May 20, 1952 F. S. CRAIG 2,597,707

TIGHTENING AND FASTENING MEANS FOR CASING COVERS

Filed Oct. 26, 1949

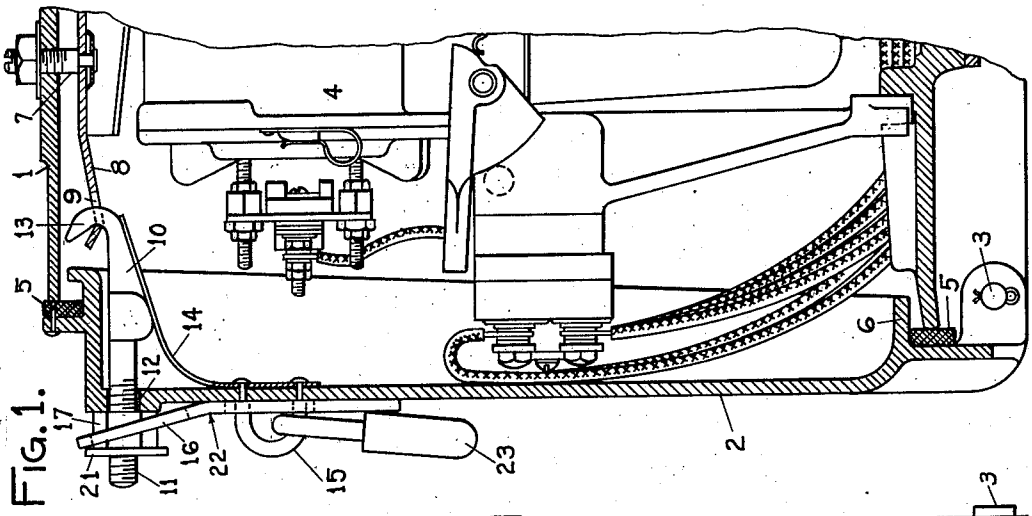

FIG. 1.

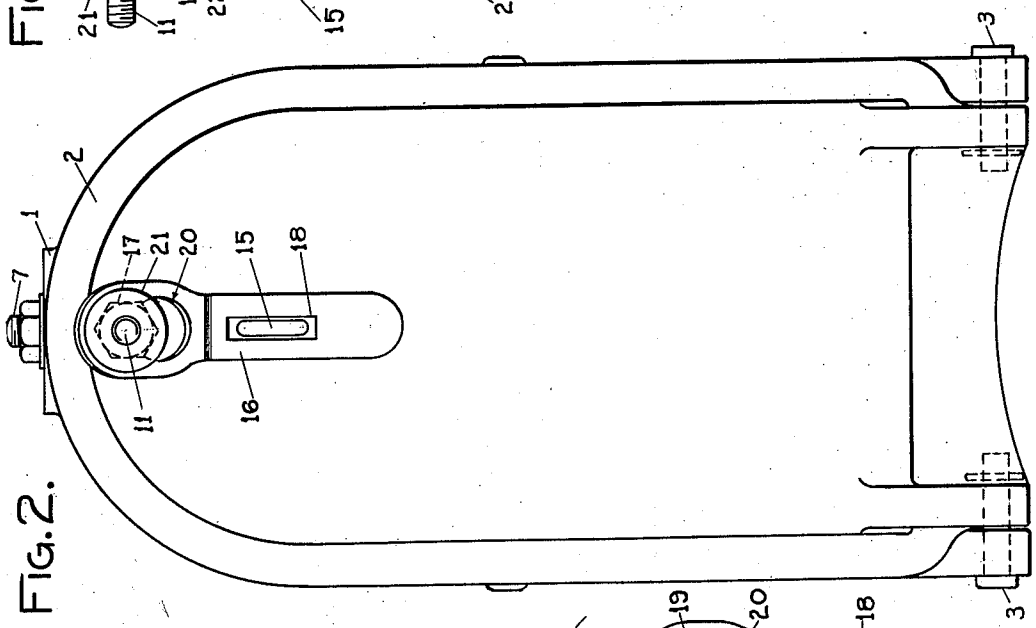

FIG. 2.

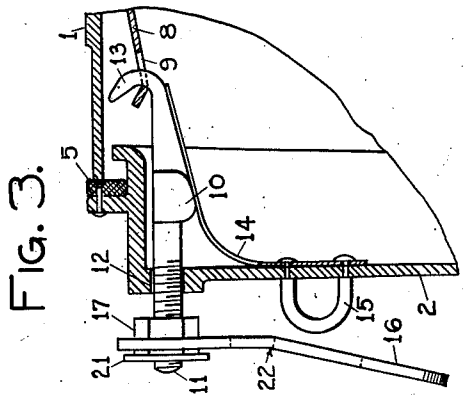

FIG. 3.

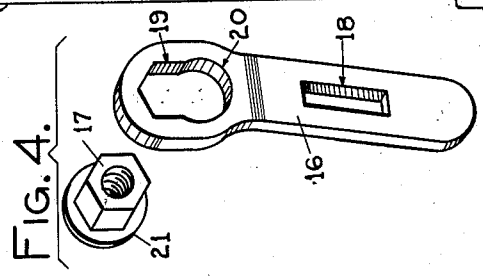

FIG. 4.

Inventor

F. S. Craig,

By Neil W. Preston,

his Attorney

Patented May 20, 1952 2,597,707

UNITED STATES PATENT OFFICE

2,597,707

TIGHTENING AND FASTENING MEANS FOR CASING COVERS

Frank S. Craig, Chili, N. Y., assignor to General Railway Signal Company, Rochester, N. Y.

Application October 26, 1949, Serial No. 123,554

2 Claims. (Cl. 220—55)

1

This invention relates in general to a means for tightening and fastening covers or doors on mechanism cases which are ordinarily exposed to the weather and must of necessity be moisture proof at all times even though they are subject to frequent opening and closing for inspection, repairs, and the like.

Generally speaking, mechanism cases of this character are provided with a suitable gasket between the door and the housing and are held closed by a spring hasp, or a hasp wrench and nut arrangement for quick accessibility, such as shown in the patent to Edmund W. Moor, No. 2,239,336, dated April 22, 1941.

In the type of fastening means shown in the above mentioned patent, after the door is closed, the threaded hasp is turned much in the same manner as a wrench until the door is tightened down on the gasket and case, consideration being given to the position of the hasp so that the slotted hole therein will line up and fit over the staple provided on the door to form a locking means.

However, it has been found in practice that eventually the gaskets become compressed and hard; and the gasket may reach this completely compressed condition when the hasp wrench and nut assume a position considerably away from the locking position where the hasp can fit over the staple. Under such circumstances, it is impossible, by following the usual procedure, to turn the hasp in the tightening direction sufficiently to reach its locking position. This is objectional as the slotted hole in the hasp does not line up with the staple and locking is prevented. Forcing the hasp around by the use of a large wrench or other type tool may cause breakage of the parts.

The present invention contemplates the use of a two piece hasp and nut whereby the tightening nut may be turned by the hasp wrench in stages of sixty radial degrees at a time, with the hasp being returnable to a locking position after each such operation. This makes it possible to compress the gasket to the correct degree of tightness after each opening and closing of the casing. Furthermore, this is accomplished without losing any of the advantages of having a one piece tightening and locking hasp wrench and nut arrangement, as will be pointed out hereinafter.

Further objects, purposes and characteristic features of the present invention will appear as the description progresses, reference being made to the accompanying drawing, showing one form which the invention can assume.

2

In the drawing:

Fig. 1 is a sectional view of a typical housing with a hinged door, with the tightening and fastening means herein described shown applied thereto;

Fig. 2 is a front elevation of the apparatus shown in Fig. 1;

Fig. 3 is a sectional view of the tightening and fastening means shown in a position wherein the door is latched shut but not tightened down; and,

Fig. 4 is a perspective view of the tightening nut and hasp wrench in an unassembled position.

Referring to the single sheet of drawing, and particularly Fig. 1, for the purpose of illustration there has been shown a typical light signal casing such as shown in the above mentioned Patent No. 2,239,336. This casing comprises a housing 1 shown partly broken away, the opening being covered by a door 2 hinged at 3. A mechanism 4 or other apparatus desired to be protected from the weather is suitably mounted within the housing 1 and need not be described herein. A gasket 5 of suitably treated flax packing, jute, cotton or hemp braid, or any other suitable material, is cemented or attached to the door 2 by split rivets. This gasket 5 completely surrounds the flange 6 extending around the outside edge of the door 2, and is so positioned that when the door is closed the gasket butts against the edge of the opening in the housing 1.

Also mounted on the inside of the housing on the side opposite the hinges, as by stud bolts 7 (only one of which has been shown), is a latch bracket 8 provided near its loose end with a receiving opening 9. Loosely mounted in the door 2 is a latch member 10 adapted to cooperate with the latch bracket 8, one end of this latch member 10 being threaded as at 11 where it passes through an enlarged hole 12 in the door 2 while the other end is provided with a hook 13 which passes through the receiving opening 9 in the latch bracket 8. The latch member 10 is flat on its bottom side and is biased upward against its own weight by a flat spring 14 which is attached to the inside of the door 2, the latch member 10 resting on the flat spring 14 when in their assembled positions. The butt ends of a staple 15 passing through holes in the door 2 serve to anchor the staple 15 and the flat spring 14 in place when riveted over.

The fastening and tightening means for the door 2 comprises a hasp wrench 16 and a collared hex nut 17 as shown in detail in Fig. 4. The

hasp wrench 16 is provided with the usual elongated hole 18 near one end so located as to fit over the staple 15 while the other end is provided with an opening which is hex shaped at its upper half and circular shaped at its lower half. The hex shaped part 19 of this latter opening is adapted to engage the hex nut 17 in much the same manner as a wrench while the circular shaped part 20 of this opening is of such a diameter that it can fit loosely over, and not engage, the hex nut 17, when the hasp wrench 16 is turned thereon. The hex nut 17 is provided at one end with a circular collar 21 of a diameter larger than the opening 20 in the hasp wrench 16. When assembling this fastening and tightening means, the hasp wrench 16 is placed over the nut 17 with the opening 20 encircling the hex nut 17. The nut 17 is then turned part way by hand on the threaded end 11 of the latch member 10 which projects through the enlarged hole 12 in the door 2, thus positioning the hasp wrench 16 on the collared hex nut 17 between the circular collar 21 and the door 2, in which position it will remain so long as the nut 17 is not removed from the latch member 10.

With the various parts in the assembled position just described (as shown in Fig. 3), the door 2 may be latched or unlatched without the necessity of removing the nut 17 and hasp wrench 16 from the latch member 10, these three parts remaining attached to the door 2 at all times after intial assembly. Assuming the door 2 to be in its opened position and it is desired to close up the casing, the door 2 is swung on its hinge pins 3 until the latch member 10 enters the housing 1 and the hook end 13 of the latch member 10 butts against the end of the latch bracket 8. The latch member 10, being loosely mounted in the enlarged hole 12 in the door 2, may be pushed inwardly and downwardly against the bias of the flat spring 14 until the hook end 13 of this latch member 10 enters the opening 9 in the latch bracket 8, thereby latching the door 2 closed, as shown in Fig. 3.

As the hasp wrench 16 is already in engagement with the nut 17, the hex shaped part 19 of the opening fitting over the hex shaped part of the nut 17, it is only necessary to turn the hasp wrench 16 in a clockwise direction to screw up the nut 17 against the door 2 and compress the gasket 5 against the edge of the opening in the housing 1 until the door is securely sealed shut. The hasp wrench 16 is formed with a slight bend at 22 so that when turned it will clear the staple 15 which protrudes from the door 2.

It is obvious that when the door 2 is tightened down as described above, the hasp wrench 16 may be lying in any position up to 180 degrees away from its locking position, that is, a position wherein the elongated hole 18 is lined up to fit over the staple 15. If such is the case, the hasp wrench 16 is moved ahead laterally so that the hex part 19 of the opening disengages the hex nut 17 and the circular part 20 of the opening now encircles the hex nut 17. The hasp wrench 16 may now be turned freely on the nut 17 to its locking position or to the point nearest to its locking position wherein the hex part 19 of the opening can again engage the hex nut 17. If necessary, further movement of the hasp wrench 16, which will always be less than 60 degrees, can be made to further compress the gasket 5 and bring the hasp wrench 16 into a locking position. When in this locking position, the hasp wrench 16 will lie flat against the door 2 and a padlock 23 may be inserted through the staple 15 to lock the door, as shown in Fig. 1. With the padlock 23 in place, it will be observed that the hasp wrench 16 is restricted from all further movement and the nut 17 cannot be turned, as it is in engagement with the hex part 19 of the opening in the hasp wrench 16. Thus, a tamper proof locking arrangement is provided as well as an adjustable tightening means.

When an authorized person desires to open the door 2, the padlock 23 is removed and the nut 17 is backed off the threaded portion 11 of the latch member 10 by turning the hasp wrench 16 in a counterclockwise direction until the nut 17 reached a position approximately as shown in Fig. 3. The latch member 10 is then pressed inwardly and downwardly against the bias of the flat spring 14 until the hook 13 disengages from the latch bracket 8, whereupon the door 2 may be swung open on its hinge pins 3.

As previously mentioned, when the gasket 5 is new, it is quite pliable and resilient which would cause it to allow a considerable amount of compressive movement. In prior organizations, this amount of compressive movement is used up quickly over a relatively short period of time since each adjustment or compensation for wear and loss of resiliency by the fastening means is a relatively large increment of the total available movement; whereas, the organization of the present invention provides means for adjustment by relatively small increments which prolongs the useful life of the gasket in its early stages of compression in addition to providing the facility in adjustment and reliability of the seal under conditions of substantially complete compression of the gasket, as previously explained.

Although the invention has been described and shown in connection with the use of a hexagon shaped tightening nut, it should be understood that an octagon shaped nut or a nut with still more flat sides could be used if it is desired to make the degree of adjustment still finer. Furthermore, the invention has been illustrated as being applied to a mechanism casing as shown and described in the above mentioned Patent No. 2,239,336 with the idea in mind to show and point out the apparent improvements, but it should be understood that the invention could be applied to other types of housings and also be used for other purposes, without in any way departing from the scope of the invention.

What I claim is:

1. A tightening and locking means for casing covers comprising, a collared nut and hasp wrench combination threaded on a fastening member protruding through the casing cover, a resilient gasket positioned between the casing and said cover, a first elongated hole in the hasp wrench so shaped that one end of such hole conforms to the shape of the nut while the other end is circular shaped and large enough to turn freely over the nut, a collar on the outside end of the nut to maintain the hasp wrench assembled to the nut, whereby the hasp wrench may be moved into and out of engagement with the nut at will during the interval of turning the nut down against the cover, so that, with the cover tightened down and the gasket fully compressed, a second elongated hole in the hasp wrench will line up over a staple in the locking position and said first elongated hole will engage said collared nut at said one end.

2. A fastening organization for housing mechanisms comprising, a casing with a hinged door

and a resilient gasket there-between, a latching member extending through an enlarged hole in the door and being spring biased to a particular position, said latching member having a hooked end within the housing for engaging a latch bracket when in its biased position, said latching member being threaded at its other end which extends outside of the housing door, a collared nut threaded onto said latch member on the outside of the door, a hasp wrench mounted over said collared nut, said hasp wrench having an elongated hole at its wrench end so shaped that the outside end of such hole conforms to the shape of the collared nut while the inside end of such hole is circular shaped and large enough to allow the hasp wrench to freely turn about said nut as an axis, a collar on the outside of said nut to maintain the hasp wrench assembled therewith, a staple mounted on said cover, a slot in the free end of such hasp wrench, whereby the hasp wrench may be used to tighten said collared nut to press said cover against the housing and compress said resilient gasket, and whereby said

hasp wrench may be freely moved about said nut until it can fit over said nut in the nearest position which will allow said hasp wrench to be brought into alignment with said staple and thereby allow such staple to pass through said slot and cause said collared nut to be locked in its tightened position, said hasp wrench having its free end bent at an angle with respect to its wrench end to permit its clearance of said staple during the tightening of said collared nut.

FRANK S. CRAIG.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
150,180	Morris	Apr. 28, 1874
1,208,236	Thompson et al.	Dec. 12, 1916
1,661,868	Armstrong et al.	Mar. 6, 1928
2,239,336	Moore	Apr. 22, 1941