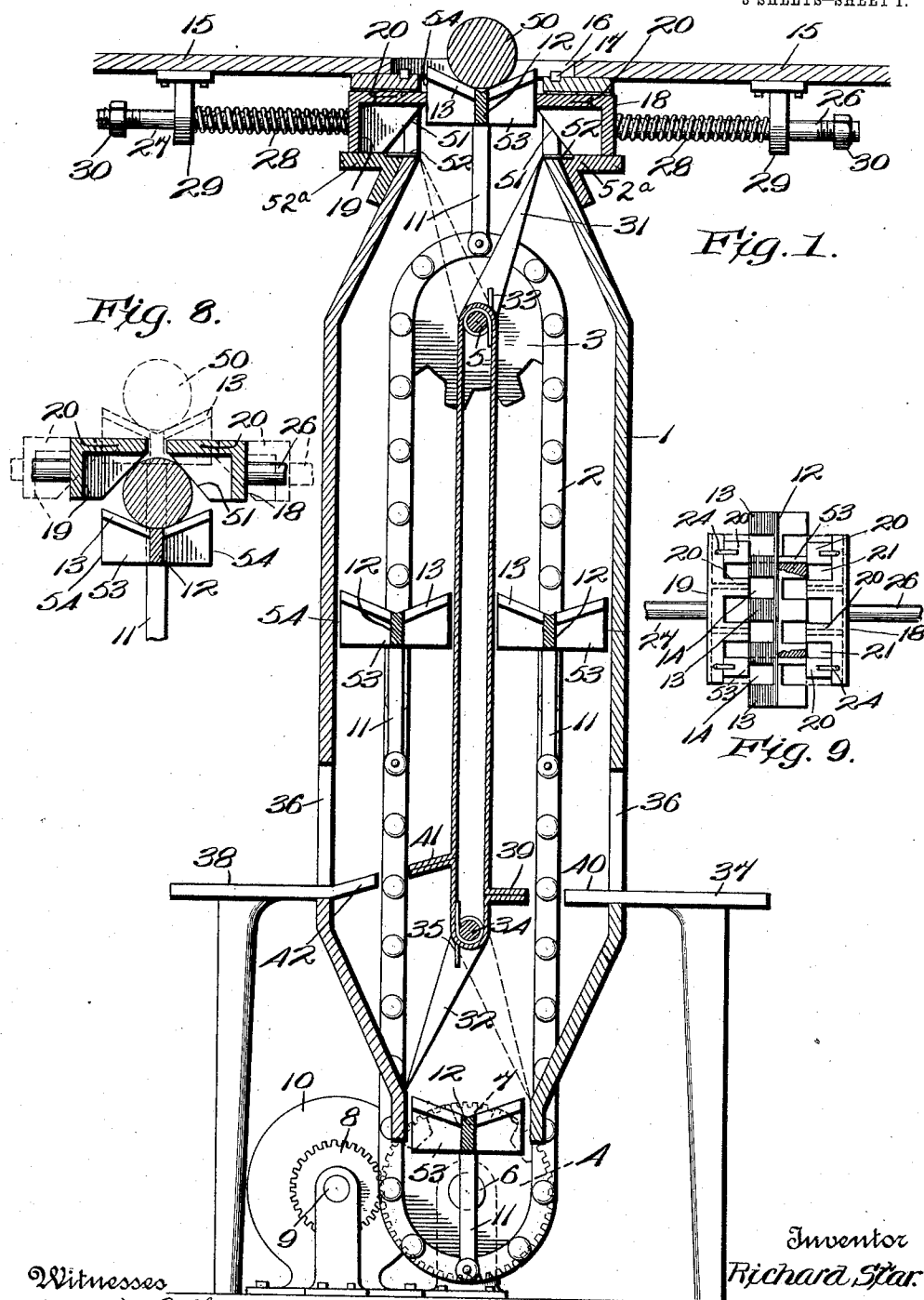


1,040,047.

R. STAR.
AMMUNITION HOIST.
APPLICATION FILED MAR. 14, 1912.

Patented Oct. 1, 1912.

3 SHEETS—SHEET 1.



Witnesses
Edwin Keller.
B.B. Collins.

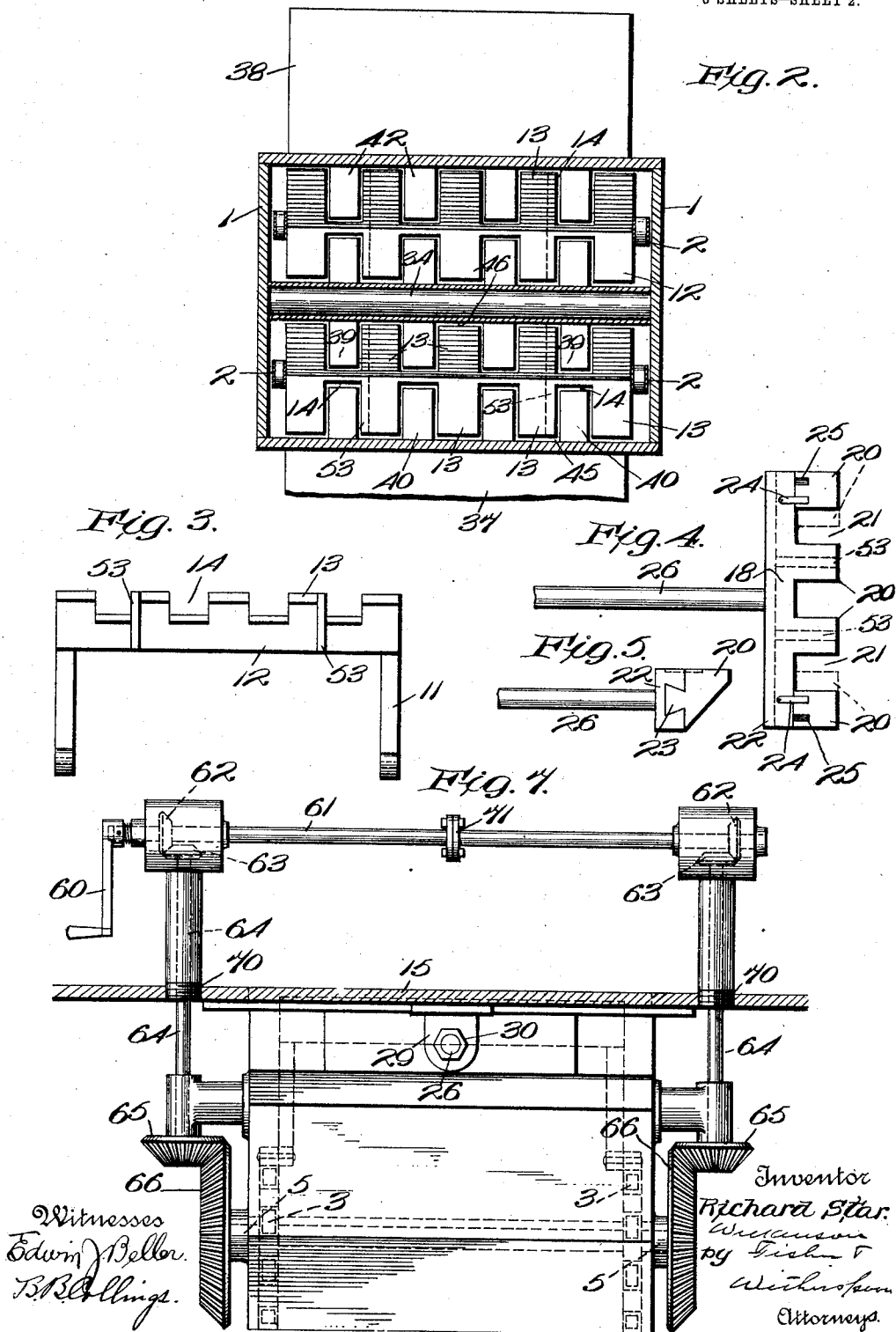
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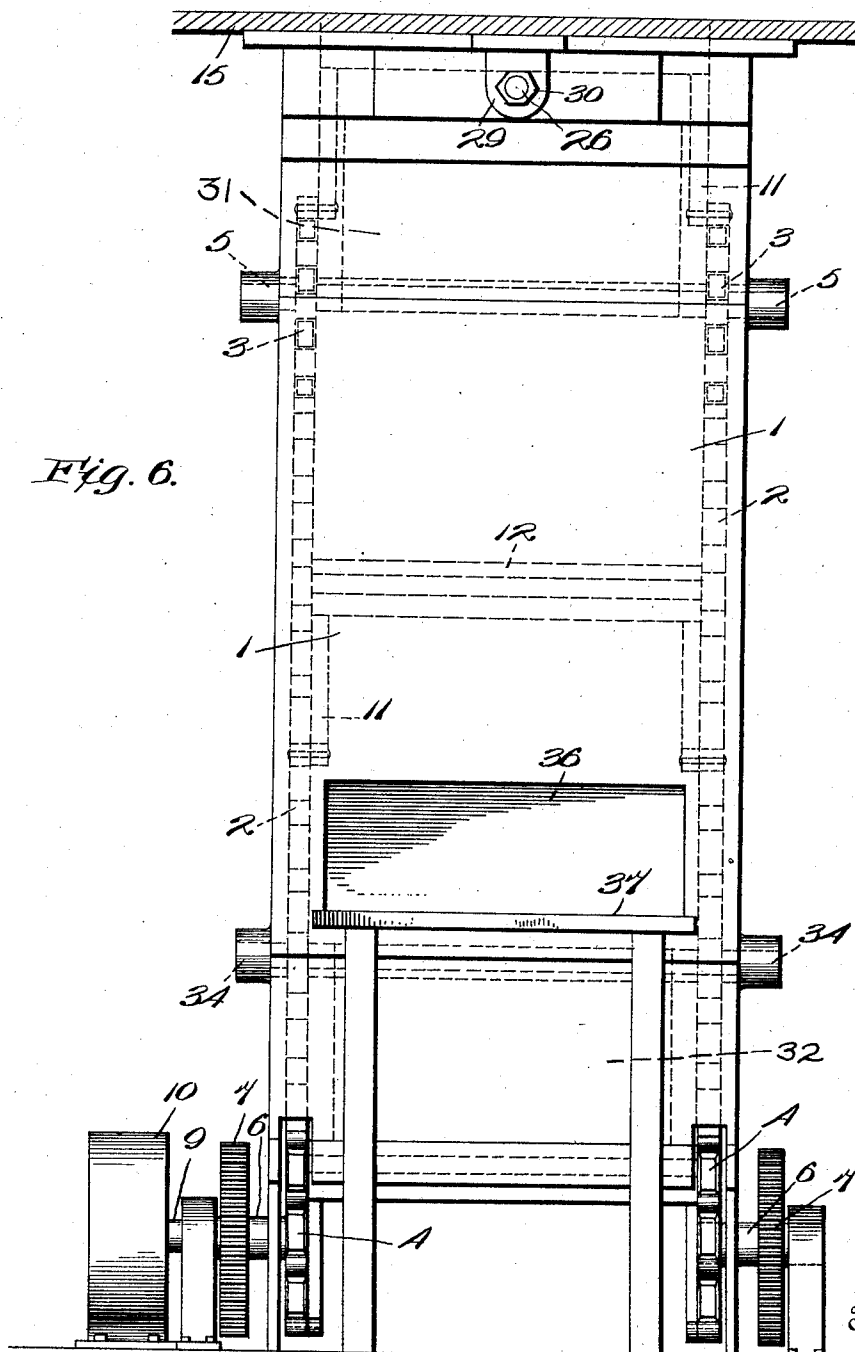
3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

RICHARD STAR, OF THE UNITED STATES NAVY.

AMMUNITION-HOIST.

1,040,047.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed March 14, 1912. Serial No. 683,812.

To all whom it may concern:

Be it known that I, RICHARD STAR, of the United States Navy, a citizen of the United States, serving on board the U. S. S. *Utah* at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ammunition-Hoists; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to ammunition hoists, and has for its object to produce an apparatus of this nature which will be more simple in construction and yet more efficient in action than those heretofore constructed, while at the same time, obviating the necessity of employing a high hatch on the deck, as well as other objections which will appear below.

With these and other objects in view, the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification, in which like numerals designate like parts in all the views:—Figure 1 is a longitudinal sectional view of an ammunition hoist made in accordance with my invention; Fig. 2 is a cross sectional view of the parts shown in Fig. 1, showing the carrier trays in plan; Fig. 3 is a side view of one of the carrier trays; Fig. 4 is a top plan view of one of the slidable deck trays employed to close the hatch opening; Fig. 5 is an end view of the parts shown in Fig. 4; Fig. 6 is an elevational view of the parts shown in Fig. 1, but showing the said parts from a point at right angles to that from which Fig. 1 is taken; Fig. 7 is a view of a portion of the parts shown in Fig. 6, but illustrating a modified means for operating the parts. Fig. 8 is a detail sectional view showing the manner in which the carrier tray passes the hatch tray; and, Fig. 9 is a plan view of the parts shown in Fig. 8 when occupying the position shown in Fig. 1.

1 indicates the outer casing inclosing the hoist, 2 an endless sprocket chain in the casing 1 passing over the upper sprocket wheels 3 and the lower sprocket wheels 4, mounted on the shafts 5 and 6 respectively. Rigid with the shaft 6 is the gear wheel 7 meshing

with the gear wheel 8 mounted on the shaft 9 driven by the motor 10.

Pivoted at one end to the sprocket chain 2 are a plurality of standards 11 carrying at their other ends the ammunition trays 12, preferably dished as shown, and each cut away to provide the lifting members 13 between which are the spaces 14, as will be clear from Figs. 2, 3 and 9.

15 represents the deck of a vessel; 16 a hatch opening; 17 any suitable packing on which a hatch cover may rest; and 18 and 19 sliding members of a hatch tray also cut away to provide the supporting members 20 and the spaces 21 therebetween, as will be clear from Figs. 4 and 5. Each of the members 18 and 19 of the hatch trays are provided with a supporting head 22 having an under cut slot into which fits the dove-tail projections 23 of the outer supporting members 20, which are carried by each of the said hatch members 18 and 19. These said outer members 20 are accordingly slidable in the heads 22 for a purpose to be disclosed hereinafter. The said heads 22 also carry a spring catch 24 adapted to take into notches 25 formed in the outer supporting members 20, and to therefore hold the said members in their adjusted positions. The said hatch members 18 and 19 are further provided with stems or rods 26 and 27, respectively, surrounded by springs 28 and passing through holding brackets 29, as shown. Adjusting holding nuts 30 are also provided on said rods 26 and 27.

31 indicates a fire door at the upper end of the hoist, and 32 indicates a similar door at the lower end thereof. The door 31 may be suitably hinged upon the shaft 5, and is provided with a spring 33 adapted to maintain the same normally in the position shown in Fig. 1. Said doors 31 and 32 are of such width as to allow the passage to either side thereof of the rods 11 carrying the lifting members 13 (see Fig. 6). The door 32 is conveniently pivoted upon the shaft 34 and is provided with a similar spring 35 adapted to maintain said door normally in the full line position, also indicated in Fig. 1.

36 indicates doors or openings through the casing 1 adapted to permit ammunition to reach the carrier trays 12; 37 indicates a table from which ammunition may be delivered through one of the openings 36 when it is intended to hoist the same, and 38 indicates a table adapted to receive the am-

munition through another opening 36 when it is intended to store the same in the magazine.

39 indicates a receiving tray member co-acting with the members 40 at the hoisting opening 36, and 41 indicates a tray member similar to 39, but inclined, as shown.

42 indicates a receiving tray member co-acting with the member 41 and likewise inclined for the purpose of facilitating the delivery of ammunition through the storing opening 36, as will appear more fully below.

The operation of my improved ammunition hoist is as follows:—Power being applied through the motor 10 to the shaft 9, the gear 8 is turned, which likewise turns the gear 7 and the shaft 6, which imparts motion to the sprocket wheel 4 and to the sprocket chain 2. Supposing the sprocket chain to turn in a counter-clock-wise direction, as shown in Fig. 1, the carrier trays 12 will likewise move in a counter-clock-wise direction, and when one of them reaches the receiving tray members 39 and 40, for example, the outer supporting members 13 of the carrier trays 12 will pass through the spaces 45 between the individual supporting members 40 of the receiving tray, as best shown in Fig. 2. In the same way, the inner supporting members 13 of the carrier trays 12 will pass through similar spaces 46 between the individual supporting members 39. It will also be clear from Fig. 2, that the said individual supporting members 39 and 40 of the receiving tray will be accommodated by the spaces 14, which exist between the individual members 13 of the carrier trays 12. In addition to the above, it will also be clear that a shell or other ammunition, may be readily rolled from the table 37 on to the individual supporting members 39 and 40 of the receiver tray, prior to the arrival of the carrier tray 12, and that the said carrier tray will readily pick up said shell, or other ammunition, and carry the same to the upper end of the hoist. When the upper end of the hoist is reached, the shell 50 will contact with the under-side of the fire door 31, and thereupon throw it from its full line position to its dotted line position, as seen in Fig. 1. As the carrier 12 continues to rise, the said door 31 will automatically return to its full line position under the action of its spring 33, and the shell 50 on the supporting members 13 of the carrier 12 will contact with the inclined edges 51 of the hatch trays 18 and 19, lift the said trays out of the notches 52, of the supports 52^a, and force the same longitudinally of their rods 26 and 27 against the tensions of their springs 28. When in closed position, the trays 18 and 19 seat within the notches or recesses 52 of said supports 52^a. The members 13 will now pass between the members 20 of the hatch trays and the latter will re-

turn under the shell, as shown in Fig. 8, and again become locked in the notches 52. The ammunition 50 is now substantially on a level with the deck 15 and may be readily rolled from said carrier tray 12 to any desired position on said deck, thereby avoiding any lifting of the said ammunition, or the use of any swabs or cushions for the same to fall upon, which are necessary when it is lifted above a hatch combing and allowed to fall upon the deck. However, should it not be desired to roll the ammunition away at once, the hatch trays being closed underneath said carrier 12, constitute a support for the shell and the said carrier 12 may be lowered out of the way.

Should it be desired to return ammunition, which is on the deck, back to the magazine, the hatch cover is removed, thereby exposing the hatch tray members 20, when the latches 24 controlling the outer members 20 may be lifted and the said outer members moved inward along the heads 22 of said hatch trays from their full line positions shown in Fig. 4, into the dotted line positions indicated in said figure. When said outer members 20 have been thus moved, the members 13 of the carrier trays will no longer pass them, and therefore upon forcing an empty carrier tray upward, the members 13 will take against the inclined edges 51 of the displaced members 20, and force the hatch trays back into their full line positions shown in Fig. 1. When in this position, the vertical edges 54 of the flanges 53 on the carrier trays will contact with the said outer members 20, and will therefore hold the said hatch trays in their open position, as indicated. In other words, even when no ammunition is on the carrier trays 12, the supporting members 13 thereof will contact with the fire door 31, throw the same to one side, permit it to return to its full line position, and the flanges or aprons 53 will cause the said members 18 and 19 of the hatch tray to be opened and held open for the reception of ammunition 50, which may be rolled on to said carrier trays 12. The still further turning of the chain 2 will now lower the ammunition, permitting the hatch trays to automatically close and become locked. When the lowered ammunition reaches the inclined supporting members 41 and 42 of the receiving tray, the said ammunition is automatically stripped from the carrier tray and permitted to roll out upon the receiving table 38, whence it may be stored in the magazine. As the carrier trays 12 continue their counter-clock-wise motion, they automatically contact with the lower fire door 32, throw the same to its dotted line position, as seen in Fig. 1, and finally pass beneath the same when the spring 35 automatically throws said door back to its full line position, thereby per-

mitting the carrier trays 12 to reach the supporting members 39 and 40 of the receiving tray. The above operations may, of course, be continued indefinitely.

5 In the modified form of construction shown in Fig. 7, I have illustrated a means of operating the carrier parts by hand, should anything happen to the motor 10. This means consists of the outer crank 60
10 mounted on the shaft 61, carrying the beveled gears 62, meshing with the bevels 63 carried on the shafts 64, provided with the bevels 65, meshing with the bevels 66, operating the shaft 5, carrying the sprockets
15 3, over which the chain 2 passes. This whole hand operated structure is detachably secured to the deck 15, as by the screw-threads 70 and the shaft 61 is preferably made in two parts, as indicated at 71, so that
20 the whole may be readily assembled for use and dissembled for the purpose of storing it away.

It is obvious that those skilled in the art may vary the details of construction, as well as the arrangement of parts, without departing from the spirit of my invention, and therefore, I do not wish to be limited to the above disclosure except as may be required by the claims.

30 What I claim is:—

1. In an ammunition hoisting apparatus, the combination of a carrier tray provided with spaced supporting members; a receiving tray also provided with spaced supporting members, between which said carrier tray members are adapted to pass; means
35 permitting ammunition to be placed on said receiving tray members; means for raising said carrier tray and causing the same to pick up said ammunition; a slidable hatch tray provided with inclined members adapted to contact with the rising ammunition
40 and to be moved out of the way of the same; and means for causing said hatch tray to automatically close under said ammunition after it has passed, substantially as described.

2. In an ammunition hoisting apparatus, the combination of a carrier tray provided
50 with spaced supporting members; a receiving tray also provided with spaced supporting members, between which said carrier tray members are adapted to pass; means permitting ammunition to be placed on said
55 receiving tray members; means for raising said carrier tray and causing the same to pick up said ammunition; a fire door normally closing the passage traversed by said carrier tray adapted to be moved out of the way of
60 said tray upon contacting with said ammunition; means for automatically closing said door after said carrier tray has passed; a slidable hatch tray provided with inclined members adapted to contact with the rising
65 ammunition to be moved out of the way of

the same; and means for causing said hatch tray to automatically close under said ammunition after it has passed, substantially as described.

3. In an ammunition hoisting apparatus, 70 the combination of a hatch tray provided with spaced supporting members, some of which are adjustable with relation to the others; a carrier tray also provided with spaced supporting members adapted to pass up and
75 down between said supporting members on the hatch tray when in their normally closed positions, but to contact in their upward movements with said adjustable members after they have been moved into their adjusted
80 positions; and means to move said carrier tray; substantially as described.

4. In an ammunition hoisting apparatus, the combination of a slidably movable hatch tray provided with spaced supporting members, some of which are adjustable with relation to the others; means to normally keep
85 said tray in its closed position; a carrier tray also provided with spaced supporting members adapted to pass up and down between said supporting members on the hatch tray when in their normally closed positions, but to contact in their upward movements
90 with said adjustable members after they have been moved into their adjusted positions; and means to move said carrier tray, substantially as described.

5. In an ammunition hoisting apparatus, the combination of a pair of slidably movable hatch tray members, each provided
100 with spaced supporting members, some of said supporting members being adjustable with relation to the other supporting members; a carrier tray provided with spaced supporting members adapted to pass freely
105 up and down between said spaced supporting members on the hatch tray when said latter members are in their normal or non-adjusted positions, but to contact with said hatch tray supporting members when the
110 latter are in their adjusted positions and thereby force the hatch tray open; and flanges carried by said carrier tray members adapted to contact with and to hold said hatch tray open, substantially as described. 115

6. In an ammunition hoisting apparatus, the combination of a pair of slidably movable hatch tray members, each provided
120 with spaced supporting members, some of said supporting members being adjustable with relation to the other supporting members; a carrier tray provided with spaced supporting members adapted to pass freely
125 up and down between said spaced supporting members on the hatch tray when said latter members are in their normal or non-adjusted positions, but to contact with said hatch tray supporting members when the
130 latter are in their adjusted positions and thereby force the hatch tray open; flanges

carried by said carrier tray members adapted to contact with and to hold said hatch tray open; an endless chain adapted to operate said carrier trays; and a fire door adapted to be opened by said carrier tray, and to automatically close the passage traversed by the same after said carrier tray passes said door, substantially as described.

7. In an ammunition hoisting apparatus, the combination of a receiving tray provided with spaced supporting members located in substantially the same horizontal plane; a second receiving tray provided with spaced supporting members located in an inclined plane; a supporting table associated with each of said receiving trays; a hatch tray also provided with two main members each having spaced supporting

members, said main members adapted to move toward and from each other to close and open the hatch; a plurality of carrier trays provided with spaced supporting members adapted to freely pass up and down between the supporting members on each of said previously mentioned trays; an endless belt for operating said carrier trays; and a plurality of fire doors for normally closing the passage traversed by said carrier trays, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

RICHARD STAR.

Witnesses:

CHARLES A. BURT,
C. F. FLYTE.

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