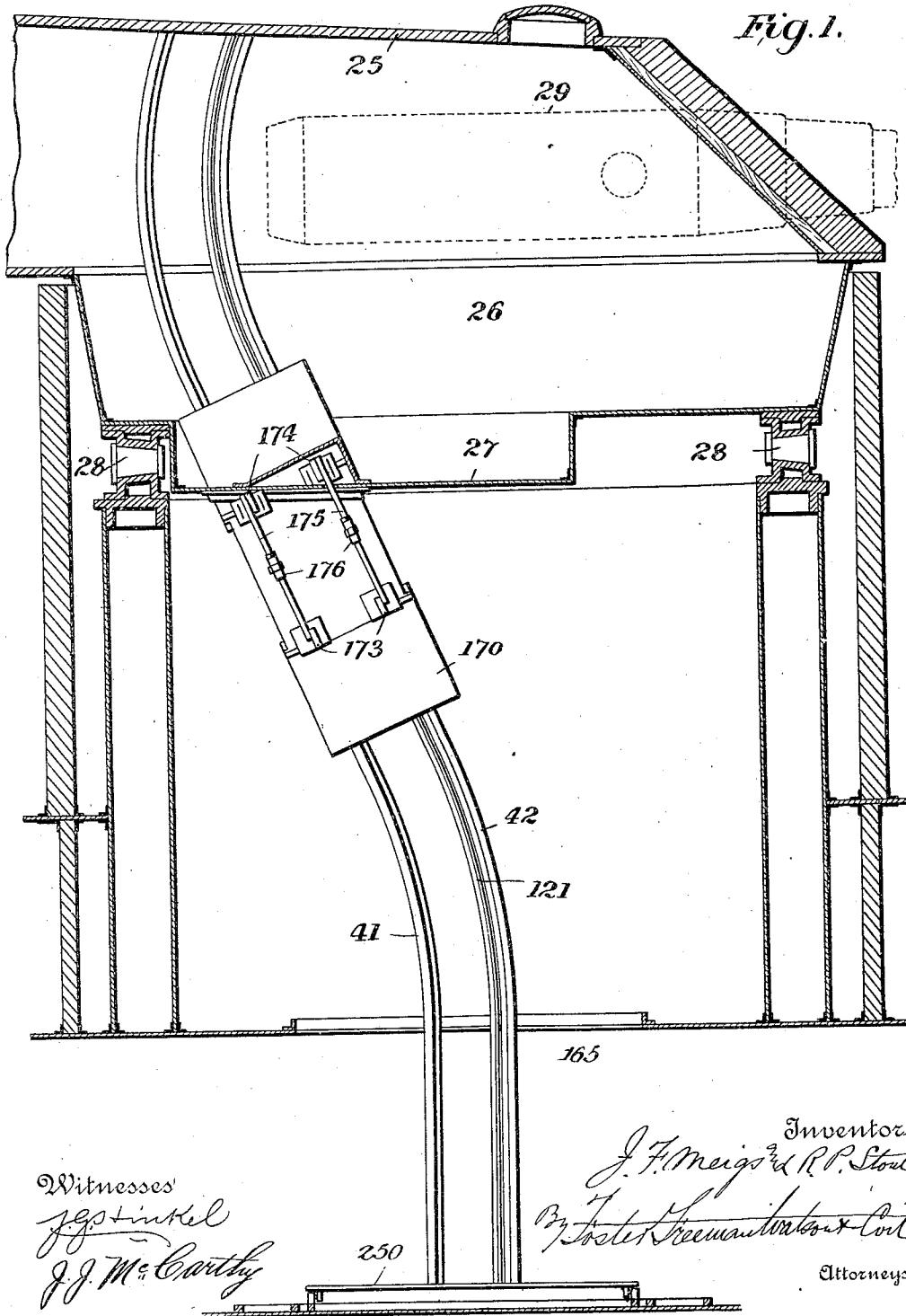


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 AMMUNITION HOISTING MECHANISM.
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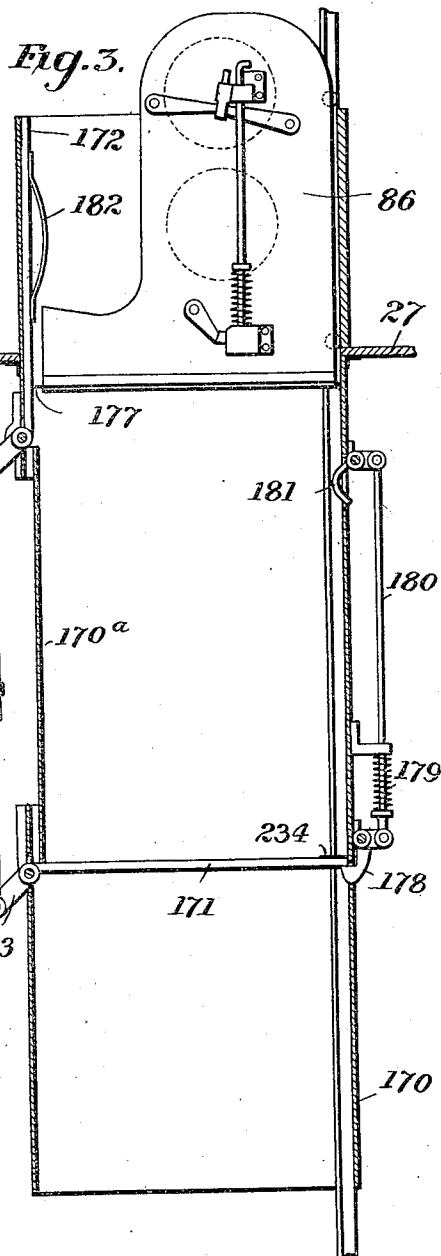
Patented Apr. 18, 1916.
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4 SHEETS—SHEET 2.



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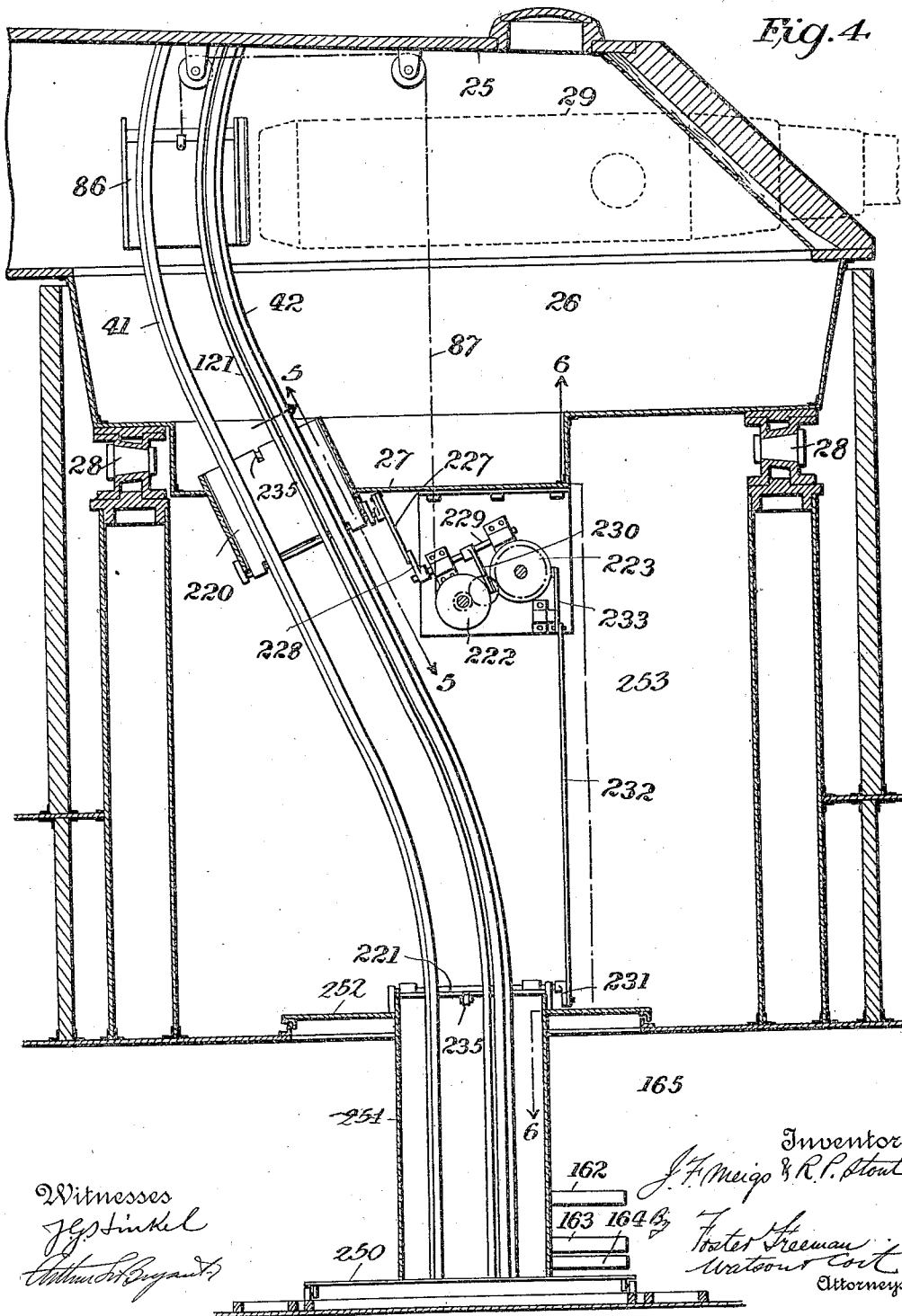
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Fig. 4.



Witnesses
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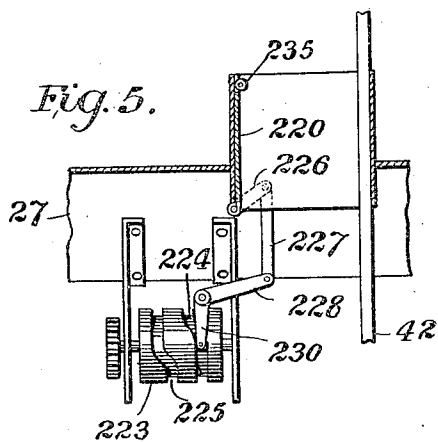
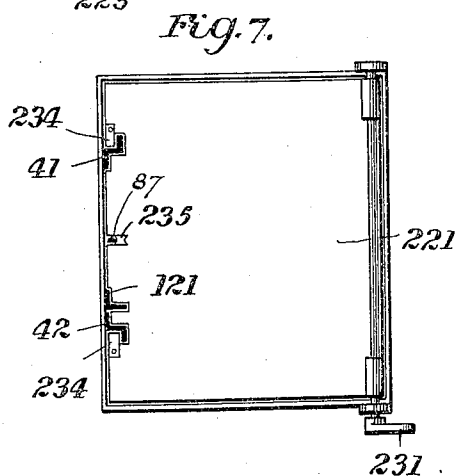
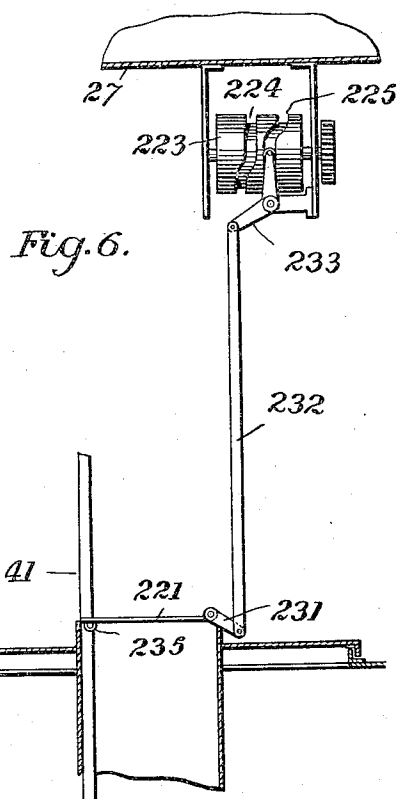
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4 SHEETS—SHEET 4.

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AMMUNITION-HOISTING MECHANISM.

1,179,643.

Specification of Letters Patent.

Patented Apr. 18, 1916.

Application filed March 21, 1908. Serial No. 422,517.

To all whom it may concern:

Be it known that we, JOHN F. MEIGS and ROBERT P. STOUT, citizens of the United States, and residents of South Bethlehem, Northampton county, State of Pennsylvania, have invented certain new and useful Improvements in Ammunition-Hoisting Mechanism, of which the following is a specification.

10 This invention relates to improvements in ammunition hoisting mechanism and more particularly to mechanism for hoisting ammunition in naval vessels provided with rotating turrets.

15 The chief object of the invention is to provide means for the safe handling of ammunition and for the protection of the magazine from fire originating in the gun or gun chamber.

20 The broader features of our invention may be embodied in different mechanisms and we shall describe herein several forms of such mechanism, reference being had to the accompanying drawings, in which,

25 Figure 1 is a vertical sectional view through the turret and ammunition room of a vessel illustrating one embodiment of the invention; Figs. 2 and 3 are sectional views of the trunk shown in Fig. 1; Fig. 4 is a central sectional view through a turret and the rooms below illustrating another form of our invention; Figs. 5 and 6 are sections respectively on the lines 5, 5, and 6, 6, of Fig. 4; Fig. 7 is a plan view of the door 30 illustrated in Fig. 6.

35 Referring to Figs. 1, 2 and 3, 25 indicates the turret, 26 the gun chamber, 27 the turret floor, 28 the roller bearings for the turret and 29 the gun, all of which parts may be of customary construction. Any convenient car, with suitable guide rails, may be used in connection with this form of our invention. As illustrated, a car 86 is employed similar to that shown in Figs. 11 and 13 of our Patent No. 1,084,947, excepting that the car is provided with means for closing a trunk or tube through which it is made to pass in traveling from the gun chamber to the ammunition room. The 40 tracks for the car may be the same as those shown in Fig. 1 of said patent and are indicated by reference Figs. 41, 42 and 121.

The bottom of the turret is provided with an opening for the passage of the car and

tracks but is otherwise closed. Through 55 this opening extends a short trunk or casing 170. This trunk is supported in an inclined position by the floor 27, as illustrated in Fig. 1, and the floor is fitted close to the periphery of the trunk so that no opening 60 exists outside of the trunk through which flame or sparks may pass from the gun chamber to the ammunition room.

Referring to Figs. 2 and 3, 171 indicates a door which is adapted to open downwardly and to entirely cut off communication through the trunk 170 when closed and 65 172 indicates a similar door which is arranged to open upwardly and likewise adapted to cut off all communication 70 through the trunk when closed. It will be seen therefore that either of these doors when closed, will cut off all communication between the gun chamber or turret and the ammunition room or other space below the 75 turret. Connected with the hinge of the door 171 are two arms 173 and similar arms 174 are connected with the hinge of the door 172. The arms 173 are connected with the arms 174 by links 175 which are preferably 80 provided with turn buckles 176 by means of which they may be lengthened or shortened. Some part of the car, preferably the bottom, is made to fit closely that portion 170^a of the trunk 170 which is between the 85 doors 171, 172. As shown the bottom of the car 86 is provided with a flange 177 of rubber or other flexible material which is adapted to entirely close the section 170^a of the trunk as the car passes through it. 90 When the car is above the section 170^a of the trunk the lower door 171 is closed and when it passes below the said section the upper door 172 is closed. At all times when the said doors are open the car is between 95 them and forms the closure for the trunk. It will thus be seen that the trunk 170 is always closed securely and that it is impossible for the explosives in the ammunition or handling room below the turret to become ignited by fire communicated from the 100 gun or gun chamber.

The doors 171, 172 are operated automatically by the car as follows: A spring catch 178 is provided for holding the lower 105 door closed when the car is above it, the said catch being held normally in position to engage the door by a spring 179. The catch

178 is connected by a rod 180 with a release device 181 which projects into the trunk and is operated by the car. As shown in Fig. 2, the car is ascending and pushing back the door 172 which door is preferably provided with a buffer spring 182 to relieve shock when the car strikes it. As the door 172 swings open the lower door 171 closes and as the bottom of the car is about to leave the trunk section 170^a the door 171 becomes entirely closed and locked by the catch 178. The car then passes on up to the gun leaving the upper door wide open and the lower door closed, both doors being locked in these positions. As the car descends it enters the trunk 170^a, closing the same, and then strikes the release device 181 unlatching the door 171. The weight of the door 171 causes it to immediately drop and throw the door 172 over against the top of the car, as shown in Fig. 2. As the car continues to descend the door 172 closes by gravity and the door 171 swings wide open, permitting the car to pass. The doors remain in this position until the car again ascends.

It will be understood that the upper door is notched to permit it to close around the suspending rope and guideways. As before stated, any suitable car may be used in conjunction with the means for sealing the gun chamber from the ammunition room. If the car previously mentioned be adopted, as shown, the means for loading and unloading the car, described in Patent No. 1,084,947, may be used. While we prefer to use a normally closed car in conjunction with the normally closed trunk between the ammunition room and the gun chamber, it will be evident that an open car may be used with more than usual safety as it is practically impossible for fire to extend to the ammunition room should the charge in the car become ignited in the gun chamber.

In Figs. 4 to 7 inclusive, another form of the invention is illustrated in which there is a single or direct hoist from the ammunition room to the gun chamber, the car passing through two doors which are automatically opened and closed and one of which is always closed to prevent fire from passing from the gun or gun chamber to the ammunition room. In these figures the various parts which are the same in construction as those illustrated in Fig. 1 are designated by the same reference figures and the additional features will now be described. Connected with the floor 27 of the gun chamber or turret is a door 220 which when closed is adapted to shut off completely communication between the turret and the room below. A similar door 221 cuts off communication between the room below the gun chamber and the ammunition room 165 at a lower elevation. So far as this form of

our invention is concerned, it is only necessary that these doors be located at two separated points in the path of the car and in such a way that they will each cut off, when closed, communication between the gun chamber and the ammunition room. These doors are operated automatically by the hoisting mechanism through suitable connections. As shown in Figs. 4 to 6 inclusive, the hoisting drum 222 is connected through a suitable train of gearing with a cam wheel 223 having two cam grooves 224, 225 for operating the doors 220 and 221 respectively. The door 220 is operated by means of an arm 226, link 227, arm 228, shaft 229, and cam lever 230, cooperating with the cam groove 224. The door 221 is operated by means of an arm 231, link 232, and cam lever 233, cooperating with the cam groove 225. Each of the doors 220 and 221, and also the doors shown in Figs. 2 and 3, are provided with flexible flaps 234 to close the spaces behind the rails and they are also preferably provided with small sheaves or pulleys 235 to prevent friction of the rope on the doors when closed. The operation of the apparatus illustrated in Figs. 4 to 7 is as follows: When the car is elevated, as shown in Fig. 4, the door 220 is opened and the door 221 closed. As the car descends it passes through the open doorway and as soon as it has passed below the door 220, the latter closes automatically and then the door 221 opens. By connecting these doors with the hoisting means, their operation is always timed properly with the movements of the car. We prefer to open the upper door upward and the lower door downward so that each will move away from the approaching car in opening.

In both forms of hoisting mechanism described the track or guideways for the hoisting cars and the safety doors or devices are carried by and rotate with the turret. In Fig. 1 the lower end of the trackway may be connected to and supported on a rotating table 250 which rests on the floor of the ammunition room 165. A similar rotating table 250 is shown in Fig. 4, upon which rests a casing 251 carrying a second table 252, the parts 251, 252, serving to normally close communication between the ammunition room and the compartment 253 which occupies the space between the gun chamber and the ammunition room. In Fig. 4 the reference characters 162, 163 and 164 indicate shelves to temporarily support ammunition which is to be charged into the car 86.

The principal features of the invention herein illustrated and described are those directed to protecting the ammunition room, and the powder which is being transferred from the ammunition room to the gun by the conveyer, from fire originating in the

gun or gun chamber. The term "fire" as used herein includes flame, hot gases, or sparks which might ignite powder exposed thereto. The term "closure" as used in the claims is intended to include any means for closing the communication between the gun and the handling room, as, for instance, the door 172, or the car 86, the car being adapted to close the communication between the gun and the handling room when the door 172 is open.

Our invention is particularly applicable to conveyers for supplying ammunition to guns on naval vessels and especially to guns mounted in rotating turrets, but certain features of the invention are also applicable to conveying or hoisting mechanism for supplying guns in forts or other stationary structures with ammunition.

It will be evident that the broader features of the invention may be embodied in many different forms of apparatus and hence we desire to be understood as not limiting ourselves to the particular apparatus illustrated and described herein.

Having described the invention what is claimed is:—

1. The combination with a gun chamber and a gun mounted therein, of an ammunition room below the gun chamber, a continuous trackway extending between the ammunition room and the gun chamber, a car on said trackway, two doors spaced apart and each adapted to close an opening through which said car passes in its travel between the ammunition room and the gun, and means for opening and closing said doors alternately, whereby communication of fire between the ammunition room and the gun chamber is continuously cut off during the travel of the car.

2. The combination with a gun chamber and a gun mounted therein, of an ammunition room below the gun chamber, a continuous trackway extending between the ammunition room and the gun chamber, a car on said trackway, two doors spaced apart and each adapted to close an opening through which said car passes in its travel between the ammunition room and the gun, and automatic means for opening and closing said doors alternately, whereby communication of fire between the ammunition room and the gun chamber is continuously cut off during the travel of the car.

3. The combination with a gun chamber and a gun mounted therein, of an ammunition room below the gun chamber, a trackway extending from the gun into the ammunition room, a car adapted to travel on said trackway to convey ammunition to the gun, a latterly closed trunk surrounding a portion of said trackway, the car being adapted to fit said trunk and close it against communication of fire while passing through it,

and two doors arranged to alternately open and close communication through the trunk.

4. The combination with a gun chamber and a gun mounted therein, of an ammunition room below the gun chamber, a trackway extending from the gun into the ammunition room, a car adapted to travel on said trackway to convey ammunition to the gun, a latterly closed trunk surrounding a portion of said trackway, the car being adapted to fit said trunk and close it against communication of fire while passing through it, two doors arranged to alternately open and close communication through the trunk, and means for automatically operating said doors alternately.

5. The combination with a gun chamber and a gun mounted therein, of an ammunition room below the gun chamber, a trackway extending from the gun into the ammunition room, a car adapted to travel on said trackway to convey ammunition to the gun, a laterally closed trunk surrounding a portion of said trackway, the car being adapted to fit said trunk and close it against communication of fire while passing through it, two doors arranged to alternately open and close communication through the trunk, and means controlled by the movement of the car for opening and closing said doors alternately.

6. The combination with a gun chamber and a gun mounted therein, of an ammunition room below the gun chamber, a trackway extending from the gun into the ammunition room, a car adapted to travel on said trackway to convey ammunition to the gun, a laterally closed trunk surrounding a portion of said trackway, the car being adapted to fit said trunk and close it against communication of fire while passing through it, two doors arranged to alternately open and close it against communication of fire through the trunk, and means controlled by the movement of the car for opening and closing said doors alternately, said doors being arranged to open in opposite directions.

7. In a naval vessel, the combination with a revolving turret and a gun mounted therein, of an ammunition room below the turret chamber, a trackway carried by and rotating with the turret and extending from the gun into the ammunition room, a car running on said trackway and adapted to travel from the ammunition room to the gun, and means for continuously cutting off communication of fire between the turret chamber and the ammunition room while permitting the car to travel freely back and forth on said trackway.

8. In a naval vessel, the combination with a revolving turret and a gun mounted therein, of an ammunition room below the turret chamber, a trackway carried by and rotating

with the turret and extending from the gun into the ammunition room, a car running on said trackway and adapted to travel from the ammunition room to the gun, and means for continuously cutting off communication of fire between the turret chamber and the ammunition room while permitting the car to travel freely back and forth on said trackway, said means including two doors rotating with the turret and trackway and each adapted when closed to cut off communication of fire between the turret chamber and the ammunition room.

9. In a naval vessel, the combination with a revolving turret and a gun mounted therein, of an ammunition room below the turret chamber, a trackway carried by and rotating with the turret and extending from the gun into the ammunition room, a car running on said trackway and adapted to travel from the ammunition room to the gun, and means for continuously cutting off communication of fire between the turret chamber and the ammunition room while permitting the car to travel freely back and forth on said trackway, said means including two separated doors connected to open alternately, and an intermediate trunk adapted to be closed by the car in its passage between the doors.

10. In a naval vessel, the combination with a revolving turret and a gun mounted therein, of an ammunition room below the turret chamber, a trackway carried by and

rotating with the turret and extending from the gun into the ammunition room, a car running on said trackway and adapted to travel from the ammunition room to the gun, means for continuously cutting off communication of fire between the turret chamber and the ammunition room while permitting the car to travel freely back and forth on said trackway, said means including two separated doors connected to open alternately, and an intermediate trunk adapted to be closed by the car in its passage between the doors, said doors and trunk being carried by the turret.

11. In a naval vessel, the combination with a rotating turret, a gun mounted therein, and an ammunition room below the turret, a vertically arranged trackway extending from the ammunition room to the gun, a car on said trackway, two doors each adapted to prevent communication of fire between the ammunition room and the gun, and a common means for operating the car and doors, whereby movement of the doors is timed to the operation of the car and direct communication of fire between the ammunition room and the gun is always prevented.

In testimony whereof we affix our signatures in presence of two witnesses.

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ROBERT P. STOUT.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."