J. G. SAVAGE.

Machine for Pulverizing Sand, &c.

No. 46,713. Patented March 7, 1865.

Fig. 1.

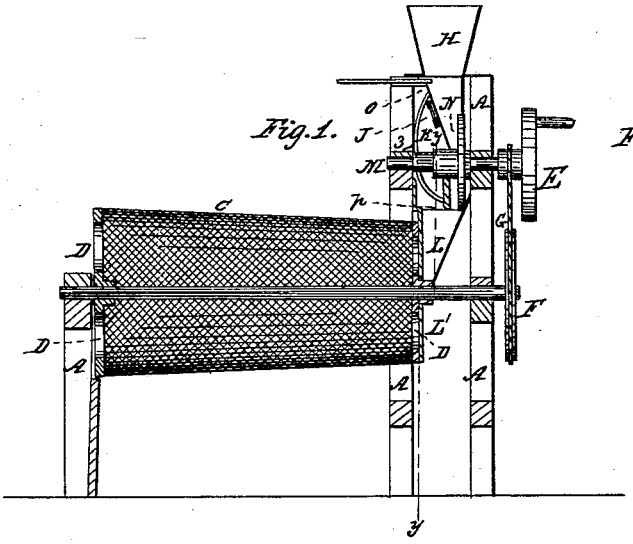


Fig. 3.

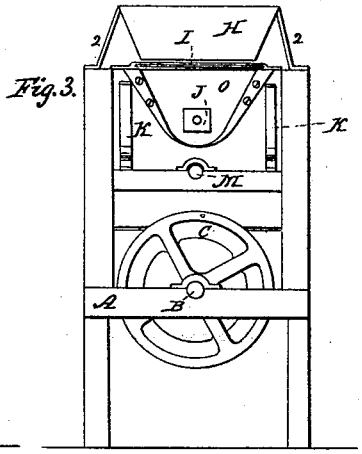


Fig. 2.

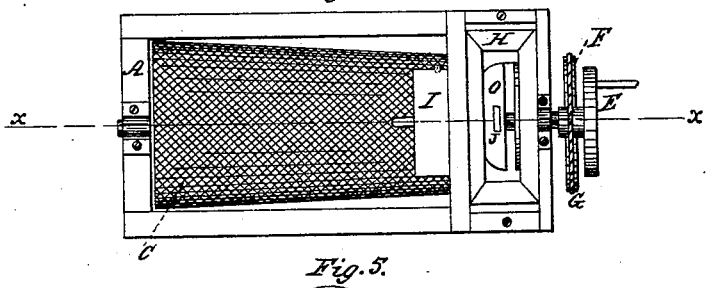


Fig. 4.

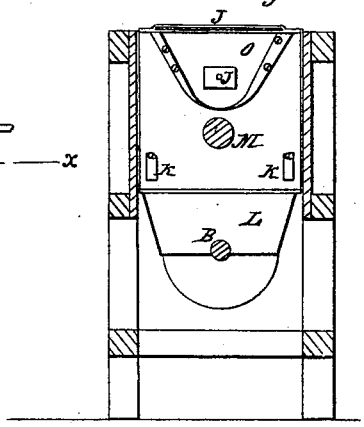
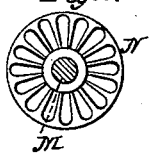


Fig. 5.



Witnesses:
W. Freurn
Theo Tusch

Inventor:
J. G. Savage
per Munn & Co
attys

UNITED STATES PATENT OFFICE.

JOSEPH G. SAVAGE, OF SOUTH READING, MASSACHUSETTS.

IMPROVED MACHINE FOR PULVERIZING SAND, &c.

Specification forming part of Letters Patent No. 46,717, dated March 7, 1865.

To all whom it may concern:

Be it known that I, JOSEPH G. SAVAGE, of South Reading, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Machines for Pulverizing and Sifting Sand; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of a machine constructed after my invention, taken on the line *x* of Fig. 2. Fig. 2 is a plan of the same machine. Fig. 3 is an end view or elevation as seen from the back part of the machine. Fig. 4 is a vertical transverse section on the line *y* of Fig. 2. Fig. 5 is a plan of the face of the grinding-plate.

Similar letters of reference indicate like parts.

This invention consists in a machine constructed and arranged so as to sift and pulverize sand used for molding and other purposes, and also for pulverizing cement and mineral putty, or the ingredients thereof, by means of a grinding-plate working against a vertical yielding bed, and a revolving wire-gauze cylinder, by which the sand or other material is eventually sifted.

A is a frame which sustains the operating parts of the machine.

B is a shaft extending the whole length of the frame and running in bearings made for it in the ends of the frame. The shaft projects beyond the front of the frame to receive a pulley, F, which is driven by means of a band, G, which embraces a pulley on the driving-shaft M above, which latter shaft M is driven by a crank-wheel, E.

Instead of bands and pulleys, gear-wheels or any other suitable mechanical devices may be used to communicate power to the different parts of the mechanism.

The shaft B carries a conical sifter of wire-gauze, both of whose ends D are open, its larger end or base being upon the hinder or delivery end of the frame.

L is a chamber triangular in cross-section, whose apex is inverted so as to begin at the level of the shaft B, its base opening beneath the grinding-wheel of the mill. This chamber is the receptacle of the material which has passed the grinding-surfaces of the machine. Its width at top is equal to the width of the grinding-chamber, and it gradually decreases in width toward its bottom, where its width is equal to the diameter of the adjacent end of the revolving sieve.

A curtain, L′, which is an extension of the back wall of the chamber L, hangs down below the shaft B, so as to close the lower half of the sieve in its rotation, and prevent the escape of the material. Its sides at the top are cut down, as seen in Fig. 1, to form ways or rails for the movable front O of the hopper to slide to and fro upon. The driving shaft M passes through this movable front.

N is a grinding-wheel whose face is to be corrugated or otherwise formed to make a good grinding-surface. It is carried upon the shaft M, being set in the fixed wall of the hopper H, so as to revolve therein freely.

The upper part of the hopper H is secured to the top of the frame by standards 2 2 at each end thereof, and its lower section, which contains the movable front, and the wheel N can be separated at pleasure from the upper part by means of a horizontal sliding gate, I.

J is a door set in the face of the movable front O of the hopper, covering an opening made therein. This movable front O is held up to its work near to the grinding-plate N by the action of springs, which are shaped in this example of my invention like single leaves of elliptical springs, the springs being secured to the frame by means of brackets 3.

The operation of the machine is as follows: The material to be pulverized and reduced is put into the hopper H, through which it passes into the receptacle L, being ground and pulverized by the action of the grinding-wheel N, which is previously to be set in rotation. The material, having been properly reduced by this action, flows downward into the revolving sieve through the openings D in its smaller end, and the finer particles are sifted through its meshes into a proper receptacle on the ground, the coarser particles, stones, and refuse being discharged beyond the frame through the openings D in the larger end of the sieve.

If by accident any substances—such as stones—should be shoveled into the hopper, the size of which is too great to pass the mill, the

sliding gate I is to be closed, thus preventing the contents of the upper part of the hopper from being fed into the mill, and affording the attendant the opportunity to remove them.

The material which passes through the mill is ground or crushed and pulverized between the revolving surfaces of the wheel N and the yielding front O of the lower part of the hopper, the front O giving way in case the material is too refractory or too large to pass between it and the wheel in their nearest positions, and resuming its normal position by the action of the springs when such material has passed. The door J also affords an opportunity for the attendant to take out such material from the hopper when he sees the strain upon the movable front to be excessive.

My machine enables me to reduce coarse sand or other materials to the proper fineness and condition for the several purposes and uses required, and in the case of building-sand it will fracture those grains which are spherical, and produce a "sharp" sand, the sieve separating the refuse from the useful parts of the materials by one and the same machine and course of operation.

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

The machine constructed and operated substantially as above described, for pulverizing and reducing sand and other material and sifting the same, as set forth.

JOSEPH G. SAVAGE.

Witnesses:
E. A. UPTON,
C. L. BAYRD.