

No. 701,679.

Patented June 3, 1902.

J. S. CHAMBERS.
THROTTLE VALVE.

(Application filed June 1, 1901.)

(No Model.)

Fig. 2.

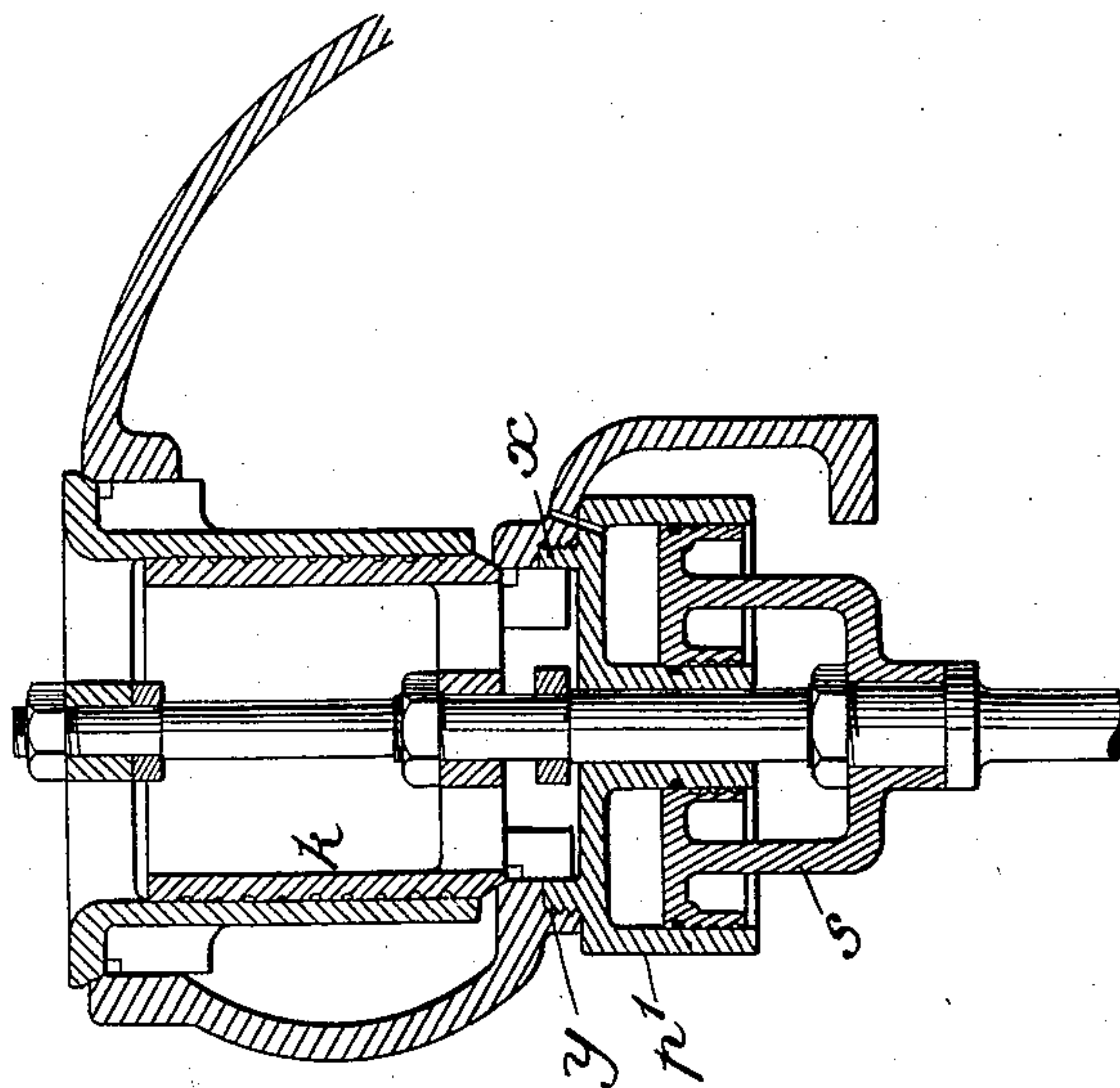
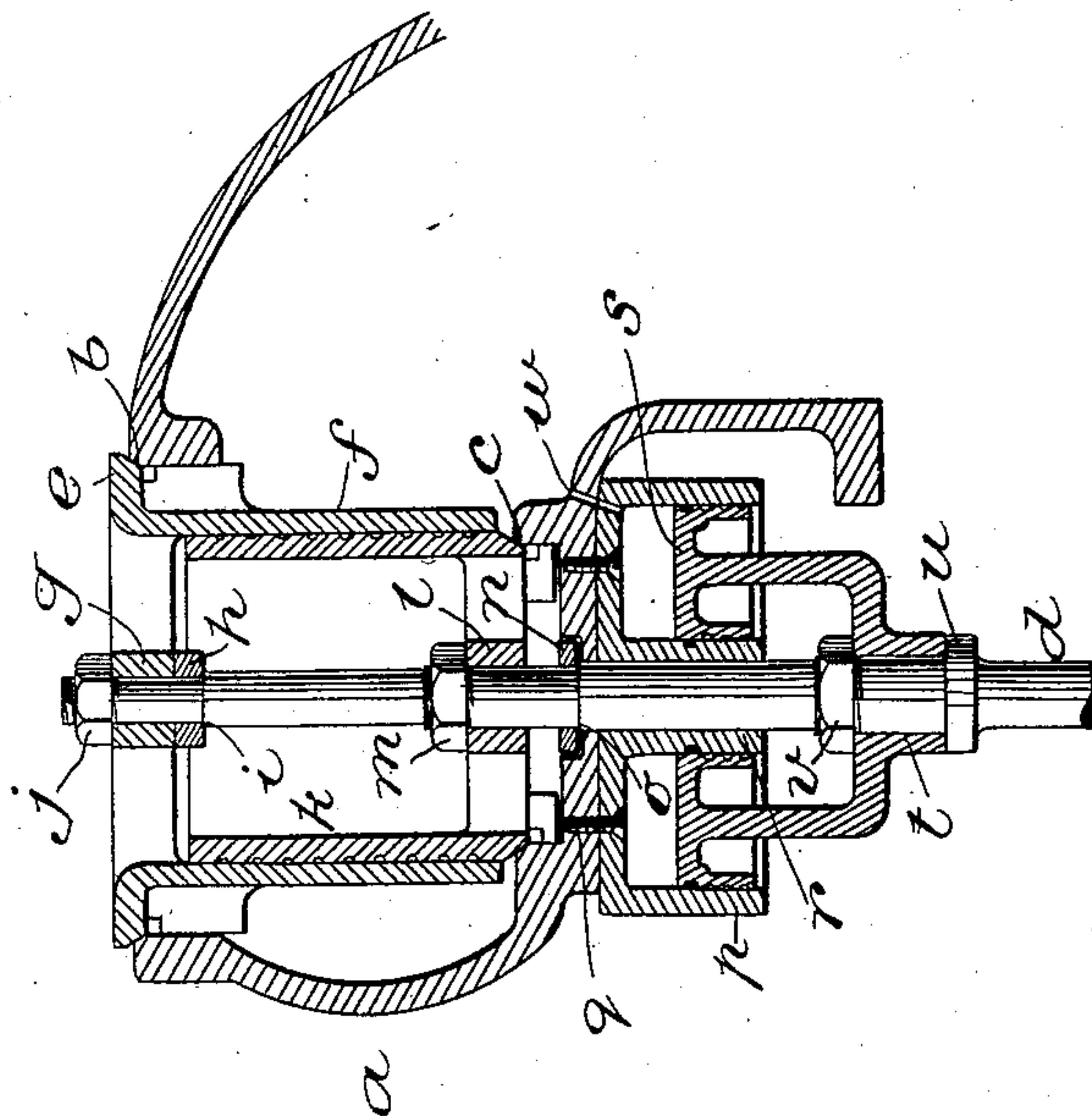


Fig. 1.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN S. CHAMBERS, OF ELIZABETH, NEW JERSEY.

THROTTLE-VALVE.

SPECIFICATION forming part of Letters Patent No. 701,679, dated June 3, 1902.

Application filed June 1, 1901. Serial No. 62,681. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. CHAMBERS, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented a new and useful Throttle-Valve, of which the following is a specification.

My invention relates to a throttle-valve, with the object in view of providing a valve so constructed that it will take steam through the top to a considerable extent before it takes steam through the bottom and will require the steam in any event to pass over the top of the valve-casing before passing through the valve, thereby materially reducing the liability of the passing of water through the valve to the cylinder.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the valve and its casing in vertical section, the cup for balancing the valve being made removable from the valve-casing without interfering with the practical operation of the valve; and Fig. 2 shows in vertical section the valve and its casing, the cups for balancing the valve forming a closure for the valve-casing at the bottom.

The valve-casing is denoted by *a* and is provided with a valve-seat *b* at its top and with a valve-seat *c* at its bottom. In the form represented in Fig. 1 the casing *a* continues below the valve-seat *c*, forming a closure beneath the seat, save only the central opening for the reception of the valve-operating lock *d*.

The valve-seat *b* is larger than the valve-seat *c* and is opened and closed by a valve *e*, having a depending tubular extension *f*, the interior of which has a diameter preferably equal to or slightly greater than the diameter of the lower or smaller valve-seat *c*.

The valve *e* is connected with the valve-rod *d* through the hub *g* of its skeleton top, the lower end of the hub *g* resting on a washer *h*, abutting a shoulder *i* on the valve-rod, and the upper end of the hub *g* engaged by a nut *j*, screwed onto the top of the valve-box.

The valve which seats on the lower seat *c* is denoted by *k* and is extended in tubular form upwardly within the downwardly-ex-

tended tubular extension *f* of the valve *e* and has a close sliding fit within it.

The valve *k* is attached to the valve-rod *d*, the latter passing through the hub *l* of its skeleton head. A nut *m*, screwed on the valve-rod *d*, engages the upper end of the hub *l*, while the lower end is engaged by a washer *n* on the valve-rod and abutting against a shoulder *o*. There is a space left between the upper face of the washer *n* and the lower end of the hub *l*, so that the valve-rod *d* may work freely upwardly through the hub *l* without lifting the valve *k* from its seat until the valve *e* shall have been opened a distance equal to the space between the lower end of the hub *l* and the washer *n*.

To the bottom of the valve-casing an annular cup *p* is removably secured, in the present instance by means of screws *q*. The valve-rod *d* passes through a central hub *r* in the cup *p*, and an annular piston *s* works with a close sliding fit within the cup *p*, the said piston *s* having its shank *t* secured to the valve-rod *d*, between a collar *u* on the valve-rod, engaging the lower end of its shank, and a nut *v*, screwed on the valve-rod and engaging the upper end of the shank. A passage-way *w* leads from the low-pressure side of the valve-casing to the bottom of the annular cup *p*, within which the balancing-piston *s* operates.

When the balancing-piston *s* is employed, the throttle-valve will be nearly counterbalanced, the pressure upon the valve being sufficiently greater than that upon the balancing-piston to insure its being held to its seat.

When it is desired to admit steam through the throttle, the upward movement of the valve-rod *d* will open the valve *e* and will admit steam between it and its valve-seat *b*, while the valve *k* remains closed until the rod *d* shall have been lifted sufficiently to bring the washer *n* into contact with the lower end of the hub *l* of the valve *k*. It is intended that this lifting of the valve *e* independently of the valve *k* shall be sufficient to supply the necessary amount of steam for ordinary purposes, the further lifting of the rod, and the consequent opening of the lower valve *k*, being resorted to when an unusual steam-supply is demanded. This insures the passage of the drier steam only through the valve,

the wetter steam being lower down in the valve-chest. Furthermore, the structure is such that when the lower valve is open it will still require the steam to pass over the top of the valve-casing before it can escape past the valve *k*, between it and its seat *c*. Again, in the event it should be found desirable to do away with the balancing of the valve the annular cup *p* might be removed and the valve would still be operative for practical purposes.

In the form shown in Fig. 2 the operation is quite similar to that hereinabove described in respect to the form shown in Fig. 1. The essential difference lies in making the annular cup *p'*, in which the balancing-piston *s* operates, form the bottom of the valve-casing beneath the lower valve *k*. The annular cup is in this instance conveniently provided with a screw-threaded extension *x*, which enters a screw-threaded socket *y* in the base of the valve-casing.

The upper and lower valves *e* and *k* hereinabove referred to form sections of the complete throttle-valve, and the extent of the movement of the one section *e* independently of the section *k* may be varied by adjusting the washer and nuts upon the valve-rod *d* to suit the requirements.

The structure is a simple and effective one for the purposes in hand, both valve-sections being free to rotate on the valve-rod *d* to compensate for wear.

What I claim is—

1. A throttle-valve comprising a valve-casing provided with upper and lower valve-seats, upper and lower valve-sections fitted to said seats and provided with tubular extensions, the tubular extension on the lower valve being arranged to telescope within the

tubular extension on the upper valve-section, a valve-rod for operating the sections, the said sections having a rotary engagement with the rod and the upper valve-section being connected to the rod to move with it independently of the lower valve-section, the passage-way of steam past the lower valve-section leading from a point above the upper valve-seat, substantially as set forth.

2. A throttle-valve comprising a valve-casing provided with upper and lower valve-seats, an upper valve-section and a lower valve-section fitted to said seats, a valve-rod for operating the valve-sections, the said rod having a connection with the upper valve-section to operate it independently of the lower valve-section, an annular cup below the lower valve-seat and in communication with the interior of the valve-casing and a counterbalance-piston connected with the valve-rod and adapted to work in said annular cup, substantially as set forth.

3. A throttle-valve comprising a valve-casing provided with upper and lower valve-seats, upper and lower valve-sections fitted to said seats, a valve-rod connected with said valve-sections for operating them, an annular cup removably attached to the bottom of the valve-casing and a counterbalance-piston connected with the valve-rod and arranged to work in said cup, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 17th day of May, 1901.

JOHN S. CHAMBERS.

Witnesses:

FREDK. HAYNES,
HENRY THIEME.