

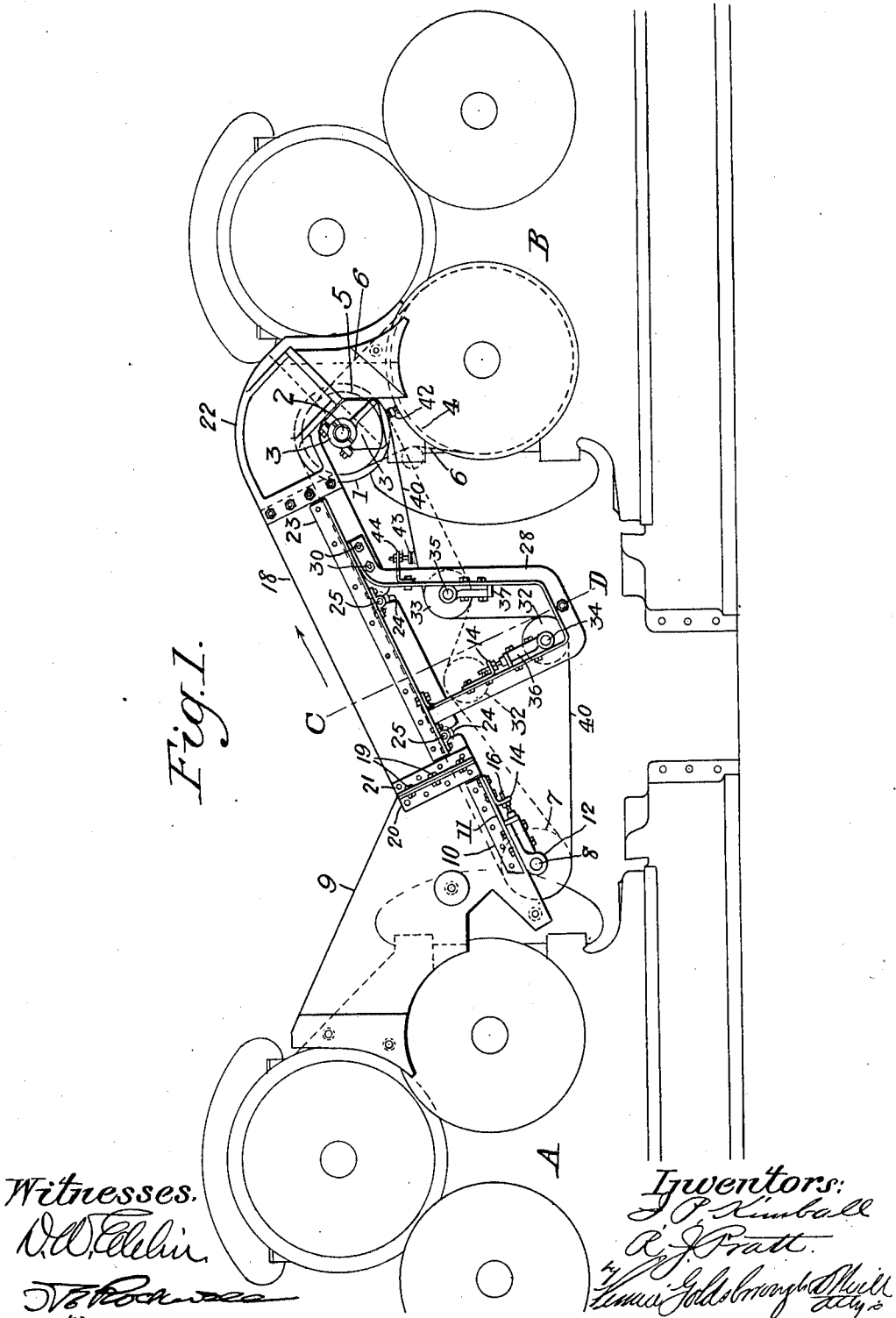
I. P. KIMBALL & R. J. PRATT.
 INTERMEDIATE BELT CONVEYER FOR SUGAR CANE MILLS.
 APPLICATION FILED JULY 30, 1909.

1,020,706.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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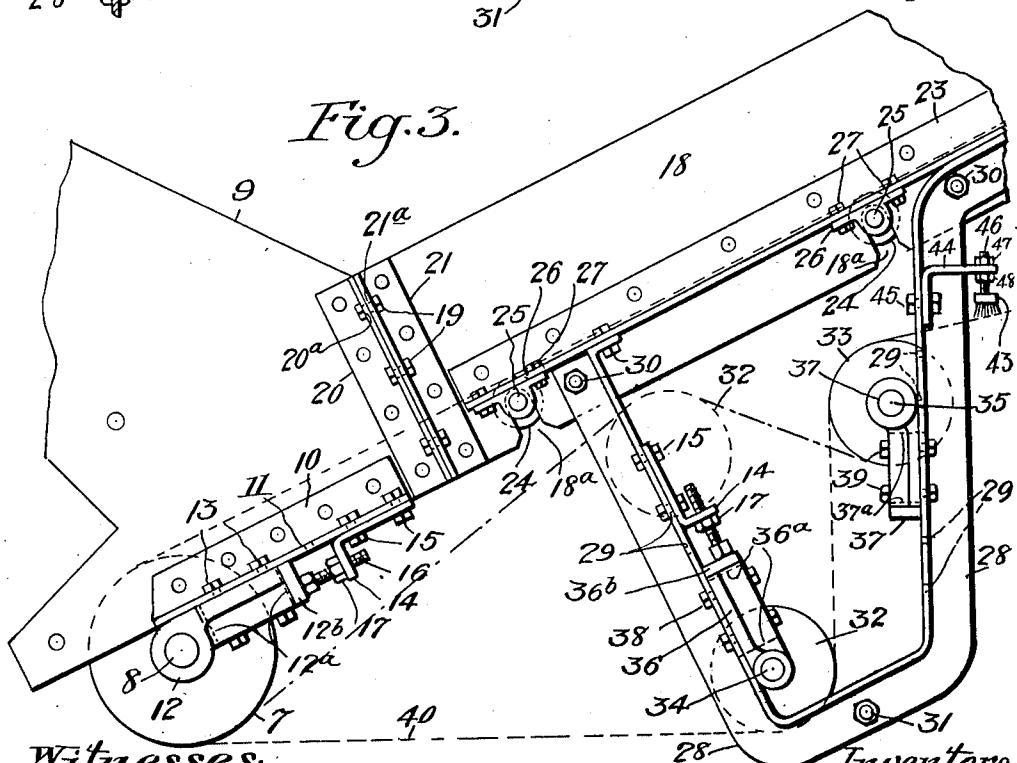
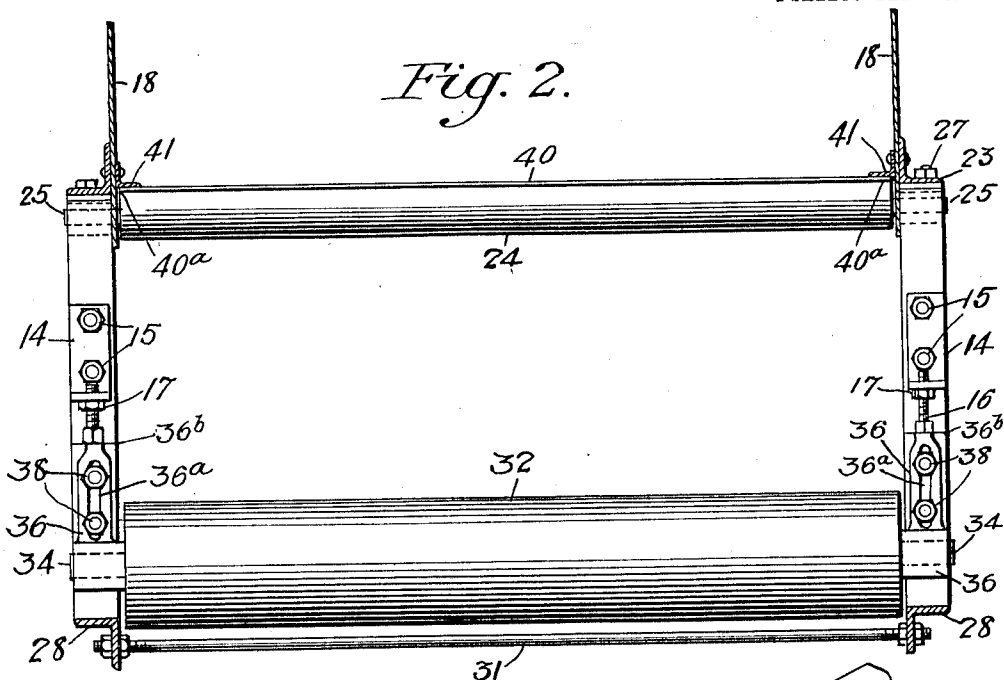
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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

IRWIN P. KIMBALL AND ROBERT J. PRATT, OF HONOLULU, TERRITORY OF HAWAII,
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INTERMEDIATE BELT CONVEYER FOR SUGAR-CANE MILLS.

1,020,706.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed July 30, 1909. Serial No. 510,436.

To all whom it may concern:

Be it known that we, IRWIN P. KIMBALL and ROBERT J. PRATT, citizens of the United States, residing at Honolulu, county of Honolulu, Territory of Hawaii, have invented certain new and useful Improvements in Intermediate Belt Conveyers for Sugar-Cane Mills; and we 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.

Our invention relates to improvements in conveyers between sugar-cane mills for conveying the crushed cane from one mill and feeding it to the next mill; and particularly to such conveyers in which a canvas or other continuous belt is employed instead of the usual slat apron.

The object of our improvements is to produce an improved take-up device whereby continuous belts of a uniform length may be used for any one of the varying lengths of intermediate conveyers of a nine or twelve roll sugar-cane mill.

The surface speeds of the rolls of a nine or a twelve roller sugar-cane mill are usually slightly increased from the first to the last mill successively. This is accomplished by slight changes in the number of teeth of the gears driving the mills, which causes the distances from center to center of mills to vary. In order that continuous belts of uniform lengths may be employed for any one of the conveyers between said mills, a new method of take-up is necessitated.

Another object of our improvements is to produce such a conveyer, which may be easily and quickly assembled or dismantled.

The invention consists in the construction and novel combination and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and pointed out in the claims.

In the drawings, Figure 1 represents in elevation an intermediate belt conveyer for sugar-cane mills embodying our improvements. Fig. 2 is a sectional view on the line C—D of Fig. 1. Fig. 3 is an enlarged detail view of a portion of Fig. 1.

Referring to the drawings, the conveyer as a whole is illustrated between mills A

and B, for receiving the crushed cane discharged from mill A and for conveying same to feed mill B.

The drum 1, preferably of wood, is secured to the head-shaft 2 journaled in the boxes 3 fastened to the cheeks of mill B. The head-shaft 2 is driven in the usual manner by the mill B, by sprockets 4 and 5 connected by the link belt 6, the surface speed of the drum 1 being proportionate to that of the rolls of mill B. The drum 7, between the discharge side-plates 9 of the mill A, is provided with the trunnions 8. An angle-iron 10, provided with holes 11, is secured to each of the discharge side-plates 9, on the outer and lower edge, as shown. The boxes 12 are adapted to receive the trunnions 8, and are each provided with a slot 12^a. The bolts 13, through the slot 12^a and holes 11, clamp the box 12 under the angle 10. An L shaped bar 14 is bolted to each angle 10 by the bolts 15 through holes 11. The screw 16, provided with a lock-nut 17, in the bar 14, is adapted to abut the end 12^b of the box 12. It is obvious that with this construction, the drum 7 may be adjusted along the side plates 9 by turning the screws 16, which push the boxes 12 along the side plates in such a manner as to increase the tension of the belt, as will be understood.

The conveyer side-plates 18 are removably connected at their lower ends to the discharge side-plates 9, in any suitable manner, as by bolts 19 through holes 20^a and 21^a in the angles 20 and 21 secured to the plates 9 and 18 respectively. The upper ends of the side-plates 18 are bolted to the brackets 22 secured to the cheeks of the mill B in the usual manner. An angle 23 is riveted to the outside of each side-plate 18, as shown. Notches 18^a are cut in the lower edge of each side-plate 18. Idler rollers 24 are provided with trunnions 25 at their ends. Boxes 26, adapted to receive the trunnions 25, are removably secured to the angle 23 by the bolts 27, the notches 18^a permitting the trunnions 25 to extend through and beyond the side-plates 18.

A take-up frame 28, preferably made of angle bars bent as shown, and provided with holes 29, is bolted by the bolts 30 to each side-plate 18, and depends therefrom. A distance bolt 31 may connect the lower

ends of the frames 28 to stiffen same. Two drums 32 33 carried by these U-shaped frames or members are provided with trunnions 34 35 at their ends respectively. Boxes 36 37, adapted to receive the trunnions 34 35, and provided with slots 36^a 37^a, are bolted by the bolts 38 39 respectively, through the holes 29, to each frame 28. The boxes 36, 37 are substantially like the box 12 previously described, and the slots 36^a 37^a are like the slots 12^a. An L shaped bar 14, with screw 16 and lock-nut 17, may also be bolted by bolts 15, through holes 29, to the frame 28, such that the screw 16 will abut the end 36^b of the box 36. The adjusting screw 16 and its accessories are identical with those previously described in connection with the drum 7, and the adjustment of the tensioning drum 32 is effected in substantially the same manner. The box 36 is reversible on its side portion of the U-shape frame in such a manner that the drum 32 may be placed in the position indicated in dotted lines in Fig. 3. The tensioning drum 33 is not provided with adjusting screws, but it will be noted that the corresponding leg or side of the U-shaped frame member is provided with a plurality of holes 29 to provide for the vertical adjustment of said drum. This drum is properly adjusted to tension the belt in an approximate fashion when the latter is first put in place, but it is not intended for adjustment during the operation of the conveyer, such as would be permitted by the adjusting means for the drum 32. It will be understood, of course, that the provision of the slot 37^a in the box 37 provides for the adjustment of the box within certain limits, without placing the bolt 39 in other holes in the frame member.

The drums 7 32 and 33, and the rollers 24, are preferably made of tubing for lightness.

An angle 41 may be bolted to the inner side of each side-plate 18, to clear the belt 40, and to prevent crushed cane from falling between the edges 40^a of said belt and the side-plates 18, Fig. 2.

Both sides of the conveyer are similar but of opposite hand.

Means for cleaning the belt 40 may be provided. A brush 42 or other suitable scraper, is supported between the cheeks of mill B and below the drum 1, and prevents crushed cane from being carried away from said mill by adhering to the belt 40; it also prevents the crushed cane from dropping off the feed roller of said mill. If desired, brushes 43 or similar devices, supported by brackets 44 bolted by bolts 45 to the frame 28, may be employed for cleaning either or both surfaces of belt 40. The brushes 43 are preferably adjustably supported by the brackets 44, for example by stud-bolts 46 provided with the nuts 47 and 48.

It will now be noted that the continuous belt 40 may either run over the drum 33 and under the drum 32, as shown by full line, or it may run under the drum 33 and over the drum 32, when the latter is raised, as shown by dotted lines, (Figs. 1 and 3) thus giving a wide range of take-up. The belt 40 may be made to run true and midway between the side-plates 18 by means of the drum adjustments provided as described. By removing the bolts 27 the idlers 24 may be removed easily and the drum may be removed in a similar manner.

We claim:

1. In an intermediate belt conveyer for sugar cane mills, the combination of an endless conveyer belt, main drums supporting the same, side plates between which the upper run of the belt passes, a frame comprising U-shaped side members depending from said side plates and supported solely thereby, and tensioning drums carried by said frame members and adjustable thereon in opposite directions, the lower run of the belt being passed between said tensioning drums.

2. In an intermediate belt conveyer for sugar cane mills, the combination of an endless conveyer belt, main drums supporting the same, side members between which the upper run of the belt passes, a frame comprising opposite side members bolted to and depending from said side members afore-said, and tensioning drums journaled between said depending frame members and between which the lower run of the belt is passed, one of said drums having bearing boxes with means to give the same positive adjusting movements on the respective frame members.

3. The combination of an endless belt, side plates between which the upper run of said belt is guided, U-shaped members bolted to and depending from said side plates, and tensioning drums journaled in said members and mounted on the side portions thereof, the lower run of the belt being passed between said tensioning drums.

4. In an intermediate belt conveyer for sugar cane mills, the combination of an endless conveyer belt, main drums supporting the same, side plates between which the upper run of the belt passes, a depending frame applied to said side plates and comprising angle bars bent into U-shape and bolted at their ends to the respective side plates, a distance bolt connecting the lower intermediate portions of said bars, and tensioning drums for the belt having boxes adjustable along the side portions of said U-shaped bars, said drums extending across said depending frame and coöperating with the lower run of the belt.

5. The combination of an endless belt, side members between which the belt is

guided, depending frames carried by said side members, boxes applied to said depending frames, and tensioning drums journaled in said boxes and extending between said
5 frames, to tension the belt at one run of the same, the boxes of at least one of said tensioning drums being reversible on the respective frames.

In testimony whereof we affix our signatures, in presence of two witnesses.

IRWIN P. KIMBALL.
ROBT. J. PRATT.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
