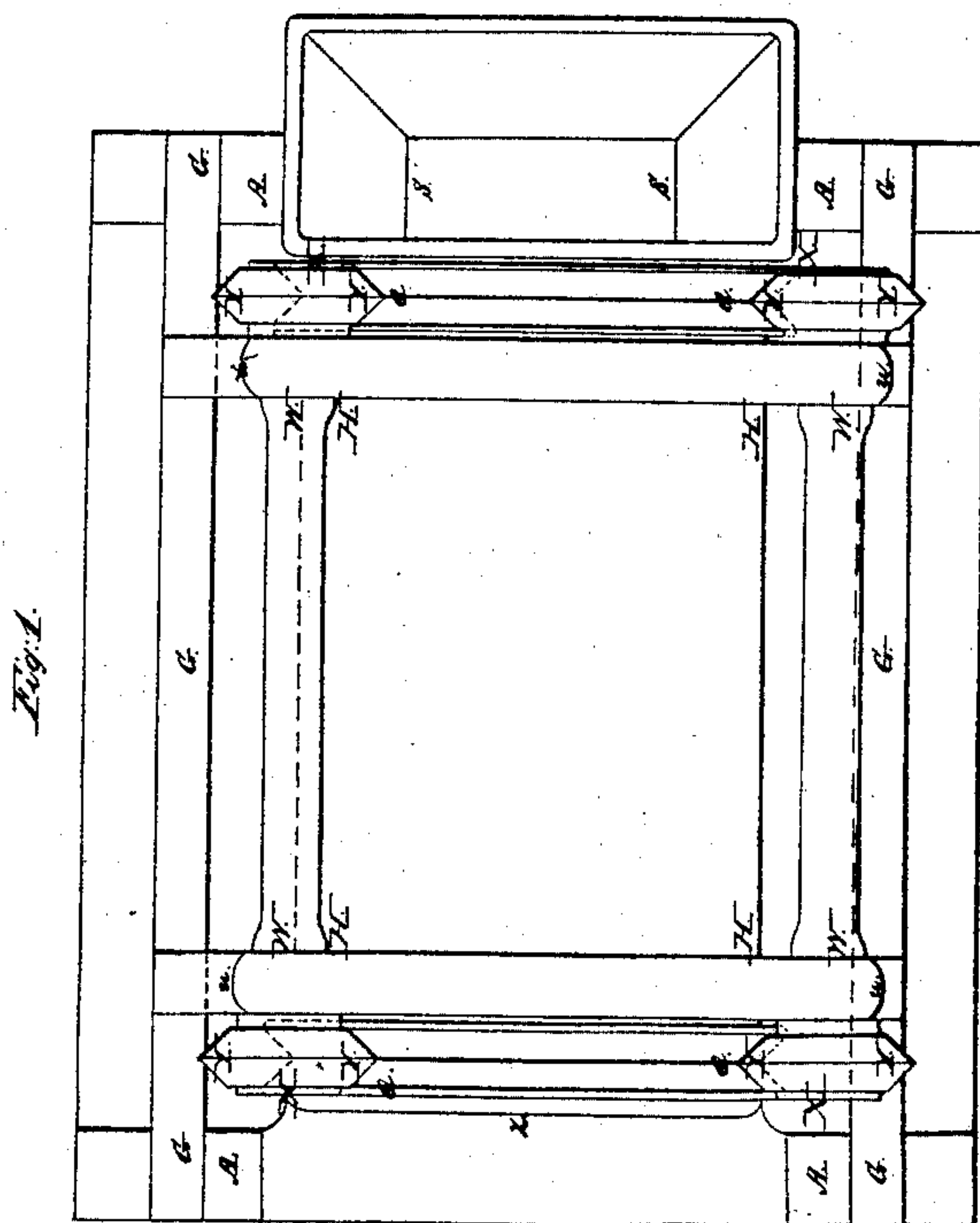
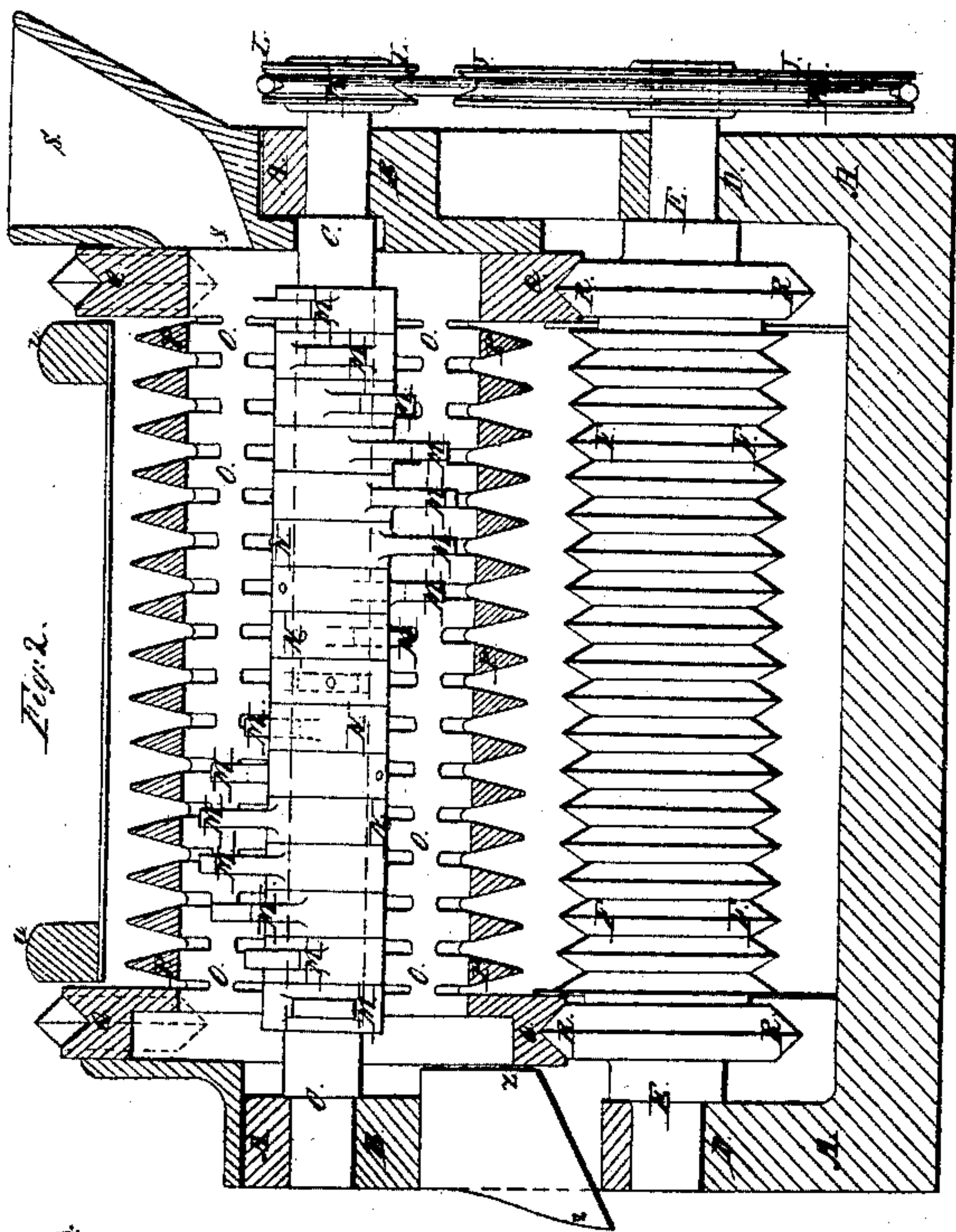
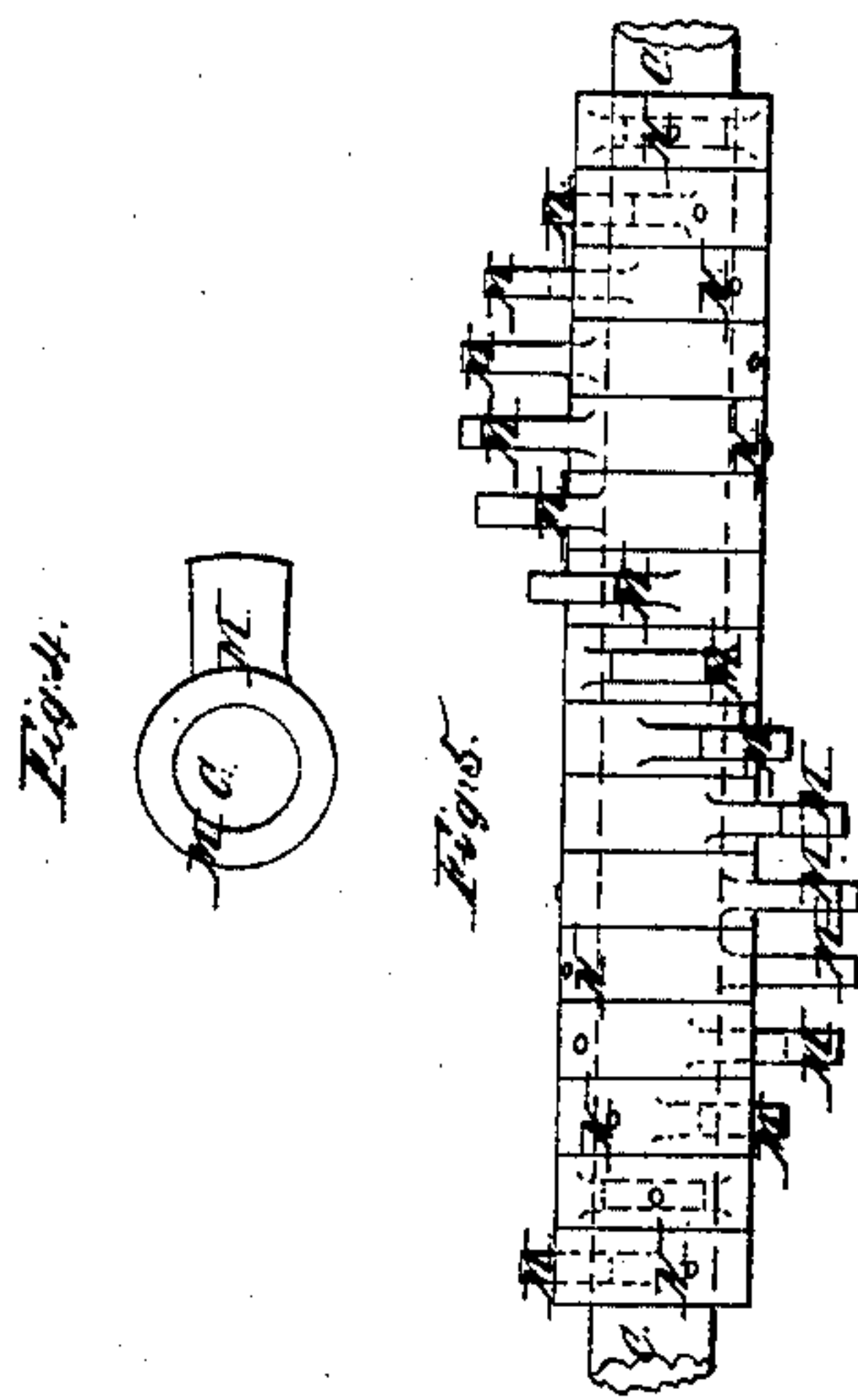
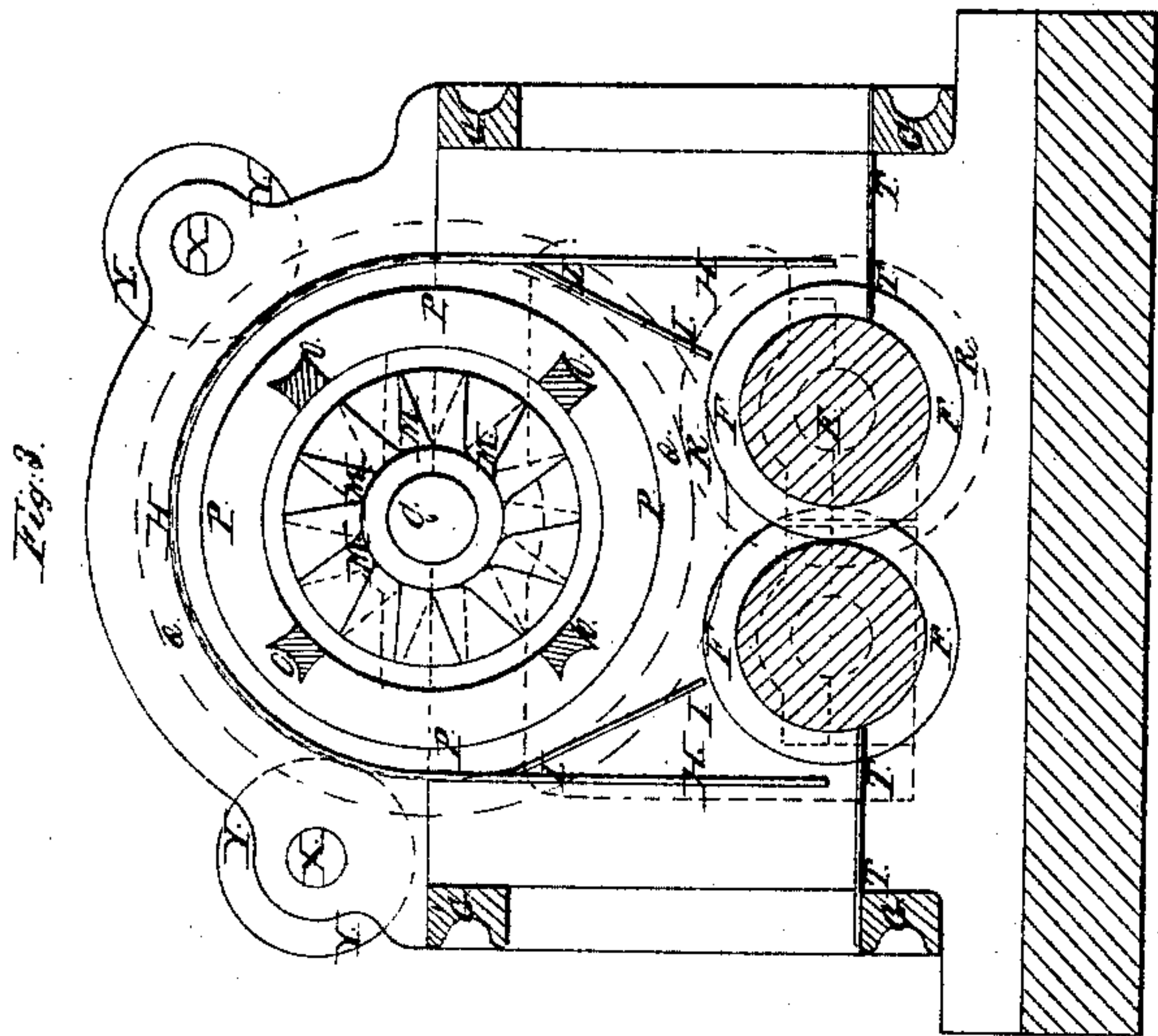


Hersey & Van Riper

Pulverizing Clay.

No 17,505.

Patented June 9, 1857.



Witnesses,
Thomas A. Richmond,
Edward F. Goodwell.

Inventors,
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UNITED STATES PATENT OFFICE.

IRA HERSEY AND JAMES H. VAN RIPER, OF NEW YORK, N. Y.

IMPROVEMENT IN CLAY-PULVERIZERS.

Specification forming part of Letters Patent No. 17,505, dated June 9, 1857.

To all whom it may concern:

Be it known that we, IRA HERSEY and JAMES H. VAN RIPER, both of the city, county, and State of New York, have invented an Improved Machine for Pulverizing Clay; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, drawn upon a scale of one-eighth of an inch to the inch, and in which—

Figure 1 is a plan of the improved machine. Fig. 2 is a vertical longitudinal section of the same with an elevation of the spiral beaters. Fig. 3 is a vertical transverse section. Fig. 4 is a view of a single detached beater. Fig. 5 is another elevation and view of the beaters arranged spirally.

The same letters represent corresponding parts in all the figures.

The nature of our invention consists in the construction of machines for pulverizing clay, in which a series of beaters M M, arranged spirally upon a horizontal shaft C C, revolve upon the shaft in the interior of a grated cylinder or screen O O, which is supported on its exterior periphery and revolves in a direction opposite to the revolution of the beaters.

To enable others skilled in the art to make and use our invention, we proceed to describe its construction and operation, the material preferred for its construction being iron, chiefly cast-iron.

A A (see drawings) are the two end frames securely bolted or affixed to a solid foundation and supporting the boxes B B of the beater-shaft C C and the boxes D D of the main shaft E E.

Upon the main shaft is one of a pair of grooved rollers F F, grooved in V-shaped grooves running around the rollers, the other grooved roller being supported by boxes which receive the ends of the shaft upon which it revolves.

G G are the side frames of the machine, securely bolted or fastened to the end frames. To the side frames are affixed the aprons I I, which conduct the clay which falls from the screen to the grooved rollers.

The power is applied by a belt and drum to the main shaft E.

J J is a pulley affixed to one end of the main shaft and is connected by a belt K K with the pulley L L, which is affixed to and turns the beater-shaft C C.

M M M are movable beaters, consisting of a ring and a projection or arm arranged in a spiral upon the shaft C C.

N N N are set-screws which hold the movable beaters in their places upon the shaft C.

O O is the grated cylinder, screen, or separator, made in drums bolted together or in one whole casting.

P P are the ribs or gratings surrounding the cylinder or separator.

Q Q are the driving-wheels of the separator firmly affixed one at each end of the separator. It is seen that these driving-wheels are grooved with a V-shaped groove in their peripheries, and that they rest upon corresponding driving-wheels R R, affixed to the main shaft E E, from which they receive their motion, the wheels R R having V-shaped projecting rims corresponding with the grooves of the wheels Q Q.

S S is a hopper to receive the clay or material to be pulverized before it enters the machine.

T T are V-shaped scrapers affixed to the side frames, the teeth of which enter into and keep the grooves of the rollers F F clean and prevent the clay from packing.

U U are bow-frames extending over the top of the machine and connected firmly with the side frames G G.

W W are longitudinal braces connecting the bow-frames, and upon their ends X X, passing through the bow-frames and serving as axles, are affixed and revolve the guide and friction rollers Y Y, which, being provided with V-shaped rims, guide and support the driving-wheels Q Q of the separator and keep them in their places.

Z Z is a delivery-chute affixed to the end frame A close to the end of the separator, from which it receives the stones and other materials which have not fallen through the gratings and have been expelled from the separator.

H H is an outer casing or cover of the machine.

Having thus described the several parts of the machine, we proceed to describe its action

when in motion. The hopper S is supplied with the clay which it is desired to pulverize and screen. Motion being given to the main shaft E E, it is communicated by means of the pulley J J, the belt K K, and the pulley L L to the beater-shaft C C, which now commences to revolve rapidly, carrying the beaters M M M. The clay, having entered the grated cylinder O O, is violently struck and beaten by the beaters, and, being arranged spirally on the shaft, they gradually move the beaten mass of clay from the receiving to the expelling end of the cylinder. At the same time the driving-wheels R R, affixed to the main shaft, communicate motion to the driving-wheels Q Q of the separator by means of the friction of the V-shaped grooves and projections of their respective rims, and thus the cylinder receives a motion of revolution in a direction contrary to the revolution of the beaters. The beaters and separator, thus revolving, pulverize the clay and separate the stones and the clay as it is sufficiently pulverized falls through the gratings of the separator or is driven through and is stopped and made to fall by the outer casing with which the machine is covered. The stones and other matters which do not pass through the gratings of the separator are moved along by the spiral arrangement of the beaters and are finally expelled at the delivery-chute Z Z. The clay which falls through the grating is guided by the aprons I I between the grooved rollers F F, which may be placed under the machine to grind and pulverize the clay still more finely. One of the rollers F F receives motion from the main shaft E E, to which it is affixed. The other roller revolves freely upon its axis. The pulverized clay which has thus fallen through the gratings of the separator, (or when the grooved rollers are used from between the grooved rollers,) is ready for use in the manufacture of bricks or tiles or for other purposes for which pulverized clay is used.

One of the advantages of this pulverizer is that the cylinder and beater-shaft are horizontal, for as the spiral arrangement of the beaters moves the material, along and expels

the stones it is not necessary, as in most other machines, to place one end of the cylinder lower than the other, which causes a great deal of friction and wear of the journals and boxes which support the cylinder.

Another advantage of this pulverizer is found in supporting and driving the cylinder by means of driving-wheels placed on the outside, by which arrangement all braces and obstructions are removed from the interior of the cylinder.

Another advantage is that this pulverizer, in consequence of the centrifugal motion imparted to the air, &c., acts as a rapid evaporator or drier, thus admitting the use of clay in a damper or moister state.

It is to be observed that by varying the pitch of the spiral (of the beaters) the length of time which the pulverized material is kept in the cylinder and under the action of the beaters may be graduated, according to the necessity of the case or the will of the operator, and the striking-surfaces of the beaters may be made broader or narrower, according to the nature of the clay or material to be pulverized, and the striking-surfaces may be made parallel with the axis of the spiral or inclined obliquely thereto at any angle.

It will be observed that as these beaters are made separate and with rings to slip on the shaft C they may be changed, if desired, for others having differently-formed arms with great facility.

Having thus described the nature of our invention and construction and operation of the same, what we claim, and desire to secure by Letters Patent, is—

The combination of the grated cylinder or separator O O, open at its ends and supported on its outside by the driving-wheels Q Q, with the movable and adjustable beaters M M on the shaft C C, when the same are constructed and arranged for joint operation, substantially as herein described.

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Witnesses:

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