

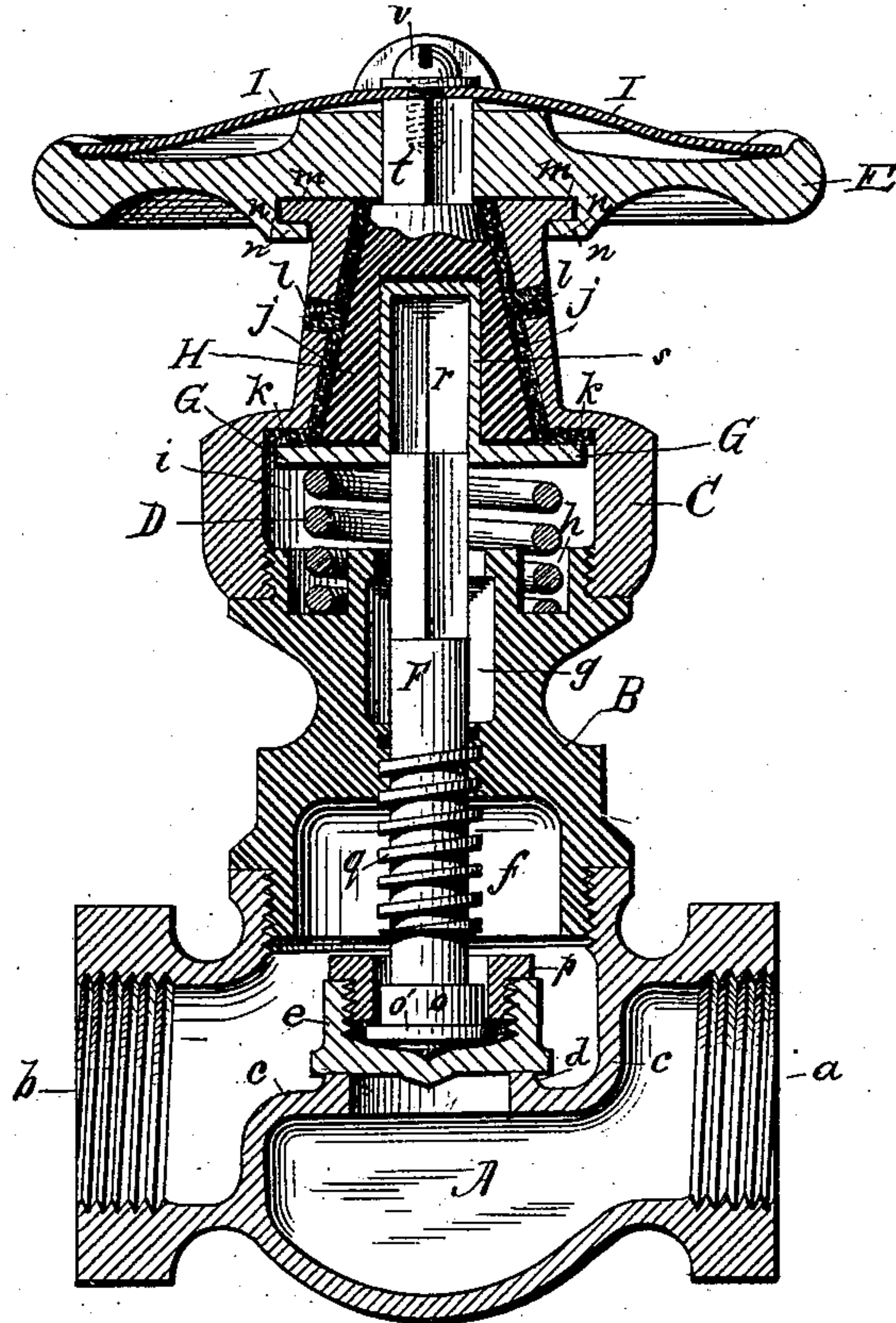
(No Model.)

J. JANOTTE.

VALVE.

No. 353,068.

Patented Nov. 23, 1886.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH JANOTTE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO TAUSSAINT TETREAULT, OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 353,068, dated November 23, 1886.

Application filed September 10, 1886. Serial No. 213,212. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH JANOTTE, a citizen of Canada, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawing forming a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to valves—more particularly to steam-valves.

The object of my invention is to do away with the packing usually employed around the stem of a valve to prevent its leaking; and my invention consists in certain novel features of construction of the neck and stem of a valve, so as to prevent any leakage without the use of any packing.

I have shown in the drawing my invention applied to a well-known form of globe-valve; but it may equally well be applied to any other kind of valve where the valve has a stem by which it is opened or closed, and a neck or equivalent device for inclosing the valve-stem.

The drawing represents a central vertical section of a globe-valve with my invention applied thereto.

The part marked A is the shell of a globe-valve, having threaded inlet and outlet holes *a* and *b*, and the divisions *c*, extending through the central portion of the shell, and the seat *d* for the valve *e* to rest upon, all in the usual manner.

Into the top part of the shell A, provided with a threaded opening, is screwed the lower part or screw-cap, B, of the neck of the valve, and upon the upper end of the screw-cap B, provided with a thread, is screwed the upper part, C, of the neck of the valve. It will thus be seen that the neck of the valve inclosing the valve-stem is made in two parts screwed together, of substantially the shape shown in the drawing, their exterior surface being at some point of octagon or other shape to permit of the engagement of a wrench or equivalent device therewith. There is no provision for any packing-box, as none is required.

The interior of the screw-cap B is bored out in substantially the manner shown in the drawing, having an enlarged chamber, *f*, in its lower part, to allow of the valve *e* passing up into the same when the valve is opened, and having a threaded hole in its central part to engage with the thread upon the stem of the valve, so that the same may be turned up or down through the same. A hole, *g*, extends up from the threaded hole to the top of the screw-cap B. In the upper end of the screw-cap B a circular groove or slot, *h*, is cut, adapted to receive and into which extends the lower part of a spiral spring, D, the upper part of said spring extending into an enlarged chamber or opening, *i*, made in the lower end of the part C of the neck of the valve.

The opening in the part C, extending from the chamber *i* to the top of said part C, is bored tapering, decreasing in size toward the top, as clearly shown in the drawing, and the same is preferably lined with Babbitt metal *j*, as shown, which also extends over the shoulders or bearing-surfaces *k k*, formed at the junction of the tapering opening with the chamber *i*. The Babbitt metal extends through holes *l l* made in the part C, so as to prevent the metal from turning with the valve-stem. A flange or rim, *m*, extends out from the upper end of the part C, adapted to engage ears or lugs *n*, formed upon the under side of the hand-wheel E, so as to prevent said hand-wheel from being drawn away from the neck of the valve. Said wheel E rests and turns upon the top of the part C.

I will now describe the stem of the valve, which extends up through the screw-cap B and the part C of the valve-neck.

The valve-stem is made in three parts—the lower part, F, to the lower end of which is attached the valve *e* in the manner shown in the drawing, the upper conical part, H, and the collar G, interposed between the two. The lower end, *o*, of the stem F is enlarged, and provided with a flange, *o'*, extending out therefrom, the bottom of said end being made slightly tapering and provided with a pointed end or center, which is adapted to extend into a countersink formed within the valve *e*, for the purpose of reducing to a minimum any

friction between the end *o* of the stem F and the interior surface of the valve *e* in closing the valve. A nut, *p*, screws into the top of the valve *e*, the lower end of which extends 5 over the flange *o'* on the part *o* and forms a bearing-surface on which said flange turns when the stem F is screwed out and the valve opened.

From the above description, in connection 10 with the drawing, it will be understood that the valve *e* does not revolve with the stem F, but is simply raised or lowered by the revolution of said stem.

A thread, *q*, is formed upon the stem F, 15 adapted to engage with a thread in the screw-cap B, so that the stem may be screwed up or down to open or close the valve *e*. The upper end of the stem F is in this instance made square, and extends up into and engages 20 loosely with a square hole, *r*, made in a projection upon the upper side of the collar G. The spiral spring D, before described, encircles the upper part of the stem F, and its upper end bears against the lower side of the 25 collar G, serving to hold said collar up in its proper position.

The collar G forms a part of the valve-stem, and revolves in either direction, having its bearing-surface upon the Babbitt metal extending 30 over the shoulders *k k*. The collar G is provided upon its top surface with a square projection, *s*, extending up therefrom, and which fits loosely into a square opening made in the lower end of the conical part H of the 35 valve-stem.

As above stated, the interior *r* of the projection *s* is cut out to correspond with the shape of the upper part of the stem F, so that said stem may engage with it and move up and 40 down freely in the same. The part H of the valve-stem is made tapering or conical at its lower end, and closely fits the tapering hole or seat made in the valve-neck C. The upper end, *t*, of said part H is made square, as shown, 45 to extend through and engage with a square hole in the hand-wheel E.

The conical part H is supported and held closely up upon its seat in the neck C by means of a bent spring, I, extending over the top of 50 the end *t*, with its ends bearing upon the top surface of the hand-wheel E, said spring being secured to the end *t* by a screw, *v*, as shown.

It will be understood that the collar G revolves with the conical part H, but that the 55 bearing-surface of the collar does not come in contact with the part H, for it is made short enough to prevent its extending down below the bearing-surface formed by the Babbitt metal extending over the shoulders *k k*, and 60 against which the collar G bears.

The object of using the collar G as part of the valve-stem, and interposing it below the end of the conical part H of the valve-stem, is to receive the pressure of the steam which 65 may escape around the lower part of the valve-stem, and prevent the steam thus escaping from

coming in direct contact with the exposed end of the tapering or conical part H, causing the same to bind and producing friction.

The operation of my valve will be readily 70 understood from the above description, in connection with the drawing, and is as follows: The parts being in the position shown in the drawing, and the valve *e* closed, by turning 75 the hand-wheel E, the conical part H, having its square end extending up through a square hole in the hand-wheel, is made to revolve, being held up closely upon its seat by the spring I. The collar G, having a square pro- 80 jection extending up into a square hole in the conical part H, revolves with it, and is held firmly pressed against the bearing-surfaces formed by the Babbitt metal upon the shoulders *k k*, by means of the coiled spring D. The stem F, having the square extension at 85 its upper end, which extends into the square hole in the collar G, is revolved with said collar, and caused to move up within the screw-cap B by means of the thread on the stem engaging with the thread in said screw-cap, and 90 the valve *e* is raised with said stem off of its seat, the flange *o'* extending out from the end *o*, coming in contact with the lower edge of the nut *p*. By turning the hand-wheel E in an opposite direction, causing the stem F to 95 be screwed down, the valve *e* is closed.

The advantages of the manner of construction of my valve will be readily appreciated by those skilled in the art.

I am enabled to do away entirely with the 100 use of any packing-box, or any packing of the stem of the valve. I prevent any leakage or escape of steam around the stem of the valve by means of the tapering or conical shape of the stem, and the interior of the neck of the 105 valve at its upper part.

By the interposition of the collar G within the neck of the valve, and directly below the exposed end of the tapering or conical part H, I prevent the steam which may escape around 110 the stem at its lower part from coming in contact with the conical part to force the same up into its seat in the neck of the valve, and cause the parts to bind and to turn hard by reason of friction between the surfaces. 115

By means of the spring I extending over the upper side of the hand-wheel E, I am enabled to keep the conical part of the stem up closely within its seat, with its lower end free from contact with the bearing-surface of the collar 120 G, and at the same time allowing the conical part to turn freely within its seat or chamber; and in case of any wear of the surfaces the spring I will serve to always keep the conical part H closely drawn up within its seat. 125

The lugs or ears upon the lower side of the hand-wheel, which extend over the flange projecting out from the top end of the valve-neck, prevent the hand-wheel from being drawn or pulled away from the valve-neck to produce 130 any binding or unnecessary friction of the conical part H with its tapering seat.

The valve *e*, connected with the valve-stem in the manner shown, and as above described, does not revolve upon its seat, but is simply raised and lowered. The center formed on the end of the valve-stem, extending into the countersink in the upper side of the valve, tends to produce the least possible friction between the parts in the closing of the valve.

I have shown in the drawing, and mentioned the use of Babbitt metal. I prefer to make use of the same, as indicated, for overcoming any tendency of friction and causing the surfaces to move more easily upon each other; but I do not limit myself to its use, for it can be dispensed with, and very satisfactory results obtained. In case the Babbitt metal is not used, it will be understood that the conical part *H* is made so that its lower end will not extend down quite as far as the shoulders *k k*, which furnish a bearing surface for the collar *G*.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the valve-neck made in two parts, *B* and *C*, the part *C* having a conical opening at its upper end, and an en-

larged chamber at its lower end for the reception of a spiral spring, *G*, and said spring *G*, of the valve-stem made in three parts, the threaded part *F*, provided with a valve at its lower end, the part *H*, of conical shape, attached to the hand-wheel and held up within its seat in the valve-neck *C* by a spring, *I*, extending over the hand-wheel, and the collar *G*, interposed between the part *F* and the conical part *H*, for the purpose stated, all constructed and arranged substantially as set forth.

2. The combination, with the valve-neck *C*, having a conical opening in its upper part, and shoulders *k k*, extending from the lower end of said opening, said opening and shoulders being lined with Babbitt metal, of the conical part *H* of the valve-stem and spring *I*, extending over the upper part of the hand-wheel *E*, and secured upon the upper end of the part *H*, for the purpose of supporting the same within its seat and allowing it to turn freely therein, substantially as set forth.

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Witnesses:

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