W. A. REES.

PIPE MAKING MACHINE.

APPLICATION FILED SEPT. 29, 1910.

1,007,974.

Patented Nov. 7, 1911.

3 SHEETS—SHEET 1.

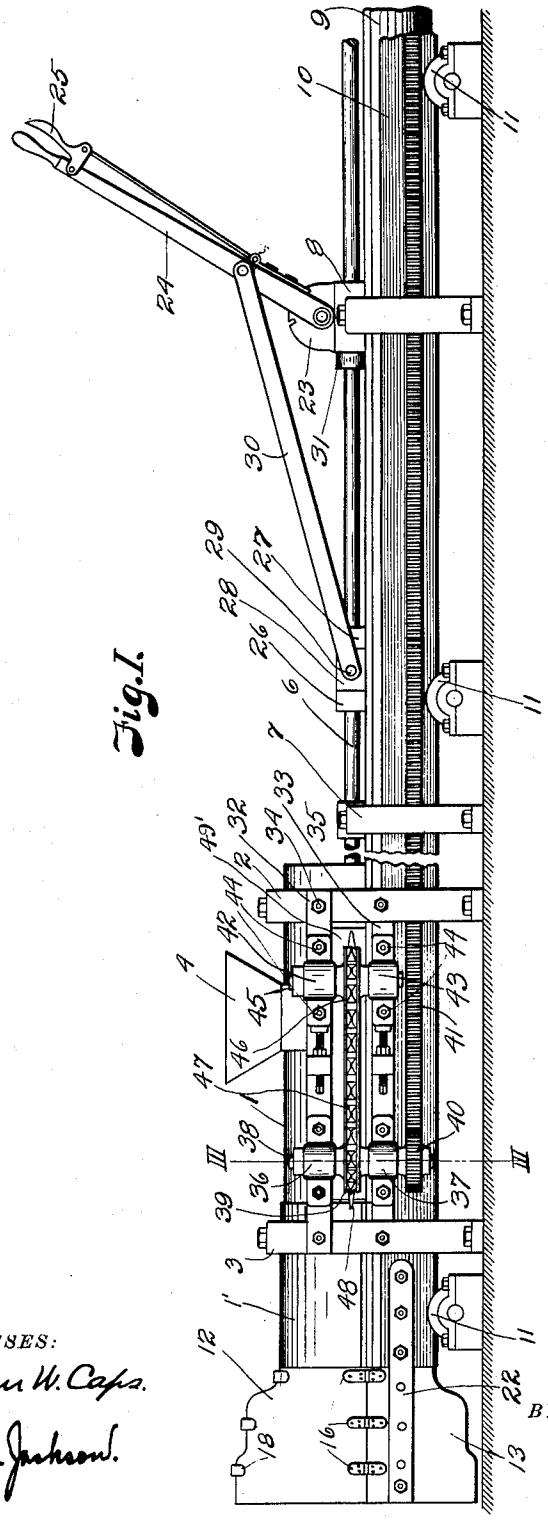

Fig. I.

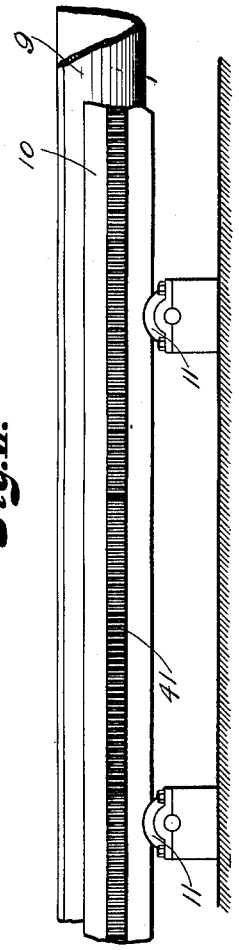

Fig. II.

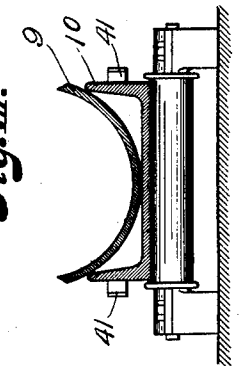

Fig. III.

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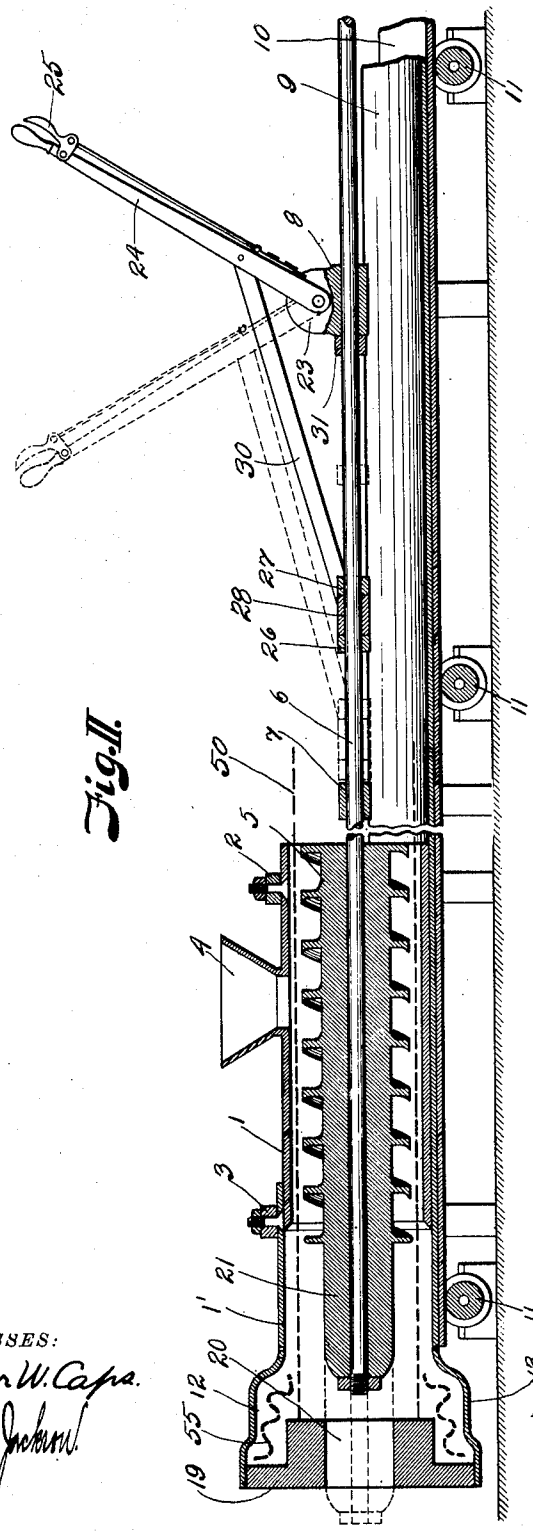

Fig. II.

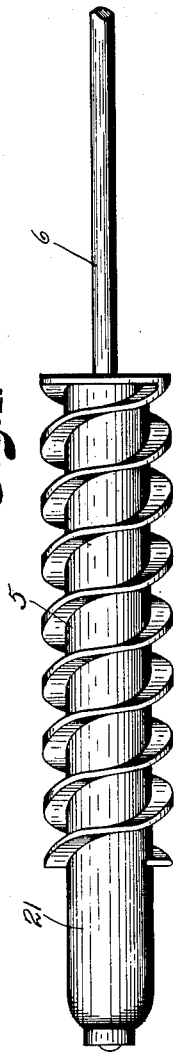

Fig. V.

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3 SHEETS—SHEET 3.

Fig. III.

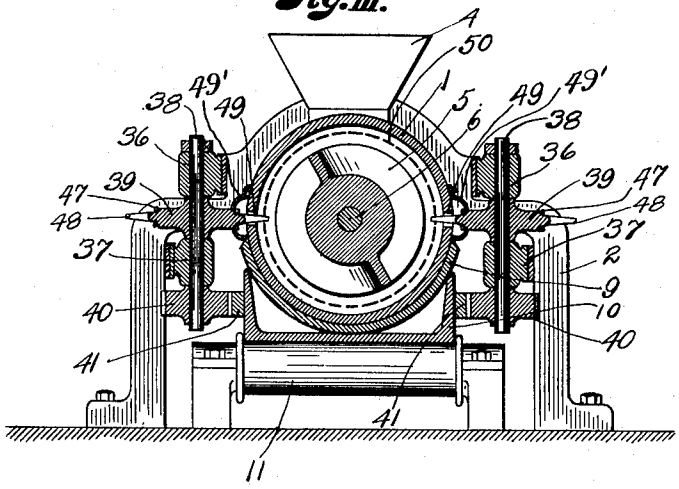


Fig. VIII.

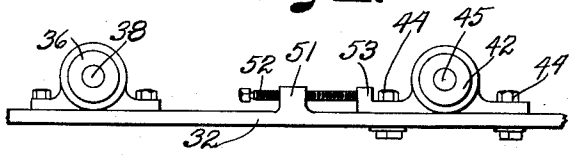


Fig. IX.

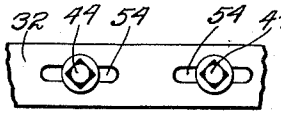
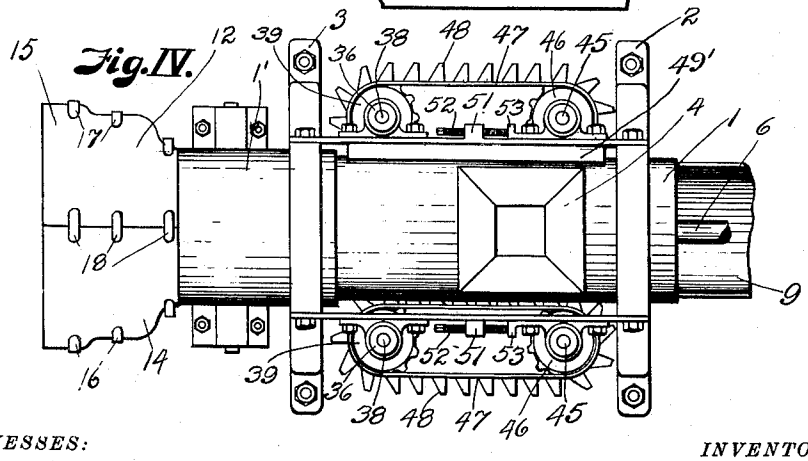


Fig. IV.



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UNITED STATES PATENT OFFICE.

WALTER A. REES, OF SAN ANTONIO, TEXAS.

PIPE-MAKING MACHINE.

1,007,974. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed September 29, 1910. Serial No. 584,403.

To all whom it may concern:

Be it known that I, WALTER A. REES, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented certain new and useful Improvements in Pipe-Making Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to pipe making machines and more particularly to a device of that class in which concrete, clay or shale is formed into pipe by a combined feeding and molding mechanism.

It is the principal object of the invention to provide a means for supporting the pipe during the forming operation, and upon which the pipe may be removed from the machine when completed and allowed to rest until seasoned or hardened.

A further object is to provide mechanisms for applying reinforcement to the pipe as it is formed.

A further object is to provide the other new and improved details of structure described and illustrated in the accompanying drawings, in which:—

Figure I is a side elevation of a pipe making machine constructed according to my invention. Fig. II is a longitudinal sectional elevation of same. Fig. III is a transverse section on line III—III, of Fig. I. Fig. IV is a plan view of the forward part of the machine, one of the formed shields being removed to illustrate the parts thereunder more clearly. Fig. V is a detail of the screw. Fig. VI is a detail elevation of the tray and its supporting means. Fig. VII is a transverse section of same. Fig. VIII is a detail view of the chain adjusting mechanism. Fig. IX is a detail view of the reverse side of same.

Referring more in detail to the parts:—1 designates a cylinder which is rigidly supported on legs 2—3, and provided with a hopper 4, through which concrete or other plastic material may be fed to the cylinder chamber.

Internally concentric with the cylinder 1 is a screw 5 which is rigidly secured to a revoluble power shaft 6, which is mounted in the bearings 7—8, and may be connected with a suitable motor (not shown). Immediately below the cylinder is a tray 9, the inner surface of which is of the same curvature as the outside of the cylinder, the tray being preferably carried in a channel frame 10, mounted on anti-friction rollers 11 and adapted for movement longitudinally, as presently more fully described.

1′ designates a curved plate that extends forwardly from the upper part of the cylinder to the tray member 9, with which it forms a continuation of the cylinder for shaping the upper part of the pipe.

At the forward end of the machine is a bell forming device 12, comprising a lower portion 13 and two lid members 14 and 15 which are pivotally connected with said lower portion by hinges 16 and 17 respectively, and are secured at the top by the latches 18 when closed. In the forward end of this bell is removably mounted a plug 19, the central part 20 of which is hollowed out to receive the core 21, the plug being adapted for retaining material while the bell is being formed and for shaping the inside of the bell.

It is obvious that the shape of the bell forming device may be varied to mold different styles of bells, or shape the pipe ends.

22 designates a bar which is riveted to the bell forming device and bolted to the channel frame 10, and is adapted for holding the bell forming device in position.

On the top of the bearing 8 is a bracket 23 which carries a lever 24, having a latch 25.

Rigidly mounted on shaft 6 are the collars 26 and 27 between which is loosely mounted a collar 28, having trunnions 29 to which a connecting link 30 is attached, the other end of the link being secured to lever 24. It is apparent therefore that the shaft 6 and screw 5 is adapted for longitudinal movement as well as revoluble movement and that these parts may be moved forwardly by the lever, as shown in dotted lines in Fig. II.

Rigidly mounted on shaft 6 is a collar 31 for limiting the backward travel of the shaft.

Secured to the leg members 2 and 3 by bolts 34—35 are the bars 32 and 33, carrying journal bearings 36 and 37, in which is revolubly mounted a shaft 38. Rigidly mounted on the shaft 38 between the journal bearings, is a sprocket wheel 39. Below

journal bearing 37 and rigidly mounted on shaft 38, is a gear 40 which is adapted to mesh with the rack members 41 on the side of channel frame 10. Also mounted on the bars 34 and 35, by bolts 44 are journal bearings 42 and 43.

Revolubly mounted in bearings 42—43, in line with sprocket wheel 39, is a shaft 45, upon which is rigidly mounted the sprocket wheel 46 between said journal bearings.

Running over the sprocket wheels 39—46, is a chain 47, which has projecting members 48 of suitable shape and form to project through a slot 49 in cylinder 1 and engage a wire mesh or like form of reinforcement 50, and carry it along when the screw is operated to forward the pipe.

Rigidly mounted on cylinder 1 are shields 49′, which are adapted to fit closely around chain 47 and slot 49 so as to prevent any considerable loss of the plastic material. To secure proper tension on this chain I provide a means of adjusting same, which consists of a lug 51 that is formed integral with the bar, and through which a screw 52 passes to rest against a lug 53 on the journal bearing 42. The bolts 44 are adapted to slide in grooves 54 when adjustment takes place.

In the bell forming device, I show a reinforcement 55 which is formed outside of the machine and placed in position by hand.

The operation of the machine is as follows:—A tray of the proper length, with its supporting frame, is placed in the machine as illustrated. A bell forming device of the shape desired is bolted to the supporting frame and the whole moved back until the bell mold rests against the member 1′. The lever 24 is then brought forward, thus moving the screw 5 forward and the core 21 within the aperture 20 of plug 19. The reinforcement is rolled into a cylinder from a flat piece, the edges being left free so as to slip over shaft 6 between bearing 7 and cylinder 1, and overlapped or joined after being placed in the machine, if desired. The proper kind of reinforcement having been placed in the machine, as described, power is applied to the shaft 6 which revolves the screw 5. Concrete or any suitable material is then placed in the hopper 4 from which it is taken by the screw and compressed into the bell portion of the mold. When this space is filled, the feeding action continues and the bell portion and tray will be moved forwardly by the feeding pressure on the material, so that a pipe body continues to be formed after the bell portion has been moved outwardly away from the cylinder and upper portion of the mold, the tray traveling with the formed pipe and supporting same as it is formed.

By providing the movable screw and core, the latter may be moved into the bell plug and will revolve therein until the plastic material has packed against the plug, when continued pressure will force the screw back to the limit of its travel. When this limit has been reached, the continued pressure will force the formed pipe and tray portion of the mold outwardly away from the stationary parts.

The rack member 41 turns gear 40 which in turn revolves shaft 38 and sprocket 39, thus moving sprocket chain 47 at the same speed the tray is traveling. The chain engages the reinforcement and carries it along and keeps it always in position to be molded in the pipe. This operation is continuous until the desired length of pipe has been attained, when the tray may be removed with the pipe thereon and carried away to allow the pipe to harden. A new tray is then placed in the machine, the screw and core again moved forwardly and the operation repeated.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent is:—

1. A pipe making machine comprising a feeding cylinder having a supply opening, a screw located within the cylinder and having an integral core portion at one end projecting through the end of the cylinder body, a mold member forming a continuation of said cylinder and surrounding said core, and means for actuating said screw.

2. A pipe making machine comprising a cylinder, having a supply opening, a mold member surrounding one end of said cylinder, a screw located within the cylinder and having a case projected into the mold, a shaft fixed to and extending rearwardly from the screw, collars fixed on the shaft, a collar revolubly mounted on the shaft between the fixed collars, a lever, and a link connecting said lever and fixed collar, for the purpose set forth.

3. A pipe making machine comprising a feeding chamber, a mold having a movable tray portion having beveled upper edges, and a fixed cap portion having beveled lower edges coöperating with said tray portion to complete a mold channel, a shouldered plug set into the outer end of the assembled mold structure and provided with a central aperture, a screw located in the feeding chamber and having a core at its outer end for projection into the plug aperture, and means for retracting said screw.

4. A pipe making machine comprising a feeding chamber, a mold member comprising a lower tray portion movable relative to the feeding chamber, an upper cap portion fixed relative to the feeding chamber, a bell member comprising a lower portion fixed relative to said tray portion and having a top member hinged to said lower portion, a screw revoluble in the feeding chamber and having a core projected into the

mold member, a plug located in the bell portion of the mold and having an off-set inner face and provided with a central aperture, into which said core may be projected, and means for retracting said screw and core, for the purpose set forth.

5. A pipe making machine comprising a feeding chamber having side slots, a mold member at the free end of said feeding chamber and comprising a movable tray portion, means located at the side of said feeding chamber and projected through said slot for feeding reinforcement into the mold member, and mechanism for actuating said feeding means simultaneously with and relative to the travel of the movable mold member, for the purpose set forth.

6. A pipe making machine comprising a feeding chamber having a side slot, a frame adapted for longitudinal travel below the feeding chamber and provided with a rack, a mold member carried by the frame, a fixed mold member completing the mold structure, a toothed member adapted for operative travel within the feeding chamber slot and having gear connection with the frame rack, and a screw and core carried within the feeding chamber and mold structure, for the purpose set forth.

7. A pipe making machine comprising a feeding chamber having a hopper opening, rollers mounted below the chamber, a frame movably mounted on said rollers and provided with side racks, a mold tray carried by said frame and adapted for travel therewith, a fixed mold cap, sprockets carried on vertical axles adjacent to the feeding chamber, chains carried by said sprockets and having teeth projected through said slots, gear connection between the sprocket and frame racks, a screw located within the feeding chamber and having a core projected into the mold structure, and means for moving said screw longitudinally, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER A. REES.

Witnesses:
R. N. PETERS,
C. B. MCCOLLUM.