This invention relates to an escape hatch and more particularly to a secondary escape hatch which may be either formed initially with or attached to an existing underground fallout or blast shelter.

A primary object of this invention is the provision of such a secondary escape hatch by means of which the occupants of an underground fallout or blast shelter may escape from the shelter in the event that the principal exit is closed or blocked by falling debris, earth, an overturned vehicle, or in any other manner rendered unusable.

An additional object of the invention is the provision of such a hatch which will provide, when closed, all of the protection of a solid earth layer above the roof of the shelter, and at the same time, reduce the effort required to escape from the shelter without the necessity of moving an equivalent weight of earth.

A further object of the invention is the provision of such an escape hatch which is normally filled with a dry pulverulent non-clogging material such as builder's sand, which has an opening of relatively small size in the base thereof through which the sand may be permitted to escape gradually, so that the main escape door may be opened without the danger of injury to the occupants by the bulk of sand or similar material falling out with the opening of a hatch.

An additional object of the invention is the provision of a device of this character which is provided with a flange adapted to seat on the roof of the underground shelter below the ground level, and which may, if the device is installed as an addition, be moved vertically of the escape hatch casing. The lower portion of the casing extends slightly below the roof of the underground shelter with the flange seating on the top thereof, and then secured fixedly in place in any desired manner, as for example, by welding.

Still another object of the invention is the provision of a device of this character provided with extremely simple latch releasing means, which are substantially incapable of jamming, so that even in the event that the shelter is shaken by blast, and distorted, the release of the latch mechanism will automatically allow the lower escape door to fall by gravity to open position.

A further object of the invention is the provision of a piano hinge extending the full width of the lower escape door, which also serves to prevent distortion of the hinges in the event of blast or other damage.

An additional object of the invention is the provision of such a secondary escape hatch which is sturdy and durable in construction, which will afford all the protection of a normally covering earth layer, which may be emptied of its contents, when it is necessary or desirable to use the same, with a minimum of confusion and difficulty, and which further may be readily attached to any existing shelter.

Under normal conditions, and when not in use, the entire interior of the hatch casing 11 is filled with pulverulent material, and blast resistant material, generally indicated at 21, which preferably, although not necessarily, comprises builder's sand. This material has been found to afford all of the protective qualities of a full earth covering, but at the same time be non-caking, so that it may be readily drained when it is desired to use the secondary escape hatch.

Escape rungs R are positioned on the wall of the shelter 5 immediately adjacent the latching pin 19, and continued at suitable spaced distances up the adjacent side wall of the escape hatch body 11.

Under normal conditions, and when not in use, the entire interior of the hatch casing 11 is filled with pulverulent material, and blast resistant material, generally indicated at 21, which preferably, although not necessarily, comprises builder's sand. This material has been found to afford all of the protective qualities of a full earth covering, but at the same time be non-caking, so that it may be readily drained when it is desired to use the secondary escape hatch.

In order to effect such drainage, a relatively small opening 25 is centrally positioned in the bottom of closure member 17, and is normally closed by a paddle-shaped closure member 26 which is pivotally mounted as on a stud or pivot 27 adjacent the opening 25. A depending handle member 28 is provided by means...
of which the closure 25 may be rotated about pivot 27 to permit the escape of the sand through opening 25 prior to the opening of the main cover. Such sand, due to the relatively small size of the opening 25, will escape relatively slowly so that it may be retained in pits or the like for convenient removal, or may, if desired, merely be allowed to fall to the floor of the shelter for later removal.

In the illustrative embodiment of the shelter shown, the same is provided with relatively thick walls and roof comprised of reinforced concrete, or other suitable material, the roof of the shelter being at any desired depth below the ground level G. After the shelter is completed, it is covered with earth E to any desired depth, in accordance with anticipated conditions or Civil Defense requirements, and in the event that the emergency escape hatch 19 is installed when the shelter is constructed, it is positioned in an opening in the roof designed to accommodate the same when the earth is filled to a level immediately adjacent the top cover 12.

In the event that it is desired to install such an escape hatch in a previously constructed shelter, it is necessary first to remove the earth covering to a depth wherein the roof of the shelter is exposed, and then branch the roof with an opening into which the body 11 may extend. In the event of any irregularities in the opening, these may be filled with cement or other desired material after the insertion of the body 11. When installing the device, the lower closure member 17 is closed, as is the auxiliary closure 26, the device filled with sand from the outside, and the cover 12 positioned thereupon.

The procedure for escape from the shelter through the secondary hatch has been previously discussed.

It to be understood that other closure means than the pins 18 may be employed, if desired.

One form of such construction is disclosed in FIGURES 5 and 6 wherein the straps 20 on the lower wall of the casing 11 below flange 14 take the form of tubular bars or rods 30, at the lower end of which there is provided a pivot pin 31 suitably secured interiorly of the members 39, which is provided with a rotatable latch member 32, one end of which overlies the edge of bottom closure member 17, such end being indicated at 33. Obviously, upon rotation of the opposite end 34 of the pivoted latch member 32 its engagement with the portion 33 of the lower closure member 17 is discontinued, and the lower closure 17 is permitted to fall by gravity to open position.

Obviously, the device may be made in any desired length or width, in accordance with the particular constructions, and may carry rungs on more than one wall, so that it may be used in large sizes for community shelters, to permit the escape of more than one individual at a time if such escape becomes necessary.

From the foregoing it will now be seen that there is herein provided an improved secondary escape hatch attachment for underground fallout or blast shelters which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiments hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

1. A second escape hatch for underground fallout or blast shelters comprising a hollow rectangular metal body, one open end of which is adapted to extend through an opening in the roof of the shelter and the other open end above the ground, a peripherally flanged metal cover loosely fitted over the end above the ground, a double thickness angle iron flange movable along the exterior of said body, said flange being adapted to rest on the shelter roof, means fixing said flange to the body after initial adjustment to seat the flange on the shelter roof surrounding the opening, a piano-type hinge extending the full width of one side of the bottom opening, a downwardly opening bottom closure carried by said hinge completely closing the open bottom end of said body, quick release latch means carried by said bottom closure on the side opposite said hinge securing said bottom closure in closed position, said bottom closure having a centrally disposed relatively small opening therein, a plate pivoted to the underside of said bottom closure movable to open and close said relatively small opening, a handle on said plate to facilitate pivoting thereof, escape rungs positioned interiorly of said body on the side adjacent said latch means, and sand completely filling said body when said bottom closure and said relatively small opening are closed.

References Cited in the file of this patent

UNITED STATES PATENTS

1,233,818 Spelbrink July 17, 1917
1,406,894 Redshaw Feb. 14, 1922
2,383,836 Grueisen Jan. 29, 1945
2,818,146 Palmieri Dec. 31, 1957
2,822,765 Rudinger Feb. 11, 1958
2,830,675 Drager Apr. 15, 1958
2,903,874 Drager Sept. 15, 1959
2,997,058 Hall Aug. 22, 1961

FOREIGN PATENTS

790,723 Great Britain Jan. 24, 1956
1,005,259 Germany Mar. 28, 1957
1,009,031 Germany May 23, 1957