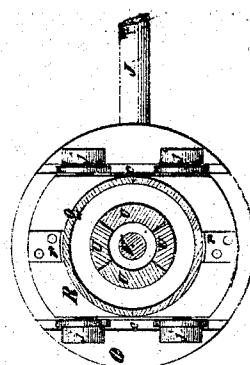
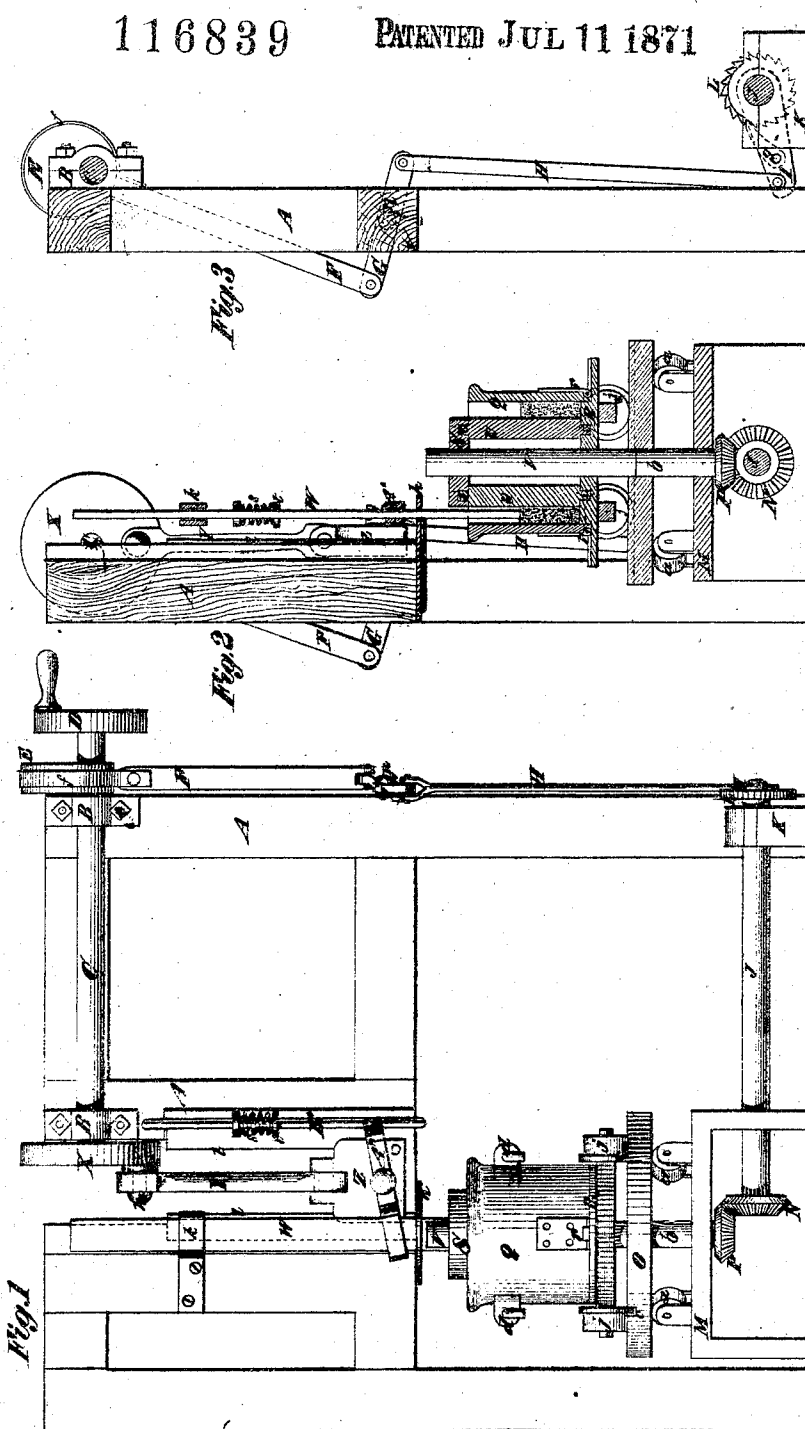


Charles W. Kennedy's
Machine for Making Pipe for Drainage & other Purposes.

116839

PATENTED JUL 11 1871



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES W. KENNEDY, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN DRAIN-PIPE MACHINES.

Specification forming part of Letters Patent No. 116,839, dated July 11, 1871.

To all whom it may concern:

Be it known that I, CHARLES W. KENNEDY, of the Eastern District of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Machine for Making Pipe for Drainage and other purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification.

This invention relates more particularly to the making of pipes of a mixture of sand with other substances, but it is also applicable to the manufacture of clay pipes. It consists in the combination of an intermittently-rotating annular mold, a reciprocating rammer, and novel mechanism for operating the latter, and in the peculiar construction of the former, whereby it is secured in position on its table or stand, and facility is afforded for removing the pipe.

In the accompanying drawing, Figure 1 is a front view of my machine. Fig. 2 is a transverse section of the same taken through the center of the mold. Fig. 3 is a transverse section taken beyond the mold, and Figure 4 is a horizontal section of the mold in place on its table.

Similar letters of reference indicate corresponding parts in all the figures.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawing.

A is the frame of the machine supported in bearings B B, on the upper portion of which is the driving-shaft C. On one end of this shaft is a driving-pulley, D, and near the same end, just beyond the frame A, is an eccentric, E, which is connected in the ordinary manner by a strap, *f*, with a rod, F, the lower end of which is connected with a rocking lever, G, pivoted near its middle by a pin, *p*, to the side of the frame A. Pivoted to the other end of this lever G is the upper end of a rod, H, whose lower end is pivoted to a lever, I, which is arranged loosely, so as to be capable of turning on a shaft, J. This shaft is supported in a bearing, K, arranged near one side of the frame and in a bearing in a box-like frame, M, near the opposite side of the frame A. It has provided on its outer end, next the lever I, a ratchet-wheel, L, which is engaged by a pawl, *g*, pivoted to the inner side of the said lever I. On the other end of the shaft J, with-

in the box-like frame M, is a bevel-wheel, N. *a a* is a series of friction-wheels, which is supported in suitable bearings on the top of the said frame M, and arranged so that their axes radiate from a common center, and their faces lie as nearly as possible in the direction of the circumference of a circle struck from the said center. These wheels support a turn-table, O, the central pivot *b* of which passes through the top of the frame M, and is provided at the end with a bevel-wheel, P, which gears with the one, N, on the shaft J. The turn-table O has parallel grooves *c c* formed across its face for the reception of the flanges of wheels *j j* on the bottom of the mold. The flask Q of the mold consists of two semi-cylindrical halves hinged at their backs to the bottom R of the mold by hinges *r r*, and secured together at the top in a vertical position by pins or bolts passing through lugs *d d* provided on the edges of each half. The core of the mold is of the form of a hollow cylinder, and divided longitudinally into a series of sections, U U, each of which tapers in a reverse direction from its immediate neighbors, alternate sections tapering the same way, and all having formed upon their bottoms tongues *i i*, which fit in a circular groove formed in the bottom R of the mold concentric with the axis of the flask. On the tops of the said sections are similar tongues, which fit within an annular groove in a cap, S, by which the tops of the sections are secured together. The grooves in this cap and in the bottom of the mold are of such diameter as to keep the component sections of the core slightly apart in order to provide for the contracting of the core for the purpose of removing it from the mold. This may be effected by simply removing the cap and first drawing out those sections which taper downward. The bottom R of the mold is made in the form of a truck, provided with four flanged wheels, *j j*, whose flanges fit within the grooves in the turn-table, as before described. The wheels are prevented from running off the table by a pin, V, which passes through the cap S, through the core and bottom of the mold, and extends into a recess in the face of the turn-table. This pin also serves to center the core in the flask and to center the mold on the turn-table. W is the rammer, which is supported in suitable guides K and *h* on the frame A over the mold. On the inner end of the shaft

C is a wheel, X, provided with a wrist or crank, *m*, which is so arranged as to operate reversely to the throw of the eccentric E—that is, when the eccentric is up the crank will be down. Y is a rod which is pivoted at one end to the said crank *m*, and at the other to a block, Z, which slides on guides *l l* provided on the frame A. To this block, which constitutes a reciprocating carrier, is pivoted, near its middle, a dog, A*, of lever form, in one end of which there is a rectangular hole, through which the rammer passes; and the other end is recessed to slide along a rail, B*, around the upper portion of which is wound a spiral spring, *s*, to the lower end of which is attached a sliding plate or follower, *t*, which constitutes a yielding stop. The slot which receives the rammer is slightly longer than the width of the rammer, and that arm of the dog which contains it is heavier than the other arm, so that the dog, when left free, assumes an inclined position toward the rammer, and when the block to which it is pivoted is raised the bottom of the outer edge of the slot and the top of the inner edge thereof will bite and hold the rammer between them.

The operation of the machine is as follows: The material of which the pipe is to be made is fed into the mold by hand or otherwise, while an intermittent rotary motion is given to the mold and a reciprocating motion is given to the rammer by the rotation of the driving-shaft C. The crank *m* of this shaft raises the sliding block Z, and by means of the dog A* pivoted thereto, which bites and holds the rammer, as before described, the rammer is also raised till the recessed end of the dog sliding along the rail B* comes in contact with the stop *t*, and the continued raising of the block brings the dog into a horizontal position, and thereby, in consequence of the slot being longer than the rammer is wide,

releases and drops the rammer onto the contents of the mold. By the continued rotation of the shaft the block Z is raised, and, at the same time, the pawl *g* is, by the eccentric E, caused to operate the ratchet-wheel L, and, by means of the gear-wheels P and N, turns the turn-table and mold about the width of the rammer, so that it will always drop on a new surface. This operation is repeated and the material constantly fed till the pipe is completed, after which the pin V is removed from the mold and the mold slid off the turn-table onto a track and wheeled away and a fresh mold placed on the table. To remove the pipe from the mold the cap S is removed and those of the sections which compose the core that taper downwardly are first drawn out, and then the remaining ones—the halves of the flask of the mold—are then unfastened and swing back, leaving the pipe free to be removed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The mold, composed of the truck-like bottom, the vertically-divided flask hinged to said bottom, and the sectional core, all combined substantially as herein described.

2. The combination of the turn-table, the mold bottom, the flask, the core, and the central pin, substantially as herein described, whereby the said pin serves to center the core in the mold and the mold on the turn-table, and to secure the mold from running off the turn-table.

3. The combination of the rammer W with the slotted lever-like dog A*, the sliding block or reciprocating carrier Z, and the stop *t*, substantially as and for the purpose herein described.

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Witnesses:

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