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INTERMEDIATE CONVEYER FOR SUGAR CANE MILLS.

APPLICATION FILED OCT. 21, 1914. RENEWED JAN. 3, 1916.

1,170,619. Patented Feb. 8, 1916.

2 SHEETS—SHEET 1

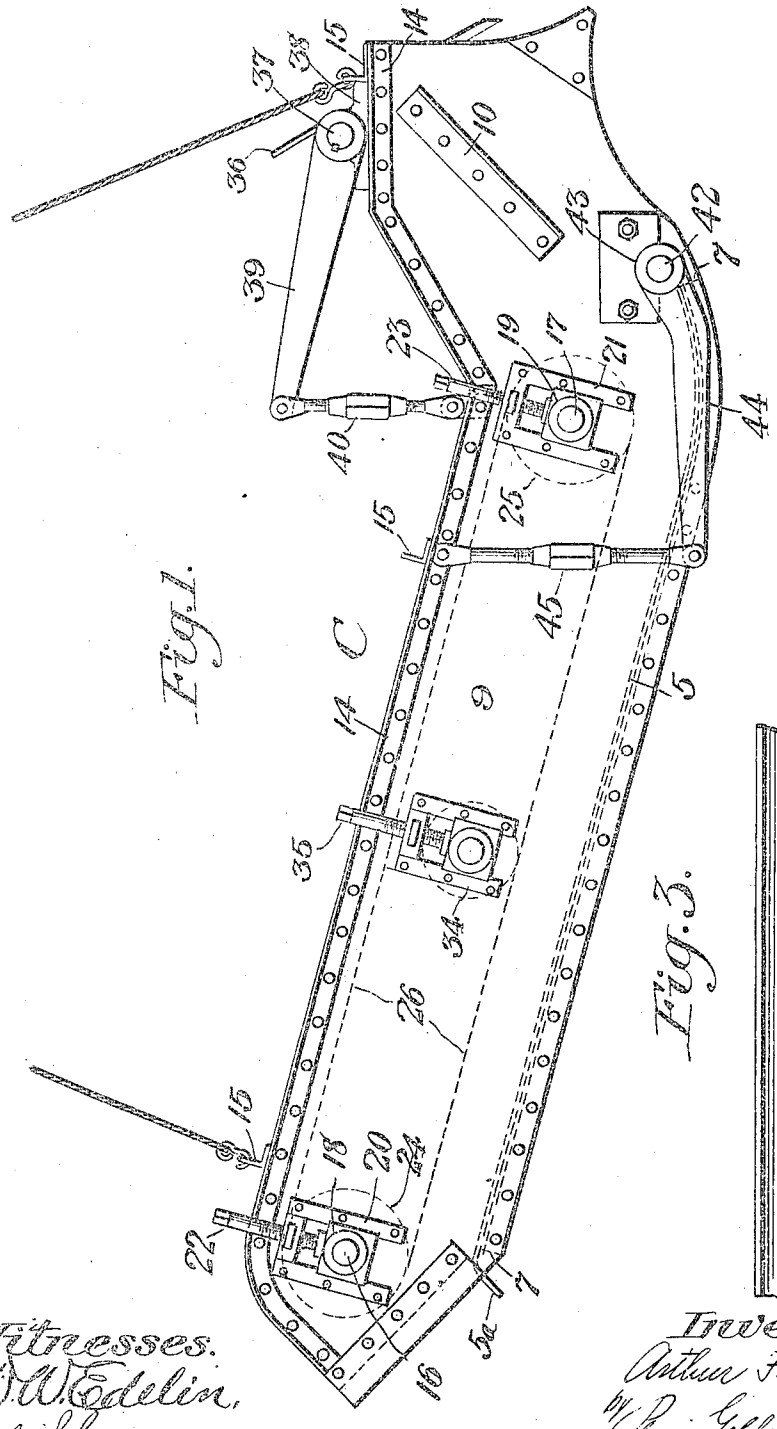


Fig. 1.

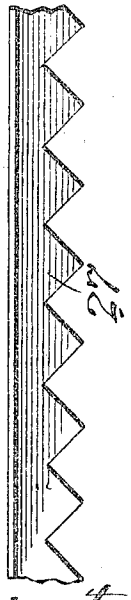


Fig. 3.

Witnesses.
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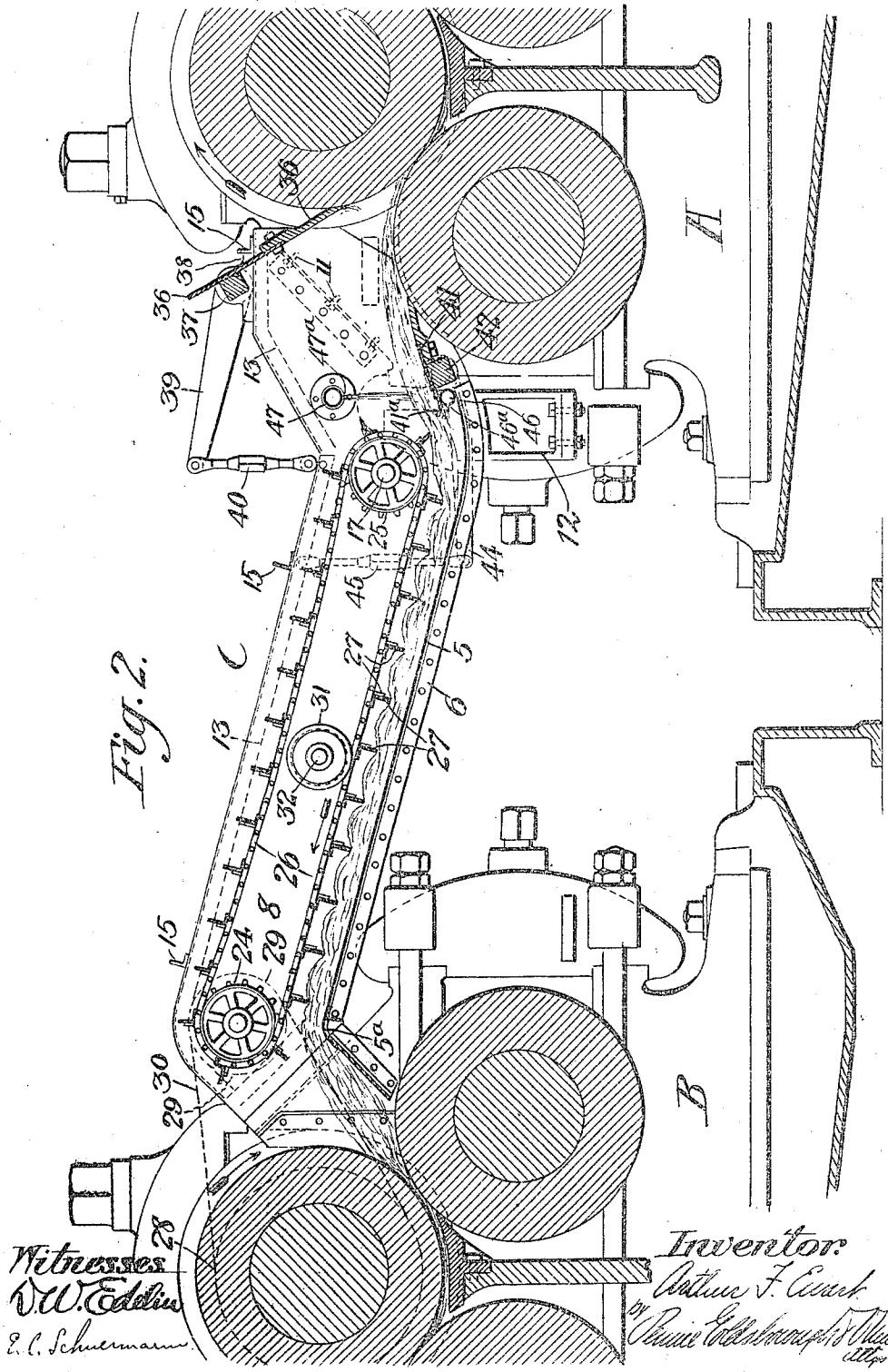
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UNITED STATES PATENT OFFICE.

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INTERMEDIATE CONVEYER FOR SUGAR-CANE MILLS.

1,170,619. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed October 21, 1914, Serial No. 867,890. Renewed January 3, 1916. Serial No. 70,075.

To all whom it may concern:

Be it known that I, ARTHUR FREDERICK EWART, a subject of the King of Great Britain, and a resident of the city and county of Honolulu and Territory of Hawaii, have invented certain new and useful Improvements in Intermediate Conveyers for Sugar-Cane Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in intermediate conveyers such as are used between sugar-cane mills for transporting the crushed cane or bagasse discharged from one mill and feeding the same to the succeeding mill of the train.

Its object is to provide a conveyer of this character which shall be self contained and easily detachable so that it can be quickly removed.

Another object is to eliminate the slat aprons or canvas belts, which heretofore have usually been employed and which cause delays due to the breakage of the chains or slats or to the stretching or bagging of the belts, and which are otherwise objectionable on account of leakage through the apron, and the inversion of sugar which occurs due to the souring of juices absorbed by the canvas belts or in the cush-cush retained by the chains of the slat aprons.

This invention contemplates an intermediate conveyer comprising a detachable water tight trough between two sugar-cane mills, means within the trough for engaging the top of the layer of crushed cane or bagasse so as to drag or aid the movement of the same through the trough, means for regulating the distance between the dragging means and the bottom of the trough, means for macerating the bagasse while in the trough, scrapers for the mill rolls supported by the trough, and certain other features, all of which will hereinafter more fully appear.

The invention consists in the novel construction, arrangement and combination of parts as hereinafter described.

In the accompanying drawings, forming a part of this specification, Figure 1 represents in side elevation an intermediate conveyer embodying a preferred form of my invention. Fig. 2 is a longitudinal sectional elevation of the same when applied between two three-roller sugar-cane mills. Fig. 3 is a detail showing a portion of one of the drags or flights.

Referring to the drawings, A represents the three-roller sugar-cane mill the bagasse from which is to be conveyed and fed to the succeeding mill B. The trough C of the conveyer, which is removable and preferably water tight, is composed of the bottom plate 5 secured to the angles 6 and 7 riveted to the side plates 8 and 9 near their lower edges respectively. The forward ends of the side plates 8 and 9 are provided with short pieces of angle 10, which are bolted by the bolts 11 to the cheeks of the mill A. The saddle brackets 12, bolted to the side-caps of mill A, support the trough C at its lowest portion. The rear or upper end of the slightly inclined trough C rests on the upper edges of the plates forming the short feed chute of mill B. The upper end of the bottom plate 5 is bent downward at 5^a to overlap the corresponding chute plate of the mill B. The side plates 8 and 9 are stiffened by the angles 13 and 14 riveted to the outside of said plates near their upper edges respectively, and also by the transverse angles 15 which act as separators.

The shafts 16 and 17 are each journaled in a pair of boxes 18 and 19 respectively on opposite sides of the conveyer trough C, said shafts passing through holes in the said plates. The boxes 18 and 19 are adapted to slide in the frames 20 and 21 secured to the side plates 8 and 9 and are adjusted by the screws 22 and 23 respectively. Sprockets 24 25 are secured to the shafts 16 17 respectively, over which the endless strands of link belt 26 are passed. Drags or flights 27 are secured transversely to these link belts 26. These drags or flights 27 may have zig-zag edges (Fig. 3) or other shaped edges to adapt the same to engage the bagasse in the trough C. The shaft 16 is revolved in any well known manner so that the link belts 26 will move in the direction as shown by the arrows, for example, from the top roller of mill B by means of the sprockets 28 29 connected by the link belt 30. One or more sets of idler pulleys 31 may be employed to depress the link-belts 26 so that the drags

or flights 27 may better engage the blanket of bagasse in the trough C, particularly when the mills A and B are situated so far apart that the trough is long and the distance between the shafts 16 and 17 is large. These idler pulleys 31 are secured on shafts 32 journaled in boxes 33 adapted to slide in frames 34 secured to the side plates 8 and 9 and adjusted by screws 35 in the same manner as described for the shafts 16 and 17.

The upper scraper 36 for the top roll of mill A is secured to the bar 37, which is adapted to turn in the boxes 38 supported by the angles 13 and 14 respectively at the forward end of the trough C. This upper scraper 36 is adjusted by the the levers 39 attached to the bar 37 and the turnbuckles 40 attached to these levers 39 and to the side plates 8 and 9 respectively. The lower scraper 41 for the discharge roll of mill A is secured to the bar 42, which is adapted to turn in the boxes 43 bolted to the side plates 8 and 9 respectively. This scraper 41 is similarly adjusted by means of the levers 44 and the turnbuckles 45, as shown. The rear end 41^a of the lower scraper 41 may be bent or curved upward, as shown, so as to raise the bagasse slightly before passing off from this scraper and dropping onto the bottom plate 5. Maceration liquid may be applied to the bagasse in the trough C as it leaves the scraper 41 by means of the pipe 46, provided with holes 46^a, located above the forward end of the bottom plate 5 and under the rear end 41^a of the scraper 41. Maceration may also be applied to the bagasse while it is passing over the lower scraper 41, by means of the pipe 47 with holes 47^a supported by the side plates 8 and 9, as shown.

In operation, the crushed cane or bagasse discharged from mill A is pushed rearward over the lower scraper 41 and drops onto the forward end of the bottom plate 5, whereupon the drags or flights 27 engage this layer or blanket of bagasse and aid its movement along in the trough C until it arrives at and drops off from the rear end 5^a of the bottom plate 5 and is fed to the mill B. The distance between the drags or flights 27 and the bottom plate 5 may be adjusted by operating the screws 22, 23 and 35, so as to suit the thickness of the layer or blanket of bagasse in the trough C. Maceration may be applied to the bagasse in the trough C as previously described.

It will now be noted, that the removable conveyer trough being water tight prevents leakage of juice or maceration liquid. By disconnecting the driving chain 30 and removing the bolts 11, the entire conveyer is detached from the mills A and B, and may then be easily lifted and removed, for example, by means of ropes attached to the ends of the transverse angle separators 15. The entire conveyer, together with the upper and lower scrapers 36 and 41 and the maceration pipes 46 and 47, is thus removed with the trough C.

I claim:

1. An intermediate conveyer for sugar-cane mills comprising, a detachable water tight trough, means within the trough for engaging the blanket of bagasse to aid its movement through the trough, means for adjusting the distance between the said means and the bottom of the trough, and scrapers for one of the mills supported by the trough, substantially as described.

2. An intermediate conveyer for sugar-cane mills comprising, a removable trough, means for engaging the blanket of bagasse within the trough to aid its movement rearward in the trough, upper and lower scrapers for the rolls of one mill with adjusting means for same supported by the trough, and a maceration pipe located between the bottom of the trough and the rear end of the lower scraper, substantially as described.

3. An intermediate conveyer for sugar-cane mills comprising, a removable trough, means for engaging the blanket of bagasse to aid its movement rearward in the trough, upper and lower roll scrapers with adjusting means supported by the trough, and a maceration pipe between the bottom of the trough and the lower scraper, the rear end of the lower scraper being bent or curved upward, substantially as and for the purpose described.

4. In an intermediate conveyer for sugar-cane mills, a removable trough, and maceration pipes supported by and removable with said trough.

5. In an intermediate conveyer for sugar-cane mills, a removable trough, roll scrapers, and means for adjusting said scrapers removable with said trough.

In testimony whereof I affix my signature, in presence of two witnesses.

ARTHUR FREDERICK EWART.

Witnesses:
ROBT. J. PRATT,
ROBT. SCOTT.