

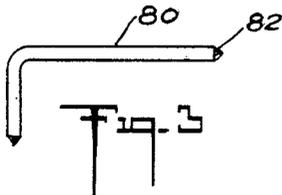
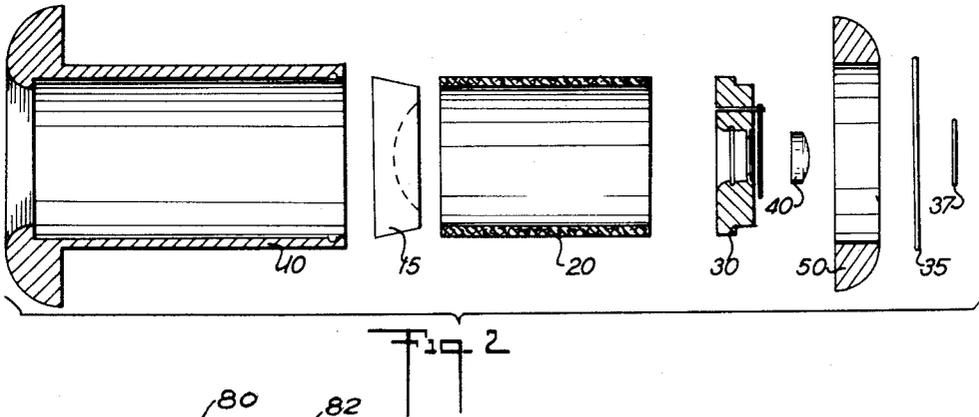
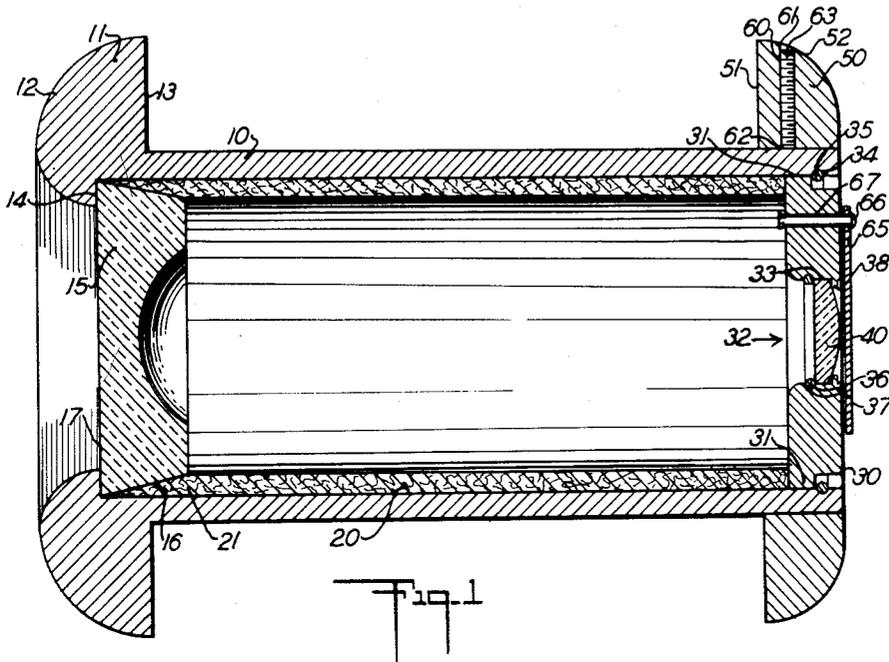
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DOOR PEEP OBSERVATION DEVICE

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## DOOR PEEP OBSERVATION DEVICE

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### 1 Claim. (Cl. 88—1)

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This invention relates to observation devices and has particular relation to an observation device adapted for installation in a circular door hole. Devices of the present type are generally termed as peep holes in the art.

Prior devices adapted for observation through a door hole have the disadvantage that they are not readily assembled and may not be telescopically assembled in accurate alignment and in substantially perfect telescopic relationship. The prior art devices of this general type also have the disadvantage that they may be disassembled from either the outside or the inside.

Accordingly, it is an object of the present invention to provide an observation device which may be mounted in a simple circular opening in any door to permit inspection by a person on the interior side of the door of persons desiring to enter or attempting to enter the door before it is opened.

Another object of the invention is to provide an observation device for inspection purposes which provides an unusually wide-angle lens system comprising a large concave negative lens matched with a convex positive lens or eye piece lens; so that the entire body of the person or persons seeking entrance may be viewed even though such person or persons are standing in close proximity to the door or to the left hand or right hand side of the device; or below the device.

Another object of the invention is to provide an observation device through which an observer can view only from the inside looking out and which will not permit viewing from the outside looking in.

Another object of the invention is to design, construct or assemble an observation device that will be noiseless in operation and which will not provide an open hole in the door, so that a person or persons on the outside being inspected cannot, under normal circumstances, become aware of being inspected by a person on the inside.

Another object of the invention is to design, construct and assemble an observation device which is essentially and exceptionally simple to install in any normal wood or metal door and which, when installed, can be simple and securely locked in place and cannot be removed or tampered with from the outside; and which can be removed from the door only by the use of a special key provided with the device which must be applied to the device on the inside of the door in order to permit removal of the device from the door.

Another object of the invention is to provide

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an observation device which will permit simple and ready telescopic assembly so that the device may be installed properly by any normal person without the aid of skilled workmen.

5 These and other objects of the invention will be understood by reference to the following description and accompanying drawing.

The present invention generally comprises an observation device adapted for installation in a door hole comprising a tube of substantially door hole diameter and having a rim-like facing at one end, the inner and outer diameters of said facing being respectively smaller and larger than the respective inner and outer diameters of said tube to provide inner and outer shoulders therefor, a concave wide-angle negative lens with its major diameter substantially that of the inside of the tube and positioned in the faced end of the tube with the flat face of the lens seated against said inner shoulder, a thin-walled liner in the tube having one end in edge abutting relation with the lens, an end plate mounted in the other end of said tube, said end plate having a peripheral shoulder at its inner edge in abutment with the other end of said liner, an inner circumferential groove in said other end of said tube adjacent said end plate, a spring ring positioned in said groove and abutting against said end plate shoulder for locking said end plate against the said other end of the liner, an axial bore hole in said end plate, an inwardly extending flange portion depending from the outer end of said bore hole; an inner circumferential groove adjacent the inner end of said bore hole, a convex positive lens mounted in said bore hole between said flange and said groove; a spring ring mounted in said groove and locking said lens against said flange; a shutter pivotally mounted on the outer face of said end plate and adapted to cover said bore hole, and a locking collar encircling the other end of the tube, whereby the observation device may be locked in the door hole by the clamping engagement of the outer and inner door sides between the outer facing shoulder of the tube and the tube locking collar.

In one embodiment the liner in the tube is jammed between the inner wall of the tube and the small end of the tapered lens. In a preferred embodiment the tube is of metal and the tube liner preferably comprises a paper construction, as of solid kraft paper tubing which is forced into the cylinder until it fits tightly and slightly overlaps the tapered end of the lens thereby only holding the lens in place. It is also contemplated that the liner may be of

molded plastic material or metal. Additionally, in a preferred construction a radially positioned set screw is provided in the locking collar whereby the assembled observation device may be locked in the door hole and may not be removed without a special key, as of the Phillips type, adapted to fit the concealed set screw.

Thus the invention consists in the novel and simple arrangement and combination of parts hereinafter more particularly described and claimed, and referring now to the drawings:

Fig. 1 is a cross sectional view of an observation device embodying the present invention and shown in assembled position;

Fig. 2 is an exploded sectional view of the device as shown in Fig. 1; and

Fig. 3 is a perspective view of a special key adapted to fit the head of the set screw shown in Figs. 1 and 2.

Referring now to the drawings, 10 is a cylindrical metal housing provided with a facing flange 11 having an outer rounded face 12. The housing is preferably die cast in one piece and is provided with a sharpened outer flange edge 13 in order to provide tight contact with the outer surface of the door (not shown) in which it is installed. The housing is also provided with an inner flange edge 14 adapted to retain a concave wide-angle negative lens 15 in the tube opening.

The negative lens 15 is provided with a tapered edge 16 and is positioned in the housing 10 with its larger diameter face 17 in abutment with the inner flange portion 15 of the housing. A tube liner 20, as of solid kraft paper, is adapted to be snugly fitted into the housing and extend from about the inner flange 14 at the front of the housing to the inner edge of the flange 31 of the eye piece holder 30. By the use of a resilient liner 20, the leading edge portion thereof may be pressed into the wedge-shaped annular area defined by the tapered edge 16 of the negative lens and the inner wall of the housing 10, as shown at 21. This construction provides a tight fit for the negative lens 15 which is relatively tamper proof and water proof.

A lens holder or end plate 30, having an outwardly extending annular flange 31 at its inner peripheral edge and an axial bore hole 32, is provided to be snugly fitted in the other end of the housing. The inner wall of the housing is provided adjacent said other end with an annular groove 34 adapted to receive a spring ring 35 for retaining the eye piece holder 30 in place in the housing 10 in abutment against the end of the tube liner 20. Likewise, a circular cut-out portion 33 in the lens holder 30 is provided with an annular groove 36 adapted to receive a spring ring 37 for holding the eye piece lens 40 in position against a flange portion 38 adjacent the outer side of the lens holder.

A retaining ring 50 is adapted to be slidably fitted over the outside of the main cylindrical housing 10 on the inside position of the door after the cylinder has been placed through a hole in the door from the outside. The sliding retaining ring 50 is moved along the end of the cylinder until the ring establishes contact with the inner surface of the door. To this end, the retaining ring 50 is provided with a flat flange portion 51 adapted to fit snugly against the inner side of the door. Preferably, the retaining ring 50 is provided with an outer surface of generally curved character as indicated at 52. It will be apparent that the retaining ring may be mounted, as by screw threading or bayonet locking, onto

the retaining ring 10. In the form shown, the retaining ring 50 is securely locked in place by means of a set screw 60 mounted in a radial hole 61 on the perimeter of the retaining ring 50 so that when the set screw is screwed inwardly, it tightens against the cylinder wall of the main housing 50, as at 62, to prevent movement of the ring. A set screw 80 (Figure 3) is provided with a special configuration as at 82. The head 63 of the set screw is provided with a special configuration so as to form a female mating member with the head of the set screw shown in Fig. 3. Additionally, in a preferred form, the eye piece holder 30 carries a shutter 65 which is rotatably mounted on a retaining pin 66, the pin being positioned in a bore hole 67 in the eye piece holder 30 so that the shutter 65 is free to fall in place by gravity and cover the lens 40 thereby preventing any possibility of light rays passing through the observation device when the shutter is in the normal closed position.

In assembling the device, the negative lens element 15 is first positioned in the main housing 10 with its larger side edge in abutment against the inner flange portion 14 of the housing. Thereafter, the resilient tube liner 20 is inserted in the housing and is pressed inwardly, preferably to fill the space between the negative lens tapered edge 16, as shown by the reference character 21. The eye piece lens element 40 is placed in the opening 33 in the lens holder against the flange 38 and the spring ring 37 is positioned in the circular groove 36, whereby the eye piece lens 40 may be secured in place by the spring ring.

Thereafter the lens holder 30 is inserted in the housing with the annular flange 31 pressing against the tube liner 20 and the spring ring 34 is positioned in the annular groove 35 in the housing to further tighten the negative lens 15 in position. Thereafter, the retaining ring 50 is mounted on the housing and positioned inwardly against the inner side of the door so that the flange 51 of the sliding retaining ring fits snugly against the inner door face. The set screw 63 is then tightened by means of the key shown in Fig. 3, so that the set screw bears against the outer wall of the housing as shown at 62.

In a preferred form, the housing, the eye piece holder, and the retaining ring are all made of metal or of brass although it will be understood that other materials such as hard thermosetting type plastics may be used. In one embodiment, the present invention was constructed with the housing die cast in one piece being  $1\frac{1}{4}$  inches outside diameter and two inches in overall length, the flange front being two inches in diameter. The negative lens was constructed with  $1\frac{1}{8}$  inch in its major diameter tapering to 1 inch in its inner and minor diameter and being  $\frac{5}{8}$  inch thick at its outer edge. The eye piece holder was fashioned  $1\frac{1}{8}$  inches in diameter and  $\frac{1}{8}$  inch in thickness, the eye piece lens being  $\frac{5}{8}$  of an inch in diameter and approximately  $\frac{1}{8}$  of an inch in thickness. The sliding retaining ring was fashioned  $1\frac{3}{4}$  of an inch in outside diameter and  $\frac{1}{8}$  of an inch thick so as to fit over the inner portion of the main cylindrical housing after the cylinder has been placed through a hole in the door.

It will be apparent that various modifications may be made in the present invention without departing therefrom, and while the invention has been shown in a preferred embodiment, it will be understood that it is intended to include all such

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modifications and departures as come within the spirit and scope of the appended claim.

I claim:

An observation device adapted for installation in a door hole comprising a tube of substantially door hole diameter and having a rim-like facing at one end, the inner and outer diameters of said facing being respectively smaller and larger than the respective inner and outer diameters of said tube to provide inner and outer shoulders therefor, a concave wide-angle negative lens with its major diameter substantially that of the inside of the tube and positioned in the faced end of the tube with the fiat face of the lens seated against said inner shoulder, a thin-walled liner in the tube having one end in edge abutting relation with the lens, an end plate mounted in the other end of said tube, said end plate having a peripheral shoulder at its inner edge in abutment with the other end of said liner, an inner circumferential groove in said other end of said tube adjacent said end plate, a spring ring positioned in said groove and abutting against said end plate shoulder for locking said end plate against the said other end of the liner, an axial

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bore hole in said end plate, an inwardly extending flange portion depending from the outer end of said bore hole, an inner circumferential groove adjacent the inner end of said bore hole, a convex positive lens mounted in said bore hole between said flange and said groove, a spring ring mounted in said groove and locking said lens against said flange, and a locking collar encircling the other end of the tube, whereby the observation device may be locked in the door hole by the clamping engagement of the outer and inner door sides between the outer facing shoulder of the tube and the tube locking collar.

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