

L. B. PITCHER.
Mixing and Drying Cylinder.

No. 70,742.

Patented Nov. 12, 1867.

Fig. 1.

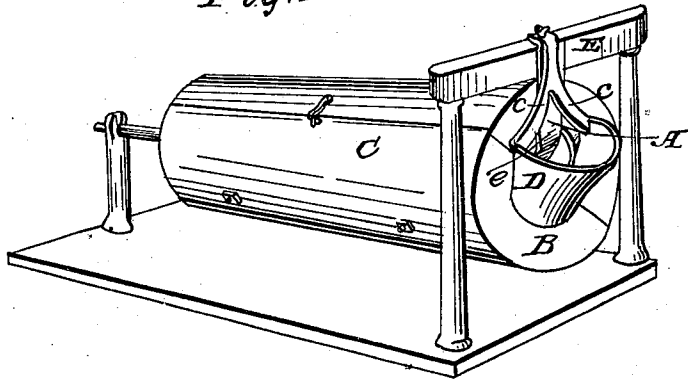


Fig. 2.

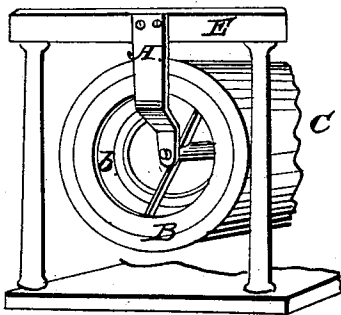


Fig. 3.

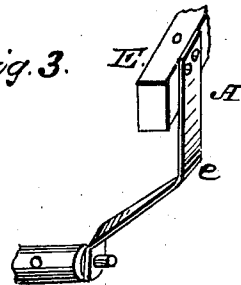
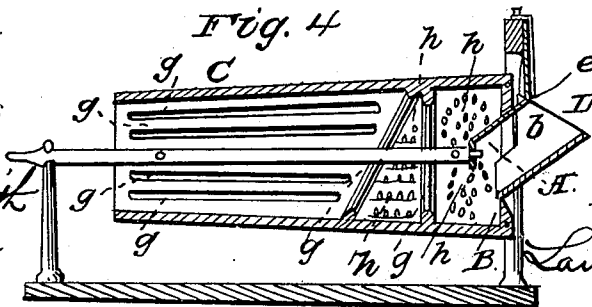


Fig. 4.



Witnesses

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LEMAN B. PITCHER, OF SALINA, NEW YORK.

Letters Patent No. 70,742, dated November 12, 1867.

IMPROVED MIXING AND DRYING-CYLINDER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, LEMAN B. PITCHER, of the town of Salina, in the county of Onondaga, and State of New York, have invented a new and improved General Mixing, Working, and Drying-Cylinder; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification.

The letters used represent corresponding parts wherever they occur.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same, its mode of operation, and the manner in which it may be applied to practical use.

Figure 1 represents a perspective view of the whole cylinder and a partial view of its mounting.

Figure 2 represents a perspective view of the head and feeding-hole therein, and one method of mounting the cylinder.

Figure 3 represents a side perspective view of the crooked arm connected with the inner end of the shaft of the cylinder.

Figure 4 represents a longitudinal and perpendicular sectional view of the cylinder and its attachments.

I know that hollow cylinders, with ends of the same or of different diameter, with heads in each end, or without any heads, with ribs or teeth, or their equivalent, arranged in various ways, mounted on friction-rollers, or on shafts, with bearing outside of the ends of the cylinder, and made to revolve around a horizontal or level line, or with one end lower than the other, have been employed to stir and move materials for various purposes. In all such revolving hollow cylinders known to me, a very serious difficulty exists in the want of a convenient way of feeding or supplying materials to be worked into said cylinders while they are revolving, and of controlling how long the materials shall be worked, or how fast they shall be discharged. Revolving hollow cylinders, in the form of a truncated cone—with a head in the larger end thereof, with a feeding-hole through the centre thereof, through which to supply the materials into the cylinder, to be worked or operated upon while the cylinder is in motion, and so mounted that the centre of rotation will usually be on a level, and so that for most purposes the lower inner side or bottom of the cylinder will incline towards the head, the hole therein being less in diameter than the small end of the cylinder, and thus a given quantity of materials will be retained in the cylinder while the work is being performed, the discharge of materials from the cylinder being regulated by and corresponding with the amount supplied, and properly mounted so as to keep the hole in the head of the cylinder free or nearly free from obstruction—may be used for a great variety of mechanical and business purposes, such as mixing the materials for various kinds of mortar and groat; mixing roofing and other cements and compounds; commingling soils and manures or other fertilizers; working pouddrettes; drying salt or grain, and for any other purpose where it is desirable to mix or commingle, stir up or agitate materials, compounded or not, of different kinds, which are to be operated upon by motion, with or without the application of heat, and capable of being worked within a hollow revolving cylinder. The value of this cylinder is greatly increased by the use of the head, with the feeding-in hole therein, through which the materials to be operated upon may be passed into the body of the cylinder, while it is revolving, by means of a common hand-shovel or otherwise, or by means of a stationary funnel or hopper, discharging into said cylinder through said hole, and by the means of regulating the discharge of materials from the small or outer end of the cylinder by regulating the feeding of materials to said cylinder. Different materials being supplied into said cylinder by continuous feeding, the compound thereof will be delivered in a continuous flow or stream—a fact or action valuable in making and delivering groats, cements, and other like compounds, whether cold or hot or warm.

I make the cylinder C of wood or iron, or other suitable materials, depending somewhat upon the purpose to which it is to be applied. It may be of parallel sides, but I prefer the form of a truncated cone, with the head in the larger end. The diameter of the larger end should be about three feet, and the small open end about two and one-half feet, the length about nine feet, more or less, for ordinary use; but the size and shape will vary according to circumstances. I make a head-piece, B, of wood or iron, or other suitable materials, fitted to or into the larger end of cylinder, in any convenient manner, with the feeding-in hole *b* in the head, as above indicated. The hole in the head *b* should be fifteen inches, more or less, in diameter, so that it will be of convenient size to shovel or work the materials through it, or so that a stationary funnel or hopper may be adjusted

to it. A hole in the head large enough to work through will ordinarily be large enough for any sized cylinder. The hopper D may be attached and stayed to the beam E, which supports the crooked arm A, and held by arms *c c*, or held to the hole in any other convenient manner. That the feeding-hole *b* in head may be kept open and comparatively free from obstruction, I support that end of the shaft of the cylinder by means of the strong, crooked arm A, made of iron or other suitable materials, the upper end or shoulder of which is attached to a firm beam E, over the feeding-hole *b*, or otherwise, from which beam the arm descends and enters at the upper edge of the hole, where it bends at what may be called the elbow *e*, and reaching forward and downwards, takes and supports the bearing of the shaft at its end, about fifteen inches inwardly from the head of the cylinder. The other end of the shaft may extend out of the cylinder and be supported in any usual manner.

This mode of mounting the cylinder enables me to sustain and revolve the cylinder by a shaft resting in bearings, while at the same time I am enabled, in a convenient manner, to feed or supply the materials to be worked through a hole in the centre of a revolving head, thus securing access into a revolving cylinder through a hole nearly equal in convenience to a stationary hole. By this means the usefulness of revolving cylinders is greatly increased. In many instances the revolutions of the cylinder, in contact with the materials to be wrought against its inner surface, will do the work desired to be performed. But in other instances, in order to facilitate operations, I use bars or ribs *g g g* and teeth *h h h*, made of wood or metal, and of various sizes and shape, as the work to be performed may require. The teeth, when used in a conical cylinder, should be longer near the head B, and shorter towards the open end of the cylinder, so as to be about equal in length to the depth of the materials being wrought while the machine is in motion. The size and number of the teeth will vary according to the work to be performed. The bars *g g* and teeth *h h* may be arranged in rows, or promiscuously, or so arranged as to produce a forward or backward spiral motion as the cylinder revolves, thus hastening or retarding the delivery, particularly the coarser parts of the materials being worked. Such a combination and action of teeth are particularly useful in working and delivering of groat and poudrette, when portions of the materials are coarse, like gravel. Cylinders may be mounted upon friction-rollers at one or both ends, and be used in combination with the feeding-in hole and head described; but I prefer to mount the cylinders on a shaft, as hereinbefore set forth, and in most instances on a level shaft. The cylinders may be revolved by hand, or by other motive power, in any way common to apply motive power. The number of revolutions of the cylinder per minute will vary according to the work to be performed, and the diameter of the cylinder. With a cylinder three feet in diameter, twenty revolutions per minute will be well for most kinds of work.

What I claim as my invention, and desire to secure by Letters Patent, is—

The crooked arm A, the head B, with the feeding-hole *b* therein, each separately and in combination with each other, and each also in combination with the cylinder C, made and operated substantially as and for the purposes described.

LEMAN B. PITCHER.

Witnesses:

W. R. CHAMBERLIN,

N. B. SMITH.