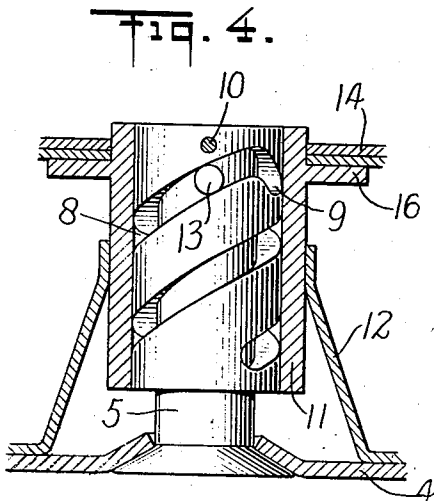
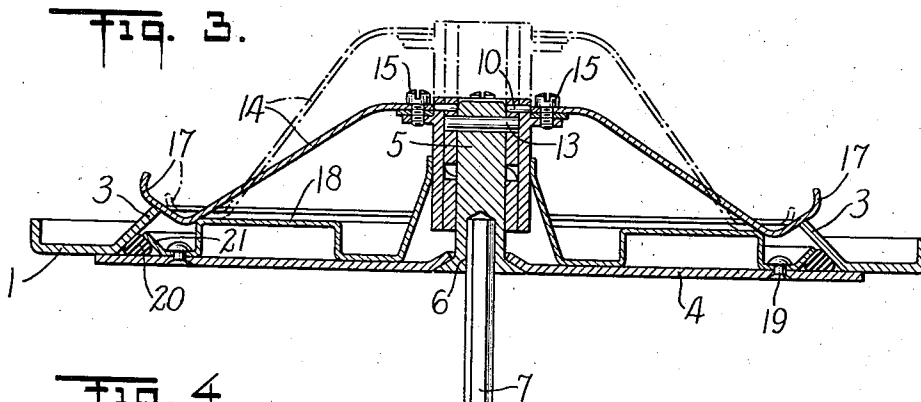
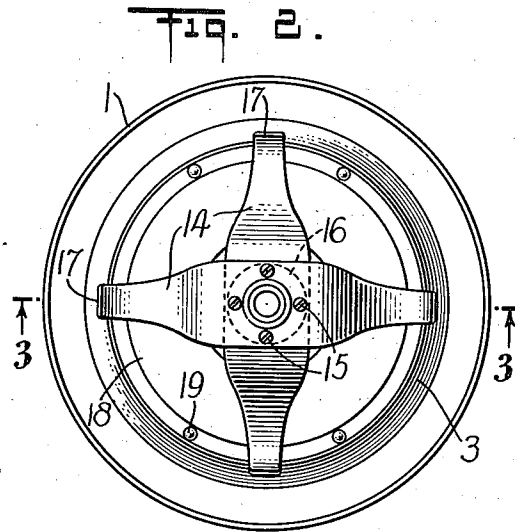
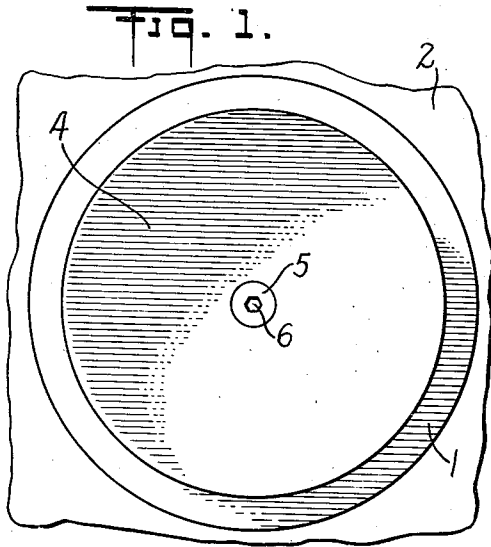


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LATCH FOR HAND HOLE COVERS

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LATCH FOR HANDHOLE COVERS

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3 Claims. (Cl. 70-163)

This invention relates to a latch for hand hole cover. In many constructions it is necessary to provide hand holes through which access may be had to operating or other mechanism.

For instance in aeroplane construction hand holes are provided in the fuselage through which access may be had to the operating parts for the purpose of inspection or repair work.

The present invention relates to a cover for such a hand hole, and the object of the invention is to provide a cover which may be easily placed and removed, and yet which will positively be secured in place against accidental displacement.

In the drawing:

Figure 1 is an elevation of such a cover looking at the outside thereof;

Figure 2 is a similar view looking at the opposite or inside;

Figure 3 is a sectional view showing the device in its locked position in full lines and in its unlocked position in construction lines, and also showing the operating tool that is used in connection therewith; and

Figure 4 is an enlarged sectional view of the spreader cam for the locking fingers.

The form of the invention disclosed in the drawing includes a frame 1 that is adapted to be attached by any suitable means to the element in which the hand hole occurs. This frame may be annular or of other desired form, and includes cam seats 3. These cam seats may be in the form of a continuous ring or, if desired, they may be only relatively narrow seats which occur opposite the cams which will later be described.

The cover element 4, which is of a configuration such as will close the hand hole, and which is either adapted to overlap the frame 1, as illustrated in the drawing, or be flush with the outer face thereof and find its support on the cam seats 3, may be locked in place by the following mechanism: a rotatable post 5 having a socket 6 in the outer end thereof for the reception of an operating tool 7 carries a helical cam groove 8 which has at its end a locking depression 9. This cam groove 8 is formed in a collar attached to the sleeve 11 by means of a rivet 10.

This post 5 is mounted for rotation in the sleeve 11 that is slidably supported by braces 12 on the cover 4. A cam pin 13 extends rigidly from the post 5 and is adapted to lie in the cam slot 8 and to seat in the depression 9 at the outer end thereof.

Resilient locking fingers 14 are secured at 15 to a flange 16 on the sleeve 11 and extend generally speaking radially therefrom. The ends of these

locking fingers are cam shaped as at 17 and are normally supported when the cover 4 is in an unlocked position upon tracks 18. These tracks may be, as shown in the drawing, formed integrally with the braces 12 and secured to the cover by rivets or other means 19. The tracks 18 and the braces 12 may be made of one continuous circular piece of metal and simply stamped out into this shape, or they may be cut away in between the tracks 18 on which the locking fingers 14 ride.

A sealing gasket 20 of resilient material surrounds the upturned ends 21 of the tracks 18 on the upturned flange of these tracks if they are formed of one continuous piece of metal, and because of the fact that the diameter of this annular gasket is normally greater than that of the upturned end 21 of the tracks, the latter will hold the gasket in place between themselves and the inner face of the cover 4 so that when the cover is drawn tightly toward the frame 1 the gasket will seal the joint between the frame and the cover.

In operation the locking fingers 14 are in the construction line positions illustrated in Figure 3 when the cover is unlocked. When it is desired to lock the cover the tool 7 is inserted in the operating socket 6 and rotated. The rotation of this tool will rotate the post 5 and because of the engagement of the cam pin 13 with the slot 8 therein will draw the sleeve 11 and the cover 4 relatively toward each other. As they will thus draw together, the cams 17 on the ends of the locking fingers will ride outwardly against the resiliency of said fingers until they engage the edge of the cam seats 3. The continued relative movement of the sleeve 11 and the cover 4 toward each other will cause the cam portion 17 to ride up on the cam seats 3 with the result that the cover 4 will be drawn tightly against the gasket 20 and the hand hole covered and sealed.

When the cover reaches its final position, the cam pin 13 will seat in the depression 9 in the post 5, and thus will lock the cover tightly against the frame 1 and the intervening gasket 20, because it will be forcibly held in said depression by the resiliency of the locking fingers 14.

When the tool is operated in the opposite direction the pressure on the cams 17 on the ends of the locking fingers will be released because the sleeve 11 and the cover 4 will be moved relatively away from each other.

After the pressure is relieved the resiliency of the locking fingers will draw them inwardly on the tracks 18 to such an extent that they will lie within the circumferential dimensions of the

cam seats 3 to permit the removal of the cover and the operating mechanism described through the hand opening in the frame 1.

Thus it may be seen that the cover may be easily and quickly placed and locked in position. It may also be easily and quickly unlocked and removed, and in its covering position will present a smooth outer surface.

While I have described this embodiment of the invention as applied to a hand hole cover, it is of course to be understood that it is just as applicable to other devices which include a frame with an opening therethrough which it is desired to close, and therefore I do not wish to be limited to the particular use of the device as I have described it, nor do I wish to be limited to the particular construction disclosed because more variations may be made within the definition of the claims.

What I claim is:

1. A latch construction for latching a cover to an angular frame having an inturned flange, comprising a post carried by and rotatable in the cover, a sleeve mounted on said post and slidable in relation thereto, means connecting the sleeve and the post together whereby when the post is rotated the sleeve will receive a sliding motion, resilient fingers carried by the sleeve and adapted to engage the inturned flange of the frame whereby when the sleeve is moved in one direction the fingers will be forcibly engaged with the flange and when the sleeve is moved in the other direction the fingers will be disengaged from the flange.

2. A latch construction for latching a cover to an angular frame having an inturned flange, comprising a post carried by and rotatable in the cover, a sleeve mounted on said post and slidable in relation thereto, means connecting the sleeve and the post together whereby when the post is rotated the sleeve will receive a sliding motion, resilient fingers carried by the sleeve and adapted to engage the inturned flange of the frame whereby when the sleeve is moved in one direction the fingers will be forcibly engaged with the flange and when the sleeve is moved in the other direction the fingers will be disengaged from the flange, and means for guiding the fingers into and out of engagement with the flange.

3. A latch construction for latching a cover to an angular frame having an inturned flange, comprising a post carried by and rotatable in the cover, a sleeve mounted on said post and slidable in relation thereto, means connecting the sleeve and the post together whereby when the post is rotated the sleeve will receive a sliding motion, resilient fingers carried by the sleeve and adapted to engage the inturned flange of the frame whereby when the sleeve is moved in one direction the fingers will be forcibly engaged with the flange and when the sleeve is moved in the other direction the fingers will be disengaged from the flange, means for guiding the fingers into and out of engagement with the flange, and means rigid with the last-mentioned means for guiding the sleeve in its movement.

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