March 22, 1932. S. DIKANT 1,850,317

DRILL DUST ARRESTER

Filed May 7, 1929 3 Sheets-Sheet 1

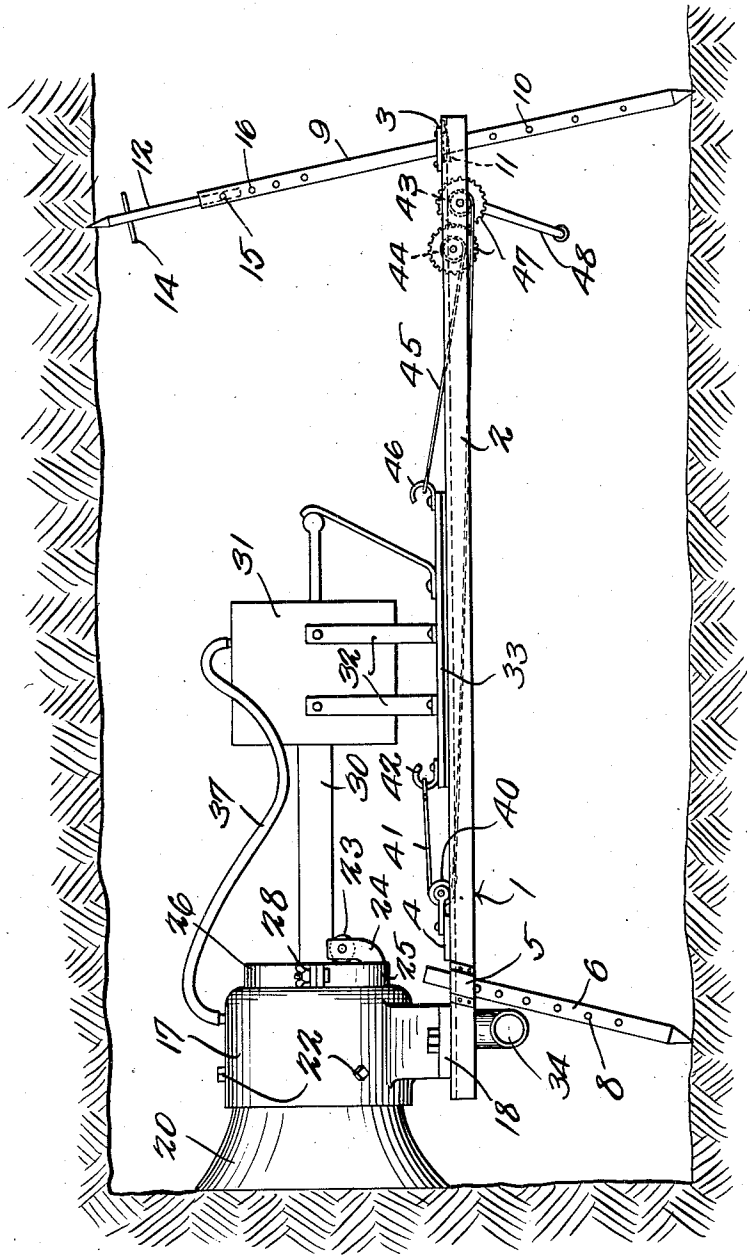


Fig. 1.

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DRILL DUST ARRESTER

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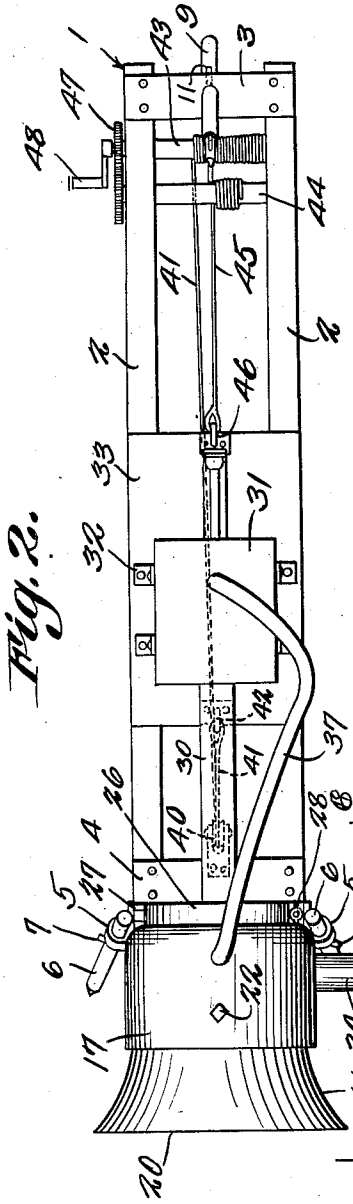


Fig. 2.

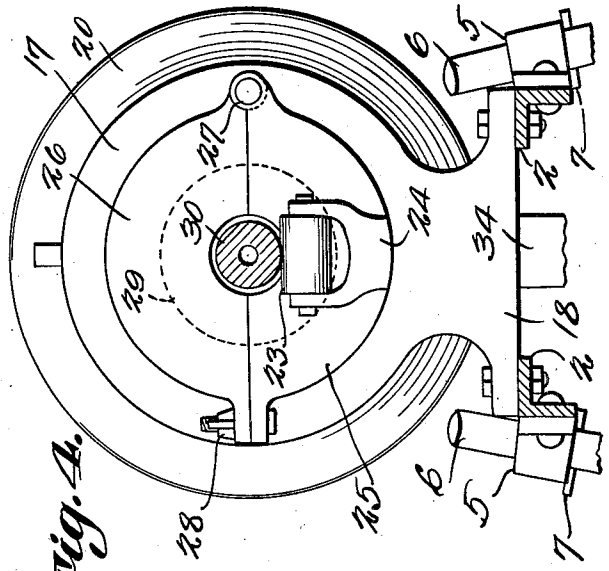


Fig. 4.

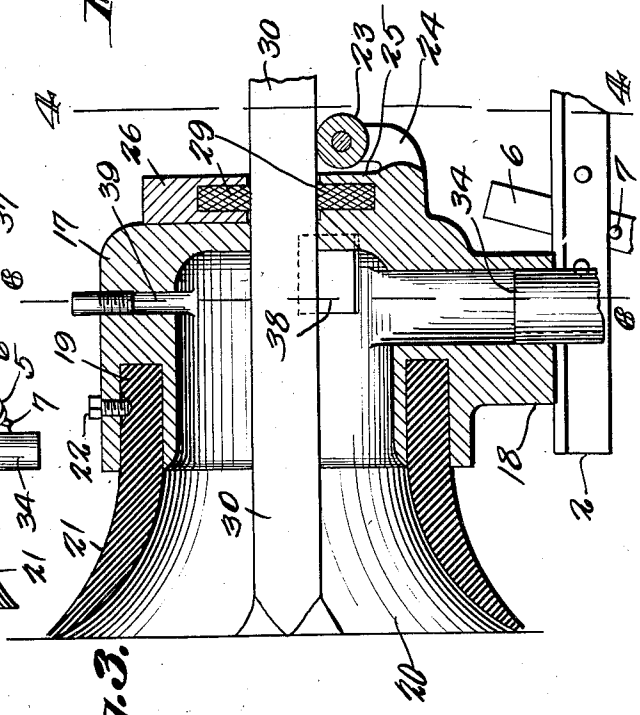


Fig. 3.

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DRILL DUST ARRESTER

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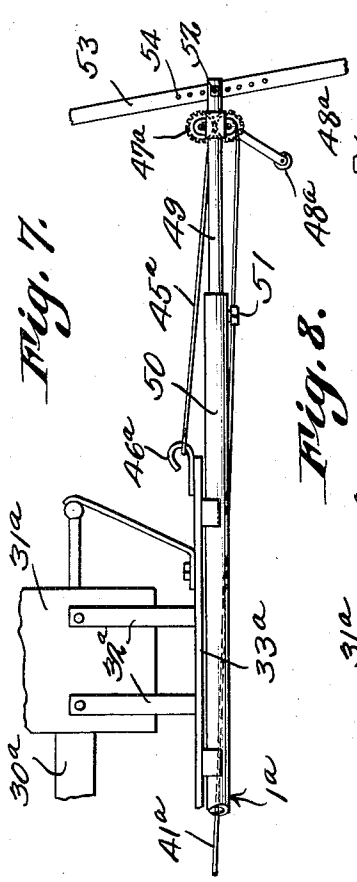


Fig. 7.

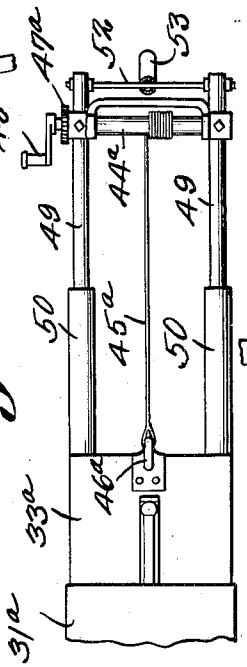


Fig. 8.

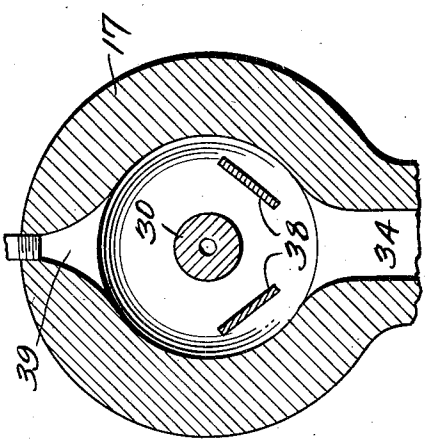


Fig. 6.

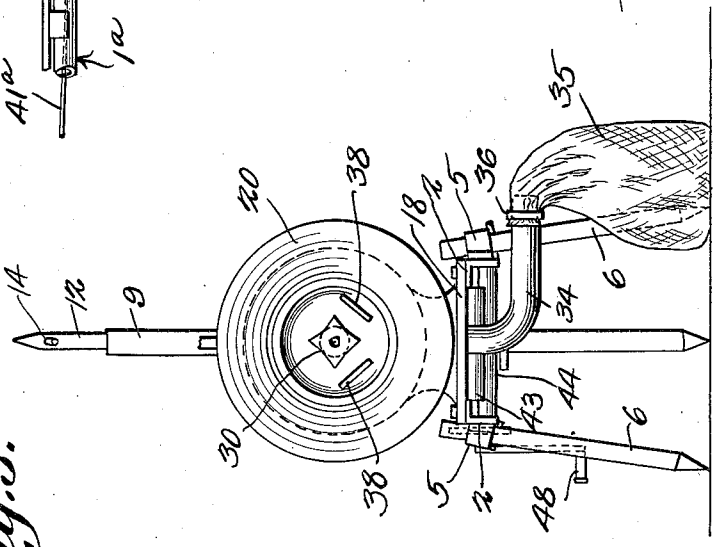


Fig. 5.

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Patented Mar. 22, 1932 1,850,317

UNITED STATES PATENT OFFICE

STEPHEN DIKANT, OF PECKVILLE, PENNSYLVANIA

DRILL DUST ARRESTER

Application filed May 7, 1929. Serial No. 361,103.

By way of explanation, it may be stated that mining machines produce dust which, being carried back by the air from the drill, finds lodgment in the lungs of the miner, to the undermining of his health. The foregoing being understood, it may be stated that one of the objects of this invention is to take care of the dust produced from a mining machine of the drill type. Another object of the invention is to provide novel means for adjusting the drill with respect to the work.

It is within the province of the disclosure to improve generally, and to enhance the utility of, devices of that kind to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed, within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 shows in side elevation, a device constructed in accordance with the invention, mounted in working position in a mine, the collecting bag for the dust being omitted;

Figure 2 is a top plan;

Figure 3 is an enlarged section of the collecting head;

Figure 4 is a cross-section on the line 4—4 of Figure 3;

Figure 5 is a front elevation;

Figure 6 is a cross-section on the line 6—6 of Figure 3;

Figure 7 is an elevation showing a modification; and

Figure 8 is a top plan of the modification disclosed in Figure 7.

Referring particularly to the form shown in Figures 1–6 of the drawings, there is provided a support 1, including side bars 2 connected by a rear cross piece 3 and a front cross piece 4. Sockets 5 are connected to the side bars 2 near to the forward ends thereof. In the sockets 5, legs 6 are mounted for vertical adjustment. Any suitable means may be supplied for adjusting the legs 6 vertically. In the present embodiment of the invention, but not of necessity, cross pins 7 are mounted in the holes 8 of the legs 6, the cross pins engaging beneath the sockets 5.

The numeral 9 designates a prop which passes pivotally through the rear cross piece 3. The prop 9 has any desired number of longitudinally-spaced openings 10, in any one of which may be placed a pin 11, the pin 11 engaging beneath the cross piece 3 to hold the prop 9 in place. At its upper end, the prop 9 has a longitudinally-adjustable extension 12 which is slidably mounted in the prop. Any suitable means may be provided for holding the extension 12 in place. In the present embodiment of the invention, but not of necessity, there are holes 16 in the prop 9, and through any one of these holes 16, and through the extension 12, a pin or other securing element 15 may be placed.

The extension 12 has a cross piece 14 whereby the extension may be handled conveniently. It will be seen that when the legs 6 are engaged with the floor of the mine, as shown in Figure 1, the lower end of the prop 9 being engaged with the floor of the mine, and the extension 12 being engaged with the roof of the mine, the support 1 will be held in place securely.

The numeral 17 marks a cup-shaped collecting head, the base 18 of which is secured to the side bars 2 of the support 1. In the forward end of the head 17 there is a channel 19 in which fits a resilient sleeve 20, made of rubber or a rubber compound. As shown at 21, the sleeve 20 flares and tapers as it extends forwardly, thereby to enhance the resiliency of the sleeve. Securing elements

22 are mounted in the head 17 and hold the sleeve 20 in place in the head.

The numeral 23 designates a roller, journaled for rotation on a bracket 24 carried by the lower part 25 of a clamp, the upper part of the clamp being designated by the numeral 26. As shown in Figure 4 of the drawings, the parts 25 and 26 of the clamp are connected together by a pivot element 27, and this pivot element 27 serves also to hold the parts 25 and 26 of the clamp on the rear end of the collecting head 17. The parts 25 and 26 of the clamp are held together by any suitable means, such as a bolt and wing nut 28.

In the cooperating parts 25 and 26 of the clamp, are located the members of a resilient gasket 29.

The drill or similar tool is mounted to slide through the gasket 29 and through the rear end of the head 17, the tool being marked by the numeral 30. The tool 30 is operated by a pneumatic mechanism 31 which is supported at 31 on a platform 33, the platform 33 being mounted to reciprocate for adjustment on the side bars 2 of the support 1.

In its bottom part, the collecting head 17 has an outlet 34 which is extended laterally, as shown in Figure 5. The numeral 35 designates a porous collecting receptacle or sack which is clamped at 36, removably, on the end of the outlet 34.

The numeral 37 designates a pipe connected to the pneumatic mechanism 31 whereby the drill 30 is operated. The pipe 37 communicates with a flared bore or mouth 39 in the top of the collecting head 17. Baffles 38 are mounted in the rear end of the collecting head 17, and project forwardly into the collecting head. The baffles 38 converge downwardly toward the outlet 34, as shown in Figure 6 of the drawings.

A pulley 40 is supported for rotation on the rear cross piece 3. About the pulley is trained a flexible element 41. One end of the flexible element 41 is anchored as shown at 42 on the forward end of the platform 33. The flexible element 41 is extended rearwardly underneath the platform 33 and is wound about a shaft 43 which is supported for rotation in the side bars 2 of the support 1. The numeral 44 designates a shaft which is also supported for rotation in the side bars 2. A flexible element 45 is wound about the shaft 44, the flexible element 45 being anchored at 46 on the platform 33. The shafts 43 and 44 are operatively connected by intermeshing gears 47. The shaft 43 is operated by way of a crank 48, or in any other suitable manner.

In practical operation, the machine is mounted as shown in Figure 1 of the drawings, with the resilient sleeve 20 in contact with the breast of the mine. The air discharged through the drill or tool 30 carries the dust backwardly into the collecting head 17, the dust being forced through the outlet 34 into the bag 35, where the dust is collected, the air passing on through the bag, because the bag is porous. In this way, the dust is not blown back into the face of the miner, to be inhaled with disastrous consequences which are well known to those skilled in the art.

It is desirable to prevent the dust from escaping at the place where the tool 30 reciprocates in the butt of the collecting head 17. It is for this purpose that the gasket 29 is used. Some persons prefer to dispense with the gasket 29 and the clamps 25 and 26, and to rely upon the blast of air through the pipe 37, the blast of air forcing the dust downwardly, between the baffles 38, into the outlet 34, the blast through the pipe 37 carrying away the dust which otherwise might find its way out through the rear end of the head 17, about the drill 33. Some operatives will prefer to take off the pipe 37 and to rely upon the gasket 29 as a means for preventing dust from finding its way backwardly out of the head 17, about the drill 30.

By means of the crank 48, rotation may be imparted to the shaft 43, the intermeshing gears 47 rotating the shaft 44. The flexible elements 41 and 45 are operated to shift the platform 33 back and forth, and in this way, the drill 30, with the mechanism 31 which operates it, may be adjusted with respect to the breast of the mine.

In the modification shown in Figures 7 and 8, parts hereinbefore described have been designated by numerals previously used, with the suffix "*a*". The modification consists in making the frame 1*a* longitudinally adjustable. The front members 50 of the frame or support 1*a* are tubular, the rear members 49 of the frame being telescoped for sliding adjustment into the front members 50. Set screws 51 are threaded into the front members 50 and, engaging with the members 49, hold the support or frame at any length to which it may have been adjusted. The rear members 49 are connected at their rear ends by a tie 52, in the form of a bolt, on which the prop 53 is mounted, the prop 53 corresponding to the prop 9 and having openings 54 for the reception of the tie or bolt 52.

The machine forming the subject matter of this application is simple in construction, but it affords an effective means whereby dust will be prevented from being blown back from a post drill or other mining machine, into the face of the minor, to be inhaled to the detriment of his health.

What is claimed is:

A mining machine comprising a dust-collecting head provided upon one side and near to its rear end with a dust outlet, the head being supplied upon its opposite side with a fluid-pressure conduit discharging into the head and toward the outlet, a drill mounted to reciprocate in the head, between the conduit

and the outlet, and baffles projecting forwardly with respect to the rear end of the head, the conduit being provided at its inner end with a flared mouth which permits the pressure-fluid to spread and pass around the drill, the baffles being located on opposite sides of the drill and converging toward the outlet, to direct the pressure-fluid into the outlet, as the pressure-fluid passes across the drill.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

STEPHEN DIKANT.