G. S. Tiffany,

Tile Machine,

No. 45,539. Patented Dec. 20, 1864.

Fig. 2

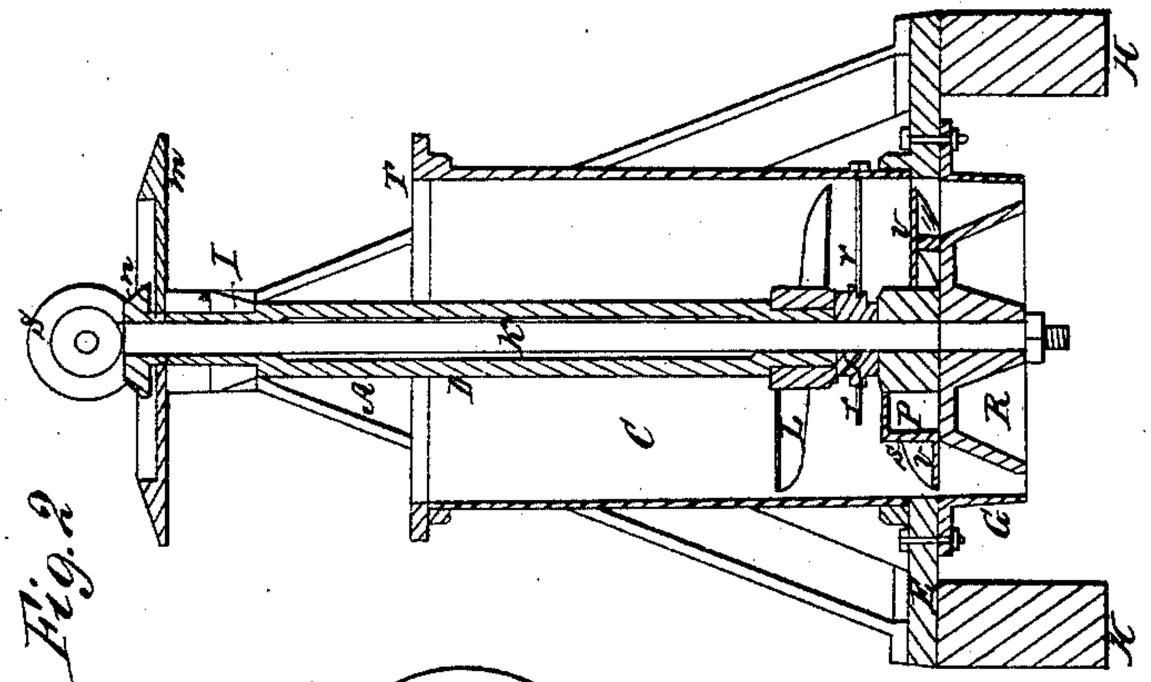


Fig. 4

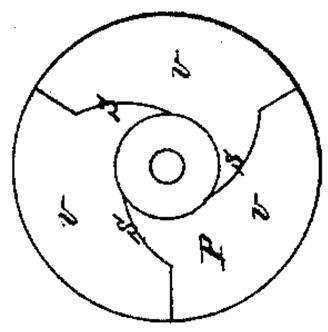


Fig. 3

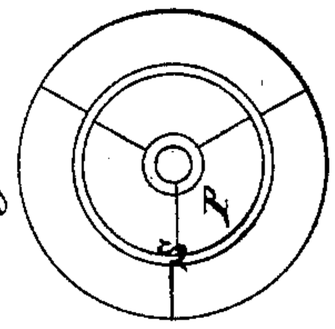


Fig. 5

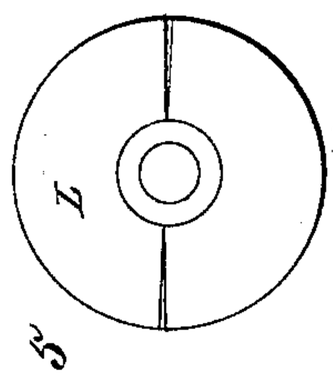


Fig. 6

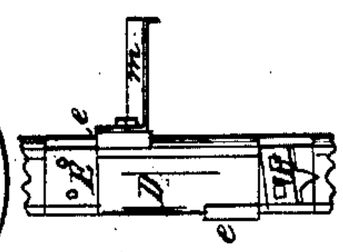
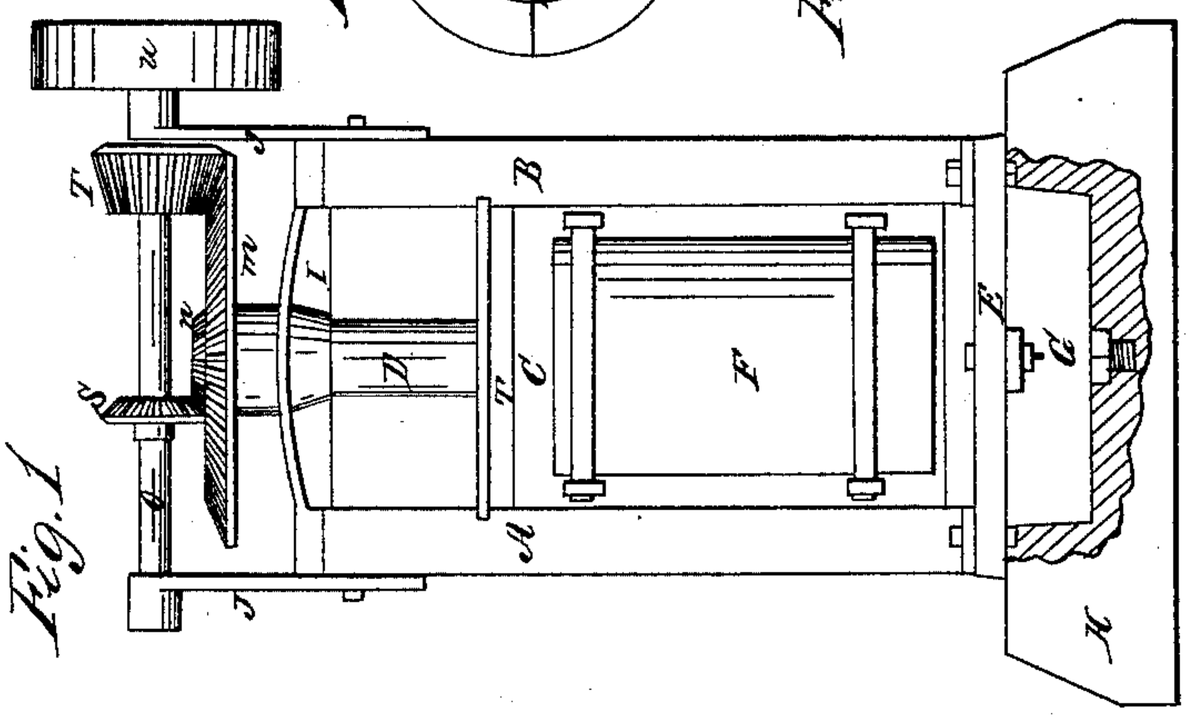


Fig. 1



Witnesses;
A. X Tiffany
G. H. Frasier

Inventor
George S. Tiffany

UNITED STATES PATENT OFFICE.

GEORGE S. TIFFANY, OF PALMYRA, MICHIGAN.

SEWER-PIPE.

Specification forming part of Letters Patent No. **45,539**, dated December 20, 1864.

To all whom it may concern:

Be it known that I, GEORGE S. TIFFANY, of Palmyra, in the county of Lenawee and State of Michigan, have invented a new and useful Machine for Making Sewer-Pipe; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the novel arrangement and operation of a series of beaters in the lower portion of a grinding-mill by means of which the ground clay is forced through a die in the bottom of the mill, thus grinding the clay and making the pipe at the same operation with much less power than is required by other machines for this purpose.

To enable those skilled in the art to make and use my invention, I will describe its construction and operation.

Figure 1 is a side elevation of my invention. Fig. 2 is a central vertical section of same. Fig. 3 is a detached view of the under side of the casting P, attached to the shaft K. (See Fig. 2.) Fig. 4 is a view of the upper side of the same. Fig. 5 is a view of beaters L, attached to shaft D, Fig. 2. Fig. 6 is a view of a part of shaft D, showing the method of attaching the knives to the grinding-shaft.

Like letters indicate like parts in all the figures.

H H are two pieces of timber which form the foundation of the machine, the near one in the elevation being represented as broken away in order to show the parts below the bed-plate E. A B are two A-shaped castings, to the cross pieces of which are attached the arms of circle T. C is the cylinder, which may be made of plate-iron or wooden staves, and is bound by the circle T and the circle in the bed-plate. F is a door to facilitate the changing of the knives, cleaning the mill, &c.

The grinding-mill shaft D is tubular and has a bearing in the bridge-tree I, a bevel wheel at the upper end, *m*, and a screw-shaped casting, L, at the lower end thereof. Plane faces, *e e e*, &c., (see Fig. 6,) are cast on the shaft, to which are bolted the beaters *w w*, &c., the bolts being tapped into the faces *e*. The shaft D is cast with a chamber and has a bearing-surface at each end for the central shaft, K. The central shaft, K, has a bevel-wheel attached to the upper end, and the lower end of the shaft is retained in position in the center of the cylinder by means of the loose collar X and three rods running therefrom through the cylinder C. The casting P is attached to the shaft K. Its form may be seen by comparing its section in Fig. 2 with its upper and lower surfaces in Figs. 3 and 4. It consists of three spiral flanges, *v v v*, which ascend to the left; a circular vertical flange, *s*, on the under side, the diameter of which is the same as the diameter of the upper end of the core-pin or center R, and vertical flanges *s s s*, curved from the hub beyond the circular flange *z*.

The core-pin R and funnel G are of the same form as are used in the tile-machine patented to me February 26, 1861, and the changes for different sizes are made in the same manner.

O is a horizontal shaft, (supported by standards J J, bolted to the A-shaped pieces,) on which is a pinion, S, meshing into bevel-wheel *n* on the central shaft, K, a pinion, T, meshing into the bevel-wheel *m* on the grinding-shaft D and band-wheel U.

The operation of this machine is as follows: Motion is given to the horizontal shaft O, so that the gearing will turn the grinding-shaft from left to right. The central shaft will then turn from right to left. The clay is thrown into the cylinder, thoroughly ground by the knives *w w*, pressed down upon the casting P (which, turning in an opposite direction, counteracts the tendency of the clay to turn with L) by the screw L. The clay is pressed outward from the shaft by the vertical curved surfaces *s s s* and is caught beneath the spiral flanges *v v v*, and by them forced between the core R and funnel G, forming the pipe, which may be cut off into suitable lengths by known devices.

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

Making the shaft D of the grinding-mill tubular, in combination with the central shaft, K, having casting P and core-pin R thereon, and funnel G, arranged to operate substantially as and for the purpose herein set forth.

GEORGE S. TIFFANY.

Witnesses:

A. N. TIFFANY,

G. W. FRASIER.