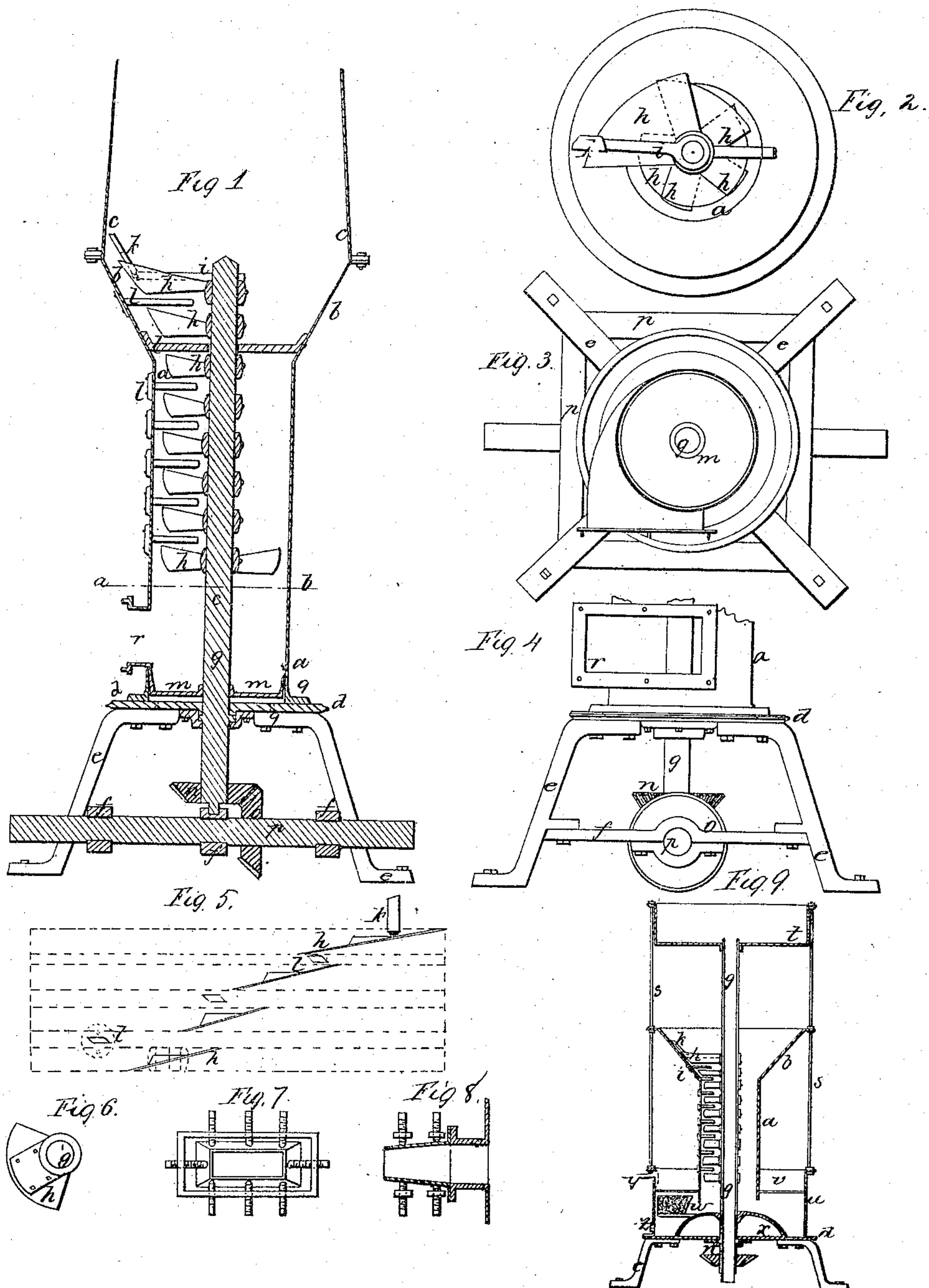


C. F. Schlickeysen,

Rug Mill.

No 15,197.

Patented June 24, 1856.



UNITED STATES PATENT OFFICE.

CARL F. SCHLICKEYSEN, OF BERLIN, PRUSSIA.

PUG-MILL FOR MIXING CLAY.

Specification of Letters Patent No. 15,197, dated June 24, 1856.

To all whom it may concern:

Be it known that I, CARL F. SCHLICK-EYSEN, of Berlin, in the Kingdom of Prussia, machinist, a subject of the King of Prussia, have invented Improvements in Machinery for Manufacturing Pipes, Bricks, and Tiles; and I do hereby declare that the following is a full and exact description of my said invention.

10 This invention relates to a novel arrangement of apparatus constructed on the pug mill principle for facilitating the manufacture from plastic materials of bricks, tiles and pipes.

15 In the accompanying drawing Figure 1 represents in vertical section my improved apparatus for molding bricks and other articles, the section being taken through the middle of the apparatus. Fig. 2 is a top view; Fig. 3, a horizontal section taken in the line *a b* of Fig. 1. Fig. 4 is a partial elevation taken at the side where the orifice for the exit of the clay is situated, and Fig. 5 shows the upper part of the casing and its appurtenances developed or laid out flat.

Similar letters of reference indicate like parts in all the figures and all the parts are constructed of iron, except where the contrary is stated.

30 *a*, *a* is a hollow cylinder upon which rests a hopper *b*, *b* which widens toward its upper part. Bolted to the hopper is a tubular continuation *c* which contracts slightly in diameter toward its upper end.

35 *d* is the bottom or foundation plate fastened by screw bolts to the casing *a* and also to the main framing *e*, *e* which supports the whole of the machine.

40 *g*, *g*, is a vertical shaft supported by a bearing secured to the under side of the plate *a*, and turning in a step below. Mounted on the shaft *g*, are knives or blades *h*, *h*, shown in the developed view Fig. 5 and also detached and in plan view at Fig. 6.

45 *i*, is an arm mounted upon and turning with the shaft *g* and carrying an inclined knife *k* at its extremity.

50 *l*, *l*, are radial arms mounted upon the inner periphery of the casing and shown in transverse section at Fig. 5.

m, *m*, is a shallow vessel fixed to the lower part of the shaft *g* and forming a kind of false bottom to the cylinder *a*. The edge of this vessel *m* fits under a flange *a*² which projects from the inner face of the cylinder *a*. To permit of the discharge of any clay that

may work over the edge of the vessel *m* small holes *q* are made in the bottom to which the casing *a*, is attached.

r, is the passage for conducting the clay to the mold or die which is attached at this part to the cylinder *a* and may be removed and replaced from time to time according to the nature of the work in hand.

The operation of the machine is as follows: The earthy substance to be molded into bricks tiles or pipes is thrown into the hopper *c* and gradually fills the entire apparatus. It will be seen that the upper blade *h* would gradually disengage itself if the knife *k* were not there and the plastic material if stiff would form a solid block over it and retain its position in the hopper. This would not however occur if the material contained much water or if its diameter was equal to 30 inches. In either of these cases the weight of the material would suffice to cause its descent. But in order to obtain a regular feed for every degree of tenacity of plastic material whatever may be the dimensions of the hopper the inclined knife *k* is used, its action being both to work and press the plastic matter above it and to prevent the adherence of the clay to the surrounding casing.

The form and helical arrangement of the knives *h*, *h*, it will be seen is peculiar the object being to obtain a pressure equal to that exerted by a solid piston. For this purpose the knives which may be said to be sections of a helical thread are set around the shaft *g* (see Figs. 2 and 5) so that each blade is in advance of the blade below it and thus an overlapping of the blades is effected which will prevent the possibility of the clay escaping from under the rotating blades except at the outlet *r*.

The vessel *m* turning with the shaft *g* assists in the discharge of the clay or other plastic materials from the case *a* forcing it upward toward the opening *r* in the same manner that the mass passing from under the lowest blade *h* is pressed toward the opening *r* from above. From this simultaneous action results a regular outward feed of the material to the mold or die which regularity of feed is very necessary when manufacturing drain pipes or bricks.

The apparatus may be set in motion by any suitable motive agent or it may be worked by manual labor.

The difference in effect between the above

described machine and those hitherto employed for a similar purpose is due principally to the employment of the cleaning knife *k* in combination with the tapering case *c*, to the overlapping arrangement of knives or beaters *h* and to the rotating false bottom *m* the latter serving the purpose of forcing up the clay toward the opening *r*, and of clearing out the waste clay from beneath the casing.

When manufacturing solid bricks I purpose to employ the die shown in front view at Fig. 7, and in cross section at Fig. 8. The die it will be seen is provided with inclined sides which are retained in position by binding screws carried by a rectangular frame that surrounds the die. These inclined sides form a tapering exit channel for the clay and thereby facilitates the molding of the clay to the desired form.

Fig. 9 represents a modification of my apparatus which need not be particularly described.

Having now set forth the nature of my invention of improvements in machinery for manufacturing pipes bricks and tiles and explained the manner of carrying the same into effect I wish it to be understood that I do not intend to claim the use of radial blades or beaters for forcing down clay into or through molds or dies as that has long been practised, but

What I do claim and desire to secure by Letters Patent is—

1. The employment of the clearing knife *K*, in combination with the hopper *b*, the tapering case *c*, and beaters *h*, operating in the manner substantially as herein set forth.

2. I claim the rotating, bottom *m*, in combination with the beaters *h*, operating in the manner substantially as herein described.

CARL FRIEDRICK SCHLICKEYSEN.

Witnesses:

P. D. VROOM,
JAMES VAN BLARCOM.