March 18, 1958 J. F. JOY 2,826,898

APPARATUS FOR MINE ROOF CONTROL

Original Filed Oct. 6, 1948 3 Sheets-Sheet 1

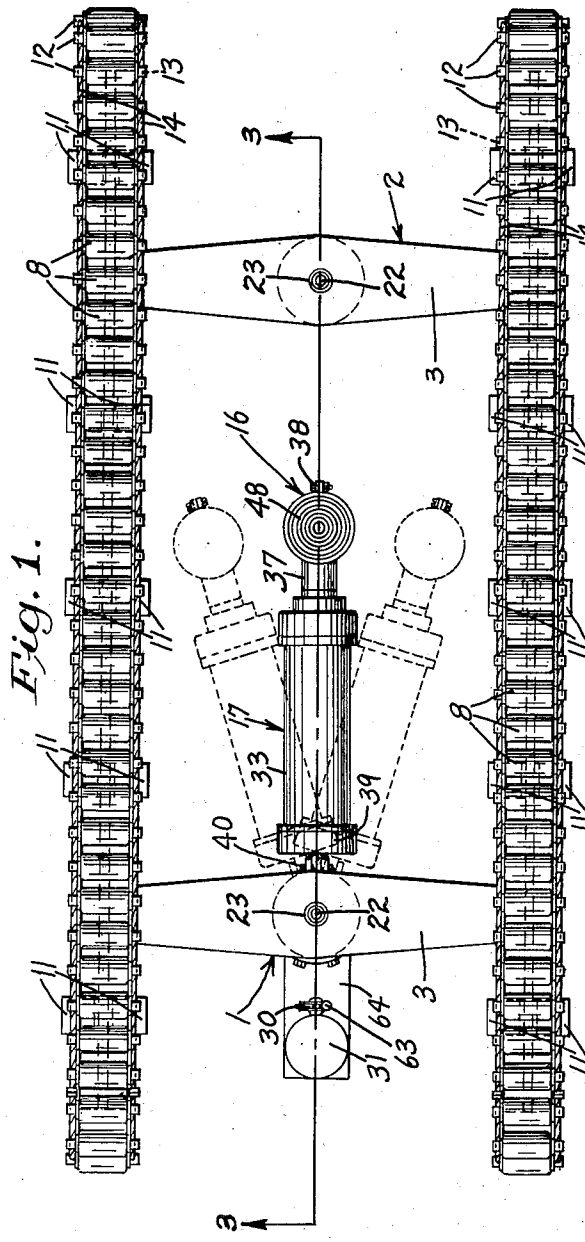


Fig. 1.

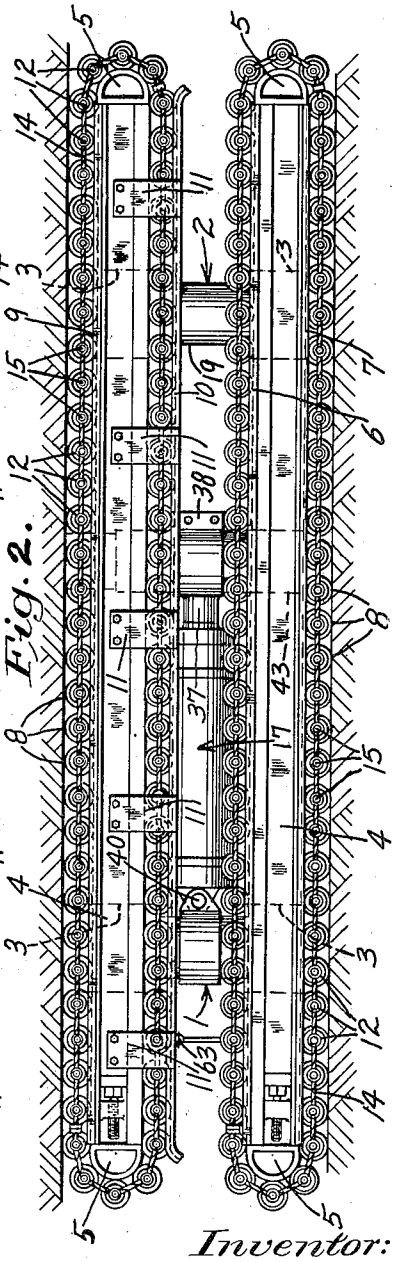


Fig. 2.

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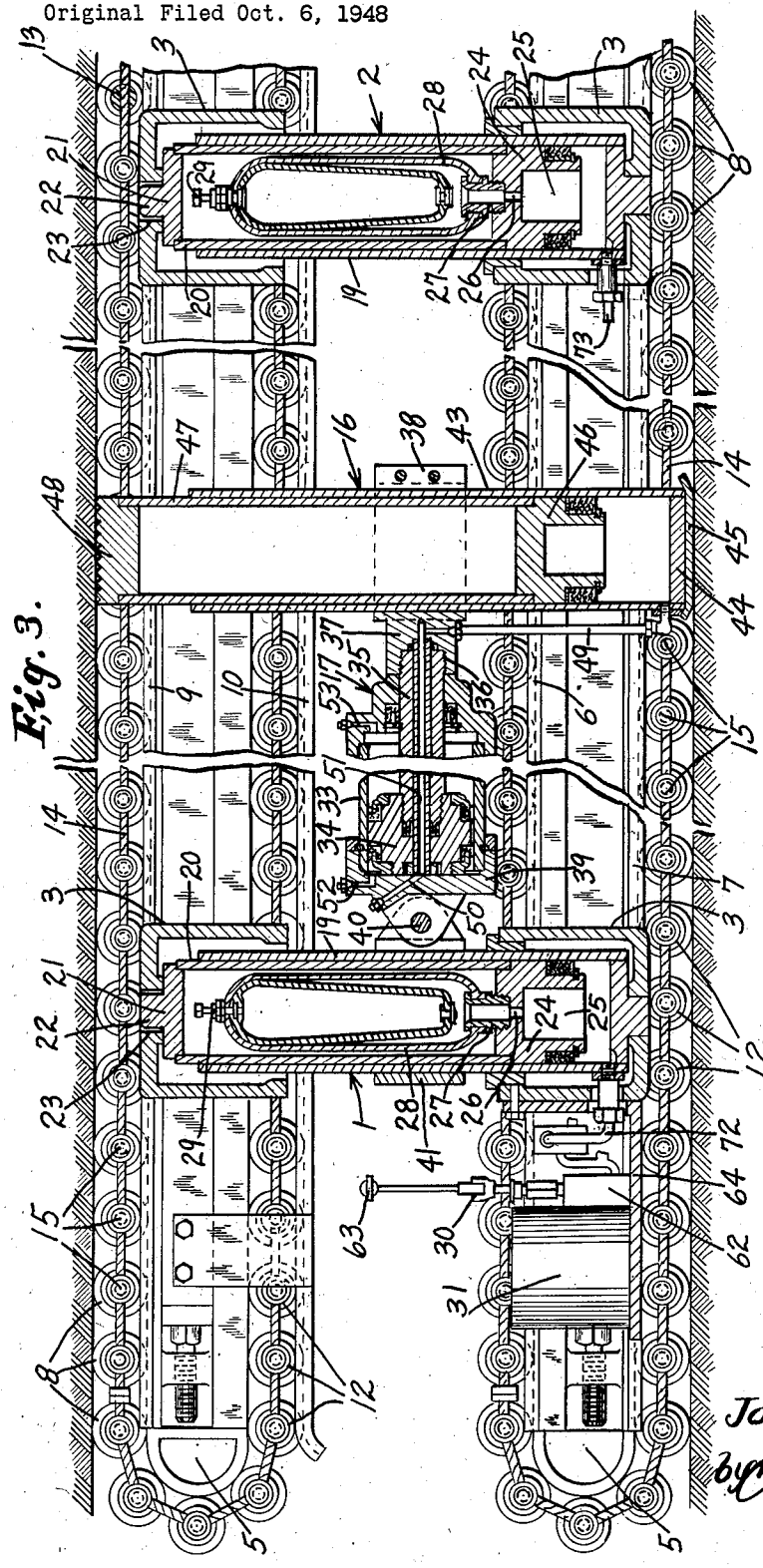


Fig. 3.

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Fig. 4.

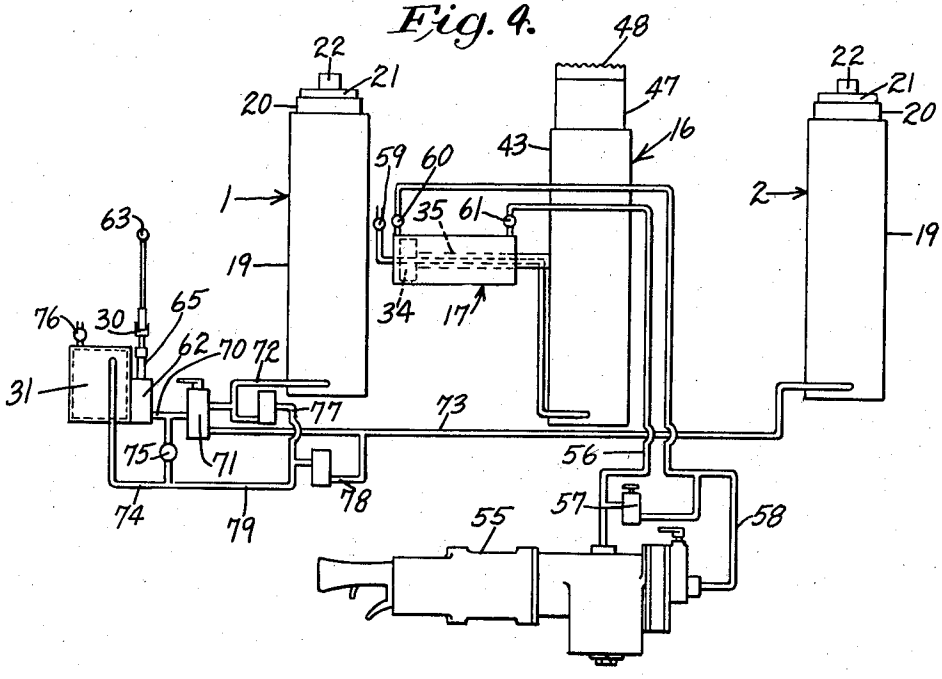
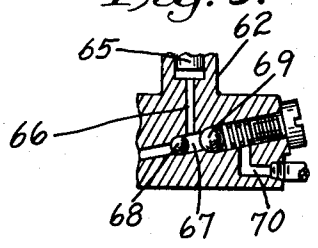


Fig. 5.



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2,826,898

APPARATUS FOR MINE ROOF CONTROL

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Original application October 6, 1948, Serial No. 53,070, now Patent No. 2,752,757, dated July 3, 1956. Divided and this application June 1, 1956, Serial No. 588,773

16 Claims. (Cl. 61—45)

This invention relates to apparatus for mine roof control and more particularly to an improved hydraulically operated walking jack mechanism having rolling contact with the mine floor and roof for supporting the latter.

An object of the invention is to provide an improved roof support for an underground mine. Another object is to provide an improved roof supporting structure having means incorporated therein for facilitating its being progressively advanced, along with the advance of a mine face, without substantial release of the resistance to roof subsidence and with sufficient yield provided for automatically to accommodate at least minor local subsidences. Still another object is to provide improved mechanically actuated structures for the control of mine roofs which support the roof close up to the face along the roof line and sufficiently to the rear of the face at the floor line for the efficient operation of coal producing apparatus. A further object is to provide an improved hydraulically operated roof jack mechanism. A still further object is to provide an improved roof jack mechanism which shall permit jack adjustment without interruption of roof support, and this notwithstanding the fact that there may be some irregularity in roof level and in roof-exerted pressure. Still another object is to provide an improved roof jack structure having incorporated therein an improved arrangement for facilitating its repositioning without interrupting its supporting action, that is, while it is yet sustaining the pressure of the roof. Yet another object is to provide an improved roof jack mechanism having improved means for altering its line of advance. Other objects and advantages of the invention will hereinafter more fully appear.

This application is a division of my copending application Serial No. 53,070, filed October 6, 1948, now matured into Patent No. 2,752,757, dated July 3, 1956.

In the accompanying drawings in which for purposes of illustration there is shown an embodiment which the invention may assume in practice:

Fig. 1 is a plan view of an illustrative embodiment of the improved roof jack structure.

Fig. 2 is a side elevational view of the structure shown in Fig. 1.

Fig. 3 is an enlarged vertical sectional view taken on the plane of line 3—3 of Fig. 1.

Fig. 4 is a somewhat diagrammatic view showing the fluid pressure operating sources and connections for effecting the roof supporting and walking operation of the jacks.

Fig. 5 is a fragmentary sectional view through the bottom end of a pump used to supply fluid to the roof supporting jacks.

In the illustrative construction, as shown in the drawings, the improved walking roof-supporting jacks comprise two upper and two lower frames having roof and floor engaging devices on them, one long upper frame at each side, and one long lower frame at each side; and each of the jack devices 1 and 2 has upper and lower transversely extending frames 3 rigidly connected at opposite ends with

elongated longitudinally extending guide frames 4. There are thus two upper guide frames and two lower guide frames—the frames of each pair being spaced by the width of the cross frames 3 from each other. The guide frames 4 may be of any suitable construction, for example, of rail or generally I-beam construction, being herein shown as formed by rigid rail sections with semi-circular guide elements 5 at their opposite ends, the guide elements 5 at one end of each guide frame being relatively adjustable to insure suitable tension for the roller connecting elements, shortly to be described. The lower frames 4 have shallow channel sections 6 suitably secured, as by welding or otherwise, to their heads and have their base flanges provided with side ledges 7 to provide for the lateral guiding of a series of rollers 8 which are adapted to provide a rolling support for the lower frames 4 as the jack mechanism is advanced. The inverted upper rail elements of the upper frames 4 have side ledges 9 at their tops to guide the associated rollers 8, and to support the lower run of rollers associated with the upper guide frame 4, there is disposed beneath them and spaced beneath the bottom of each upper guide frame 4, an elongated guide strip or channel bar 10 which is held in the desired spaced relation to the frame 4 which is above it, by spacing plates 11 secured to the guide bars and to the sides of the frames 4. The rollers 8 are provided with through pins 12 and between these pins and the rollers there are mounted suitable bearings (not shown). The opposite ends of the pins are suitably bored, as shown in Fig. 3, at 13, to permit an endless cable 14 to extend through the various openings and provide a connection between the rollers, and in order that the rollers may not contact with each other, these pins may be fixed in spaced apart relation to the cable loop as by axial clamping screws 15.

The devices for extending the jack elements, the devices for feeding them, etc. includes the front and rear roof load sustaining jack devices 1 and 2, an upright abutment jack device generally designated 16, an extendible walking jack device generally designated 17 for imparting repositioning forces to the jack devices, will now be described. It will be observed that many of the parts of the front and rear jack devices are identical, and therefore a detail description of the jack device 1 will suffice for both jack devices. The jack device 1 is shown as of the hydraulic pressure operated type and is carried by a lower transversely extending frame or cross frame member 3 and includes, as fully disclosed in the copending application Serial No. 53,070, now Patent No. 2,752,757, a vertical cylinder 19 in which a hollow piston element 20 is reciprocable. The reciprocable hollow piston has an upper head 21 having a boss or projection 22 loosely received in an opening 23 formed in a top wall of the upper transversely extending frame 3. The piston has rigidly secured thereto at its lower end a suitably packed piston head 24. The piston head is recessed at 25 at its lower side and a passage 26 extends from this recess through the upper surface of the piston 24, and a member 27 threaded within the piston provides a mounting for a conventional accumulator 28 which may be, for example, of the Greer type. Liquid may flow from the passage 26 to the interior of the flexible rubber bag of the accumulator. A suitable filling connection 29 for the accumulator is provided at the top of the accumulator whereby the latter may be preloaded with gaseous fluid from an external supply. The other roof support 2 is of a similar construction. Liquid under pressure may be supplied to the hydraulic jacks by a conventional hand operated pump mechanism 30 which is connected to a liquid reservoir or tank 31.

The extendible jack device 17 is in the form of a walking jack mechanism including a horizontal, longitudinally

extending cylinder 33 containing a reciprocable piston 34 having its piston rod 35 connected at 36 with a boss 37 on a collarlike element 38 surrounding the cylinder of the abutment jack device 16. The cylinder head 39 is pivotally connected at 40 with a collar 41 surrounding the cylinder element 19 thereby to enable the cylinder element to swing vertically.

The abutment jack device 16 includes a vertical cylinder 43 closed at its bottom at 44 and having a mine floor engaging support element 45. Within the cylinder there is reciprocable a piston 46 having its upstanding tubular piston rod 47 carrying a roof engaging element 48 at its upper end. Liquid may be admitted to and vented from the cylinder beneath the piston through a conduit 49.

Liquid may be supplied to the liquid supply conduit 49 through a passage 50 formed in the cylinder head 39 of the walking jack and leading to the bore of a conducting tube 51 mounted within the cylinder head 39 and telescoping with the hollow piston rod 35 which receives the tube. Liquid may be admitted to the opposite ends of the bore of the cylinder 33 through conduits 52 and 53 formed in the cylinder heads respectively. Each of the liquid supply connections 50, 52 and 53 will desirably be equipped with a fitting through which liquid can be supplied to it past a stop valve, as fully disclosed in my copending application above referred to.

In view of the fact that the abutment jack device 16 and the walking jack device 17 will have liquid supplied to them and vented from them only on the order of perhaps once or twice, or at most a very small number of times, a day, it is unnecessary to provide liquid reservoirs and pumps individual to them, and instead a portable liquid supply and discharge arrangement such as is shown in my Patent No. 1,900,446 may be provided to supply liquid under pressure to extend the abutment jack device 16 and to move the cylinder 33 relative to the abutment jack, or to allow the venting of liquid; it being understood with respect to the walking jack device 17 that it will be necessary to provide a return connection from whichever one of the connections 52 or 53 is not to have liquid discharged to it from the apparatus shown in said Joy patent. Such a liquid supply means is portable from jack to jack.

It may be noted that the abutment jack device 16 may be repositioned laterally, as indicated in dotted lines in Fig. 1, so as to cause the jack devices to change their direction of travel, that is, to be moved slightly laterally in one direction or the other as they advance toward the face. It will be understood that the loose mountings of the upper frames 4 on the jack devices 1 and 2 permit limited lateral and longitudinal tilting of the solid upper frame structure including two frames 3 and two frames 4.

In Fig. 4, there is shown for purposes of illustration, a control diagram. This diagram shows the connections so far mentioned, and also others. The roof jack devices are shown at 1 and 2, the abutment jack device at 16, and the jack device for effecting walking is shown at 17. The abutment jack and the walking devices are adapted to be supplied with liquid under pressure from a separate power driven pump device 55, such as is shown in my Patent No. 1,900,446. The only material difference between the device of the patent and the device shown at 55 resides in the fact that a return conduit or connection 56 is provided for the back flow of liquid from a working space which is to be vented to the reservoir of the device 55, and of course the reservoir size and the discharge pressure will be predetermined to the demands of the work to be done. If desired an adjustably loaded relief valve 57 may be arranged between the discharge conduit 58 from the device 55 and the return line to the reservoir. Each of the connections 50, 52 and 53 will be provided with a stop valve (shown in Fig. 4 at 59, 60 and 61), and suitable quick detachable connections, as of the Hansen coupling type, may be provided to facilitate connection and disconnection between the condiuts 56 and 58 and the connections 50, 52 and 53.

The liquid supply to the roof jack devices 1 and 2 is, as has been previously noted, such that liquid under pressure may be supplied simultaneously to them, as will ordinarily be desirable, or separately, and liquid may also be vented simultaneously or separately from them. The manually operable pump mechanism 30 includes, as has been noted, a reservoir 31, a pump cylinder 62 and manual operating means 63 for the pump. An operator may therefore quickly pump up the desired pressures in the jack devices 1 and 2.

The supply of liquid under pressure to the cylinders 19 of the jack devices 1 and 2 beneath the pistons 24 is by the hand operated pump mechanism 30, and a shelf 64 carried by the frame 3 supports the pump mechanism. This pump mechanism may be of any suitable construction and, as shown, includes the reservoir or liquid tank 31, and the pump cylinder 62 in which a plunger 65 is adapted to be reciprocated by the operating means 63. The bottom of the pump cylinder communicates through a passage 66 (Fig. 5) with a chamber 67 which is arranged between a pair of check valves 68 and 69. The check valve 69 controls communication with the discharge line 70, which opens into a valve casing 71. The check valve 68 controls communication between the reservoir 31 and the chamber 67. The valve casing 71 contains a valve (not shown) shiftable to connect the line 70 with a conduit 72, leading to the bore of the cylinder of the jack 1 beneath the piston, or to connect the line 70 with a conduit 73 leading to the cylinder bore of the jack mechanism 2, or to connect the line 70 with both conduits at the same time. A return connection from the line 70 to the reservoir is provided at 74 and is controlled by a valve 75. The reservoir has a supply connection 76, and additional liquid will be supplied to the reservoir, as needed, while the jack devices are being extended to provide approximately the desired elevation of their upper portions. Means for releasing pressure from the bores of the cylinders beneath the pistons in the event of excessive roof pressures is provided in the form of two relief valve control means 77 and 78, these having the relief valves therein set at pressures higher than any normally desired pressure in the cylinder bores beneath the pistons but adapted to permit the return of liquid from these bores through a common conduit 79 to the line 74 as pressures such as to endanger the accumulators 28 are occasioned by markedly increased roof pressure.

The upper and lower roller carrying frames 4 associated with the roof supporting jacks 1 and 2 are connected together by the cross frames 3 and extensible parts of the roof supporting jacks and due to the multiplicity of rollers and the substantial length of the upper and lower beamlike frames the pressure per square inch of contact with the floor and roof is substantially reduced, and yet these roller frames are capable of rolling along the floor and roof without excessive forces being required. Thus the roof supporting jack devices 1 and 2 are connected together by the upper and lower frames and the cross frames so that forward movement of one jack device will be attended by corresponding movement of the other jack device and yet, if there is uneven subsidence of the roof, there may be limited tilting of the upper frames relative to the jack devices. Change in the direction of jack travel may also be facilitated, as mentioned above.

When the roof supporting apparatus is in roof supporting position, as shown in Fig. 2, the roof supporting jack devices 1 and 2 will be subjected to hydraulic pressure from the pump mechanism 30 in such manner that they will provide the desired roof support, and the forces will be applied to the roof through the series of roof contacting rollers 8, resulting in a substantial area of contact between the upper roof supports and the roof

and a diminution of the maximum pressures imposed on the roof at any given point. It will be unnecessary to relieve the pressure in the roof supporting jack devices 1 and 2 in order that advance of these jacks may be possible. If the roof pressure suddenly increases, a portion of the liquid below the pistons 24 in the jack devices 1 and 2, or whichever one of them may underlie the roof area where the pressure is increased, will be forced into the accumulator, increasing the pressure of the confined gaseous fluid in the accumulator bag and thereby in many cases enabling continued non-rigid withstanding of increased roof pressure. When the roof jack underlying the area of increased pressure is advanced from beneath that area the gaseous fluid under increased pressure in the accumulator bag will displace liquid from the accumulator and cause the return of the roof engaging portions of the jack device to its previous level. Of course, as has been previously explained, before the pressure could be built up in the accumulators sufficient to rupture the bags therein, the relief valve means heretofore described in the connections 77 and/or 78 would allow the escape of fluid and the substitution of a solid for a yielding support for the roof pressure. The provision of the yielding support, of course, facilitates the advance of the jacks over uneven bottom or beneath uneven roof. Further explanation of the mode of operation and advantages of the invention is clearly unnecessary, since the manner of extending the jack device of the roof-supporting jack mechanisms, the manner of extending and collapsing the abutment jack device 16, and the manner of supplying the fluid to the opposite ends of the walking jack device 17 will be clearly apparent from the description already given.

As a result of this invention an improved mine roof supporting apparatus is provided having an improved arrangement of the floor engaging and roof supporting roller-carrying supports. By the provision of the rigid, longitudinally extending, elongated beam members for carrying the rollers, and the associated supporting parts, the mine roof is at all times adequately supported while the apparatus without release thereof may be readily advanced as the mine face advances. The provision of the abutment jack, together with the horizontally swingable walking jack connected thereto, enable the roof supporting apparatus to be advanced in various directions as determined by the lateral position of the abutment jack. The structure is relatively simple and rugged in design, and extremely compact, well adapted for its intended purpose. Other advantages of the invention will be clearly apparent to 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 claims.

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

1. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free orbital circulation thereabout, each frame having guiding means for said rolling contact means including upper and lower guideways, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely

along said guiding means relative to said frames during such horizontal movement.

2. A jack mechanism as set forth in claim 1 wherein means is provided whereby the horizontal angular relation of said power operated feeding device may be varied with respect to the longitudinal axis of the jack mechanism to vary the direction of travel of said roof and floor engaging devices.

3. A jack mechanism as set forth in claim 1 wherein said power operated feeding device has anchor means providing a reaction point therefor during the feeding operation.

4. A jack mechanism as set forth in claim 3 wherein said power operated device has means for shifting the angular position thereof horizontally to vary the direction of feed.

5. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free orbital circulation thereabout, each frame having guiding means for said rolling contact means including upper and lower guideways, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, said extensible jack means including jack devices arranged between and spaced longitudinally of said frames and acting on said frames at points located inwardly of the ends of said first mentioned devices with said first mentioned devices projecting forwardly and rearwardly with respect to said jack devices to provide substantial overhang, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling abutment means circulating freely along said guiding means relative to said frames during such horizontal movement.

6. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, said extensible jack means including jack devices arranged between and spaced longitudinally of said frames and acting on said frames at points located inwardly of the ends of said first mentioned devices with said first mentioned devices projecting forwardly and rearwardly with respect to said jack devices to provide substantial overhang, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement, and said power operated device arranged longitudinally of said first mentioned devices between said longitudinally spaced jack devices and operatively connected to one of the latter.

7. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, said rolling contact means each having guideways therefor extending about the frame-margin and including a series of rollers rotatable about axes transverse to the frame and means for connecting said rollers for movement in an orbital path about said guideways, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to

bring said roof engaging device firmly in supporting engagement with the mine roof, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement.

8. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, said rolling contact means each having a guideway therefor extending about a frame-margin and including a series of rollers rotatable about axes transverse to the frame, shafts on which said rollers are journaled and flexible means for connecting said shafts for movement in an orbital path about said guideway, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement.

9. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, said rolling contact means each having a guideway therefor extending about a frame-margin and including a series of rollers rotatable about axes transverse to the frame, shafts on which said rollers are journaled and flexible means for connecting said shafts for movement in an orbital path along said guideway, said flexible means comprising an endless cable and means being provided for attaching said shafts at intervals to said cable, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement.

10. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, said rolling contact means each having a guideway therefor extending about a frame-margin and including a series of rollers rotatable about axes transverse to the frame, shafts on which said rollers are journaled and flexible means for connecting said shafts for movement in an orbital path along said guideway, said flexible means including parallel laterally spaced endless cables arranged at the sides of the frame and there being means for attaching said shafts at their ends to said cables at intervals along their lengths, and a power operated device for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement.

11. In a mine roof supporting jack mechanism, a floor engaging device comprising elongated parallel side frames and means for connecting said side frames in rigid transverse relation, a roof engaging device comprising elongated, upper, parallel side frames and means for connecting said side frames in rigid transverse relation, said upper side frames being arranged in parallel, superimposed, and substantially coextensive relation with said lower side frames, rolling contact means guided for free circulation about each of said frames, and jack mechanisms spaced apart longitudinally of said frames and arranged between said upper and lower connecting means and engaging the same intermediate said side frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device in firm supporting relation with the roof.

12. In a mine roof supporting jack mechanism, a floor engaging device comprising elongated parallel side frames and means for connecting said side frames in rigid transverse relation, a roof engaging device comprising upper, elongated, parallel side frames and means for connecting said side frames in rigid transverse relation, said upper side frames being arranged in parallel, superimposed, and substantially coextensive relation with said lower side frames, rolling contact means guided for free circulation about each of said frames, jack mechanism arranged between said upper and lower connecting means and engaging the same intermediate said side frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device in firm supporting relation with the roof, and power operated means for moving said devices horizontally in unison while said devices are maintained in supporting relation with the roof and floor, and said rolling abutment means circulating freely relative to said frames during such horizontal movement.

13. In a mine roof supporting jack mechanism, a floor engaging device comprising elongated parallel side frames and means for connecting said side frames in rigid transverse relation, a roof engaging device comprising upper, elongated, parallel side frames and means for connecting said side frames in rigid transverse relation, said upper side frames being arranged in parallel, superimposed, and substantially coextensive relation with said lower side frames, rolling contact means guided for free circulation about each of said frames, jack mechanism arranged between said upper and lower connecting means and engaging the same intermediate said side frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device in firm supporting relation with the roof, and power operated means for moving said devices horizontally in unison while said devices are maintained in supporting relation with the roof and floor and said rolling contact means circulating freely relative to said frames during such horizontal movement, said transverse connecting means connected to said side frames at longitudinally spaced points and said jack mechanism including a pair of jack devices connected between said transverse connecting means at each end of said first mentioned devices, and said first mentioned devices extending forwardly and rearwardly a substantial distance with respect to said jack devices to provide substantial overhang.

14. In a mine roof supporting jack mechanism, a floor engaging device comprising elongated parallel side frames and means for connecting said side frames in rigid transverse relation, a roof engaging device comprising upper, elongated, parallel side frames and means for connecting said side frames in rigid transverse relation, said upper side frames being arranged in parallel, superimposed, and substantially coextensive relation with said lower side frames, rolling contact means guided for free circulation about each of said frames, jack mechanism arranged between said upper and lower connecting means and engaging the latter intermediate said side

frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device in firm supporting relation with the roof, and power operated means for moving said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement, said transverse connecting means connected to said side frames at longitudinally spaced points and said jack mechanism including a pair of jack devices connected between said transverse connecting means at each end of said devices and said first mentioned devices extending forwardly and rearwardly a substantial distance with respect to said jack devices to provide substantial overhang, and said power operated means including a horizontal jack device arranged longitudinally of said first mentioned devices intermediate said jack devices and operatively connected to one of the latter.

15. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, and extensible jack means having anchor means and operatively connected to one of said first mentioned jack means for feeding said roof and floor engaging devices horizontally in unison while said devices are maintained in supporting relation with the roof and floor, and said rolling contact means circulating freely relative to said frames during such horizontal movement.

16. In a mine roof supporting jack mechanism, a pair of elongated, substantially coextensive and superimposed roof and floor engaging devices, each of said devices including an elongated frame and rolling contact means guided for free circulation thereabout, extensible jack means arranged between said frames for elevating said roof engaging device relative to said floor engaging device to bring said roof engaging device firmly in supporting engagement with the mine roof, said extensible jack means including jack devices arranged between and spaced longitudinally of said frames and acting on said frames at points located inwardly of the ends of said first mentioned devices with said first mentioned devices projecting forwardly and rearwardly with respect to said jack devices to provide substantial overhang, and extensible jack means having anchor means and operatively connected to one of said first mentioned jack means for feeding said first mentioned devices horizontally in unison while said first mentioned devices are maintained in supporting relation with the roof and floor, and said rolling abutment means circulating freely relative to said frames during such horizontal movement.

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