W. Goodwin,

Tile Machine.

No. 49,828. Patented Sep. 5, 1865.

Fig. 1.

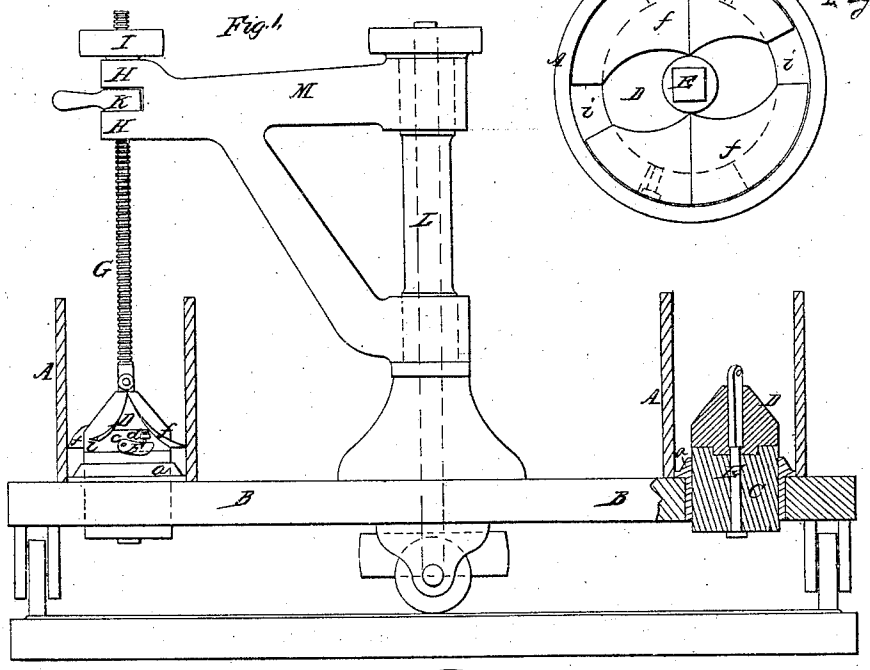


Fig. 3

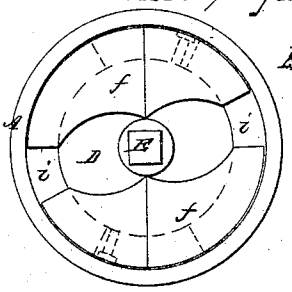


Fig. 2.

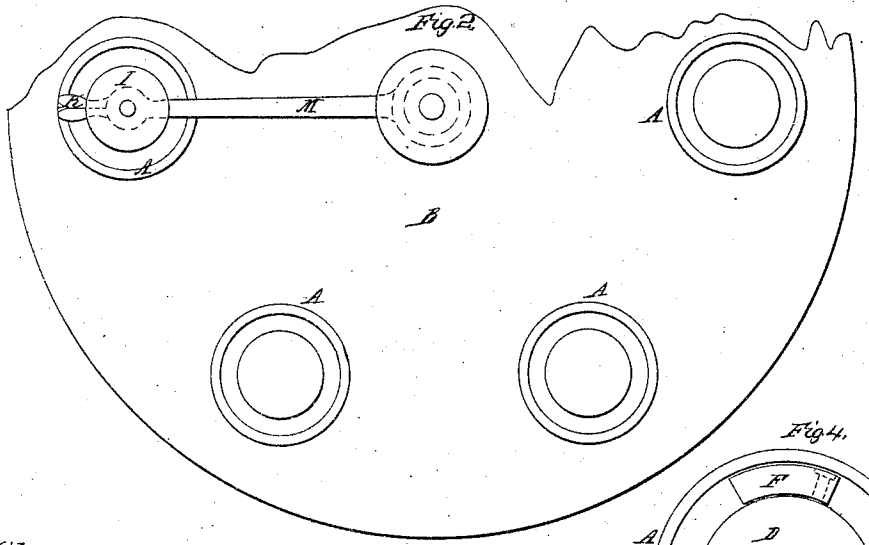
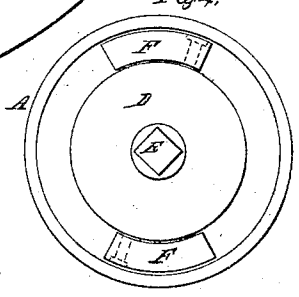


Fig. 4.



Witnesses:
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Chas. N. Jewett

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UNITED STATES PATENT OFFICE.

WILLIAM GOODWIN, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO JOHN P. LINDSAY, OF SAME PLACE.

IMPROVEMENT IN MACHINERY FOR MAKING CEMENT PIPE.

Specification forming part of Letters Patent No. **49,828**, dated September 5, 1865; antedated August 28, 1865.

To all whom it may concern:

Be it known that I, WM. GOODWIN, of New Haven, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Machines for Making Cement Pipe; and I do hereby declare the following to be a full, clear, and exact description of the same, when taken in connection with the accompanying drawings and letters of reference marked thereon, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a sectional side view; Fig. 2, a plan view, and in Figs. 3 and 4 detached parts to illustrate the operation and construction of the working parts of my improvements.

My invention relates to improvements in machinery for making drain or water pipe in the composition of which hydraulic cement forms the principal ingredient, and commonly called "cement pipe."

Ordinarily this pipe is made by placing the stock into a flask and tamping it by hand—a laborious and tedious operation. To overcome or to do away with this labor is the principal object of my invention, which consists in an automatic mechanism for feeding and pressing the stock.

To enable others skilled in the art to make and use my invention, I will proceed to fully describe the same as illustrated in the accompanying drawings.

A is a flask, of any common or known construction, set upon a base or table, B, its internal diameter the same as the external diameter of the pipe to be formed within the said flask, and resting upon the said table is a ring, *a*, to form one end of the pipe, and may be of any form best adapted to form a perfect joint between two sections of pipe.

C is the core, constructed in the following manner, and designed to be raised during the process of filling the flask: I form the core of metal the diameter designed for the interior of the pipe. Upon the top of the core I fix a head, D, (see Fig. 1,) so that it may be turned or revolve without revolving the core by passing a spindle, E, through the two, square through the head and round through the core, as indicated in the said Fig. 1, and by means of which the head may be made to revolve, as hereinafter shown. To the said head I adjustably fix one or more shoes, F. (See Figs. 1 and 4—enlarged in Fig. 4.) These shoes should be wide enough to nearly fill the space between the core and case, as in Fig. 4, so that they may bear upon the whole surface of the stock. If rolls were used instead of shoes, that part of the stock next to the case could not be reached. Hence the advantage of the shoes over rolls. The shoes are hung to the head D, as seen in Fig. 1, upon a pivot, *e*, and are adjusted by the screws *d* as more or less inclination is required.

To the spindle E, I attach a rod or shaft, G, in such manner that the shaft revolving will also cause the head of the core to revolve, and also so that it may be readily detached. The said shaft G is supported in proper bearings H H, and made to revolve by means of the pulley I. As the stock is fed into the flask the shoes revolving press it down and gradually rise as the flask is filled, drawing up the core until the flask is filled. Then detach the shaft from the head, remove the head, and form the upper end of the pipe the reverse of the lower end, so that the sections will fit together. This may be done in any convenient manner.

To make my machine self-feeding or to regulate the quantity of stock to each revolution of the shoes, I form a metallic flange, *f*, on the head over the shoes, and so as to fill the flask except a small space, *i*, in front of each shoe, as seen in Figs. 1 and 3, through which the stock falls as the head revolves, the space *i* regulating the quantity of stock. Only so much will pass through as can pass under the flange. By depressing the shoe the depth of the stock will be proportionately increased, or if the shoe is raised the depth will be less. After the pipe is finished the core may be drawn out or depressed by means of a screw cut upon the shaft G revolving in a hinged nut, K. This nut, as seen in Fig. 2, may be opened or closed to engage or disengage the screw for the purpose above mentioned, or, if

necessary, the same screw may used to raise the core and shoes during the operation of filling.

I place several flasks, A, around a column, L, which supports a crane, M, on which are the bearings H, and through the said column set the driving-shaft through which to carry power to the pulley I. When one section is completed, carry the core to the next flask by swinging the crane, which supports the core suspended, and so on from flask to flask as each are finished, while other hands remove the finished pipe; or, instead of swinging the crane, the table B may be set upon trucks so as to turn; but I prefer the swinging crane, except it be in places where it is desirable to take the finished pipe all away at one point. Then the table would be best. I therefore illustrate the two combined in one machine.

I do not claim raising the core during the operation of filling the flask; but

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

1. The construction and arrangement of the shoe or shoes F with a core and flask, when the said core and shoes rise as the flask becomes filled, substantially as and for the purpose specified.

2. The combination of the flanges *f* with a revolving head, substantially as and for the purpose specified.

3. The arrangement of the crane M in combination with one or more flasks, constructed to operate substantially as and for the purpose described.

4. The combination of the crane M, table B, and two or more flasks, substantially as and for the purpose specified.

WM. GOODWIN.

Witnesses:

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