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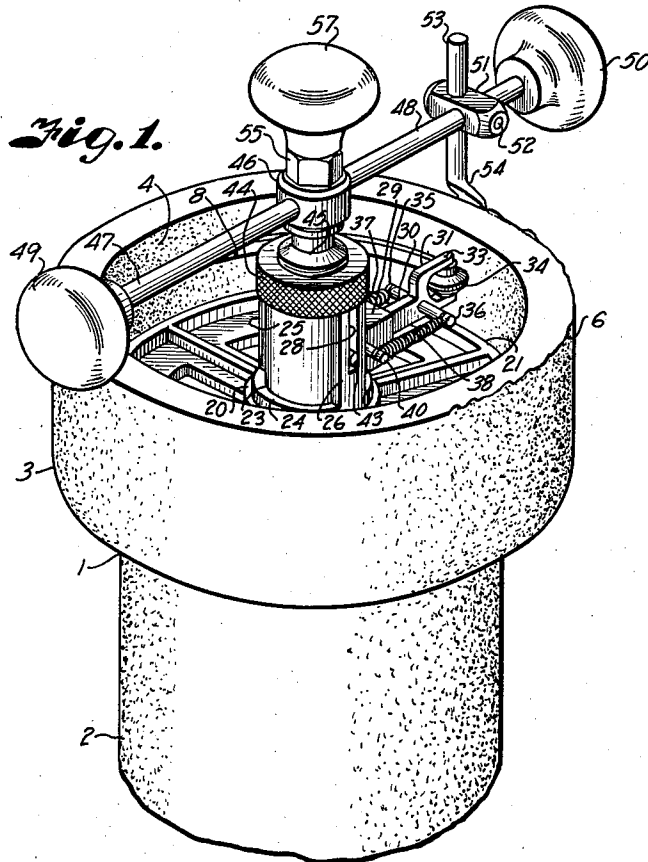
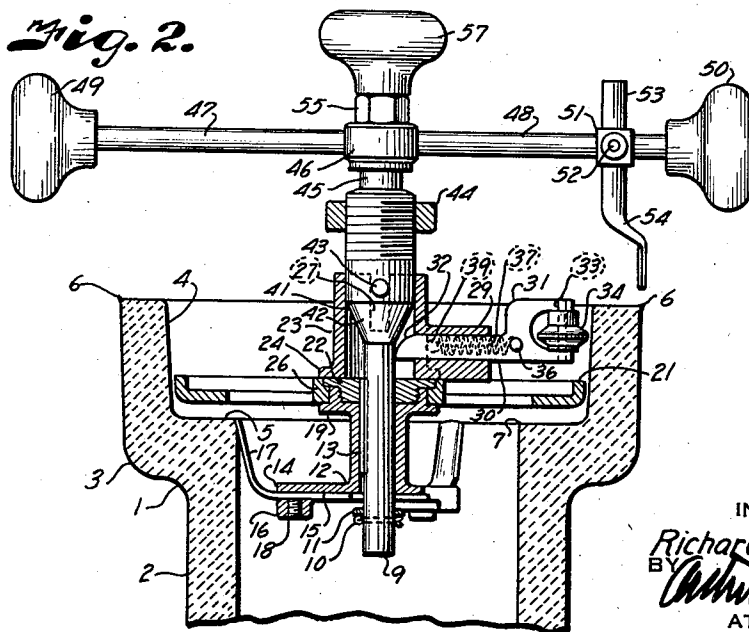
R. I. JONES

2,291,899

FINISHING TOOL

Filed April 8, 1940

2 Sheets-Sheet 1



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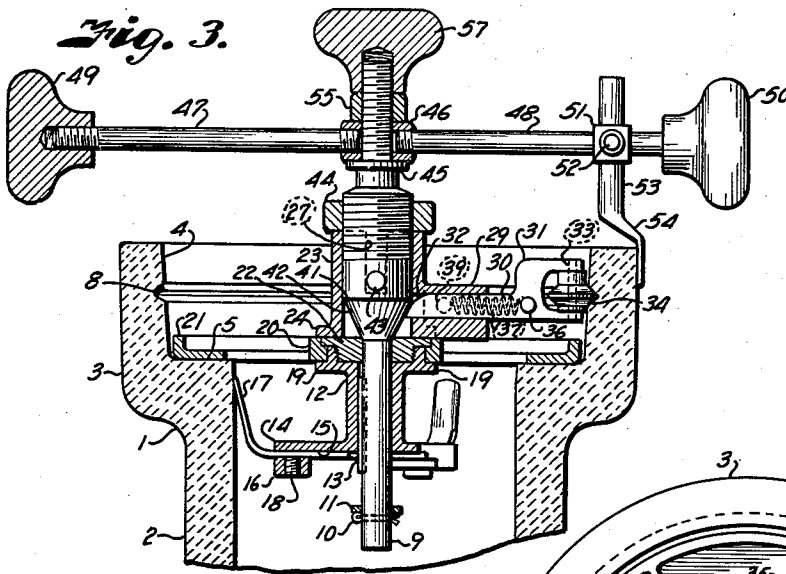
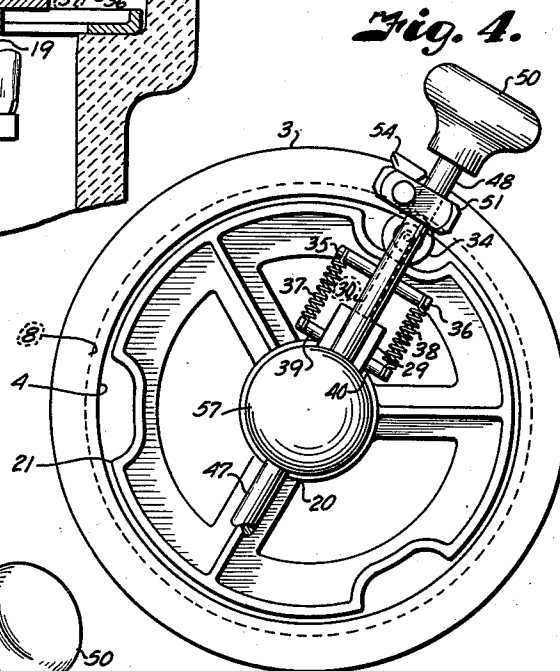
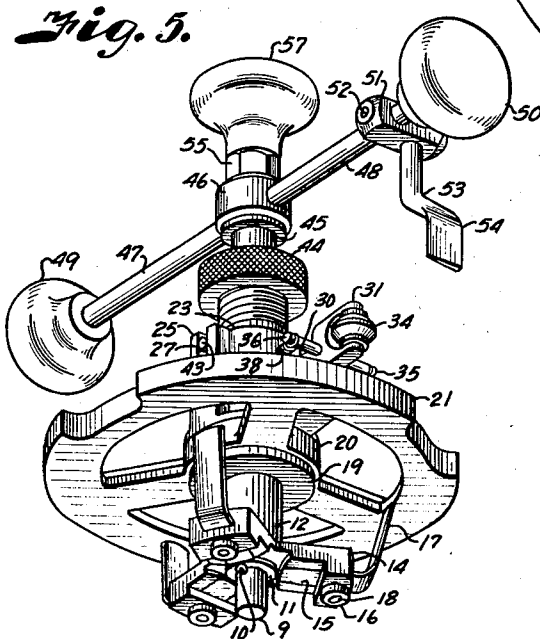
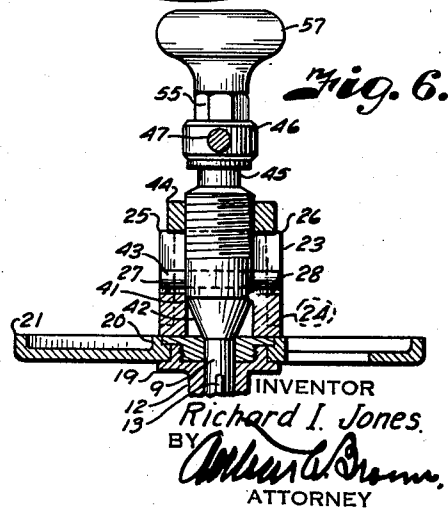
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FINISHING TOOL

Filed April 8, 1940

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,291,899

FINISHING TOOL

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Application April 8, 1940, Serial No. 328,542

2 Claims. (Cl. 25—105)

This invention relates to finishing tools and more particularly to finishing tools for clay and like pipe, the principal objects of the invention being to provide a convenient, economical and efficient finishing tool for such pipe.

In the manufacture of vitrified clay sewer and like pipe, clay is extruded through a press into suitable shapes, for example, cylindrical bodies, having integral barrels and end sockets or bells. The shapes are cut to desired size and removed from the press. During the pressing operations the ends of the pipe will sometimes, unintentionally, be provided with frayed, thin edges of clay that are usually attached to the top of the socket as well as the inside of the barrel at the top. It has heretofore been the practice to remove the noted excess material by hand, for example with an ordinary case or butcher knife in the hands of the pipe finisher.

Other objects of the invention are, therefore, to provide a finishing tool that is capable of performing a plurality of finishing operations on the pipe with one or more movements of the operators hands, after the tool has been placed in the pipe; to provide for removal of excess clay from around the top of the socket of the pipe, as well as that inside the barrel at the top; to provide for the placement of a corrugation or corrugations or threads or grooves on the socket end of the pipe, particularly on the inside thereof; and to provide improved elements and arrangements of them in a finishing tool of the character noted.

In accomplishing these and other objects of the present invention, I have provided improved details of structure the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a perspective view of the socket end of a vitrified clay sewer pipe showing a finishing tool embodying the features of the present invention applied thereto.

Fig. 2 is a detail vertical cross-section through the pipe and portions of the tool, particularly illustrating the relation of the pipe finishing elements of the tool to the portions of the pipe to be finished as the tool is in semi-seated relation to the socket.

Fig. 3 is a vertical cross section through the pipe and tool showing the tool in seated relation to the pipe and the finishing elements in operative position.

Fig. 4 is a plan view of a pipe having my improved finishing tool applied thereto.

Fig. 5 is a bottom perspective view of my improved finishing tool.

Fig. 6 is a detail vertical cross-section through the finishing tool, particularly illustrating an arrangement for adjusting the depth of thread to be placed in the socket of a pipe relative to the end of the pipe.

Referring more in detail to the drawings:

1 designates a pipe that is preferably formed of extruded vitrified clay or the like, which pipe has a barrel 2, Fig. 2, and a socket or bell end 3, having a socket 4 therein provided with a shoulder 5 at the lower end of the socket and upper end of the barrel.

Upon extrusion of clay into pipe forming shapes, frayed, thin edges of clay are attached to the socket as indicated at 6, Fig. 1, and 7, Fig. 2. It is desirable to remove such excess material in order to finish the pipe and give it a more satisfactory appearance. It is also desirable to provide a corrugation, thread or groove 8 on the inside of the socket of the pipe in order to facilitate bonding, as by cementing or the like, bell or socket ends of pipe sections with adjacent barrel ends of pipe sections to form a continuous line of pipe.

9 designates a shaft, rod, bar, or the like that forms a support and is adapted to be inserted substantially axially within the pipe socket and barrel. The shaft 9 is provided with an aperture for receiving a cotter or like pin 10 upon which rests a washer or similar stop 11. The stop 11 is to limit downward movement of a casting 12 that is keyed, as at 13, to the shaft 9 above the stop.

The lower end of the casting 12 is preferably provided with a plurality of radial arms 14 having grooves 15 on the bottom faces thereof and depending bosses 16 at the outer ends and lower faces thereof, the bosses substantially enclosing the outer ends of the grooves and providing slotted supports for the inner ends of upwardly and outwardly curved blades 17.

The blades are normally laterally slideable in the grooves 15 and are adjustable relative to the shaft 9, as by reciprocating the blades in the grooves to a desired extended condition. Set screws 18 are preferably mounted in threaded apertures in the bosses 16 the inner ends of which screws bear against the blades to secure them in desired position. The upper end of the casting 12 is preferably provided with an annular flange 19 that forms a shoulder for seating the hub 20 of a spider 21, the spider having an outer periphery of approximately the diameter

of the inner diameter of the socket 4. The spider 21 is rotatably mounted on the flange 19 about the shaft 9 and is held against vertical movement by a plug 22 that is threaded into a threaded socket at the upper extremity of the casting 12.

Mounted on the shaft 9 above the hub 20 of the spider and plug 22 of the casting 12 is a casting 23 of generally cylindrical shape having an annular flange 24 seating on the hub of the spider for aiding in preventing upward movement of the spider, while allowing rotation of the spider relative to the shaft 9.

The casting 23 is preferably provided with laterally directed bosses 25 and 26, as clearly shown in Figs. 1 and 6, which bosses have vertically arranged grooves 27 and 28 therein that are open at the top of the casting. The casting is also provided with a boss 29 extending laterally of the casting preferably approximately midway between the bosses 25 and 26 and at one side thereof. The boss 29 has a longitudinal bore therein for receiving an arm 30 on a thread cutter support 31. The inner end of the arm is curved, as at 32, in an inward and downward direction from the top face of the arm and the outer end of the arm terminates in a yoke, the arms of which have aligned bearing apertures for seating a shaft 33 on which a cutter 34 is rotatably mounted.

It is normally desirable to maintain the cutter 34 in inwardly spaced relation to the socket it is to act upon and to this end the support 31 is provided with laterally directed pins 35 and 36 for supporting the outer ends of springs 37 and 38, the inner ends of which springs are mounted on laterally directed pins 39 and 40 which, in turn, are mounted on the boss 29 of the casting 23.

In order to extend the cutter 34 outwardly into cutting engagement with the inside face of the socket 4, the shaft 9 is provided with an enlargement 41 having an upwardly and outwardly tapered substantially conical surface 42 that is engageable with the curved surface 32 of the arm 30, it being apparent that as the shaft 9 is lowered into the socket the tapered surface 42 engages the curved surface 32 to force the arm 30 outwardly and the cutter into the wall of the pipe. Vertical movement of the shaft 9 is controlled by laterally directed pins 43 that ride in the grooves 27 and 28 in the bosses 25 and 26 of the casting 23.

The enlargement 41 on the shaft 9 is also preferably provided with threads for receiving a lock nut 44 that may be threaded up and down on the enlargement in such a manner as to allow variable amounts of vertical movement of the shaft relative to the casting 23.

A spacer 45 is also mounted on the shaft 9 above the enlargement 41 and supports a hub 46 which is fixed to the shaft. Radial arms 47 and 48 are mounted in the hub 46 and have handling devices 49 and 50 at their outer ends by which manipulation of the tool is facilitated. The arms 47 and 48 are preferably of an overall length in excess of the diameter of the socket of the pipe and one of the arms is preferably provided with a lug 51, that is adjustably mounted on the arm as by a set screw 52. A cutter 53 is mounted in the lug 51 which cutter preferably consists of a base mounted in the lug and an angularly and downwardly turned sharpened cutting portion 54 engageable with the outer upper edge of the socket of the pipe.

A retaining device 55 is preferably mounted on the shaft 9 above the hub 46 and a handling device 57 is preferably mounted on the shaft above the retaining device 55.

The operation of a finishing tool constructed as described is as follows:

Assuming a pipe to be extruded from a press and to be provided with a barrel and socket as shown, it is desired to remove the rough or frayed edges from the pipe. The finishing tool may be picked up by the handling devices 49, 50 or 57 and the lower end of the shaft 9 applied to the barrel of the pipe. The blades 17 on the casting 12 engage the barrel of the pipe and, upon manipulation of the handling devices 49 and 50, cut off any rough edges of the barrel and bottom of the socket. Upon removal of such rough edges, the spider 29 seats on the shoulder 5 of the socket and forms a support for the finishing tool which may then be rotated. Upon seating of the spider on the socket shoulder, the blade 54 engages the upper, outer edge of the socket, and upon rotating the shaft, trims and finishes such surfaces.

Downward movement of the handling device 57 forces the shaft 9 downwardly relative to the casting 23 to cause engagement of the tapered surface 42 of the shaft with the curved surface 32 of the cutter arm.

The cutter 34 is thus moved outwardly into cutting engagement with the inside face of the socket and upon continued rotation of the shaft 9 cuts the groove 8 in the socket.

The depth of the groove relative to the outer end of the socket may be adjusted by manipulation of the lock nut 44 on the threaded end of the enlargement 41 of the shaft 9. Relief of downward pressure on the handling device 57 allows the springs 29 to draw the cutter inwardly toward the shaft and out of engagement with the socket. The finishing tool may then be removed for performance of similar operations on other pipe sections.

It is apparent, therefore, that I have provided a convenient, economical, and efficient finishing tool that is capable of a plurality of finishing operations on pipe with one or more movements of an operator of the tool.

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

1. In a finishing tool, a shaft, a cutting device keyed to said shaft and engageable with a pipe barrel at a socket end of a pipe, a spider rotatably mounted on said shaft and engageable with a shoulder at the socket end of said pipe for rotatably supporting said shaft on said pipe, a cutting device mounted for longitudinal movement on said shaft and having a laterally movable cutter engageable with the socket of said pipe, means on said shaft for moving the laterally movable cutter into and out of engagement with said socket, means for limiting longitudinal movements of said longitudinal movable cutting device relative to said shaft, handling devices on said shaft, and a cutting device on said handling devices engageable with outer surfaces of said pipe for trimming the same in response to rotation of said shaft.

2. In a finishing tool, a shaft, a cutting device carried by the lower portion of the shaft and engageable with a pipe barrel at the socket end of a pipe, a handling device fixed to the upper portion of the shaft and provided with a cutting device engageable with the outer surface of said pipe for trimming the same in response to rota-

tion of said shaft, a spider rotatably mounted on the shaft and engageable with a shoulder at the socket end of the pipe for rotatably supporting said shaft on said pipe, a cutting device mounted for longitudinal movement on the shaft and located between said cutting devices and above the spider and having a laterally movable

5 cutter automatically maintained out of pipe engaging positions when the spider is unseated, and means carried by the shaft for moving the laterally movable cutter into engagement with the pipe when the spider is seated thereon.

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