Feb. 28, 1939. C. W. PLOEN 2,149,100

WATER-GLASS PROTECTOR

Filed Jan. 18, 1937

Fig. 1

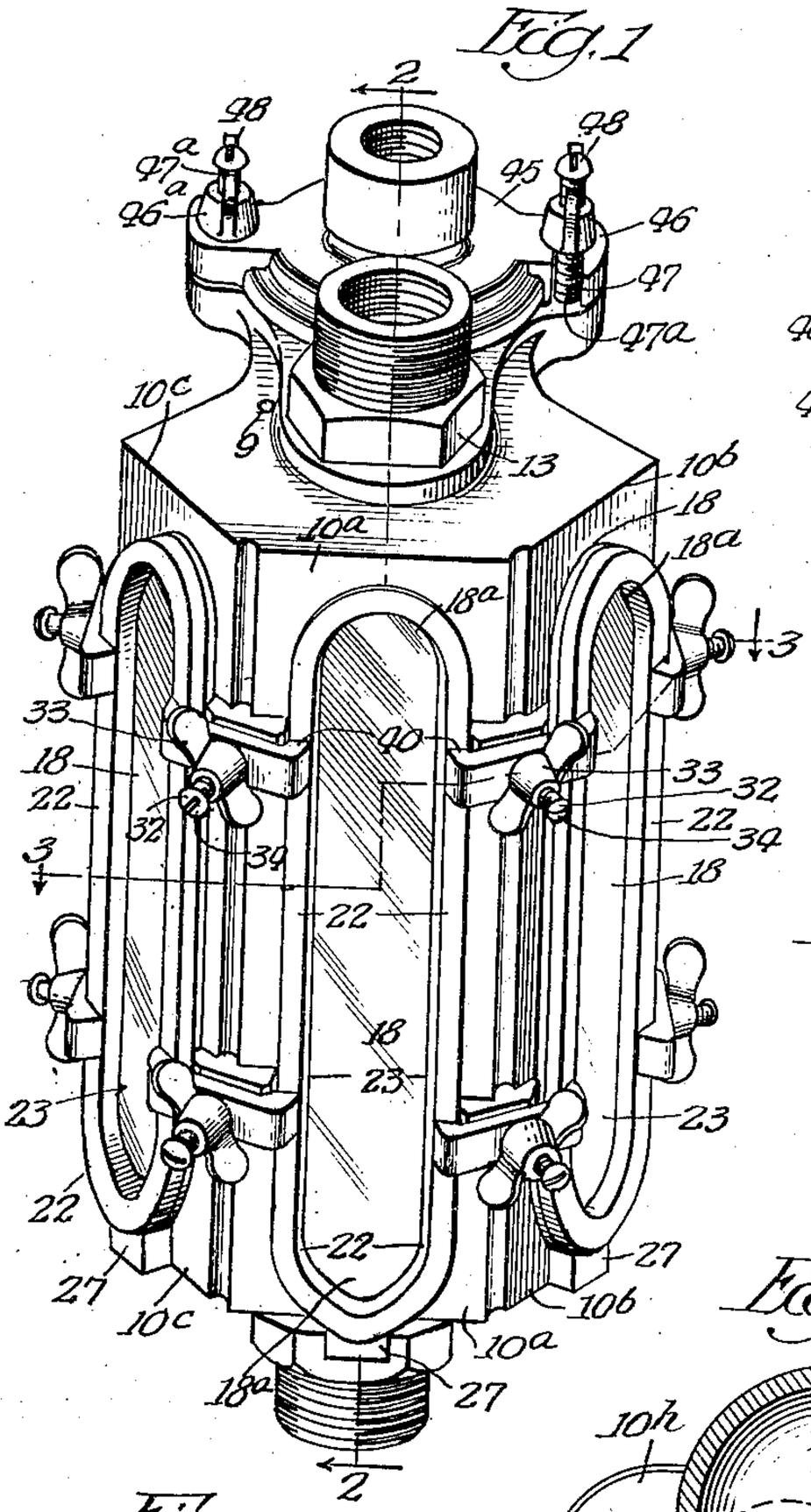


Fig. 4

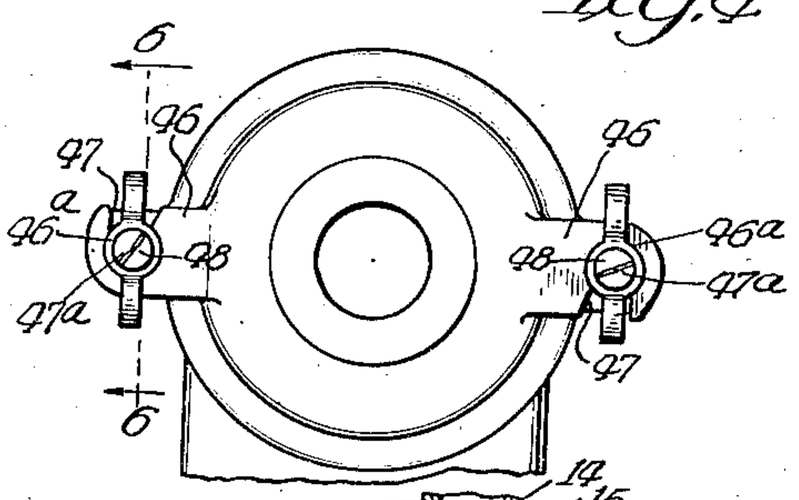


Fig. 2

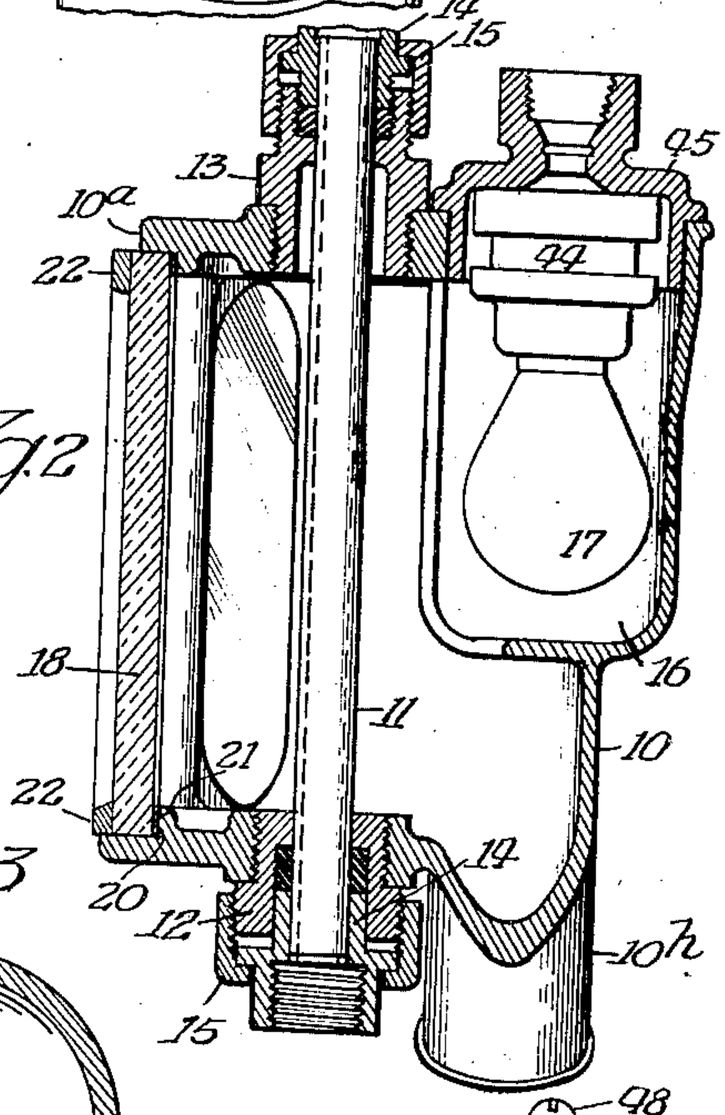


Fig. 3

Fig. 5

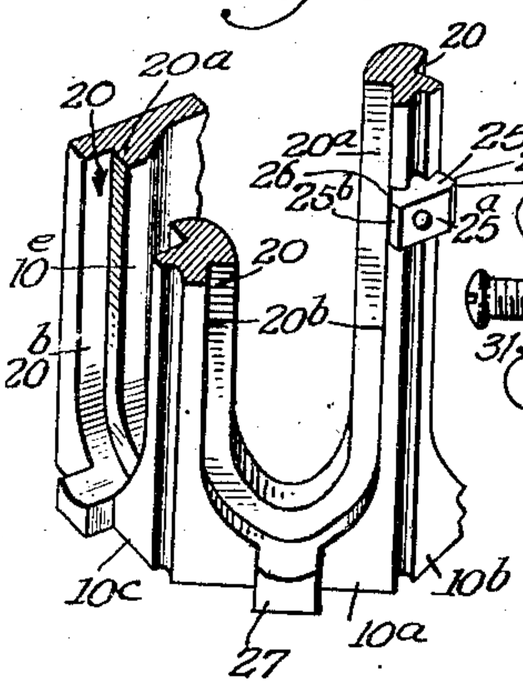
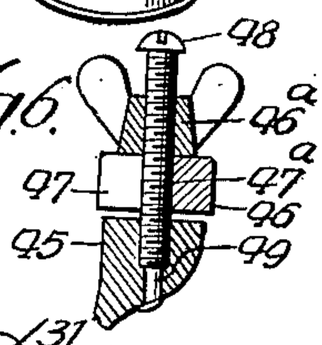


Fig. 6



Inventor
Curtis W. Ploen
By Fred Gerlach
his Atty.

Patented Feb. 28, 1939 2,149,100

UNITED STATES PATENT OFFICE

2,149,100

WATER-GLASS PROTECTOR

Curtis W. Ploen, Chicago, Ill., assignor to The Okadee Company, Chicago, Ill., a corporation of Illinois

Application January 18, 1937, Serial No. 121,093

8 Claims. (Cl. 73—325)

The invention relates to gauge glass protectors or guards.

The object of the invention is to provide an improved protector which comprises a casing or hollow body through which the gauge glass extends, one or more glass plates through which the gauge glass is visible, and improved means for removably securing the glass plates in the casing and also to provide improved means for positioning the cover-plates for the glass plates in their correct positions when it is necessary to remove them for cleaning or replacement.

Other objects of the invention will appear from the detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing: Fig. 1 is a perspective of a gauge-glass protector embodying the invention. Fig. 2 is a vertical section on line 2—2 of Fig. 1. Fig. 3 is a horizontal section on line 3—3 of Fig. 1. Fig. 4 is a plan of the removable cover for the lamp chamber. Fig. 5 is a sectional perspective of a portion of the casing. Fig. 6 is a section on line 6—6 of Fig. 4.

The invention is exemplified in a device comprising a hollow body or casing 10 provided with integral top and bottom walls, a tubular sight-glass 11 suitably held in sleeves 14 which are secured in a lower bushing 12, and an upper bushing 13. Coupling-rings 15 threaded to the bushings 12, 13, respectively, secure the sleeves in the bushings. This tubular sight-glass may be secured in the casing in any suitable manner, as well understood in the art, for communication with pipes leading from and to a boiler. The rear of the casing-body 10 is extended to form a housing for a chamber 16 for an electric lamp 17 which provides illumination in back of the tubular glass 11 to render it visible for reading the height of the water-column in the glass. A depending tubular extension 10^h on the casing provides a drain for connection with a hose, as well understood in the art.

Three transparent or glass plates 18 are provided in the front and sides of the casing and are positioned in relatively angled vertical planes, so that the gauge-tube 11 will be visible from the front and sides of the protector. The casing 10 is formed with a front wall 10^a and angular side-walls 10^b and 10^c extending in the planes of the plates 18 and substantially at right angles to radial planes extending through the centers of the sight-tube and said plates. Each glass plate 18 has substantially straight vertical sides and rounded or semicircular upper and lower ends 18^a. Each of the walls 10^a, 10^b and 10^c is provided with a recess 20 which is right angled in cross-section, the base 20^a of the angle forming a seat for a gasket 21 interposed between a glass plate 18 and the casing. The sides 20^b of the recesses 20 conform in contour substantially to the edges of the glass plate 18. A vent hole 9 is formed in the top of the casing to prevent fog from gathering on the sight-tube and windows. Each wall 10^a, 10^b, 10^c has an opening 10^d through which the sight-tube is visible. The glass plate 18 is of greater thickness than the depth of the recesses 20 so that the front of the glass will project sufficiently from the side of the recess 20 so its front cover can be gripped during its placement into or removal from said recess. A cover or frame 22 fits over the marginal portion of the front face of each glass plate 18 and its marginal or edge contour conforms to the edge of the glass plate 18. Each frame has an opening 23 with bevelled edges so that the tube 11 will be visible through the frame and glass plate 18. A pair of lugs 25 are integrally formed on and project from each of the corners between the walls 10^a, 10^b, 10^c of the casing 10 and between the sides of the front and side glass plates 18 at each of the rear covers of walls 10^b, 10^c. The lugs 25 have outer faces 25^a which are oblique with respect to the planes of the glass plate and the outer faces of frames 22, respectively. The sides 26 of lugs 25 are coplanar with the contiguous sides 20^b of the recess 20, respectively, to form means for holding the glass plates and the frames 22 against lateral displacement. At the bottom of each recess 20, a lug 27 integral with the casing 10 projects outwardly therefrom adjacent the vertical center line of the glass plate 18 and frame 22. The upper face of each lug 27 is curved to substantially conform to the lower rounded ends of the glass plates 18 and cover-frames 22. These lugs 27 are adapted to support and position the frames 22 when they are loosely held but not clamped against the plates 18. The lugs 27 also facilitate the positioning of the glass plates and frames 22 into position to enter the recesses 20 in the frame. The lugs 25 permit the glass plates 18 to be inserted from the outside into the recesses 20 to fit against the gaskets 21. The glass plates 18 are adapted to be placed into the recesses 20, respectively, from the outside of the casing-body and by placing the rounded lower ends in the correspondingly shaped portion of the recesses 20, the cor-

rect positioning of the glass plates will be facilitated. Lugs 25 have portions 25b which are flared relatively to the edges of the glass plates 18 and the cover-plates 22 to guide the glass plate into its recess 20 and the cover-plate laterally into position between said lugs.

Clamping devices are provided for removably securing the frames 22 and glass plates 18 in their respective recesses so as to form fluid-tight joints at gaskets 21. The clamping devices at the front of the casing comprise pairs of clamping members 30 which are adapted to span the corners between walls 10a, 10b, 10c and engage the frames 20 and a pair of members 31 at the rear corners of the walls 10b, 10c for engaging the rear sides of the frames 22 for the plates 18 in the sides of the casing. The faces 40 on the inwardly extending ends of lugs 30, 31 are coplanar with the outer faces of the frames 20. Each member 30, 31 is adapted to be clamped against a frame 22 by a wing-nut 33 on a screw 32 which extends loosely through and rotatably supports the clamping lug. Each nut is adapted to press the clamping-member against the associated frame 22 to force the frame against the glass plate and force the latter against the gasket 21. Each screw 32 is provided with a head 34 at its outer end and its inner end engages a shoulder 35 in the casing so that the said head will be positioned to leave the clamping-member on the screw free to be withdrawn a sufficient distance to permit the ends of the lugs 30, 31 to rotate clear of the frame 20. Each screw is formed with a pin or stem 37 which extends through a hole 38 in the casing. The inner end of each pin 38 is bent to engage the casing and prevent the screw from being unscrewed from the body. The head 34 serves as a stop for the wing-nut 33. The axis of each of the screws 32 bisects the angle between the planes intersecting the axis of the sight-tube 11 and the centers of plates 18 and the center of one of the lugs 30 and 31 and oblique to the sides of its associated plate 18 and frame 22. When pressure is applied to the clamping members 30, 31 through the nuts 33, the faces 40 on the lugs will seat on the oblique faces of the frames 22 and force the frames against the glass plates 18 and the latter against the gaskets 21 to form fluid-tight joints between the glass plates and the casing. In placing the plates 18 in the recesses 20 and the frames 22 in place, their lower ends will be placed in lugs 27 to position them vertically for easy placement in correct positions.

In use, when it is necessary to remove the glass plates 18 for cleaning or replacement, the nuts 33 are unscrewed sufficiently to permit the clamping members 30, 31 to be turned from a horizontal to a vertical position to clear the space outwardly of the frames 22 and glass plates 18. The heads 34 on screws 32 prevent the nuts 33 from being removed from screws 32 so that the clamping members and nuts can not be removed or become lost or misplaced. With the clamping-members loosened, the frames 22 are free to be removed outwardly and vertically, if desired, and the glass plates 18 will be free to be removed outwardly from recesses 20. In replacing the frames 22 in position over glass plates 18, flared sides of lugs 25 will guide them into registration with the glass plates positioned in the recesses 20. The U-shaped recess in lug 27 will vertically position the cover-plate for placement between the lugs 25. There is sufficient clearance between the clamping-members 30 and 31 and the outer faces of the casing to permit the inclined faces 40 to engage the frames and force them to hold the glass plates firmly in the casing.

An electric lamp 17 is carried by a socket 44 which is secured in a cap 45 which closes the top of the lamp-chamber 16 in the casing. Cap 45 is provided with diametrically opposite lugs 46 having open-ended slots 47. This cap is adapted to be held in the casing by nuts 46a which pass through slots 47 and are threaded to screws 47a which are threaded into the casing 10 and terminate at shoulders in the casing. Heads 48 on the outer ends of screws 47a prevent the nuts 46a from being removed from the screws. The inner ends of screws are provided with pins 49 which extend through holes 46b and have their lower ends bent to prevent the screws from being unscrewed from the casing. When it is desired to remove the cap for access to or replacement of the lamp or lamp-socket, it is only necessary to unscrew the nuts 48 sufficiently to permit the cap 45 to be rotated to disengage lugs 46 from nuts 46a. The cap can then be lifted out of the casing.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

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

1. In a gauge glass protector, the combination of a casing provided with vertically extending walls inclined relatively to the other, each wall having an opening therein, transparent plates fitting over the openings, frames fitting over the transparent plates, said plates and frames being inclined conformably to the inclined walls of the casing, and devices for clamping the frames against the transparent plates to secure the latter on the casing, comprising radial screws extending into the intersecting corner of said inclined walls and between the adjacent sides of the transparent plates and the frames, clamping members rotatable on the screws and having inner faces for engaging the outer faces of the frames and nuts on the screws for clamping the members against the frames.

2. In a gauge glass protector, the combination of a casing provided with vertically extending walls inclined relatively to the other, each wall having an opening therein, transparent plates fitting over the openings, frames fitting over the transparent plates, said plates and frames being inclined conformably to the inclined walls of the casing, and devices for clamping the frames against the transparent plates to secure the latter on the casing, comprising radial screws extending into the intersecting corner of said inclined walls and between the adjacent sides of the transparent plates and the frames, clamping members rotatable on the screws and having inner faces substantially coplanar with the outer faces of the frames and nuts on the screws for clamping the members against the frames.

3. In a gauge glass protector, the combination of a casing provided with vertically extending walls inclined relatively to the other, each wall having an opening therein, and a recess around the opening, transparent plates fitting over the openings and in the recesses, frames fitting over the transparent plates, said plates and frames being inclined conformably to the inclined walls of the casing, and devices for clamping the frames against the transparent plates to secure the latter in the recesses on the casing, compris-

ing radial screws extending into the intersecting corner of said inclined walls and between the adjacent sides of the transparent plates and the frames, clamping members rotatable on the screws and having inner faces for engaging the outer faces of the frames and nuts on the screws for clamping the members against the frames, the casing being provided with lugs under the clamping-members with guide faces for the plates and frames.

4. In a gauge glass protector, the combination of a casing provided with an opening in its side, a tubular gauge glass in the casing, a transparent plate fitting over the opening, a frame fitting over the transparent plate, lugs rigid with and projecting outwardly from the casing, terminating at the margins of the plate and frame and having flared surfaces at their outer ends for guiding the transparent plate and the frame into registry, and clamping devices for securing the frame and transparent plate against the casing.

5. In a gauge glass protector, the combination of a casing provided with an opening in its side, a tubular gauge glass in the casing, a transparent plate fitting over the opening, a frame fitting over the transparent plate, lugs integral with and projecting outwardly from the casing terminating at the margins of the plate and frame and having flared surfaces at their ends for guiding the transparent plate and the frame into registry, and clamping devices comprising screws fixed in the casing and members rotatable on the screws and extending over the frame to clamp the frame and transparent plates against the casing.

6. In a gauge glass protector, the combination of a casing provided with an opening in its side and a recess around said opening, a tubular gauge glass in the casing, a transparent plate fitting over the opening and in said recess, a frame fitting over the transparent plate, lugs rigid with and projecting outwardly from the casing terminating at the margins of the recess and having flared surfaces at their outer ends for guiding the transparent plate into the recess and the cover-plate into registry with the transparent plate, and clamping devices for securing the frame and transparent plates against the casing.

7. In a gauge glass protector, the combination of a casing provided with an opening in one of its sides and a recess around said opening, a gauge glass in said casing, a transparent plate fitting over the opening and in the recess, a frame fitting over the glass plate, a lug projecting from the casing provided with a recess for receiving the lower end of said frame and supporting the glass plate in registry with the recess, screws extending into the wall of the casing, clamping lugs for the cover-plate rotatable on the screws and nuts for shifting the clamping-lugs.

8. In a gauge glass protector, the combination of a casing provided with an opening in one of its sides and a recess around said opening, a gauge glass in said casing, a transparent plate fitting over the opening and in the recess, a frame fitting over the glass plate, said frame having a curved lower end, a lug projecting from the casing provided with a curved recess for receiving the lower curved end of said plate and positioning it vertically before it enters the recess, screws extending into the wall of the casing, clamping-lugs for the cover-plate rotatable on the screws and nuts for shifting the clamping-lugs.

CURTIS W. PLOEN.