

(No Model.)

2 Sheets—Sheet 1.

A. F. FOSTER.

SCREW DUMMY FOR SEWER PIPE DIES.

No. 521,445.

Patented June 12, 1894.

Fig. 1.

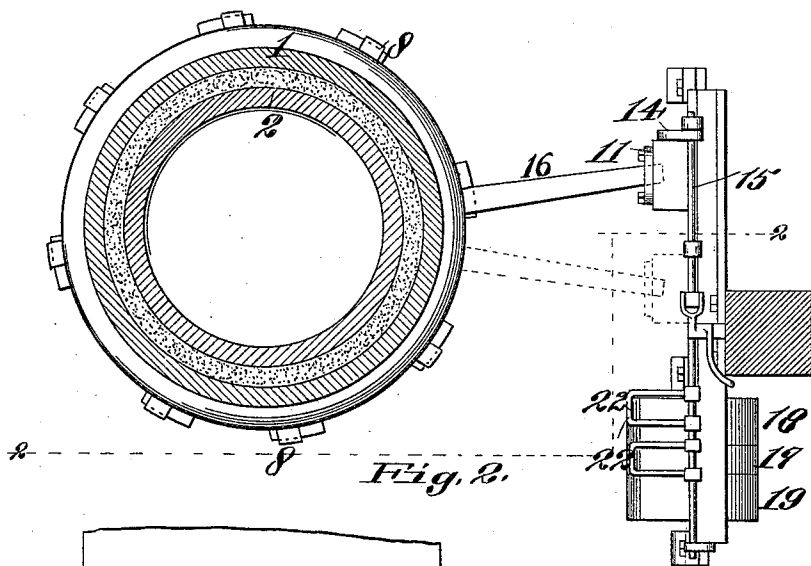
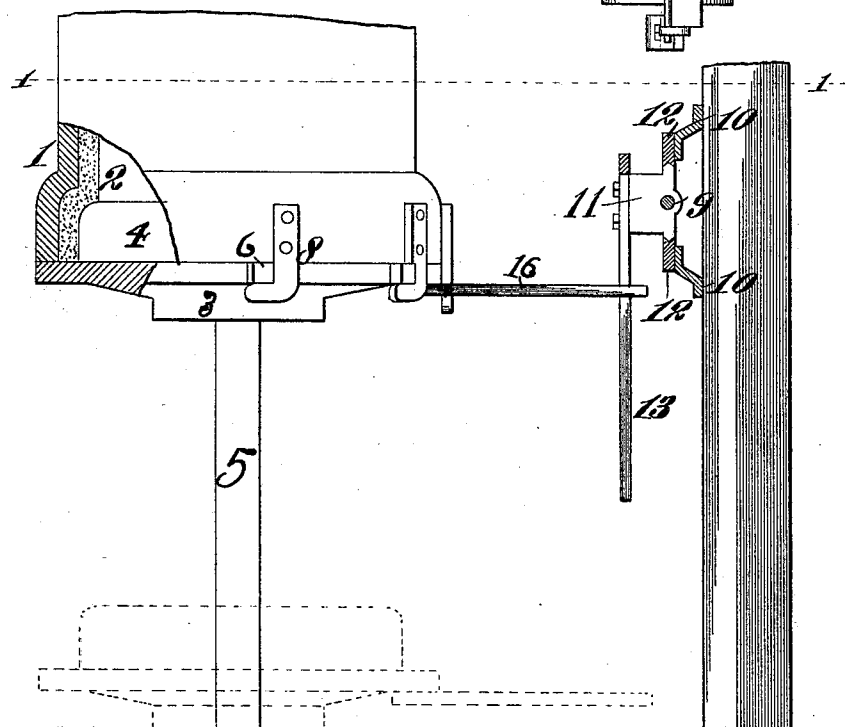


Fig. 2.



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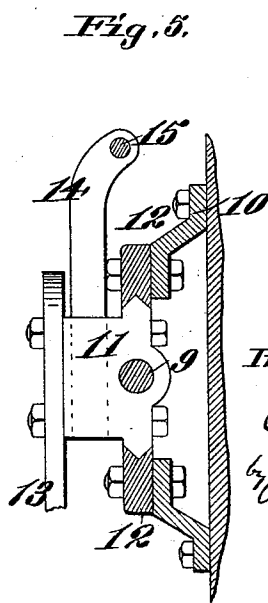
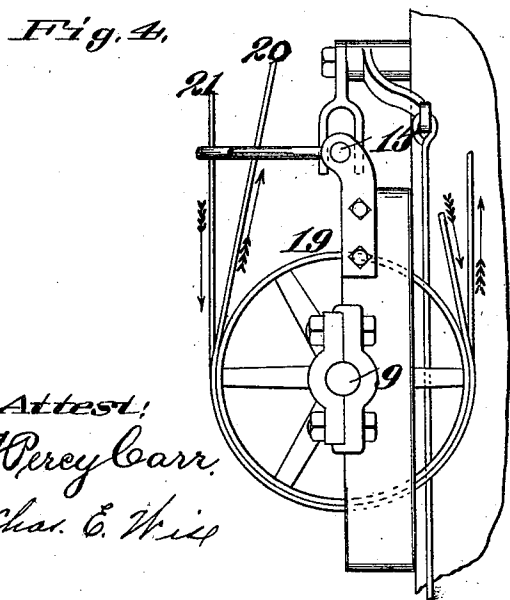
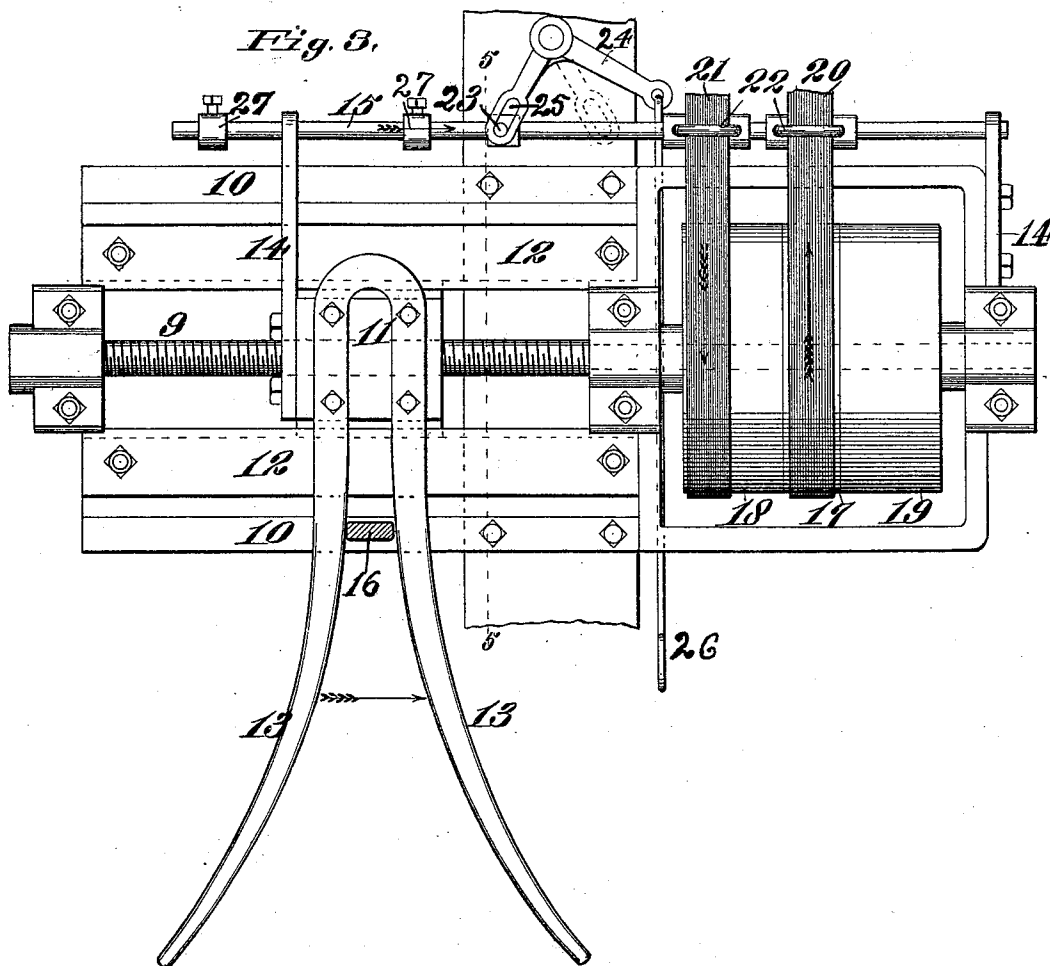
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2 Sheets—Sheet 2.

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SCREW DUMMY FOR SEWER PIPE DIES.

No. 521,445.

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UNITED STATES PATENT OFFICE.

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SCREW-DUMMY FOR SEWER-PIPE DIES.

SPECIFICATION forming part of Letters Patent No. 521,445, dated June 12, 1894.

Application filed April 22, 1893. Serial No. 471,392. (No model.)

To all whom it may concern:

Be it known that I, ALFRED F. FOSTER, a citizen of the United States, residing at Alton, in the county of Madison and State of Illinois, have invented a certain new and useful Improvement in Screw-Dummies for Sewer-Pipe Dies, of which the following is a specification.

My invention relates to sewer-pipe dies, and has for its principal object to utilize mechanical energy in unlocking the socket-plug of the socket-die from the main body thereof after the formation of the bell-end of the pipe.

My invention consists in an attachment for applying mechanical power to turn the socket plug of the die; it also consists in the particular arrangements and combinations of parts hereinafter shown and described.

In the accompanying drawings, which form a part of this specification, Figure 1 is a plan of my device applied to a sewer-pipe die which is shown in section on the line 1—1 of Fig. 2. Fig. 2 is a vertical section of my device on the line 2—2 of Fig. 1, showing the die in elevation. Fig. 3 is a front elevation of my device. Fig. 4 is an end elevation thereof, omitting the lever fork; and Fig. 5 is a sectional detail showing the guide in which the threaded block travels.

An ordinary sewer-pipe press consists of an upright receptacle for the clay, to the lower end of which is fastened the pipe-die. This die consists of a hollow cylindrical neck, 1, provided with a flange at its upper end for securing it to the clay-cylinder or receptacle. The lower end of the neck has a bell-shaped extension. Inside of the hollow neck, is a circular bell or cone, 2, which is fixed in position by a standard passing through the clay receptacle or cylinder and supported from above. The bell-shaped extension of the die is closed by a socket-plug, 3. This socket-plug consists of a head-block or plate and an inwardly extending circular portion, 4, fixed thereto, whereby said circular portion is adapted to enter said extension, leaving an annular space between them. The socket-plug is journaled on the upper end of a vertical shaft or post, 5, so as to rotate thereon. The socket-plug is provided with lugs, 6, in its circumference, and the die is provided with depending hooks, 8, corresponding thereto, arranged so that a partial rotation of the

plug will cause said hooks and lugs to interlock and hold the plug in position against downward pressure. The post or shaft, 5, on which the socket-plug is journaled, is arranged to move vertically in guides, and in order to facilitate such movement, a counterweight is generally connected to said socket-plug. A piston in the clay-receptacle is rigidly connected to the piston of a steam cylinder fixed above said receptacle. When steam is admitted to said cylinder, the pressure on its piston is transmitted to the piston in the clay-receptacle, and the moist clay is forced through the annular channel between the neck of the die and the bell inside thereof, filling the annular space between the socket-plug and the extension of the die, and thereby forming the bell-end of the pipe. After the socket-plug is unlocked, the piston in the clay-cylinder forces the mass of moist clay through the annular channel between the neck of the die and the bell inside thereof, so as to form the body of the pipe. During the formation of the bell end of the pipe, the socket-plug is locked by the hook-and-lug locking devices, and on account of the adhesion of the clay, great power is necessary to turn and unlock said socket-plug, to permit the formation of the body of the pipe. The dummy now to be described is designed particularly for unlocking said socket-plug.

A screw-threaded shaft, 9, is journaled in a fixed frame, 10, and a correspondingly screw-threaded block or crosshead, 11, travels along said shaft. This block or crosshead is represented as having its edges beveled and the frame as having slotted plates, 12, corresponding to said edges to serve as guides, though, obviously, numerous other devices may be used to keep said block from turning. The block has a pair of arms, 13, diverging downwardly and an upwardly extending standard or projecting piece, 14, for the belt shifting rod or bar, 15. A lever arm, 16, fixed to the socket plug, 3, is arranged to lie between the diverging arms of lever fork, 13. The threaded shaft, 9, is part of or rigidly connected with a shaft on which are three pulleys of the same diameter arranged side by side. The intermediate pulley, 17, of the three is fixed to the shaft; the other two pulleys, 18, 19, are loose and of twice the width

of the fixed pulley, 17. Belts, 20, 21, communicate motions of opposite directions from their driving shaft or shafts to the respective pulleys onto which they are shifted; and
 5 whichever belt occupies the fixed pulley, 17, gives direction to the rotation of the shaft, 9, and therefore to the direction of travel of the threaded block or crosshead, 11, thereon.

In order to shift the belts, a longitudinally
 10 sliding bar, 15, is arranged in standards, 14, one of which may be fixed to the traveling block or cross-head, 11, as shown. This sliding bar is provided with the common loops or guides, 22, through which the belts run, and
 15 which are so arranged as to keep the belts the width of the intermediate pulley apart. The sliding bar is provided with a pin 23; and a bell-crank lever, 24, pivoted to the frame, has an elongated slot, 25, in one arm, through
 20 which said pin passes, and the other arm is provided with a hand-bar, 26, or other suitable device for operating the lever. The belt-shifting mechanism is adjusted so that at its extreme movements one belt or the other
 25 drives the fixed pulley; but in the intermediate position of the shifting device, both belts are on the loose pulleys at the same time, the belts being always separated from each other by slightly more than the width of
 30 the fixed pulley.

A tappet or set-collar stop, 27, either fixed or adjustable, is provided on the shifting bar, 15, on each side of the standard or other fixed projecting piece, 14, on the traveling block.
 35 As the main function of the whole attachment or dummy is to turn the socket-plug of the die, these tappets should be so located on the bar, that the standard or other projection shall strike such tappets and move the bar
 40 and shift the belt from the fixed pulley as soon as the socket-plug has made a sufficient turn to lock or unlock its lugs. The location of the tappets to effect this result may easily be determined by a skilled mechanic.

45 The operation of this device is as follows: Suppose the bell-end of the pipe to have been formed as hereinbefore described, but still in the die. In this position, the socket-plug is locked by the hooks and lugs, and its lever arm lies between the depending arms or fork
 50 of the screw-threaded traveling block; and the two belts are running on the loose pulleys so that the screw-threaded shaft is not rotated. In order to disengage the socket-plug, the operator pulls the hand-bar attached to the bell-crank lever. The motion of the bell-crank lever is communicated by the pin-and-slot connection to the sliding bar, and the movement
 55 of the sliding bar shifts one of the belts onto the fixed pulley of the screw-threaded shaft. The rotation of the screw-threaded shaft thus effected causes the cross-head or block which fits thereon to move longitudinally along its guides, and the movement of this
 60 traveling block causes its depending arm to carry with it the lever arm of the socket-plug of the die, and thereby turn the socket-plug

itself so as to disengage its lugs from the hooks of the die. As soon as the lugs are disengaged from their corresponding hooks, the
 70 socket-plug, which is held in place by its counter-weight, is free to be moved downwardly as the press forces the clay through the pipe former. The socket-plug thus serves as a platform for the pipe as it issues from
 75 the die. The traveling block continues to move until its upright or projecting piece strikes and moves the tappet of the sliding bar so as to shift the belt off of the fixed pulley and thereby stop the motion of the shaft. 80
 In setting the device for a repetition of this operation, the socket-plug is raised to the die, the diverging arms of the traveling block determining the proper position therefor by serving as guides for its lever arm. For this
 85 purpose, the divergence of the lower ends of said arms should be great enough to allow for the rotary motion of the socket-plug in its downward movement and also for the movement of the screw-threaded block after the socket-plug is moved down. When the socket-plug is raised, the operator manipulates the bell-crank in the opposite direction to that given for effecting the above-described operation, thereby shifting the belts so that the
 90 belt which in that operation ran on the loose pulley now runs on the fixed pulley, and thereby reverses the direction of rotation of the shaft. The traveling block is thus moved backwardly, carrying with it the lever arm of
 95 the socket-plug and the lugs of the socket-plug are thereby brought into engagement with their corresponding hooks, whereby the socket-plug is locked in place. When the socket-plug is locked, the projecting piece on
 100 the traveling block strikes and moves the tappet on the sliding bar so as to shift the driving belt onto a loose pulley, and the operation stops automatically.

Numerous changes in the details may readily suggest themselves, and I do not wish to limit myself to the precise construction shown, nor to the use of my invention only in connection with sewer-pipe presses. By reason
 105 of the power being applied by means of the screw-thread, the dummy acts steadily and evenly and is especially free from any sudden jerk, which it is important to avoid.

What I claim as new, and desire to secure by Letters Patent, is— 120

1. The combination with a die having a socket-plug, of a mechanism for moving said socket-plug, said mechanism consisting of a screw-threaded shaft and means for driving the same, and a screw-threaded block working thereon, and means for transmitting the motion of said threaded block to said socket-plug, substantially as described. 125

2. The combination with a pipe die having a rotary socket plug and a locking device therefor, said socket-plug having a lever arm fixed thereto, of a device for applying power to said lever arm, said device comprising a screw-threaded shaft and means for driving 130

the same, and a screw-threaded block working on said shaft and connected to said lever arm, substantially as described.

3. The combination with a pipe-mold having a rotary socket-plug and a post on which said socket-plug is journaled so as to be free to rotate and move longitudinally therewith, and a hook-and-lug locking device holding said socket-plug in position, said socket-plug having a lever arm fixed thereto, of a device for applying power to said lever arm, said device comprising a screw-threaded shaft and means for driving the same and a screw-threaded block working on said shaft, and connected to said lever arm, substantially as described.

4. The combination with a pipe-mold having a rotary socket-plug and a post on which said socket-plug is journaled so as to be free to rotate and move longitudinally therewith, and a hook-and-lug locking device holding said socket-plug in position said socket-plug having a lever arm fixed thereto, of a device for applying power to said lever arm, said device comprising a screw-threaded shaft and means for driving the same and a screw-threaded block working on said shaft, and downwardly diverging arms on said block between which said lever arm is arranged, substantially as described.

5. The combination with a pipe-die having a rotary socket-plug and a hook-and-lug lock-

ing device for holding said socket-plug in position, and a lever arm fixed to said socket-plug, of a screw-threaded shaft having two loose pulleys and an intermediate fixed pulley thereon, a screw-threaded block working on said shaft, a projecting piece fixed to said block and downwardly diverging arms on said block between which said lever arm is arranged, a sliding bar carrying loops through which the pulley belts pass and tappets on said sliding bar arranged to be struck by said projecting piece, substantially as described.

6. The combination with a pipe-die having a rotary socket-plug and a hook-and-lug locking device for holding said socket-plug in position, and a lever arm fixed to said socket-plug, of a screw-threaded shaft having two loose pulleys and an intermediate fixed pulley thereon, a screw-threaded block working on said shaft, a projecting piece fixed to said block and downwardly diverging arms on said block between which said lever arm is arranged, a sliding bar carrying loops through which the pulley belts pass and tappets on said sliding bar arranged to be struck by said projecting piece, and a device for positively operating said sliding bar, substantially as described.

A. F. FOSTER.

Witnesses:

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