

J. W. STOCKWELL.

PATENTED JUL 4 1871

Impt. in Machine for Making Cement Pipe.

116643

Fig. 1.

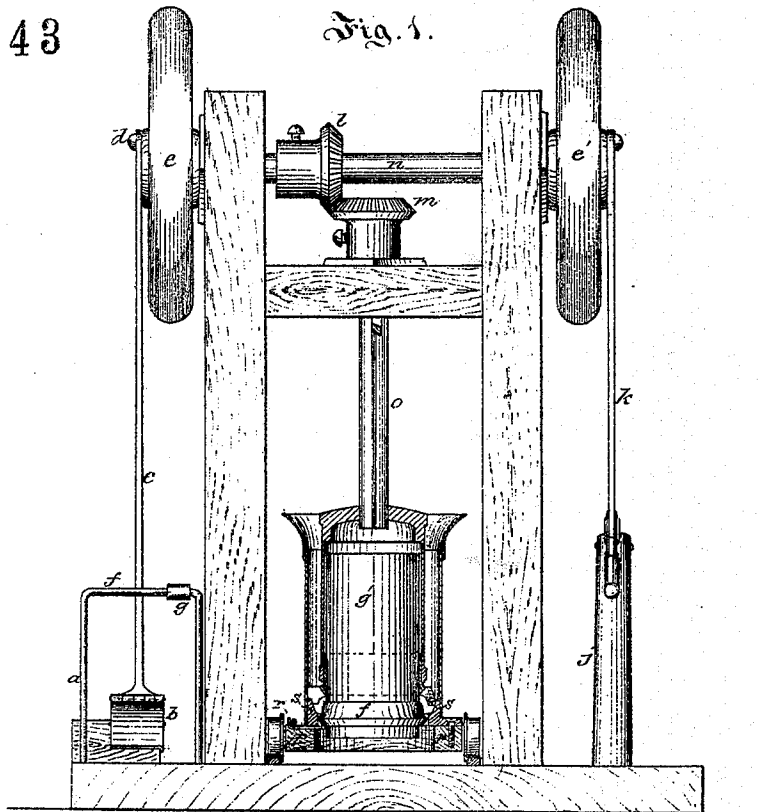
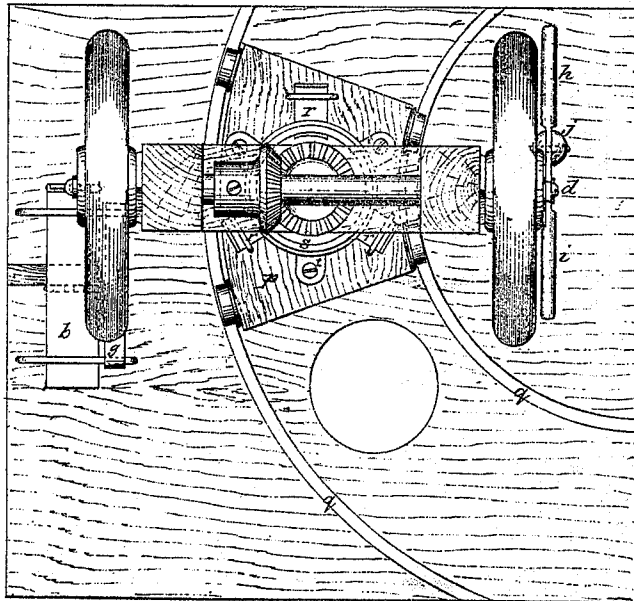


Fig. 2:



Witnesses:

T. C. Brecht.

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Fig. 3.

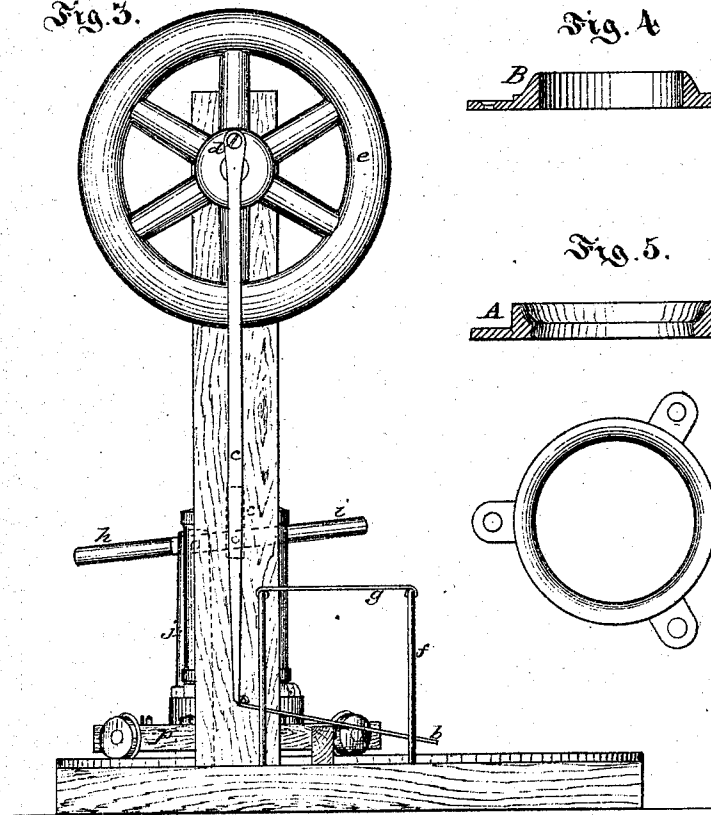
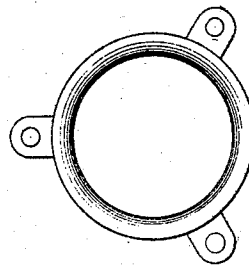


Fig. 4.



Fig. 5.



C

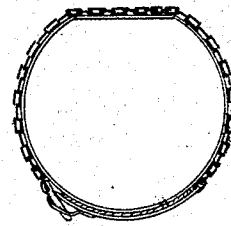


Fig. 6.

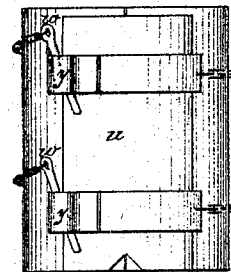


Fig. 7.

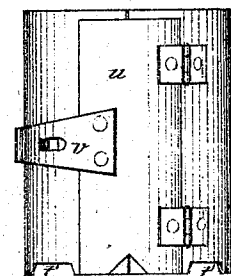


Fig. 9.

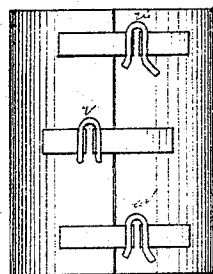


Fig. 10.

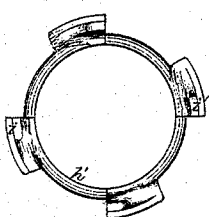


Fig. 11.

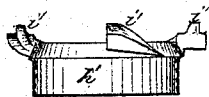


Fig. 8.

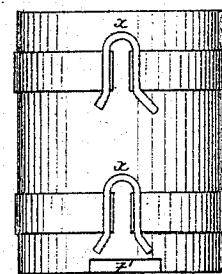
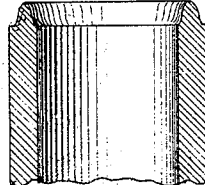


Fig. 12.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN W. STOCKWELL, OF PORTLAND, MAINE.

IMPROVEMENT IN DRAIN-PIPE MACHINES.

Specification forming part of Letters Patent No. 116,643, dated July 4, 1871.

To all whom it may concern:

Be it known that I, JOHN W. STOCKWELL, of the city of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in the Manufacture of Drain-Pipe; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1, plate 1, shows a front elevation of the machine for operating the revolvers and packing the case, with a vertical section of the case and its appurtenances. Fig. 2 shows a top plan of the same, and shows, moreover, the curved track. Fig. 3, plate 2, is a side elevation of the machine. Fig. 4 is a vertical section of the butt-former and ears. Fig. 5, a section of the tip-former. Fig. 6 is a side elevation of a case, showing a method of fastening the same, C showing a top plan of the same. Figs. 10 and 11 show bottom view and side elevation of a new form of trowels. Fig. 12 shows a vertical section of two joints of pipe to illustrate a new form of joint for the same.

Same letters show like parts.

Letters Patent reissue No. 4,220, dated December 27, 1870, of the United States, have already been granted to me for certain devices embodied in the machinery employed in the present application, and I do not now claim those combinations.

My present application relates to certain improvements in the manufacture of drain, water, and other cement pipe, which I will describe. My invention consists: 1st, of a device which I call a tip-former, in combination with a flange upon one extremity of the core for forming the male end of a length of jointed pipe. 2d, in an improved form of joint or connection for such pipe. 3d, in certain devices employed, in combination with a divided case, for the purpose of retaining said case in position while being filled. 4th, in trowels of a peculiar construction for compacting the plastic material within the case and around the core. My former invention shows a method of driving the rotary vertical shaft. In the present application I show a hand and foot-power, to be used when steam-power might be inconvenient or too expensive to obtain.

In Figs. 1 and 2, plate 1, and Fig. 3, plate 2, *a* shows a foot-operated device, having the pedal *b* and rod *c* attached to a crank, *d*, on the balance-

wheel *e*. *f* shows rails to support the operator, and also for him, when he wants more power than his weight, to grasp with his hands, and, by pulling upon said rails, add to his weight as much of his strength as he desires. *b*, locks or tips on its hinge or pivot, (see Fig. 3, plate 2,) and so, with the operator's feet on either side of the pivot, the motion is imparted to the balance-wheel *e*. *g* is a sliding seat for the operator to sit upon with his feet on the pedal *b*, when only a portion of his weight is needed. *h* is a hand device, consisting of the lever *i* on the standard *j* with the connecting-rod *k* also connected with a crank on the balance-wheel *e'*. The method of operating this is apparent, and the two methods can be so arranged as to operate alternately and exert a continuous power upon the cranks *d*. *l* and *m* are two beveled gears, one on the shaft *n*, the other on the vertical shaft *o*, which carries the revolver and trowels. Both the foot and hand-levers work with an upward or lifting and downward pressure. The vertical shaft *o* is made either grooved or plain-sided, as desired, and rotates the revolver, as before patented by me, reissue 4,220.

I employ a curved carriage, *p*, running on circular tracks *q*, each carriage having the core-pins *r*. These carriages can be run under the shaft *o*, and, having the outer casing and all the parts required, when a joint is to be made the pipe is made and then wheeled away on the curved carriage and circular track, then replaced by another, and so on. The core-pins *r* are so made as to slide inward and support the core in position and to draw back and allow the core to drop down out of the pipe when made. These pins can be attached in any convenient way.

With these arrangements great promptness and rapidity can be attained in the manufacture of the pipe. The core-pins can be made to slide in and out through or under the tip-former, which is also attached to the carriage, as shown, and has the ears *t* to keep the casing centered, and also to prevent it from rotating by the friction of the revolver by means of the recesses *t'* cut in the lower ends of the cases and intended to fit over the said ears, and thus hold the cases. The cases can be reversed when worn on one end, and new recesses made to fit the ears on the tip-former. I bring the two edges of the outer case together and place over them, thus united, the outer piece *u*, which serves for a connection for

the bands extending around the case and also to stop the squeezing through of the cement. Several kinds of bands to bind on the piece can be employed to advantage, and they will serve, at the same time, to press and hold the edges of the case together. The overlapping piece or case may have a shoulder for one edge of the case to rest against. *w* shows a chain and inclined pins fastened to it, and fitting into sockets *y*, so that the more the pins are driven in the tighter the chains will be drawn. The pipe may be formed with a flat side to rest on the ground, which increases the strength of the pipe by giving it a better bearing-surface. This is indicated in Fig. 6, plate 2, the top plan, though not specially claimed herein. The peculiar joint, as seen in Fig. 12, plate 2, enables the joints to be made much firmer and stronger.

In laying this kind of pipe, when the joints are to be united, fresh moist cement is placed either on the male end or in the recess of the female end of one of the joints to be united, and then the two pressed tightly together, so that the projecting or male end enters the other. When dry the parts thus united are as strong and firm as other parts of the pipe. This, therefore, produces a tighter and a stronger joint than heretofore in this kind of pipe. This is limited to the kind of pipe known as cement drain-pipe. The female part of this joint may be made by a former similar in shape to the male part of the joint, and the former may be placed on the upper end of the newly-made joint of pipe, and revolved sufficiently long to produce the result or female part of the joint. One joint is formed with a projection or male end fitting a recess in the next contiguous joint with a shoulder running around both pieces of the pipe on their respective ends on the inner and outer periphery. I employ a funnel-shaped device over and on the upper end of the case to conduct the material more readily into the case. A section of this is seen in Fig. 1, plate 1, where the device is shown as placed on the top of the outer or molding-case. As seen in Fig. 1, plate 1, I construct the core slightly smaller at the top than at the bottom, with the tip-former fastened to the carriage *p*, as before described, and with the peculiar enlargement *f'*, which, with the tip-form-

er, completes the tip seen in Fig. 12. When the pipe is manufactured the withdrawal of the core-pins allows the core to be removed.

My improved manufacture of the trowels is illustrated in Figs. 10 and 11, plate 2, where is shown a circular band of metal, *h'*, with the trowels *i'* cast in one piece together with the same. This band *h'* fits into the bottom end of the revolver, and so affords not only an increased cheapness and facility in manufacture, but likewise convenience in use. The trowels are formed on a ring, *h'*, projecting from the outer periphery thereof, and have small projections on their under sides. (See *i'*, Fig. 11, plate 2.)

The operation of my device is as follows: The core *g'* being placed in position on the tip-former, the outer case is then placed around it, both being held in position by the ears and recesses. The revolver is then placed down over the core, and inside the case, and, being connected with the vertical shaft *o*, is caused to rotate with this shaft. The stock is then introduced into the upper flaring end of the case, and, falling down between the trowels, is packed and compressed by them as they rotate till the length of pipe is done. The revolver is then lifted entirely free from the case, and the case and pipe are removed away to give place to another. When the cement is sufficiently set the pins *w* are withdrawn from the case and the core taken away, and the pipe then allowed to dry and harden.

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

1. The tip-former *A*, in combination with the flange *f* of the core *g'*, as herein described.
2. The improved joint for cement pipe, as shown in Fig. 12, plate 2, and as herein described.
3. The chains, sockets, and inclined pins, or their equivalents, as shown, in combination with the case, as described.
4. The trowels, as shown in Fig. 11, provided with projections *i'*, in combination with the collar *h*, when said parts are cast in one piece, as set forth.

JOHN W. STOCKWELL.

Witnesses:

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