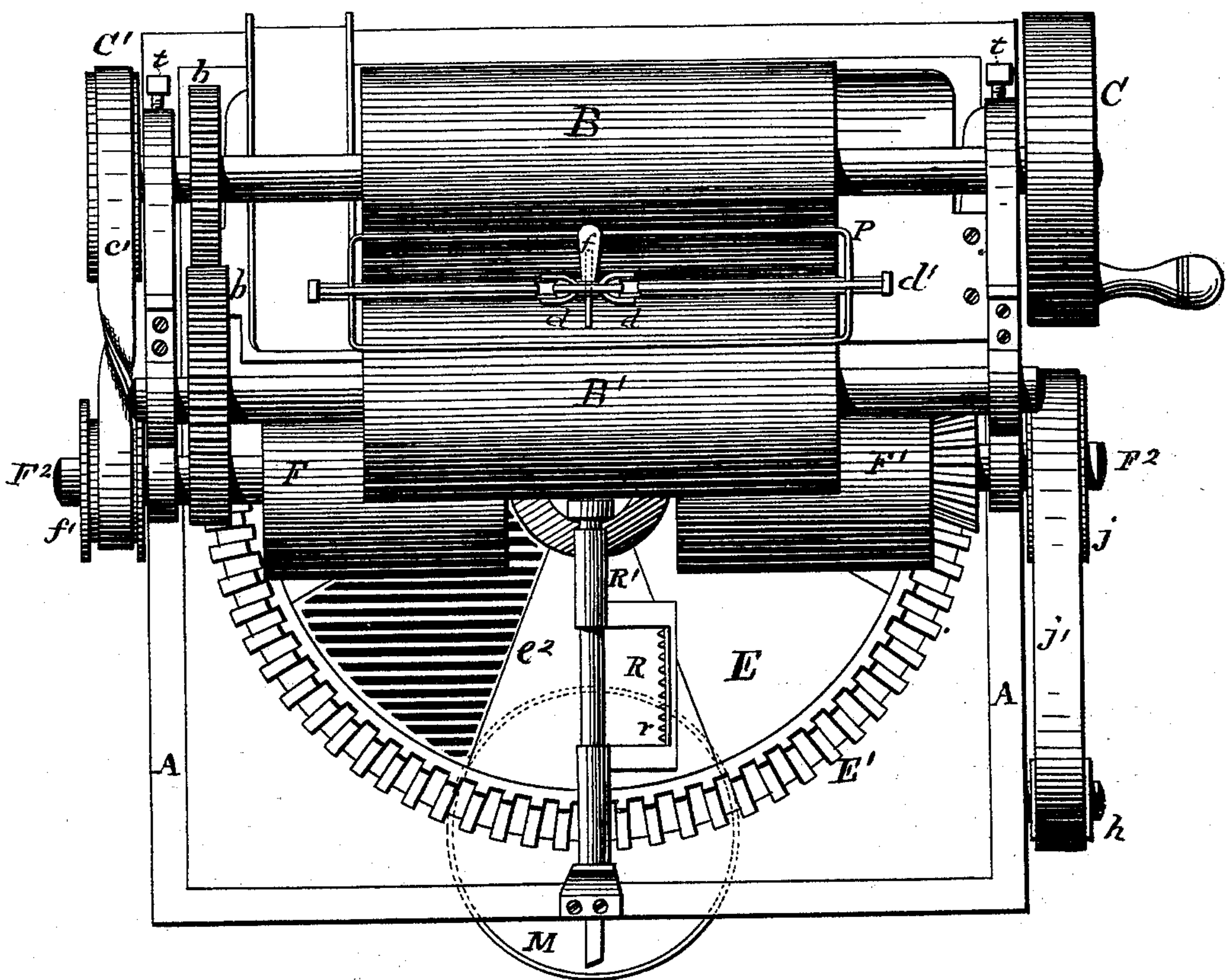


J. N. KERPER.
CLAY-PULVERIZING MACHINE.

No. 170,742.

Patented Dec. 7, 1875.

Fig. 1.



WITNESSES=

Jas. Hutchinson
 Jas. H. Wildman

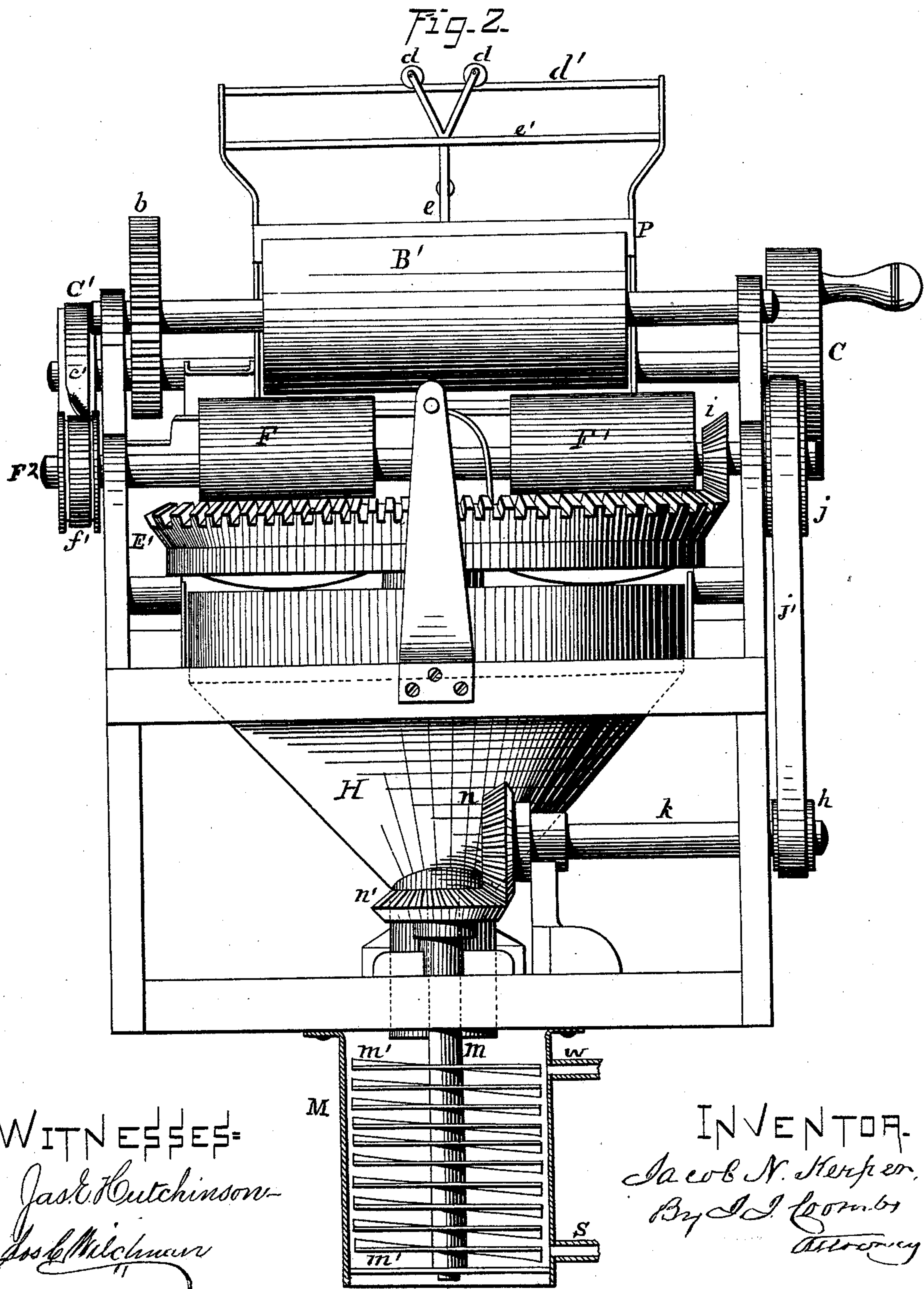
INVENTOR.

Jacob N. Kerper
 By J. J. Loomis
 Attorney

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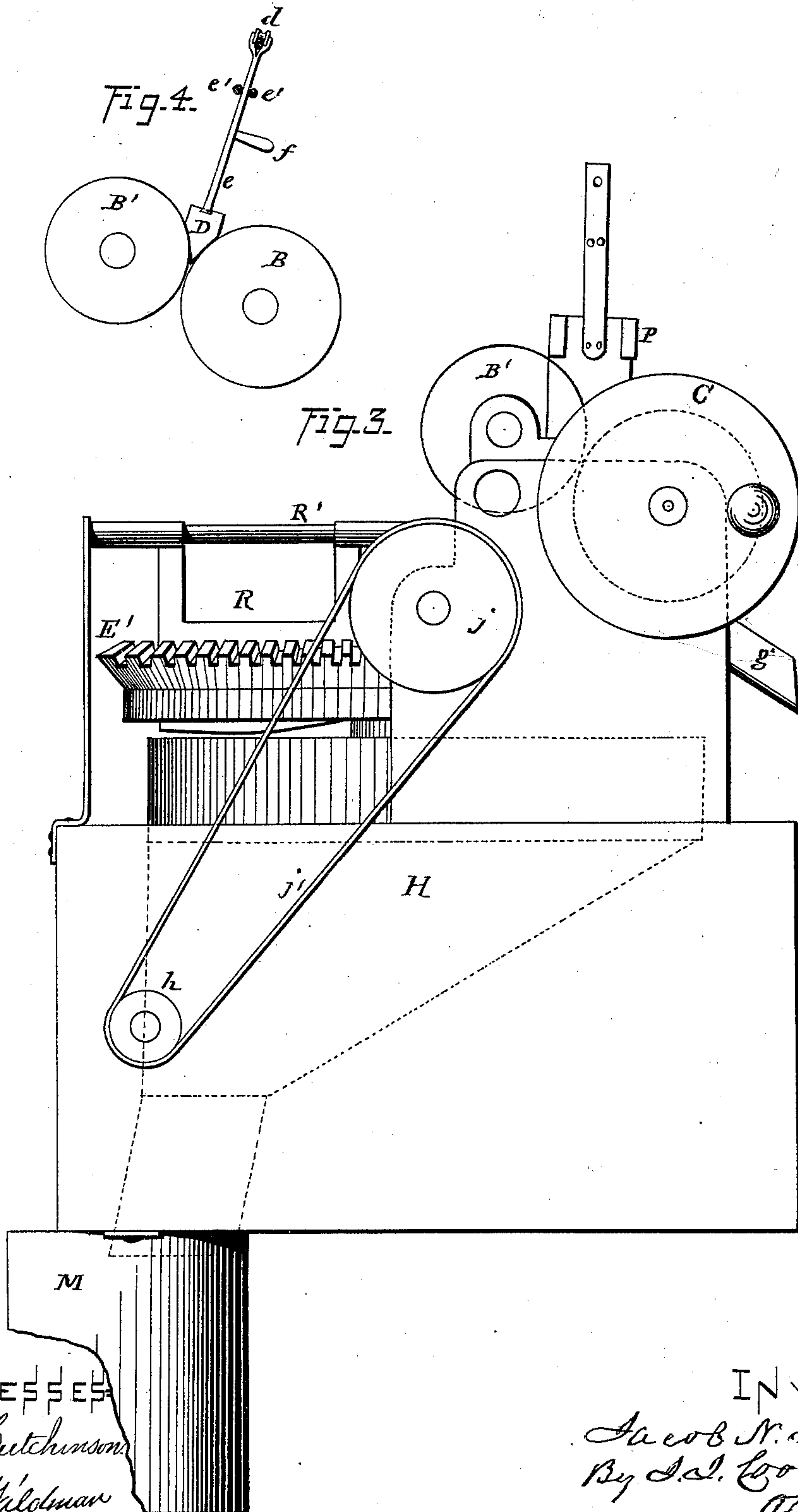


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WITNESSES
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UNITED STATES PATENT OFFICE

JACOB N. KERPER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF ONE-HALF HIS RIGHT TO ISAAC P. CHILDS, OF SAME PLACE.

IMPROVEMENT IN CLAY-PULVERIZING MACHINES.

Specification forming part of Letters Patent No. 170,742, dated December 7, 1875; application filed
November 22, 1875.

To all whom it may concern:

Be it known that I, JACOB N. KERPER, of Washington, District of Columbia, have invented an Improved Machine for Pulverizing Clay for Brick-Making, of which the following is a specification:

My invention relates to a machine for pulverizing clay for making brick of the kind known as "dry-pressed;" but by a slight modification, which will be described, it may be made to temper the clay after it has been pulverized.

In the accompanying drawings, Figure 1 represents a plan or top view of my machine; Fig. 2, a front elevation; Fig. 3, an end elevation; Fig. 4, a sectional view of the crushing-rollers and device for removing gravel-stones from the same.

A is a box or frame upon which the main portion of the machinery is mounted. B and B' are two cast-iron crushing-rollers, made to rotate toward each other by gear-wheels *b b*. The machine may be driven by any suitable power applied to the crank-wheel C on the shaft of roller B. D is a pointed scraper for removing gravel-stones which are too large to pass through the crushing-rollers. It is suspended from friction-wheels *d d*, which ride upon a horizontal rod or bar, *d'*, above the crushing-rollers; its shank *e* passes between two guiding and steadying rods, *e¹ e¹*, and it is moved back and forth by the handle *f* to remove the gravel-stones and deposit them in a spout, *g*. E is a horizontally-revolving grate, consisting of a very strong wheel, with radial arms supporting the circular cog-gear E' and the grate, made in sections, one section of which, *e²*, is shown in the drawing. The interstices between the grate-bars I prefer to have about one-fourth of an inch wide. F and F' are two cast-iron rollers loosely mounted on a shaft, F², and lying upon the revolving grate. These rollers have a play of about one inch on their shaft, which allows them to rise and fall accordingly as the quantity of clay under them may vary. On the end opposite to the power-wheel C of the shaft of roller B, is mounted a band-wheel, C', and a band, *c'*, passing around this wheel, and also around a band-wheel, *f'*, on the shaft F², rotates said

shaft, and the pinion-wheel *i* mounted thereon, and engaging with the circular cog-gear E' of the revolving grate, rotates said grate. On the opposite end of said shaft F² is mounted another band-wheel, *j*, and a band, *j'*, passing around said wheel, and also around a small pulley-wheel, *h*, on shaft *k*, rotates said shaft and the bevel-wheel *n* mounted on its inner end. This bevel-wheel *n*, engaging with a similar bevel-wheel, *n'*, on a vertical shaft, *m*, rotates the latter rapidly. This shaft *m* is provided with a number of projecting arms, *m'*, which are inclosed in a cylinder, M, (shown in vertical section, Fig. 2,) which I call the "temper-cylinder." H is a hopper for conducting the clay, as it falls through revolving grate, down into said temper-cylinder. S is a pipe for conducting steam into the lower part of the temper-cylinder, and *w* is a pipe for conveying water into the upper part of the same, when desired. The rollers B and B', and F and F', are each provided with stationary knife-scrapers, (not shown in the drawings,) to clear them of adhering clay. The rollers B and B' will ordinarily be adjusted so as to leave about one-fourth of an inch space between them, but by means of adjusting-screws *t t* said roller B may be slightly moved to and from its fellow B'.

I do not desire to limit myself to the exact proportions shown in the drawings, nor to any specified dimensions or weight of any of the parts; but I will here state what I regard as about the proper dimensions and weight for the principal parts, viz: Crushing-rollers from one and a half to two feet in diameter; and they may be both of a size, or one may be somewhat larger than the other, as shown in the drawings. They may be geared to revolve at the same velocity, or at different velocities. These rollers should be of the hardest chilled cast-iron. The rollers F F' may be from one and a half to two feet in diameter, and should weigh from four hundred to five hundred pounds each. They should also be made of chilled cast-iron. The annular grate should be about three feet in width from the center pedestal to the circular gear, and the rollers F F' of corresponding length. The temper-cylinder M may be about three feet in diame-

ter, and from three and a half to four feet in depth.

R is a serrated scraper or agitator to loosen up the clay upon the grate. It is suspended from the shaft R', which turns upon journals, thus operating as a hinge. The points of the teeth r must be bent upward, so that they will not catch upon the grate-bars. One or more such rakes may be employed. P is a hopper, into which the clay is placed, to be fed to the crushing-rollers B B'.

The operation is as follows: The clay, as it is dug from the bank, is deposited in the hopper P, whence it passes through the rollers B B', becoming partially pulverized, and falls upon the revolving grate, where it is further crushed and pulverized by the rollers F F', and is forced through the grate into the hopper H, and conducted thence to the temper-cylinder M, where it is further operated upon by the revolving arms of the shaft m, and finally drops out of the open bottom of said cylinder in proper condition for the brick-machine for making dry-pressed brick. A jet of steam introduced through the pipe s moistens the clay slightly, so that it will the better adhere when subjected to pressure in the molds.

If it is desired to temper the clay, as well as to pulverize it, a bottom must be applied to the temper-cylinder M, having an opening at one side for the tempered clay to escape,

and instead of introducing steam through the pipe s water must be introduced through the pipe w. A movable bottom may be provided, which can be applied to the cylinder M when it is desired to temper the clay, and fastened thereto by screws or clamps.

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

1. The combination of the crushing-rollers B B', and the suspended scraper D, constructed and arranged to operate substantially as described.

2. The combination of the crushing-rollers B B' and the revolving grate, substantially as set forth.

3. The combination of the revolving grate and the rollers F and F', arranged to operate substantially as set forth.

4. The combination of the revolving grate, the rollers F and F', and the rake or agitator R, substantially as described.

5. The combination of the revolving grate, the hopper H, the temper-cylinder M, and revolving shaft m, with its arms m', all combined and arranged to operate substantially as set forth.

JACOB N. KERPER.

Witnesses:

A. H. NORRIS,
JOS. L. COOMBS.