

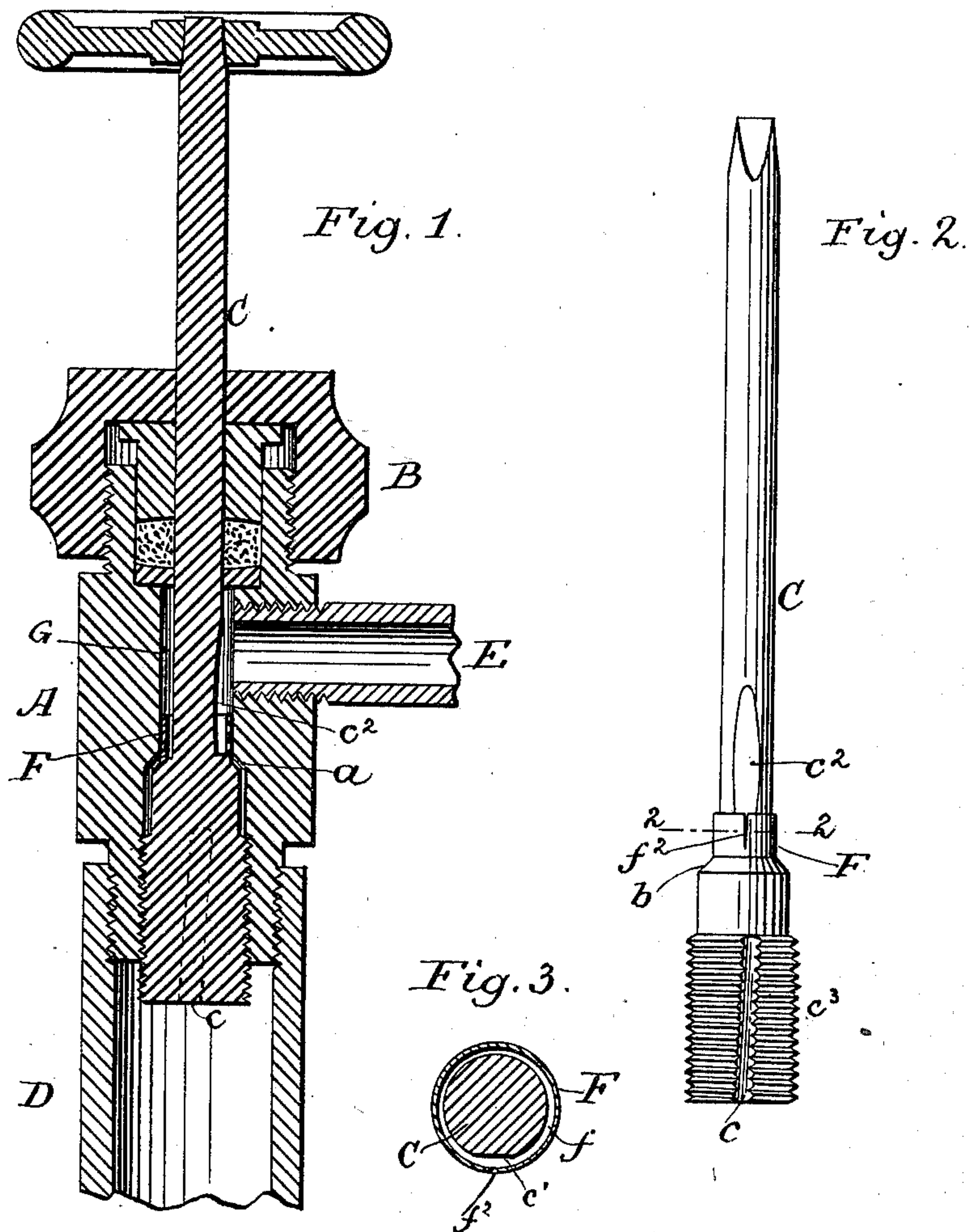
No. 670,770.

Patented Mar. 26, 1901.

W. J. FRANCKE.
VALVE FOR ICE MACHINES.

(Application filed Dec. 26, 1900.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM J. FRANCKE, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO
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VALVE FOR ICE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 670,770, dated March 26, 1901.

Application filed December 26, 1900. Serial No. 41,041. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. FRANCKE, a citizen of the United States, residing at New Brunswick, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Valves for Ice-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to ice-machines, the object being to provide a simple, reliable, and efficient valve to regulate the passage and expansion of liquefied gases in ice-machines, and particularly to small machines the daily capacity of which is twenty-five to thirty pounds of ice. It has been difficult to obtain suitable valves for ice-machines producing this small quantity of ice, principally because impurities in the ammonia passing there-
15 through had a tendency to clog the passage when the latter was of very small size.

The nature, characteristic features, and scope of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings, forming a part hereof, in which—

Figure 1 is a central vertical section of a valve embodying features of the invention. Fig. 2 is a side view of the valve-stem. Fig. 3 is a transverse section of the valve-stem on a larger scale and on the line 2-2 of Fig. 2.

Referring to the drawings, A represents a valve-casing provided with the ordinary stuffing-box B, through which tightly passes the valve-stem C. The casing is externally threaded at its lower end to receive the pipe D, which conducts the liquefied gas—for instance, ammonia—and has also a lateral threaded passage to receive the pipe E, which
40 conveys away the expanding gas.

The casing is provided with a seat *a*, which is constituted by an inclined offset or shouldered portion, to which the valve-stem is fitted with some freedom of motion, the lower end of the latter having a quick thread engaging with a similar thread in the casing. This threaded portion of the stem is provided with an angular slot *c*, which extends slightly out of the vertical and serves the purpose of a passage for the ammonia. As will be readily observed upon reference to Fig. 2, the

valve-stem is also provided above its conical portion *b* with a slightly-concaved flattened surface *c*², which extends past the lateral passage E and provides a path for the expanding gas. 55

A jacket or sleeve F surrounds the valve-stem directly above its conical portion *b*, forming an annular space *f* within the sleeve. Said sleeve is provided through its upper end
60 with a vertical incision *f*² for the passage of the liquid, so that said sleeve constitutes also a spring member, which fits closely against the walls of the valve-casing.

The threaded portion *c*³ of the valve-stem
65 is made up of left-hand threads, so that while the valve is shown inverted the same right-hand turning operation is done here also.

It will be understood that the ammonia comes from below through the pipe D and the angular slot *c* to the vertical incision *f*², which has acute or knife edges. Consequently liquid ammonia is on the valve-seat and on the incision *f*² under pressure, and therefore no sediment or gum can take a lodgment in
75 the incision to clog the passage. It is advantageous to have as little pressure as possible on the stuffing-box or to reduce the same to the minimum possible, and by having the ammonia come from the opposite side of the
80 valve, as in the present construction, there is but little pressure to interfere with the freedom of movement of the valve-stem. As before stated, the liquid ammonia enters the channel or slot *c* to the valve-seat, and upon
85 turning the valve-stem the latter is turned from its seat and the ammonia escapes through the knife-edged incision *f*² in the sleeve F, along the flattened portion *c*, into the valve-chamber G, where it undergoes ex-
90 pansion and passes into the system through the passage E. The sleeve F in its character of a spring tends to make a tight fit between it and the walls of the valve-casing and prevent the passage of the ammonia around the
95 periphery of said sleeve.

It will be obvious to those skilled in the art to which the invention appertains that modifications may be made in detail without departing from the spirit and scope of the in-
100 vention. Hence I do not limit myself to the precise construction and arrangement of parts

hereinabove described, and illustrated in the drawings; but,

Having now fully described the nature and objects of the invention, what I claim as new, 5 and desire to secure by Letters Patent, is—

1. An expansion - valve for refrigerating systems comprising a valve-casing provided with a stuffing-box and with a bore or passage having an annular inclined shoulder or valve- 10 seat tapering toward said stuffing-box, and a screw-tapped lower end, a valve and a valve-stem movable downwardly in respect to the seat to unseat the valve and having a pas- 15 sage extending from the screw-threaded bottom of said valve-stem to near its seat, designed to convey liquid ammonia, a passage above the valve-seat for the expanding gas and a springy sleeve upon said valve-stem and fitted within said passage, and having an 20 incision lengthwise thereof substantially as described.

2. An expansion - valve for refrigerating

systems comprising a valve-casing provided with a stuffing-box and with a central pas- 25 sage having an annular inclined shoulder or valve-seat, a valve-stem movable downwardly in respect to said seat and having a springy sleeve secured to the valve-stem and provided with an acute or knife edged slot lengthwise thereof, the central passage of the casing fit- 30 ting the periphery of the springy sleeve and having an extended portion provided with internal and external screw-threads, a left-hand thread on the valve-stem engaging with said internal screw-threads, and a liquid-am- 35 monia-supply pipe having threads to engage the external threads of the casing substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. FRANCKE.

Witnesses:

R. C. KENYON,
EDWARD MORRIS.