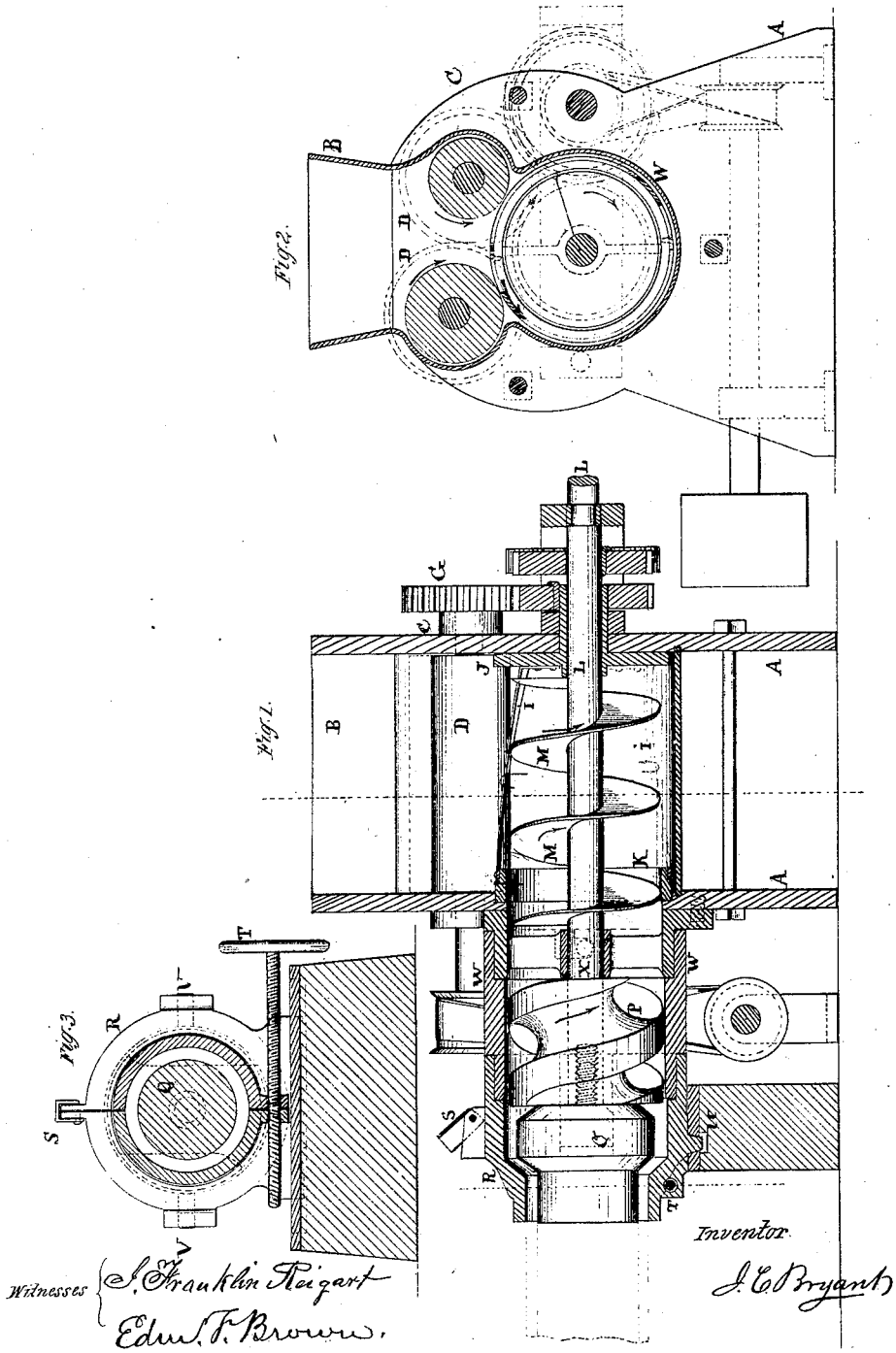
2. Sheets. Sheet. 1.

I. C. Bryant,

Brick Mach.

No. 113,847. Patented Apr. 18. 1871.



Witnesses { J. Franklin Reigart
Edw. F. Brown.

Inventor
J. C. Bryant

I. C. Bryant,

2. Sheets. Sheet 2.

Brick Mach.

No. 113,847. Patented Apr. 18. 1871.

Fig. 6.

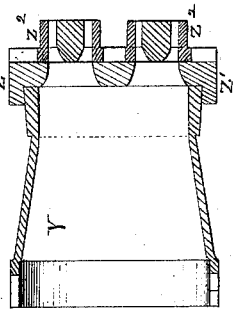


Fig. 7.

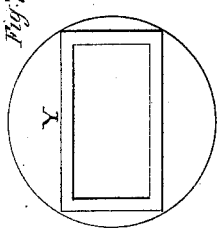


Fig. 8.

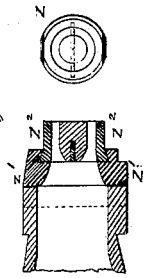


Fig. 5.

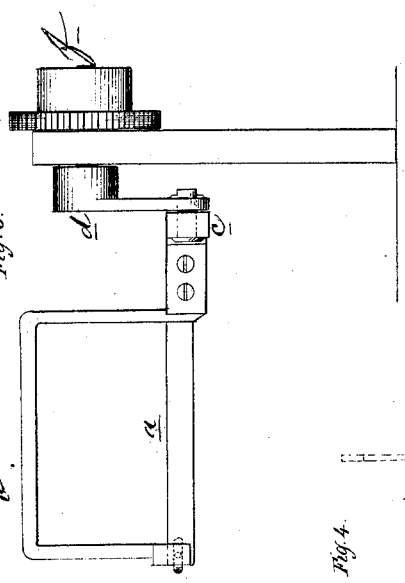
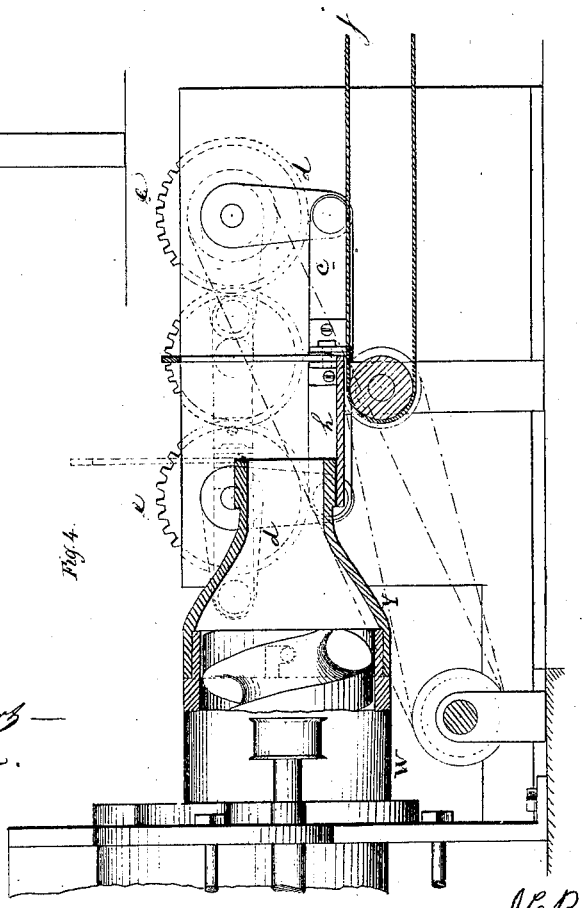


Fig. 4.



Witnesses { W. Franklin Redgate
Edw. F. Brown.

J. C. Bryant

United States Patent Office.

ISAAC C. BRYANT, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 113,847, dated April 18, 1871; antedated April 8, 1871.

IMPROVEMENT IN MACHINES FOR MAKING BRICKS AND TILES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ISAAC C. BRYANT, of the city of Washington and District of Columbia, have invented a new and useful "Machine for Making Bricks and Drain-Pipes;" and I do hereby declare the following to be an exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification, in which—

Sheet 1—

Figure 1 represents a longitudinal section of the machine for making bricks and drain-pipes.

Figure 2 is a front elevation and view of the same.

Figure 3 represents the mouth-piece and mold for the pipe and collar.

Sheet 2—

Figure 4 represents a longitudinal section of the front part of the machine, showing the mouth-piece and cut-off of the bricks or drain-pipes.

Figure 5 is a side elevation of the vertically-operating knife and cut-off of the bricks and pipes.

Figure 6 represents a longitudinal section of the mouth-piece, showing the mold for the bricks and pipes.

Figure 7 is a front view of the brick-mold.

Figure 8 exhibits a longitudinal section and front view of the mold for making the drain-pipes.

The nature of my invention consists in the arrangement and combination of a double-flanged screw in front, a single-flanged screw in the rear, (on the same shaft,) with oblique cutters operating around the rear screw, but in opposite direction, and feed-rollers above the knives; also, the shape and construction of the mouth-piece, forming and molding the collar with the pipe at the same operation, with the dovetail piece sliding on the brick-mold and the mouth-pieces of the pipe-molds sliding in dovetail guides in front of the dovetail plate; also, the construction of the knife or cutter operating in a reciprocating motion, by which the bricks and pipes are cut off at the mouth of the machine with accuracy and facility; also, the movable cylinders surrounding the double screw, that is attached by a bayonet-lock so as to be easily removed and a larger or smaller cylinder attached to the head-plate of the machine so as to mold large or small pipes; also, a revolving core in front of the double screw.

The object of my invention is to manufacture bricks or drain-pipes by one machine, tempering its own clay, and enabling me to manufacture terra-cotta pipe and common drain-pipe with the same facility, the double screw giving increased pressure upon the clay, while the collar is molded at the same time with the pipe.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, as follows:

A represents the upright frame or iron plates that support the devices.

B represents the hopper at top, in which the clay is put.

C, the cylinder or lower part of the hopper that the rollers D, knives E, and screw F operate in.

The rollers D D are operated by toothed wheels G G at the end. The pinion H that is geared into one of the toothed wheels, G, drives the two oblique knives, I I, that are attached to a circular plate, J, at one end and a ring, K, at the other end, the knives working independently of the main axis L, and in an opposite direction from the single-flanged screw M, so that there is a free passage for the clay.

The front end of the axis L operates in an upright support or post, N, as a bearing, which bearing is between the single-flanged screw M and the double-flanged movable screw P in front.

In front of the double-flanged screw P is the core Q that is screwed into the end of the main shaft L in front of the screw P, and this core forms the inside of the pipe and its collar.

The outside of the core R, as shown at fig. 3, is made in two halves, with a buckle or fastening, S, at top, and an adjustable right-and-left hand screw, T, below, for the purpose of freeing the pipe and collar when molded. This mold R also slides to either side in a slot, U, below, sufficiently to clear the pipe, and is held securely on each half by two pins, V V, on the outer cylinder W, the cylinder W being movable and attached to the front of the hopper C by a bayonet-joint, X.

The mouth-piece Y for making bricks fits onto the front of the cylinder W also by a bayonet-joint, and the plate Z^1 that holds the molds Z^2 Z^2 for making pipes is fitted by a dovetail to the front of the mouth-piece Y, as shown at figs. 6 and 8. The molds for making pipes Z^2 Z^2 fit into the plate Z^1 in a dovetail, the plate Z^1 being made of metal and with dovetails on the front and back sides so as to be movable when required, and the plate has two or more apertures, according to the number of molds to be used for making two or more pipes at the same time.

The knife *a* that cuts off the brick or pipe as it passes from the mouth of the machine is a horizontal knife at the lower side of a square upright frame, *b*, that is attached to a cross horizontal pitman, *c*, that has a reciprocating motion, the pitman *c* being attached to cranks *d d* of the toothed wheels *e e* that give the pitman a lateral, upward, and downward movement; and the knife *a* being permanently fastened to the center of the pitman C, receives its lateral, upward, and downward motion, and as it descends in a perpendicular line to cut off the brick or pipe passing from the mouth-piece, it moves with the pipe, cutting it perfectly straight at each downward cut.

The knife is operated by a band-wheel, *f*, and belt, moving regularly with the band-wheel and belt that drive the machine.

The center-wheel *g*, as shown at fig. 5, is to give the same motion to wheels *e e*. The knife *a* operates at right angles with the mouth of the machine.

h and *j* represent a table and apron, intended to be used for carrying off the bricks and pipes when molded.

As the clay is passed through the hopper B it is carried, between the horizontal rollers D D, to the tempering-knives I I, down to the single-flanged screw M, where it is then forced in a horizontal direction to the double-flanged forcing-screw P to the core or mouth-piece, forming a bar or a hollow tube of clay, when the knife *a* cuts off the bricks or pipes as they pass from their molds.

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

1. The combination and arrangement of the double-flanged screw P, single-flanged screw M on the same shaft, oblique cutters I I, and feed-rollers D D, all constructed and operating as herein described, and for the purposes set forth.

2. The combination of the case K, removable cylinder W, screw P, mold R, and core Q, all constructed and arranged as shown and described.

3. The combination of the mouth-piece Y with the double dovetailed plate Z^1 and Z^3 and molds Z^2, constructed and arranged substantially as shown and described.

4. The combination of the knife *a* and frame *b* with the crank *d*, wheel *g*, and pulley *f*, when arranged and operated as herein shown and described, for the purpose set forth.

5. The combination of the cylinder W, provided with the bayonet-lock X, with the removable screw P, when arranged and operating as herein shown and for the purpose specified.

I. C. BRYANT.

Witnesses:

J. FRANKLIN REIGART,

EDM. F. BROWN.