

2 Sheets. Sheet 1.

S. Ustick,
Brick Machine.

N^o 5,187.

Patented July 10, 1847.

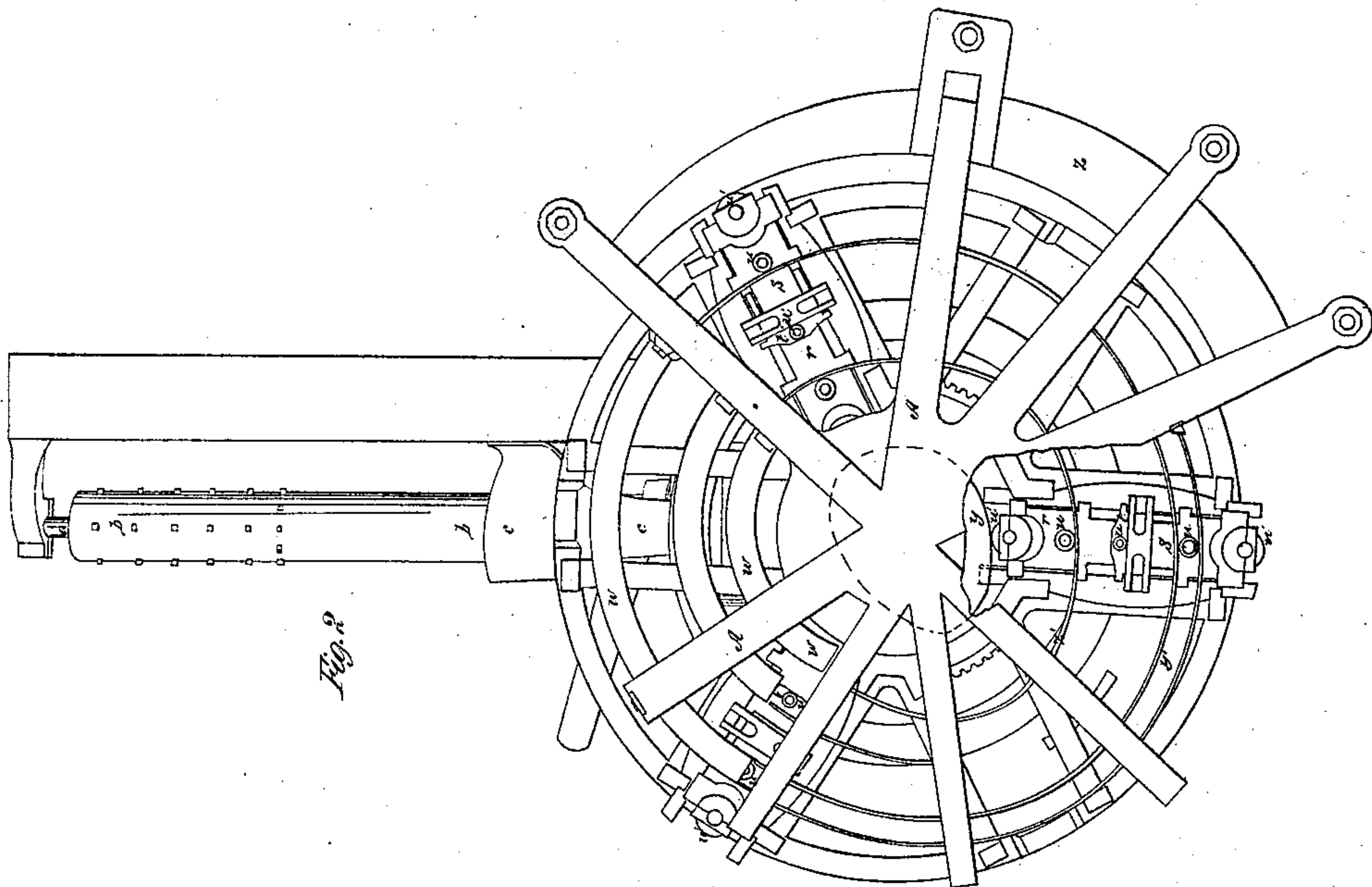


Fig. 2

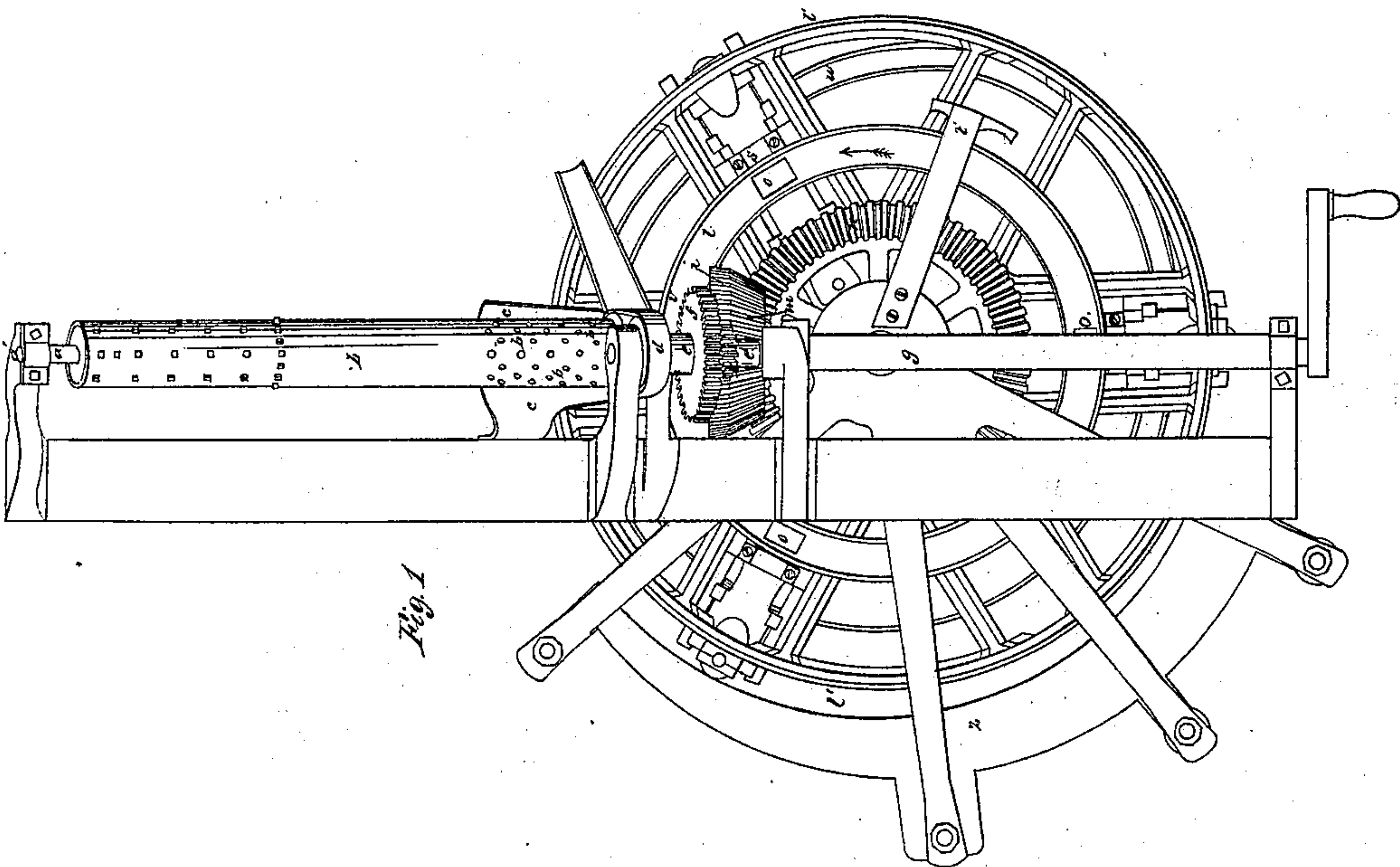


Fig. 1

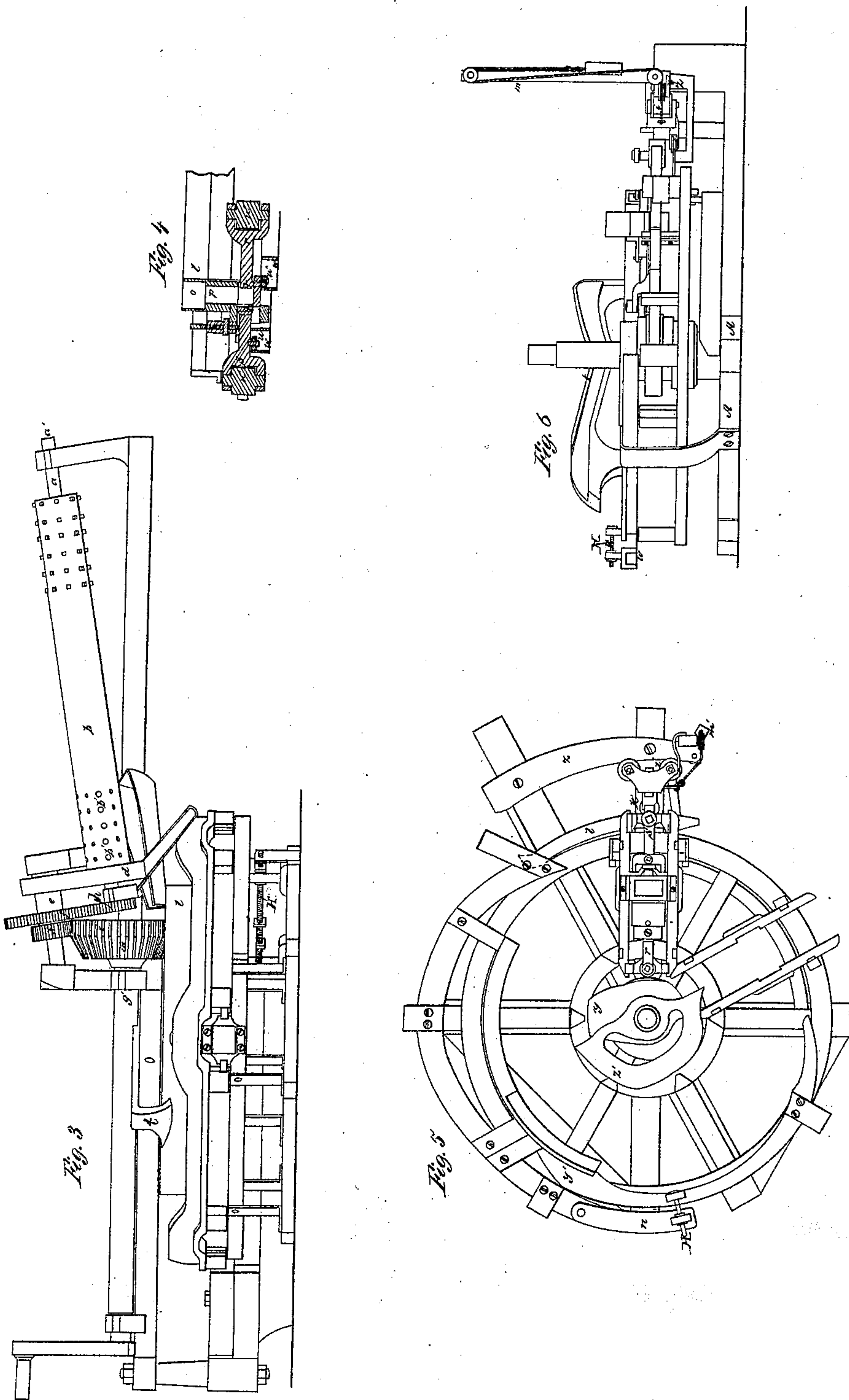
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UNITED STATES PATENT OFFICE.

STEPHEN USTICK, OF PHILADELPHIA, PENNSYLVANIA.

BRICK-MOLDING MACHINE.

Specification of Letters Patent No. 5,187, dated July 10, 1847.

To all whom it may concern:

Be it known that I, STEPHEN USTICK, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented
5 new and useful Improvements in Machines for the Manufacture of Brick, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before
10 known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a plan of the machine; Fig.
15 2, a view of the underside; Fig. 3, a side elevation; Fig. 4, mold and parts detached, and Figs. 5 and 6 modifications of the machine.

The same letters indicate like parts in all
20 the figures.

The nature of my invention consists in an apparatus for molding dry clay, which is pulverized and sifted for that purpose.

It consists of the following parts: first,
25 a pulverizer into which the clay is received from the bank; this pulverizer is an inclined revolving shaft (*a*) surrounded by a cylinder (*b*) that turns in an opposite direction, the upper end of this shaft within the cylinder is armed with projecting pins that
30 mesh in between similar pins standing out readily from the inside of the cylinder; as this is similar in construction to many other machines for like purposes the interior is
35 not shown. The clay after passing down through the cylinder past the pins to the lower end is then sifted through perforations (*b'*) made in the cylinder for that purpose and is caught on an apron or hopper (*c*) under it which conveys the clay into
40 the circular hopper that supplies the molds. The large pebbles and coarse clay being carried out of the end of the cylinder into a trough down which it runs out of the machine. The outer cylinder (*b*) is turned by a
45 band (*d*) from a pulley on a shaft (*e*) above; on the same shaft there is a spur wheel (*f*) that gears into a pinion (*h*) on shaft (*a*) by which it is turned in a direction contrary
50 to the surrounding cylinder. The short shaft (*e*) receives its motion from the driving shaft (*g*) through the spur wheel (*i*) and pinion (*h*). The clay is dried by means of a hot air tube that enters the shaft (*a*)
55 at (*a'*), or by surrounding the outer cylinder with a furnace if required. The hopper

(*l*) into which the clay is received from the pulverizer is of annular form and is attached to a horizontal wheel that is made to revolve by means of the bevel gearing (*m*)
60 and (*n*), that connects it with the driving shaft (*g*) which are within the hopper while the wheel (*l'*) is extended out some distance beyond it. This wheel turns on a stout center stud firmly fixed in the stationary
65 frame that partly surrounds the wheel to which several cams hereafter described are also attached beneath the wheel for moving the different pistons, belonging to the molds that are connected with the wheel, as they
70 revolve. The openings into the molds are in the bottom of the annular hopper (*l*), they are lettered (*o*), beneath which the molds are situated. These molds (see Fig. 4) consist of a box (*p*) below which there
75 is a frame (*q*) for the pistons to slide in horizontally which extends out a little in front, and from this frame the shanks of two pistons project radially, one of which
80 (*r*) I denominate the inner piston is toward the axle of the wheel and forms the side of the press on that side, the other (*s*) projects toward the periphery of the wheel and forms the opposite side of the press:
85 between these the clay is consolidated. The underside of each of the pistons is furnished with a small stud roller (*u*) and on their extreme outer ends they have broad friction rollers (*u'*); the former work in light
90 grooves to regulate the motion of the pistons when not pressing; the others come in contact with permanent cams at the proper time to produce the pressure as hereafter described. On the underside of a projection
95 of a little frame (*t*) which forms the sides of the movable box there is a small stud roller (*u''*) which works also in a light cam groove to give motion to the box. When
100 the mold arrives at the point (*v*) where it is to receive its charge of clay both of the pistons are spread apart so as to leave an open space from the box (*p*) down between them; they are brought to this position by means of the cam grooves (*w*) in which the
105 stud rollers (*u*) above named run; these cam grooves (*w*) are adjustable and their distance apart is regulated by a radial screw (*x*) which determines the quantity of clay that shall be filled into the mold, by causing
110 the pistons to approach or recede from each other as they are adjusted. When filled the mold moves on as the wheel turns in the

direction of the arrow and this inner piston (r) is forced outward by a stationary cam (y) attached to the center shaft or axle on which the main wheel (l') turns. This cam (y) bears against the friction roller on the end of the piston rod (r) while this inner piston is thrust forward the outer one is allowed to recede a little by the form of the cam groove (w), which guides it, till the clay between the pistons, which is to form the brick, is thrust outward far enough to carry it beyond the box (p) into the space where it is pressed, the outer piston then stops and resists the pressure of the inner one which is still borne forward by the cam (y) till a certain amount of pressure is produced on the brick, the cam (y) then become concentric with the wheel so as to keep the piston (r) stationary in the mold, and then the outer piston (s) is forced inward by an outer stationary cam (z) till the brick is sufficiently pressed. The stud wheels on the pistons are then acted on by stationary guides or cams (y') and (z') which move both pistons out carrying the brick with them under a vertical piston (s') placed at right angles to them in a frame in the wheel outside the mold. When the face of the outer piston has advanced to the outside of the mold, by a suitable form of the cam groove (w) in which the stud roller of the piston works, the piston is moved more rapidly than the inner one to remove it entirely from the brick. When the brick is thus pushed out of the mold the horizontal wheel (l') has revolved far enough to bring the upper end of the rod of piston (s') into contact with a stationary cam (t') attached to the frame above, see Fig. 3, this forces the piston (s') down and discharges the brick below, whence it can be carried off by an endless apron or other convenient device; and the pistons are by their guides brought into the first position for receiving clay. A series of any number of molds may be put into the wheel which follow each other consecutively through all of the above described positions, being supplied with clay at the point (v) and discharging the brick at the cam (t'). The frame can be made of any

suitable material and should be sufficiently braced to resist the pressure upon the stationary cams attached thereto; this is shown in the drawings and designated by letters (A, A) but these parts are not described, as they may be indefinitely changed to suit the views of the manufacturer or purchaser.

Many parts of my machine can be modified, an example of which I give in Figs. 5 and 6. In these figures corresponding parts or those which are substituted for others in the main description bear the same letters: the most essential change is in the cam (z') for pressing in the outer piston (s), this has a little carriage running on two horizontal wheels (i') with flanches on them that fit on and are guided by said cam (z); this carriage is kept in place and guided by a third wheel (k') that is also horizontal and grooved, this fits a rail (l') parallel with cam (z), the end of the outer piston (s) as it comes around to this carriage strikes it and carries it around the length of the cam where it is disengaged; Fig. 5 shows the piston and carriage in contact. When disengaged the carriage is drawn back by a cord and weight (m') over proper pulleys.

Having thus fully described my machine, what I claim therein as new and desire to secure by Letters Patent is—

1. The combination of the pistons with the cams in the manner described, said cams being adjustable and guiding the pistons during the whole revolution of the wheel substantially as herein set forth.

2. I claim the combination of the revolving screen and pulverizer with the horizontal wheel of molds, constructed substantially as hereinbefore described.

3. And lastly, I claim in combination with the double piston mold the apparatus for discharging the brick from the mold and cleaning the face of the pistons consisting of the vertical piston and cam arranged as described.

STEPHEN USTICK.

Witnesses:

MASON NAYLOR,
CHAUNCEY BULKLEY.