Dec. 4, 1923. 1,475,989

H. E. EASTERDAY

CORE REMOVER

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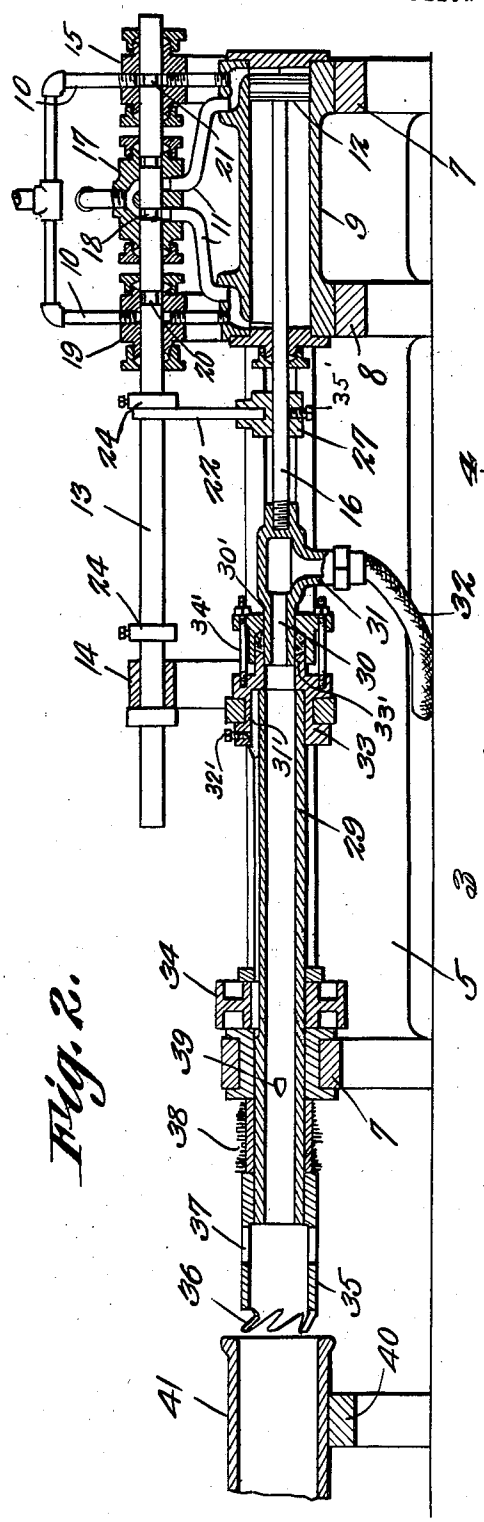


Fig. 2.

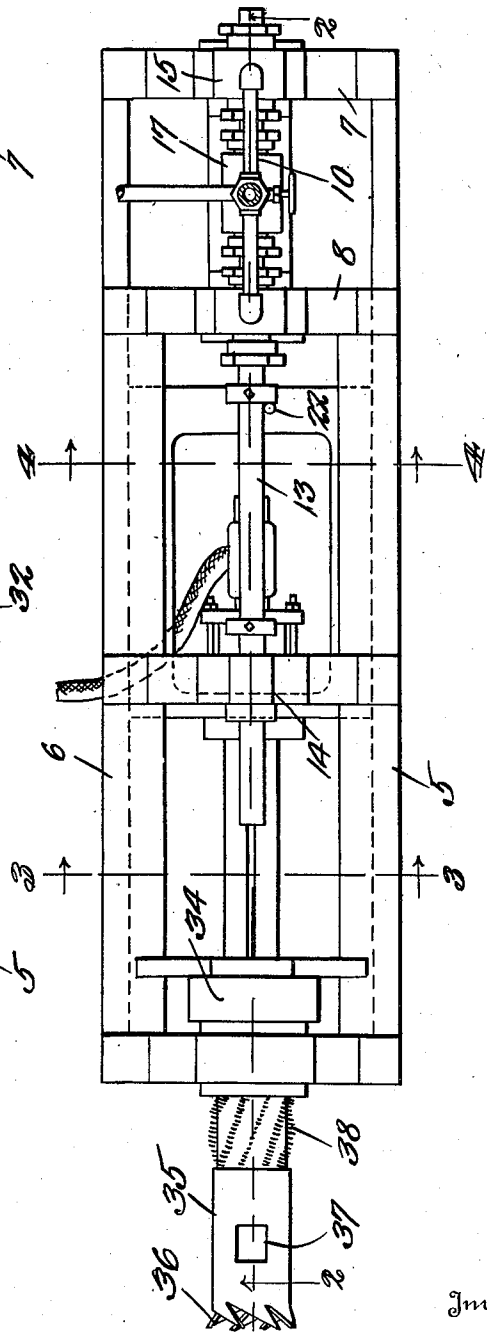


Fig. 1.

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Fig. 3.

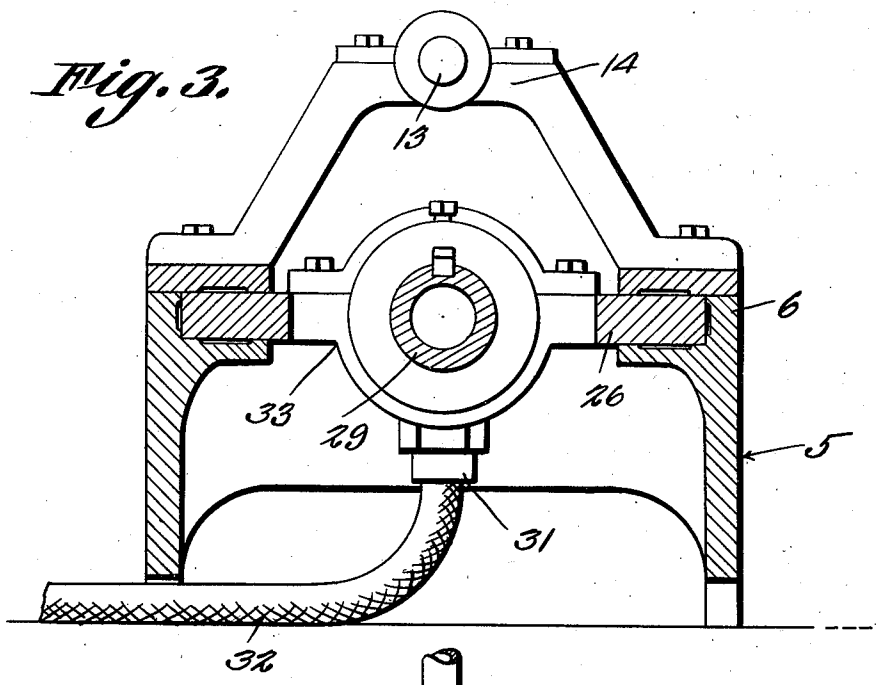
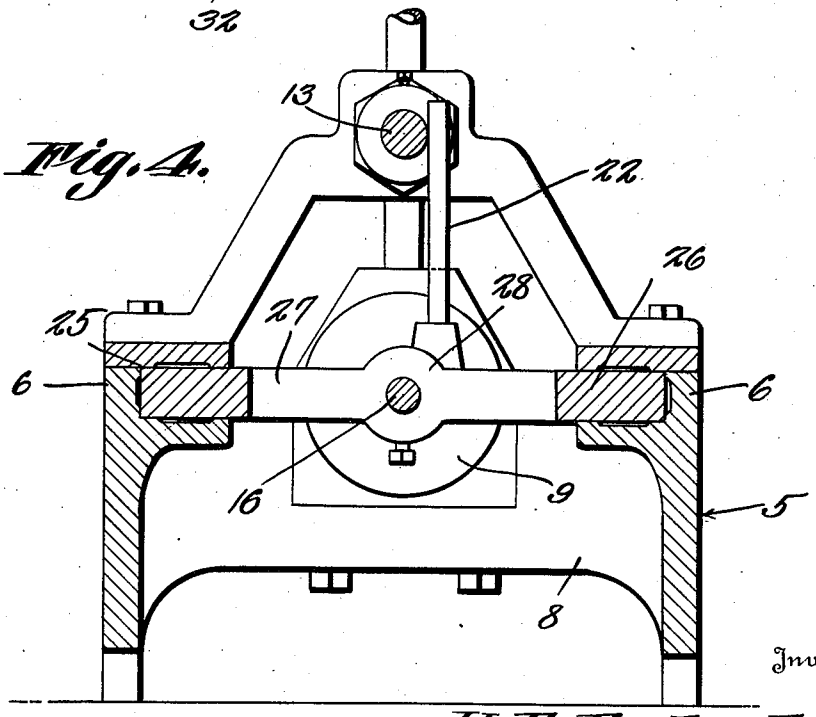


Fig. 4.



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Patented Dec. 4, 1923. 1,475,989

UNITED STATES PATENT OFFICE.

HARRY E. EASTERDAY, OF MARTINSBURG, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO WILLIAM H. KENNEDY, OF BEDINGTON, WEST VIRGINIA.

CORE REMOVER.

Application filed September 9, 1922. Serial No. 587,131.

To all whom it may concern:

Be it known that I, HARRY E. EASTERDAY, a citizen of the United States, residing at Martinsburg, in the county of Berkeley and State of West Virginia, have invented a new and useful Core Remover, of which the following is a specification.

This invention relates to a machine for removing cores from lengths of pipe, after the pipe has been molded.

The primary object of the invention is to provide a machine of this character which will facilitate the removal of the usual sand core, and at the same time polish the inner wall of the pipe to the end that the pipe will be in condition for immediate use.

Another object of the invention is to provide suction controlled means for removing particles of sand from the pipe which may be dislodged from the wall of the pipe by the brush, forming a part of the machine.

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

Referring to the drawings:

Figure 1 is a plan view of a core removing machine constructed in accordance with the invention.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 1 and

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Referring to the drawings in detail the device embodies a frame indicated generally by the reference character 5, which frame includes side rails 6 which are connected as by means of the cross bars 7 disposed adjacent to the ends of the flange, and the cross bars 8, disposed intermediate the ends of the frame.

Supported at one end of the frame is the cylinder 9 which has communication with a suitable source of fluid supply, as through the pipes 10, the exhaust from the cylinder being carried off through the pipes 11 which also are in communication with the cylinder.

The valve controlling the operation of the piston 12, which operates in the cylinder 9 includes a relatively long rod indicated at 13 which rod is mounted in bearings 14 and 15 to reciprocate with the piston rod 16 to be hereinafter more fully described. The exhaust valve casing is indicated at 17 and is formed with suitable passage-ways communicating with pipes 11. This valve rod 13 is formed with grooves 18 that are alternately brought into registry with the pipes 11 to establish communication between pipes 11 and the atmosphere to exhaust the spent fluid from the cylinder.

The bearing 15 is constructed to provide a valve chamber through which the incoming fluid passes on its entrance to the cylinder 9, the same being directed to one end of the cylinder while the valve casing 19 which is in communication with one of the pipes 10, admits fluid to the opposite end of the cylinder 9 at predetermined intervals.

Grooves 20 and 21 are formed in the valve rod 13 which grooves are brought into registry with the intake pipe to admit fluid to the cylinder 9, the grooves being arranged so that when one groove is in a position to admit fluid to the cylinder 9, the opposite groove is out of registry with its intake pipe to the end that fluid is admitted to opposite ends of the cylinder 9, alternately.

From an observation of Figure 2, it will be seen that the groves 18 are arranged in such relation with the grooves 20 and 21 that while fluid is entering the cylinder 9 at one end thereof, fluid may be exhausting from the cylinder, at the opposite ends thereof. A valve actuating arm 22 is carried by the carriage, to be hereinafter described, and is designed to contact with the collars 24 of the rod 13 to move the rod and accomplish the operation of the valve elements, in a manner described. Thus it will be seen that as the piston rod moves within its cylinder, the operation of the valve rod is automatically controlled to regulate the passage of fluid to and from the cylinder 9.

The frame is formed with guideways indicated at 25 in which the carriage 26 operates, the carriage 26 including cross

arms 27 formed with bearings 28 that accommodate the hollow shaft 20, coupling 30 and rod 16. The coupling 30 has an extension 31 to which the hose 32 may be connected, the hose being in communication with the interior of the hollow shaft 29. In order that the rod 16 will reciprocate with the coupling 30, a set screw 35′ is provided and extends through the cross arm 27 associated with the rod 16 to bite into the rod 16 and secure the rod to the carriage.

A swivel joint is indicated at 33 and connects the hollow shaft 29 with the coupling 30, which in turn has connection with the piston rod 16 so that the shaft 29 may be reciprocated and at the same time rotated to accomplish the purpose of the invention. This coupling includes a sleeve 30′ positioned over the coupling 30, and a sleeve 31′ positioned over the shaft 29 the sleeve 31′ being secured against rotation with respect to the shaft 29 by means of the set screw 32′. An extension 33′ forms a part of the sleeve 31′ and is disposed within the sleeve 30′, packing being positioned between the sleeves 30′ and 31′ to insure a fluid-tight connection therebetween.

The sleeves 30′ and 31′ are secured together by means of the bolts 34′ that extend through suitable openings formed therein. Supported on the hollow shaft 29 is a pulley 34 which is keyed to the shaft and which transmits rotary motion to the shaft, through a belt and power device, not shown.

Disposed at one end of the shaft 29 is a bit 35 formed with teeth 36 that are designed to dig into the sand core filling the pipe section under operation, openings 37 being formed in the bit to allow sand dislodged by the teeth 36 to be drawn into the hollow shaft 29. Operating in proximity to the bit 35 is a wire brush 38 designed to contact with the inner surface of the pipe under operation to remove any particles of sand which may adhere to the inner wall of the pipe under operation.

Openings 39 are also formed in the hollow shaft 29 providing communication between the interior of shaft 29 and the pipe under operation, to allow particles of sand to be drawn from the pipe. It is to be understood that the hose 32 has connection with a suitable suction fan not shown, for creating a suction through the hollow shaft 29 to convey the particles of sand therethrough.

In the use of the device, a supporting frame which is indicated at 40 is disposed adjacent to the bit 35, which frame supports the pipe under operation, the pipe being indicated at 41, suitable means not shown being provided on the support for clamping the pipe under operation thereto.

The pipe under operation is placed with one end thereof adjacent to the bit 35, whereupon fluid is admitted to the cylinder, to the end that the piston 12 is driven into the pipe. Simultaneously with the movement of the bit through the pipe, the shaft 29 and its bit, are given rotary movements to the end that the rotating bit is driven through the pipe.

It follows that as the bit reaches the limit of its outward movement, the arm 22 contacts with the collar 24 with the result that the rod 13 is moved to bring the opposite intake port of the valve housing into communication with the cylinder 9 to the end that the piston 12 is moved in the opposite direction, withdrawing the bit from the pipe.

Having thus described the invention, what is claimed as new is:—

In a machine of the class described, a frame, a cylinder at one end of the frame, a rod carrying a piston movable in the cylinder, a coupling supported at one end of the rod and carrying an extension, a hollow shaft associated with the coupling, means for securing the hollow shaft to the coupling to permit of rotary movement of the hollow shaft, a hollow bit mounted on the free end of the hollow shaft and having openings disposed adjacent to the outer end of the hollow shaft, means supported by the hollow shaft and disposed adjacent to one end of the bit, for brushing the surface of the article under treatment and means for rotating the shafts.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HARRY E. EASTERDAY.

Witnesses:
R. Lea Hammann,
Paul H. Martin.