

Aug. 10, 1937.

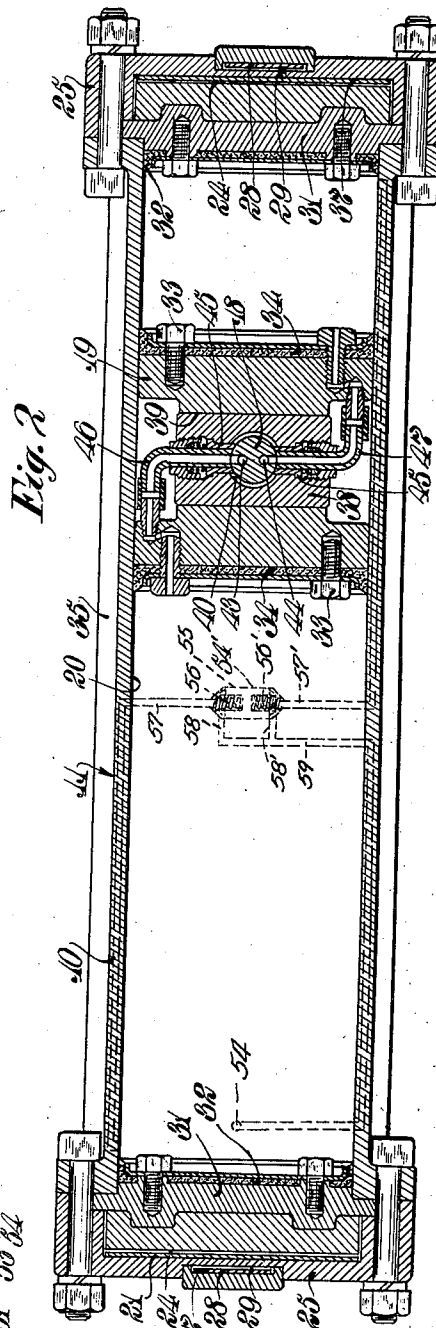
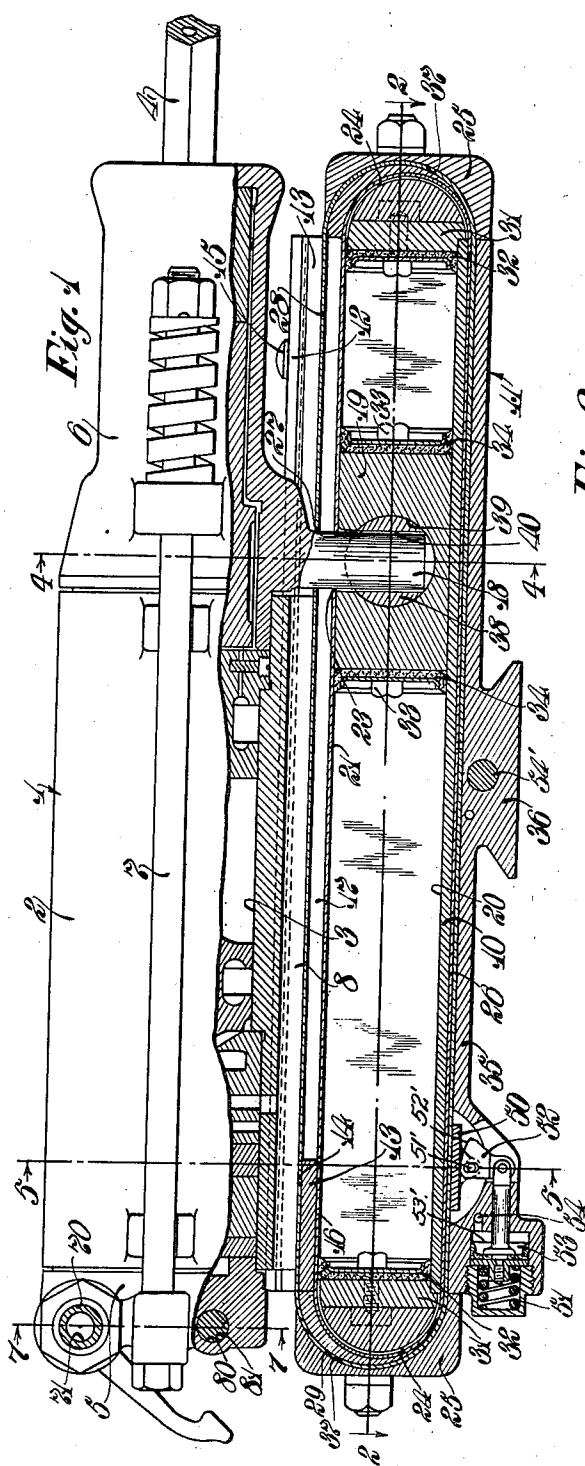
E. G. GARTIN

2,089,202

ROCK DRILL FEEDING MEANS

Filed May 11, 1935

3 Sheets-Sheet 1



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Aug. 10, 1937.

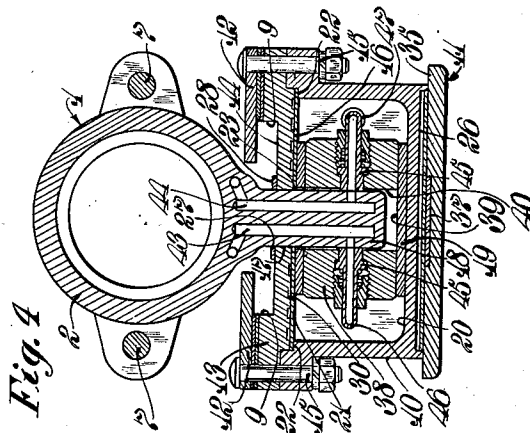
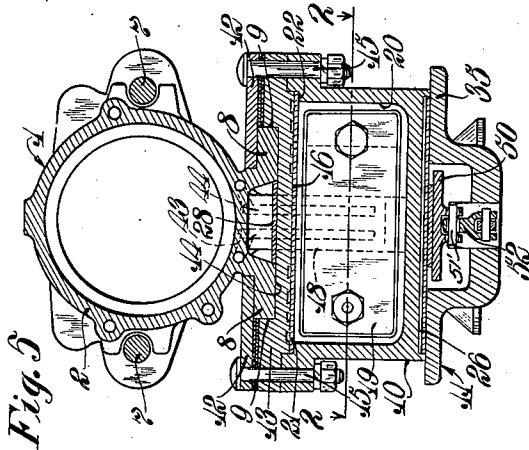
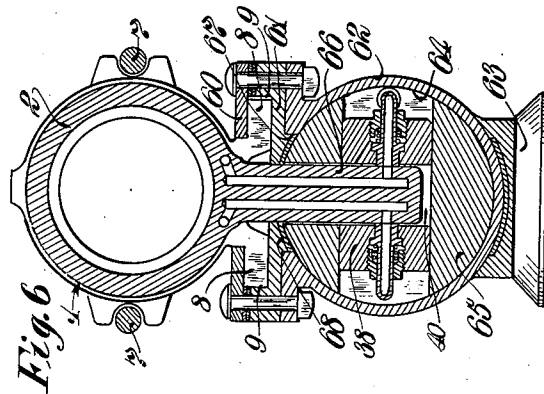
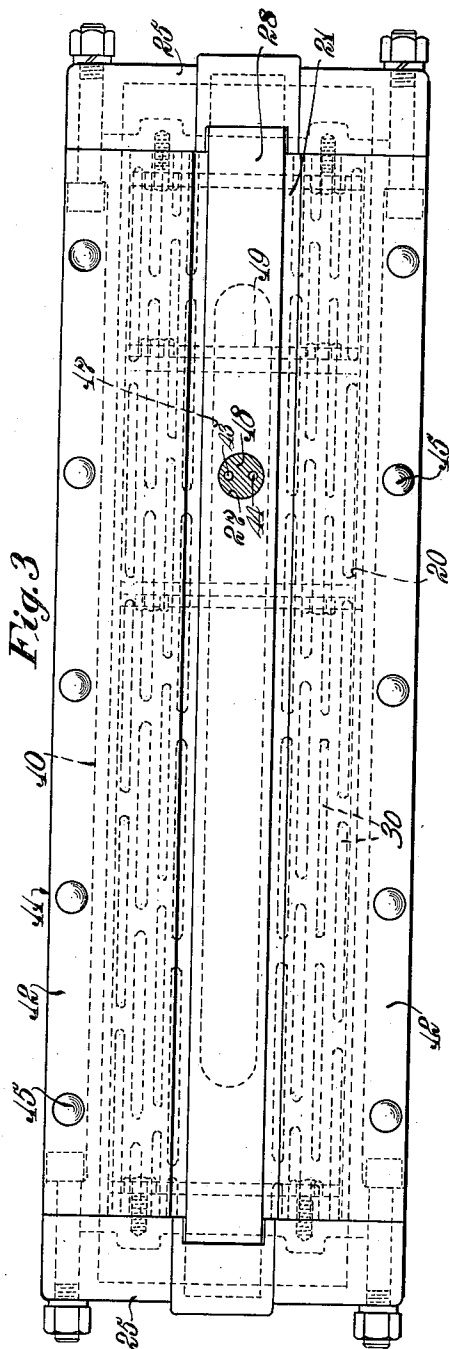
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ROCK DRILL FEEDING MEANS

Filed May 11, 1935

3 Sheets-Sheet 2



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ROCK DRILL FEEDING MEANS

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3 Sheets-Sheet 3

Fig. 7

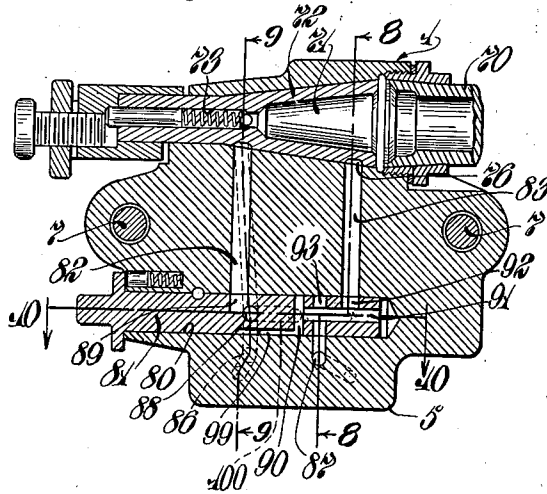


Fig. 11

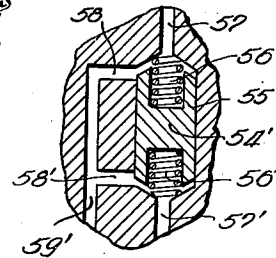


Fig. 8

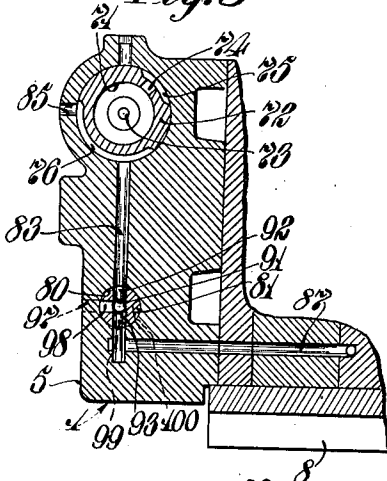


Fig. 9

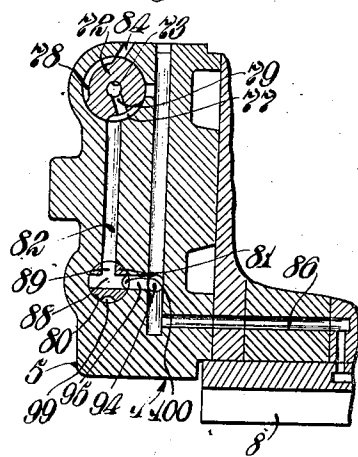
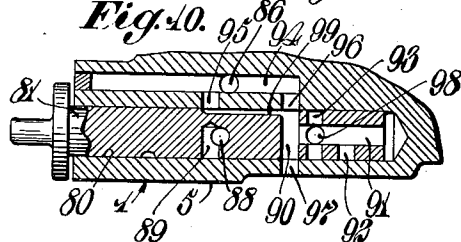


Fig. 10



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UNITED STATES PATENT OFFICE

2,089,202

ROCK DRILL FEEDING MEANS

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Application May 11, 1935, Serial No. 21,026

20 Claims. (Cl. 121-9)

This invention relates to rock drill feeding means, and more particularly has reference to improvements in a pressure fluid actuated feeding means for a hammer rock drill of the mounted drifter type.

An object of this invention is to provide an improved rock drill feeding means. Another object is to provide an improved pressure fluid actuated feeding means for a rock drill of the mounted drifter type having embodied therein an improved direct acting feeding device having a minimum overall length consistent with the total length of feed. Still another object of this invention is to provide an improved pressure fluid actuated feeding means for a rock drill wherein the overall dimension of the feeding device remains constant throughout the travel or feed of the rock drill. Yet another object of this invention is to provide an improved pressure fluid actuated feeding means having embodied therein improved means for maintaining the active feeding parts locked against movement whenever the feed is rendered inactive. These and other objects will, however, subsequently more fully appear.

In the accompanying drawings there are shown for purposes of illustration one form and a modification which the invention may assume in practice.

In these drawings,

Fig. 1 is a view in longitudinal section of an illustrative embodiment of the improved feeding means and its associated rock drill.

Fig. 2 is a horizontal sectional view taken substantially on line 2-2 of Figs. 1 and 5.

Fig. 3 is a plan view of the improved feeding means with the rock drill removed therefrom.

Fig. 4 is a cross sectional view taken substantially on line 4-4 of Fig. 1, with internal motor parts omitted.

Fig. 5 is a cross sectional view taken substantially on line 5-5 of Fig. 1, with internal motor parts omitted.

Fig. 6 is a view similar to Fig. 4 showing a modified form of cylinder and piston structure.

Fig. 7 is a cross sectional view taken substantially on line 7-7 of Fig. 1.

Fig. 8 is a detail sectional view taken on line 8-8 of Fig. 7.

Fig. 9 is a detail sectional view taken on line 9-9 of Fig. 7.

Fig. 10 is a detail sectional view taken on line 10-10 of Fig. 7, with the feed control valve in a different position.

Fig. 11 is a detail sectional view illustrating the automatic control valve.

In this illustrative embodiment of the invention there is shown a drifter type hammer rock drill generally designated 1, conventional in form, and comprising a cylinder 2 having a piston chamber 3 containing a reciprocable hammer piston for delivering impact blows to the shank of a drill steel 4. The motor cylinder 2 has a rear head 5 and a front chuck housing 6, the latter suitably supporting the chuck for the drill steel 4 and the elements 2, 5, and 6 maintained in assembled relation by suitable side rods 7. As is usual in rock drills of the mounted drifter type, the motor cylinder 2 has formed on its bottom surface parallel guides 8, 8 slidably mounted in longitudinal guideways 9, 9 formed on the upper surface of the feed cylinder 10 of the improved feeding device generally designated 11. The guideways 9 are formed by upper plates 12 and an intermediate plate 13 having a longitudinal guiding groove 14 forming the guideways, the plates 12 and 13 being secured in assembled relation with respect to side flanges integral with the feed cylinder 10 by means of bolts 15. The plate 13 has a plane bottom surface 16 and has symmetrically with its axis a closed slot 17 extending substantially its full length. Through this slot a depending driving projection herein in the form of a stanchion 18 formed integral with the lower portion of the chuck housing 6 extends into engagement with a feed piston 19, the latter herein of rectangular cross section, reciprocable in a correspondingly shaped bore 20 formed in the feed cylinder 10. The longitudinal slot 17 is maintained sealed irrespective of the position of the feed piston with respect to the feed cylinder by means of an inner endless sealing strip 21 herein in the form of a flat metallic ribbon preferably composed of spring steel, guided between the bottom surface 16 of the plate 13 and ledge-like shoulders 22 formed on the feed cylinder 10. The stanchion 18 extends through an opening 23 formed in this sealing strip for securing the strip to the feed piston and this strip at the opposite ends of the feed cylinder is guided within arcuate recesses 24 formed in end heads 25 of the feed cylinder 10. This flexible strip passes around the curved inner surfaces of the recesses 24 and the bottom longitudinal portion thereof extends longitudinally of the feed cylinder in parallel relation with its intermediate upper portion through a longitudinal slot 26 formed in the bottom surface of the feed cylinder 10. The stanchion 18 also passes

through an opening 27 formed in an outer endless dust strip 28 similar to the strip 21 but of substantially less width, as shown in Fig. 4. This dust strip is guided on the outer plane surface 14 of the plate 13 and the cylinder heads 25 are formed with arcuate recesses 29 in which this strip at the ends of the feed cylinder is guided, the bottom longitudinal portion of the dust strip underlying the bottom portion of the sealing strip 21 and likewise guided at the bottom of the feed cylinder. The bottom plane surface of the plate 13 has formed therein series of packing, lubricating and balancing grooves 30 running parallel with the closed slot 17, these grooves being individually made discontinuous for a purpose to be later explained. Secured between the heads 25 and the ends of the feed cylinder are plates 31 having secured thereto as by screws suitable cup packings 32, while secured to the opposite faces of the feed piston by screws 33 are similar cup packings 34. The packings 32 sealingly engage the inner walls of the feed cylinder bore and the inner surface of the inner sealing strip 21 to prevent leakage of pressure fluid from the ends of the feed cylinder bore past the end plates, while the packings 34 sealingly engage the walls of the cylinder bore and the inner surface of the sealing strip to prevent leakage of pressure fluid from the ends of the cylinder bore past the feed piston. Secured to the bottom surface of the feed cylinder 10 in any suitable manner, as by welding, and enclosing the outer side of the slot 26, is a bottom plate 35 having formed integral with the bottom portion thereof a supporting trunnion 36. The inner sealing strip is slightly wider than the width of cylinder bore, while the sides of the outer dust strip overlie the edges of the slot 17 so that these strips always maintain the upper side of the feed piston and the upper side of the slot 17 continuously sealed irrespective of the position of the feed piston within the feed cylinder bore, and the guiding means for the strips provide freedom for travel of the strips at either edge thereof, although guiding the same firmly. The curved recesses of the heads 25 are so formed as to constrain the strips to bend back upon themselves in an easy curve so that their ends lie between the base wall of the cylinder in the groove 26 and a cooperating bottom groove 37 in which the outer dust strip is guided. To provide for directness of drive between the stanchion 18 of the rock drill and the feed piston 19 both as to true axiality of piston thrust and in order to make allowances for slackness between the drill guide elements 8, 12 and 13, a piston pin 38 is used as one element of the connecting mechanism between the rock drill and the feed piston, this pin being free to rotate transversely of the piston in the bore 39 and in turn pierced transversely at 40 to receive slidably the stanchion 18. The combination of stanchion and rotatable piston pin provides a desirable universality of action between the stanchion and the piston guides. In action the reactance of the feeding pressure is directly against the feed piston and so to the rock drill, so the only stress in the sealing strip is that imposed by its own friction when subjected to pressure in the cylinder bore, crowding it against the plane surface 16 of the intermediate plate 13, plus a negligible load due to bridging of the slot 17. Obviously, its friction load will vary directly with the length of the strip exposed to pressure wall. Such being the case, it is necessary to entertain a diminishing feeding effort or else avoid the loss by bal-

ancing the pressure on the strip by the grooves 30. Were these grooves to be freely communicative from end to end of the guide plate 13, pressure reaching them due to leakage from the feed cylinder around the strip edges, would travel beyond the pressure area on one side of the piston to the zone of less pressure on the opposite, non-feeding side of the piston and so escape without lessening the friction creating pressure between the plate 13 and the sliding sealing strip; hence the series of grooves 30 are formed discontinuous with a series of partitions or obstructions left between the grooves which become effective to stop this longitudinal flow from one side of the feed piston to the other, provided their length is less than the distance between the opposite faces of the feed piston. The staunchness of such a construction against pressure fluid leakage is primarily one of workmanship, since the interstice necessarily left between the edge of the strip and its guideway can not be definitely packed. The usual difficulty of packing a right-angled corner, necessarily in this case without fillet, of course is present, but the moulding of packing has progressed to a point where these difficulties under modern conditions are vastly less than heretofore. The operating necessity for some leakage from such a feed cylinder, if even, forward urge is to be achieved, is a favorable circumstance. The probability of slight leakage is therefore entertainable with equanimity. For the sealing of the strip against the guide base 13, excellent conditions obtain, and the necessity for a flexible strip in order to make the end turns, materially enhances the probability of securing staunchness to the slot through which the connection to the rock drill passes.

Suitable pressure fluid passages controlled by valve mechanism to be later described, are drilled in the rear head 5 and the motor cylinder 2, and these passages communicate with parallel passages 43 and 44 formed in the stanchion 18, and the latter passages communicate to the diverse faces of the feed piston 19 through the medium of spring-pressed thimbles 45 sealed against opposed faces of the stanchion and conduits 46 and 47, eventually issuing to the cylinder bore through drilled holes in the packing attachment screws 33.

Provision has also been made for retaining the rock drill in any position with respect to the guideways of the feeding device when pressure fluid is unavailable in the feed cylinder. This mechanism comprises a shoe 50 bearing upon the returned sections of the sealing and dust strips which it traps against the base wall of the feed cylinder by influence of a stout spring 51. The effort of the spring transmitted through a toggle 52 to the shoe 50 aggregates a thrust normal to the cylinder base wall and so to the strips sufficient to provide friction capable of supporting the weight of the rock drill in vertical position. The pressure of the spring 51 is neutralized when pressure fluid is available in the feed cylinder by the opposing pressure within the cylinder and piston combination 53, sufficient in area to release the pressure on the friction shoe 50 and permit the strips to travel freely in their guides. The cylinder of the piston and cylinder combination is connected at the forward side of the piston through a passage 54 with the source of pressure fluid supply in such manner as to effect supply to 54 when either end of the feed cylinder is under feeding pressure. This is effected by automatic valve means 54' precluding flow of live pressure between the feed cylinder ends but

normally spring-centered and connecting the feed cylinder ends when neither end of the feed cylinder is under feeding pressure, and so venting 54 to the exhaust. More specifically, the automatic brake comprises a stationary cross pin 51' by which the brake shoe 50 is guided for movement toward and from its braking position; and the toggle 52, which is pivoted on the cross pin, is formed with a cam surface 52' engageable with the brake shoe when the piston 53' is moved toward the right in Fig. 1 by the coiled spring 51, that is, when both ends of the feed cylinder are connected to exhaust. The brake shoe and toggle are preferably slotted at their pivotal connection with the cross pin 51' to permit free bodily movement of the brake shoe and pivotal movement of the toggle. The automatic valve means 54', as shown most clearly in Fig. 11, comprises a double-ended valve 55 guided for reciprocation in a bore formed in the cylinder base and normally held in its centered position by oppositely acting coiled springs 56 and 56'. The opposite ends of the valve bore are connected through passages 57 and 57' with the opposite ends of the feed cylinder bore at the opposite sides of the feed piston, so that when pressure fluid is supplied through one passage to one end of the feed cylinder bore, pressure fluid is simultaneously supplied to one end of the valve 55 to move the valve against the pressure of the opposing spring to cut off communication of the other end of the feed cylinder bore with said other passage. Also communicating with the valve bore are passages 58 and 58' connected by a passage 59 with the passage 54 leading to the bore of the cylinder containing the piston 53'; and these passages 58 and 58' are maintained in communication with the passages 57 and 57' when the valve 55 is in its centered position shown in Fig. 11. When the valve 55 is moved to one end or the other of its bore by the pressure fluid in one of the passages 57, 57', pressure fluid is supplied through one of the passages 58, 58' to the passage 59, and thence to the passage 54 to effect release of the brake, while communication of the passages 58, 58' with the other of the passages 57, 57' is cut off by the valve. It will thus be seen that whenever pressure fluid is supplied to the feed cylinder, the brake is maintained released by the pressure in the passage 54 acting on the brake piston; and when the feed cylinder is connected to exhaust, the brake is automatically applied by the coiled spring 51.

In Fig. 6 is shown an alternate form of the cylinder and piston structure. Herein the guide-ways 9 for receiving the guides 8 on the rock drill are formed by upper plates 60, and an intermediate plate 61 bolted to one side of a feed cylinder 62 herein of cylindrical form, and a support of normal character is attached midway of the cylinder length at 63. Reciprocable in the circular bore 64 of this feed cylinder is a cylindrical feed piston 65 carrying annular packings instead of the packings of rectangular shape shown in Fig. 2. The stanchion for directly connecting the rock drill to the feed piston is indicated at 66, the stanchion entering a similar piston-pin-arrangement with pressure fluid distribution in general as above described. The piston, however, instead of being rectangular is circular, and circular packings may be used both at the piston and at the end heads. The cylinder wall adjacent to and symmetrical with the closed slot 67, through which the stanchion 66 reaches the piston, is broached to take a curved sealing

strip 68, the concavity of which is an arc of the cylinder-size selected. End return means is made as in Fig. 1 except that the origin of the return bend is further removed from the cylinder head plates in order to permit the change in form from arcuate to flat section on the part of the strip inseparable from return bending of such a form. Protection means for the inactive portion of the strip lying beneath the cylinder is achieved by built-up construction, and manufacture of the strip in this specific form is now a well-known and closely controlled art. A familiar example of such a strip and the nature of a return bend made in it is furnished by the type of steel measure coiled interiorly of a circular container to be found in almost every mechanically interested establishment. A marked detailed difference between the two designs, apart from the circularity of the latter, is worthy of note. In the case of the flat strip, it is necessary to snare its edges between the guide base 13 and the cylinder body to avoid sagging on the non-feeding side. The strip in this case is positively guided and sagging can only result from bending transversely of the strip. In the case of the circular piston, however, the inherently stiff, arched form of the strip removes this fear, and it is consequently unnecessary to provide snaring for the strip edges. The arched strip is also practical in a narrower width than the flat strip; on account of this lack of necessity for support, edge friction is consequently less. The packings, sealing and dust strips and the strip-receiving passages are the same as those above described, with the exception that they are curved to accommodate a circular feed cylinder; wherefore further illustration of details is unnecessary.

Now referring to the valve mechanism and fluid distributing passages for supplying pressure fluid to the passages 43 and 44 heretofore described, as clearly shown in Figs. 7 to 10 inclusive, it will be noted there is illustrated as one possible feed control means a device more fully illustrated and disclosed in Patent No. 2,015,678, granted Oct. 1, 1935. It will be observed that pressure fluid flows from a suitable source of supply through an inlet connection 70 into a bore 71 formed centrally in the main throttle valve 72 of the drilling motor, the valve rotatably mounted in the rear head 5 of the rock drill. This valve is formed with an axial bore 73 communicating with the bore 71, and is traversed by a radial passage 74 (see Fig. 8) connecting the bore 71 with a circumferentially-extending groove 75 on the exterior valve periphery. Also formed on the exterior valve periphery in the same transverse plane as the groove 75 is a circumferentially extending groove 76. Formed on the exterior periphery of the valve, as shown in Fig. 9, are circumferentially-extending grooves 77 and 78, the former communicating with the axial bore 73 in the valve through a radial passage 79. Arranged transversely of the rear head 5 of the rock drill is a bore 80 having mounted therein a rotary feed control valve 81. Connecting the throttle valve bore with the bore 80 of the feed control valve and lying in the planes of the grooves 75, 76 and 77, 78 are parallel passages 82 and 83, while lying in the same planes as these passages and grooves, as shown in Figs. 8 and 9, are exhaust ports 85 and 84 respectively. The passages 82 and 83 are communicable through the feed control valve 81 with parallel passages 86 and 87, respectively, formed in the

motor cylinder and communicating with the feed supply passages 43 and 44 respectively formed in the stanchion 18 and communicating with the opposite ends of the cylinder bore at the opposite sides of the feed piston. As shown, the feed control valve 81 is traversed by a passage 88 and a communicating right angle passage 89, the latter opening at one end into a longitudinally extending groove 100 in the periphery of the valve. When the valve is in the position shown in Figs. 7 and 9, passages 89 and 88 and groove 100 connect the passage 82 with the forward feed passage 86. The valve 81 is also traversed by a passage 90 which is communicable with an axial passage 91, in turn communicable through a radial passage 92 with the passage 83, and a diametric passage 93 with the reverse feed passage 87. As shown in Fig. 10, arranged parallel with the valve bore 80 is a passage 94 communicable, when the valve 81 is in the position shown in Fig. 9, through a passage 95, with the passage 88 in the feed control valve. When the valve is in the position shown in Fig. 10 the passage 94 is connected through a passage 96 and the transverse passage 90 in the valve 81 with a vent port 97. The valve 81 is also traversed by a radial passage 98 communicating with the axial passage 91, and when the valve is in the position shown in Fig. 10, connects the passage 87 to exhaust through the vent port 97. The valve 81 is also provided with a longitudinal groove 99 on its exterior periphery, and this groove is communicable with the passage 82 and connects with the passage 90, one end of which opens into the end of said groove. Also formed on the valve 81 is the longitudinal groove 100, above mentioned, into which the passage 88 opens and which is communicable in one position of the valve with exhaust port 97.

From the foregoing description it will be evident that when the throttle valve 72 and feed control valve 81 are in the position shown in Fig. 7, pressure fluid may flow through the inlet connection 70 to the valve bores 71, 73, through radial passage 79, passage 82, passages 89 and 88 in the valve 81, passages 95, 94 and the forward feed passage 86 which communicates with the feed cylinder bore at the rear side of the feed piston. At the same time the forward end of the feed cylinder bore is connected to exhaust through the reverse feed passage 87, and passages 93, 91 and 92 in the valve 81, passage 83, groove 76 and vent 85, and as a result the rock drill is fed forwardly along the feed cylinder. When the throttle valve is rotated into its reverse feeding position, pressure fluid may flow through radial passage 74, groove 75, passage 83, through the passages in the valve 81 and reverse feed passage 87, which communicates with the feed cylinder bore at the forward side of the feed piston, while the feed cylinder bore at the rear side of the feed piston is simultaneously connected to exhaust through passage 86, through the passages in the valves 81 and 72, and the vent passage 84, and as a result the rock drill is fed rearwardly along the feed cylinder. The forward feed passage 86 may be connected to exhaust at will during the forward feeding operation simply by rotating the feed control valve 81 to the position shown in Fig. 10, thereby connecting the passage 86 to exhaust through passages 94, 95, groove 99, and passages 90 and 97. When the valve 81 is in this position the flow of pressure fluid to the passage 86 is cut off by the valve 81. If it is desired to connect the

reverse feed passage 87 to atmosphere during the reverse feeding operation, the valve 81 may be turned to connect the passage 87 with the passage 98, bore 91, passage 90 and vent port 97. At this time the communication between the supply passage 83 and the passage 87 is cut off by the valve 81. A quick reverse during feed in either direction may be obtained by other adjustments of the valve 81, but as this is fully described in the patent mentioned, and as this feed control valve mechanism does not specifically enter into this invention, being merely illustrative of any suitable control, further description of its structure and mode of use is herein considered unnecessary.

As a result of this invention it will be noted that an improved rock drill feeding mechanism is provided whereby a direct feeding action is transmitted to the rock drill, while the overall dimensions thereof are maintained at a minimum. It will further be noted that an improved pneumatic feeding mechanism is provided of the cylinder and piston type, wherein the feed piston is connected directly to the rock drill, thereby to attain a direct feeding action, and having embodied therein improved sealing means whereby the connection between the rock drill and feed piston is always maintained sealed. It will further be evident that the improved feeding mechanism is not only extremely compact in overall dimensions but is also of an extremely simple and rugged construction, all complicated connections between the power feeding element and the rock drill having been eliminated. These and other uses and advantages of the improved feeding mechanism will be clearly apparent to those skilled in the art.

While I have in this application specifically described one form which my invention may assume in practice, and a certain modification thereof, it will be understood that this form of the same is shown for purposes of illustration, and that the invention may be further modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

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

1. In a rock drill feeding mechanism, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said bore, a feed piston reciprocable in said feed cylinder bore, means extending through said slot into engagement with said feed piston and adapted for connection to a rock drill, means movable with said feed piston for always maintaining said slot sealed irrespective of the position of said feed piston in said cylinder bore, and means associated with said sealing means and movable with said feed piston for providing a dust seal for said slot.

2. In a rock drill feeding mechanism, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said bore, a feed piston reciprocable in said bore, means extending through said slot into engagement with said feed piston and adapted for connection to a rock drill, means movable with said feed piston for always maintaining said slot sealed regardless of the position of the feed piston in said cylinder bore, means for supplying pressure fluid to said cylinder to effect actuation of said feed piston, and means for locking said feed piston against movement in said cylinder bore including a feed piston locking device and means opera-

tive when said supply of pressure fluid to said cylinder is discontinued for automatically operating said locking device to lock said feed piston against movement in said cylinder bore.

3. In a rock drill feeding mechanism, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said bore, a feed piston reciprocable in said bore, means extending through said slot into engagement with said feed piston and adapted for connection to a rock drill, means movable with said feed piston for always maintaining said slot sealed regardless of the position of the feed piston in said cylinder bore, means for supplying pressure fluid to said cylinder to effect actuation of said feed piston, and means for locking said feed piston against movement in said cylinder bore including locking means engageable with said sealing means, and means operative when said supply of pressure fluid to said cylinder is discontinued for automatically causing said locking means to lock said feed piston against movement in said cylinder bore.

4. In a rock drilling mechanism, a feed cylinder having a bore, a guideway on which a rock drill is slidably guided and a longitudinal slot extending substantially coextensively with said cylinder bore, a feed piston reciprocable in said cylinder bore, means extending through said slot for connecting the rock drill directly to said feed piston, means movable by said feed piston for always maintaining said slot sealed regardless of the position of said feed piston in said cylinder bore, and means associated with said sealing means for providing a dust seal for said sealing means to protect the same for its full area.

5. In a rock drilling mechanism, a feed cylinder having a bore, a guideway on which a rock drill is slidably guided and a longitudinal slot extending substantially coextensively with said cylinder bore, a feed piston reciprocable in said cylinder bore, means extending through said slot for connecting the rock drill directly to said feed piston, and means for automatically locking said feed piston against movement in said cylinder bore when the feeding operation is interrupted.

6. In a rock drilling mechanism, a feed cylinder having a bore, a guideway on which a rock drill is slidably guided and a longitudinal slot extending substantially coextensively with said cylinder bore, a feed piston reciprocable in said cylinder bore, means extending through said slot for connecting the rock drill directly to said feed piston, means for locking said feed piston against movement in said cylinder bore, means for automatically operating said locking means for locking said feed piston against movement in said cylinder bore when the feeding operation is interrupted, and means for automatically releasing said locking means when the feeding operation is effected.

7. In a rock drilling mechanism, a feed cylinder having a bore, a longitudinal guideway along which a rock drill is slidably guided and a longitudinal slot extending substantially coextensively with said cylinder bore, a feed piston reciprocable in said cylinder bore, means extending through said slot for connecting the rock drill directly to said feed piston and embodying a pivotal stanchion connection, and sealing means for said slot for maintaining said slot sealed irrespective of the position of said feed piston in said cylinder bore.

8. In a rock drill feeding mechanism, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said

bore, a feed piston reciprocable in said feed cylinder bore, means extending through said slot into engagement with said feed piston and adapted for connection to a rock drill, a flexible sealing strip movable by said piston for always maintaining said slot sealed irrespective of the position of said feed piston in said cylinder bore, and a flexible dust strip for always maintaining said sealing strip sealed against access of dust thereto.

9. In a rock drill feeding mechanism, in combination, a feeding motor comprising relatively reciprocable feed cylinder and piston elements, means for supplying pressure fluid to said feeding motor to effect relative reciprocation between said feeding elements, and locking means for locking said feeding elements against relative reciprocation, said locking means including a locking device for said feeding elements and mechanically operated, pressure fluid released means automatically operative when the supply of pressure fluid to said feeding motor is discontinued, for causing said locking device to lock said feeding elements against relative reciprocation, and said locking means being released by pressure fluid against the action of the mechanical operating means.

10. In a rock drill feeding mechanism, a feeding motor comprising relatively reciprocable feed cylinder and piston elements, means for supplying pressure fluid to said feeding motor to effect relative reciprocation between said feeding elements, and means for locking said feeding elements against relative reciprocation, said locking means including a locking device for said feeding elements and means controlled by the pressure in said feeding motor and automatically operative when the supply of pressure fluid to said feeding motor is discontinued, for causing said locking device to lock said feeding elements against relative reciprocation.

11. In a rock drill feeding mechanism, in combination, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said bore, a feed piston reciprocable in said bore, means extending through said slot into engagement with said feed piston and adapted for connection to a rock drill, means movable with said feed piston for always maintaining said slot sealed regardless of the position of the feed piston in said cylinder bore, means for supplying pressure fluid to said feed cylinder to effect actuation of said feed piston, and locking means for locking said feed piston against movement in the cylinder bore, said locking means including a feed piston locking device and means controlled by the pressure in said feed cylinder and automatically operative when said supply of pressure fluid to said cylinder is discontinued, for causing said locking device to lock said feed piston against movement in said cylinder bore.

12. In a rock drill feeding mechanism, in combination, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said bore, a feed piston reciprocable in said bore, means extending through said slot into engagement with said feed piston and adapted for connection to a rock drill, means movable with said feed piston for always maintaining said slot sealed regardless of the position of the feed piston in said cylinder bore, means for supplying pressure fluid to said feed cylinder to effect actuation of said feed piston, and locking means engageable with said sealing means for locking said feed piston against movement in said cylinder bore, said locking means including a sealing-

means-engaging, locking device and means controlled by the pressure in said feed cylinder and automatically operative when said supply of pressure fluid to said cylinder is discontinued, for
5 causing said locking device to lock said feed piston against movement in said cylinder bore.

13. In a rock drill feeding mechanism, in combination, a feed cylinder having a bore and a longitudinal slot extending substantially coextensively with said bore, a feed piston reciprocable
10 in said feed cylinder bore, means movable with said feed piston for always maintaining said slot sealed irrespective of the position of said feed piston in said cylinder bore, and means associated
15 with said sealing means and movable with said feed piston for providing a continuous dust seal for said sealing means.

14. In a rock drilling mechanism, in combination, a support having a longitudinal guideway, a
20 rock drill slidably guided on said guideway, said support providing a feed cylinder having a bore extending longitudinally of the support guideways, said feed cylinder having a wall thereof
25 open substantially along the length of the cylinder bore, means extending through said longitudinal opening for connecting the rock drill directly to said feed piston, means movable with said feed
30 piston for continuously maintaining said longitudinal opening closed irrespective of the position of said feed piston with respect to the feed cylinder, and means associated with said closure
means for continuously providing a dust seal for said sealing means to protect the same for its full area.

15. In a rock drill feeding mechanism, a feed cylinder having a longitudinal slot substantially
35 coextensive with its bore, a feed piston reciprocable in said cylinder bore and to which a rock drill to be fed is adapted to be directly connected, a flexible sealing strip movable with said feed
40 piston for always maintaining said slot sealed, and a flexible dust strip movable with said feed piston for always providing a dust closure for said sealing strip.

16. In a rock drilling mechanism, a feed cylinder having a longitudinal seal extending substantially
45 coextensively with its bore, a feed piston reciprocable in said bore and adapted for connection with a rock drill, means movable upon movement of said feed piston for always maintaining
50 said slot sealed, and means movable upon movement of said feed piston for always providing a dust closure for said sealing means.

17. In a rock drilling mechanism, a feed cylinder having a longitudinal slot extending substantially
coextensively with its bore, a feed piston reciprocable in said bore and adapted for
6 connection with a rock drill, an endless flexible sealing strip secured to said feed piston for
always maintaining said slot tightly sealed, and
an endless flexible dust strip secured to said feed
piston for always providing a dust closure for
said sealing strip.

18. In a rock drilling mechanism, means providing a longitudinal guideway, a rock drill
guided on said guideway, feeding means including
relatively reciprocable cylinder and piston
elements arranged parallel with said guideway,
15 and a connection between the reciprocable feeding element and the rock drill comprising a
stanchion secured to a part of the drill, and a
block pivotally connected with the reciprocable
feeding element and having a socket for receiving
20 said stanchion.

19. In a rock drilling mechanism, means providing a longitudinal guideway, a rock drill guided
on said guideway, feeding means including relatively
reciprocable cylinder and piston elements
arranged parallel with said guideway, and a connection
25 between the reciprocable feeding element and the rock drill comprising a stanchion secured to a part of the drill and a block pivotally connected with the reciprocable feeding element on
30 an axis arranged transversely to the direction of feed, said block having a bore arranged at right angles to said transverse axis for receiving said stanchion.

20. In a rock drilling mechanism, means providing a longitudinal guideway, a rock drill guided
35 on said guideway, feeding means including relatively reciprocable cylinder and piston elements arranged parallel with said guideway and a connection between the reciprocable feeding element
40 and the rock drill comprising a stanchion secured to a part of the drill and a block pivotally connected with the reciprocable feeding element and having a socket for pivotally receiving said
45 stanchion, and means for supplying pressure fluid to said cylinder element to effect relative reciprocation of said feeding element including fluid supply passages in said stanchion and said block,
50 and means for maintaining communication between said passages regardless of the relative pivoted position of said block relative to said stanchion and the reciprocable feeding element.

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