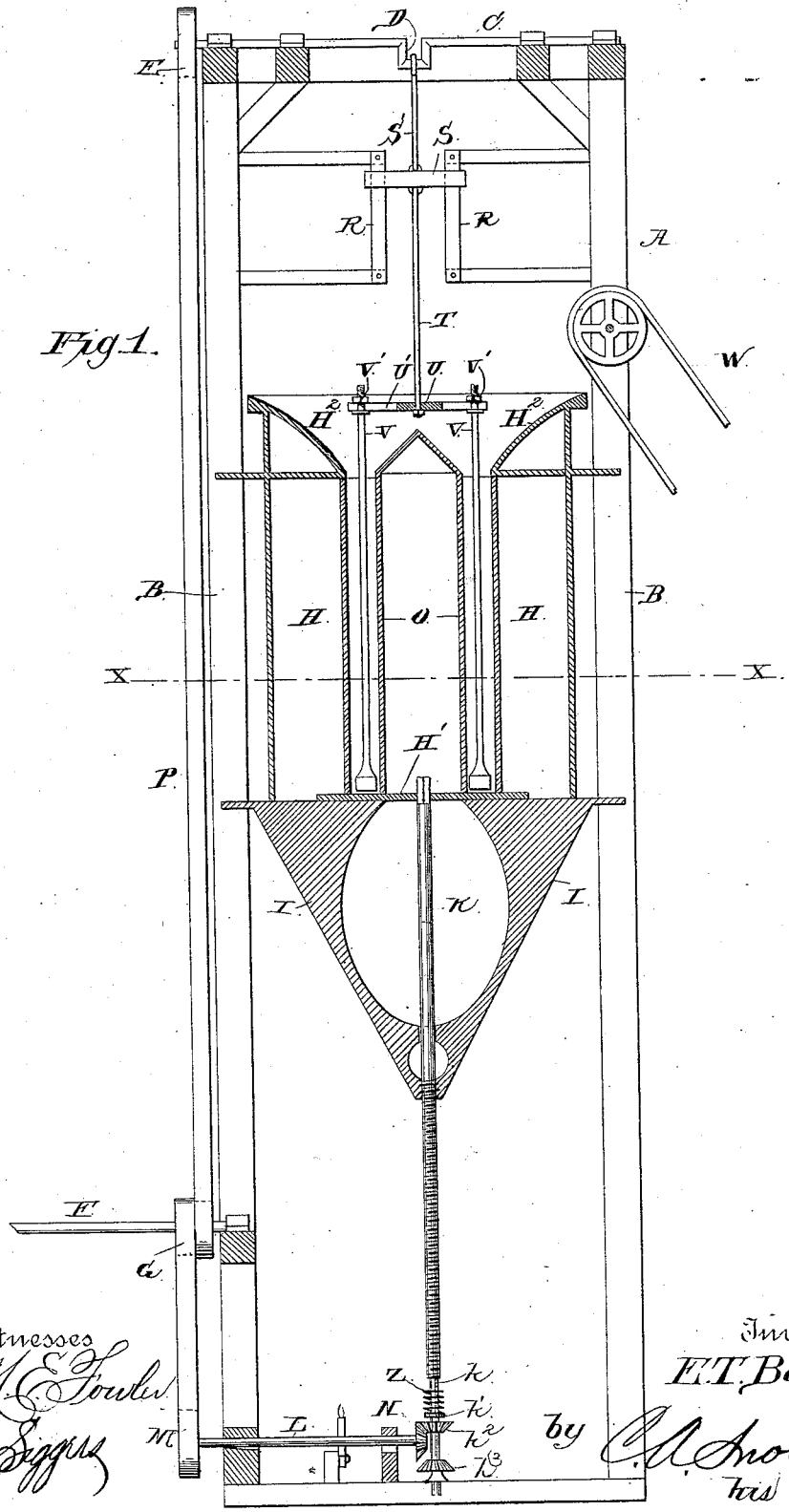
(No Model.) 2 Sheets—Sheet 1.

E. T. BARDEN.

MACHINE FOR MAKING SEWER PIPES OF CLAY, &c.

No. 347,457. Patented Aug. 17, 1886.

Fig. 1.



Witnesses
M. E. Fowler
E. G. Siggers

Inventor
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(No Model.) 2 Sheets—Sheet 2.

E. T. BARDEN.

MACHINE FOR MAKING SEWER PIPES OF CLAY, &c.

No. 347,457. Patented Aug. 17, 1886.

Fig. 2.

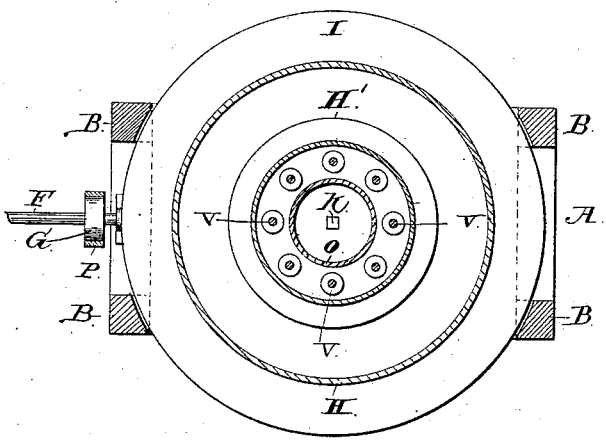


Fig. 3.

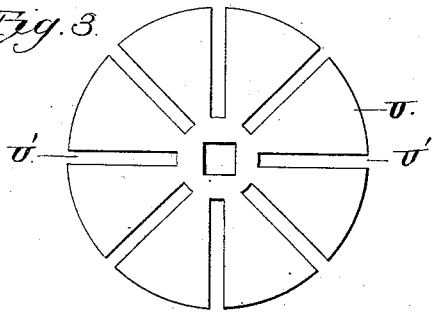
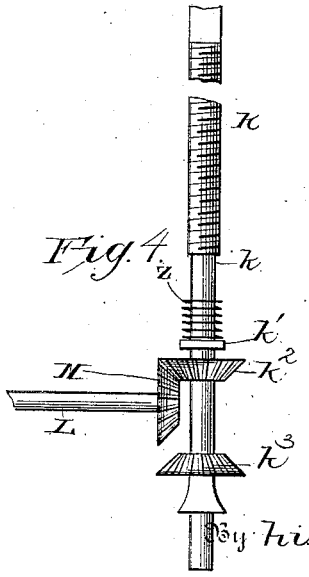


Fig. 4.



Witnesses
M. E. Fowler
E. G. Siggers

Inventor
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UNITED STATES PATENT OFFICE.

EMMET TOTMAN BARDEN, OF WAUSAU, WISCONSIN.

MACHINE FOR MAKING SEWER-PIPES OF CLAY, &c.

SPECIFICATION forming part of Letters Patent No. 347,457, dated August 17, 1886.

Application filed February 15, 1886. Serial No. 192,038. (No model.)

To all whom it may concern:

Be it known that I, EMMET TOTMAN BARDEN, a citizen of the United States, residing at Wausau, in the county of Marathon and State of Wisconsin, have invented a new and useful Improvement in Machines for Making Sewer-Pipes of Clay, &c., of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in machines for making sewer-pipes of clay or other plastic material, such as cement and sand or fine gravel; and it consists in the peculiar construction and combination of parts, that will be hereinafter set forth, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my invention, partly in section. Fig. 2 is a transverse sectional view of the same, taken on the line *x x* of Fig. 1. Figs. 3 and 4 are detail views.

A represents a rectangular frame, which is composed of the vertical posts B, which are connected together at their upper ends. At the upper end of the frame A is journaled a horizontal shaft, C, which has a crank, D, at its center, and is provided near one end with a pulley, E. A horizontal shaft, F, is journaled in suitable supports near the base of the frame A, and is provided with a pulley, G.

H represents a frame which forms the outside of the mold for the pipes, and the said frame works in vertical guideways, with which the frame A is provided, so that the frame H may be raised or lowered therein. The frame H is cylindrical in cross-section, and rests upon the casting or table I, which is provided at its lower side with a central screw-threaded opening, through which passes the threaded portion of a vertical shaft, K. The said shaft K is reduced for a slight distance below the lower end of the threaded portion, as at *k*, and is provided with a collar, *k'*, and with a pair of miter gear-pinions, k^2 and k^3, one of which is below the other, and the faces of which oppose.

L represents a horizontal shaft, which is journaled in the frame A at a suitable distance below the shaft F. The outer end of the shaft L is immovable in its bearings, and is provided with a pulley, M; but the inner end of the shaft L is free to move vertically for a slight distance, and is provided with a miter-pinion, N, which may be caused to engage with either of the pinions k^2 and k^3. The upper end of the vertical shaft K is square, and passes through a central opening made in a base-plate, H', which forms the bottom of the mold, and which rests upon the upper side of the casting I.

O represents the inner mold, which is a hollow cylinder of less diameter than the outer mold, and which is located therein. Endless belts P connect the pulleys E G and G M.

R represents vertical guideways, which are supported near the upper end of the frame A and at the center thereof, and on these guideways slides a cross-head, S, which is connected to the crank D by means of a pitman, S'. A rod, T, depends from the lower side of the cross-head, and to the lower end of the said rod is attached a circular plate, U, which has a series of radial open slots, U'.

V represents a series of tamping-bars, the upper ends of which are screw-threaded and fitted in the radial slots U', and clamped therein by means of clamping-nuts V'. These tamping-bars work in the space between the inner and the outer molds, as shown in Figs. 1 and 2. The upper end of the outer mold is flared or inclined outwardly, so as to form a hopper, as at H^2.

W represents an endless belt, which is inclined at a suitable angle, and the upper end of which is supported above the hopper H^2. This endless apron is driven by any suitable mechanism, (which is not here shown, as it forms no part of the present invention,) and serves to carry the clay or other plastic material to the upper end of the mold and discharge it therein. When the driving-shaft F is actuated, its motion is communicated to the shafts C and L, which causes the tamping-bars to reciprocate in the mold and the latter to rotate, the pinion N being geared with the pinion k^2. As the shaft K rotates, the threaded portion thereof causes the casting I to be lowered slowly during the operation of the machine, and at a rate of speed proportioned to the supply of clay or plastic material to the mold, which is tamped therein by the reciprocating movement of the tamping-bars and the rotary motion of the mold. When the casting I and the mold have reached the lower limit of their

movement, and a pipe of suitable length has been tamped in the mold, the threaded opening in the casting passes below the threaded portion of the shaft K onto the reduced plain portion k thereof, and bears upon a coiled spring, Z, which is placed on the collar k'. While in this position the pipe which has just been formed is removed from the mold. The spring Z then raises the casting I sufficiently far to cause its threaded opening to again engage the threaded portion of the shaft L, and the inner end of the shaft L is lowered sufficiently to cause the pinion N to disengage the pinion k^2 and to mesh with the pinion k^3, which gives a reverse movement to the shaft K, and causes the threaded portion of the latter to raise the casting I and the mold to their normal position, (shown in Fig. 1,) when the operation is again repeated as before. By providing the circular plate U with the open radial slots U′ the tamping-bars may be adjusted in or out on the said plate, and thus adapted to operate in a mold of any size.

Having thus described my invention, I claim—

1. The combination of the rotating mold having the vertically-movable support I and the vertical screw-shaft engaging the support to raise and lower the same, and connected to the mold to rotate the latter while the support is being raised or lowered, substantially as described.

2. The combination of the rotating mold having the vertically-movable support I, and means for rotating the mold and moving the support simultaneously, substantially as described.

3. The combination of the rotating mold, the vertically-movable support I therefor, means for lowering the support and rotating the mold simultaneously, and the reciprocating tamping-bars in the mold, substantially as described.

4. The combination of the rotating mold, the vertical guides R, the cross-head S, the tamping-bars suspended from the cross-head and working in the mold, and the crank-shaft C and the pitman connecting the said shaft with the cross-head for operating the latter and the tamping-bars, substantially as described.

5. The combination of the rotating mold, the circular reciprocating plate U, having the radial slots U′, and the tamping-bars having their upper ends secured in the said slots, for the purpose set forth, substantially as described.

6. The combination of the mold, the reciprocating tamping-bars, the vertical shaft K, for turning the mold, and having the threaded portion and pinions k^2 and k^3, the casting I, to support the mold, and having the threaded opening, in which the threaded portion of the shaft K operates to raise or lower the casting and the mold, and movable shaft L, having the pinion N, to engage with either pinion k^2 or k^3, for the purpose set forth, substantially as described.

7. The combination of the mold, the reciprocating tamping-bars, the vertical shaft K, for turning the mold, and having the threaded portion, the plain portion k, and spring Z, and pinions k^2 and k^3, the casting I, to support the mold, and having the threaded opening, in which the threaded portion of the shaft K operates to raise or lower the casting and the mold, and the movable shaft L, having the pinion N, to engage with either the pinion k^2 or k^3, for the purpose set forth, substantially as described.

8. The combination of the rotating mold having the vertically-movable support, the reciprocating tamping-bars in the mold, and the crank-shaft, to which the said bars are connected to reciprocate the same, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EMMET TOTMAN BARDEN.

Witnesses:
EDWARD NICOLLS,
STEPHEN ELMER THAYER.