July 24, 1934. J. C. CURTIS 1,967,501

DRILL STEEL CENTRILIZER

Filed Dec. 30, 1932 2 Sheets-Sheet 1

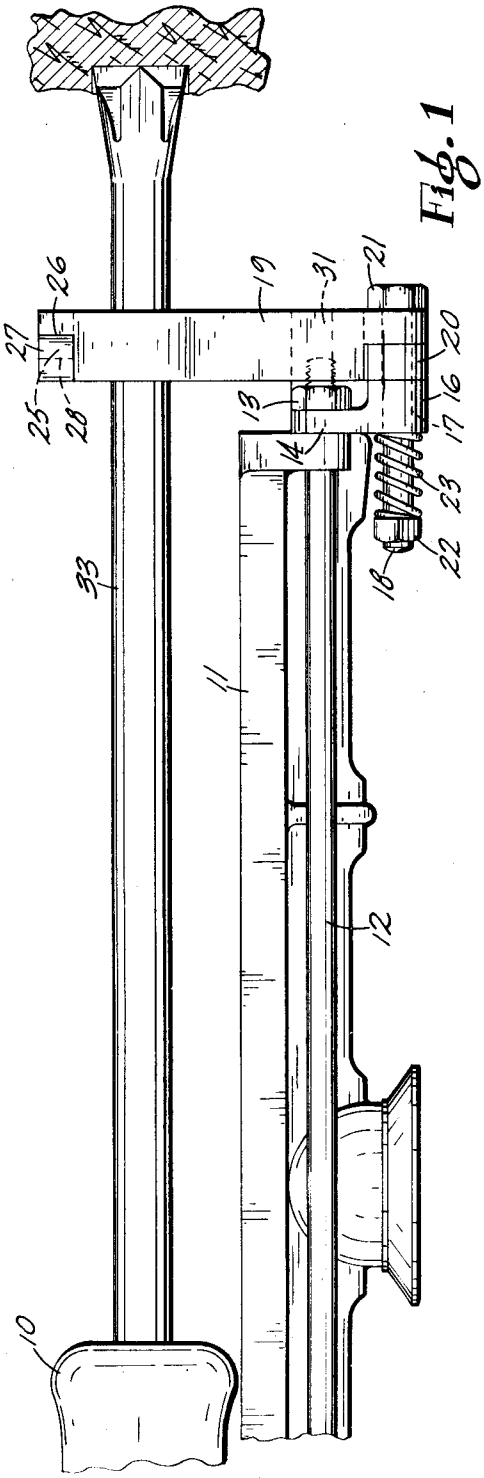


Fig. 1

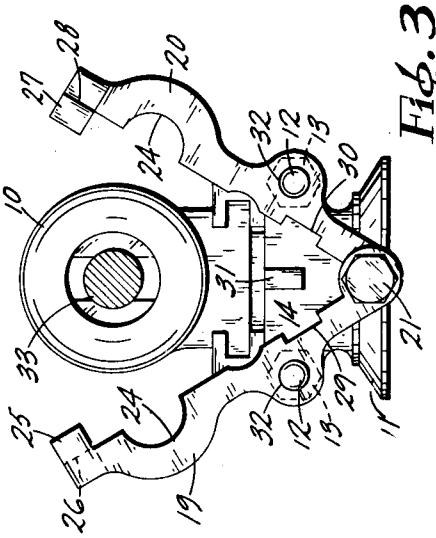


Fig. 3

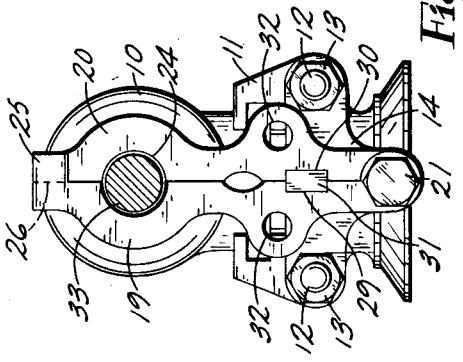


Fig. 2

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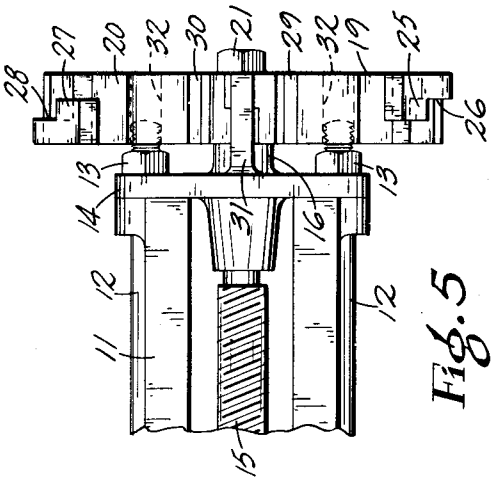


Fig. 5

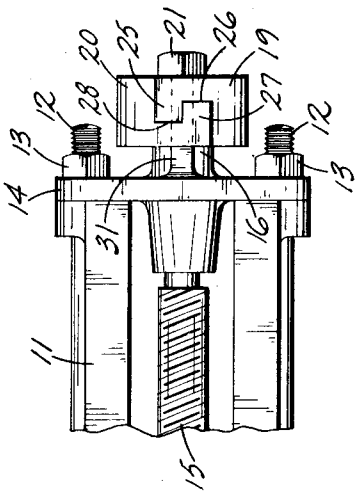


Fig. 4

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DRILL STEEL CENTRALIZER

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Application December 30, 1932, Serial No. 649,566

9 Claims. (Cl. 255—45)

This invention relates broadly to rock drills, but more particularly to a centralizer for the working implement, such as a drill steel, used in connection with rock drilling machines.

One object of this invention is to guide and support the free end portion of the drill steel in such a manner as to prevent the lateral displacement of the cutting end of the drill steel when starting a drill hole.

Another object of this invention is to provide a centralizer which can be locked into operative and inoperative position without necessitating the use of a wrench or the like.

Another object of the invention is to provide a centralizer of simple and sturdy construction, thus reducing the cost of manufacture and maintenance.

Other objects will be in part obvious and in part pointed out hereafter.

In the drawings which illustrate a preferred embodiment of the invention:

Fig. 1 is a longitudinal side elevation of a portion of a rock drill together with the end portion of its support, showing the manner in which the centralizer is attached to the support to guide the free end of the drill steel.

Fig. 2 is an end elevational view illustrating the centralizer in operative position.

Fig. 3 is a view similar to Fig. 2 illustrating the centralizer in inoperative position.

Fig. 4 is a plain view of the mechanism positioned as illustrated in Fig. 2.

Fig. 5 is a plain view of the mechanism positioned as illustrated in Fig. 3.

Referring to the drawings in which like symbols designate corresponding parts throughout the several views, 10 represents a rock drill slidably mounted upon a support or guide shell 11. Secured to the front end of the guide shell by a pair of bolts 12 and nuts 13, there is a cross head 14 within which the end of the feed screw 15 is journaled in a manner common to carriage of this type. The cross head 14 is formed with an outwardly protruding boss 16 provided with an aperture 17. Pivotally mounted on a bolt 18 which is slidably mounted in the aperture 17, there are two identical members or arms 19 and 20. The lower end of these arms are formed with restricted portions overlapping each other to permit the pivotal movement of the arms toward and away from each other. The bolt 18 transversing these restricted portions is formed with a head 21, and has its other end threaded to receive a nut 22. Interposed between the rear face of the cross head 14 and the nut 22, there is a compression spring 23 tending to move the bolt 18 leftwardly, and consequently affording the constant resilient clamping engagement of the head 21 with the arms 19 and 20. From the bolt 18, these arms extend upwardly in juxtaposed relation, and are formed toward the upper end, with transversely disposed recesses constituting a bore 24. Adjacent this bore, the end of the arm 19 is formed with a protruding lug 25 and a recess 26. Similarly the end of the arm 20 is provided with a lug 27 and recess 28, the former capable of engagement into the recess 26 and the latter capable to receive the lug 25. The engagement of the lugs 25 and 27 into their corresponding recesses 28 and 26, causes the arms 19 and 20 to be locked against relative lateral movement. The longitudinal movement of these arms is checked by the engagement of the head bolt 21 with the arm 19 which tends to maintain, by the tension of the compression spring 23, these arms against the boss 16.

The internal opposed walls of the arms 19 and 20 are provided with a cut away portion or groove 29 and 30 constituting a slot. The cross head 14 is formed with an integral lug 31 protruding therefrom through this slot and capable of engagement with the bottom wall of the grooves 29 and 30 to prevent the rotation of the arms 19 and 20, when the latter are held in locked engagement. Adjacent the grooves 29 and 30, the arms 19 and 20 are provided with apertures 32, which are conveniently located for possible engagement over the end of the bolts 12 protruding from the nuts 13.

In the operation of this improved drill steel centralizer, the drill steel 33 is first introduced into the front end of the rock drill. Subsequently the arms of the centralizer are positioned as illustrated in Fig. 1, with the drill steel passing through the bore 24, thus causing the inner surface of this bore to engage the external surface of the drill steel 33. The arms 19 and 20 are locked to each other by the inter-engagement of the lugs 25 and 27, thus preventing the separation of the members. During the locked operative position of these members, the rotation of the centralizer around the axis of the bolt 18 is prevented by the engagement of the lug 31 with the bottom of the grooves 29 or 30. Subsequently the rock drill is started, thus driving the drill steel into the material being drilled, with the drill steel maintained in axial alignment with the axis of the rock drill. After the hole has reached a sufficient depth, or when the front end of the rock drill reaches the cen-

tralizer, it is necessary to open the latter to permit the passage of the rock drill. The opening of the centralizer may be accomplished by simply exerting pressure on the arms 19 to move the latter longitudinally relative to the arm 20 and against the tension of the compression spring 23, a sufficient amount to permit the disengagement of the lug 25 with the lug 27. Subsequently each arm may be rotated away from each other and positioned to permit the engagement of the ends of the bolts 12 into the apertures 32, thus locking the arms away from the rock drill or into inoperative position.

The locking of the arms 19 and 20 into operative position may be effected in a similar manner. The arms 19 and 20 may simply be pulled out of engagement with the end of the bolts 12, and be moved toward each other against the lug 31. The arm 19 is maintained in advance of the arm 20 to permit the passage of the lug 25 under the lug 27. When the arms are thus positioned, the arm 19 may be released into locked engagement with the arm 20 by the mutual engagement of the lugs 25 and 27.

Although the foregoing description is necessarily of a detailed character, in order to completely set forth the invention, it is to be understood that the specific terminology is not intended to be restrictive or confining and it is to be further understood that various rearrangements of parts and modification of structural detail may be resorted to without departing from the scope or spirit of the invention as herein claimed.

I claim:

1. A guide for drill steels comprising a pair of arms, one being a replica of the other, said arms having the lower portion thereof overlapping each other for pivotal connection with a rock drill support, said arms having recesses adapted to register for guiding a drill steel, and means integral with said arms engageable with each other to secure said arms in operative position.

2. A guide for drill steels comprising a pair of arms having the lower portion thereof overlapping each other for pivotal connection with a rock drill support, said arms having recesses adapted to register for guiding a drill steel, and identical means integral with each of said arms engageable with each other to secure said arms in operative position.

3. A guide for drill steels comprising a pair of arms having the lower portion thereof overlapping each other for pivotal connection with a rock drill support, said arms having recesses adapted to register for guiding a drill steel, and means identically disposed on each of said arms, engageable with each other to secure said arms in operative position.

4. A guide for drill steels comprising a pair of arms having the lower portion thereof overlapping each other for pivotal connection with a rock drill support, said arms having recesses adapted to register for guiding a drill steel, means for preventing the pivotal movement of said arms and simultaneously locating said recesses in axial alignment with the drill steel to be guided, and further means on said arms capable of mutual engagement for locking said arms in operative position.

5. A guide for drill steels comprising a pair of juxtaposed arms having the lower portion thereof overlapping each other for pivotal connection with a rock drill support, said arms having recesses adapted to register for guiding a drill steel, means integral with said arms capable of mutual engagement for maintaining said recesses in registration, and further means for locating said recesses in axial alignment with the drill steel to be guided.

6. A guide for drill steels comprising a pair of arms pivotally connected to a member which is secured to a rock drill support by a pair of bolts, said arms having recesses adapted to register for guiding a drill steel, means on each of said arms capable of mutual engagement for locking the latter into operative position, and means on each of said arms engageable with said bolts for locking said arms into inoperative position.

7. A guide for drill steels comprising a pair of arms having a portion overlapping each other into abutting engagement and pivotally connected to a rock drill support, means on each of said arms capable of engagement with each other for locking said arms into operative position, other means for locking said arms into inoperative position, and resilient means associated with said arms for maintaining said overlapping portions into forcible abutting engagement.

8. A guide comprising a pair of arms pivotally secured to a rock drill support, said arms having recesses adapted to register for guiding a drill steel, locking means integral with each of said arms engageable with each other to secure said arms into operative position, and resilient means associated with said arms for maintaining said locking means into forcible engagement.

9. A guide comprising a pair of arms having one end thereof pivotally connected to a rock drill support, said arms having recesses within the other end portion thereof adapted to register for guiding a drill steel, the outer end of said arms adjacent said recesses constituting locking means engageable with each other to secure said arms into operative position, and resilient means associated with said arms maintaining said locking means into forcible engagement.

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