

R. L. BRETH & P. M. CAMPBELL.
VALVE.

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923,808.

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Fig. 1.

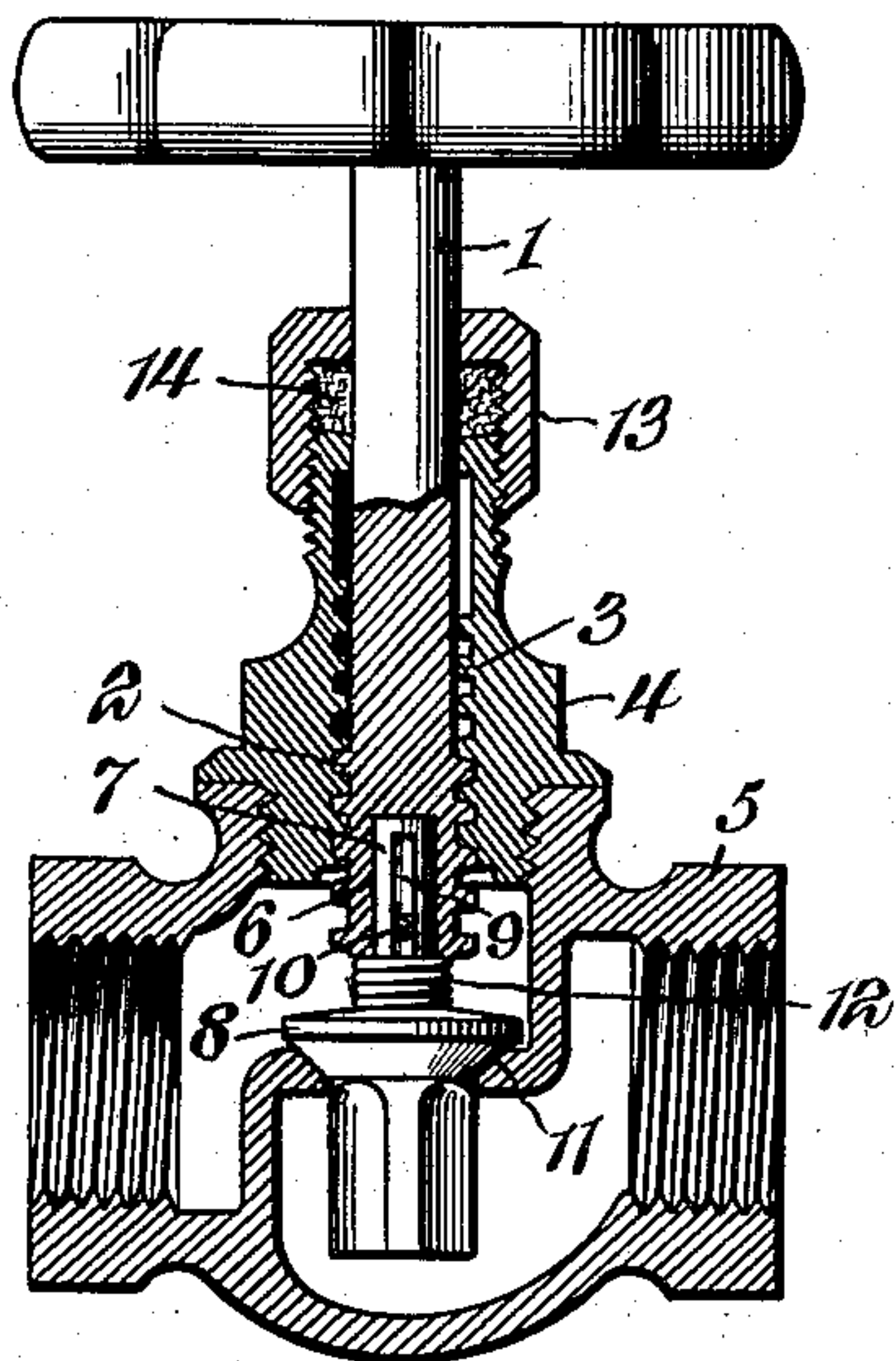


Fig. 2.

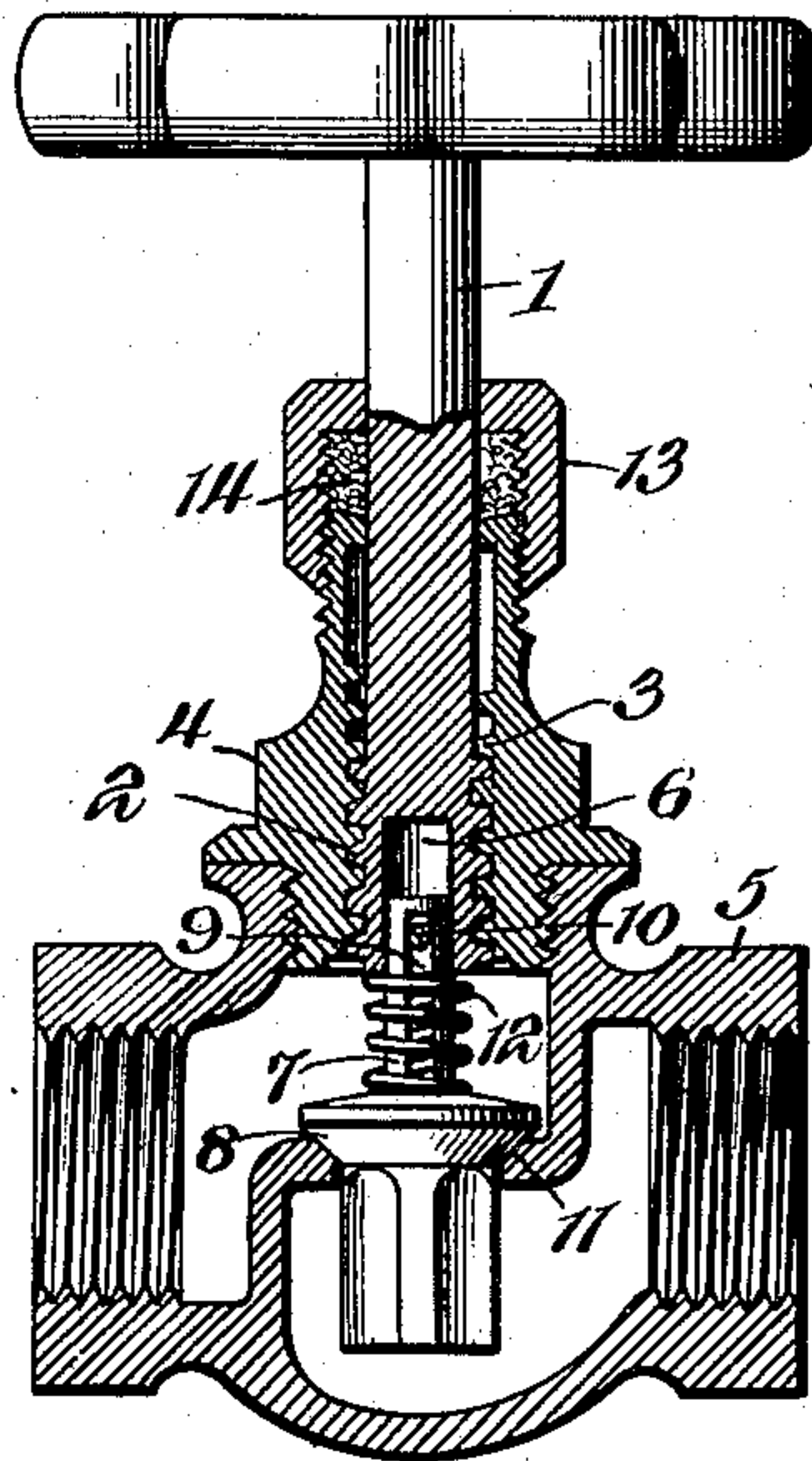


Fig. 3.

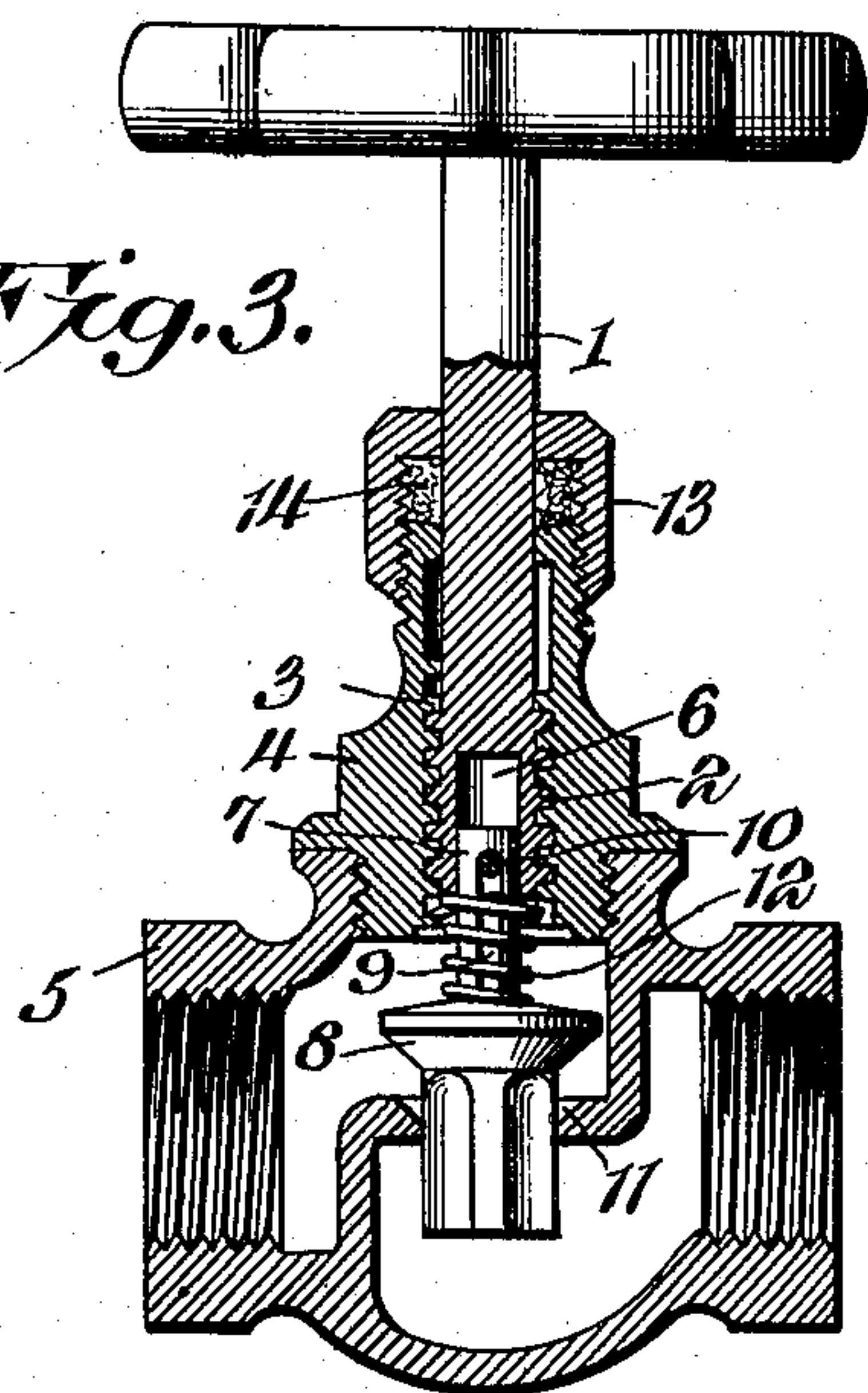


Fig. 4.

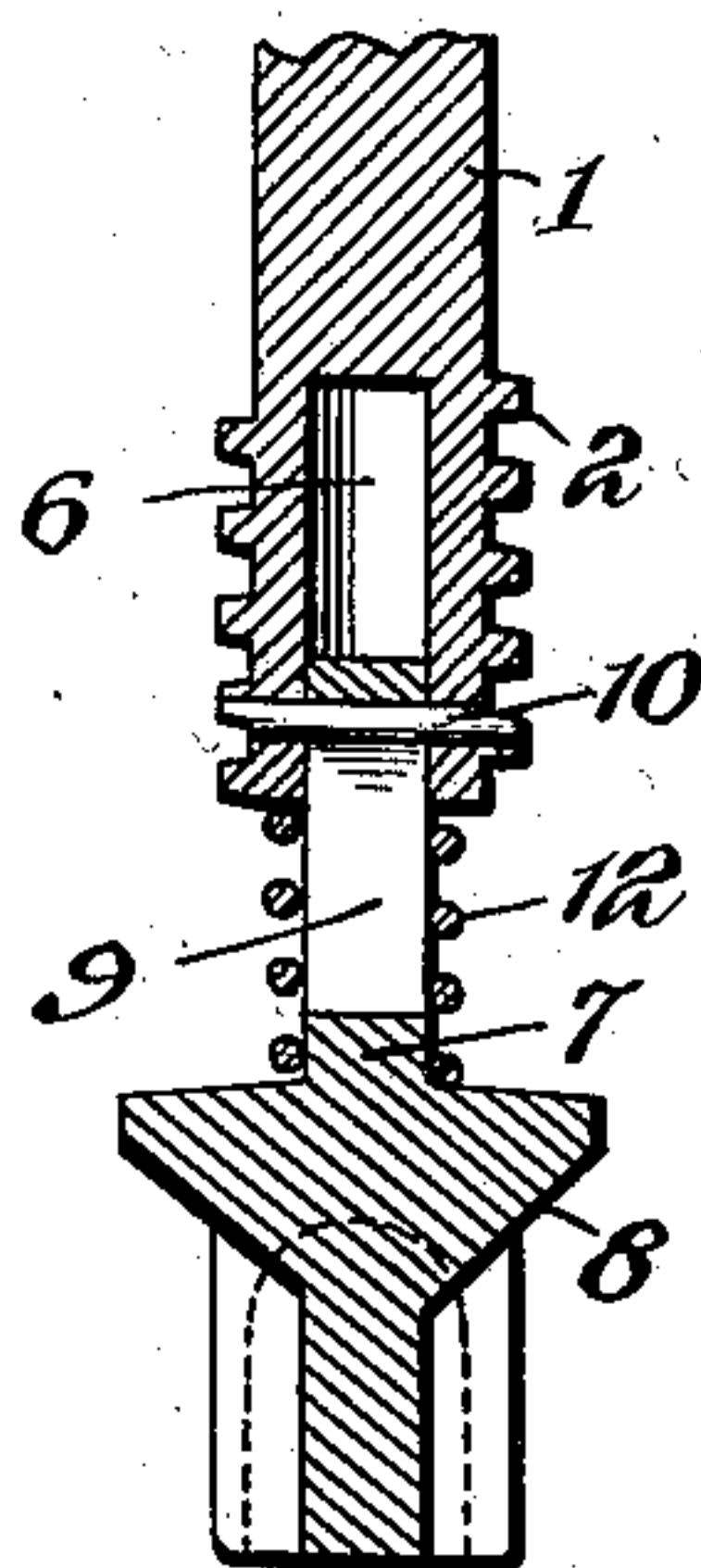
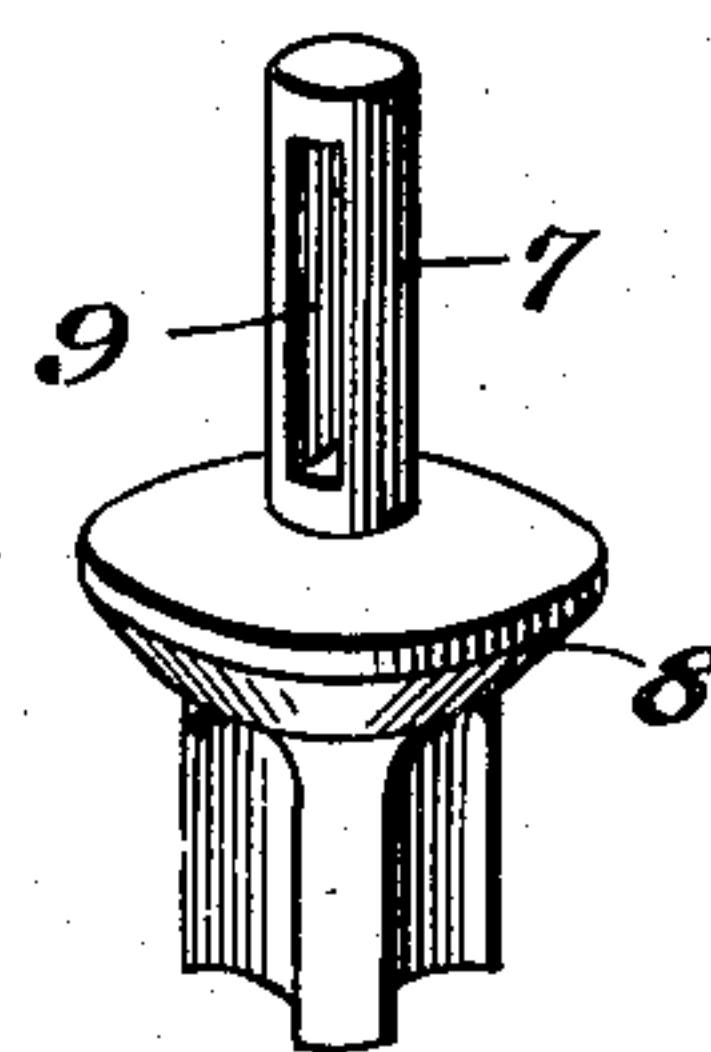


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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VALVE.

No. 923,808.

Specification of Letters Patent.

Patented June 8, 1909.

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To all whom it may concern:

Be it known that we, ROBERT L. BRETH and PAUL M. CAMPBELL, citizens of the United States, residing at New Washington and McGees Mills, respectively, in the county of Clearfield and State of Pennsylvania, have invented a new and useful Valve, of which the following is a specification.

The invention relates to improvements in valves.

The object of the present invention is to improve the construction of valves, and to increase the efficiency of the same, and to provide a simple and comparatively inexpensive valve, adapted for controlling and regulating the flow of water, or other liquid, and capable also of yieldably engaging its valve seat and of being automatically opened by internal pressure, and of automatically closing when the pressure falls below a predetermined amount.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—Figure 1 is a vertical sectional view of a valve, constructed in accordance with this invention and shown closed, the valve stem being in engagement with the upper end of the shank of the valve to relieve the spring of excessive pressure. Fig. 2 is a similar view, the valve stem being raised and the valve being yieldably held on its seat by the spring. Fig. 3 is a vertical sectional view, the valve being raised from its seat. Fig. 4 is an enlarged detail sectional view, illustrating the construction of the connection between the valve and the valve stem. Fig. 5 is a detail perspective view of the valve.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

1 designates a valve stem or spindle, provided at its lower portion with exterior screw threads 2 for engaging the interior threads 3 of the bonnet 4 of a valve casing

5 of the ordinary construction. The lower end of the stem 1 is provided with a longitudinal bore 6 for the reception of an auxiliary stem or shank 7 of a valve 8. The shank 7 is round to fit the bore 6, and it is provided with a longitudinal slot 9 to receive a transverse pin 10, which pierces the threaded portion of the stem 1. The pin 10 limits the downward movement of the valve 8, when the latter is raised from the valve seat 11 of the casing 5, and the valve is moved downwardly with respect to the valve stem by means of a coiled spring 12, arranged on the shank 7 and interposed between the lower end of the valve stem and the valve 8. The slot and pin connection between the stem and the valve prevents independent rotary movement of those parts and causes the valve to grind and clean the valve seat when it is opened and closed. The spring is adapted to hold the valve at the limit of its downward movement, when the said valve is out of contact with its seat, and it is also adapted to yieldably maintain the valve on its seat, when the valve stem is raised out of contact with the upper end of the shank 7. The shank 7 is of sufficient length to be engaged by the upper end wall of the bore 6, when the valve stem is screwed down to the limit of its movement in closing the valve, and a spring is thereby relieved of excessive pressure and is prevented from being crushed, when the valve is forced into engagement with the seat with sufficient pressure to grind the same. When the valve is closed in this manner the spring is inert, but automatically comes into operation when the valve stem is moved upward out of engagement with the upper end of the shank 7.

The valve is adapted to operate as an ordinary stop or regulating valve, and when the valve stem is partially raised to disengage the upper wall of the longitudinal bore 6 from the upper end of the stem, as illustrated in Fig. 2 of the drawing, the spring holds the valve on its seat and enables the valve to operate as a check valve. The bonnet 4 of the valve is equipped with the ordinary screw cap 13, which receives a suitable packing 14.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination with a valve casing

having a valve seat and provided with an interiorly threaded bonnet, of a valve stem provided at its lower end with threads to engage those of the bonnet and having a longitudinal bore extending upward from its lower end, a valve having a shank fitted within the bore of the stem, means for slidably connecting the shank of the valve and the valve stem to limit the downward movement of the valve with respect to the stem and to prevent independent rotary movement of the said parts to cause the valve to grind and clean the seat when it is opened and closed, and a coiled spring arranged on the shank of the valve and engaging the latter and the lower end of the valve stem for yieldably holding the valve on the seat, said shank being of greater length than the bore of the stem and being in contact with the top wall of the bore when the valve stem is at the limit of its downward movement so as to hold the valve rigidly on its seat, whereby the spring will be relieved of the excessive and crushing pressure incident to such closing of the valve.

2. The combination with a valve casing having a valve seat and provided with an interiorly threaded bonnet, of a valve stem provided at its lower end with threads to engage those of the bonnet and having a

longitudinal bore extending upward from its lower end, a valve having a shank fitted within the bore of the stem and provided with a longitudinal slot, a transverse pin piercing the lower portion of the valve stem and passing through the slot of the shank to limit the downward movement of the valve and to prevent independent rotary movement of the valve and the stem to cause the valve to grind and clean the valve seat in opening and closing, and a coiled spring arranged on the shank of the valve and engaging the latter and the lower end of the valve stem for yieldably holding the valve on the seat, said shank being of greater length than the bore of the stem and being in contact with the top wall of the bore when the valve stem is at the limit of its downward movement so as to hold the valve rigidly on its seat, whereby the spring will be relieved of the excessive and crushing pressure incident to such closing of the valve.

In testimony, that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

ROBERT L. BRETH.
PAUL M. CAMPBELL.

Witnesses:

DAVID PENMAN,
GEORGE JOHNSON.