May 22, 1923. 1,456,430

J. FISHER

JUICE SAVING ATTACHMENT FOR CANE MILLS

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Fig. 1.

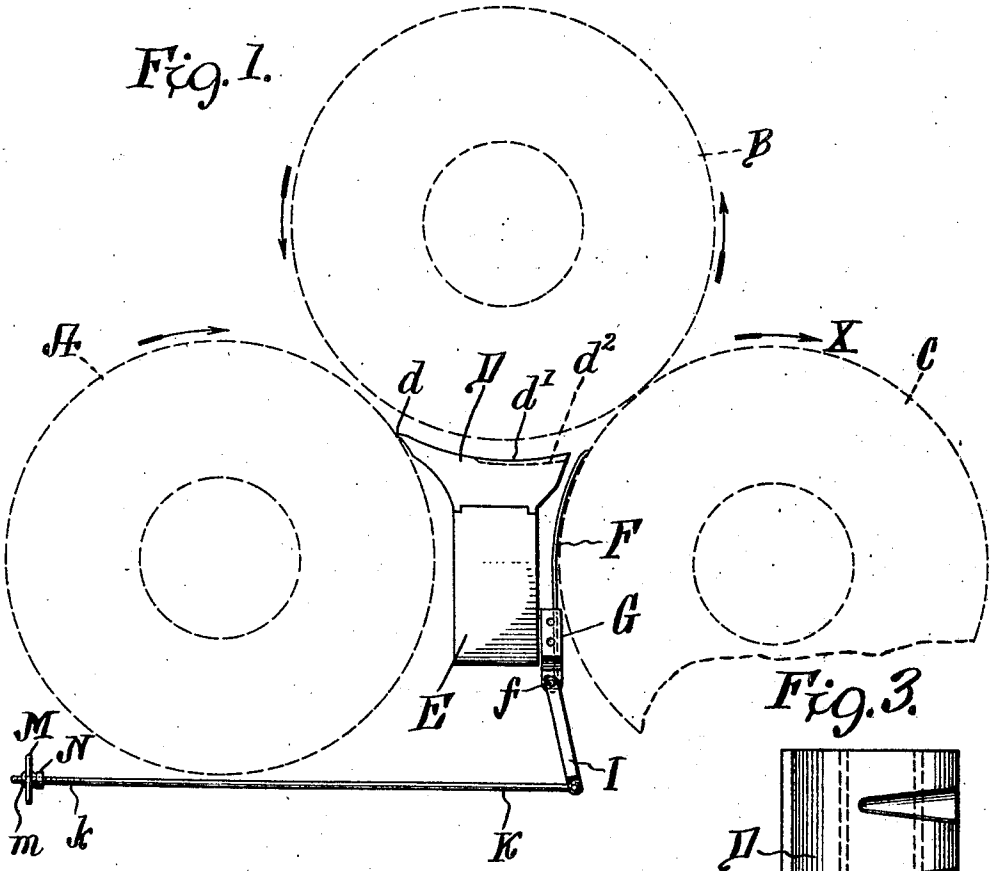


Fig. 2.

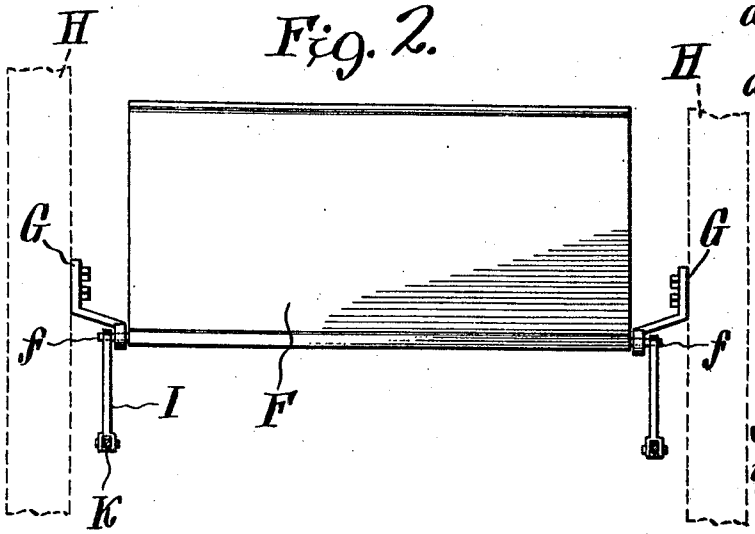
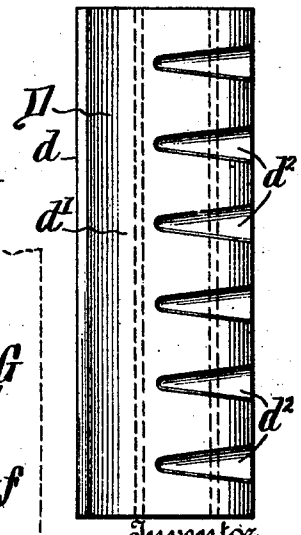


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES FISHER, OF NEW ORLEANS, LOUISIANA.

JUICE-SAVING ATTACHMENT FOR CANE MILLS.

Application filed December 26, 1922. Serial No. 609,061.

To all whom it may concern:

Be it known that I, JAMES FISHER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Juice-Saving Attachments for Cane Mills, of which the following is a specification.

My present invention relates to improvements in juice saving attachments for cane mills, especially for those mills of the three-roller type which are well known in the sugar making art. Such mills ordinarily comprise three rollers, the lower front or receiving roller, the top roller to which the hydraulic pressure is applied, and the lower back or bagasse roller. The two lower rollers are more or less spaced apart, and between these the turn plate for deflecting the bagasse from the receiving roller to the bagasse roller is located. As ordinarily constructed, this turn plate has a smooth curved upper surface, which surface in one direction is substantially parallel to the surface of the top roller, but in the other direction is formed of a series of rectilinear elements. This turn plate extends the entire length of the rollers, and all the bagasse, after being crushed between the top roller and the receiving roller, passes over the turn plate to be again crushed between the top roller and the bagasse roller.

Owing to this shape of the turn plate, and to the inevitable inequalities in the cane fed to the mill, quantities of the juice are carried along with the bagasse from the first two rollers, only to be partly crushed again by the second crushing, while any juice that may be swept along over the top of the turn plate free of the bagasse strikes the rotating surface of the bagasse roller, and is carried along with the bagasse to be subjected to the re-crushing operation just referred to.

Owing to inequalities in the feed, capillary attraction and other causes this re-crushing operation is never perfect, and there is an undesirable loss in having the juice, once separated from the cane, carried along with the bagasse, to be partly extracted therefrom in the second crushing of the three-roller mill.

The foregoing description relates especially to a single three-roller mill, but obviously similar objections would be encountered where there are a plurality of such mills operating in tandem.

According to my invention I provide on the upper surface of the turn plate a series of shallow grooves into which the juice can flow clear of the bagasse, while passing over the turn plate, and I provide a deflecting plate which is pressed against the bagasse roller, and which will keep the free juice clear of the bagasse roller and will deflect the same downwards, permitting it to fall into the usual juice pan provided below the mill.

My invention will be more fully understood after reference to the accompanying drawings, in which like parts are indicated by similar reference symbols throughout the several views, and in which:—

Figure 1 is a diagrammatic view showing the three rollers of the mill in elevation and in dotted lines, with my invention as applied thereto in full lines; the means for rotating the mill not being a part of my present invention are omitted for the sake of clearness in the drawings.

Figure 2 is an elevation showing the pivoted deflector plate attached to the mill housing; and

Figure 3 is a plan view of the turn plate showing the curved and grooved upper portion thereof.

A represents the front or receiving roller, B the top roller to which the hydraulic pressure is applied in the usual well known way, and C the rear or bagasse roller; the three rollers being driven in the direction of the arrows by suitable gearing well known in the art.

D represents the turn plate mounted upon any suitable support E, which support, not being a part of my present invention, will not be further described herein. This turn plate is provided with a scraper edge d, and its top d' is in the form of a curve provided with a series of grooves d^2 on the rear portion thereof, as shown in Figs. 1 and 3.

F represents the deflector plate which is preferably curved as shown in Fig. 1, and is pivoted, as at f, to the brackets G, see Fig. 2, which are connected to the mill housing H in any convenient way. This deflector plate F is regulated by the crank arms I to which the rods K are pivoted. These rods are screw-threaded, as at k, to engage

the screw threads on the hub *m* of the hand wheel M, which hand wheel engages a suitable stop N attached to any convenient portion of the mill housing.

It will be seen that this curved plate F will fit snugly against the bagasse roller C, and may be pressed against the same by setting up on the hand wheel M. Since the bagasse roller rotates in the direction of the arrow X, there will be no pressure on this plate F except that applied by the hand wheel M, and the occasional passage of small particles of bagasse or other material which may adhere to the surface of the bagasse roller after it has nearly completed a revolution from the turn plate. Such particles would be very small, and could do no more harm than press the deflector plate outwards slightly, which movement would be readily permissible owing to the flexibility of the various parts of the device used in pressing this deflector plate against the bagasse roller. In fact the principal need for the adjusting hand wheel M would be to apply the deflector plate properly in the first instance, and to compensate for any subsequent wear on either the plate itself or on the roller.

It will be seen that any free juice falling over the grooved edge of the turn plate will fall on this deflector plate and will be guided down to the juice pan (not shown) which is provided in mills of this character. Of course any free juice contained in or which adheres to the bagasse as it passes over the turn plate will be subjected to the second crushing just referred to, but by the herein described invention any free juice that passes over the turn plate will not come in contact with the bagasse roller at all, and will fall freely down between the receiving roller and the bagasse roller to the juice pan, and will then be carried off to the juice tanks or other apparatus well known in the sugar making art.

While I have described an embodiment of the invention in its preferred form, it will be obvious that various modifications might be made in the herein described apparatus, and in the construction, combination and arrangement of parts which could be used without departing from the spirit of my invention; and I do not mean to limit the invention to such details except as particularly pointed out in the claims.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is:—

1. A juice saving attachment for three-roller mills comprising a turn plate mounted between the receiving roller and the bagasse roller, and having its upper surface curved in a transverse direction substantially parallel with the curvature of the top roller, said turn plate being provided on its upper surface with a series of grooves, inclined downwards and rearwards, adapted to receive the free juice carried along with the bagasse, and a deflector plate engaging the surface of the bagasse roller opposite the rear upper edge of said turn plate.

2. A juice saving attachment for three-roller mills comprising a turn plate mounted between the receiving roller and the bagasse roller, and having its upper surface curved in a transverse direction substantially parallel with the curvature of the top roller, said turn plate being provided on its upper surface with a series of grooves, inclined downwards and rearwards, adapted to receive the free juice carried along with the bagasse, and a curved deflector plate engaging the surface of the bagasse roller opposite the rear upper edge of said turn plate, with means for pressing said deflector plate against the face of the bagasse roller.

3. A juice saving attachment for three-roller mills comprising a turn plate mounted between the receiving roller and the bagasse roller, and having its upper surface curved in a transverse direction substantially parallel with the curvature of the top roller, said turn plate being provided on its upper surface with a series of grooves, inclined downwards and rearwards, adapted to receive the free juice carried along with the bagasse, and a pivoted curved deflector plate engaging the surface of the bagasse roller opposite the rear upper edge of said turn plate, crank arms for regulating said deflector plate, and means for applying pressure to said crank arms and thereby pressing said deflector plate against said rear roller.

JAMES FISHER.