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J. L. HALSTEAD
CONCRETE PIPE MACHINE

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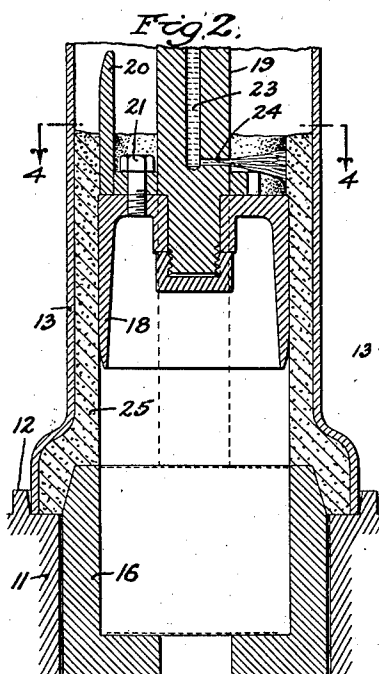
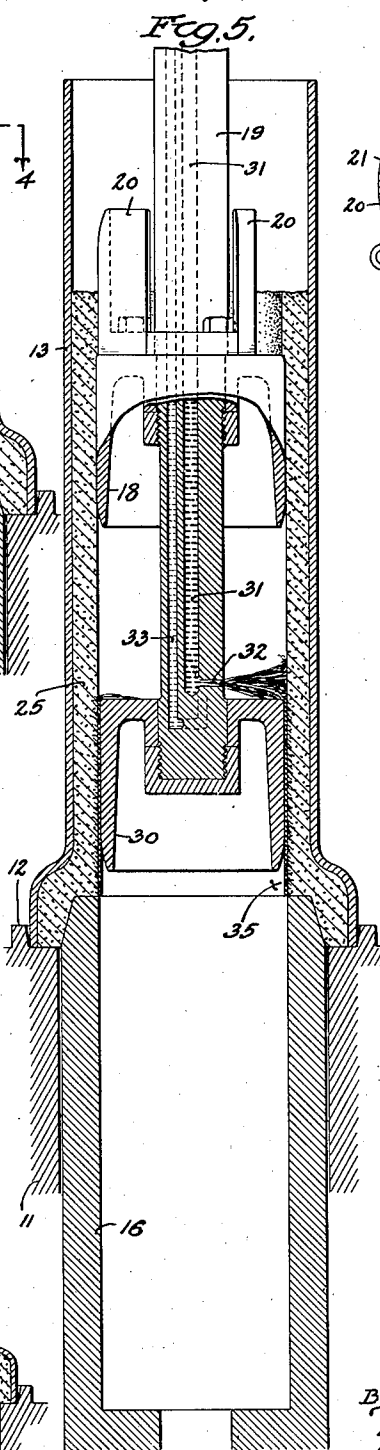
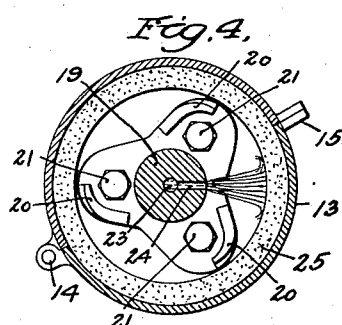
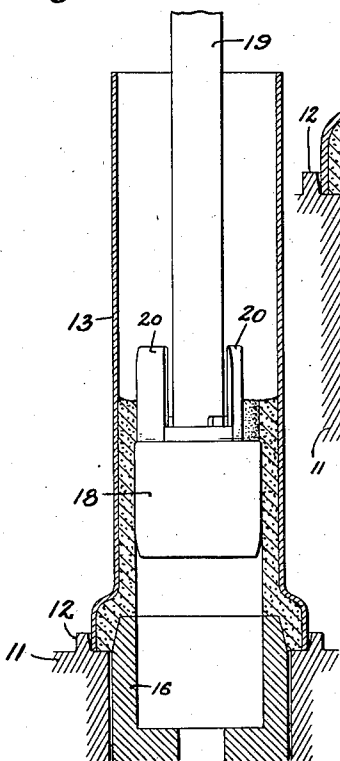
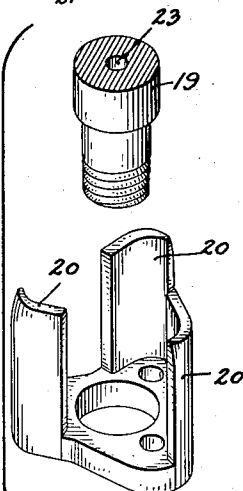
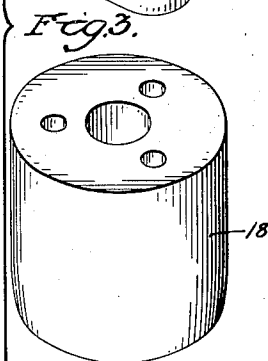
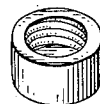


Fig. 1.



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CONCRETE PIPE MACHINE

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This invention relates to the art of making pipe from plastic material such as concrete and the like, being more particularly a machine in which the inner surface of the pipe is treated or coated during the operation of forming the pipe.

Concrete pipe is at times used for the purpose of carrying liquids which have a destructive influence on the interior of the pipe which eventually results in destruction of the pipe, and for the purpose of producing pipe which will resist such destructive action, various attempts have been made to treat the interior of the pipe, but such attempts embrace additional operations which add greatly to the cost of production.

It is one of the principal objects of my invention to produce a machine of the class described, of simple form and construction, in which provision is made for treating the inner surface of the pipe during the operation of forming the pipe so that one single operation is necessary in producing a concrete pipe in which the inner surface is made of resisting qualities to acids, gases or other chemicals which would ordinarily affect the pipe in an injurious manner.

This invention embraces the introduction of water, either with or without contained chemicals, for hardening to the inner surface of the pipe which due to the traveling action of the machine, results in a hard inner surface, or material such as emulsified asphaltum may be added to the inner surface in the form of a thin layer, in either case the resultant pipe is of superior quality due to such treatment of the inner surface.

Referring to the drawings which are for illustration purposes only

Fig. 1 is a sectional view through a concrete pipe mold showing the plunger in elevation.

Fig. 2 is an enlarged vertical sectional view of the apparatus shown in Fig. 1.

Fig. 3 is a perspective view of detached parts of the plunger shown in Fig. 2.

Fig. 4 is a plan view of the plunger, the shaft being in section, and

Fig. 5 is a modified form of machine embodying my invention.

More specifically describing the invention as illustrated in the drawings, 11 designates a base member having an upwardly extending circular flange 12 which receives the lower end of the mold or form 13 which as shown in Fig. 4, consists of two semi-cylindrical plates of sheet metal hinged at 14 and having flanges 15 which may be releasably secured together in any suitable manner. 16 designates a well, the upper end of which extends above the base 11 to form a circular recess in the end of the pipe being formed. 18 designates a head or plunger mounted on a shaft 19 which is movable longitudinally in the mold and rotatable therein, simultaneously such movements of the head or plunger being imparted thereto by any mechanism as is ordinarily done in machines of the character described. 20 designates packers which are mounted on the head 18 by suitable bolts 21, such packers having eccentrically disposed exterior surfaces which initially spread and pack the concrete in the mold forming the pipe therein.

In the form shown in Figs. 1 to 4 inclusive the shaft 19 is provided with a central bore 23 having a horizontally extending discharge port or passage 24 through which liquid, preferably under pressure, is discharged against the inner surface of the concrete between the packers 20.

The operation of this form of my invention is as follows. The head or plunger 18 being in its lowermost position in the well 16 as indicated in dotted lines in Fig. 2, concrete is fed into the mold. The head or plunger is then caused to move upwardly, being simultaneously rotated, which rotative movement spreads the concrete outwardly against the inner surface of the mold into the form of a concrete pipe indicated at 25. The head or plunger 18 is of the proper diameter to finish the pipe to the desired internal diameter, and due to its rotative movement compacts and finishes the inner surface of the pipe. The liquid being discharged against the inner surface of the concrete pipe, is traveled into such inner surface and in cases where water is used, results in a more compact inner surface. The hardness of such

inner surface may be increased by adding well known chemicals to the water which have a hardening action when combined with the concrete. If desired, such chemicals may be discharged in a dry state against the inner surface of the pipe.

In the form shown in Fig. 5, a primary head 18 and a secondary head 30 are used, the head 30 being slightly smaller in diameter than the head 18. In this form the shaft 19 is extended below the head 18 and is provided with a central bore 31, provided with a discharge outlet 32 just above the head 30. Provision is made for maintaining the asphaltum in fluent condition which consists of ducts or passages 33 through which hot water or steam is circulated. In this form concrete is delivered into the top of the form and spread and packed by the packers 20, then smoothed by the head 18 and for the purpose of adding a lining to the pipe, asphaltum mixtures of sand and sulphur or other suitable material is discharged to the inner surface of the pipe from the bore 31 through the discharge outlet 32 against the inner surface of the concrete pipe being spread and smoothed thereon in the form of a thin coating 35 by means of the head 30.

In using either of the forms shown, it is to be understood that the treating of the inner surface of the concrete pipe is done during the forming operation of the pipe so that the treating materials used are incorporated in the inner surface of the pipe as the same is being formed in plastic condition, resulting in a homogeneous incorporation of such materials in the pipe.

I claim as my invention:

1. A concrete pipe machine comprising a mold, a shaft longitudinally and rotatably movable therein, a primary head on said shaft, packing means on said primary head, a secondary head below the primary head, and means for supplying inner surfacing material to the inner surface of the pipe being formed in said mold.

2. A concrete pipe machine comprising: a mold, a shaft longitudinally and rotatably movable therein, a primary head on said shaft, packing means on said primary head, and a secondary head below the primary head, said shaft having a bore therein having a surfacing material discharge outlet between the two heads.

3. A concrete pipe machine comprising: a mold, a shaft longitudinally and rotatably movable therein, a primary head on said shaft, packing means on said primary head, and a secondary head below the primary head, said shaft having a bore therein having a surfacing material discharge outlet between the two heads, said shaft having passages therein for circulation of heating fluid therein.

4. A concrete pipe machine comprising a mold having an open bell bottom, a support for the bell bottom of the mold, a well member below the mold and projecting upwardly into the bell bottom of the mold, a longitudinally and rotatably movable shaft in the mold, and a pipe forming head on the lower end portion of the shaft, the well being open at its top and of the size to receive the head below the bottom of the mold preparatory to feeding concrete to the mold.

5. A structure as specified in claim 4, in which that part of the well member which extends upwardly into the bell bottom of the mold is annularly spaced therefrom to form a recess in the belled end of the concrete pipe. In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 26th day of June, 1928.

JOSEPH L. HALSTEAD.