M. ALLEN.

Machine for Lining Pipes with Cement.

No. 162,515. Patented April 27, 1875.

Fig. 1.

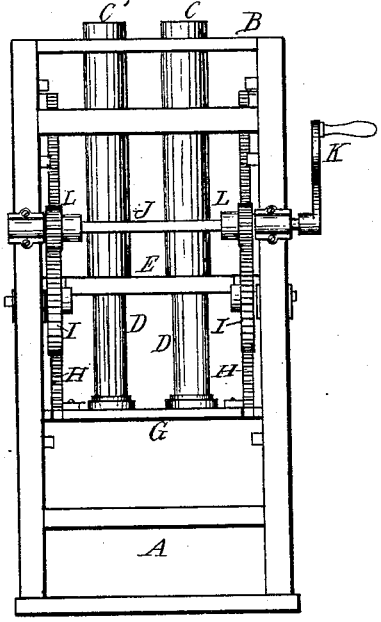


Fig. 2.

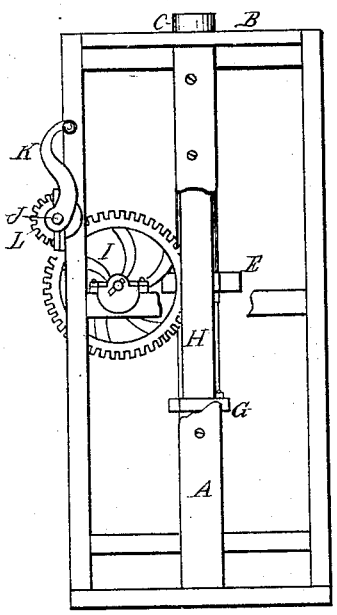
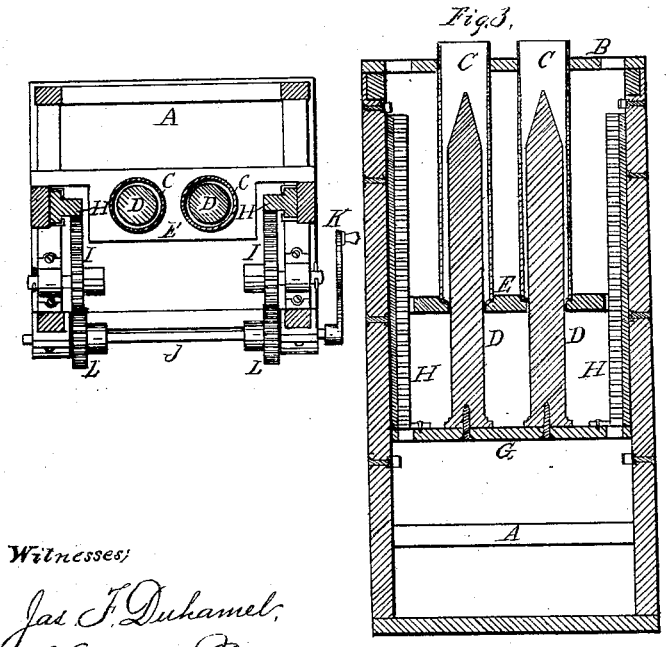


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

MICHAEL ALLEN, OF NATICK, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR LINING PIPES WITH CEMENT.

Specification forming part of Letters Patent No. **162,515**, dated April 27, 1875; application filed December 17, 1874.

To all whom it may concern:

Be it known that I, MICHAEL ALLEN, of Natick, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Lining Pipes with Cement, of which the following is a specification:

My invention has for its object to line sheet-metal or other pipes with an inner coating of cement in an expeditious manner. The cement used for this purpose must be made so as to set rapidly; otherwise it will run, and the lining will be more or less defective; but unless the lining is formed rapidly the cement will have set before the lining is formed, and the time, labor, and expense is wasted.

My invention is intended to obviate such difficulties; and it consists in the construction and arrangement of mechanism whereby the formers of the lining are rapidly moved into and out of the pipes, so as to form the lining in a quick and expeditious, yet effective, manner, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which forms a part of this specification, and in which—

Figure 1 is a front elevation of my machine. Fig. 2 is a side elevation of the same, part of the frame being broken to show the movable frame. Fig. 3 is a longitudinal vertical section through the pipes, formers, and movable frame.

A represents a frame-work of any suitable construction, on top of which is a platform or table, B. In this table are made circular openings—one, two, or more—for the passage of the pipes C C to be lined, the lower ends of said pipes having an inwardly-inclined flange, as shown in Fig. 3, to form a stop to prevent the cement from passing out. The lower ends of the pipes rest in countersinks formed around corresponding holes in a horizontal board or platform, E, within the frame A. Through these holes pass the corers or formers D D, which are made round, of so much smaller diameter than the interior diameter of the pipes as the thickness of the lining required. The upper ends of the formers D are made conical, as shown, and at their lower ends they are firmly secured on or to a bar, G, which is fastened at its ends to the lower ends of two rack-bars, H H. These rack-bars move up and down in suitable guides attached to the frame A. Into these rack-bars gear two large cog-wheels, I I, which are suitably mounted in the frame A. J is the driving-shaft, provided at one end with a crank, K, and upon said shaft are secured two pinions, L L, which gear with the wheels I I.

It will readily be seen that by this construction of the operating mechanism a rapid up-and-down movement may be imparted to the formers D D.

The operation of the machine is as follows: The pipes C being placed in position, and the rack-frame G H, with the formers, run down, said formers closing the lower flanged ends of the pipes, the cement is poured into the pipes. The cement should only be sufficiently plastic to run, and of such consistency as to set in a very short interval of time. As soon as the cement has been poured into the pipes, the formers D D are run up, by means of the mechanism above described, leaving a layer of cement between each former and the interior of its pipe, when the cement is at once compressed and formed at the upper end of each pipe by the device P, and the formers instantly run down, leaving the pipes completely lined. The pipes are then taken out and put away.

The device P, above referred to, consists simply of a collar large enough to fit over the former, and provided with two handles, and with a beveled flange on the under side around the hole or opening. It is placed over the former, the flange entering the upper end of the pipe, and worked back and forth in a rotary manner by the handles.

I am aware that formers have been inserted from the bottom of a mold for forming pipe, and do not, broadly, claim such.

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

In a machine for lining pipes with cement, the combination of the reciprocating rack-frame G H, working in guides attached to frame A, cog-wheels I I, and shaft J, with pinions L L, for rapidly operating the forms D D, substantially as and for the purpose herein set forth.

In testimony that I claim the foregoing as my invention I hereunto affix my signature this 12th day of December, 1874.

MICHAEL ALLEN.

Witnesses:

W. K. DU HAMEL,

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