

Dec. 8, 1953

W. H. ENDSLEY

2,661,983

MUD GUN

Filed March 5, 1951

2 Sheets-Sheet 1

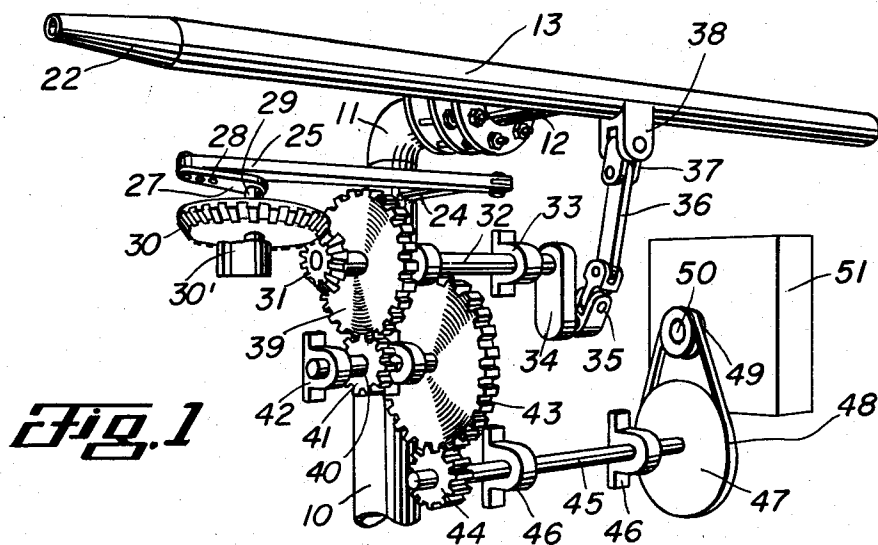


Fig. 1

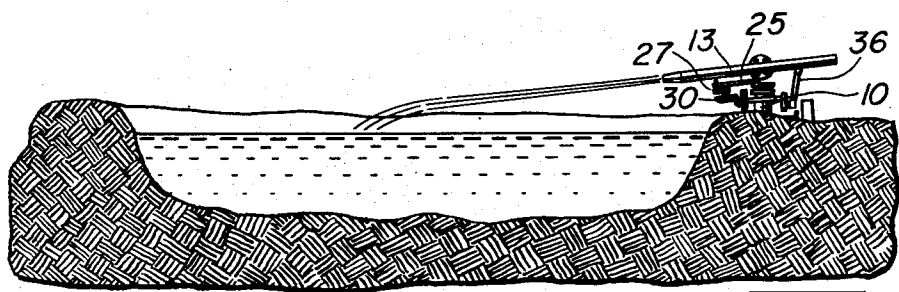


Fig. 2

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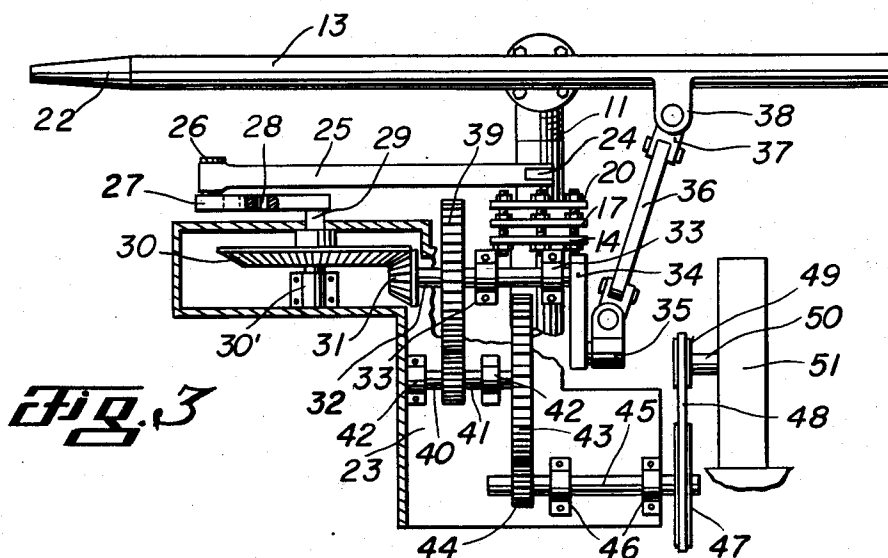


Fig. 3

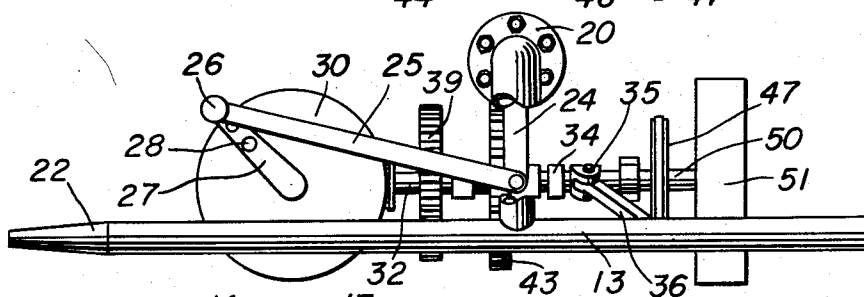


Fig. 4

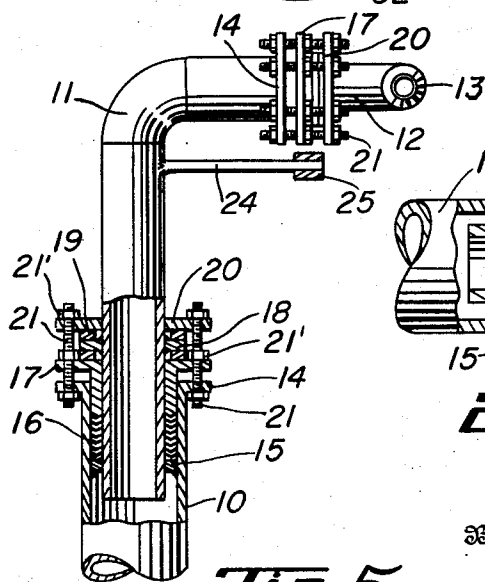


Fig. 5

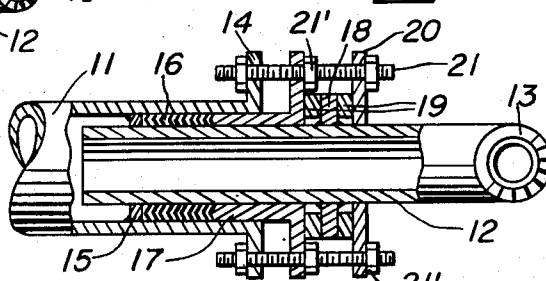


Fig. 6

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UNITED STATES PATENT OFFICE

2,661,983

MUD GUN

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Application March 5, 1951, Serial No. 213,942

8 Claims. (Cl. 299-62)

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This invention relates to new and useful improvements in mud guns.

One object of the invention is to provide an improved mud gun for use at the mud pits of wells being drilled and arranged to move in various directions so as to discharge a mud stream under pressure and stir up or agitate the mud in the pit, whereby the ingredients, particularly the chemicals, are kept in a thoroughly mixed condition.

Another object of the invention is to provide an improved mud gun arranged to be mounted on the bank of the pit and directed over the pond and equipped with liquid mud supply means and mechanical elements for swinging it in various directions while discharging mud liquid, whereby the mud in the pit is agitated and kept thoroughly mixed.

A further object of the invention is to provide mechanism for swinging the gun in a vertical arc while also swinging in a horizontal arc, the mechanism being so timed as to cause the gun to swing up and down more frequently than it is swung horizontally, thus assuring agitation of the entire mass of liquid mud in the pit.

Still another object of the invention is to provide a mud gun mounting which includes an elbow mounted and packed to swing horizontally from an upright supply pipe and connected at its horizontal end with an elongate barrel, mounted and packed to swing vertically, whereby a stream may be directed over the entire area of a pond.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings wherein an example of the invention is shown, and wherein:

Fig. 1 is a perspective of a mud gun constructed in accordance with the invention.

Fig. 2 is a sectional view through a mud pit showing the improved gun, in general, mounted on the bank,

Fig. 3 is an elevation of the gun,

Fig. 4 is a plan view of the same,

Fig. 5 is a detail of the supply line swivel showing the vertical member in section, and

Fig. 6 is a similar view showing the horizontal member in section.

In the drawings, the numeral 10 designates an upright liquid mud supply pipe which may convey liquid mud from any suitable source. An elbow 11 has its lower vertical end mounted to rotate in the upper end of the pipe, while its upper

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horizontal leg receives the reduced tubular shank 12 of a gun barrel 13. The elbow is mounted to swing in a horizontal plane; while the barrel is mounted to swing in a vertical arc.

Since the mounting at each end of the elbow is duplicated, a description of one will suffice for both and the same reference numerals will be used. The top of the pipe 10 is formed with a lateral flange 14 (Fig. 5) and a ring 15 surrounding the end of the elbow 11 is welded in the pipe 10 below the flange. Packing rings 16, snugly surrounding the elbow and engaging the wall of the pipe, are supported on the ring 15. A flange packing gland 17 inserted in the upper end of the pipe compresses the packing rings. A supporting flange 18 is welded around the elbow leg between two packing rings 19, the lower of which rests upon the upper end of the gland 17.

An annular cap 20 snugly surrounds the elbow leg and rests on the upper ring 19. Vertical bolts 21 pass through the cap 20, the flange of the gland and the flange 14, receiving nuts 21' engaging said elements 20, 17 and 14, whereby the parts are held in position. In this manner the elbow 11 is vertically supported and is free to be rotated. Except as to size the elements connecting the shank 12 are the same.

The gun barrel has a reduced nozzle 22 at its forward end, the shank 12 being rigidly attached to the barrel nearer its rear end, which latter is closed. An upright, box form, of standard 23 is provided adjacent the upright pipe 10, the details of structure being unimportant. A rigid horizontal arm 24 extends outwardly from the vertical leg of the elbow 11 and has its outer end pivoted to one end of a laterally extending link 25. The opposite end of the link is pivoted on an upright pin 26 extending from a crank arm 27, which is provided with adjustment holes 28 for varying the travel of the link.

The crank arm 27 extends horizontally from the vertical shaft 29 of a horizontal beveled gear 30, mounted in a box 30' secured to the rear wall of the standard 23. The gear 30 is driven by a beveled pinion 31 fastened on a crank shaft 32 mounted in brackets 33 on the standard. The elements which have been described swing the barrel 13 laterally. On the opposite end of the crank shaft, a crank arm 34 is mounted. A swivel 35 provided to the outer end of the arm is pivoted to the lower end of a link 36 which is pivoted at its upper end to a swivel 37. The swivel 37 is pivoted in a bracket 38 depending from the underside of the barrel 13 in rear of the shank 12 and whereby, the barrel is swung in a vertical arc.

From the foregoing it will be seen that since the crank shaft is constantly revolving the pinion

31 and swinging the crank arm 34 in a circular path, the elbow and barrel will be swung at the same time. However, owing to the horizontal travel of the barrel at the same time it is being swung up and down, said up and down movement will not be truly vertical, but both vertical and angular. Such a movement will more effectively direct the fluid discharged from the nozzle 22, over the surface of the mud pond.

For driving the shaft 32 a gear 39 is fastened thereon and driven by an underlying pinion 40 fastened on a jack shaft 41 mounted in bearing boxes 42. A gear 43, slightly larger in diameter than the gear 39, is fastened on the end of the jack shaft and in turn, is driven by a pinion 44 fastened on one end of a driven shaft 45 secured in bearing boxes 46. A large pulley 47 is fastened on the opposite end of the shaft 45 and driven by an endless belt 48 from a smaller pulley 49 fastened on a drive shaft 50. The shaft 50 is driven by a suitable motor 51 or other means.

It will be observed that since the crank 34 is directly revolved by the shaft 32 and the gear 30 is rotated by the pinion 31, the barrel 13 will be swung up and down at a more rapid rate of speed than it is moved laterally. These ratios are, of course, subject to change.

It is believed the operation will be obvious from the foregoing description without detailed explanation. The mud stream ejected from the nozzle 22, being under pressure, will be directed into the pond of mud in the pit with sufficient force to stir up the pond. Since the ejection covers substantially the entire area of the pond, the whole body will be sufficiently agitated to assure thorough mixing and prevent settling.

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

1. A mud gun including, an upright elbow having means for mounting it to swing horizontally on a vertical supply pipe, a laterally directed horizontal shank mounted in the opposite end of the elbow to rotate, a barrel medially fixed on the outer end of the shank, a rotatable shaft, actuating elements connected with and driven by one end of the shaft and connected with the elbow for swinging it, and actuating elements connected with and driven by the other end of the shaft and connected with the barrel for swinging it up and down.

2. A mud gun as set forth in claim 1, and driving connections having engagement with the shaft.

3. A mud gun including, an upright fluid supply member, an elbow having its vertical member mounted to rotate in the upper end of the supply member, an arm extending from the vertical member of the elbow, a barrel having a medial shank directed laterally therefrom and rotatably mounted in the horizontal member of the elbow, and elements connected with the arm and the barrel for swinging the elbow and rocking the barrel.

4. A mud gun including, an upright fluid supply member, an elbow having its vertical member mounted to rotate in the end of the supply member, an arm extending from the vertical member of the elbow, a barrel having a medial shank fixed thereto and directed laterally therefrom and rotatably mounted in the horizontal member of the elbow, a driving shaft, a crank arm, gearing connected with the crank arm and the driving shaft, a link connecting the crank arm and the arm extending from the elbow, a rotating crank

mounted on the shaft, and linkage connections between the rotating crank and the barrel in rear of the shank.

5. A continuously moving mud gun including a barrel having a discharge nozzle at one end, a lateral inlet shank fixed to the medial portion of the barrel, and an upright elbow to one end of which the shank is rotatably connected and the other end of which elbow is rotatably mounted on an upright supply pipe, in combination with operating means connected with the vertical portion of the elbow and also connected with the barrel at a point offset from the shank including elements for continuously moving said elements and the barrel in a predetermined regular path.

6. A continuously moving mud gun including a barrel having a discharge nozzle at one end, a lateral inlet shank fixed to the medial portion of the barrel, and an upright elbow to one end of which the shank is rotatably connected and the other end of which elbow is rotatably mounted on an upright supply pipe, in combination with a rotatable shaft, elements connected with one end portion of the shaft and with the barrel beyond the shank for swinging said barrel in a regular up and down path, and other elements connected with the other end portion of the shaft and with the vertical end of the elbow for swinging said elbow in a regular path while said barrel is being swung.

7. A continuously moving mud gun including a barrel having a discharge nozzle at one end, an upright elbow having horizontal and vertical ends, the barrel being rotatably connected to the horizontal end of the elbow to swing up and down and said elbow having its vertical end rotatably connected with an upright supply conductor to swing horizontally, in combination with operating elements connected for continuous operation and having moving connections with the barrel and with the elbow for continuously moving said barrel up and down while swinging it laterally back and forth.

8. A mud gun including, an upright fluid supply member, an upright elbow having its vertical member mounted to rotate in the upper end of the supply member and disposed to swing horizontally, an arm extending from the vertical member of the elbow, a swinging barrel having a medial shank directed laterally therefrom and rotatably mounted in the horizontal member of the elbow, in combination with elements for swinging the elbow and rocking the barrel comprising a crankshaft, a crank arm, gearing connected with and between the crank arm and the crankshaft, a link connecting the crank arm and the arm extending from the elbow, a rotating crank mounted on the crankshaft, a linkage connections between the rotating crank and the barrel in rear of the shank, a driving shaft, gearing connecting the driving shaft with first named gearing, and driving means connected with the driving shaft.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,880,272	Panther, Jr.	Oct. 4, 1932
2,082,330	Frede et al.	June 1, 1937
2,111,553	Chew	Mar. 22, 1938
2,265,063	Crumley	Dec. 2, 1941
2,502,763	Swift	Apr. 4, 1950