

(No Model.)

J. A. FREY.  
METAL CAN OR VESSEL.

No. 420,781.

Patented Feb. 4, 1890.

FIG. I.

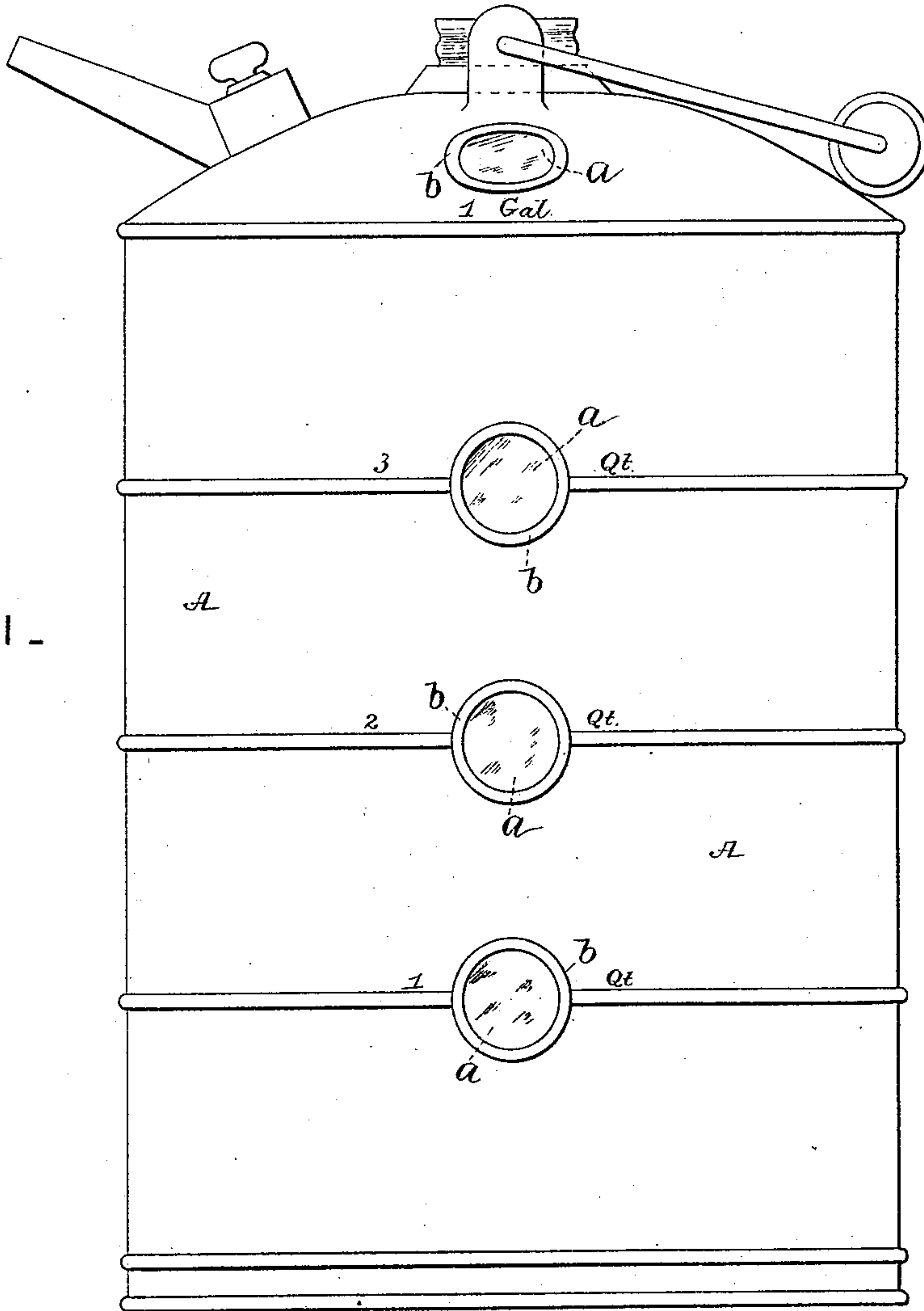
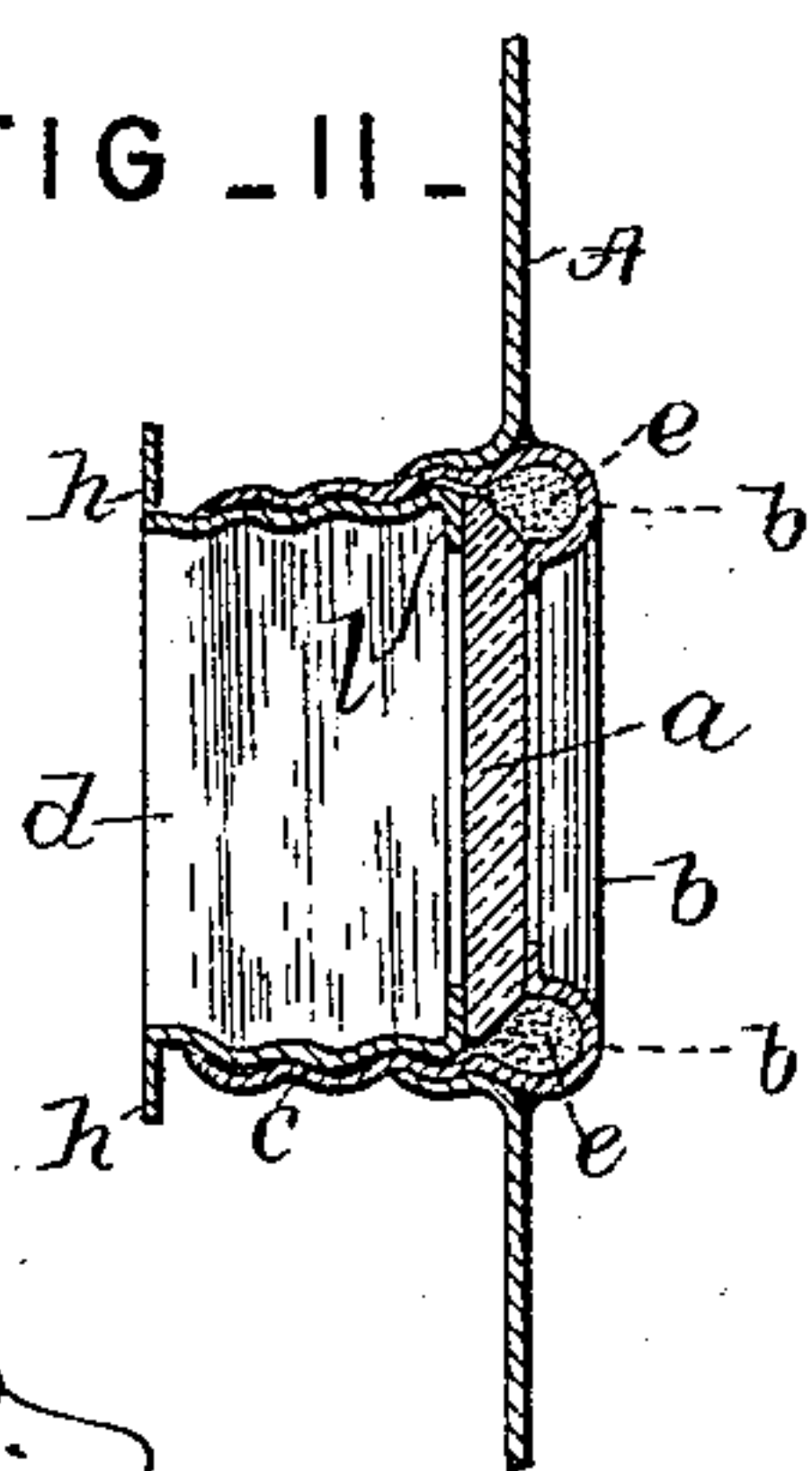
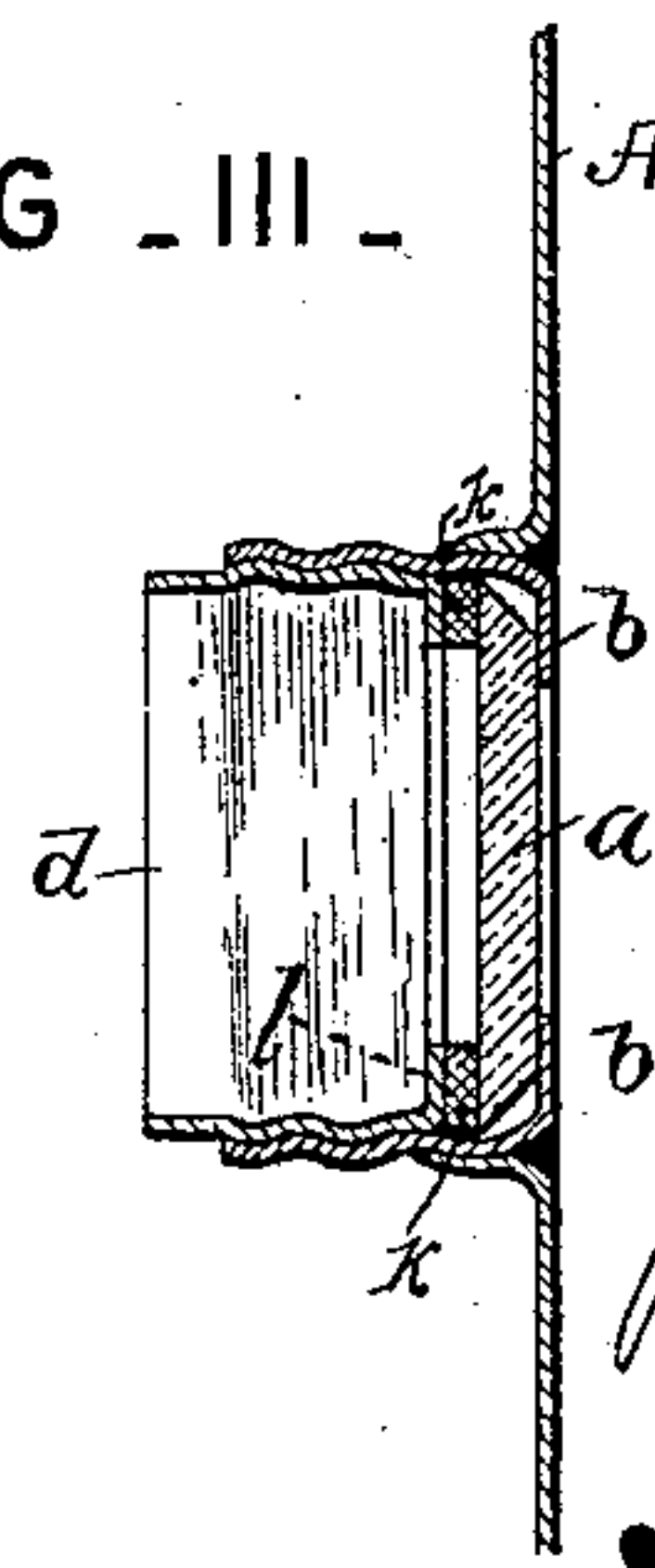


FIG. II.



Attest:  
J. W. Miller  
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FIG. III.



Inventor:  
John A. Frey  
by A. Pollok  
his attorney

# UNITED STATES PATENT OFFICE.

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## METAL CAN OR VESSEL.

SPECIFICATION forming part of Letters Patent No. 420,781, dated February 4, 1890.

Application filed April 23, 1889. Serial No. 308,320. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. FREY, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Metal Cans or Vessels, which invention is fully set forth in the following specification.

In tin or sheet-metal cans and the oil-holders of lamps and other vessels for holding hydrocarbon oils it is very desirable that the user should be able to know the quantity and condition of the contents of the vessel. For this purpose windows of glass have been made in the sides of oil-cans, the glass and metal being united in the following manner: A hole would be cut in the side of the can or other vessel to accommodate the required window. A flange would be made either toward the inside of the vessel or toward the outside of the vessel. Then the glass would be placed in the recess formed by the flange, and an independent frame or collar was then soldered over the glass, so as to hold it in position. At the time of laying in the glass the edges of the glass were cemented, so as to fill up the cavities, the object being to make a joint that would resist the action of hydrocarbon oils. In practice this method of inserting a window into any vessel designed to hold hydrocarbon oils has been found very objectionable. Hydrocarbon oil is very searching and very penetrating, and it will therefore escape through a leak that would be of no importance whatever in the case of most other liquids. When a sheet-metal vessel is in use, it is liable to be frequently struck or jarred, and if any of the blows strike near the edge of the glass the contact of the glass with the metal and the cement is liable to be disturbed in such a manner as to cause a leak. The sharp edges of the glass itself, of course, have a tendency to disturb the cement with every vibration, and as soon as the cement is disturbed a leak is created, for it must be borne in mind that if there is a leak sufficient to allow the vapor of hydrocarbon oil to pass, the vapor will condense on the outside and thus practically cause a leak. There does not seem to be now in use any can or other holder

of hydrocarbon oils made of sheet metal containing windows that is not subject to these serious defects. These objections have been so serious that they have led to the very extensive introduction of glass vessels for containing hydrocarbon oils incased in sheet metal, and having apertures in the metal for the purpose of viewing the oil through the glass, notwithstanding the fact that such incased glass vessels are very much more expensive than sheet-metal vessels and very much more liable to breakage. I have succeeded in obviating these difficulties by inserting in sheet-metal vessels intended to hold hydrocarbon oils what may be called a "new window-frame." The frame consists of two pieces of metal made in the form of a cylinder and screw-threaded to correspond with each other, so that one will fit into the other. On the upper part of the outer cylinder a flange is made, turned inwardly. Another similar flange is preferably made on the upper edge of the inner cylinder. A circular piece of glass is then inserted into the outer cylinder, and then the inner cylinder is inserted into the outer cylinder, and they are screwed tightly together, so as firmly and permanently to secure the glass. The surfaces of the screws that come in contact with each other and the edges of the glass window that come in contact with the metal are coated with soluble glass in its soft or liquid state before the parts are united. The glass, the soluble glass, and the metal parts become firmly united by the pressure, and the glass and soluble glass become, as it were, fused together. Notwithstanding the extreme brittleness of the soluble glass when it hardens, it is in no danger of allowing a leak, owing to the peculiar method used of fastening the parts together and holding them firmly in position. A washer or washers of any suitable material may be saturated or coated with the soluble glass and inserted between the glass and the metal, and the parts may then be screwed together and firmly united; but I prefer to employ the method before described. The frame being thus made, suitable holes are cut in the side of the vessel where the windows



are desired to be inserted. The frames that I have described are then inserted in these holes and secured thereto by soldering. I prefer to have the glass outward and flush, or nearly so, with the outer surface of the vessel, and it will also be found desirable to surround the glass with a flange or beading, which will serve the double purpose of an ornament and protection of the glass. The metal frame itself may be projected outwardly beyond the glass, so as to give such a beading, which will protect the glass. The frame, however, may be so inserted as to have the glass projecting inside of the vessel, or it may be so inserted as to have the body of the frame projecting outwardly from the vessel.

The accompanying drawings will serve to illustrate the invention.

Figure I is a partial side view of an oil-can provided with windows constructed in accordance with the invention, and Figs. II and III are details in section.

The can A, represented in Fig. I, is a measuring-can having a capacity of one gallon and having horizontal beads at different levels, indicating one quart, two quarts, &c. The windows *a* are placed at the levels of these beads, as shown, and each window is provided with a surrounding bead *b*, as hereinbefore described, for the protection of the glass and for ornament.

The construction of the frame and the method of holding the glass in place are shown in Figs. II and III, *c* being the outer threaded cylinder and *d* the inner threaded cylinder, between which the glass *a* is firmly clamped. As shown in Fig. II, the two parts are firmly united by soluble glass *e*, which holds the glass in position, and the outer cylinder *c* has a bead *g* at the outer end thereof for the protection of the glass *a*. The inner end of cylinder *d* is flanged or turned outward at *h*, and, if desired, this end of the frame may be set flush with the wall A of the vessel, so that the frame and window will project outwardly from the same. The inner end of cylinder *d* is turned inward to form a flange *l*, which flange presses against the glass *a*, as in Fig. II, or against the washer *k*, as in Fig. III.

As shown in Fig. III, a washer *k*, of suitable material, is coated or saturated with soluble glass and interposed between the glass *a* and the flanged end of the cylinder *d*.

The advantages of this construction are very important. The difficulties above suggested in the old style of windowed sheet-metal vessels for holding hydrocarbon oils are obviated. The height of the liquid in the can can be readily observed through the window or windows. The circular shape of the windows gives the greatest possible strength and causes the least liability of breakage. The glass is firmly and permanently secured in the frame by means of the screw-connection, by the great pressure of which it is made and kept absolutely tight, and there can be

no leakage around its edges. The frame itself makes the part of the wall of the vessel that immediately surrounds the glass by far the strongest part of the wall, and the glass itself, owing to its size, shape, and mode of attachment, is practically not liable to be broken except by great and unusual violence operating directly against it.

It is obvious that in place of glass other transparent materials capable of resisting the action of hydrocarbon oils might be used and would be equivalents.

The use of soluble glass with a glass window and metal frame in a vessel is, I believe, broadly, new, and I have made the same the subject of a separate application, filed August 31, 1889, and serially numbered 322,516.

While my invention is specially designed for use in a sheet-metal oil-holder, a vessel for holding hydrocarbon oils might be made of paper-pulp or similar material instead of metal, and have windows inserted in it in the manner described, and such substitution of material would be the equivalent of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. A sheet-metal vessel for containing hydrocarbon oils having a glass window in its walls secured in a frame composed of an outer screw-threaded flanged cylinder and an inner screw-threaded cylinder, holding the glass between the flange of the outer cylinder and the edge or flange of the inner cylinder and having a washer of suitable material capable of resisting the action of hydrocarbon oils interposed between the glass and one or both of the parts bearing on the glass, the washer or the part with which it comes in contact being coated or saturated with soluble glass, substantially as described.

2. A sheet-metal vessel for containing hydrocarbon oils having a glass window in its walls secured in a frame composed of an outer screw-threaded flanged cylinder and an inner screw-threaded cylinder, holding the glass between the flange of the outer cylinder and the edge or flange of the inner cylinder and having a washer of suitable material capable of resisting the action of hydrocarbon oils interposed between the glass and one or both of the parts bearing on the glass, the washer or the parts with which it comes in contact being coated or saturated with a cement capable of resisting the action of hydrocarbon oils, substantially as described.

3. A sheet-metal vessel for containing hydrocarbon oils having a glass window in its walls secured in a frame composed of an outer screw-threaded flanged cylinder and an inner screw-threaded cylinder, holding the glass between the flange of the outer cylinder and the edge or flange of the inner cylinder, and having soluble glass placed around the outer edge of the glass at or near the circle or circles of contact of the metal parts with the glass, substantially as described.



4. A sheet-metal vessel for containing hydrocarbon oils having a glass window in its walls secured in a frame composed of an outer screw-threaded flanged cylinder and an inner screw-threaded cylinder, holding the glass between the flange of the outer cylinder and the edge or flange of the inner cylinder and having a cement capable of resisting the action of hydrocarbon oils placed around the outer edge of the glass at or near the cir-

cle or circles of contact of the metal parts with the glass, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN A. FREY.

Witnesses:

W. H. L. LEE,  
R. A. PIPER.