

(No Model.)

2 Sheets—Sheet 1.

C. A. CALVERT.  
CANE MILL.

No. 585,335.

Patented June 29, 1897.

Fig. 1.

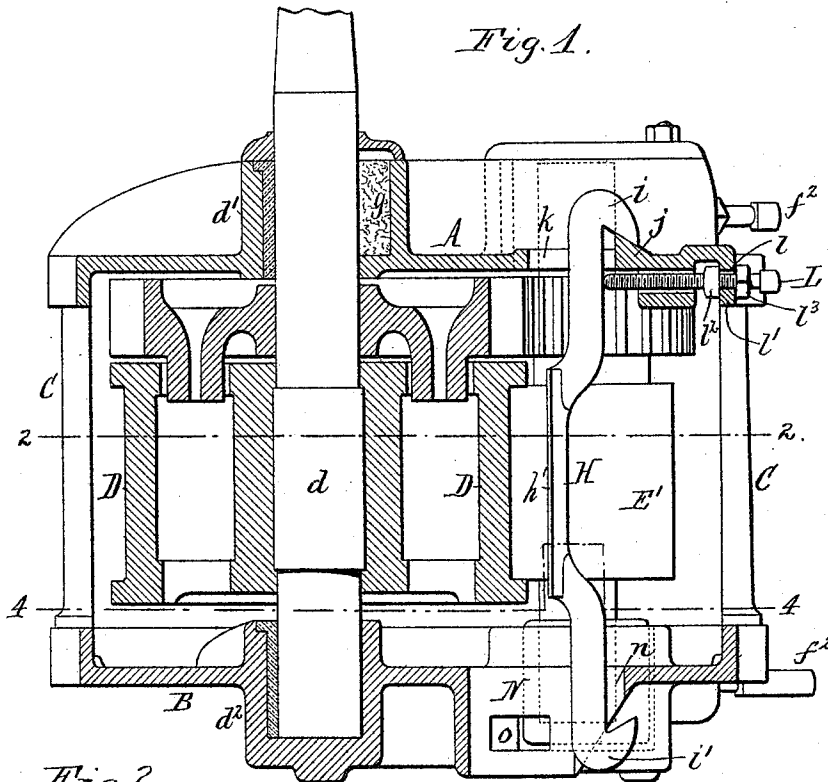


Fig. 2.

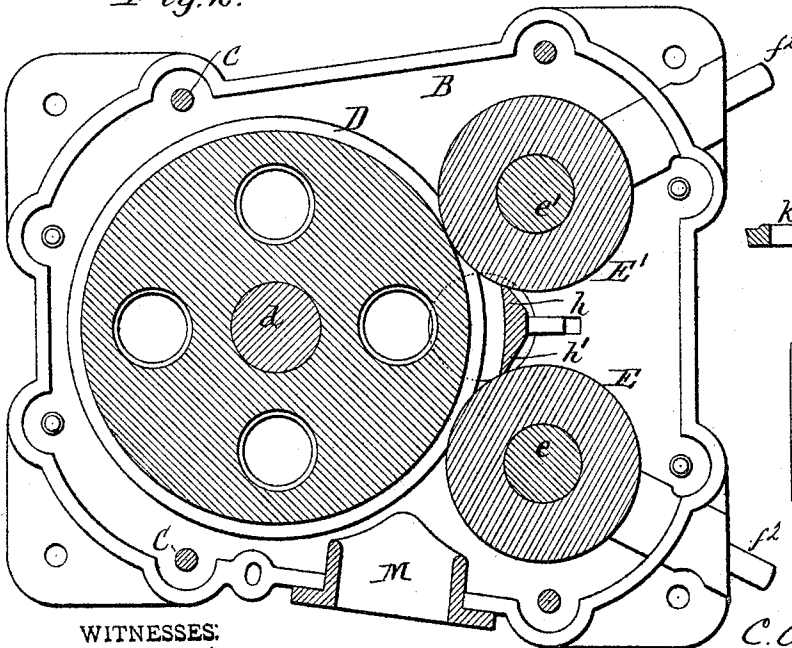
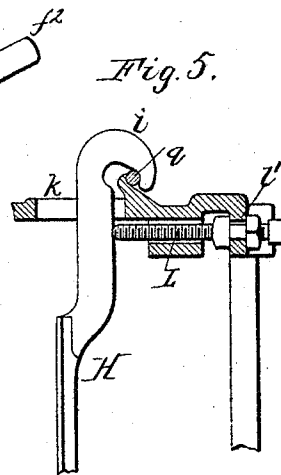


Fig. 5.



WITNESSES:

Chas. F. Burkhardt.  
Henry L. Deck.

C. A. Calvert  
INVENTOR.  
By Wilhelm Bonner.  
ATTORNEYS.

C. A. CALVERT.  
CANE MILL.

No. 585,335.

Patented June 29, 1897.

Fig. 3.

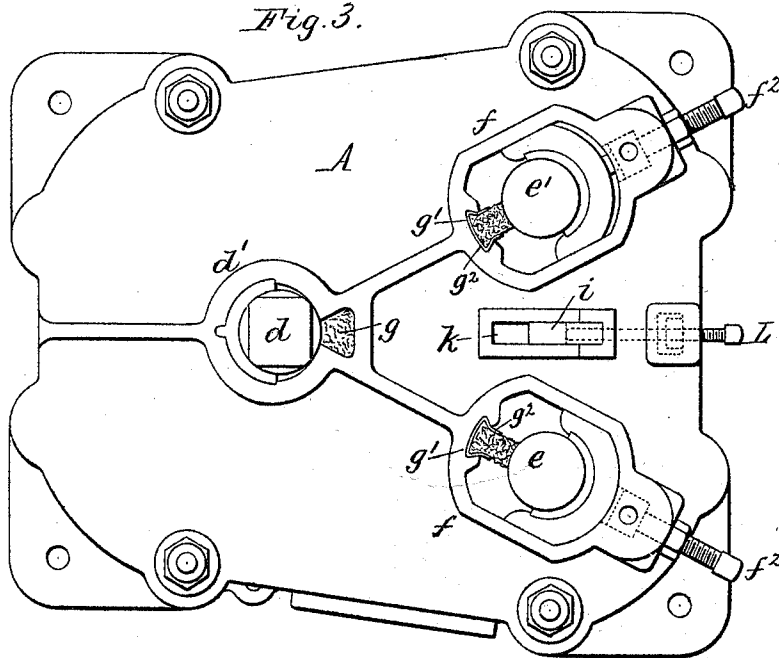
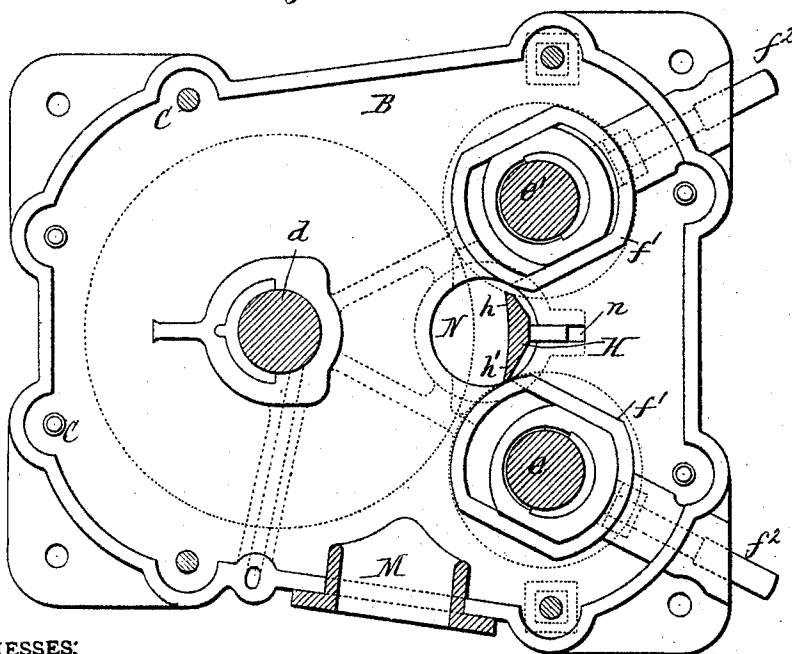


Fig. 4.



WITNESSES:

Chas. F. Burkhardt.  
Henry L. Deck.

Charles A. Calvert.  
By Wilhelm H. Bonner.

INVENTOR.

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

CHARLES A. CALVERT, OF BUFFALO, NEW YORK, ASSIGNOR TO THE GEORGE L. SQUIER MANUFACTURING COMPANY, OF SAME PLACE.

## CANE-MILL.

SPECIFICATION forming part of Letters Patent No. 585,335, dated June 29, 1897.

Application filed September 21, 1896. Serial No. 606,500. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. CALVERT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Cane-Mills, of which the following is a specification.

This invention relates more particularly to that class of crushing-mills known as "cane-mills."

My invention has for its object to improve the construction of the roller-bearings and to provide the minor rollers of the mill with an efficient scraper which is not liable to be broken in the event of cornstalks entering between it and the rollers and which will co-operate with both minor rollers irrespective of whether one or the other of the same is used as the feed-roller, thus permitting the machine to be fed from either side.

In the accompanying drawings, consisting of two sheets, Figure 1 is a sectional elevation of a cane-mill embodying my improvement. Fig. 2 is a horizontal section thereof in line 2 2, Fig. 1. Fig. 3 is a plan view thereof. Fig. 4 is a transverse section in line 4 4, Fig. 1. Fig. 5 is a fragmentary vertical section showing a modified construction of the scraper-support.

Like letters of reference refer to like parts in the several figures.

A represents the horizontal top plate of the machine, B the bottom plate or pan, and C the posts connecting these plates.

D is the large or main crushing-roller, and  $d$  its shaft, which turns in bearings arranged in pockets  $d'$   $d^2$ , formed on the top and bottom plates A B, respectively.

E E' are the minor crushing-rollers, and  $e$  the shafts thereof, which are journaled in bearings arranged in oblique pockets  $f$   $f'$ , formed on the top and bottom plates A B in the usual manner and capable of adjustment by the customary set-screws  $f^2$ . The upper pocket of the main roller-bearing is preferably provided in one of its walls with an upright dovetailed recess  $g$ , opening into the pocket and adapted to receive cotton-waste or rags saturated with oil, the dovetailed form of the recess tending to hold such rags or waste in place and preventing the same from becoming twisted or wound about the roller-shaft. The upper pockets of the mi-

nor roller-bearings are provided with similar recesses  $g'$  for the same purpose, but the cotton-waste is preferably confined in a separate holder  $g^2$ , which is removably seated in the dovetail recess of the bearing, so that the waste can be conveniently placed into the bearing and removed therefrom.

H is the scraper, arranged between the minor rollers and bearing against the opposing surface of said rollers. This scraper consists of an upright bar, which is provided with laterally-projecting scraper lips or blades  $h$   $h'$  and which is loosely suspended from the top plate, so that the scraper presses against the rollers by gravity. For this purpose the scraper is provided at its upper end with a supporting-hook or hook-shaped extension  $i$ , which engages over an inclined boss or ledge  $j$ , arranged on the upper side of the top plate A, the contiguous face of the hook being correspondingly inclined, so that the weight of the scraper tends constantly to move the hook toward said ledge and retain the same in engagement therewith. The upper portion of the scraper passes through a slot  $k$ , arranged tangentially to the minor rollers and midway between the same, so as to permit the scraper to swing toward and from the periphery of the said rollers. Ordinarily the cane-stalks do not enter between the scraper and the minor roller, but if they should the scraper is free to swing inwardly or toward the main roller and the scraper cannot, therefore, be injured or broken. The central portion of the scraper, on which the lips are formed, is preferably offset inwardly, as shown, so that the scraper tends to swing toward the surfaces of the minor rollers by gravity and bear against the same.

L is an adjusting device or adjustable stop consisting, preferably, of a screw, as shown, which bears against the outer side of the scraper near its point of suspension and whereby the upper portion of the scraper may be adjusted inwardly sufficiently to cause its blades  $h$   $h'$  to bear uniformly against the surface of the rollers throughout their length. This adjusting-screw passes through a smooth opening  $l$ , formed in the depending rim  $l'$  of the top plate A and bears at its inner end against the front side of the scraper near the upper end thereof. The screw is adjusted and secured in place by jam-nuts  $l^2$   $l^3$ , applied thereto and

bearing against opposite sides of the rim  $l'$ . The screw is adjusted by unscrewing one of said nuts and advancing or tightening the other, according to the direction in which the scraper is to be shifted. By this means the scraper can be adjusted to bear gently and evenly against the rollers, its pressure being due to gravity and the long leverage obtained by the portion of the scraper below the adjusting-screw.

Whichever of the minor rollers is used as the feed-roller must be set at a short distance from the main roller D to permit the cane-stalks to enter between the same. As the slot  $k$  in which the scraper moves is arranged centrally between the minor rollers and tangentially thereto, and as the adjustment of the minor rollers toward and from the main rollers takes place in a direction obliquely to the direction of said slot, the periphery of the feed-roller, when the latter is moved away from the main roller, recedes from the adjacent blade of the scraper, and hence said blade must be somewhat wider than the blade coöperating with the other minor roller, as shown in Fig. 2, in order to cause the scraper to bear against both minor rollers under these conditions. The minor roller E is represented in the drawings as the feed-roller and the feed-box M is arranged on the adjacent side of the machine.

When the machine is fed from the opposite side, the minor roller  $E'$  must be set at a distance from the main roller, and in that case the wide scraper-blade  $h'$  must coöperate with the feed-roller and the narrow blade  $h$  with the other minor roller. This requires the scraper to be reversed, and to permit such reversal the scraper is provided at its lower end with a suspension-hook  $i'$ , similar to the hook  $i$  at its opposite end—in other words, the scraper is double-ended, so that it may be reversed end for end and suspended in either position for bringing its wide scraper-blade opposite that of the minor roller, which is used as the feed-roller. The lower portion of the scraper passes through a slot  $n$ , which is formed in the bottom plate B in line with the upper slot  $k$  and which opens into an aperture N. This aperture is of sufficient size to permit the introduction of the scraper into the machine and is also preferably employed as the discharge-opening for the expressed juice received by the bottom plate or pan B. In reversing the scraper the same is removed through the aperture N, and after reversing it it is again passed through said aperture and suspended from the ledge  $j$  of the top plate A.

In order to permit the escape of any juice which may enter the lower bearing-pockets of the minor rollers, said pockets are provided at their inner walls with discharge-passages  $o$ , which lead to the main discharge-aperture N, as shown by dotted lines in Fig. 4 and by full lines in Fig. 1.

In the modified construction of my improvement shown in Fig. 5 the upper hook of the

scraper is suspended from an antifriction-roller  $q$  instead of from a fixed ledge, as in the first-described construction. This antifriction-roller is free to roll upon the inclined ledge of the top plate.

I claim as my invention—

1. The combination with the top and bottom plates and the crushing-rollers, of a scraper suspended loosely from said top plate and free at its lower end, whereby the same is permitted to vibrate toward and from the opposing crushing-rollers, substantially as set forth.

2. The combination with the top and bottom plates and the crushing-rollers, of a scraper suspended from said top plate and free at its lower end and having a portion thereof offset inwardly or away from the surface of the opposing crushing-rollers whereby the scraper tends to swing against said rollers by gravity, substantially as set forth.

3. The combination with the top and bottom plates and the crushing-rollers, of a scraper for said rollers, provided at its upper end with a suspension-hook which engages loosely with said top plate, whereby the scraper is free to move toward and from the periphery of said rollers, substantially as set forth.

4. The combination with the top plate having an inclined ledge or support, and the crushing-rollers, of a pendent scraper provided at its upper end with a suspension-hook hung from said inclined ledge, substantially as set forth.

5. The combination with the top and bottom plates and the crushing-rollers, of a scraper suspended loosely from said top plate and free at its lower end, whereby the same is permitted to vibrate toward and from the opposing crushing-rollers, and an adjustable stop bearing against said scraper below its point of suspension, whereby the scraper can be adjusted to bear uniformly against the opposing crushing-rollers throughout its length, substantially as set forth.

6. In a cane-mill, the combination with horizontal top and bottom plates and upright main and minor crushing-rollers, of a reversible scraper provided at each end with a suspension device adapted to engage with the top plate and having scraper-blades of different widths adapted to operate against said minor rollers, substantially as set forth.

7. The combination with the top and bottom plates and the main and minor crushing-rollers, of a reversible scraper having scraper-blades of different widths and provided at both ends with suspension-hooks one or the other of which is adapted to engage with said top plate, substantially as set forth.

Witness my hand this 3d day of September, 1896.

CHARLES A. CALVERT.

Witnesses:

CARL F. GEYER,  
KATHRYN ELMORE.