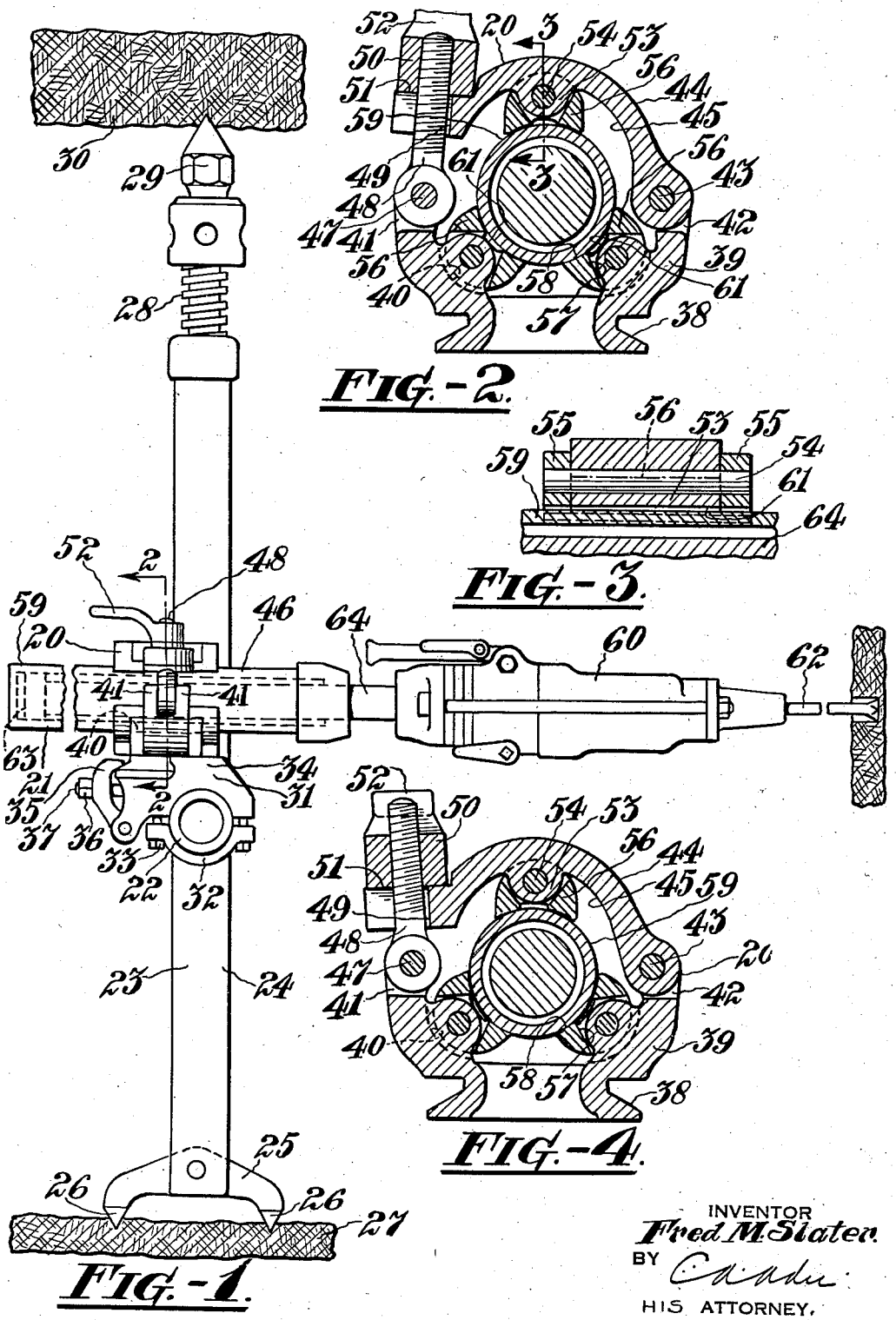
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CLAMPING DEVICE

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CLAMPING DEVICE

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1 Claim. (Cl. 24—249)

This invention relates to supporting devices, and more particularly to a clamping device for securing a pneumatically fed rock drill to a supporting element, as for example a quarry bar or a column.

One object of the invention is to enable the rock drilling mechanism to be conveniently and quickly adjusted with respect to the supporting element and the work.

Another object is to enable the clamping device to accommodate drilling mechanisms of different diameters.

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

In the drawing accompanying this specification and in which similar reference numerals refer to similar parts,

Figure 1 is a side elevation of a clamping device constructed in accordance with the practice of the invention and rock drilling mechanism and its support to which it is applied,

Figures 2 and 4 are transverse views taken through Figure 1 on the line 2—2 showing the clamping device applied to elements of different diameters, and

Figure 3 is a transverse view taken through Figure 2 on the line 3—3.

Referring more particularly to the drawing, the clamping device, constructed in accordance with the practice of the invention and designated in its entirety by 20, is shown in gripping engagement with a rock drilling mechanism 21 and supported by a cross arm 22 which, in turn, is supported by a column 23.

The column 23 may be of a well known type comprising a tubular member 24 carrying a foot piece 25 having pointers 26 to engage the supporting material 27, as for example the floor of a drift. A screw 28 is threaded into the upper end of the column to apply the pressure required for pressing the pointers 26 into the floor 27 and to force a pointer 29, carried by the screw 28, into engagement with the roof 30 of the drift.

The cross arm 22 may be provided with suitable devices (not shown) for affixing it to the tubular member 24 and to enable it to be adjusted longitudinally thereof. The arm may be of any suitable length and serves as a support for a clamp 31 which is secured to the arm by a yoke 32 and bolts 33 extending through the yoke and threaded into the clamp 31.

The clamp 31 is of known design comprising an integral jaw 34 and a movable jaw 35 which is pivotally connected to the clamp 31 and clamping force is applied thereto by a nut 36 on a bolt 37 extending through the jaw 35 and threaded to the clamp 31. The jaw 34 is recessed to receive a cone 38 of the clamping device 20 and the jaw 35 is constructed to engage the conical surface of the cone 38.

The cone 38 constitutes an integral portion of a jaw 39 which, together with the cone 38, forms the base member of the clamping device 20. The interior of the jaw 39 is in the form of a concave recess 40 which extends longitudinally of the jaw 39 and on the upper surface and the opposite sides of the jaw 39 are lugs 41 and 42.

The lugs are arranged in pairs. Those designated 42 support a pivot pin 43 for a jaw 44 having a concave recess 45 which, together with the recess 40, defines an opening between the jaws to receive rock drilling mechanism 46. The lugs 41 also support a pin 47 which extends through the eye of a bolt 48 lying in a slot 49 in the free end of the jaw 44. A nut 50 threaded on the bolt 48 and seating on a flat surface 51 on the jaw, has a handle or lever 52 whereby it may be manipulated to clamp the jaws 44 and 39 together.

Although the clamping power for holding the rock drilling mechanism 46 in the correct position with respect to the work is applied through the jaws 39 and 44 they do not directly engage the rock drilling mechanism. They are, instead, provided on their inner surfaces with lugs 53 to accommodate pivot pins 54 of which the ends extend exteriorly of the lugs 53 and into end walls 55 of gripping members 56. Preferably only three gripping members 56 are employed, as by arranging one on the jaw 44 and two on the jaw 39.

In the outer surfaces of the gripping members 56 are recesses 57 to accommodate the lugs 53 and the inner ends of the gripping members are in the form of concave surfaces 58 to engage the element intended to be gripped, in this instance the cylinder 59 of the pneumatic feeding mechanism of a rock drill 60. The curvature of the concave surfaces 58 may be selected to conform to that of a feeding mechanism of a given diameter and the said surfaces are interrupted by slots or spaces 61 which open into the recesses 57 so that actually two longitudinally extending gripping surfaces are presented by each gripping member. In this way the gripping portions of the members 56 will be capable of accommodating feeding mechanisms of different diameters.

In practice, this has been found to be highly convenient for the reason that the dimension of rock drilling mechanisms of different manufacture often vary. By thus rendering the clamping

device capable of accommodating feeding mechanisms of different sizes the necessity of maintaining a series of clamping devices suitable for the different drilling mechanisms will be entirely eliminated, as will also be the delays occasioned by substituting one clamping device for another.

The rock drill **60** may be of any well known type comprising a percussive element to actuate a working implement **62** and is joined to the piston **63** of the feeding mechanism by a rod **64**. It is moved toward and removed from the work by pressure fluid admitted into the cylinder **59** of the feeding mechanism in a well known manner. For simplicity of illustration the rock drill **60** is arranged in a horizontal plane. It is to be understood, however, that it may be otherwise positioned, as for example by inclining it above or below the horizontal and this may be accomplished by releasing the yoke **32** and swinging the clamp **31** about the cross arm **22**.

In the operation of the device, whenever it is intended to place the rock drilling mechanism in a desired position with respect to the work, the various clamping elements, as for example the yoke **32**, the jaw **35** and the yoke **32** are loosened to permit the clamp **31** to swing about the axis of the arm **22** and the clamping device **20** to rotate within the jaws **34** and **35**. The feeding mechanism of the rock drill may then be placed between the gripping members **56** and the various elements be rotated, as required, to bring the cutting end of the working implement to a desired position on the rock face. Thereafter the bolts **33** may again be tightened to clamp the yoke and, therefore, the clamp **31** securely to the arm **22**. The jaw **35** is then tightened to clamp the cone **38** fixedly to the clamp **31** after which the nut **50** is manipulated to clamp the gripping members **56** into firm gripping engagement with the cylinder **59**. The rock drill will then be in readiness for a drilling operation and will be held firmly in the desired position by the various clamping devices.

I claim:

In a clamping device, a lower jaw provided with a conical base having a central opening therethrough, lugs on either side of said opening integral with said lower jaw adapted to act as pivotal supports, an upper jaw having curved inner and outer surfaces, a pivot to secure one end of said lower jaw to one end of said upper jaw, a lug protruding from the inner surface of said upper jaw to act as a pivotal support and defining recesses on the inner surface of said jaw on either side thereof, a bolt pivotally connected to the free end of said lower jaw, a nut for the bolt, and a seat formed above a recess in the free end of the upper jaw to support the nut when the pivotal bolt is placed in said recess to clamp the jaws together.

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