July 25, 1950 E. H. ENSINGER 2,516,192

PORTABLE CONVEYER AND WHEELED SUPPORT

Filed Aug. 2, 1946

2 Sheets-Sheet 1

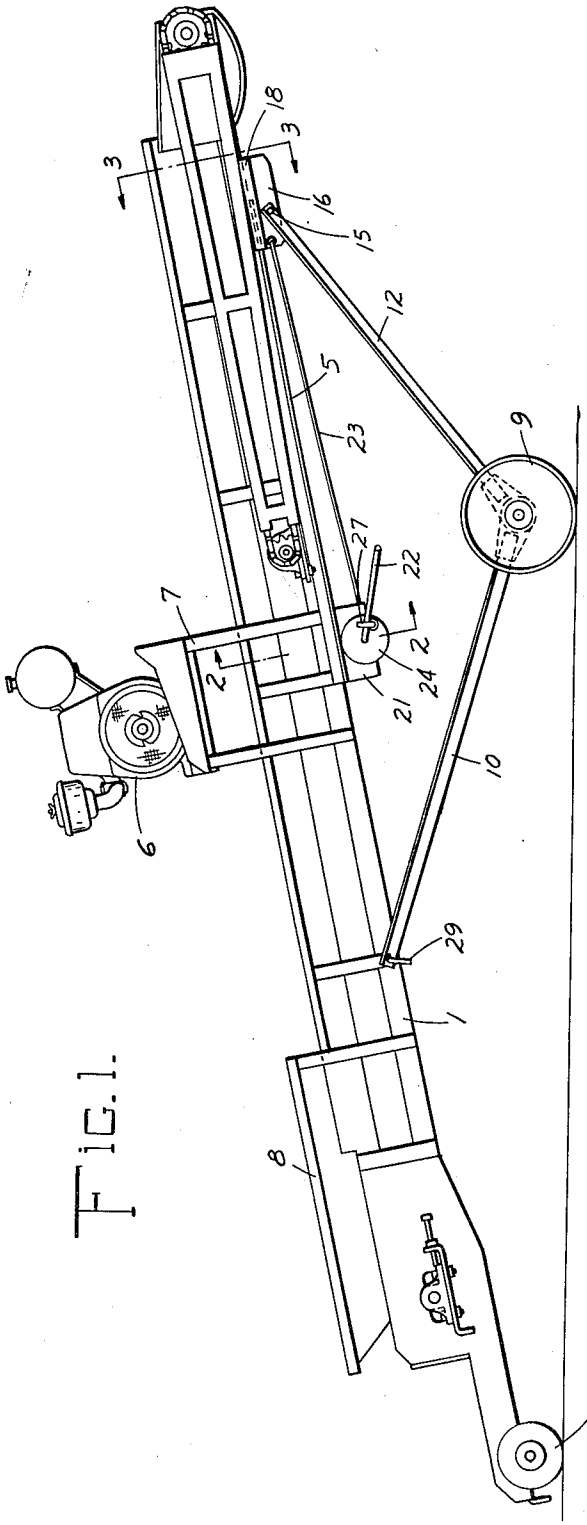


FIG. 1.

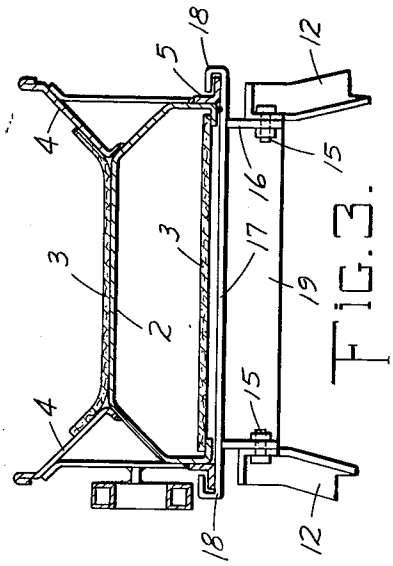


FIG. 3.

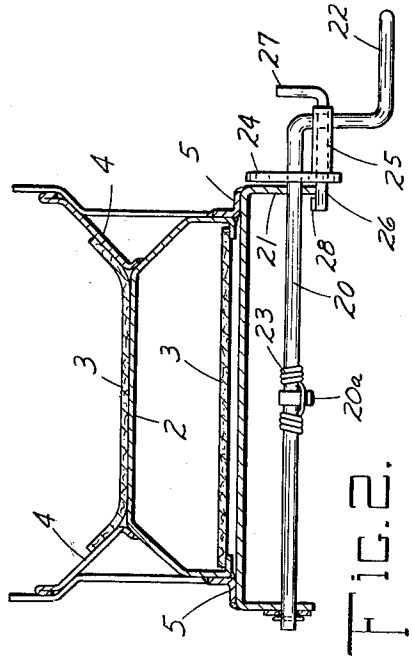


FIG. 2.

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2 Sheets-Sheet 2

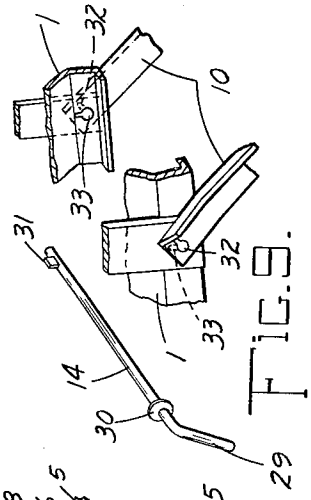


FIG. 3.

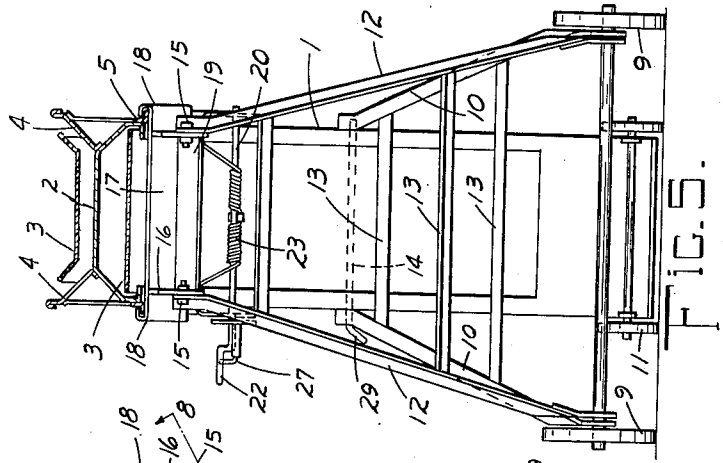


FIG. 5.

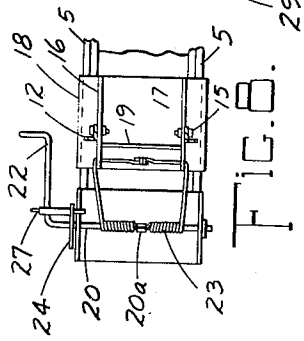


FIG. 8.

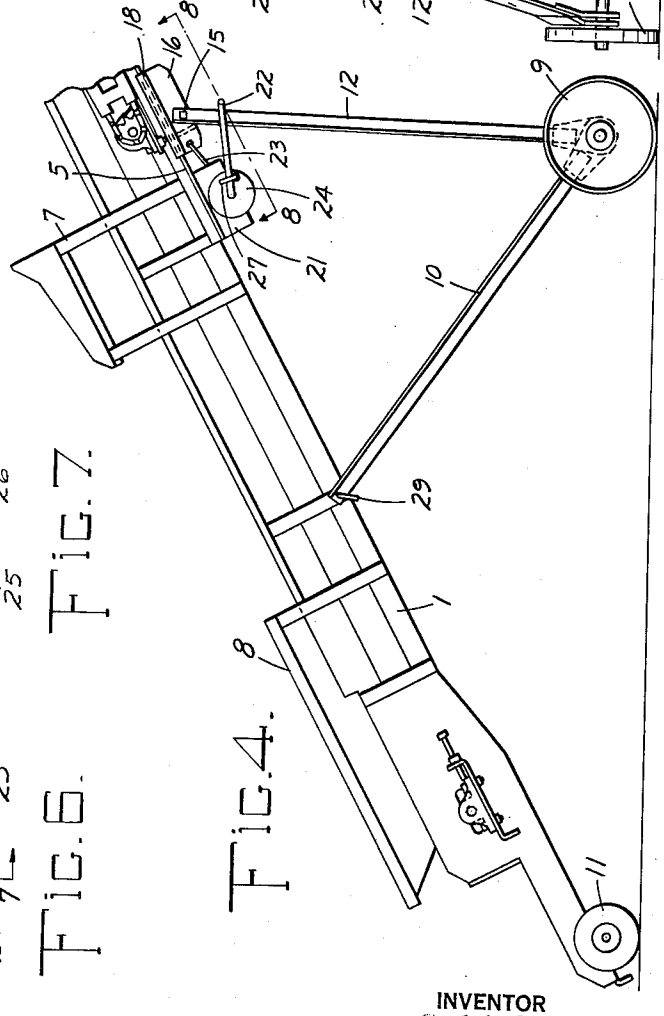


FIG. 4.

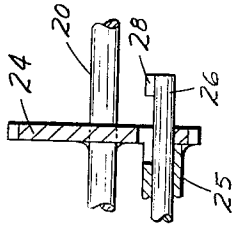


FIG. 7.

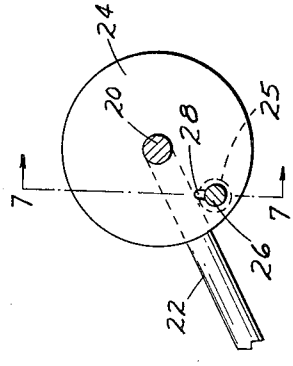


FIG. 6.

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UNITED STATES PATENT OFFICE

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PORTABLE CONVEYER AND WHEELED SUPPORT

Earl H. Ensinger, Cleveland, Ohio

Application August 2, 1946, Serial No. 687,882

3 Claims. (Cl. 198—233)

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My present invention relates to the art of portable conveyors of the type at present commonly in use for the purpose of conveying materials deposited in a hopper at one end of the conveyor frame to a point beyond the delivery end of said frame, the materials being conducted by the usual form of endless belt conveying means suitably mounted upon the conveyor frame.

My invention involves primarily a novel construction of adjustable and quickly detachable supporting means for the body frame of the conveyor, whereby the height of the delivery end of the conveyor may be varied within reasonable limits so as to correspondingly deliver the materials conveyed to points of deposit at different elevations.

The adjustable supporting means of my invention comprises a frame made of pivotally connected leg members, said leg members being detachably secured to the frame of the conveyor at their upper ends, and being pivotally connected at their lower ends with a suitable axle equipped with wheels on which the conveyor may be rolled from place to place. By the use of windlass means I provide for the adjustment of the legs of the support of the conveyor to different angles in relation to the conveyor frame by movement effected by the connection of the windlass and the cable of the latter to one of the leg members.

The quickly detachable means to connect the upper portions of the leg members pivotally to the conveyor frame, are advantageous because they permit of quick removal and re-attachment of the supporting leg means as a unit. This is desirable when it is desired to carry my conveyor into a cellar, or through a window or narrow entrance way. To such end the removal of the supporting unit entirely, and the engine on the conveyor will facilitate reduction in size of the conveyor so it may be easily transported through small spaces, with parts separated.

The details of novelty of my construction of adjustable support will be fully presented hereinafter and completely understood upon reference to the following detailed description, and to the accompanying drawings, in which:

Figure 1 is a side elevation of a portable conveyor embodying the novel adjustable support of my invention.

Figure 2 is a sectional view taken about on the line 2—2 of Figure 1, omitting the engine and support.

Figure 3 is a section taken about on the line 3—3 of Figure 1.

Figure 4 is a fragmentary view of the conveyor,

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showing the adjustable support so adjusted as to increase the elevation of the delivery end of the conveyor as compared with Figure 1, illustration.

Figure 5 is an end elevation looking at the conveyor from the delivery end, and showing portions of the frame in sections.

Figure 6 is a detailed view largely in side elevation, showing more clearly the lock means for the windlass shaft.

Figure 7 shows the same construction as Figure 6, but is a section taken on the line 7—7 of Figure 6.

Figure 8 is a fragmentary sectional view taken about on the line 8—8 of Figure 4, looking in the direction of the arrows.

Figure 9 is a fragmentary view showing more clearly the removable pivotal means for the inner leg member of the conveyor support.

Referring to Figures 1 and 4 of the drawing particularly, it is notable that the conveyor to which I have shown my invention applied, generally comprises a longitudinal frame 1, which as seen in Figures 2 and 3 is made up of a longitudinal inverted and somewhat U-shaped channel member 2, the transverse portion of which supports the conveyor belt 3 in bellied condition as it operates over said channel member, the bellied formation of the belt being caused by the use of side guide members or plates 4, which diverge from the side edge portions of the channel member 2 as seen in Figures 2 and 3. The frame 1 is likewise made up of lower longitudinal angle plates or members 5, the horizontal flanges of which extend outwardly and laterally from the frame, these angle plates being located primarily at the half portion of the frame 1 nearer the delivery end thereof.

The belt 3 passes about rollers at opposite ends of the conveyor frame, not clearly shown, because it is not material to the invention, and the belt is driven by means of a suitable engine 6, mounted on a supporting frame 7, located at the middle portion of the conveyor frame.

The construction of my conveyor includes also a receiving hopper 8, at the receiving end of the frame 1, said hopper supplying the materials fed thereto, to the lower end of the belt 3, and the materials are then carried by the belt, driven by the engine 6, to the delivery end of the conveyor frame 1. At the hopper end of the conveyor frame 1 the said frame is equipped with supporting rollers 11, and these rollers in conjunction with wheels 9 of my adjustable support afford portable means for the movement of the conveyor unit from place to place.

Now referring to the adjustable supporting means of my invention, and bearing in mind that the said means may be applied to many different types of conveyor frames, such as at present in use today, which frames are equipped with the angle bars or members 5, previously referred to, I note that the adjustable support includes rear frame or leg members 10 and the front leg or frame members 12, these members being fabricated somewhat as illustrated in Figure 5 of the drawing, so as to be made up of side angle bars and cross connection plates 13.

The leg member 10 is pivoted at 14 to the frame 1 near the hopper 8 and the front leg member 12 is arranged so that its front end portion is pivotally connected at 15 with downwardly depending flanges 16 extending from a slide or carrier member 17. The slide or carrier member 17 consists of merely a movable flat plate having its side edges bent upwardly and inwardly to provide U-shaped guide members 18 which members receive and slide along the horizontal flanges of the angle bars 5 that constitute guide members on the frame 1 of the conveyor. A transverse vertical web or plate 19 extends downwardly from the slide or carrier member 17 and is connected at its ends with the depending flanges 16. This member 19 is primarily a reinforcing member for the slide or carrier construction.

By reason of the interlocking of the carrier guide members 18 with the conveyor frame guide members 5, it will be apparent that the carrier 17 is adapted to slide longitudinally of the frame along the guide members 5.

Obviously, if the carrier 17 is pulled toward the middle portion of the frame 1, it will cause a pivotal movement of the front leg member 12 to tend to straighten the same toward the position assumed in Figure 4. This will impart a corresponding angular movement to the rear leg member 10 along the line of the illustration of Figure 4, and since the wheels 9 are connected to the lower ends of the leg members 10 and 12, they will be moved a greater or less distance from the frame 1, dependent on whether the carrier or slide 17 is moved toward the middle of the frame or toward the delivery end of the frame.

The means for moving the carrier 17 comprises a simple form of windlass shaft 20 (see Figure 2), which windlass shaft is mounted in a depending frame 21 attached to the frame 1, said frame 21 having openings forming bearings for the said shaft 20. At one end thereof the shaft 20 is equipped with a simple form of crank handle 22.

Cable means 23 are attached to the shaft 20 and extend toward the delivery end of the conveyor to points of attachment to the flange members 16 depending from the carrier or slide member 17.

By turning the crank handle 22, the crank shaft 20 will be rotated and the cables 23 wound upon the shaft 20 incident to turning the handle 22 in one direction. Such winding of the cables 23 on the shaft 20 will pull the slide or carrier 17 toward the middle portion of the frame 1 of the conveyor and thus tend to impart angular movement to the leg members 10 and 12 to bring the latter toward the positions assumed in Figure 4. On the other hand, if the crank handle 22 is permitted to turn in a reversed direction to that previously mentioned, the weight of the conveyor acting on the wheels 9 will tend to force the upper ends of the legs 10 and 12 apart and move the slide or carrier 17 toward the delivery end of the conveyor, thus to bring the frame of the conveyor down or nearer to the wheels 9, which would thus involve a lowering adjustment of the conveyor for its delivery operation.

For locking the shaft 20 against a turning movement simple means are provided and illustrated primarily in Figures 2, 6 and 7. Said means comprises a disk of approximately circular form, designated 24, which is attached to rotate with the shaft 20. Extending outwardly from the disk 24 is a rigid or integral sleeve 25, which sleeve supports a locking pin 26. The locking sleeve 25 supports the pin 26 for longitudinal movement, and the outer end of the pin 26 has a lateral handle 27. A lug 28 on the pin 26 prevents its displacement from the sleeve supporting bearing 25.

Since the locking pin 26 is supported by the disk 24, it will be apparent that if the locking pin 27 is pushed inwardly, so that it engages beneath one of the side portions of the frame 1, see Figure 2, the rotation of the disk 24 and therefore the shaft 20 will be prevented, and the windlass means will be locked at the adjustment of the cables arrived at previous to the locking of the said shaft 20 or disk 24.

The operating means for the cable means 23 is therefore very simple, and by causing the sliding of the slide member or carrier 17, the legs 10 and 12 of the supporting means for the conveyor frame may be adjusted so as to elevate or lower said frame to any desired position within reasonable limits, for the use of the conveyor belt in performing its usual function.

By producing sufficient revolutions of the windlass shaft 20 by permitting the handle means 22 to turn in a contra-clockwise direction, enough slack in the cable means 23 may be created to enable the slide or carrier 17 to be moved sufficiently toward the delivery end of the conveyor frame 1, so that the slide or carrier 17 may be disengaged from the guide means 5, and detached from the frame 1. The operation of the parts to this end is of advantage in facilitating the replacement of the cable means 23, or replacing the parts or repairing the same as may be needed. Likewise this detachment means for the slide is a part of my general means now to be set forth, for entirely removing the supporting unit 9, 10, 12 and 16 from the conveyor frame.

As seen in Figure 9 the pivot means 14 comprises a long pin or pivot rod having at one end a manipulating handle 29, and a stop member 30 adjacent to the latter. At the end opposite the handle 29 the rod has a key projection 31.

The pivot rod 14 passes through keyhole shaped openings 32 in the upper ends of the legs 10, and similar openings 33 in the opposite side portions of the conveyor frame. When the legs are in positions like those of Figures 1 and 4 the openings 32 and 33 are out of register, but when the legs 10 and 12 are collapsed in lowering the conveyor close to the ground, the said openings are in register and permit the rod 14 to be displaced from the frame and legs 10 by endwise movement.

The cable means 23 is removably connected with the windlass shaft 20 by the hook 20a on the latter.

Now supposing it to be desired to remove the wheel support or prop for the conveyor frame, as a unit, the operation is as follows:

With the parts in a position like that of Figure 1 or Figure 4, the shaft 20 is permitted to turn contra-clockwise, by release of the pin 26, until the cable 23 entirely unwinds. This lets

the slide or carrier 17 move toward the upper end of the conveyor to a position enabling it to be disengaged from the guide rails 5. The cable 23, which is detachably interlocked to hook 20*a*, may then be disengaged from the hook 20*a* and the leg 12 is thus disconnected from the conveyor frame. The above action will lower the conveyor frame and legs to the ground practically and the leg 10 will assume a down position such that the openings 32 and 33 will register so the rod 14 can be endwise displaced from engaging the frame and members of the leg 10 because the projection 31 will pass through the openings 32 and 33 when they are so registered. The rod 29 is locked from such displacement, however, except in the last described condition. With the pivot member or rod 14 displaced the slide 17 may be readily slid off the frame, no longer being held from such displacement by the cable means 23.

With the leg or supporting unit thus disconnected from the frame of the conveyor, the engine 6 can be also detached, and the frame unit easily carried without the protruding adjuncts, through narrow spaces.

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

1. In a portable conveyor, in combination, a conveyor frame, a support for the frame to hold the same in adjusted positions, said support comprising a leg having a pivotal connection at its upper end to the frame, a second leg, a slide movable on the frame and pivotally attached to the upper end of the second leg, means pivotally connecting the lower ends of the legs, and means on the frame for moving the slide longitudinally of the frame to change the elevation of the lower supporting ends of the legs, the last means including a windlass shaft, cable means connecting the shaft to the slide, a crank to turn the shaft, a disc rigid on the windlass shaft adjacent to the frame, a sleeve parallel to said shaft and rigid on the disc, and a releasable lock pin carried in said sleeve and slidable toward and from the conveyor frame to engage and hold the slide in a predetermined position.

2. In a portable conveyor, in combination, a conveyor frame, a support for the frame to hold the same in adjusted positions, said support comprising a leg having a pivotal connection at its upper end to the frame, a second leg, a slide movable on the frame and pivotally attached to

the upper end of the second leg, means pivotally connecting the lower ends of the legs, and means on the frame for moving the slide longitudinally of the frame to change the elevation of the lower supporting ends of the legs, the last means including a windlass shaft, a cable detachably interlocked to the shaft for quick removal, and a pivot device detachably connecting the first mentioned leg with the frame, the slide being detachable from the frame, the pivot device including a rod having a handle at one end and a lateral projection at the other end, the frame and upper end of the first mentioned leg having openings through which the shaft and its projection may pass, which openings register for endwise displacement of the pivot rod only when the two legs are adjusted to positions close to the frame.

3. In a portable conveyor, in combination, a conveyor frame, a support for the frame to hold the same in adjusted positions, said support comprising a leg having a pivotal connection at its upper end to the frame, a second leg, a slide movable on the frame and pivotally attached to the upper end of the second leg, means pivotally connecting the lower ends of the legs, means on the frame including a windlass and cable means, connected to operate the slide, and means to lock the windlass means at a desired adjustment of the slide and the leg means connected thereto, said cable means being quickly detachable from the windlass means, the slide detachable from the conveyor frame, and the pivot connecting the frame and first mentioned leg being detachable quickly from the last legs and frame by means normally interlocked with the first leg and frame.

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