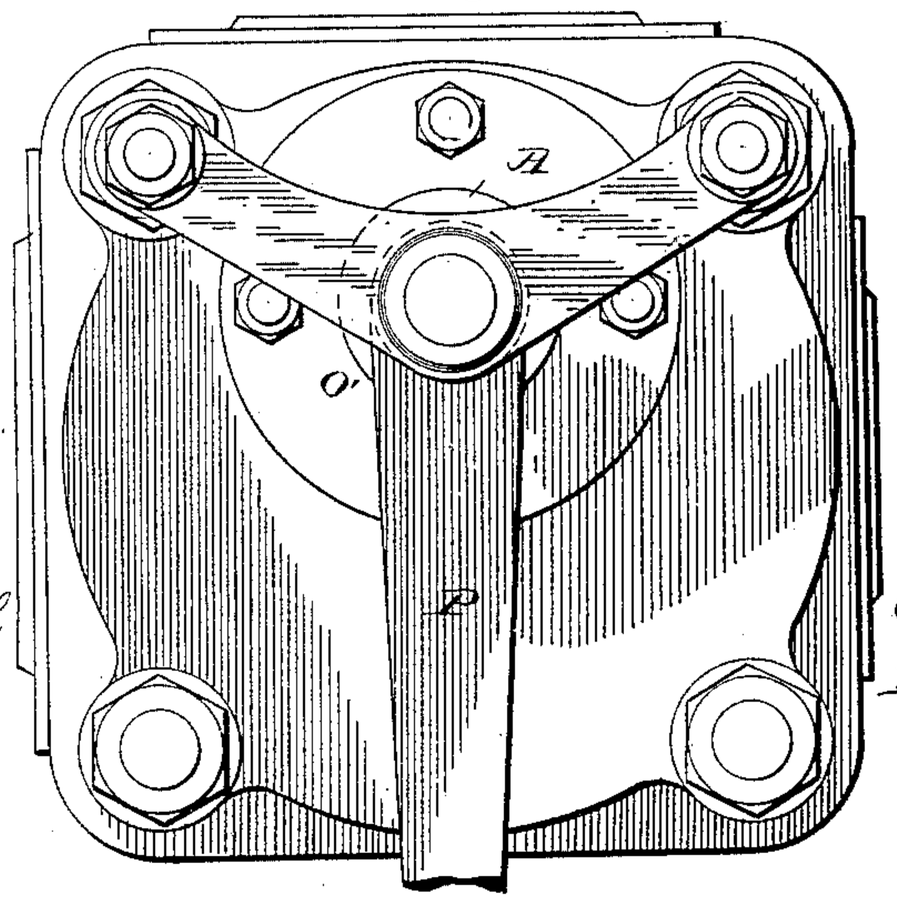


Fig. 5



Witnesses
F. P. Cornwall
F. W. Ritter

Inventor
Ernest W. Naylor
By C. Walker
Attorney

UNITED STATES PATENT OFFICE.

ERNEST W. NAYLOR, OF CLEVELAND, OHIO.

VALVE.

SPECIFICATION forming part of Letters Patent No. 462,727, dated November 10, 1891.

Application filed February 28, 1891. Serial No. 383,265. (No model.)

To all whom it may concern:

Be it known that I, ERNEST W. NAYLOR, of Cleveland, Ohio, have invented a new and useful Improvement in Valves for High Pressures, of which the following is a specification.

This invention relates to slide-valves, its object being to provide a valve that is so balanced by the steam or fluid as to relieve the valve-seat of its friction, as will be hereinafter explained.

The accompanying drawings, which form a part of this specification, illustrate my invention in several figures, with similar letters of reference to indicate corresponding parts, as follows:

Figure 1 represents a longitudinal vertical section showing the spindle A, on the lower end of which is the crank B, Fig. 2, provided with the pin C, which is screwed into the block D, arranged to slide transversely in the head of the valve E, which is shown in Fig. 1 as covering the ports N N. Fig. 2 illustrates a transverse vertical section showing the same parts in the same position, but giving a better view of the crank B, of the spindle A, and the block D, which slides transversely in the top of the slide-valve E. Fig. 3 is a top view of the valve-seat, showing the supply and exhaust ports N N N, which are of the usual form and do not enter as a part of this invention, except as to illustrate the operation of the valve. Fig. 4 represents a side elevation showing the pressure-inlet K and the exhaust-outlet M; and Fig. 5 represents a top view showing the position of the hand-lever P.

The casing C of the steam-chest is made of cast-iron in the usual or any desired form; but is provided in its upper surface with an opening in which the body of the spindle A is fitted and made steam-tight with the packing-rings O and O′. The spindle is located a little to one side, so that the "throw" or line of travel of the pin C is directly over the supply and exhaust ports N N N. The upper surface of the valve E is provided with a hood, as *e*, in the upper side of which is an elongated hole, into which the pin C fits, touching on two sides only and having sufficient lateral play to permit the arm B to swing freely. Within the hood *e* the block D is fitted so as to slide transversely to the slide of the valve, and into the block D the pin C is screwed. Thus when the valve slides over its seat the block D will slide transversely within the hood, so as to accommodate the throw of the arm B.

The under surface of the spindle A, which is open to the live steam or fluid-pressure, has about the same area as the upper surface of the valve, so that by properly adjusting the block D to the pin C the spindle A lifts the valve sufficiently to relieve it of the usual seat friction.

The hand-lever P will throw the valve in either direction to stop or start the engine or machine to which the valve is attached.

Having thus described my invention, what I claim, and desire to protect, is—

1. The spindle A, provided with an arm, as B, attached by means of a pin, as C, to the block D, arranged to slide transversely within the hood *e*, the upper surface of the block D bearing against the under surface of the hood *e*, so that the steam-pressure against the under surface of the spindle A will raise the valve sufficiently to relieve it of the usual seat friction.

2. The combination of the spindle A, provided with the arm B and pin C, with the block D, arranged to slide transversely under a suitable projection formed on the valve E, so as to accommodate the throw of the arm B and relieve the valve E of its seat friction, all as herein set forth and specified.

3. The combination of the valve E, provided with the hood *e*, with the block D, trunnioned to the arm B of the spindle A, the latter provided with the hand-lever P and held in place by the packing-rings O and O′, as set forth and specified.

In testimony that I claim the foregoing improvement in steam-valves as above described I have hereunto set my hand this 28th day of January, 1891.

ERNEST W. NAYLOR.

Witnesses:

WALTER A. BIDDLE,

L. S. FISH.