June 9, 1942. A. F. JOHNSTON 2,285,664

AIRPORT BARRICADE GUARD

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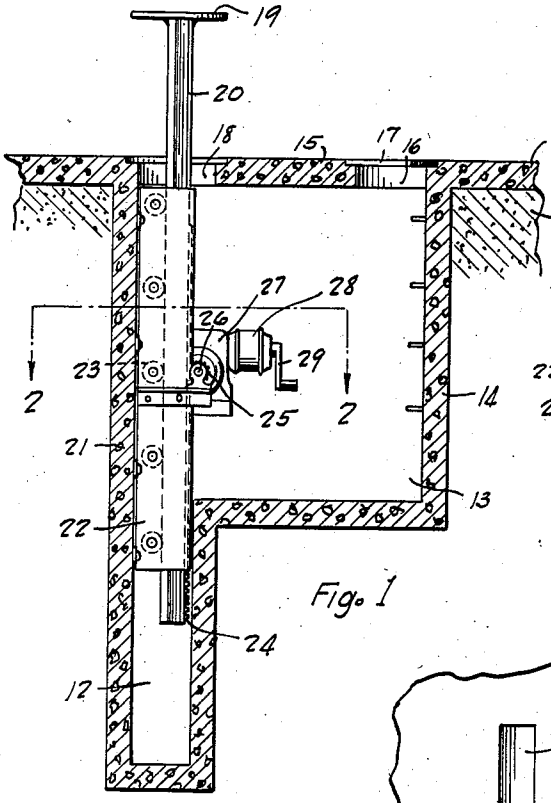


Fig. 1

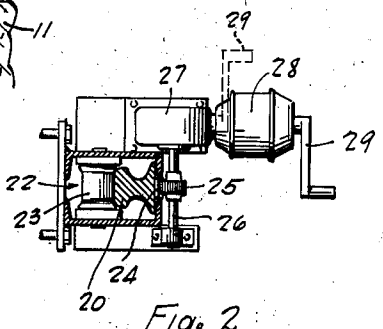


Fig. 2

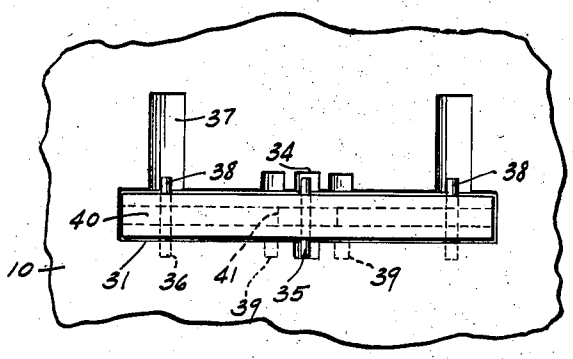


Fig. 4

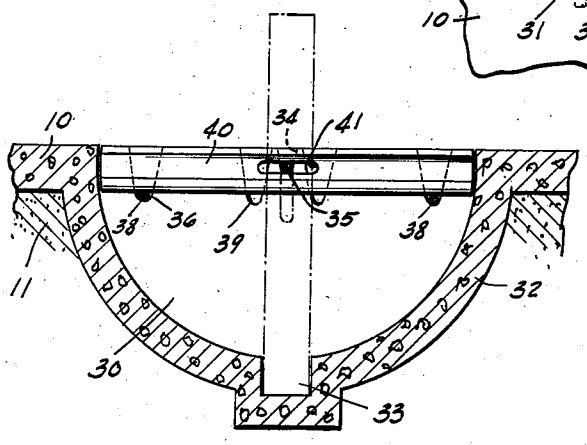


Fig. 3

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AIRPORT BARRICADE GUARD

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4 Claims. (Cl. 39—5)

This invention relates to barricades designed for installation in landing fields on which enemy war planes might attempt to land, the barricades being intended for protective purposes to render the landing field unfit for the landing of airplanes.

The present war in Europe has well established that troops may be transported by airplanes. If a country includes landing fields adjacent to important centers and key positions, these landing fields in their present form constitute a menace, as they are subject to having enemy planes land thereon. The present invention recognizes this danger, and proposes to provide barricades which may be incorporated in landing fields, and which may be erected to render such fields unsuitable for the landing of airplanes.

While many surfaces on which airplanes might land, such as golf courses, large meadows, and the like, may be rendered unfit for the landing of airplanes by having permanent barricades erected thereon at appropriate intervals, such a mode of procedure is not possible in the landing fields of airports. Such fields must be maintained in condition for the normal use required thereof, namely the taking off and landing of airplanes.

Accordingly the present invention has in view, as its foremost objective, the provision of barricade mechanism which is incorporated beneath the surface of the landing field, and which ordinarily does not mar the field, nor in any way detract from its ability to permit the landing and taking off of planes. However, the barricade mechanism may be operated to quickly erect the barricades into protective position when danger threatens.

More in detail this invention has, as an object, the provision of barricade mechanism of the character above noted which includes a barricade element that is normally positioned in a pit formed in the landing surface. This barricade element acts as a closure for said pit to maintain intact the landing surface.

Yet another object of the invention is the provision of barricade mechanism of the character above noted which includes power means for raising the barricade element into protective position when danger threatens.

More in detail the invention has in mind an arrangement in which the power means for raising the barricade element is supplemented by the manually operable device which may be availed of should the power means fail because of sabotage, or for any other reason.

Still another object of the invention is the provision of a landing surface of the character above noted which is formed with a pit for receiving the barricade element. Contiguous to and communicating with this pit is another pit which is adapted to receive a man who may enter therein for the purpose of raising the barricade element. This second pit will be formed with an entrance in the form of a manhole, which will be closed by a manhole cover.

Still another object of the invention is the provision of a landing surface formed with an arcuate pit the top of which is normally closed by a barricade element. This barricade element is pivotally mounted centrally thereof, the pivot being received in a slot in the barricade element. Supporting means normally maintain the horizontal position of the barricade elements, but the supporting means may be removed to permit the barricade element to be swung about its pivot into a substantially vertical position.

A further object of the invention is the provision of a barricade of the character set forth in the preceding paragraph, in which the arcuate pit is formed with a bottom with a socket. When the vertical position of the barricade element is reached, the slot which receives the pivot permits the barricade element to fall into the socket, whereby the vertical position is effectively maintained.

Various other more detailed objects and advantages of the invention will in part become apparent, and in part be hereinafter stated, as the description of the invention proceeds.

The invention, therefore, comprises barricade mechanism that is designed to be incorporated in the landing surfaces of airdromes and similar places, for the purpose of ordinarily permitting the landing surfaces to be maintained intact, but which may be operated to raise barricade elements into effective position to render the landing surface unfit for the landing of airplanes thereon.

For a full and more complete understanding of the invention, reference may be had to the following description and accompanying drawing, wherein

Figure 1 is a vertical section through a portion of a landing field immediately beneath the landing surface thereof, showing the manner in which the barricade mechanism of this invention may be included therein,

Figure 2 is a detailed plan view taken about

on the plane represented by the line 2—2 of Figure 1,

Figure 3 is a sectional view similar to Figure 1 of a modification, and

Figure 4 is a top plan view of a landing field including the modification of Figure 3.

Referring now to the drawing, wherein like reference characters denote corresponding parts, and first more particularly to Figures 1 and 2, a landing surface is represented at 10. This landing surface may be the landing surface of an airport or any other surface which it is desired to normally maintain intact and free from protuberances.

During normal use of an airport planes will land on the surface 10 and take off therefrom at frequent intervals, and it is important that the barricade mechanism be so included beneath the surface 10 as to not interfere with this normal use. However, it is equally important that the barricade mechanism be present so that when danger threatens it may be operated to raise the barricade elements in protective position and render the surface 10 unfit for the landing of planes thereon.

The ground beneath the surface 10 is represented at 11, and this ground is formed with a barricade pit 12, and a manhole 13. The pit 12 and manhole 13 communicate with each other, and the walls and bottom thereof are preferably lined by concrete, as shown at 14. It is notable that the upper surface of this concrete 14 is flush with the landing surface 10.

The pit 12 and manhole 13 are closed by a top represented at 15, which also is preferably of concrete, and which is flush with the surface 10. Means of entrance into and egress from the manhole 13 is shown in the form of an opening 16, which normally may be closed by a closure member 17. Another opening 18 is formed in the top 15, the opening 18 being in alignment with the pit 12. This opening 18 is normally closed by a closure member 19 that is carried by a barricade element 20. Thus when the barricade element 20 is in its lowered position within the pit 12 the closure member 19 closes the hole 18.

The barricade element 20 may take any structural form providing the required properties of stiffness and rigidity.

The pit 12 is defined on one side by a side wall designated 21, and this side wall carries guide mechanism 22 in which the barricade element 20 reciprocates.

Referring more particularly to Figure 2, it will be noted that the guide structure 22 includes rollers 23 on which the rail rides, these rollers serving to reduce friction. The face of the element 20 that is opposite to and removed from the rollers 23 carries a series of gear teeth defining a rack designated 24. A pinion 25 meshes with the rack 24, and is drivably carried by a shaft 26. This shaft 26 is operatively connected with the gear elements of a speed reducing mechanism represented at 27. The latter is in turn connected with an electric motor represented at 28.

Under ordinary conditions the motor 28 may be operated to raise or lower the barricade element 20. However, should the motor 28 become disabled, due to sabotage, or any other cause, a hand crank shown at 29 may be availed of to raise and lower the barricade element 20.

It is important to note that each landing surface will include an appropriate number of the barricade mechanisms shown in Figures 1 and 2, that will be suitably located over the field so that when the elements 20 are raised into protective position it will be impossible for a plane to land on the field without becoming wrecked.

With a landing surface including a large number of these barricade mechanisms it is evident that the motors 28 may be controlled by wiring that will come to a central station. Thus all of the barricade elements 20 may be raised into protective position substantially simultaneously. Of course, with the motors 28 out of commission it will be necessary for an operator to enter manhole 13 through the opening 16 in order to raise the element 20.

Referring now more particularly to Figures 3 and 4, the landing surface 10 is shown as formed with an arcuate pit 30. The pit 30 has an open top shown at 31 in Figure 4, which is of an elongated rectangular formation. The bottom and side walls of the pit 30 will preferably be provided with concrete lining 32, and this lining 32 is formed at the bottom with a socket 33.

Substantially midway between the ends of the open top 31, the side walls of the pit 30 are formed with sockets 34 designed to receive the extremities of a pivot pin represented at 35. These concrete side walls also will be formed adjacent each end of the arcuate pit 30 with a small socket 36 on one side, and a larger socket 37 on the other. Supporting elements 38 are designed to be received in the sockets 36 and 37, as will be pointed out later. Moreover, these supporting elements 38 are designed to be removed through the enlarged sockets 37, as also will be later pointed out.

These concrete side walls that line the pit 30 are also formed with recesses 39 that are closely adjacent the central sockets 34, and these recesses 39 are adapted to receive the elements 38, as will later become apparent.

A barricade element shown at 40 is formed at the central portion thereof with a slot 41. The pivot pin 35 passes through this slot 41.

The barricade element 40 normally assumes a position in which it is supported by the pivot pin 35 and the supporting pins 38 at each end. In this position the open top 31 of the pit 30 is closed, and the landing surface 10 is maintained intact. When danger threatens, one of the supporting pins 38 is removed through the enlarged socket 37 on one side, which permits that end of the barricade element 40 to move downwardly. Thus the element 40 is swung about the pin 35 as a pivot until a substantially vertical position is reached. When this vertical position has been reached, the lower end of the element 40 will slide into the socket 33, this rectilineal movement being permitted by the slot 41 which receives the pivot pin 35. After this position has been assumed the supporting pins 38, which previously were in supporting position in the sockets 36 and 37, may be moved over into position in the recesses 39, in which position they engage the element 40 on each side, thus providing additional support therefor.

When the barricade is to be lowered these pins 38 will first be removed from the recesses 39, after which the element 40 will have to be raised to free the lower end thereof from the socket 33. Some suitable hand tool, such as a lever, may be employed for this purpose.

When the lower end of the element 40 has cleared the socket 33 it may then be rotated about the pivot pin 35, to again assume the horizontal

position shown in full lines in Figure 3, and final positioning of the supporting pins **38** will fully maintain the element **40** in this horizontal position closing the open top **31** of the pit **30**.

While preferred specific embodiments of the invention are hereinbefore set forth it is to be clearly understood that the invention is not to be limited to the exact constructions illustrated and described, because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

I claim:

1. In combination, a landing field having a landing surface and formed with a plurality of spaced pits of substantially arcuate formation, each pit being formed with a socket substantially centrally at the bottom thereof, a barricade element in each pit normally closing the top of said pit, and pivot means disposed substantially above said socket for pivotally mounting said barricade element, one end of said barricade element being movable into said socket when a vertical position has been reached.

2. In combination, a landing field having a landing surface and formed with a plurality of spaced pits of substantially arcuate formation, each pit being formed with a socket substantially centrally at the bottom thereof, a barricade element in each pit normally closing the top of said pit, said barricade element being formed with a slot that is disposed substantially above said socket, a pivot pin in said slot pivotally supporting said barricade element, and removable means normally maintaining said barricade element in a horizontal position closing said pit.

3. Barricade apparatus for aircraft landing fields comprising a barricade element, means for pivotally mounting said element in the upper portion of a pit in a landing field whereby said element is adapted to assume a substantially horizontal position closing the top of said pit or an upright barricading position, supporting means for holding said element in pit closing position and withdrawable to permit of swinging of said element into barricading position, and means cooperating with the lower end of said element in upright position for holding said element in barricading position.

4. Barricade apparatus for aircraft landing fields comprising a barricade element formed with a slot substantially centrally thereof, a pivot pin in said slot and adapted to have its ends supported in the upper portion of a pit in a landing field, withdrawable support means for holding said element in pit closing position, and means adapted to be located at the bottom of said pit cooperating with the lower end of said element in upright position to hold said element in barricading position.

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