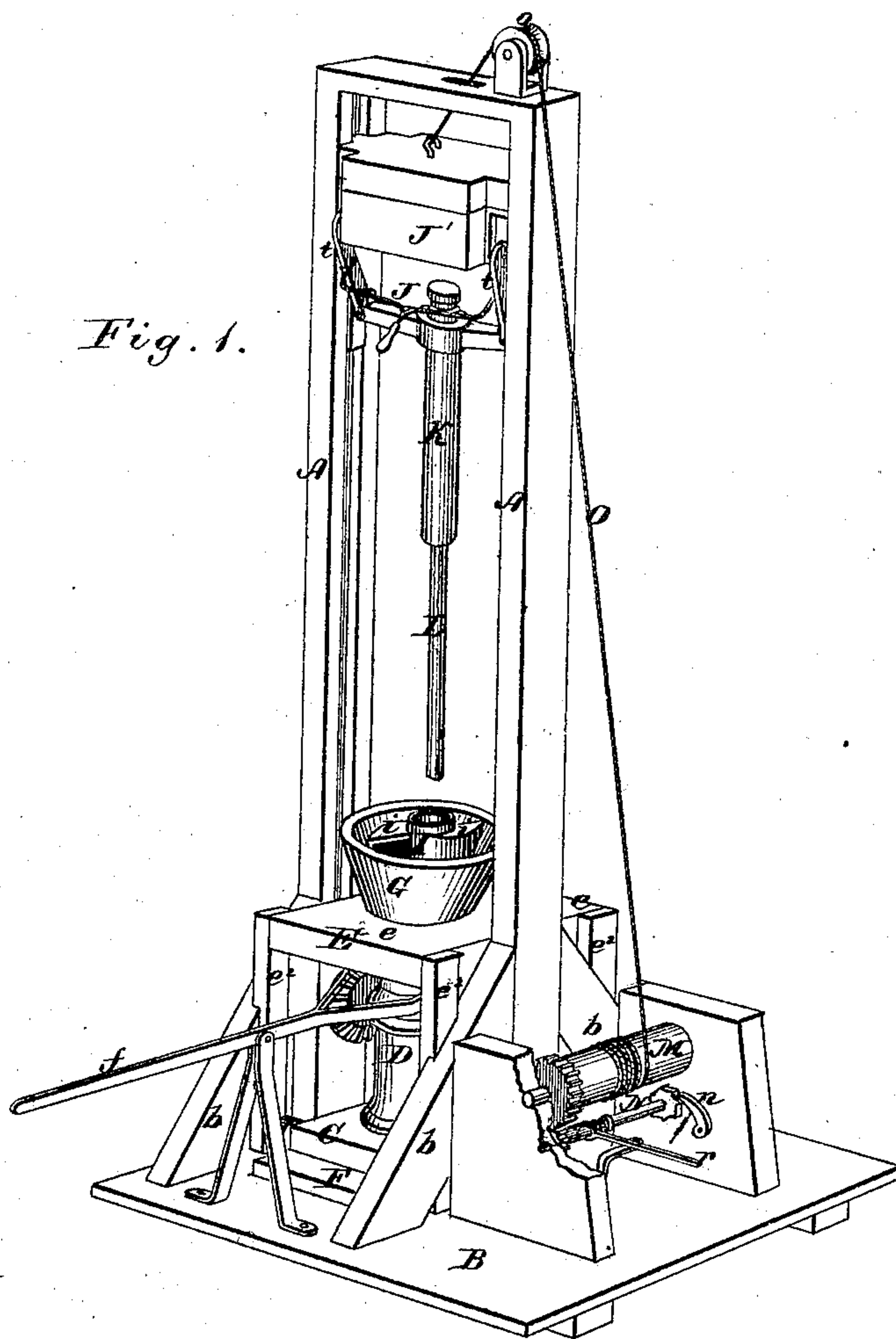


GEORGE L. EAGAN.

Improvement in Machines for Making Concrete Pipes.

No. 125,551.

Patented April 9, 1872.



*Fig. 1.*

Witnesses.  
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Fig. 2.

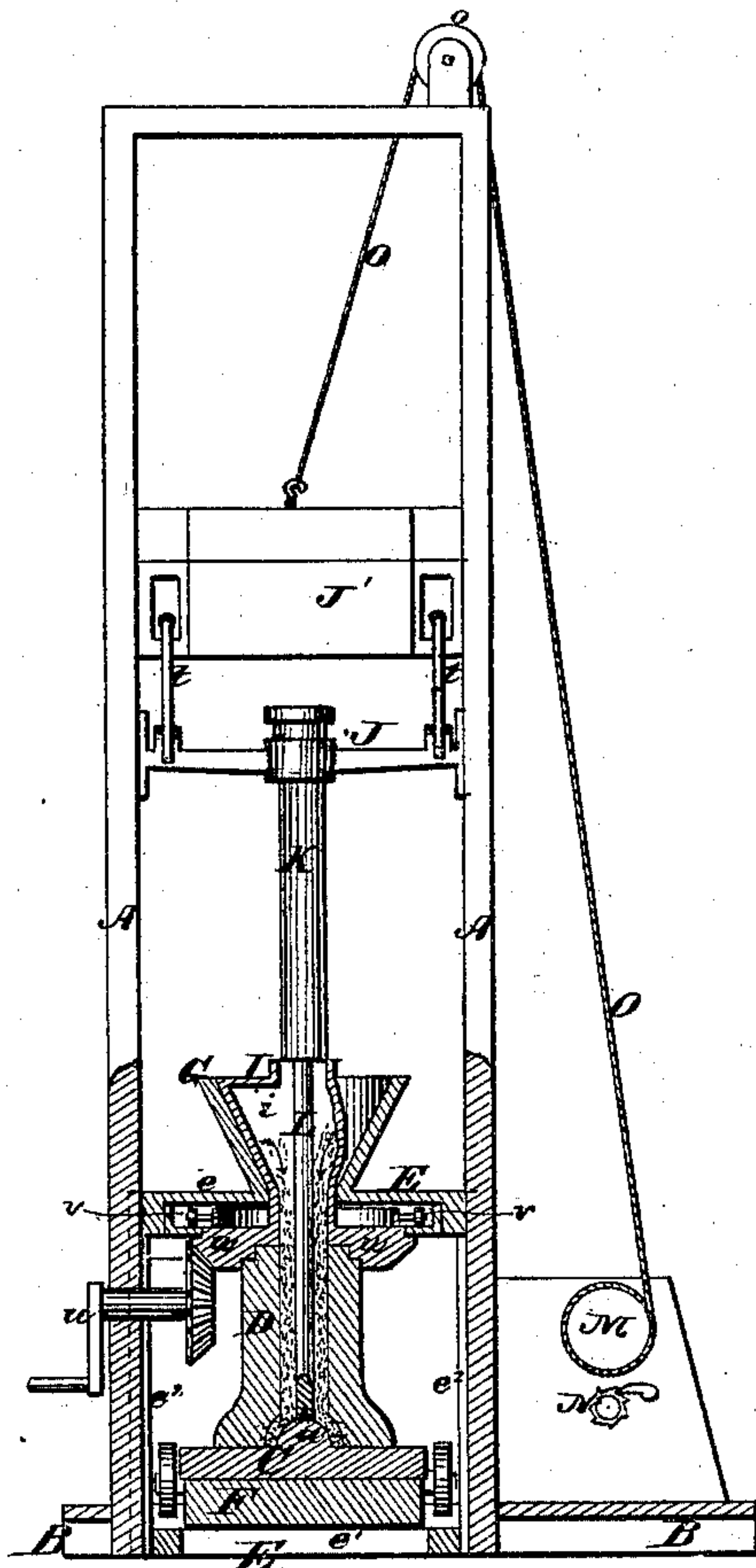


Fig. 3.

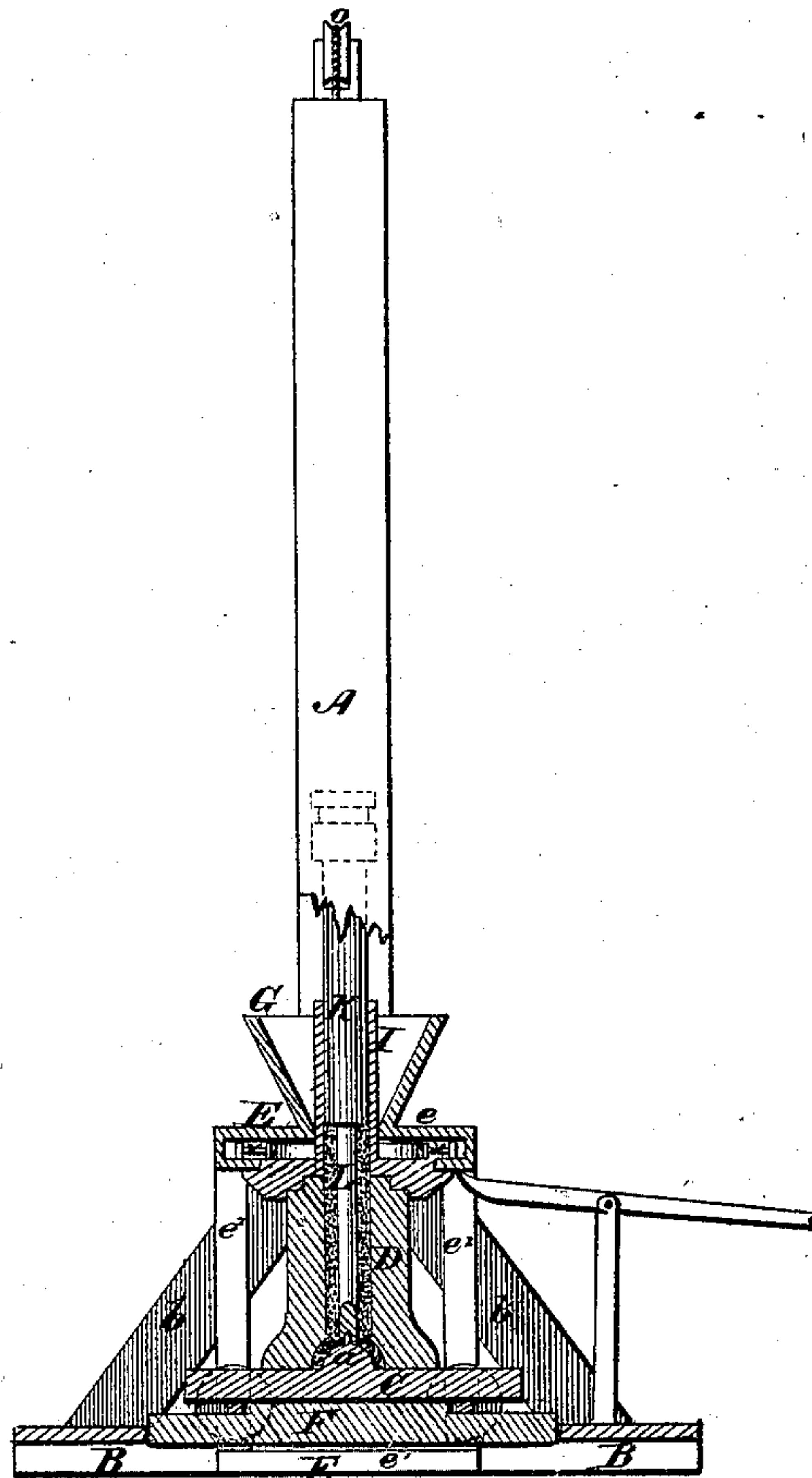


Fig. 4.

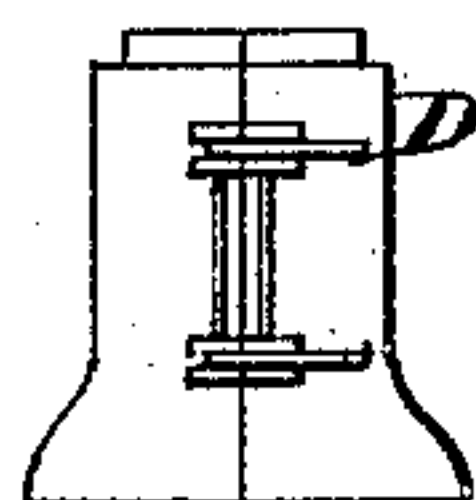
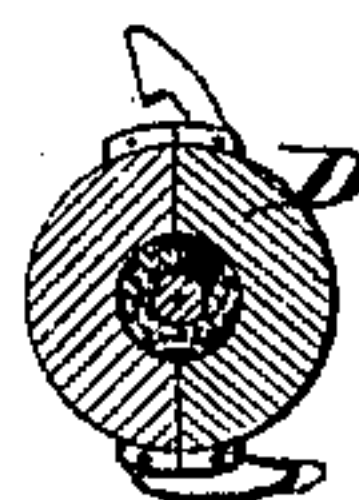


Fig. 5.



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# UNITED STATES PATENT OFFICE.

GEORGE L. EAGAN, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN MACHINES FOR MAKING CONCRETE PIPES.

Specification forming part of Letters Patent No. 125,551, dated April 9, 1872.

*To all whom it may concern:*

Be it known that I, GEORGE L. EAGAN, of the city and county of San Francisco, and State of California, have invented an Improved Machine for Making Concrete Pipes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a front elevation, showing a portion in section; Fig. 3, a side elevation, showing a portion in section; Fig. 4, a side elevation of the flask or outer mold; and Fig. 5, a horizontal section of the same.

Similar letters of reference in the accompanying drawing indicate the same parts.

The object of this invention is to provide for public use an improved machine for making concrete or earthen pipes; and the invention consists, first, in an improved construction which enables me to mount the molding-flask upon a movable car or truck, run the truck into place, mold the pipe in the flask without removing the latter from the truck, and then run the truck out with the flask and pipe still upon it, and convey them in that manner to any desired place; secondly, in an improved device for filling the molds; thirdly, in an improved device for packing the material in the molds; and, fourthly, in the details of construction and general combination of the several parts, as hereinafter set forth.

In the drawing, A A are two vertical standards, connected at their top by a cross-bar, and having their lower ends resting upon a platform, B, and supported by inclined brace b b, a way being thus provided between the lower ends of the standards through which the car or truck can be run upon the platform. E is a vertically-sliding frame between the standards, its movement being effected by means of a lever, f, or its equivalent, and guided by means of vertical tongues and guide-grooves upon the frame and the standards or their braces. The top of said frame is square and horizontal, occupying the whole space between the standards, as shown at e; its bottom is of similar form and dimensions, and is sunk in a bed or depression provided for it in the platform, as shown at e<sup>1</sup>, while its side consists of four or more vertical joists or bars, e<sup>2</sup> e<sup>2</sup>, connecting

the corners of the parts e e<sup>1</sup>. The car C supporting the flask D passes in and out through this frame. The car-wheels run upon the bottom e<sup>1</sup>, when the latter is raised to the level of the platform, but when the frame is lowered the body of the car rests upon a bridge, F, across the depression in the platform, and the wheels are suspended above the bottom piece e<sup>1</sup>. G is a conical hopper, into which the material is fed that is to form the pipes, the same having first been thoroughly ground and prepared. Inside of the hopper is a tubular rotary feeder, I, having openings on each side covered by spiral conductors i i, through which the material in the hopper is forced into the interior of the tube, and thence down into the flask. The spiral conductors are made in such shape as to fit closely against the interior wall of the hopper. The feeder is attached to a horizontal bevel gear-wheel, w, working in the under side of the path e, as shown in Figs. 2 and 3; and the whole feeding-apparatus thus constructed is supported by means of little friction-rollers v v traversing an annular chamber within the part e, said rollers being attached to the gear-wheel w, by means of arms or trunnions projecting from an annular flange or rim, cast upon its upper surface, as shown in the drawing. The hopper, feeder, and wheel w are all supported by the frame E, rising and falling therewith. The flask D, (the construction of which is shown in Figs. 4 and 5,) is designed to be mounted upon the car and run into the frame E until its axis is in line with that of the feeder, when the frame E is to be lowered bringing the body of the car down upon the bridge F, and the lower end of the feeder down upon the top of the flask, in which position the machine is ready for operation.

The material of which I construct my pipes is not sufficiently liquid to flow into the molds, but is a pasty compound about of the consistency of putty; and, which, therefore, must be tamped down thoroughly in the molds in order to form a strong compact pipe. The tamping apparatus which I employ is constructed as follows: J is a sliding cross-head, guided by tongues and grooves on its ends, and in the proximate faces of the standards A. To the lower side of this cross-head, at its center, is attached a tubular plunger, K, the lower end



of which fits closely into the tubular feeder I, and slides freely up and down therein as the cross-head is raised and lowered. Arranged centrally within the tube K is a cylindrical rod, L, which slides freely up and down therein, although it cannot become accidentally detached from the tube. This rod L dropping down till it rests on the bottom of the flask, constitutes the core around which the pipe is formed, as shown in Figs. 2 and 3. When the pipe is finished the core can be raised out of it by elevating the cross-head sufficiently for the purpose, as shown in Fig. 1. The cross-head may be raised and lowered directly by a rope or chain, O, running over a sheave, o, at the upper end of the standards; but, preferably, I employ an apparatus working on the principle of the common pile-driver, consisting of an independent cross-head, J', which automatically attaches itself to the cross-head J, when lowered upon it by means of spring-hooks *t t*. An arm or cam may be provided that will throw the hooks out whenever the cross-heads are raised to a certain height, and allow the lower end, with the plunger K attached, to drop. This cross-head may be weighted in any manner, and the weight may be capable of adjustment, for the purpose of regulating the force of the blow struck by the tamping-plunger upon the material in the mold. The upper cross-head must be of sufficient weight, of course, to descend by its own gravity when released from the lower one, and to unwind the reel employed for operating the rope. The reel may be of any suitable construction. Preferably, I employ two shafts, M N, provided with engaging spur-wheels, one fast and one loose, and with a sliding spring-friction clutch, operated by a lever, *r*, for the purpose of making the loose spur-wheel fast upon winding up and loose when running down the cross-head. The small shaft is operated by a crank, and is provided with a pawl, *n*, to prevent any accidental retrograde movement. The bevel-wheel *w* is operated by means of a shaft, *n*, having attached to its outer end a crank, pulley, or other device for applying the power.

The operation of the machine will be readily understood without much further description. The material is fed into the hopper, and by the rotation of the feeder is carried down into the space between the core and the flask. While the material is thus feeding the tubular tamping-rod is in constant operation tamping it down into a solid compact pipe of the proper form required. The enlargement at the end of the

pipe to receive the end of the contiguous section when laying is provided for by the shape of the mold or flask, as shown in Figs. 2, 3, and 4; in the first two of which is represented a boss, *a*, upon the floor of the car to direct the material outward and form the enlarged flange of the pipe, said boss having a spur at its center for the purpose of centering and holding immovable the core L while the tamping apparatus is in operation.

The flask or mold, it will be observed, is made in two parts, hinged or locked together in any suitable manner, for convenience in taking out the pipe when formed; and a water-jet may be introduced through the truck or car into its lower end, if preferred.

By means of this improved machine the pipes can be made much more quickly, conveniently, and cheaply than heretofore. At the same time as an article of manufacture they have a decided advantage over those molded from a liquid composition in being compact and free from air-holes.

Having thus described my invention, what I claim is—

1. The device for sustaining the body of the car while under the operation of the stamping-hammer—to wit., the vertically-movable frame E and the bridge F—arranged with relation to each other, and to the car and feeding and tamping-mechanism, substantially as described.

2. The tubular feeder I, having the spiral conductor *i i*, when arranged in the conical hopper G, as and for the purpose described.

3. The combination of the feeder I, with the wheel *w*, said feeder being supported by means of the friction-rollers *v v* within the top *e'* of the frame, substantially as described, for the purposes specified.

4. The combination of the hopper G, feeder I, and wheels *w v*, with the vertically-movable frame E, the hopper and feeder moving with the frame, substantially as described.

5. The tubular-tamper K, and sliding rod L, in combination with the flask or mold D, substantially as and for the purposes set forth.

6. The cross-heads J J' and their automatic connections *t t*, in combination with the tubular hammer K and the rod L, substantially as described.

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Witnesses:

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