R. J. Mc GREW.

Improvement in Paint Mills.

No. 132,304. Patented Oct. 15, 1872.

Fig. 1.

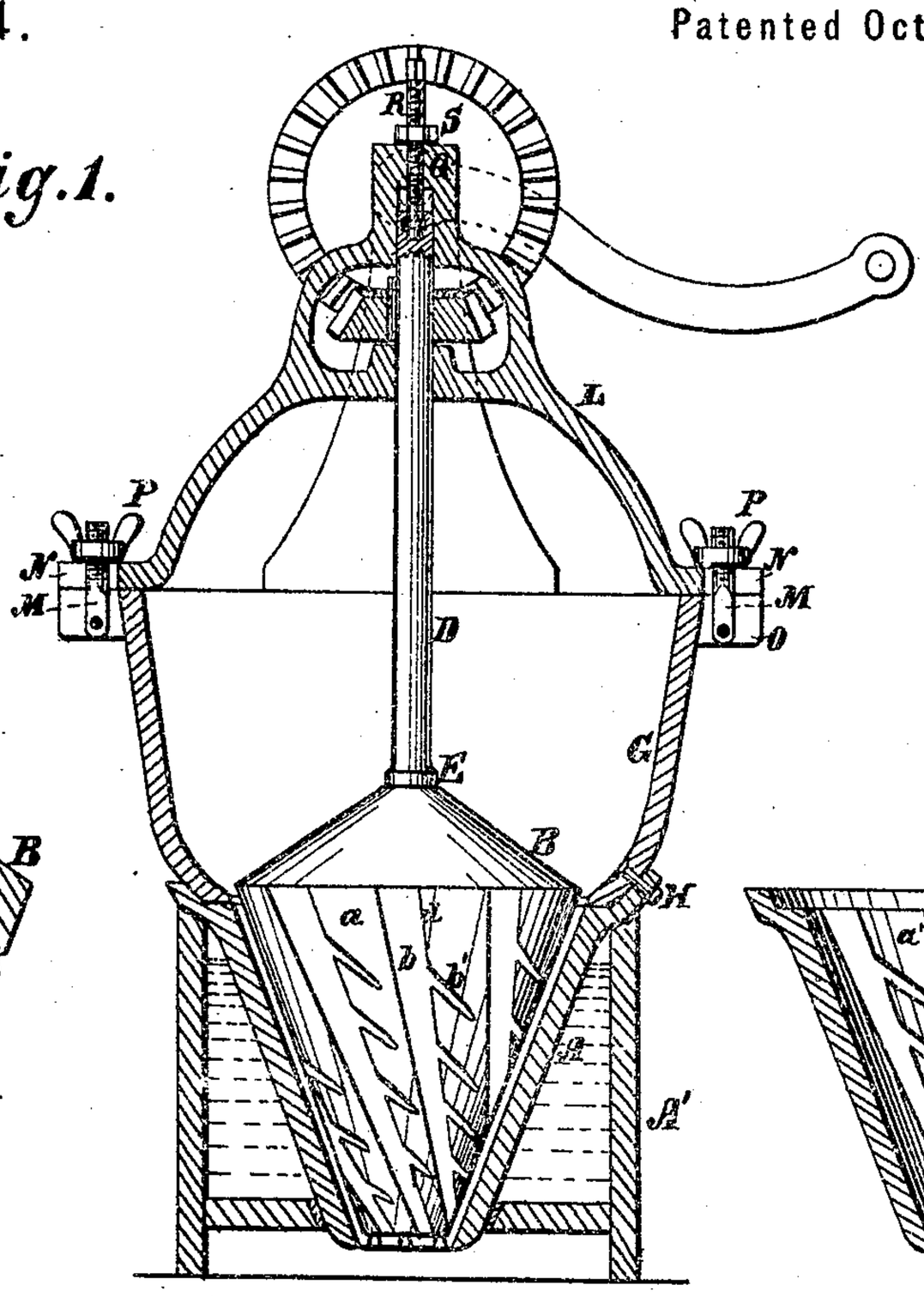


Fig. 4.

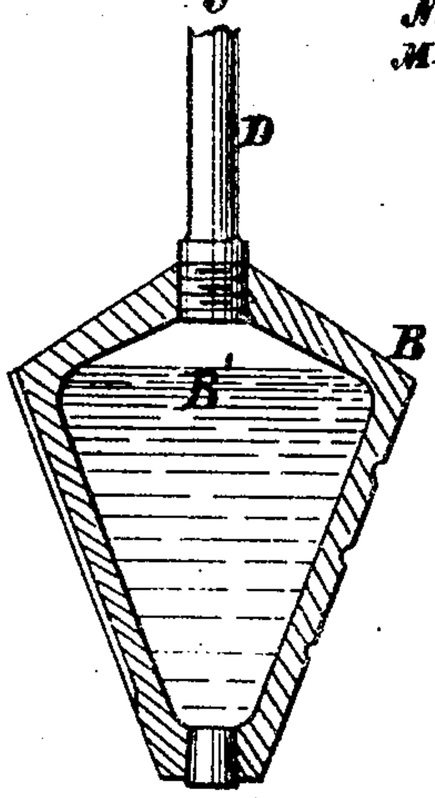


Fig. 3.

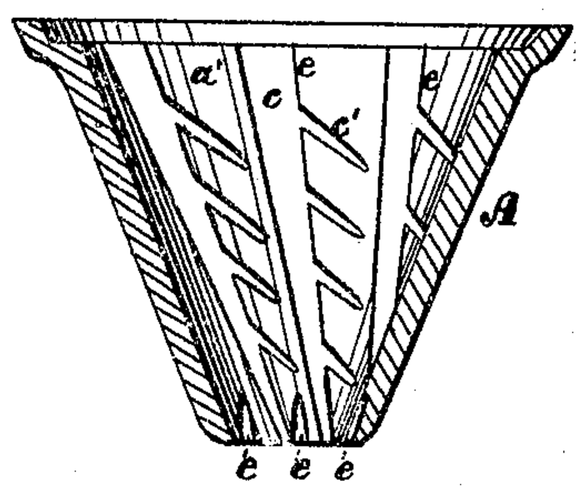
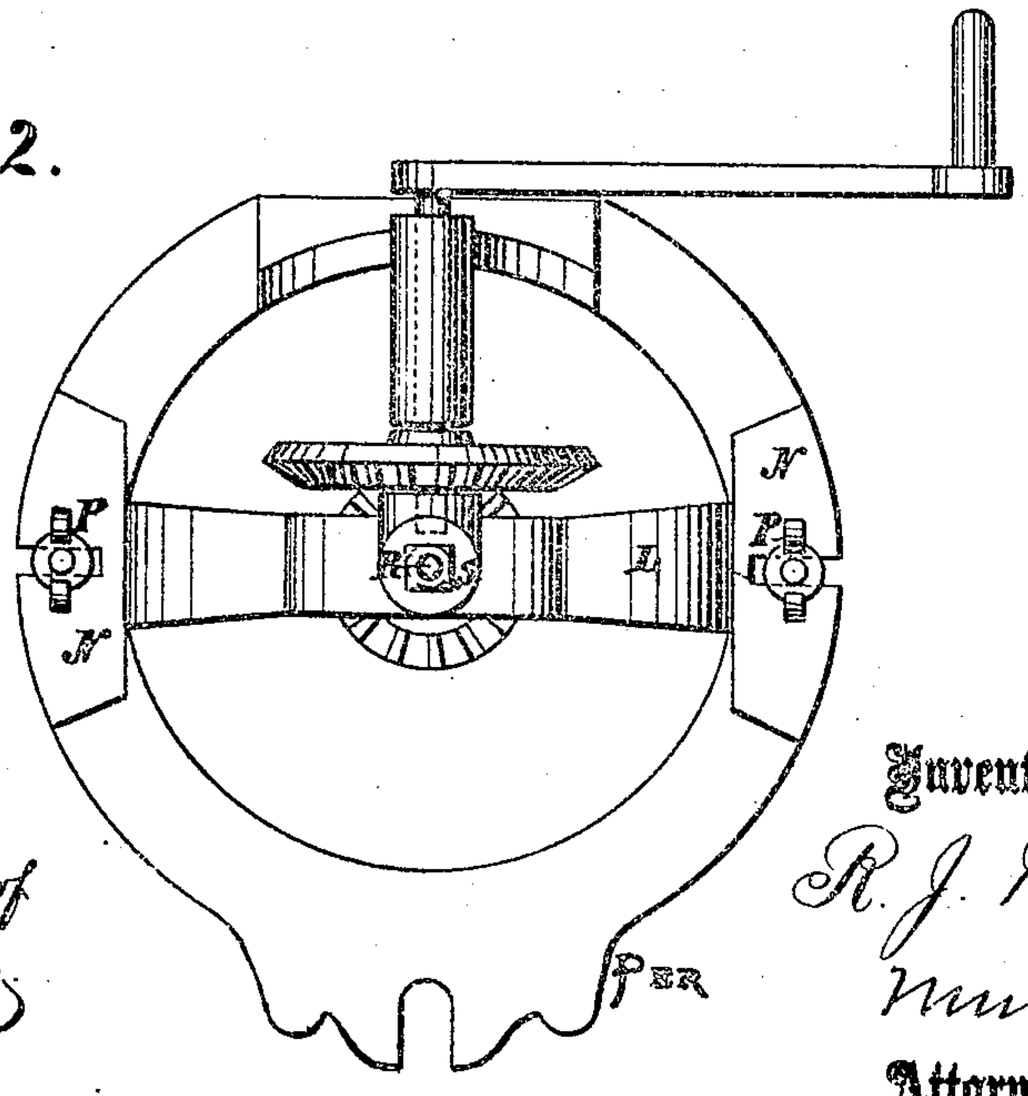


Fig. 2.



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UNITED STATES PATENT OFFICE.

ROBERT J. McGREW, OF EVANSVILLE, INDIANA, ASSIGNOR TO HIMSELF AND GEORGE W. SHANKLIN, OF SAME PLACE.

IMPROVEMENT IN PAINT-MILLS.

Specification forming part of Letters Patent No. **132,304**, dated October 15, 1872.

To all whom it may concern:

Be it known that I, ROBERT J. MCGREW, of Evansville, in the county of Vanderburg and State of Indiana, have invented a new and Improved Paint-Mill, of which the following is a specification:

My invention consists in an arrangement of the furrows or grooves of stationary and movable conical grinders, calculated to be efficient in performing work and to be self-sharpening. Second, it consists in a construction and arrangement of both the grinders so that they can be readily taken off when worn out and new ones applied without any unnecessary waste of parts not worn out. Third, it consists in an arrangement of the connecting devices by which the bridge or top frame is connected to the hopper to facilitate the removal of the rotating grinder. Fourth, it consists of an arrangement of devices for suspending and adjusting the rotary grinder. Fifth, it consists of an arrangement of grooves in the shell to answer the purpose of an ordinary scrape for the discharge of the ground paint.

Figure 1 is a sectional elevation of my improved mill. Fig. 2 is a plan view, and Fig. 3 is a sectional elevation of the stationary grinder detached from the hopper. Fig. 4 is a sectional elevation of the movable grinder.

Similar letters of reference indicate corresponding parts.

A is the stationary shell or case, and B is the rotating cone, which works within said case to grind the paint between the surfaces by the rubbing of it when confined between the two. These surfaces are for the most part smooth, as indicated by the "lands" *a a'*; but they are divided by the furrows *b b'* of the cone and *c c'* of the shell, the long furrows of both parts extending from top to bottom, while the short ones do not extend across the lands formed by the said long furrows. The said long furrows are inclined to the vertical axis of the grinders, those of the cone slanting backward to the direction in which it turns and those of the shell forward to said direction, so that they shear across each other and work the substance downward while being ground. Said furrows are wider at the upper ends in about the proportion that the cone is larger. The short furrows of the cone begin at the rear sides of the long furrows, and also slant backward and downward and vanish in the surface short of the next furrow behind. The short furrows of the shell begin at the forward side of the long furrows, and slant forward and downward and also vanish in the surface before reaching the next furrow. These short furrows are arranged at an angle of about forty-five degrees with the long ones. The rear sides *d* of the furrows of the cone are nearly perpendicular to the radius, and the forward sides of the furrows *e* of the shell are the same, so that sharper edges are preserved as the surfaces wear away than could otherwise be. The same arrangement is provided for the short furrows. The shell A is provided with the short vertical grooves *e*, which begin in the surface a short distance above the lower end, and gradually expand to the said end in a manner well calculated to receive the ground paint forced down by the other furrows and conduct it away through the contracted discharge-opening at the bottom of the cone. This arrangement of the grinding-surfaces is well calculated for efficiency in grinding and to preserve the requisite sharpness of the edges of the furrows for a long time; but as at best the grinders will ultimately wear out I have constructed the cone and its shaft D separately, and connected them together detachably by having the shaft screw into a hole through the cone in its vertical axis, the threads being so cut that the resistance on the cone in grinding tends to screw the cone on the shaft against the collar E, whereby it does not need to screw on so hard as to be difficult to remove when necessary, and it does not need any fastening to keep it in place. And I make the case separate from the hopper G at the top of the grinding-surface, and secure them together thereat by bolts H, having one fit into the other in the manner shown, or in any equivalent way, so that the case can be readily taken off when worn out and another put on. To facilitate the removal of the cone from the shell and to avoid the necessity of detaching the fastening-bolts M, the feet N of the bridge L for the support of the upper bearing of the shaft D, and the supports O therefor, are slotted, as shown in Figs. 1 and 2, and the bolts are pivoted in the slots of the said supports, so as to

swing off and on the feet when the thumb-nuts P are loosened, by which they can be released quicker than the nuts can be taken off and the bolts removed when arranged in the ordinary way, and the nuts and bolts are not detached from the mill and from one another so as to be liable to be lost. I also propose to suspend the cone from the bridge by a top piece, Q, in the said bridge, and a screw, R, and nut S, so that the said cone will not only be suspended thereby, but will be adjusted also to regulate the grinding by being raised or lowered by turning the screw which screws in the said top Q of the frame, and is secured against turning by the jam-nut S. The said screw and the shaft are swiveled together so that the shaft may turn freely while being suspended by the screw. A′ represents a water-jacket, of wood or any other suitable substance, surrounding the shell A, to be supplied with cold water, which will be caused to flow though it by any suitable system of pipes, for keeping the grinders cool; and B′ represents a chamber within the cone B, also to be kept filled with water for cooling the said grinder. The water may be caused to flow in and out of the said chamber through suitable passages in the shaft D and pipe connections at the top, or there may be a tubular extension through the bottom of the shell for that purpose.

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

1. The arrangement of the long and short furrows in the rotary cone and the stationary case, substantially as described and represented in the drawing.

2. The grinding shell or case and the rotating cone, constructed and arranged for being detached in the manner described.

3. The bridge fastened to the hopper by the slotted supports O and feet N, and the connecting-bolts M and thumb-nuts, substantially as specified.

4. The shell A provided with the discharging-grooves *e*, in combination with furrows C C′, substantially as specified.

5. The cone B provided with a water-chamber, B′, substantially as specified.

6. The arrangement of the rotating grinder-shaft bridge L Q, adjusting-screw R, and nut S, substantially as specified.

ROBERT J. McGREW.

Witnesses:

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