

(No Model.)

2 Sheets—Sheet 1.

J. H. BLESSING.

STEAM TRAP.

No. 295,224.

Patented Mar. 18, 1884.

Fig 4

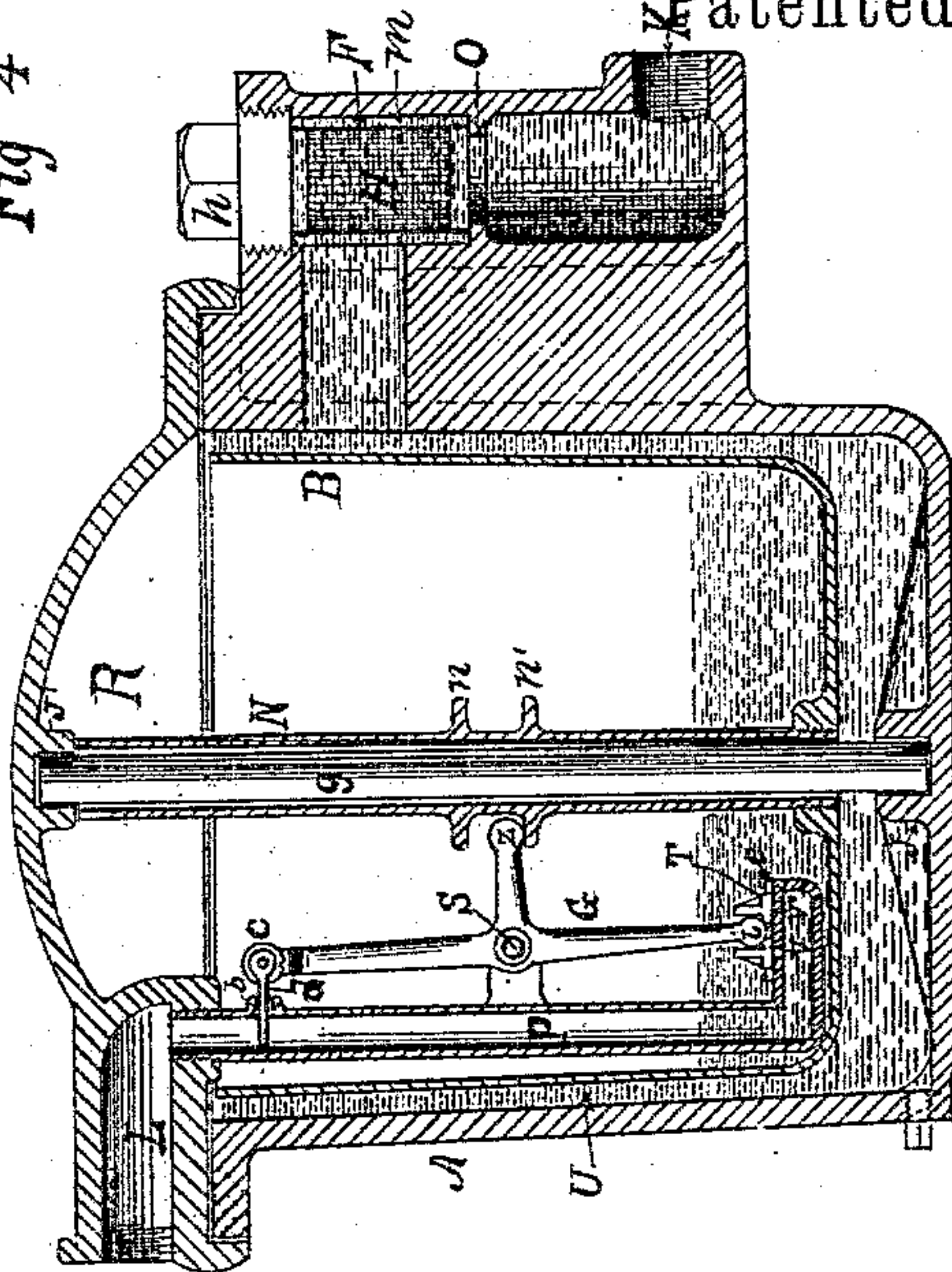


Fig 2

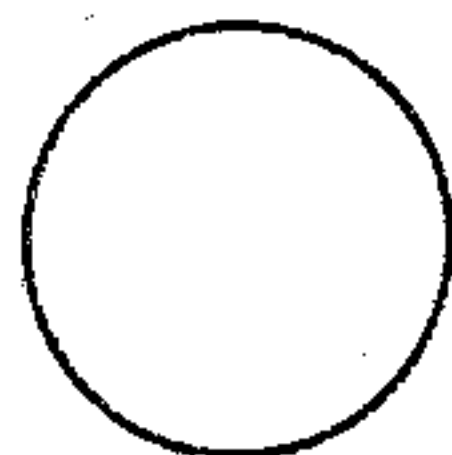


Fig 3

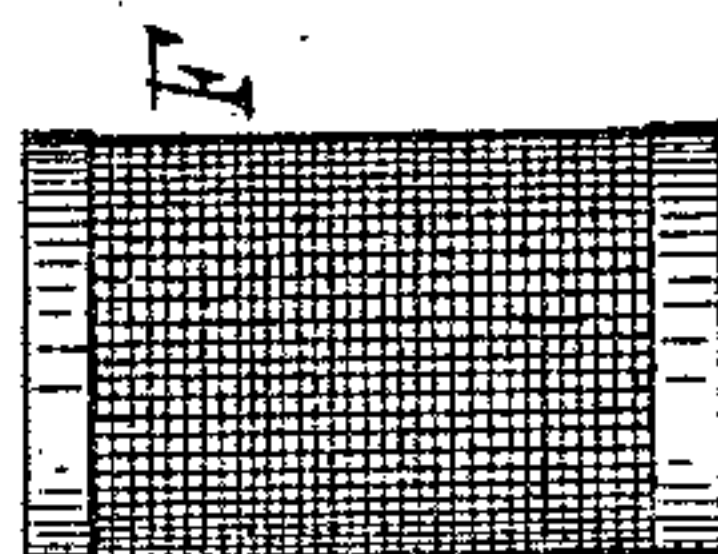
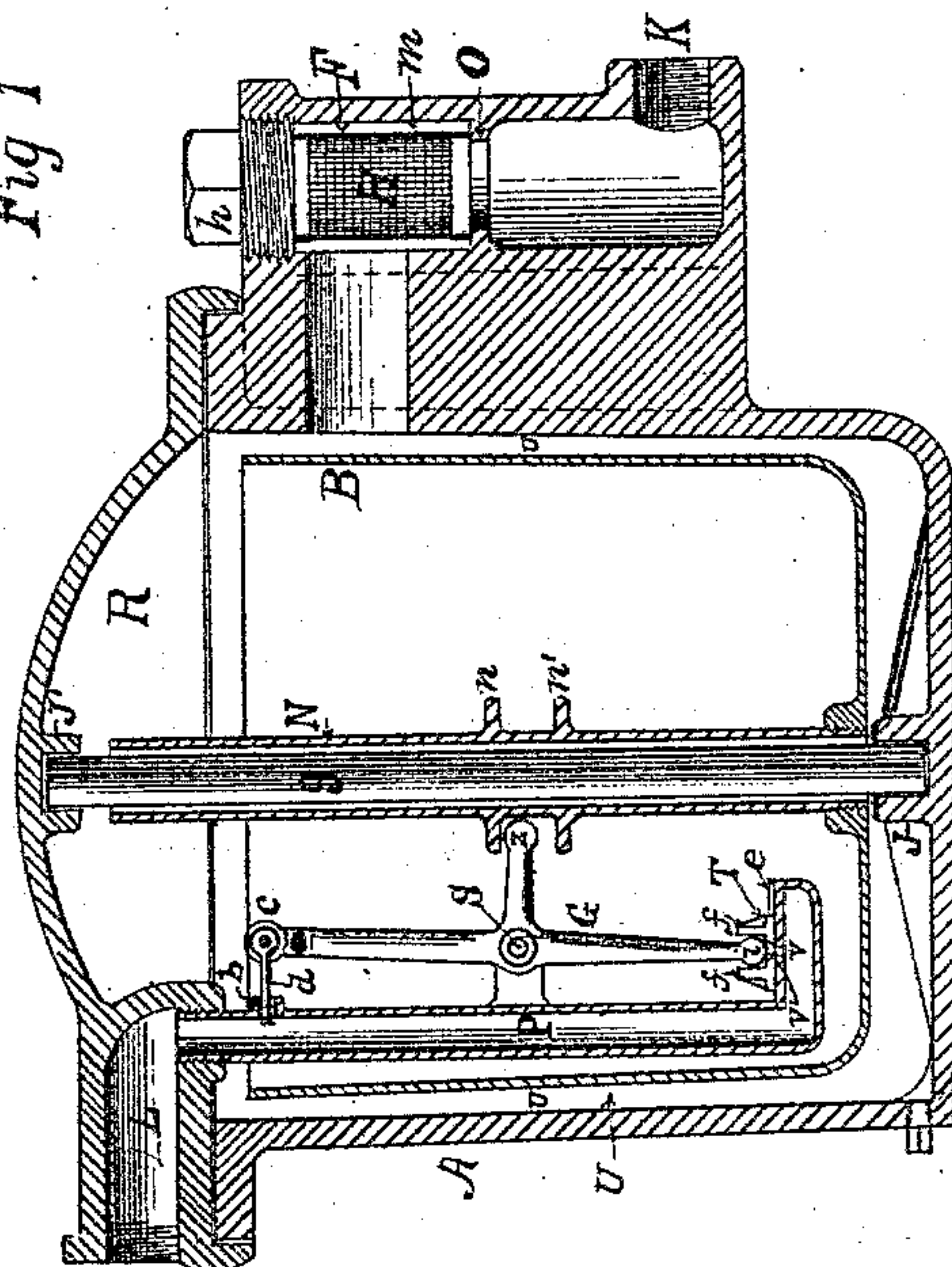


Fig 1



Witnesses

John W. Wheelock
James Clark

Inventor

James H. Blessing

(No Model.)

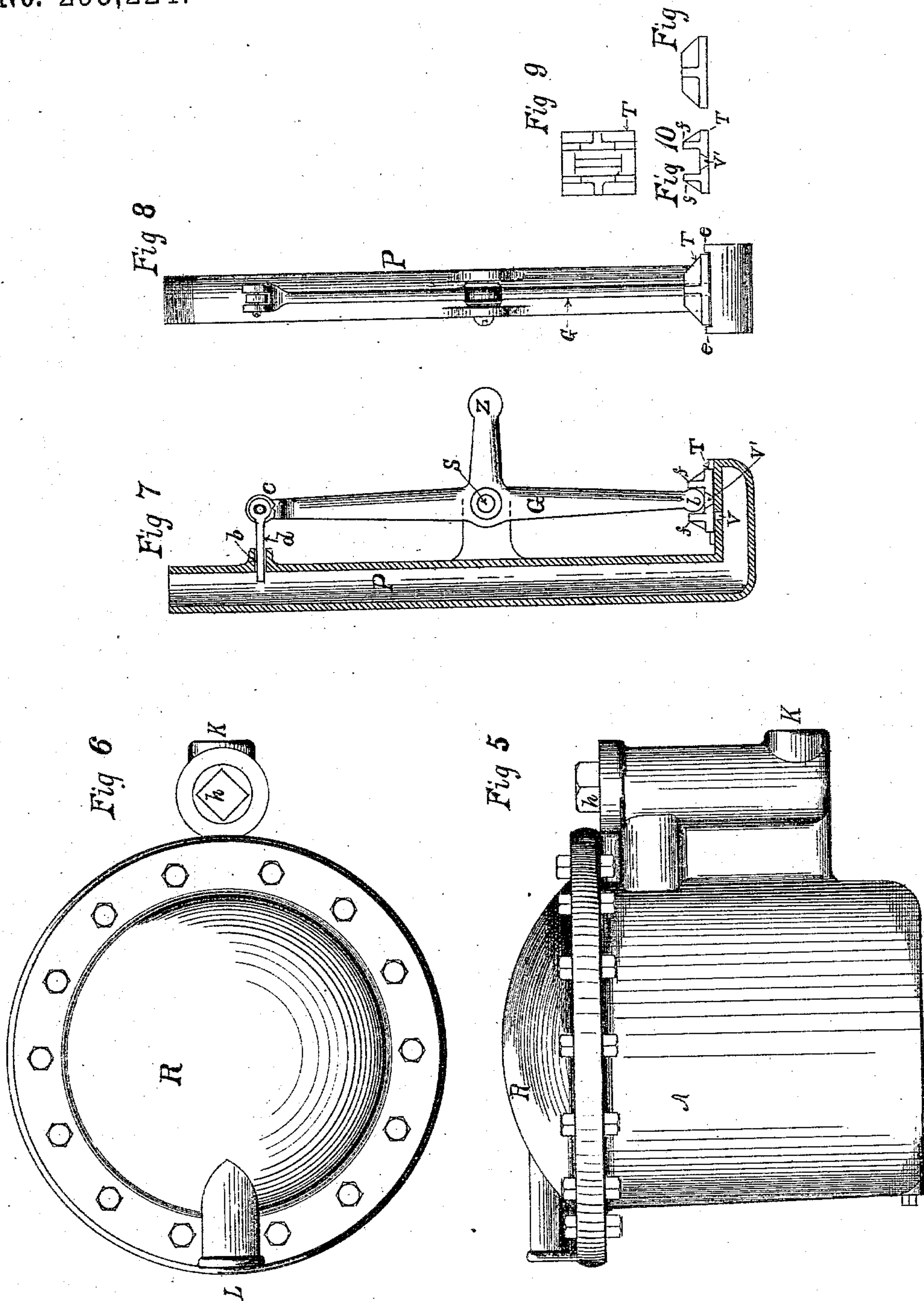
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UNITED STATES PATENT OFFICE.

JAMES H. BLESSING, OF ALBANY, NEW YORK.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 295,224, dated March 18, 1884.

Application filed October 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. BLESSING, of Albany, county of Albany, and State of New York, have invented certain new and useful
5 Improvements in Steam-Traps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 This invention relates to that class of steam-traps that allow the waters of condensation to flow into a tank open to the atmosphere, whence it is pumped back into the boiler by means of a force-pump.

15 The purpose of my present invention is to produce a steam-trap that will allow the condensed water to pass into the tank, from whence it is returned to the boiler, and to prevent the escape of steam. This I accomplish by means
20 of the floating power of water acting on the under side of a floating bucket, which in its turn serves to operate the valve for the escape of the water, and a loosely-fitted piston for the escape of the air, and a cylindrical strainer
25 for preventing dirt from entering the "trap," that can readily be taken out for cleaning purposes.

My invention will be readily understood from the accompanying drawings, in which
30 similar letters represent similar parts, and in which—

Figures 1 and 4 are vertical sections through the trap, showing the receiving and the discharging passages and the different positions
35 of the buckets. Figs. 2 and 3 are enlarged views of the cylindrical strainer. Fig. 6 is a plan view. Fig. 5 is a vertical view thereof. Figs. 7 and 8 are enlarged views of the discharge-pipe removed from the trap. Figs. 9,
40 10, and 11 are also enlarged views of the sliding valve removed from its seat.

A represents the case or exterior of the trap; B, the bucket, made enough smaller in diameter to form the annular space U between the
45 outer case and the bucket.

K represents the steam and water inlet, and is threaded to receive the drip-pipe connecting with the heating system; P, a pendent escape-pipe secured to the under side of the
50 bonnet R, and arranged within the bucket B so as to extend nearly to the bottom of the latter, but so that the bucket B can freely re-

ciprocate in a vertical direction independently of said escape-pipe. The lower end of the escape-pipe P is provided with a valve-
55 seat, containing the port V, for the escape of water therethrough into said escape-pipe. The bucket B is arranged to reciprocate vertically upon the central guide-rod, *g*, and is provided with a tube, N, which surrounds
60 said central guide-rod. Said tube is provided with collars *n n'*, that act against one end of the three-ended lever G, pivoted at S to the escape-pipe P. The rising-and-falling movement of the bucket imparts a vibratory motion to the lever G. The arms *e* of said lever
65 control a sliding valve, T, situated on the horizontal valve at the lower end of the pipe P, and the other end, *c*, of the arm G is connected to a loosely-fitted piston, *d*.
70

On one side of the shell A is formed a pocket, H, to receive the cylindrical strainer F, which is held in its position by the lower end resting on the annular projection O, and its upper end by the screw-plug *h*. The diameter of said cylindrical strainer should be sufficiently small
75 to produce an annular space, *m*, between it and the walls of the pocket H. The casing A is provided with a bonnet, R, which contains a passage, L, for the escape of the water; and
80 the escape-pipe is secured to the under side of said bonnet in such manner that a continuous discharge-opening will be formed from the port V to the exterior of the trap. The guide-rod *g* is held in a central position by two small
85 bosses, J and J', the first of which is formed in the bottom of the case A, and the other on the lower side of the bonnet R, as shown in Figs. 1 and 4, the said bosses having perforations of a sufficient depth and size to securely
90 hold the rod *g*. The bucket B has sufficient vertical movement to impart to the lever G the requisite motion to effect the reciprocating movements of the valve T and piston *d*. The valve T is provided with the opening V', which
95 conforms—on the under face of said valve—to the port V, (in the valve-seat of the escape-pipe P,) but which expands upwardly, so as to form sharp edges for said opening at the face of said valve, so that as the valve is reciprocated it
100 will scrape from off the valve-seat any deposition of dirt.

The operation of my machine can now be understood. Water enters the apparatus by

means of the drip-pipe from the coils which connect with opening K. The water first fills the pocket H, and then passes through the cylindrical strainer F into the annular space U between the outer case and the bucket, and, as is shown in Fig. 1, the apparatus does not contain any water. The bucket is in its lowest position, and the upper collar, *n*, on the guiding-tube N is in contact with the end of the lever Z; and in this position the valve T, with its port V', is directly over the port or passage V; and as the water continues flowing into the space U, it will in time receive enough water to overcome the weight of the bucket B, thereby causing the bucket to rise, bringing the lower collar, *n'*, in contact with the under side of the end of the arm Z, thereby moving the lever G to carry the valve T into position to close the port V, to prevent an escape of any water or steam through said port, and to move the piston *d* in the air-vent hole *b*, so as to prevent any accumulation of dirt in said vent-hole. In accomplishing this the parts will be in the position shown in Fig. 4, wherein the bucket B is raised, so that the upper end of the tube N is in contact with the boss J', and will remain there until the water has filled the annular space U and has entered into the bucket B in sufficient quantity to overcome the buoyancy of said bucket. The latter then descends and moves—by means of the lever G—the valve T to open the port V, so that the pressure of the steam, acting on the surface of the water in the bucket B, will cause the water to flow upward through the escape-pipe P, and from thence be discharged from the apparatus until the floating power of the water outside of the bucket B again overcomes the weight of said bucket and its contents, whereupon the bucket B will rise, in the manner described, to effect the operations above set forth; and—in the manner described—the apparatus will continue to operate so long as

any water, under pressure, continues to flow into the casing A.

What I claim as my invention, and desire to secure by Letters Patent in the United States, is—

1. In a steam-trap, the combination, with a floating bucket adapted to reciprocate vertically, as herein set forth, of the mechanism, substantially as described, for operating a slide-valve, so as to alternately cover and uncover a discharge-opening through which the water contained in said bucket is discharged, in the manner herein specified.

2. In a steam-trap, the combination, with a floating bucket arranged to reciprocate, as herein described, of a slide-valve adapted to cover and uncover a discharge-opening for the escape of the water contained in said bucket, and mechanism, substantially as described, for effecting the movements of said slide-valve by means of the reciprocations of the floating bucket, substantially in the manner herein specified.

3. In a steam-trap, the combination, with a floating bucket adapted to reciprocate vertically, as herein set forth, of the mechanism, substantially as described, for the purpose of imparting alternate reciprocatory motions to a sliding valve and a loose piston, in the manner and for the purpose herein specified.

4. In a steam-trap, the combination, with a floating bucket, B, and a lever, G, connected with and vibrated by said bucket, as herein set forth, of a movable piston, *d*, adapted to reciprocate in an air-vent hole, *b*, as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

JAMES H. BLESSING.

Witnesses:

CHAS. W. BACKUS,
JOHN W. WHEELOCK.