F. REICHARD.

AMMUNITION HOIST.

APPLICATION FILED JUNE 19, 1914.

1,138,149.

Patented May 4, 1915.

3 SHEETS—SHEET 1.

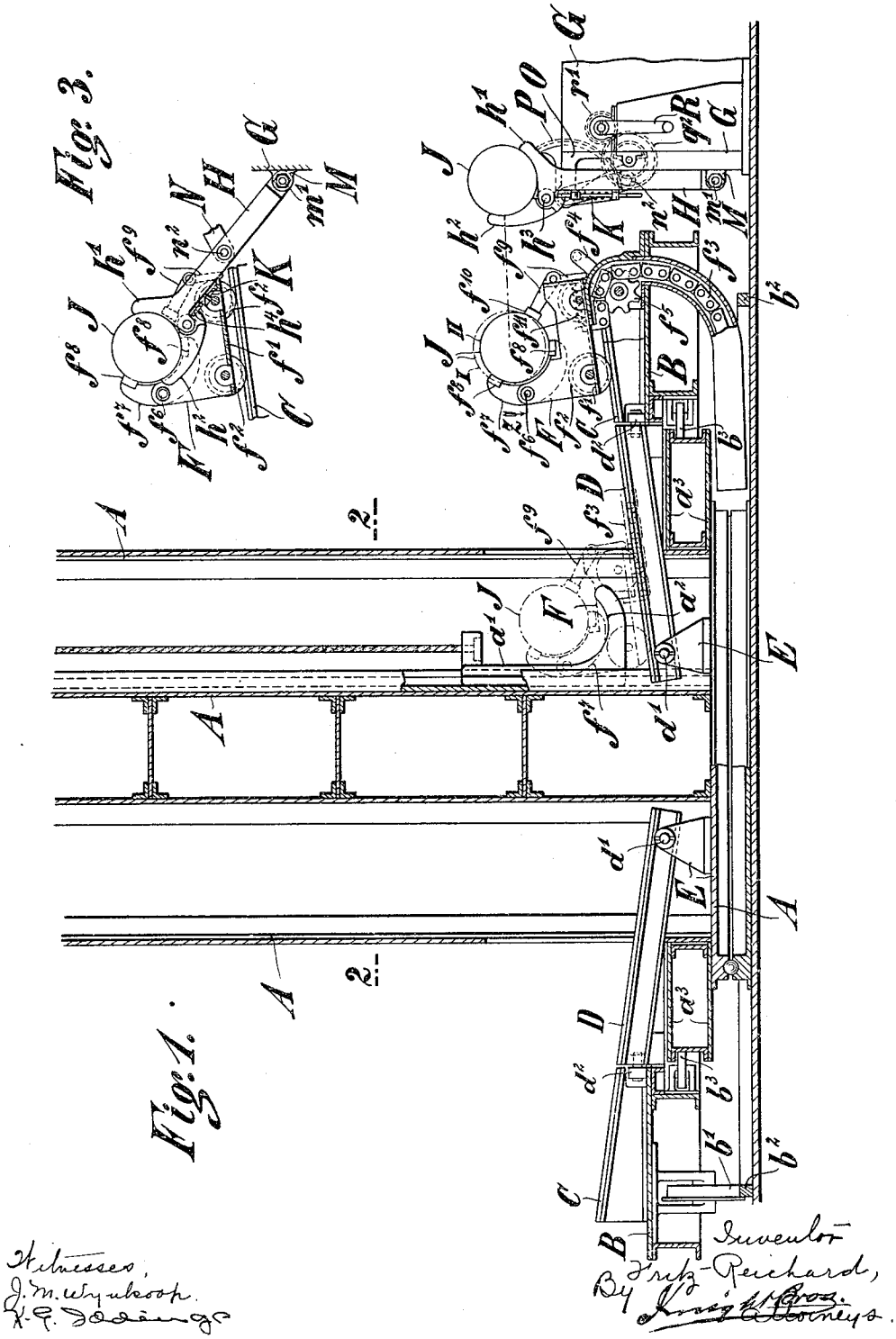

Fig. 3.

Fig. 1.

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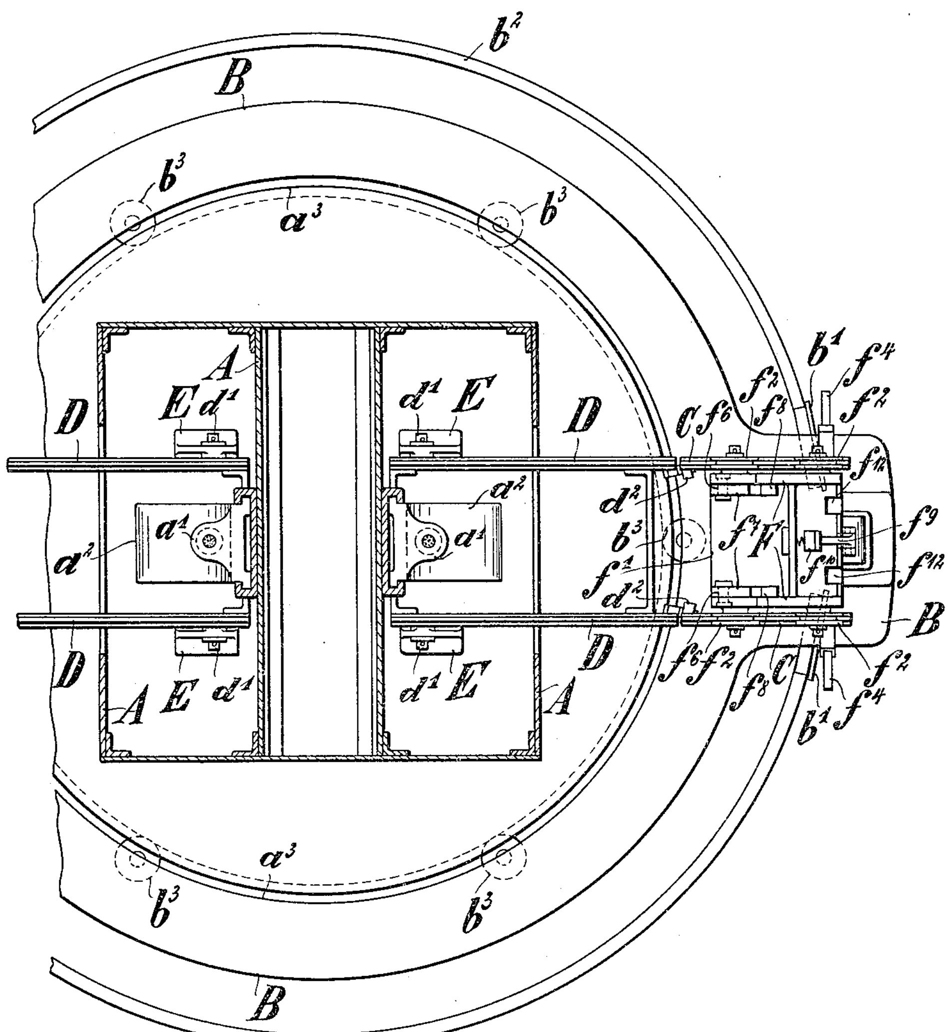
3 SHEETS—SHEET 2.

Fig: 2.



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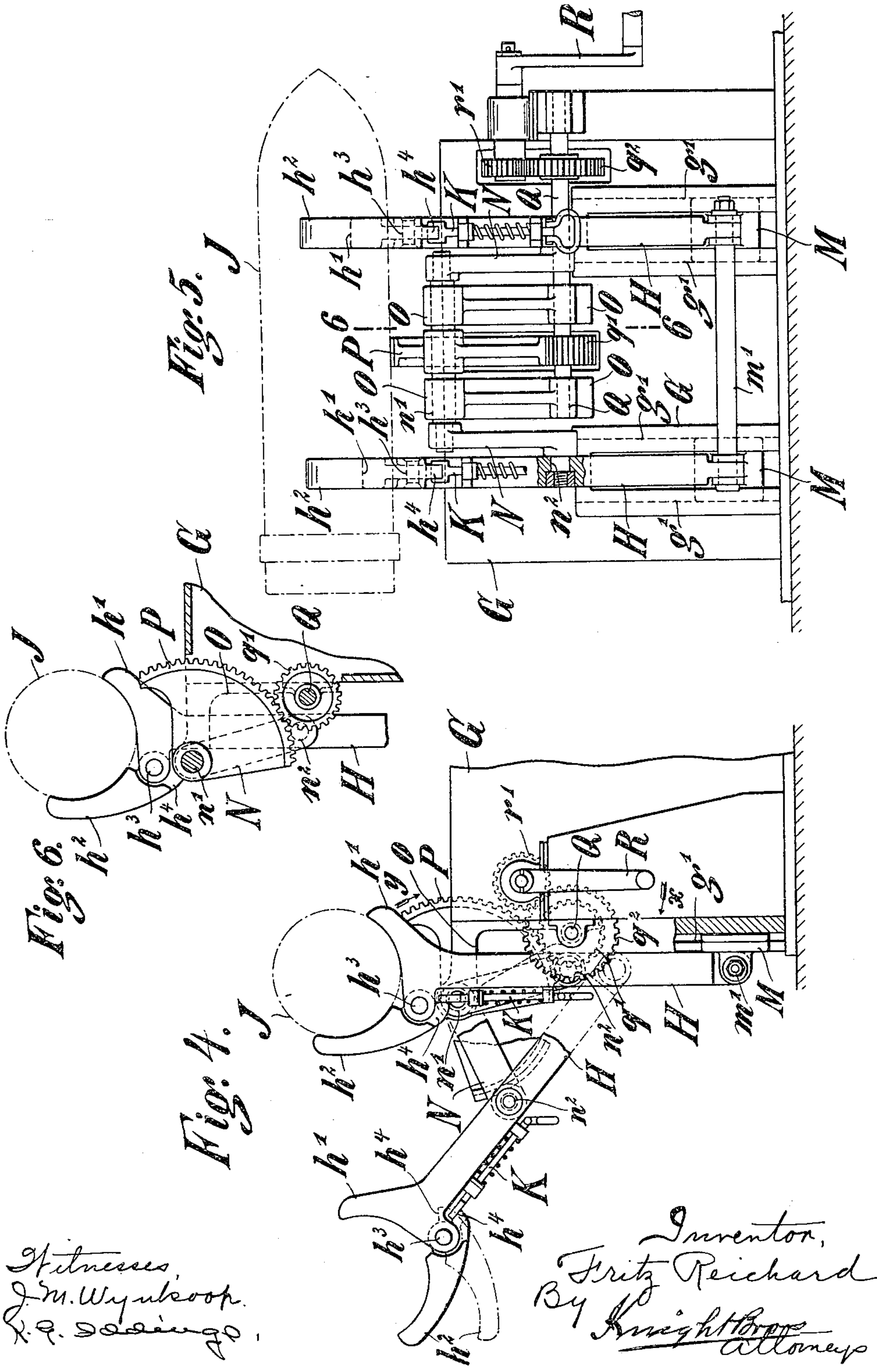

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UNITED STATES PATENT OFFICE.

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AMMUNITION-HOIST.

1,138,149. Specification of Letters Patent. Patented May 4, 1915.

Application filed June 19, 1914. Serial No. 846,184.

To all whom it may concern:

Be it known that I, FRITZ REICHARD, residing at Essen-on-the-Ruhr, Germany, a citizen of the German Empire, have invented a certain new and useful Improvement in Ammunition-Hoists, of which the following is a specification.

The present invention relates to ammunition hoists, into the shaft of which the ammunition is carried on a truck.

The object of the invention is now to reduce as far as possible the consumption of power and time and to procure accurate operation.

One embodiment of the invention is illustrated in the accompanying drawings, and Figure 1 shows a vertical section of the lower portion of the hoist shaft together with the device, partly in section, for the transmission of the ammunition into the shaft. Fig. 2, a partial top plan view partly in section along line 2—2 of Fig. 1. Fig. 3, a portion of Fig. 1 with the parts in different position. Fig. 4 another portion of Fig. 1 with the parts in different position and in larger scale. Fig. 5, a left hand side view partly in section, of Fig. 4, and Fig. 6, a section along line 6—6 of Fig. 5, seen from the right.

Two projectile cars a^1 provided each with a trough a^2 for raising the projectiles, are carried in the hoist shaft A, which turns with the gun turret, see Figs. 1 and 2. This shaft A carries at its lower end a circular platform a^3 relative to which a turntable B is revolubly mounted, running on a rail b^2 through the intermediary of rollers b^1 and resting against the platform a^3 by means of other rollers b^3. The turntable B carries two rail tracks C, inclined against the shaft A, set 180° apart, and each forming an extension with another rail track D, when the parts are in the position indicated in Figs. 1 and 2. The tracks D are attached to the shaft A by means of trunnions d^1 and bearings E, and rest on the turntable B by means of rollers d^2. The rail tracks C and D are intended for running tracks for the wheels f^2 of two projectile trucks F, of which only one has been shown. On the bottom f^1 of the truck is secured a chain f^3, see Fig. 1, which is in mesh with a sprocket wheel f^5 operated by a hand lever f^4, see also Fig. 2.

On the side walls of the projectile truck F are mounted to oscillate on trunnions f^6, two-armed levers f^7, which are provided with a claw f^8 at each end, see Figs. 1 to 3. The truck F moreover carries on its outer wall, away from the shaft A, a two-armed lever f^9, which also possesses a claw f^{10} actuated by a tension spring f^{11}, which tends to hold it in the position shown in the drawing. The claws f^8 and f^{10} are intended to hold the projectile.

To transfer the projectiles to either truck F, a swing is provided mounted on a frame G and having two levers H, each of which carries two arms h^1 and h^2 for gripping the projectile J. Arms h^1 are rigidly connected with the levers H, while arms h^2 are, by means of journals h^3, mounted to oscillate on the levers H. For securing the arms h^2 there are provided spring actuated sliding bolts K on the levers H, which bolts are adapted to lie in front of a nose h^4 of the arms h^2. On their lower end, the levers H carry slides M, which are guided in vertical grooves g^1 of the frame G and interconnected by a cross rod m^1 which also forms a link connection between the levers H and the slides M, see in particular Fig. 4. Links N, which are non-revolubly secured on journals n^1 mounted in brackets O of the frame, are connected to the levers H at n^2. The length of the levers H and the links N, as well as the position of the point n^2, have been so selected, that the axis of the projectile J, resting on arms h^1 and h^2, moves approximately in one plane, when the arms H are swinging between the positions indicated in Figs. 1, 3, and 4.

A toothed sector P rigidly connected with the journal n^1, is in engagement with a gear wheel q^1, which is carried on a spindle Q mounted in the bearing-brackets O. The spindle Q carries moreover, a gear wheel q^2, which may be rotated by a hand lever R through the intermediary of a pinion r^1.

When the swing formed by the levers H is situated in perpendicular position, the projectile is placed thereon by means of a crane or the like. If the projectile has to be brought onto the truck F from the swing, the truck is first brought into the position, illustrated in Fig. 1 by turning the turntable B in case it does not already stand opposite the swing. The hand lever R is thereupon turned in the direction of the arrow x, Fig. 4. This turning of the hand lever R is transmitted by the gearing r^1 q^2 and q^1 P to

links N. These swing outwardly in the direction of the arrow y, so that the levers H change into the position seen in Figs. 3 and 4, whereby the slides M move upward in the guides g^1. Toward the end of this movement the levers H enter recesses f^{12}, see Fig. 2, in the outer wall of the truck F; simultaneously the projectile J hits the upper arm of the lever f^9 and lays it over against the action of its spring f^{11}. The projectile thereupon impinges against the upper claws f^8 of the levers f^7 and swings the levers f^7 in the direction of the arrow z, Fig. 1, until the lower claws f^8 abut against the projectile. In the meantime the lever f^9, actuated by its spring f^{11} has returned into its initial position. The parts then take the relative positions illustrated in Fig. 3, which corresponds to position I of the projectile, shown by dot and dash lines in Fig. 1.

The sliding bolts K are now drawn back, so that the arms h^2 snap into the position shown in dot and dash lines in Fig. 4, determined by the nose h^4 and the projections for the nose, thereby releasing the projectile. Actuated by its weight, the projectile then sinks into the position denoted by II in Fig. 1, bringing with it the levers f^7 so that it takes the position indicated. The projectile simultaneously impinges against the claw f^{10} of the lever f^9, so that the projectile is held between the claws f^8 and f^{10}. Thereupon the levers H, by turning the hand lever R, are swung back into their perpendicular position, and the arms h^2 locked in their initial position by the sliding bolts K. Then if need be, the turntable B is turned until the rail track C, upon which the loaded truck F is standing, is in alinement with one of the two tracks D and the truck F runs into the shaft A. The projectile now lies above the trough a^2 of the projectile car a^1, so that it can be raised by the trough a^2, as soon as the car a^1 commences its upward movement. Lastly, the truck F is returned into the position required for receiving a new projectile.

It should be noted, that it is old to transfer the ammunition by means of a swing into the loading axis of a gun and to hold ammunition on suspended grippers by means of a clamping device.

I claim:—

1. An ammunition hoist, having a hoist shaft, an ammunition car running up and down in the shaft, a truck for bringing the ammunition into the shaft and a swinging device for placing the ammunition on said truck; said truck having gripping jaws which automatically grip the ammunition on receiving it from said swing, subsequently delivering it to said ammunition car.

2. An ammunition hoist, having a hoist shaft, an ammunition car running up and down in the shaft, a truck for bringing the ammunition into the shaft and a swinging device for placing the ammunition on said truck; said truck having gripping jaws which automatically grip the ammunition on receiving it from said swing, subsequently delivering it to said ammunition car; said swinging device comprising a carrying member having hinged connection on said swinging device for delivering ammunition to said truck.

3. An ammunition hoist, having a hoist shaft, an ammunition car running up and down in the shaft, a truck for bringing the ammunition into the shaft and a swinging device for placing the ammunition on said truck; said truck having gripping jaws which automatically grip the ammunition on receiving it from said swing, subsequently delivering it to said ammunition car; said gripping jaws comprising a set of levers, hinged on the truck, in such a manner that one of said levers yields when receiving the ammunition from the swing.

4. An ammunition hoist, having a hoist shaft, an ammunition car running up and down in the shaft, a truck for bringing the ammunition into the shaft and a swinging device for placing the ammunition on said truck; said truck having gripping jaws which automatically grip the ammunition on receiving it from said swing, subsequently delivering it to said ammunition car; said swinging device comprising a carrying member having hinged connection on said swinging device for delivering ammunition to said truck; said gripping jaws comprising a set of levers, hinged on the truck, in such a manner that one of said levers yields when receiving the ammunition from the swing, and subsequently holds it fast as soon as released by said carrying member.

The foregoing specification signed at Barmen, Germany, this 29th day of May, 1914.

FRITZ REICHARD. [L. S.]

In presence of—

ALBERT NUFER,
FRANCES NUFER.