(No Model.)

L. MIDDLETON.

CIDER MILL.

No. 508,958. Patented Nov. 21, 1893.

Fig. 1.

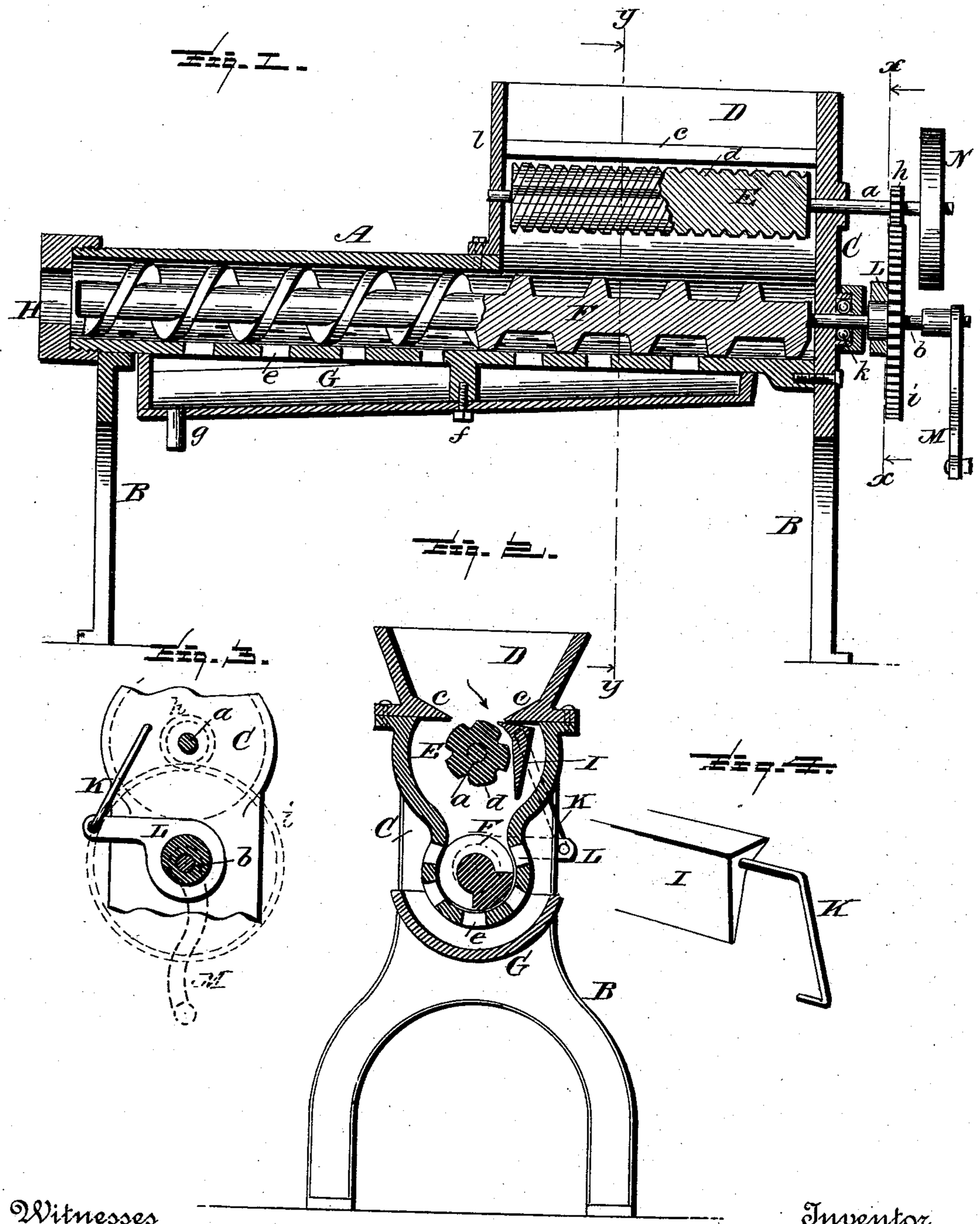

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses
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CIDER-MILL.

SPECIFICATION forming part of Letters Patent No. 508,958, dated November 21, 1893.

Application filed February 13, 1893. Serial No. 462,010. (No model.)

To all whom it may concern:

Be it known that I, LEE MIDDLETON, a citizen of the United States, residing at Clarksville, in the county of Pike and State of Missouri, have invented certain new and useful Improvements in Cider-Mills; 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 a part of this specification, and to the letters of reference marked thereon.

The present invention has relation to that class of cider-mills wherein is employed a grinding cylinder or roller arranged below a suitable hopper and a horizontally operating screw for compressing the pomace in extracting the juice therefrom and afterward conducting it out of the mill.

It is the object of the invention to improve this class of cider mills in the several details of construction, whereby the action upon the fruit will be rendered more perfect in reducing it to a state of pulp necessary to extract the juice therefrom, also in materially simplifying the operating parts and in the general construction of the mill and thus enhance its value and render it more practical in its purpose. These several objects I attain by the construction substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings represents a vertical longitudinal section of a cider-mill constructed in accordance with my invention. Fig. 2 represents a transverse section taken on line *y y* of Fig. 1, looking in the direction of the arrows. Fig. 3 represents a detail sectional view taken on line *x x* of Fig. 1, looking in the direction of the arrows; Fig. 4 a detail view in perspective of one end of the compressor plate showing the crank-rod upon the end.

In the accompanying drawings A represents a suitable cylinder which is supported by suitable standards or legs B of any preferred construction and size found best adapted to the purpose, or a suitable frame may be used to which the several parts of the mill may be connected.

The legs B at one end of the mill have an upward extension C to form one end of the mill and one side of the hopper D, and also form bearings for the shafts *a b*.

The hopper D may be of any suitable construction and may be connected in place by bolts and nuts or other like means and has upon its interior sides deflecting plates *c* which are disposed on an incline and extend the entire length of the hopper. These deflecting plates may be formed on the sides of the hopper or made separately and afterward secured in place by any well known means, and the purpose thereof is to guide the fruit to the crushing roller E. This roller is suitably connected to the shaft *a* and has upon its periphery spiral ribs *d* to more effectually crush the fruit as it passes from the hopper onto the roller.

Within the hollow cylinder A is located a spiral screw F for receiving the pomace from the crushing roller E and compressing it to extract the juice therefrom. As the juice is extracted from the pomace it passes down through the opening *e* of the cylinder A onto the trough, where it flows down the incline thereof and passes out through the nozzle or spout *g* into a receptacle placed in position to receive it. The trough G is detachably connected to the cylinder A so that it can be removed for cleaning, a screw *f* or other well known means being used for attaching the trough to the cylinder.

In order to contract the discharge opening at the end of the cylinder A, I provide what is termed a contracting head H connected thereto by screw threads or other well known means that will admit of the head being detached and removed should it be desired to replace it by another having a smaller or larger opening, or to remove it for the purpose of withdrawing the screw from the cylinder. The employment of some means for contracting the discharge opening in the end of the cylinder is found desirable so that the pulp will not pass out faster than the juice can be extracted.

Below the hopper D and upon one side of the crushing roller E, is located a compressor bar I which extends longitudinally with the roller and is connected to one end of a crank-

rod K, the other end of said rod being attached to an arm L upon the shaft *b*. The opposite end of the compressor bar I is pivotally supported in any suitable and well known manner to the side *l* below the hopper D. When the shaft is rotated, through the medium of the crank and arm above referred to, a vibratory motion will be given to the compressor bar while the crushing roller is rotated, so that the fruit will be taken between the two and most thoroughly compressed and crushed.

The crushing roller E and the screw F may have motion imparted to them by any well known means, such as any ordinary system of gearing usually employed to run machinery, and may be run by hand or other power.

The most simple means of gearing I have shown in Fig. 1 of the drawings, which consist of a pinion *h* upon the shaft *a* which meshes with the teeth upon a large drive wheel *i* upon the shaft *b*, the latter mentioned shaft having a suitable crank-handle M for turning it, and the shaft *a* having a pulley N to receive a drive belt, when the mill is run by other than hand power, or the pulley may serve as a fly-wheel when not otherwise in use. The shaft *b* is supported in ball bearings as shown at *k* so as to lessen the friction and insure the shaft running easier.

Many changes or modifications may be made in the details of construction without departing from the principle of my invention, and I reserve this right to make any changes that would be considered as coming within ordinary mechanical skill.

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

In a cider-mill, the combination of a horizontal crushing roller, a horizontal compressing screw, a cylinder in which said screw is located having openings for the escape of the juice, a contracting-head detachably connected to the end of the cylinder, and a detachable trough located under the cylinder, substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LEE MIDDLETON.

Witnesses:
JOHN H. MUSE,
T. S. MCQUEEN.