Sept. 26, 1950 P. H. NAST 2,523,512

DRILL STEEL CENTRALIZER

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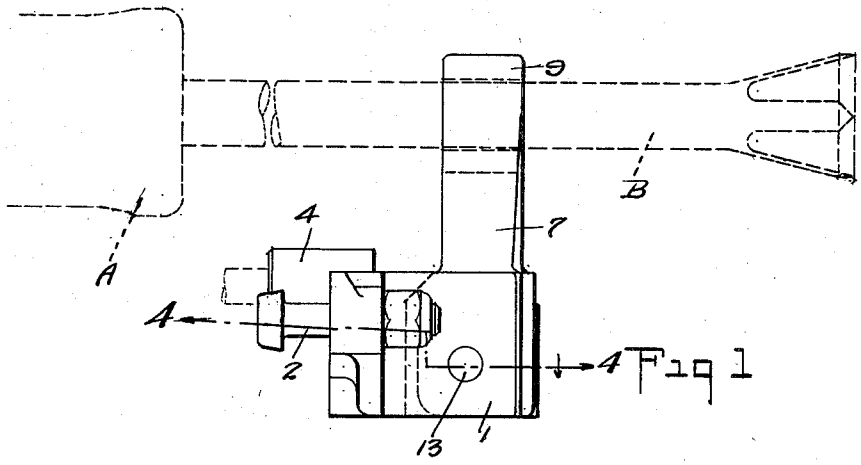


Fig 1

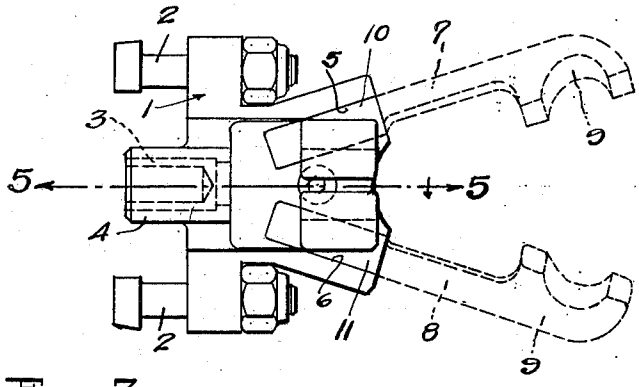


Fig 2

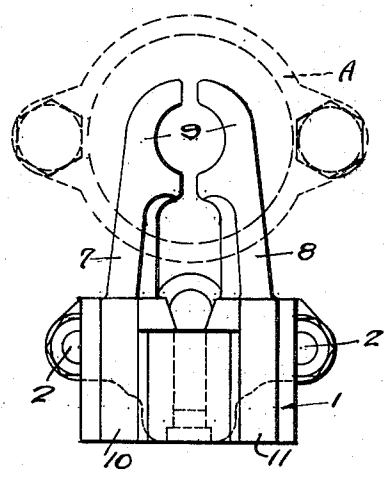
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Fig. 3.



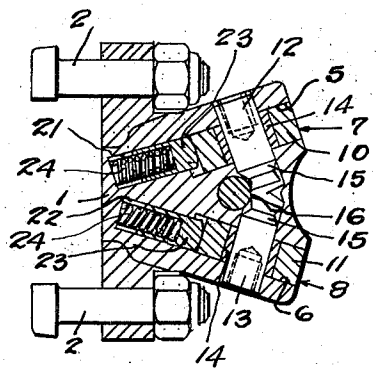
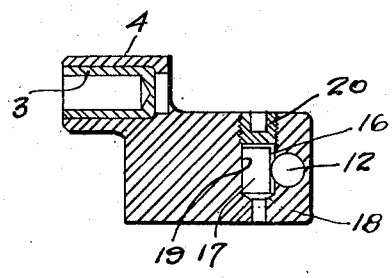


Fig 4

Fig 5



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DRILL STEEL CENTRALIZER

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Application July 31, 1945, Serial No. 607,989

3 Claims. (Cl. 255—51)

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This invention relates to rock drills and more particularly to a centralizer for supporting and guiding drill steels to provide accurate "spotting" of holes, prevent "crawling" of the drill steel and facilitate the starting of drill holes in uneven, rough or inclined rock surfaces.

An object of the present invention is to provide a drill steel centralizer which is relatively compact, may be readily attached to the forward end of a rock drill feed shell and one in which the steel guiding arms are pivotally mounted to swing outward and away from the drill steel into inoperative position when contacted by the rock drill during its feeding motion to the work.

Another object of the present invention is the provision of a drill steel centralizer which is constructed and designed so that its parts subjected to the greatest wear may be easily replaced when worn.

With these and other objects in view, as may appear from the accompanying specification, the invention consists of various features of construction and combination of parts, which will be first described in connection with the accompanying drawings, showing a drill steel centralizer of a preferred form embodying the invention, and the features forming the invention will be specifically pointed out in the claims.

In the drawings:

Figure 1 is a side elevation of the improved drill steel centralizer showing a part of a rock drill in dotted lines.

Figure 2 is a top plan of the centralizer.

Figure 3 is an end elevation of the centralizer.

Figure 4 is a horizontal section through the centralizer, and taken on the line 4—4 of Figure 1.

Figure 5 is a vertical section through the centralizer taken on the line 5—5 of Figure 2.

Referring more particularly to the drawings, a fragment of a rock drill A and drill steel B are shown in dotted lines in Figure 1 showing the position of the centralizer attached thereto when in operative position.

The centralizer comprises a body 1 which is attached to the front end of the feed shell (not shown) of a rock drill by means of bolts 2, while the front end of the feed screw (indicated at C in Figure 1 of the drawings) engages in the removable bearing bushing 3 carried by the bearing extension 4 formed on the body 1.

The body 1 is provided with two recesses 5 and 6 extending thereinto from its forward face. The recesses 5 and 6 incline inwardly towards each other as they extend into the body as clearly shown in Figures 2 and 4 of the drawings so as

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to permit the drill steel guiding arms 7 and 8 to move outwardly from the axis of the drill steel as they move downwardly away from it so as to move the guiding arms 7 and 8 out of the path of the rock drill as it approaches the hole being drilled.

The outer ends of the arms 7 and 8 have guiding heads 9 formed thereon for approximately fitting around the drill steel to guide and steady it during drilling operation and particularly while starting or "spotting" a drill hole.

Trunnion bearings 10 and 11 are formed on the inner ends of the arms 7 and 8 and engage in the recesses 5 and 6 respectively being pivotally connected to the carrying body 1 by means of fulcrum pins 12 and 13 respectively. Suitable bearing bushings 14 are removably carried by the trunnion bearings 10 and 11 and may be easily removed for replacement when worn.

The fulcrum pins 12 and 13 have locking heads 15 on their inner ends formed by annular grooves cut in the pins the sides of which grooves extend at obtuse angles to each other to provide flat angularly extending surfaces against which the flat face 16 of a locking pin 17 engages. The pin 17 is clamped against a shoulder 18 formed at the inner end of its receiving bore 19, and in locking engagement with the locking heads 15 by a removable set screw 20, so that it may be readily removed to permit replacement of worn parts, or for disconnecting the guiding arms 7 and 8 from the body 1.

The recesses 5 and 6 have reduced extensions 21 and 22 thereon extending inwardly into the body 1 from the inner ends of the recesses 5 and 6. Index pins 23 are slidably mounted in the recess extensions 21 and 22 and are urged by springs 24 into engagement with the bearing portion 10 and 11 of the arms 5 and 6 for holding these arms in adjusted positions.

In operation, when starting to drill a hole the operator of the drill, moves the guiding arms 7 and 8 into a vertical position with the guiding heads 9 one on each side of the drill steel B, as shown in Figure 1 of the drawings, and thus the guiding arms will hold the drill steel steady against "wobbling" or "jiggling" and permit a drill hole to be "collared" or started regardless of the nature of the surface of the rock being drilled. As the drilling of the hole progresses and the rock drill moves forward to the work, the centralizer remains in upright guiding and steadying position until the rock drill closely approaches the surface, at which time the forward end of the rock drill will strike the arms 7 and 8 and

throw them in outwardly and downwardly motion out of the path of the rock drill.

It will be understood that the invention is not to be limited to the specific construction or arrangement of parts shown, but that they may be widely modified within the invention as defined by the claims.

What is claimed is:

1. In a drill steel centralizer, a body having two diverging slots, a centralizer arm to be mounted in each of the slots, each of the arms having a hole therethrough, said body having cylindrical holes transversely positioned across said slots and communicating with said arm holes and angularly disposed with respect to each other, pivot pins mounted in said cylindrical holes and passing through said arm holes to connect said arms to the body for pivotal movement only in the slots, said body having internal recesses in axial alignment with the inner ends of the slots, engaging members slidably mounted in each of the internal recesses to abut the inner sides of the arms, spring means in said recesses abutting the inner end of the engaging members for forcing the members against the arms to resist pivotal movement thereof, circumferentially disposed annular grooves in said pivot pins adjacent the inner ends thereof, means coacting with said annular grooves for locking the pivot pins in their axial position comprising a vertically disposed hole between said diverging slots in intersecting relationship with the cylindrical holes and so constructed and arranged that the annular grooves will lie in said hole when the pivot pins are in position, a locking pin in said hole having surfaces thereon to engage the annular grooves for locking the pivot pins in place, and a locking member for confining the locking pin in said hole.

2. In a drill steel centralizer for rock drills, a body, means for attaching said body to the rock drill feed shell, diverging slots formed in the body, bores in the body transversing said slots and angularly disposed with respect to each other, centralizer arms, pivot pins mounted in said bores and passing through said centralizer arms for pivotally mounting said centralizer arms

in said slots, a vertically disposed hole between the diverging slots in intersecting relationship with said bores, circumferentially disposed V-shaped grooves adjacent the inner ends of the pivot pins and lying in said hole, a locking pin removably mounted in said hole and having a surface to engage the V-shaped grooves for locking the pivot pins in place, and a locking member for confining the locking pin in said hole.

3. In a drill steel centralizer, a body having two diverging slots, a centralizer arm to be pivotally mounted in each of said slots, each of said arms provided with a cylindrical hole therethrough, bores transversely positioned across each of said slots and angularly disposed with respect to each other, pivot pins mounted in said bores and communicating with the cylindrical holes in said arms to provide pivotal movement only in the slots, said body provided with a vertically disposed hole between said diverging slots in intersecting relationship with said bores, circumferentially disposed V-shaped grooves adjacent the inner end of each of said pivot pins, said pivot pins disposed so that the grooves lie in said hole, a locking pin mounted in the hole having a surface interlocked with the V-shaped grooves to prevent axial movement of the pin, and means for confining the locking pin to the hole.

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