

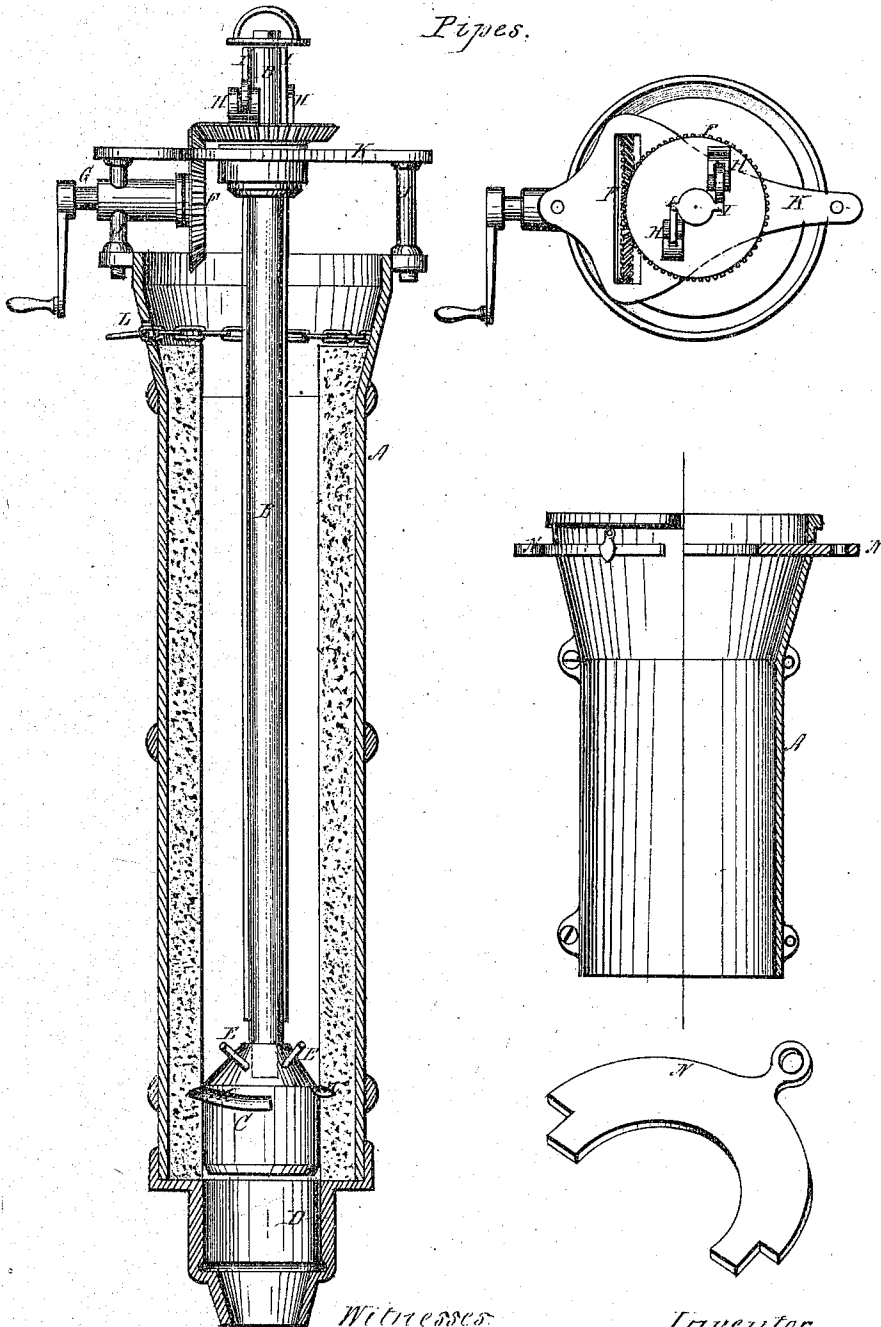
J. M. Clelland,

Casting Mold.

No. 104,479

Patented June 21, 1870.

Pipes.



Witnesses
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JOHN McCLELLAND, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN DEVICE FOR MOLDING AND CASTING PIPE.

Specification forming part of Letters Patent No. 104,479, dated June 21, 1870.

To all whom it may concern:

Be it known that I, JOHN McCLELLAND, of Washington, District of Columbia, have invented a new and useful Device for Molding and Casting Pipes; and I do hereby declare the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawing, forming part hereof.

In the drawing, A represents the case or flask; B, the main shaft; C, the propeller-hub; D, the lower section of the flask; E, the distributing-pins; F F, the gear-wheels; H H, the friction-rollers, which are secured to the horizontal bevel-gear wheel; I I, the feathers on main shaft B; J J, columns which secure plate-piece K; L, the chain for displacing the molding-sand, which chain, if removed at the proper time, so relieves the resistance of the sand as to prevent any strain on the pipe-casting while cooling and prevent injury by cracking; M M, the propeller or packing blades.

I have shown the upper portion of the flask A with a device (marked N) which may be substituted for the chain L for relief of shrinkage of the pipe while cooling.

Screw-packing for molding pipe is not a novel idea; but, from some cause to me unknown, such inventions have not come into use. The friction of the shaft as it ascends while doing the work may have been the main difficulty, which heretofore was insurmountable. This I have overcome by the driving-rollers, which bear on the keys or feathers I I of the main shaft B. By this construction it is obvious that the devices employed interpose the least possible friction to the shaft during its passage up and through the bevel-gear, and thus is rendered available all the other devices which co-operate to make this my invention a complete success in molding and casting pipe.

Heretofore great difficulty has been experienced in making the pipe straight and of uniform thickness. This I overcome by the pins or rods E, which perform the function of distributing the sand alike on all sides, by reason of the rotative motion of the main shaft B. I also use a funnel-shaped top at the upper end of the flask A, whereby to centralize or distribute the sand uniformly around the shaft at the time it enters the flask.

My first experiments in molding pipes with

a packer involved a detachable bottom, secured to the bottom end of the flask, which gave the starting-point for the packer. This detachable bottom was first molded in sand, with the bead on the end, and thus was the lower end of pipe held fast while cooling. The pipe-casting, as a consequence, must shrink downward. Added to this was the weight of metal from just below the funnel portion of the flask, which caused so great a strain at that point as not unfrequently to pull the pipe-casting asunder.

Now, the principal object of my invention is to remedy this heretofore great difficulty and loss in casting pipe; and to this end I make the bottom piece, D, with its recess for the bead, a part of and permanently secured to the main flask A, and then provide the means for displacing the sand just under the bell end of the pipe by removing the chain L just as the metal sets and the shrinkage commences. Thus it is obvious that there can be not only no strain due to shrinkage, but, on the contrary, all the metal of which the pipe is composed exerts a force, due to its specific gravity, in more closely uniting its particles, and thereby relatively making a pipe of a given material, diameter, and thickness capable of resisting greater pressure.

The usual method is to allow freedom of the lower end of the pipe, so that while cooling the shrinkage lifted the lower end from its original position, together with all the metal of which the pipe was composed below its bell end, thereby leaving the metal of less cohesive power, while not unfrequently did the pipe draw asunder at the lower portion of the bell part at the upper end of the pipe.

The removable piece N is believed to be the equivalent of the chain for making a space into which the molding-sand may fall loosely, and thus relieve resistance to the downward movement of the bell part (upper end) of the pipe while shrinking.

The chain is laid around in the mold and out against the flask, so as to allow the sand in the mold to fill the space between the chain and pipe-casting. I use a chain because of its cheapness and simplicity, it being obvious that any device may be used which will, by being removed, cause the necessary space perform the function as the equivalent of the chain.

The lower end of the flask (designated by

the letter D) is make tapering, so that it will enter wedgingly into the hole of the drying-furnace, which hole serves to securely hold this end of the flask in place when the core is lowered down into it.

Having thus described the object, construction, and operation of my said invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the rollers H with the keys or feathers I and shaft B, substantially as described.

2. The combination of the friction-rollers H, keys or feathers I, shaft B, propeller-hub C, with its distributing-pins E, packing-blades M, gear-wheels F, chain L, flask A, and sec-

tion D, substantially in the manner herein set forth.

3. The construction and arrangement of the plate-piece K, friction-rollers H, with their hangers secured to the gear-wheel F, substantially as described.

4. The arrangement of the flask A, shaft B, lower portion of the flask, D, gear-wheels F, shaft G, rollers H, plate K, chain L, and columns J, substantially in the manner herein made known.

JOHN McCLELLAND.

Witnesses:

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