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LOCKAGE OF BREECH OF MORTAR BARREL TO COUNTERPLATE

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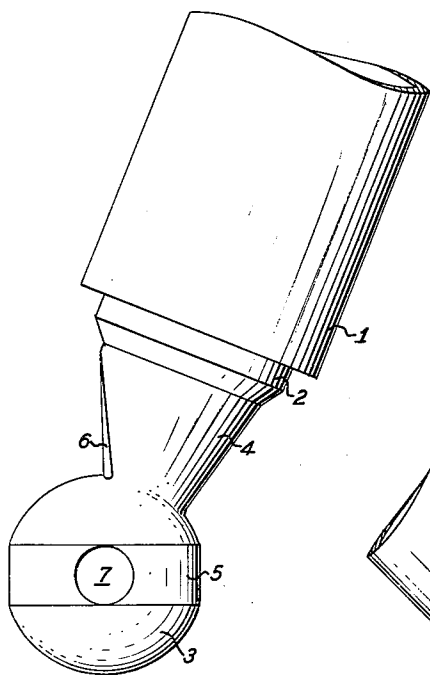


FIG. 1

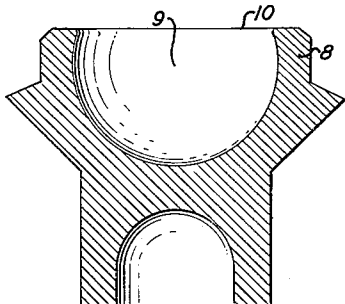


FIG. 2

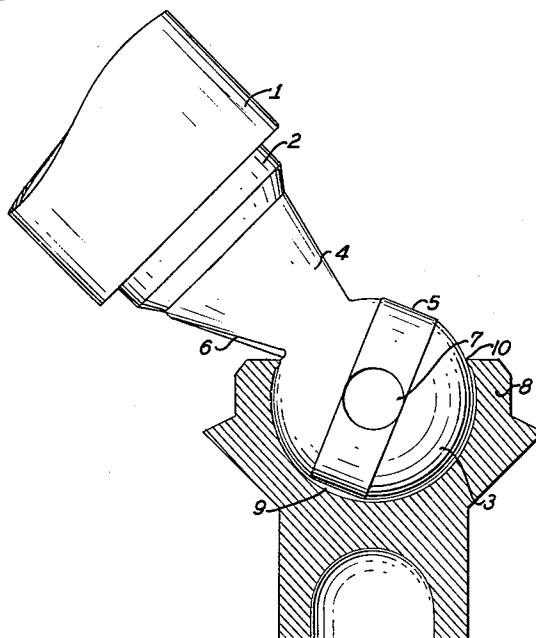


FIG. 3

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LOCKAGE OF BREECH OF MORTAR BARREL TO COUNTERPLATE

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4 Claims. (Cl. 89—37)

This invention relates to a lockage between the breech of the mortar barrel and the counterplate.

The coupling between the breech and the counterplate is usually accomplished through a ball joint coupling, the breech of the barrel consisting of a spherical part that fits into the cup-like part in the middle of the counterplate. Thus such a coupling is obtained that the barrel can be elevated and lowered and even turned sidewise around this coupling point. The joint ball and socket are, of course, to be locked to each other so as to prevent the reaction force that influences the counterplate subsequent to firing from releasing the coupling. This lockage should also be very simple in construction and quick to make.

In hitherto known lockage methods the joint socket is equipped with two opposite lugs, the mutual distance of which is less than the joint ball diameter. The joint ball again comprises two opposite planes on the sides, so that the joint ball enters into the joint socket in a certain position. When the barrel is then tilted and turned, the joint ball becomes locked in the joint socket.

This commonly known method of locking has, however, the defect that because of said lugs in the joint socket of the counterplate the shooting sector is limited and this disadvantage is apparent especially when shooting at low angles of elevation. Nowadays in view of rapid battle situations the requirement is for a shooting sector of 360° for the barrel with the counterplate remaining in the same position.

The object of this invention is to present a new, improved lockage for a mortar barrel and counterplate, the lockage being very quick and simple to make and allowing an unlimited shooting sector of 360°.

A lockage according to the invention is characterized in that the ball joint socket is larger than a hemisphere and that the joint ball to be inserted into the socket is provided with a cylindrical turning in the mantle, the diameter of the cylindrically turned part being a little smaller than that of the joint socket opening, the diameter of the joint ball being greater than that of the joint socket opening.

An embodiment of the invention is explained in the following description with reference to the attached drawing, it being however understood that the present invention is in no way restricted to the embodiment described herein.

In the attached drawing

FIG. 1 shows a ball joint in the breech of the barrel according to the invention,

FIG. 2 shows a ball joint socket for the counterplate according to the invention,

FIG. 3 shows the coupling in combination, the barrel being in the shooting position.

In the FIG. 1 part 1 is the breech of the mortar barrel, in which the breech 2 is fastened suitably by means of screw threads. In the breech is a smaller neck part 4 and on its head a joint ball, part 3. The ball is provided with a turned cylindrical part 5, so that the turning axis and the barrel axis are at an angle of about 20°. The neck 4 has been provided on one side with a notch 6 permitting the bore to be tilted so low that firing is possible even at 45° angles of elevation. The joint ball is provided with a hole 7, into which the lever rod for removing and fastening the breech can be fitted.

In the FIG. 2 part 8 is a joint socket that is to be fastened to the counterplate, e.g. by welding. The joint

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socket consists of an inside spherical surface 9, prepared so as to be larger than a hemisphere, that is to say, the diameter of the ball opening 10 is smaller than the major circle of the ball. The diameter of the ball socket 9 is somewhat greater than the diameter of the joint ball 3 coming inside it, with a view for obtaining for battle circumstances a suitable clearance in case of e.g. sand getting between the balls. The diameter of the ball opening 10 is in turn a little larger than the diameter of the turning 5 in the joint ball 3, so that the coupling as shown in figure can be performed.

In FIG. 3 is described a joint coupling with the barrel in firing position, the significance of notch 6 being clearly illustrated as to how the barrel can be tilted to its lowest position. The figure shows also that, without moving the counterplate, the firing direction can be changed through 360°. The joint coupling remains locked in its place and reaction impacts do not release it. When the coupling is to be released, the barrel is tilted backwards, until the axis of the turning 5 is vertical, and the barrel with its breech is removed.

The coupling as described herein, as can easily be noted, is very quick and reliable and allows an unlimited firing sector, which is not to be obtained with hitherto known couplings. The production also is simple, the main operation being turning.

It is understood, that within the limits of the invention even other embodiments are conceivable, for instance so that the part of the spherical surface in the joint socket above the major circle is not uninterrupted, but consists of parts of spherical surface that are sufficient for keeping the coupling in place.

What I claim is:

1. Apparatus to lock a mortar comprising a mortar barrel member, a counter plate member, a male element on one of said members and a female element on the other of said members, said elements being engageable to lock said members together; said female element comprising a single piece provided with a frusto spherical socket having a circular entry opening of determinable diameter and a maximum diameter greater than said determinable diameter; said male element including a generally spherical portion having a maximum diameter greater than that of the entry opening but less than the maximum diameter of said socket, said spherical portion having a flat annular surface with a diameter less than that of said entry opening whereby said male element can be selectively disengaged from said female element, and a neck connected to said spherical portion but spaced from said flat annular surface.

2. Apparatus as claimed in claim 1 wherein said neck has a center line disposed at an acute angle with respect to said flat annular surface.

3. Apparatus as claimed in claim 2 wherein said neck has an inverted conical shape and has a depression at its junction with said spherical portion.

4. Apparatus as claimed in claim 3 wherein said spherical portion has a diametral bore aligned with said flat annular surface.

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