(No Model.)

2 Sheets—Sheet 1.

G. S. STRONG.

ENGINE VALVE.

No. 385,967. Patented July 10, 1888.

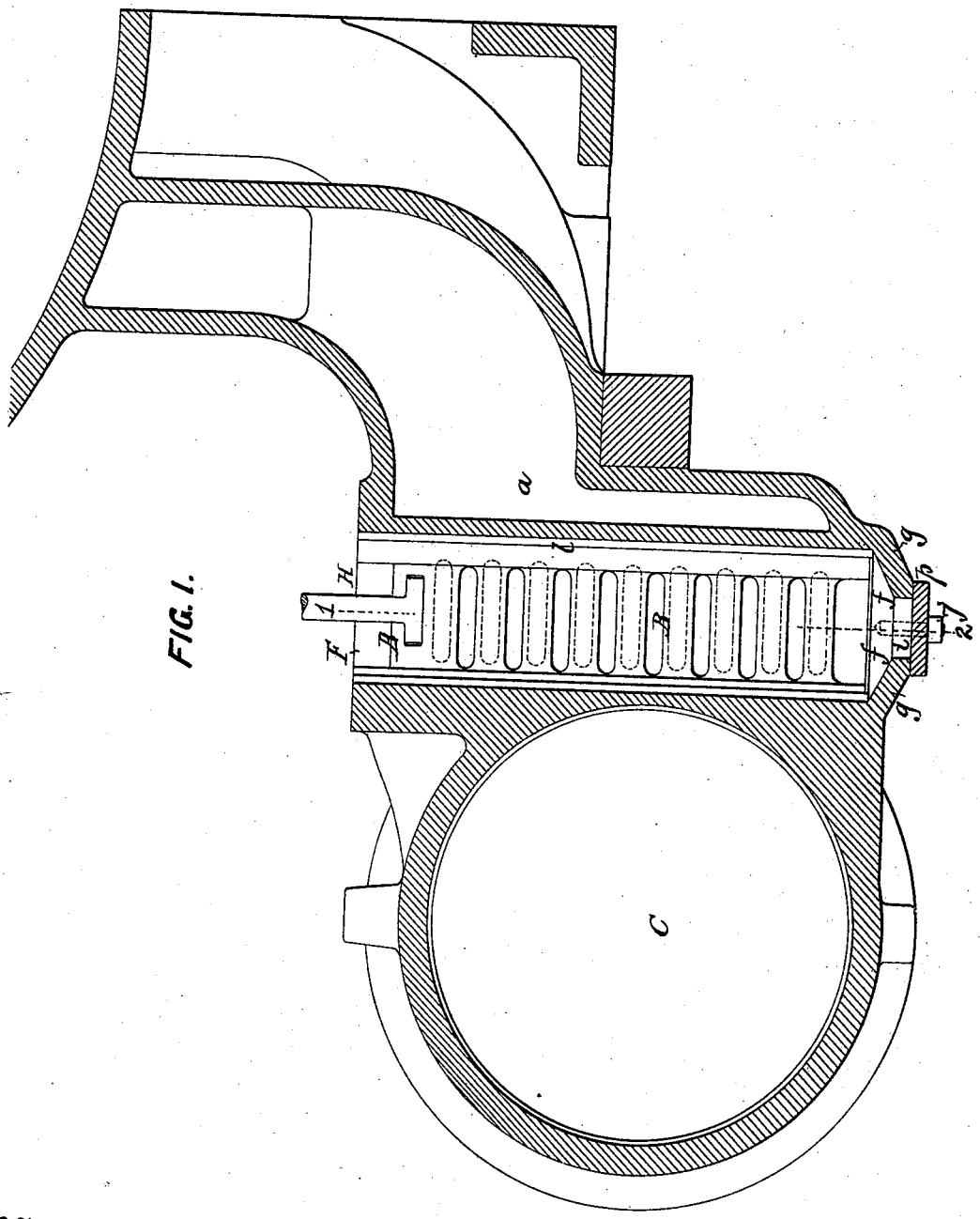


FIG. 1.

Witnesses:
E. J. Griswold.
Wm. Chester Wells.

Inventor:
George S. Strong
By his Attorneys
Howson and Howson

(No Model.)

2 Sheets—Sheet 2.

G. S. STRONG.

ENGINE VALVE.

No. 385,967. Patented July 10, 1888.

FIG. 2.

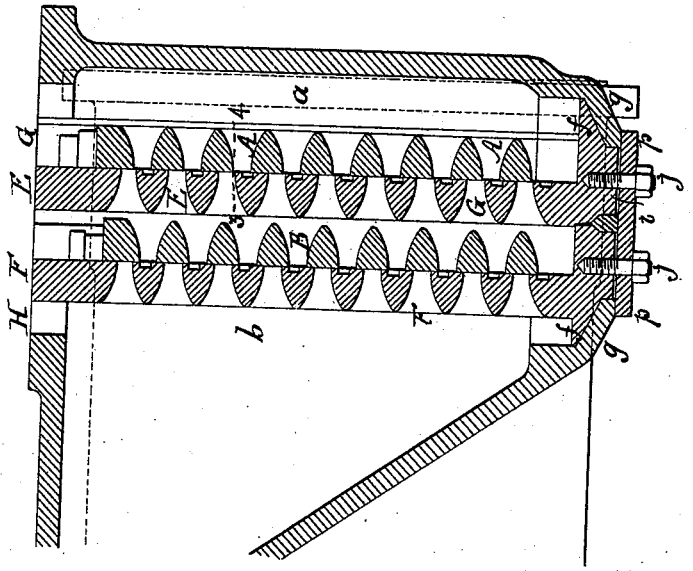


FIG. 3.

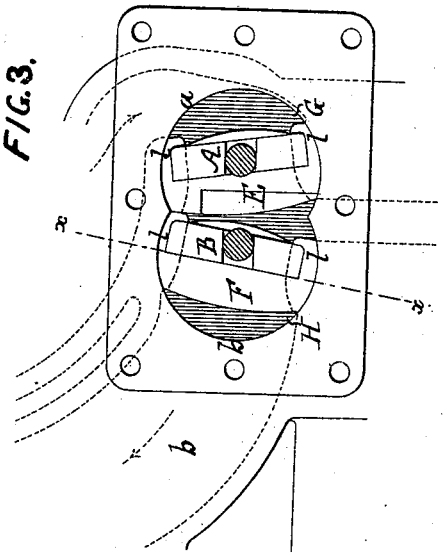
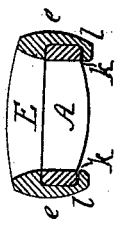


FIG. 4.



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E. J. Griswold.
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Inventor:
George S. Strong.
By his Attorneys
Howson and Howson.

UNITED STATES PATENT OFFICE.

GEORGE S. STRONG, OF NEW YORK, N. Y.

ENGINE-VALVE.

SPECIFICATION forming part of Letters Patent No. 385,967, dated July 10, 1888.

Application filed January 23, 1888. Serial No. 261,639. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. STRONG, a citizen of the United States, and a resident of New York city, New York, have invented Improvements in Engine-Valves, of which the following is a specification.

The object of my invention is to so construct the valve and valve-seat of an engine that the valve can be fitted to its seat prior to attaching the seat to the cylinder, and that the valve-seat will be self-sustaining in its place, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a transverse sectional view of a steam-engine cylinder provided with my improvements. Fig. 2 is a section on the line 1 2, Fig. 1. Fig. 3 is a plan view of one corner of the cylinder-casing, showing the inlet and exhaust valves; and Fig. 4 is a detached section on the line 3 4, Fig. 2.

C is the cylinder, having at each end the usual inlet-ports, *a*, and exhaust ports *b*, the inlets and exhausts being governed by the slide-valves A and B, respectively, A being the inlet-valve and B the outlet. These slide-valves A and B are seated in independent seats E and F, respectively, adapted to suitable orifices, G H, in the cylinder-casing. The valve and seats are of the ordinary gridiron pattern, having a series of openings formed by bars for the passage of steam to or from the cylinder. The valve seats are oblong in cross-section, as shown in Fig. 4, and their edges *e e* are segmental or rounded to fit snugly, like plugs, in the cylindrical orifices G H, which are bored out in the casing. The lower ends, *f*, of the seats are tapered or shouldered to correspond with the bottom *g* of the orifices, Figs. 1 and 2, and each seat has an extension, *i*, adapted to enter an opening in the bottom of the casing. A bolt, *j*, passing through a plate or washer, *p*, secures the seat firmly to the cylinder-casing. The seat can be set to any desired angle in respect to the opening into the cylinder previous to securing the seat firmly to the casing by the bolt *j*. The seat, it will be seen on reference to Fig. 3, extends on both sides of a central plane, 6, drawn through the cylindrical orifice, which it occupies, and is thus self-sustaining in its place. This bearing-surface of the seat on both sides of the central plane, 6, extends throughout the length of the seat, so that the latter is strong enough to resist heavy steam-pressures and rigid enough to preserve truly a plane surface for the valve to work on.

Each valve is wholly within its seat, being adapted to slide in grooves at each side, as shown in Fig. 4, formed by the face of the seat and the flanges *l l*. The valve is not held rigidly to the seat by these flanges, but is kept up thereto by the steam-pressure of the engine, for the valves are so set in respect to the parts that the pressure of the steam will tend to keep the valve A on its seat, while the pressure of exhaust-steam will tend to keep the valve B to its seat. In the case of the steam-valve I prefer to leave a little play between the overlapping edges of the flanges and the valve, as shown in Figs. 3 and 4; but this is not essential. The valves can have the necessary reciprocating motion imparted to them by any of the usual valve-operating mechanisms now in use.

By the above-described construction I am enabled to fit slide-valves to their seats previous to the placing of them in the cylinder, and the seats being adapted to cylindrical orifices fit like plugs, so that much fine workmanship and skill are dispensed with, and a worn out valve and seat can readily be replaced without the usual delay attending repairs of ordinary valves and seats.

I claim as my invention—

1. The combination of the casing of an engine-cylinder having a cylindrical orifice with a removable valve-seat having segmental or curved edges adapted to fit snugly to the sides of said orifice and extending throughout the length of the seat on both sides of a central plane through the orifice, and a slide-valve wholly within the seat.

2. The engine-cylinder having inlet and exhaust passages and an orifice with a conical or shouldered bottom, in combination with a corresponding valve-seat adapted to the orifice, plate and bolt securing the seat to the casing, and a slide-valve carried by said seat.

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

GEO. S. STRONG.

Witnesses:
WM. CHESTER WELLS,
HUBERT HOWSON.