No. 809,455. PATENTED JAN. 9, 1906.

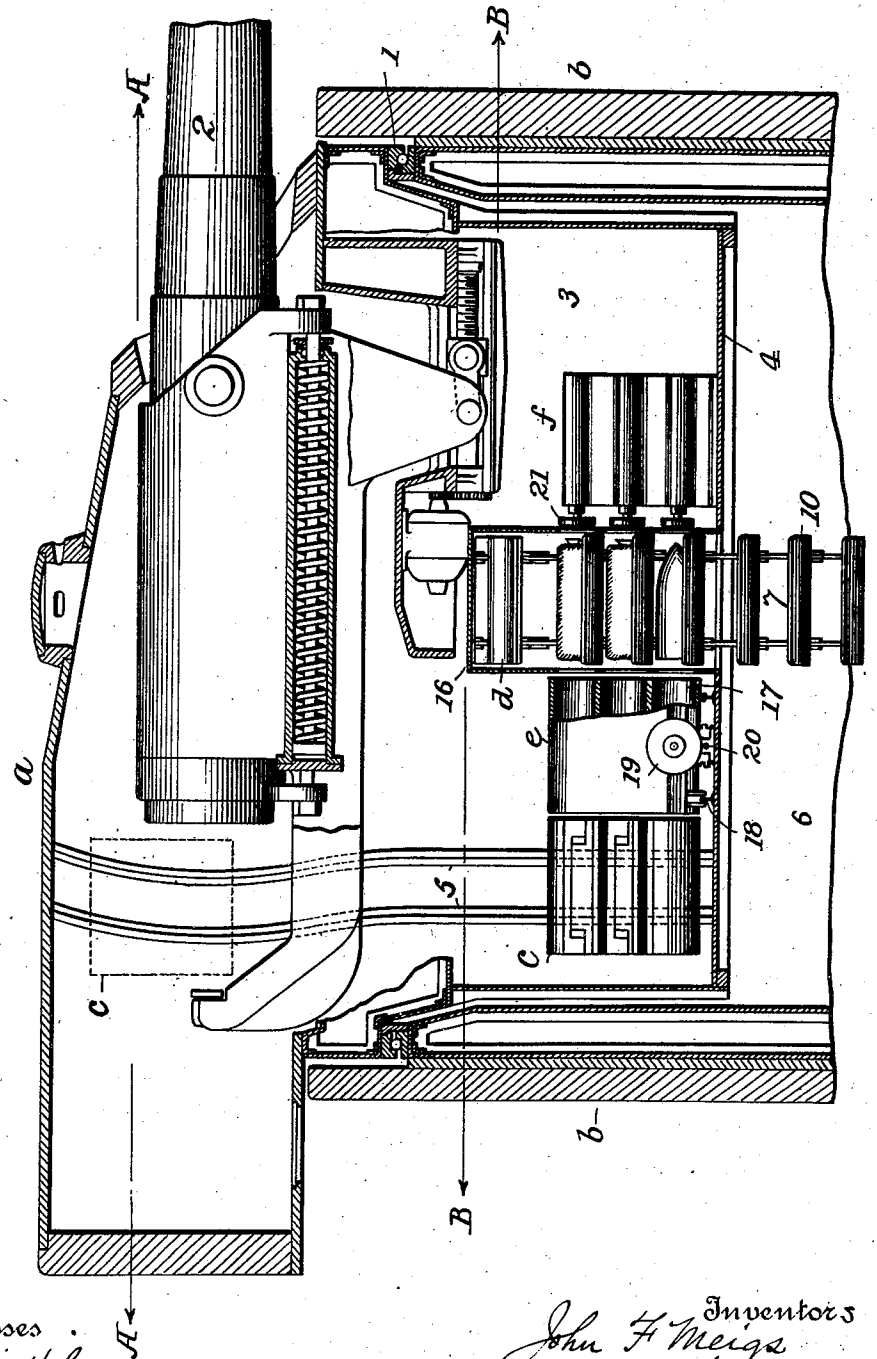
J. F. MEIGS & R. P. STOUT.

AMMUNITION HOISTING MECHANISM.

APPLICATION FILED SEPT. 14, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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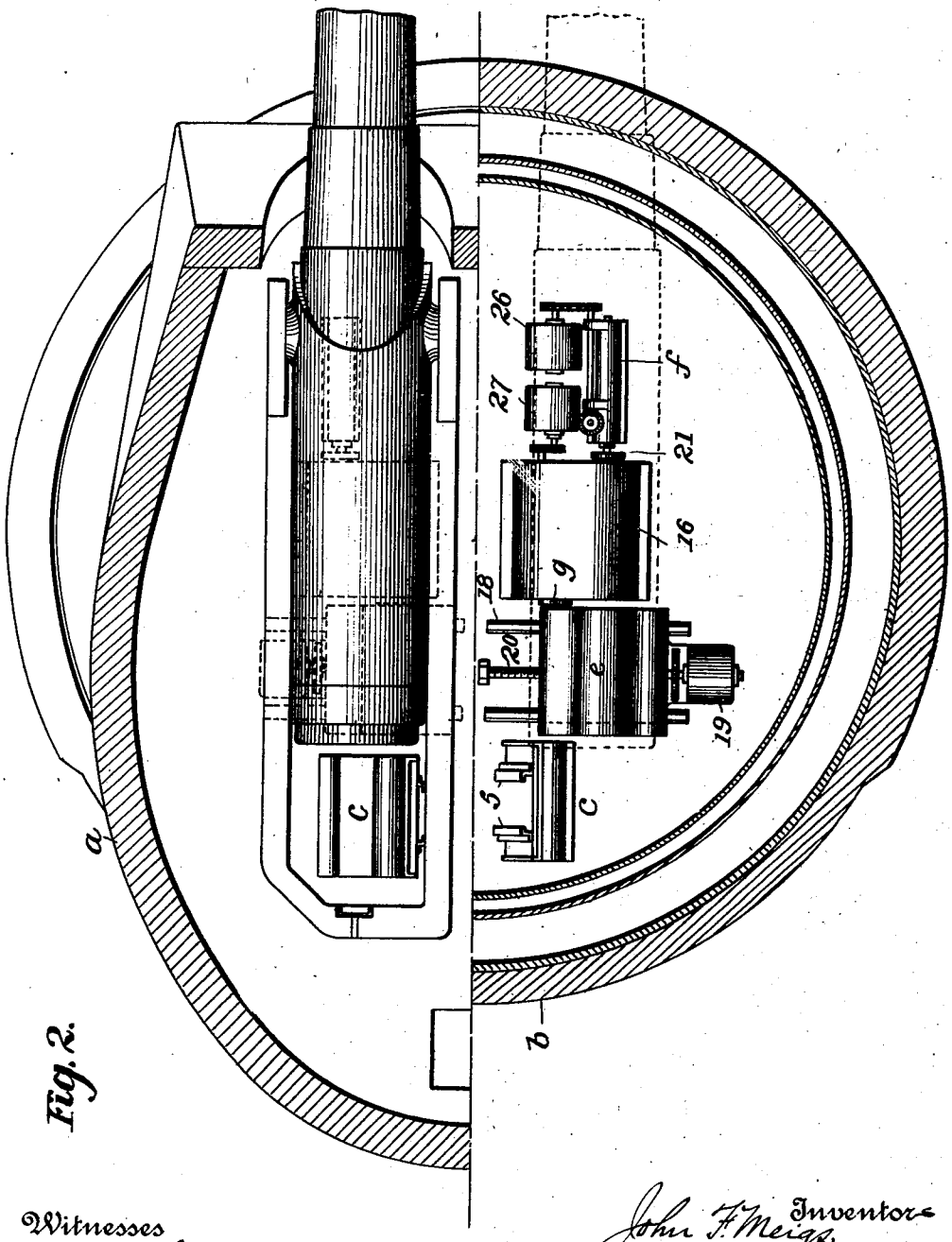

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

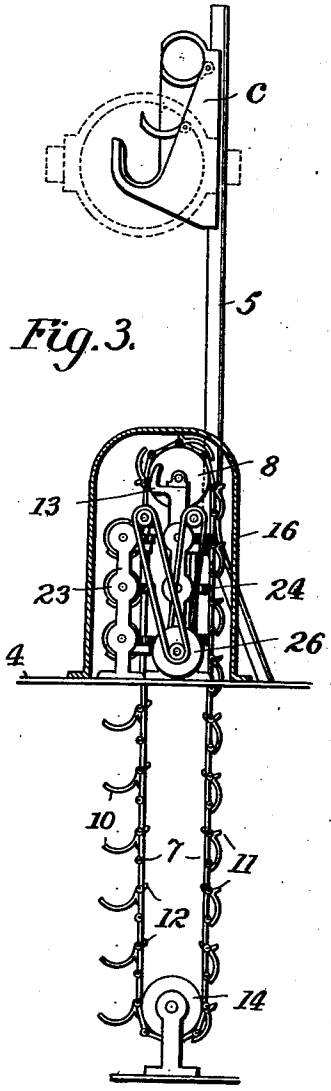


Fig. 5.

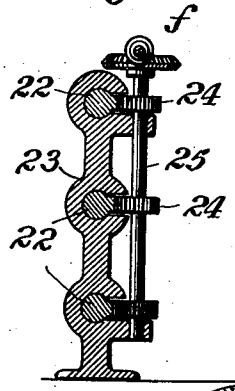


Fig. 4.

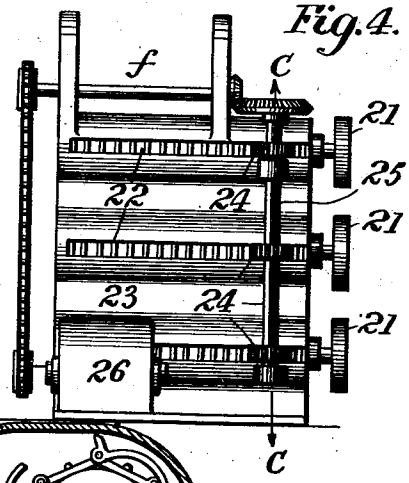


Fig. 6.

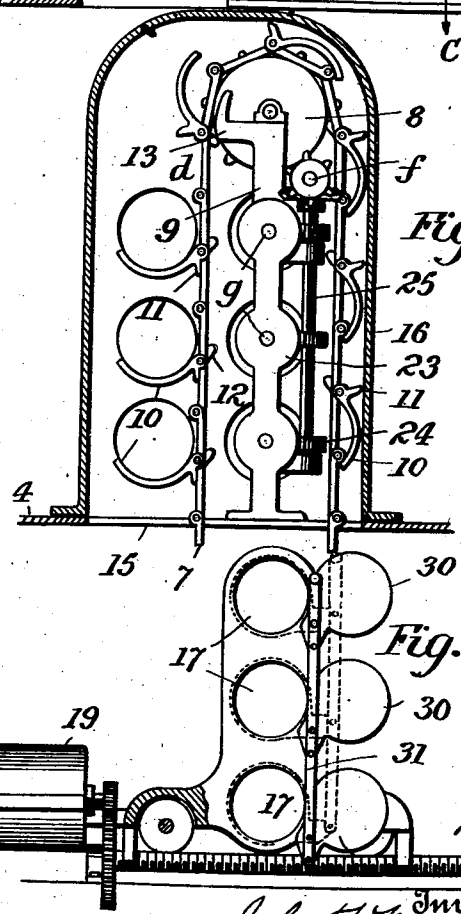
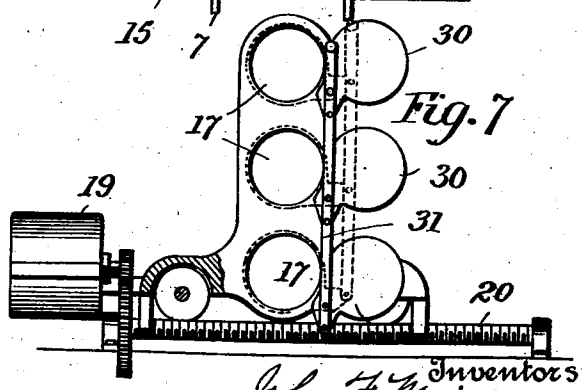


Fig. 7.



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UNITED STATES PATENT OFFICE.

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AMMUNITION-HOISTING MECHANISM.

No. 809,455. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed September 14, 1904. Serial No. 224,440.

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, and State of Pennsylvania, have invented certain new and useful Improvements in Ammunition-Hoisting Mechanism, of which the following is a specification.

This invention comprises means for transferring ammunition from the magazine of a vessel to the breech of a gun, and it relates particularly to means for hoisting the ammunition expeditiously, while protecting the handling-room below from sparks which may accidentally be discharged in the turret or gun-room above.

The invention will be described in connection with the accompanying drawings, in which—

Figure 1 is a sectional elevation of a turret in which a pair of guns are mounted. Fig. 2 is a plan view, partly in section on the line A and partly in section on the line B, Fig. 1. Fig. 3 is a side elevation of the hoisting apparatus. Fig. 4 is a rear view of one set of the transfer-rammers. Fig. 5 is a section on the line C of Fig. 4. Fig. 6 is an enlarged side view of the upper part of the chain elevator; and Fig. 7 is a side view of the transfer-carriage, partly broken away.

Referring to the drawings, *a* indicates a rotating turret or shield mounted on circular bearings 1 in a protecting-wall or barbette *b*. The turret comprises a shield covering the guns 2 and a cylindrical chamber 3 below the guns, having a floor 4 adapted to support the ammunition-hoisting mechanism. The present invention does not relate to the particular construction of the turret or the arrangement of the guns in the turret, and hence no detailed description of these parts is necessary. Within the turret are vertically-arranged tracks 5, upon which elevator-cars *c* travel to convey the ammunition from the lower part of the turret to the guns. Near the center of the turret and supported by the floor 4 is an elevator *d* for raising the ammunition from the handling-room 6 into the turret. Between the elevator *d* and the track 5 is a transfer-car *e*, onto which the ammunition is loaded by a series of rammers *f*. A second series of rammers *g* are located adjacent to the elevator *d* and adapted to convey the ammunition from the transfer-car to the elevating-car *c*.

As shown, the elevator *d* comprises two sprocket-chains 7, running over sprocket-wheels 8, supported on a stand 9, which is carried by the floor 4 of the turret. Pivotally connected to the chains are a series of flights 10, which are curved to conveniently hold the ammunition. Each of the flights is provided with a spur 11, which rests against a link of the chain and holds the flight in proper horizontal position on the ascending branch of the chains. Each flight is also provided with an arm 12, which engages a fixed projection 13 at the upper end of the frame 9 as the flight approaches the sprocket-wheel, and the flight is thus folded in upon the chains and retains this position in passing over the sprocket-wheel and down on the descending branch of the chains, as illustrated in Fig. 6. The chain conveyer passes under suitable guide-sprockets 14, said sprockets being carried by the floor of the hoist-well, which well rotates with the turret. An opening 15 is provided in the floor of the turret for the passage of the chain conveyer, and a hood or casing 16 covers the conveyer and the opening. The openings in said casing 16, through which the rammer operates and through which ammunition is discharged into transfer-car *e*, as also the openings in each end of said car *e*, are closed by shutters 30, which shutters are opened only when necessary to move ammunition into or out of said openings, thus preventing sparks from dropping into the handling-room or from igniting powder charges contained in hoist *d* in transfer-car *e*. (See Fig. 7.) As shown, the shutters are pivoted, and each set is connected by a link 31.

The apparatus illustrated and described is capable of handling a charge of ammunition in three parts, which may include, for instance, a projectile and two bags of powder. It will be understood, however, that either one or more sections of the charge of ammunition may be handled at a time. Between the chain conveyer and the lower station of the track for the elevating-car *c* is located the transfer-car *e*. As shown in Figs. 1 and 7, this car has three compartments adapted to register with three flights of the chain elevator

and to receive three sections of a charge of ammunition. These compartments 17 are preferably cylindrical, being thus covered and adapted to protect the powder from sparks. The car is provided with wheels and mounted on suitable rails 18, and means are provided for shifting it from a position registering with the chain conveyer to a position registering with the elevator-car. The said means, as shown, are an electric motor 19 and a screw 20.

The elevating-car *c* may be of any suitable construction. As shown in Fig. 3, it is provided with three shelves or supports for the ammunition, which register with the compartments in the transfer-car when the elevating-car is at its lower station.

Two sets of transfer-rammers of any suitable construction are provided, one for transferring a charge from the chain elevator to the transfer-car and another for transferring it from the transfer-car to the elevating-car. These sets of rammers, as shown, are substantially similar. Referring to Figs. 5 and 6, which represent the triple rammer *f*, 21 indicates three rammers carried by racks 22, which slide in a frame 23 and are operated by pinions 24 on a vertical shaft 25. The shaft 25 is driven by a motor 26 and suitable connections. The construction and operation of the rammers *g* and *f* may be the same, and a detailed description of the rammers *g* will therefore be omitted. As compactness is an essential feature of the mechanism, owing to the limited space in the turret, the rammers *g* are located between the branches of the chain elevator *d*, as shown in Figs. 3 and 6. The rammers *g* are driven by an independent motor 27. Any suitable power mechanism is provided for operating the elevating-car *c* and the chain elevator *d*.

It will be understood that a complete set of the apparatus above described may be supplied for each gun in the turret and that the apparatus may be in some instances used for supplying ammunition to guns which are not mounted in revolving turrets. This apparatus greatly expedites the handling of the ammunition. While one charge is being placed in the gun from the elevating-car *c* the transfer-car is supplied with a succeeding charge and brought back into position to register with the triple rammer *g*. By a slight movement of the chain elevator a third charge is brought into position to register with the triple rammer *f*, as a number of charges may be carried simultaneously by the chain elevator. It will thus be seen that the elevating-car *c* may be loaded instantly when it reaches its lower station, and the gun may be fired as rapidly as the car *c* can be moved up and down and the charges placed in the gun. At the same time the handling-room is practically shut off from the turret and protected from falling sparks. The charges of ammunition are entirely inclosed by the casing and shutters during the time they are in the chain elevator and in the transfer-car, thus greatly reducing the danger of igniting such charges by sparks from the turret.

Having described the invention, what we claim, and desire to secure by Letters Patent, is—

1. In ammunition-elevating mechanism, the combination with a gun, of two elevators and an intermediate transfer-car adapted to transfer ammunition from the handling-room to the gun.

2. In ammunition-elevating mechanism, the combination with a gun, of an elevating-car adapted to deliver ammunition at the breech of the gun, a second elevator adapted to deliver ammunition at the lower station of the elevating-car, and a transfer-car located between said elevators at said lower station.

3. In ammunition elevating mechanism, the combination with a gun, of an elevator adapted to deliver ammunition at the breech of the gun, a second elevator adapted to raise ammunition from the handling-room, said elevators being out of register with each other, and a transfer-car movable to regiters with said elevators alternately.

4. In ammunition-elevating mechanism, the combination with a gun, of an elevator adapted to raise ammunition from the handling-room, a second elevator adapted to deliver the ammunition at the breech of the gun, a transfer-car between said elevators, a rammer adapted to move the ammunition from the first elevator to the transfer-car, and a second rammer adapted to move the ammunition from the transfre-car to the second elevator.

5. In ammunition-elevating mechanism, the combination with a gun, of a chain elevator adapted to raise the ammunition from the handling-room, an elevating-car adapted to deliver the ammunition at the breech of the gun, a transfer-car between said elevators, a series of rammers adapted to transfer the ammunition from the chain elevator to the transfer-car, and a second series of rammers adapted to transfer the ammunition from the transfer-car to the elevating-car.

6. The combination with a turret and a gun mounted therein, said turret having a floor extending over the handling-room, of an elevator extending through an opening in said floor from the handling-room into the turret, a cover extending over said opening and elevator, a second elevator within the turret, and a transfer-car between said elevators.

7. The combination with a turret and a gun mounted therein, said turret having a floor extending over the handling-room, of a chain elevator supported on said floor and provided with flights adapted to hold ammu-

nition, a transfer-car movable on said floor, and a plurality of rammers adapted to move a number of sections of ammunition simultaneously from said chain elevator to said car.

8. In an ammunition-elevating mechanism, the combination with a gun, of an elevator adapted to raise the ammunition from the handling-room, a second elevator adapted to deliver the ammunition at the breech of the gun, and means, including a rammer, for transferring the ammunition from the first-mentioned elevator to the second elevator.

9. The combination with a turret and a gun mounted therein, said turret having a floor extending over the handling-room, of a chain elevator supported on said floor and extending through an opening in the floor to the handling-room, and a casing or cover over said elevator and opening, said elevator being provided with pivoted flights, and means for folding said flights upon the chains within said casing whereby a casing of minimum size may be used.

10. In ammunition-hoisting mechanism, the combination with a chain elevator, a transfer-car, and an elevating-car, of a multiple rammer adapted to move several sections of ammunition simultaneously from the chain elevator to the transfer-car, and a second multiple rammer located between the branches of the chain elevator and adapted to move several sections of ammunition from the transfer-car to the elevating-car.

11. The combination with a turret, and a gun mounted therein, said turret having a floor extending over the handling-room, of an elevating apparatus supported on and extending through an opening in said floor, and a normally closed casing extending over said elevator, whereby sparks are prevented from passing below the turret-floor said casing having openings for the passage of ammunition and means for normally closing the same.

12. The combination with a turret, and a gun mounted therein, said turret having a floor extending over the handling-room, of an elevating apparatus supported on and extending through an opening in said floor, a normally closed casing extending over said elevator, said casing having openings through which the ammunition is discharged into the turret, and shutters for normally closing said openings.

13. In ammunition-elevating mechanism, the combination with a gun, of an elevator adapted to raise the ammunition from the handling-room, a second elevator adapted to deliver ammunition at the breech of the gun, and a transfer-car between the upper station of the first-named elevator and the lower station of the second elevator, the said stations being laterally displaced and the car being movable to register with each of said stations.

14. In ammunition-elevating mechanism, the combination with a turret and a gun mounted therein, of an elevator adapted to raise ammunition from the handling-room into the turret, a second elevator within the turret adapted to deliver ammunition at the breech of the gun, the upper station of the former elevator and the lower station of the latter being out of register, and an intermediate transfer-car movable to register with each of said stations and adapted to hold a charge of ammunition.

15. In ammunition-elevating mechanism, the combination with a turret and a gun mounted therein, of an elevator adapted to raise ammunition from the handling-room to the turret, a second elevator adapted to deliver the ammunition at the breech of the gun, each of said elevators being adapted to simultaneously hold a plurality of sections of ammunition and the upper station of the first-named elevator and the lower station of the second elevator being at the same elevation, but out of register with each other, a horizontally-movable transfer-car arranged between said stations and adapted to register with each of them, and rammers adapted to transfer the ammunition from the first elevator to the transfer-car and from the said transfer-car to the second elevator.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN F. MEIGS.
ROBERT P. STOUT.

Witnesses:
EDWIN A. MILLER,
EARL G. RUSH.