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2,148,420

ROCK DRILL

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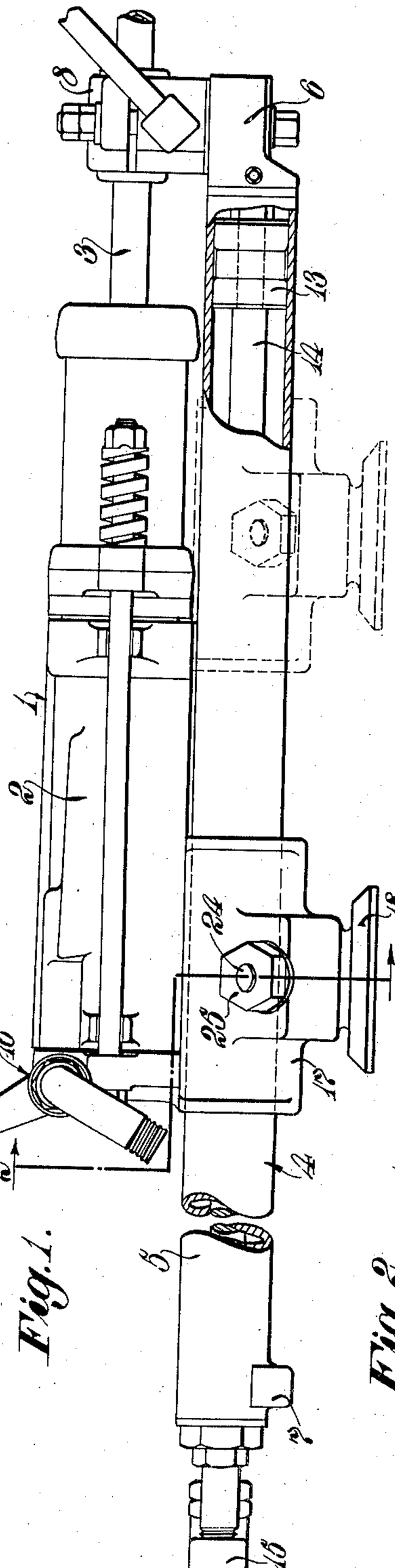

Fig. 1.

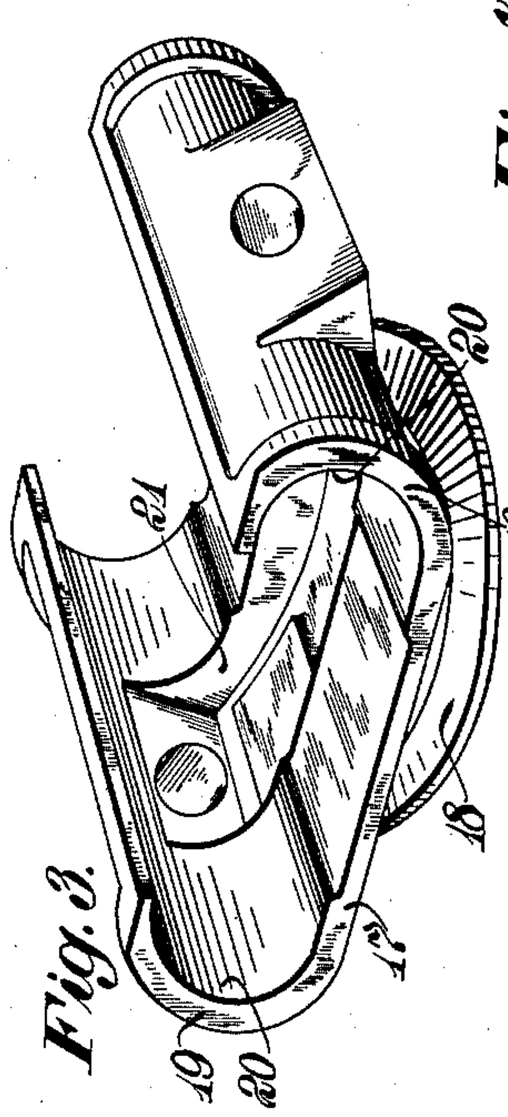

Fig. 3.

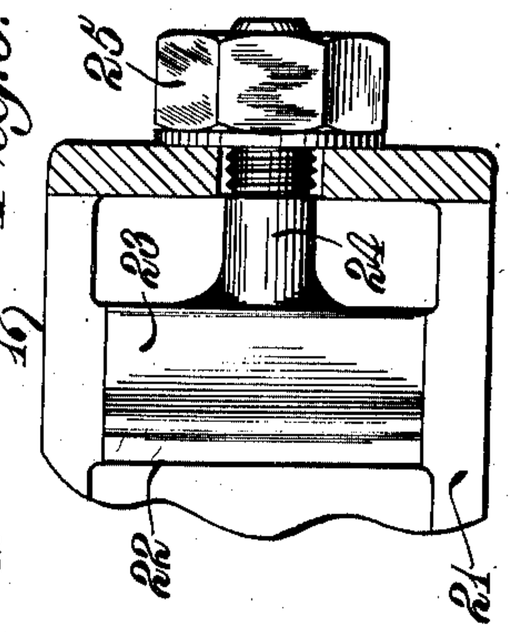

Fig. 5.

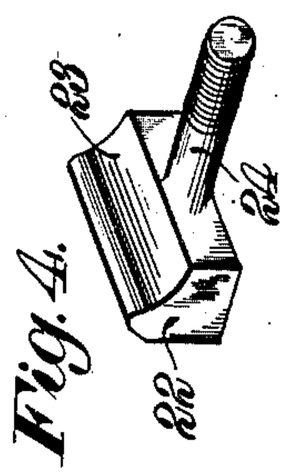

Fig. 4.

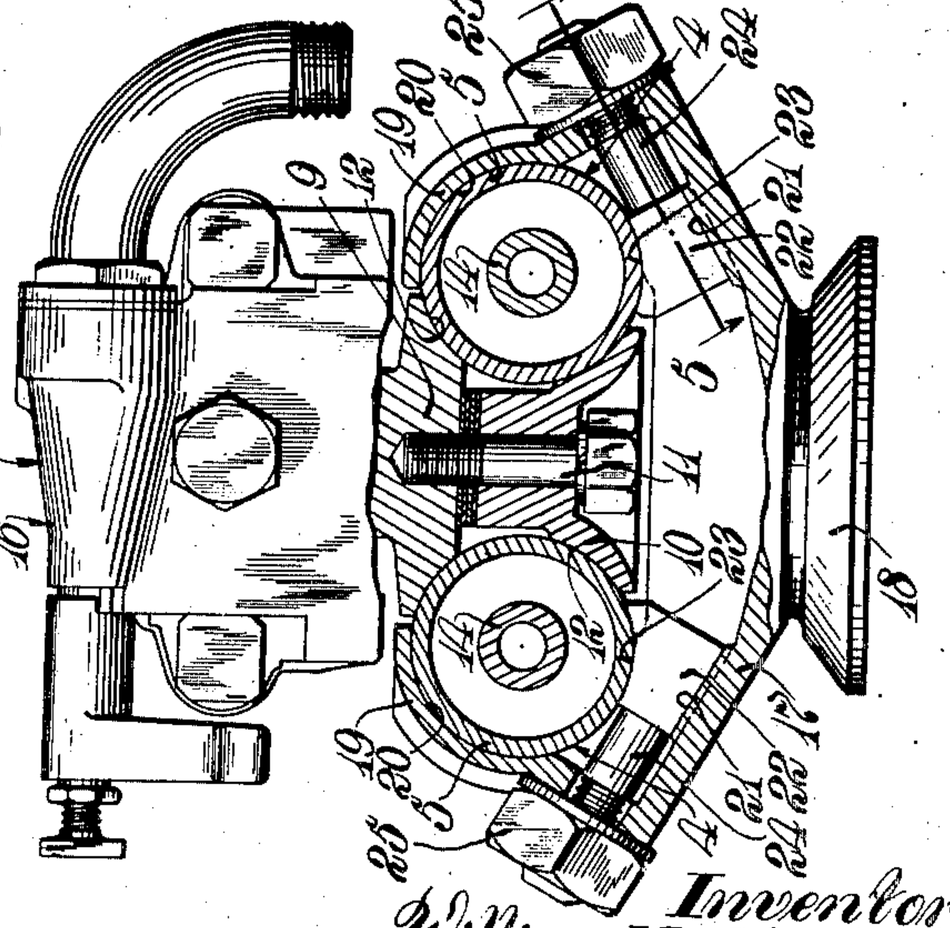

Fig. 2.

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ROCK DRILL

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Application November 30, 1935, Serial No. 52,324

1 Claim. (Cl. 255—51)

This invention relates to rock drilling mechanisms, and more particularly to improvements in the supporting means for a rock drill of the so-called mounted drifter type, wherein an improved sliding swivel plate or trunnion is employed.

An object of this invention is to provide an improved rock drill supporting means. Another object is to provide an improved adjustable supporting means embodying an adjustable swivel plate or trunnion. A further object is to provide an improved sliding support for the swivel plate or trunnion of a rock drill feeding and guiding means. A still further object is to provide in a feeding and guiding means of the pressure fluid actuated, parallel cylinder type, an improved sliding swivel plate or trunnion guided on the parallel cylinders and embodying means for securing the trunnion to the cylinders in the desired position. A further object is to provide an improved pneumatic feeding means of the parallel cylinder type wherein the rock drill is guided on the exterior peripheries of the cylinders therebetween, and having an improved sliding swivel plate or trunnion guided on the exterior peripheries of the cylinders at the outer sides of the latter in a position out of the path of guided movement of the rock drill, and embodying means for clamping the trunnion to the cylinders. These and other objects of the invention will, however, hereinafter more fully appear in the course of the following description, and as more particularly pointed out in the appended claim.

In the accompanying drawing there is shown for purposes of illustration one form which the invention may assume in practice:—

In this drawing:—

Fig. 1 is a side elevational view of a rock drill feeding and guiding means having embodied therein the illustrative form of the improved sliding swivel plate or trunnion.

Fig. 2 is a cross sectional view, with parts shown in end elevation, taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the improved swivel plate or trunnion.

Fig. 4 is a perspective view of one of the clamping elements.

Fig. 5 is a detail sectional view taken on line 5—5 of Fig. 2.

In this illustrative embodiment of the invention, there is shown a rock drill of the pneumatically fed, mounted "drifter" type with which the improved sliding swivel plate or trunnion is associated. The rock drill, generally designated 1, mounted on the feeding and guiding means, is of a conventional design having a hammer motor 2 for percussively actuating the drill steel 3. The feeding and guiding means is generally designated 4 and may be of the same general character as that disclosed in Patent No. 1,955,744, granted April 24, 1934, and Patent No. 2,015,673 granted October 1, 1935, and generally comprises parallel feed cylinders 5, 5, spaced transversely and connected together at their forward ends by a front head member 6 and at their rearward ends by a transverse connecting member 7. The front head member 6 has mounted thereon a detachable centralizer or guide 8 of a suitable design for guiding the drill steel during starting of a hole, and this centralizer may be detached from the head member after the hole is started, in a well known manner. The rock drill 1 is supported directly on and between the cylinders 5, 5 by the provision of a depending portion 9 which may be of suitable longitudinal length, so as to provide suitable bearing surfaces, while a clamping element 10 is removably secured to and spaced from the portion 9, as by screw bolts 11. The elements 9 and 10 present arcuate bearing surfaces 12, 12, respectively, slidably engaging the inner portions of the exterior peripheries of the cylinders 5, 5. It will thus be seen that the rock drill is entirely supported by and slidable on the feed cylinders without the intermediation of any other element, thereby causing the feed cylinders to perform all the functions of both feeding elements and guiding elements. Reciprocably mounted in the feed cylinders 5, 5 are feed pistons 13, respectively, having rearwardly extending piston rods 14 connected at their rear ends to a transverse connecting head 15, the rock drill being secured to the latter by a connecting rod, in the manner clearly described in the above mentioned patents. The rock drill is provided with suitable throttle valve mechanism 16 for controlling the flow of pressure fluid to the motor 2 and to the feed cylinders 5, 5, likewise in the manner clearly described in the above mentioned patents.

Now referring to the improved sliding swivel plate or trunnion, it will be noted that slidably mounted on the feed cylinders is a bottom frame 17 having an integral swivel plate or trunnion portion 18 adapted to be clamped in a suitable saddle of any well known form of rock drill support. The frame 17 has guiding portions 19, 19 provided with concave bearing surfaces 20 engaging the exterior peripheries of the parallel feed cylinders 5, 5 at the outer sides of the latter

in a position out of the path of movement of the rock drill. Mounted within inclined guideways 21 formed in the side portions of the sliding frame 18 are clamp elements 22 having concave clamping surfaces 23 engaging the bottom portions of the feed cylinder peripheries, and having bolt-like threaded portions 24 engaged by tightening nuts 25. It will thus be seen that when the tightening nuts 25 are loosened, the sliding trunnion may be slid longitudinally along the parallel feed cylinders and clamped in the desired position, upon tightening of the nuts 25, securely to the feed cylinders by means of the clamping elements 22. As previously stated, the sliding trunnion mounting engages the feed cylinders entirely out of the path of movement of the rock drill along the inner portions of the peripheries, so that there is no interference therebetween. By the provision of the improved sliding trunnion structure, the rock drill, when it is in supported position with respect to the work, may have its feed cylinders brought up into close adjacency with the work, simply by sliding the feed cylinders relative to the trunnion, the latter thereafter being clamped in position to the feed cylinders. The sliding trunnion may also be employed in the changing of drill steels in the manner well known by those skilled in the art.

While there is in this application specifically described one form which the invention may assume in practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claim.

What I claim as new and desire to secure by Letters Patent is:

In a rock drilling mechanism, in combination, a rock drill, feeding means for said rock drill comprising a pair of parallel feed cylinders arranged in rigid spaced relation and having cylindrical exterior surfaces, means extending between said parallel cylinders providing concave inner guide surfaces slidably engaging the cylindrical exterior surfaces of said cylinders at the inner adjacent sides of the latter for slidably guiding and supporting the rock drill directly on said parallel cylinders, a sliding trunnion support for said feeding means having inner concave guide surfaces slidably engaging the exterior cylindrical surfaces of said cylinders at the outer remote sides of the latter out of the path of sliding movement of said drill guiding and supporting means for slidably mounting the trunnion support on said cylinders, and means for securing said sliding trunnion support to said feed cylinders including clamping elements guided on said trunnion support and having concave inner clamping surfaces engaging the cylindrical exterior surfaces of said feed cylinders at the bottoms of the latter.

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