

April 15, 1958

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DOUBLE DOOR AIR LOCK
Filed Dec. 27, 1954

2,830,838

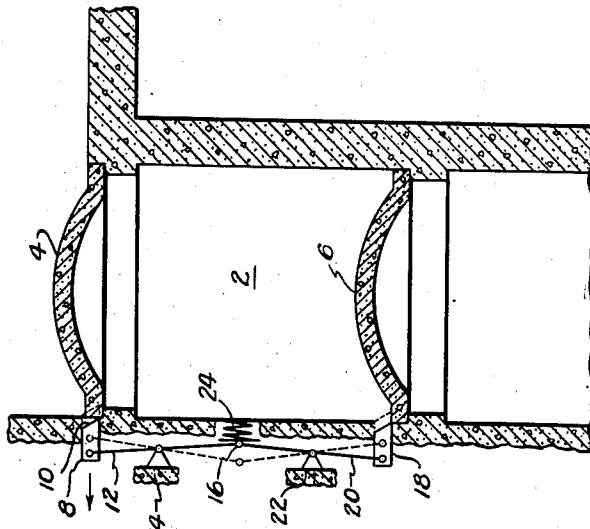


Fig. 1

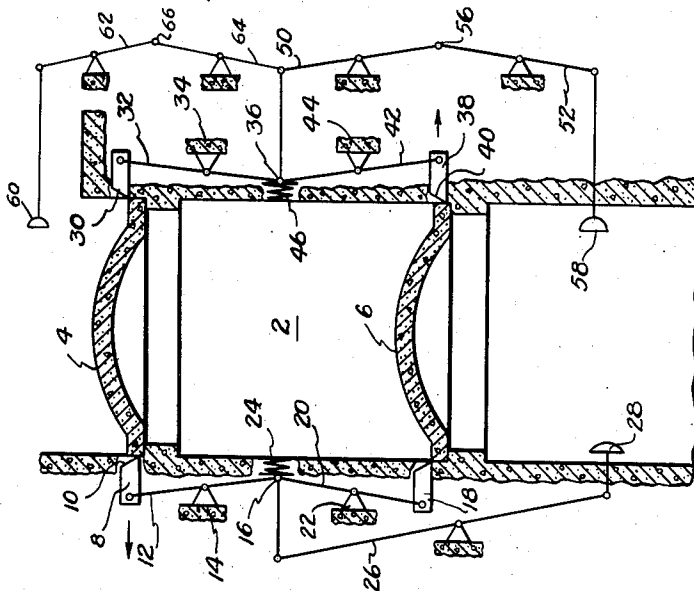


Fig. 2

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2,830,838

DOUBLE DOOR AIR LOCK

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Application December 27, 1954, Serial No. 477,883

Claims priority, application Germany December 11, 1954

1 Claim. (Cl. 292—166)

This invention relates to air locks. In particular the invention is directed to a double door air lock for an air raid shelter.

Double door air locks have been used for air raid shelters. However, heretofore, both doors could be simultaneously opened, thus rendering the air lock ineffective. Such a possibility is disadvantageous when the door should provide protection not only from poison gases, but also from heat flashes which would be produced by the explosion of the atomic bomb. If the last person in fails to close the outer door, both doors will be open to expose the interior of the air raid shelter.

An object of this invention is to provide a locking system so that the inner door can be opened only when the outer door is closed. Another object is to produce a locking system so that the outer door can be opened when the inner door is opened so that people can either enter or leave the shelter in the least possible time. Another object is to produce a locking system in which the outer door cannot be opened even when the inner door is opened. A further object is to produce a locking system in which the outer door can be opened only when the inner door is closed. Still another object is to provide means for manually or mechanically actuating the locking system from the interior of the shelter. Another object is to provide means for unlocking the locking system from the outside only.

The means by which these and other objects of the invention are obtained are described more fully with respect to the accompanying drawings, in which:

Figure 1 is a cross-sectional view through an air raid shelter air lock showing one locking system; and

Figure 2 is a similar cross-sectional view showing a modified locking system.

In Figure 1 an air shaft 2 is provided which also serves for the ingress and egress to the air raid shelter. This shaft is provided with outer door 4 and inner door 6. A slidable bolt 8 having an inclined face 10 is adapted to be slidably engaged by the edge of the peripheral frame of door 4. This bolt is connected by lever 12 mounted on fulcrum 14 to pivot 16.

Mounted above the peripheral frame of door 6 is a slidable bolt 18 which is adapted to engage over the frame. Bolt 18 is connected by lever 20 mounted on fulcrum 22 to pivot 16. Pivot 16 is pressed against compression spring 24, which is under compression when bolts 8 and 18 are in unlocked position.

In operation, in normal position bolt 18 engages over the top of the frame inner cover 6 to lock the same, and bolt 18 extends to the right, as shown by dotted lines. When upper door 4 moves into closed position, the edge of the door engages inclined face 10 of bolt 8 and pushes the bolt to the left as indicated by the arrow. Pivot point 16 compresses spring 24, and lever 20 is moved to pull bolt 18 to the left and releases door 6. Thus, inner door 6 is not unlocked and cannot be opened until outer door 4 is closed. When outer door 4 is opened, spring

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24 will actuate lever 20 to move bolt 18 into locking position.

In Figure 2 the same locking system is shown with the addition of a lever system 26 connecting pivot point 16 with a handle 28 mounted within shaft 2, or within the air raid shelter itself.

In operation if outer door 4 has been closed, but then displaced by an explosion, locking bolt 18 is projected into locking position by spring 24, and thus the inner door at least is locked. However, by pushing on handle 28, spring 24 can be compressed and lever 20 actuated to move bolt 18 into unlocking position.

Also in Figure 2, an additional locking system is shown which constitutes a safety means by which the outer door can be opened only when the inner door is closed. Locking bolt 30 is arranged to slide over the top of the frame of outer door 4 when it is placed in locking position. Bolt 30 is connected by lever 32 fulcrumed at 34 to pivot 36. For the inner door a locking bolt 38 is provided with an inclined face 40 so that it can be displaced by the edge of inner door 6 in the same manner as described for bolt 8 in Figure 1. Bolt 38 is connected by lever 42 fulcrumed at 44 to pivot 36, and pivot 36 bears upon compression spring 46. A lever system composed of levers 50 and 52, joined by pivot point 56, connects pivot 36 to handle 58.

If the inner door 6 is closed, it displaces bolt 38 in the direction shown by the arrow. At the same time pivot point 36 is moved to compress the spring 46, and actuates lever 32 to move bolt 30 into unlocking position. Consequently, the outer door 4 is locked when the inner door is unlocked.

In order to open outer door 4, even though inner door 6 is open, handle 58 is used by pulling on handle 58. When handle 58 is actuated, the pivot point 56 is moved in a direction opposite to the direction of pull on handle 58, pivot point 36 is moved to compress spring 46, and lever 32 is actuated to move locking bolt 30 into unlocked position.

In a similar manner, another handle may be provided for the outer door 4 so that locking bolt 30 can be withdrawn even when inner door 6 is open and there is no one in the shelter to pull handle 58. In the absence of door 6, bolt 40 has no function, and it is only necessary to move bolt 30. Accordingly, the handle 60 is mounted outside of shaft 2 and connected to point 36 by a lever system composed of levers 62 and 64 joined by a pivot 66. Upon pulling handle 60, the bolt 30 is withdrawn to unlocked position. Only supervising personnel should be permitted to unlock bolt 30 and actuate handles 28 and 58. The above system safeguards are to prevent unauthorized persons from opening outer door 4.

In the embodiment of Figure 2 both doors can only be opened when both locking systems are unlocked.

In the embodiment of Figure 1 both doors can be opened from the inside. Also, the inner door 6 can remain open for immediate use of the shelter while the outer door is still closed. When the outer door is then opened, both doors are opened, and thus people can quickly move into the shelter. Then first the outer and inner doors are closed. A person coming in late opens outer door 4, and the inner door cannot be opened until the outer door is closed, but the person coming late can open the inner door to come into the shelter.

Having now described the means by which the objects of the invention are obtained, I claim:

A double door air lock for an air raid shelter comprising an air shaft, two doors spaced in said shaft, one being the inner door and the other the outer door, locking means actuated by the outer door for unlocking the inner

door upon the closing of the outer door, manual means for actuating the locking means from inside the air shaft, safety lock means for locking said outer door upon opening said inner door, and means operable from outside of said shaft for unlocking said safety lock means.

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References Cited in the file of this patent**UNITED STATES PATENTS**

784,644	Warner	Mar. 14, 1905
1,460,609	Scola	July 3, 1923
1,504,795	Trost	Aug. 12, 1924
2,649,101	Suits	Aug. 18, 1953