2 Sheets--Sheet 1.

# J. W. McGLASHAN.

## Apparatus for Making Cement and other Drain-Pipe.

No. 152,143. Patented June 16, 1874.

Fig. 2.

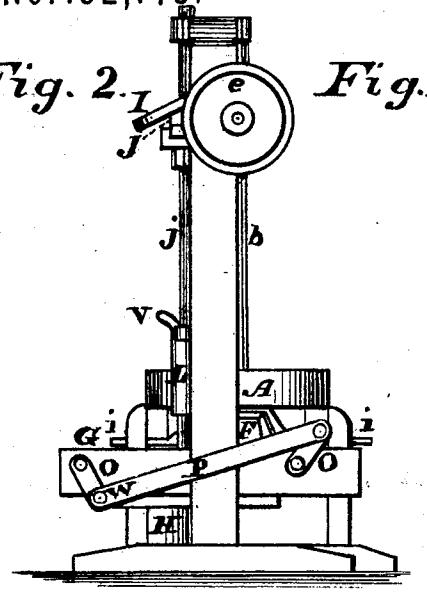



Fig. 1.

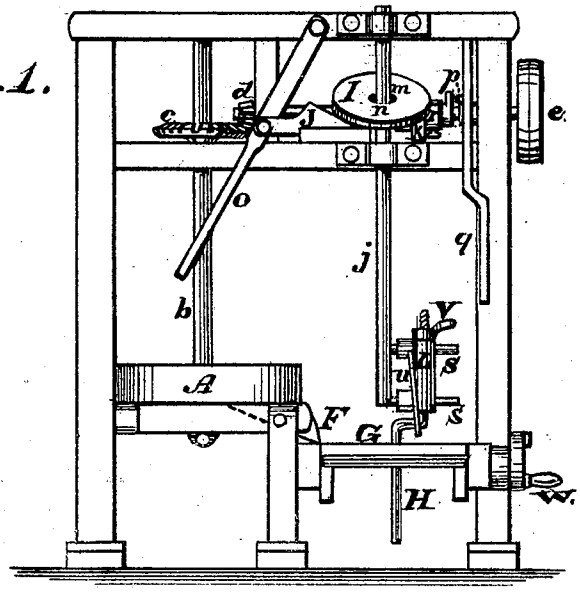



Fig. 3.

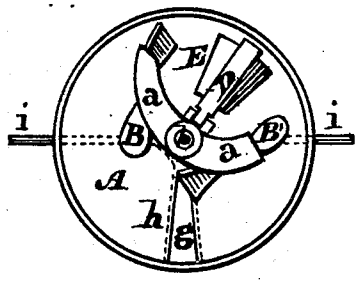



Fig. 4.

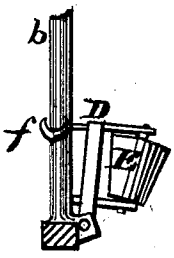



Fig. 5.

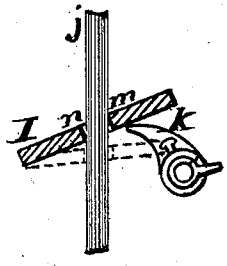



Fig. 6.

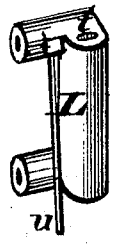



Fig. 8.

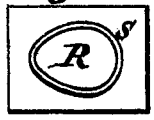



Fig. 9.

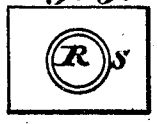



Fig. 7.

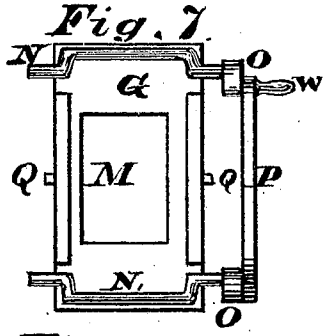



Fig. 10.

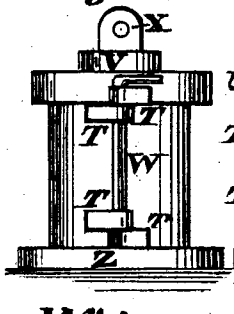



Fig. 11.

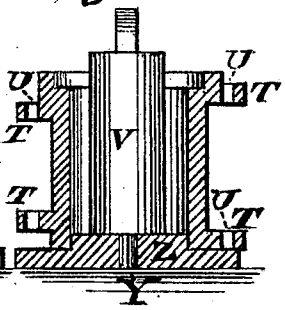



Fig 12.

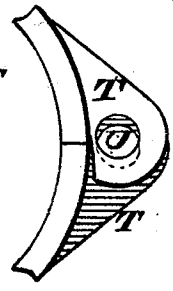



Fig. 13.

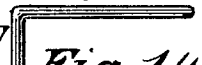
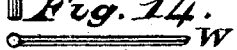



Fig. 14.

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2 Sheets--Sheet 2.

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## Apparatus for Making Cement and other Drain-Pipe.

No. 152,143. Patented June 16, 1874.

*Fig. 15.*

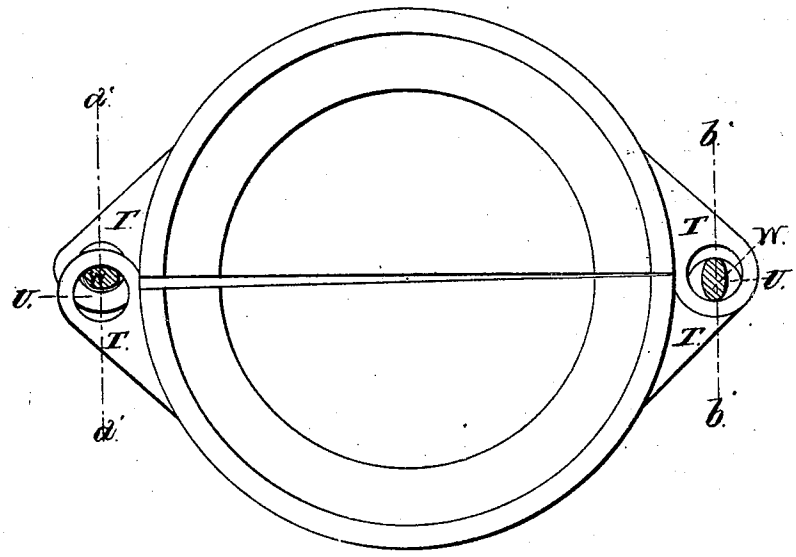



*Fig. 16.*

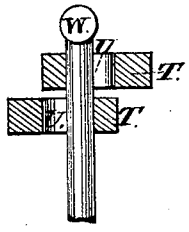
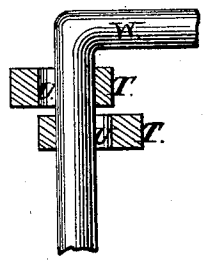



*Fig. 17.*




*Attest:*
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Albert F. Jacobs.

*Inventor:*
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# UNITED STATES PATENT OFFICE.

JOHN W. McGLASHAN, OF MONTREAL, CANADA.

## IMPROVEMENT IN APPARATUS FOR MAKING CEMENT AND OTHER DRAIN-PIPE.

Specification forming part of Letters Patent No. **152,143**, dated June 16, 1874; application filed April 18, 1874.

*To all whom it may concern:*

Be it known that I, JOHN W. McGLASHAN, of the city of Montreal, in the Province of Quebec, Dominion of Canada, have invented an Apparatus for Making Cement or other Drain-Pipe, of which the following is a specification:

My invention relates to improvements in apparatus for manufacturing or producing cement or other drain-pipe, whereby a saving of both time and labor is effected; and consists in the plow-shaped form of the mixing-blades, for inverting as well as thrusting aside the materials upon which they are intended to act. It also consists in setting the mixing-blades in opposition to each other, so that one shall have a centrifugal action and the other a centripetal one, for rapidly and intimately mixing the materials. It also consists, in combination with the mixing-blades, of a roller, for the more speedy and equal diffusion of liquids through the mass. It consists in a disk having a central circular aperture for engaging the shaft of the tamper, whereby the same shall be elevated and partially rotated by a cam. It also consists of a sliding wedge for freeing the tamping-shaft from the grasp or bite of the disk, when so desired. It also consists of a sliding tamping-tool holder, whereby one and the same tool can be used for tamping any size or shape of pipe. It also consists, in combination with a tool-holder, of a bent tamping-tool moving freely in the socket of the holder, and furnished with a clamping-nut, to secure it rigidly when required. It also consists of a vertically-movable table operated by cam or crank shaped bars, and having an aperture to receive interchangeable plates, for the purpose of enabling the case to be rapidly placed under it, held while there, and easily removed from it. It also consists of cases with lugs overlapping each other, said lugs having holes so arranged in them that an elliptical-shaped rod can be easily introduced for the purpose of locking together the two parts of the case. It also consists, in combination with the case, of an elliptically-shaped rod for forcing together and locking the two parts of the case. It also consists, in combination with the case, of a movable core, furnished with a shank for sustaining it in the base-plate, and with an eye or hook for hoisting it out vertically after the pipe is made.

The following is a more exact and detailed description of my invention, reference being had to the accompanying drawings.

Figure 1 is a front elevation of the mixing and tamping apparatus. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the mixing-blades and roller. Fig. 4 is a profile view of the roller and jointed arm. Fig. 5 represents a section of the disk I, together with a portion of the shaft *j* it engages, and in dotted lines the action of the cam upon the former. Fig. 6 is a perspective view of the tool-holder. Fig. 7 is a plan view of the filling-table G inverted, showing the crank-shaped bars. Figs. 8 and 9 are plan views of the interchangeable plates, also inverted, and showing the collars. Fig. 10 is a side elevation of the case and core mounted on the base-plate ready for filling. Fig. 11 represents a vertical section of the same. Fig. 12 is a plan view of the lug enlarged, showing the position of the holes. Figs. 13 and 14 are front and profile views of the elliptical locking-rods. Fig. 15 represents an enlarged plan view of the mold, showing the lugs T T, together with sections of the elliptical locking-rods W W, inserted in the apertures U U, and indicating at *a a* the position of the corresponding lugs of the two parts of the mold before the rod has been turned, and at *b b* their position after the rod has been turned at right angles. Figs. 16 and 17 are sections of the lugs T T, taken through the dotted lines *a a* and *b b*, Fig. 15, showing portions of the elliptical locking-rods W W in the apertures U U.

Similar letters of reference indicate corresponding parts.

The mixing-mill consists of the circular vessel A, in which rotate the blades B B′ on the arms *a a*, secured to the shaft *b*, and operated by the gears *c d*, driven by the pulley *e*. The blades B B′ resemble in form the mold-board of a plow, and are placed on the arms in opposition to each other, so that the blade B, while inverting the mass it is operating upon, thrusting it outward from center to circumference of the vessel A, is immediately followed

by the blade B′, which forces the mass back again to the center. The effect is such that a very short time suffices to mix intimately the materials which are placed in the mill dry. Springing from between the arms *a a* is the jointed arm D, carrying the roller E. The latter has slotted bearings in which to adjust itself readily to the irregularities of the material on which it may have to act. When desirable, the roller can, by means of the jointed arm, be thrown into a vertical position, and for this purpose is furnished with a spring or other catch, *f*, which engages the shaft *b*, and retains it in that condition. The vessel A is furnished with a gate, *g*, closed at pleasure by a slide, (shown in dotted lines at *h*,) and operated by the levers *i i*. Under the gate *g* is the chute F, which, when the gate is opened, conducts the material as it drops from the mill to the filling-table G. Immediately over the center of the filling-table is the vertical tamping-shaft *j*, carrying the tamper H. This shaft is operated by the cam K acting on the disk I. The disk I is a plate having a circular central aperture, *m n*, whose diameter is somewhat greater than that of the shaft *j*, on which it freely slides.

It will be seen that, when the plane of the disk is inclined so that the upper edge *m* of the aperture is brought in contact with the shaft, the opposite lower one *n* will also be forced upon it, and the combined action causes it to bind or bite upon the shaft, and as the cam K elevates and rotates the disk I, it must also take with it and rotate the shaft, and, consequently, the tamping-tool H. When the cam gets clear of the disk, the latter, together with the shaft and tamping-tool, descends by its own gravity. As, however, it is necessary that the shaft and tamper should continue to fall until the latter impinges upon and packs the material in the case, some means of freeing the shaft from the clutch of the disk is requisite. This is supplied by the wedge-shaped block J sliding in guides attached to the frame, and operated by the lever *o*.

It is evident that when the wedge J is brought under the inclined disk I the latter must assume a nearly horizontal position. The edges *m* and *n* of the aperture will then cease to bind the shaft, and the latter with the tamper must descend until arrested by the material upon which it is to strike. It will be evident, also, that, whether the case be filled or empty, the blow struck by the tamper will be precisely of the same degree of force. The disk may have its under face corrugated or formed in shallow radial grooves, the better to enable the cam to rotate it.

Free on the horizontal shaft, and thrown into or out of gear with it by the claw-clutch *p*, operated by the lever *q*, is a sleeve, *r*. Fitted to the sleeve, and secured to it by a set-screw, is the cam K. The latter can be adjusted on any part of the sleeve by releasing the set-screw and sliding the cam backward or forward, and again securing it by the set-screw; hence the rotation of the disk can be increased or decreased at will. On the lower extremity of the shaft *j* are two or more arms, *s s*, acting as guides for the tamping-tool holder L. The holder L is secured to the arms by a set-screw, and has a vertical socket, *t*, to receive the tool H. It is also furnished with a spring, *u*, which will give an outward or inward thrust to the tool, according as one or the other side of the latter shall be presented to it, and thus force the tool lightly either against the core inwardly, or against the case outwardly, at pleasure, when tamping pipe of irregular form.

The tamping-tool H is bent, as shown, and, when placed in the socket *t*, is free to turn on its own axis therein, and thus follow the form of either the core or the case it is operating in. Its upper extremity is fitted with a screw to receive the nut *v*. The clamping-nut *v* has an arm projecting from one of its sides to serve as a wrench, and thereby the tool can be clamped rigidly in any desired position. The filling-table G has a central rabbeted aperture, M, corresponding in size to the interchangeable plates, Figs. 8 and 9. The table rests upon the bent or crank-shaped bars or rods N N, which have a quarter-circle motion on their bearings, and are operated by the cranks O O, connected by the rod P. The vertical motion of the table is rendered steady by the projecting slides Q Q, working in vertical guides. (Not shown.) The interchangeable plates are adapted to fit the aperture in the table, and also have apertures R R, corresponding to the shape and size of the various cases. The lower edges of the apertures terminate in collars S S, the better to engage the cases when brought under the table to be filled. The cases are of any suitable form and size, and are provided with lugs T T, so arranged that when the two parts of the case are brought together the lugs on one part shall overlap those on the other part. The lugs have holes U U, whose centers fall a little short of coinciding with those of the lugs on the other part of the case, as shown in Fig. 12, where the unshaded portion represents the lug on one part of the case, and the shaded portion that on the other.

It will be seen that the clear opening through the two lugs thus presented represents a vertical section of a circular spindle, and that a rod having an elliptical or any similar cross-section whose shorter diameter is less than that of the opening can easily be thrust down through both lugs; and, furthermore, if its longest diameter is equal to the shorter diameter of the opening, that giving the rod a quarter-turn must force the two lugs toward each other, and consequently lock the two parts of the case firmly together.

The locking-rod W is made of an elliptical or similar shape, and is bent in order to form a lever by which they may be operated. The

core V is rigid, and tapered sufficiently to draw upward from the newly-made pipe, and to this end has an eye, X, by which it can be hoisted out. It has a shank, Y, to fit into a corresponding cavity in the foundation-plate Z.

In operating my apparatus, the materials of which the pipe is to be made are, in proper proportion, thrown dry into the vessel A. Here they are very rapidly and thoroughly mixed by the combined action of the blades B B′, the roller being elevated and secured to the shaft by the catch *f*. Water or other liquid in proper proportion is then added by hand or conducted to the vessel A by a suitable pipe under the control of the operator. The jointed arm and roller E are then let down, and while the blades continue their action the roller presses and diffuses the liquid throughout the mass.

The operator, who stands in front, has within reach of his right hand the lever *q*, to operate the clutch *p*, the crank *w*, to elevate the table, and within that of his left one the levers *o i* of the wedge J and gate *g*, and, if necessary, the faucet of the water-pipe.

The material being mixed and moistened, the operator raises the table G by a quarter-turn of the crank *w*, acting on the bars N N. The case and core on the foundation-plate Z, as shown in Fig. 10, are then, on a truck or sled, brought under the table, and centered there by suitable guides on the floor. The table is then lowered by a reverse motion of the crank, when the collar S of the plate immediately engages the case and retains it firmly. The roller E is again thrown up, the gate *g* opened, and the materials descend by the chute F to the table, its delivery being regulated by the extent to which the gate is opened. With a trowel the operator feeds the material into the case through the aperture R in the plate, and, throwing the clutch *p* into gear with the cam K with one hand, and with the other brings the wedge J under the disk I, he sets the tamper to work. The tamping-tool, pulling regularly and traveling around the core as the material is fed into the case, packs it evenly and rapidly. The filling and tamping being completed, the clutch *p* is disengaged from the cam K, the wedge J thrust from under the disk I, and tamping-tool H and shaft *j* thrown up out of the way, when the shaft is instantly grasped by the disk and retained, the table is again elevated, the case, core, and pipe withdrawn, and its place supplied by another case and core.

In order to lock the two parts of the case together they are placed on the foundation-plate Z, the locking-rod W is passed through the lugs and turned the quarter-circle. To free the pipe from the case the rods are rapidly turned and withdrawn, when the two parts of the case separate immediately, and the pipe removed.

The same core answers for all pipes of the same size, as it is drawn out as soon as the pipe is made, and replaced in the foundation-plate Z, together with a fresh case.

I claim as my invention—

1. In drain-pipe-making apparatus, the blades B B′, constructed in the form of a plow mold-board, adapted to be set so as to move in the same or in opposite directions, for the purpose of rapidly mixing the materials from which the pipe is to be made, substantially as described.

2. In drain-pipe-making apparatus, the combination of the roller E and jointed arm D, for the purpose of acting on the materials in process of mixing, and thereby more equally and rapidly diffusing throughout the mass the liquids, when added thereto, substantially as described.

3. In drain-pipe-making apparatus, the disk I, having the circular orifice *m n*, for the purpose of grasping, and cam K upon the shaft E, for raising as well as rotating the tamping-shaft and the tamper, substantially as described.

4. In combination with the disk I, the sliding wedge J, for disengaging, when required, the shaft *j* from the grasp of the disk I, substantially as described.

5. In drain-pipe-making apparatus, the holder L, sliding freely on the arms *s s*, and having the socket *t*, for the purpose of receiving the tamping-tool H, and thereby admitting the said tool to be adjusted and used to tamp pipe of various sizes, and of regular or irregular forms, substantially as described.

6. In combination with the holder L, the bent tamping-tool H, having the nut *v*, for rigidly clamping it, when required, substantially as described.

7. In drain-pipe-making apparatus, the movable table G, operated by crank-shaped bars N N, for speedily adjusting it, so that the case or mold can be readily brought beneath, secured while being filled, and withdrawn from under it, substantially as described.

8. In drain-pipe-making apparatus, the lugs T T, having apertures U U, Figs. 10, 11, and 12, on cases or molds, for receiving the elliptically-formed rods W W, whereby the two parts of the mold may be locked together, substantially as described.

9. In drain-pipe-making apparatus, the shank Y on the core V, for centering and holding it in a corresponding socket in the base-plate Z, and the eye X on the upper extremity of the core, for drawing the latter upward from the newly-molded pipe, substantially as described.

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