

J. M. REID.

Manufacture of Plaster of Paris.

No. 155,257.

Patented Sept. 22, 1874.

Fig. 2.

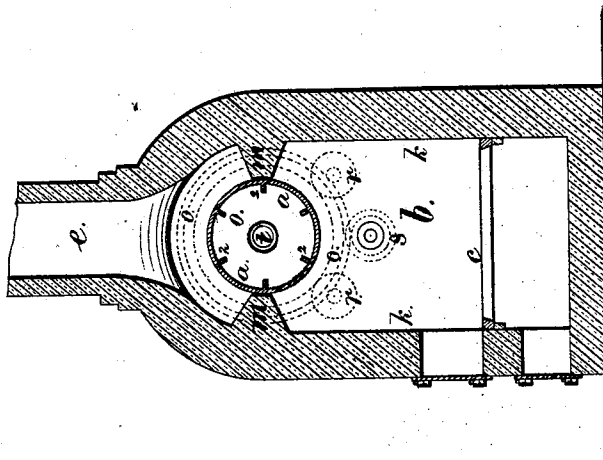
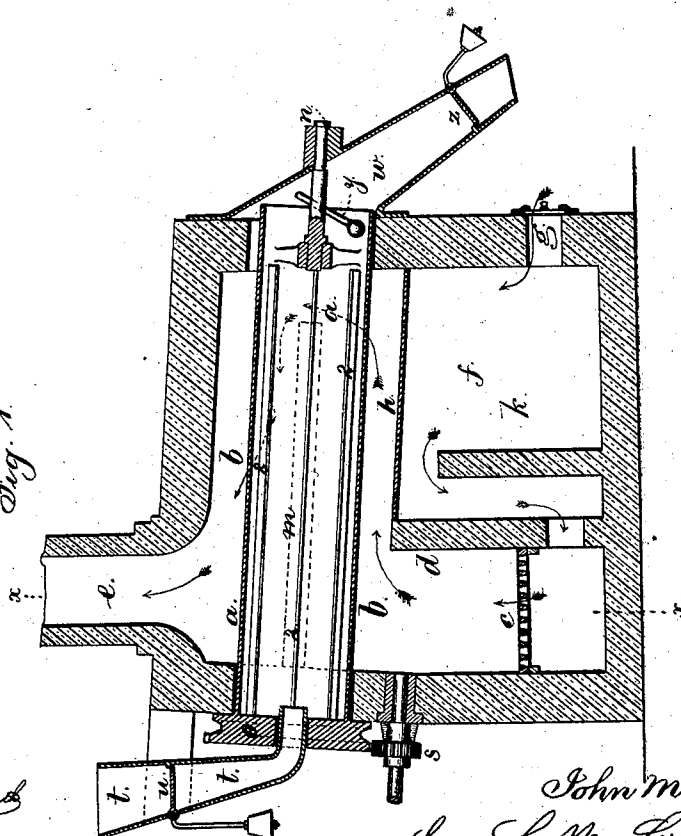


Fig. 1.



Witnesses,

Chas. H. Smith
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Inventor

John M. Reid,
per L. M. Torrell,
att'y

UNITED STATES PATENT OFFICE.

JOHN M. REID, OF MONTREAL, CANADA.

IMPROVEMENT IN THE MANUFACTURE OF PLASTER-OF-PARIS.

Specification forming part of Letters Patent No. **155,257**, dated September 22, 1874; application filed July 18, 1874.

To all whom it may concern:

Be it known that I, JOHN M. REID, of Montreal, in the Dominion of Canada, have invented an Improvement in the Manufacture of Plaster-of-Paris, of which the following is a specification:

Gypsum is converted into plaster-of-paris by heat; but if the heat is too great, and too much of the water contained in the gypsum is evaporated, the plaster will not set with the desired rapidity when mixed with water.

In the manufacture of plaster-of-paris, the gypsum is either ground and subjected to heat in an oven or pan, or else the lumps are burned or baked in a kiln or oven. In either case the product is not of a uniform character, because some portions have been subjected to a higher temperature than others; thereby that which is nearest the heat is too much calcined, and that which has not been sufficiently heated is inferior.

My invention is made for the purpose of securing a uniformity in the calcining operation; and to this end I cause the ground gypsum to be presented to a regular heat, and to be automatically supplied and continuously delivered after the calcining operation has been performed, so as to produce a better article.

In the drawing, Figure 1 is a longitudinal section of the apparatus employed by me, and Fig. 2 is a cross-section at the line *x x*.

The cylinder *a* is within the flue or fire-space *b* of a suitable furnace, of which *c* are the grate-bars; *d*, the bridge-wall; *e*, the escape-flue; and *f* is a chamber, into which, by preference, air is admitted by a damper or door at *g*, and becomes warm while traveling in contact with the plate or hearth *h* and walls *k d*; and said atmosphere enters the ash-pit and passes through the fire, and the products of combustion circulate along the under side of the cylinder *a*, below the offset *m*, and return around such cylinder *a*, and above the offsets, to the chimney *e*. The cylinder *a* is supported at one end by the shaft and box *n*, and at the other end the closed head *o* rests upon supporting-wheels *r*, as shown in Fig. 2 by dotted lines, there being a groove to receive the edges of such wheels *r*. The head *o* is made with gear-teeth, into which the pinion *s* gears, so as to rotate the said cylinder; and there should

be a conical pulley, and a belt that can be shifted to vary the speed, as desired. The ground gypsum is supplied into the hopper *t*, and passes from the lower end through the head *o* into the cylinder *a*. A weighted valve at *u* is employed to prevent atmosphere circulating through the cylinder *a* and hopper *t*; but said valve opens periodically by the accumulated weight of the gypsum. In the cylinder *a* there are wings or ledges *2*, that serve to lift and agitate the gypsum, and at the lower end of the cylinder *a* is a bonnet-hopper, *w*, with a weighted delivery-valve, *z*, and a thermometer at *y*.

The operation of calcining is to be continuous. The supply from the grinding-stones or otherwise to the hopper *t* will be in proportion to the heat of the cylinder and the quality of the gypsum; and the speed of revolution is also to be properly proportioned. The attendant will test the setting qualities of the plaster-of-paris as it is delivered from the hopper, at the same time watching the thermometer, which indicates the temperature of the ground plaster just before it leaves the cylinder *a*. If the calcining is defective, the speed of revolution of the cylinder may be lessened or the fire increased. If the plaster has been too highly heated, or too much water driven off, the speed of supply may be increased, and also the revolution of the cylinder *a*.

By this means the calcining of all particles of gypsum with regularity and uniformity is insured, as the attendant can regulate the supply, the speed of revolution, and the heat according to the quality of the material.

The time during which the plaster requires to be exposed to a given temperature to calcine the same will vary in different qualities of gypsum; but, after ascertaining the calcining temperature and the speed of revolution by testing the plaster, the operator will be able to conduct the operation continuously by reference to the thermometer.

The vapors formed in the cylinder *a* can be allowed to pass off into the flue-space of the furnace, and thence to the chimney; or they may be led by a pipe, or in any other manner, to the escape-flue or chimney.

I claim as my invention—

1. The method herein specified of calcining

plaster by a progressive or continuous operation at a defined temperature, while the ground gypsum is agitated and moved progressively from the point of supply to that of delivery, substantially as set forth.

2. The revolving calcining-cylinder and supply-hopper at one end, and the delivery-hopper at the other end, in combination with the

furnace and indicating-thermometer, substantially as set forth.

Signed by me this 9th day of July, A. D. 1874.

JOHN M. REID.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.