

Jan. 4, 1944.

J. H. SHARP

2,338,359

CONVEYER

Filed July 5, 1941

2 Sheets-Sheet 1

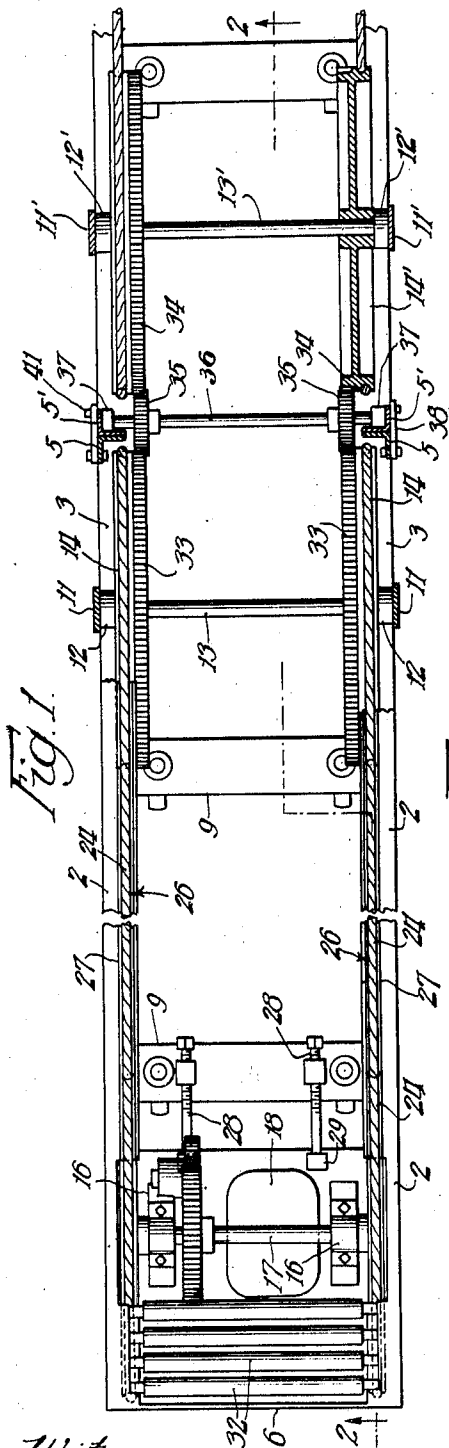


Fig. 1

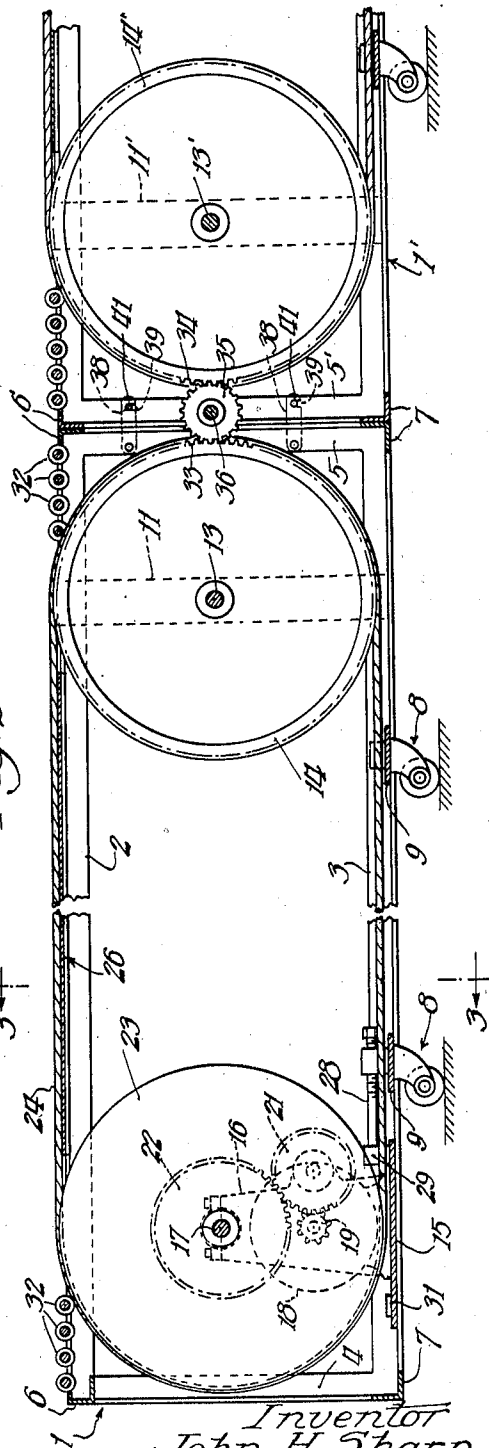


Fig. 2

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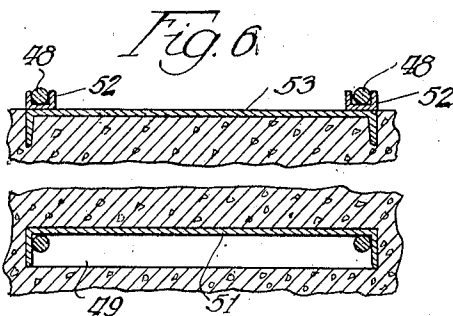
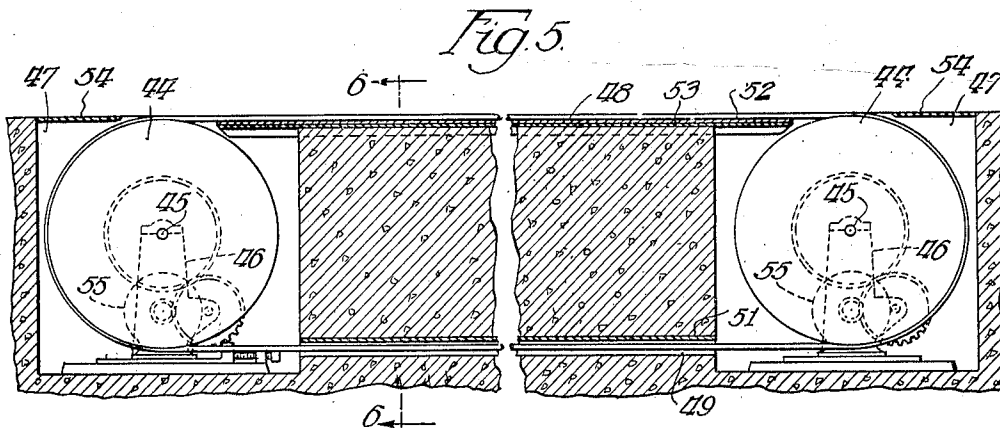
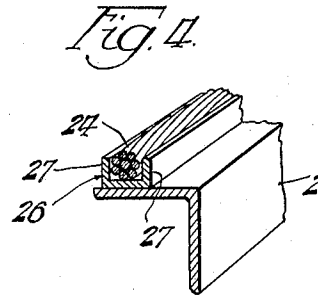
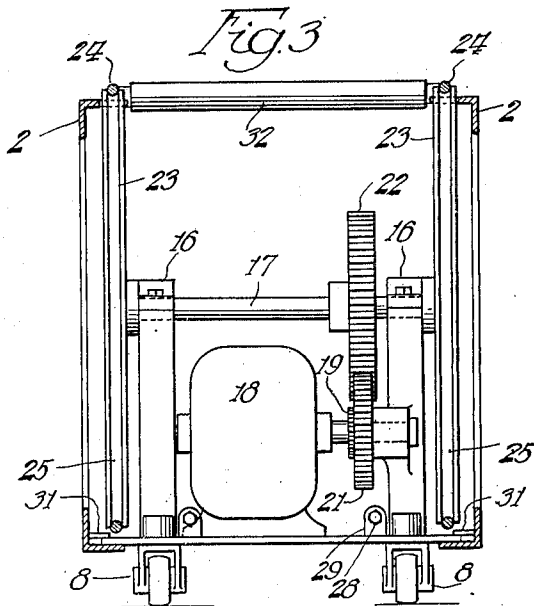
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CONVEYER

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2 Sheets-Sheet 2



Witness:
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UNITED STATES PATENT OFFICE

2,338,359

CONVEYER

John H. Sharp, Chicago, Ill.

Application July 5, 1941, Serial No. 401,193

4 Claims. (Cl. 198—102)

My invention relates generally to conveyers and more particularly to improvements in conveyers used for transporting materials, packages and the like, which may be readily adapted for portable use.

The invention has among its objects the production of a conveyer which is relatively simple in construction, inexpensive to manufacture, and very efficient for the purposes intended.

Another object of the invention is the production of such a conveyer which may be readily installed with a minimum of cost and having a high degree of safety in operation as a result of the elimination of the usual safety hazards attendant to the average conveyer system.

A further object of the invention is the production of a conveyer of a portable type which may be readily operated with similar units and whereby one unit may be utilized to drive another unit, thus, readily adapting the device to meet varied and changed requirements in operation.

Many other objects and advantages of the invention herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a top plan view of a conveyer unit embodying the present invention with portions of the same broken away to show the details thereof;

Fig. 2 is a sectional view taken approximately on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of a portion of the cable guide means and conveyer cable;

Fig. 5 is a longitudinal sectional view similar to Fig. 2 illustrating the application of the invention to a permanent installation; and

Fig. 6 is a sectional view taken approximately on the line 6—6 of Fig. 5.

The invention is widely adaptable to all types of conveying in practically any field where conveyers may be employed as a means of efficiently transporting various articles from one place to another resulting in increased efficiency and lower costs.

Referring to the drawings, and more particularly to Figs. 1, 2 and 3, 1 designates generally a framework composed of angle irons or other

suitable members secured together to form a substantially rectangular shaped structure adapted to carry the conveyer mechanism. In the construction illustrated, the frame 1 comprises a pair of upper and lower side rails or members 2 and 3, respectively, connected by end uprights 4 and 5 and upper and lower horizontal end rails or members 6 and 7 respectively, thus forming a rectangular shaped framework. The frame 1 is supported by swivel rollers, designated generally by the numeral 8, mounted on intermediate cross members 9 extending between the lower side members 3. Extending between each pair of upper and lower members 2 and 3 adjacent one end of the frame 1 are vertical members 11 which are rigidly secured to their respective members 2 and 3. Carried by the members 11 adjacent the central portions thereof are a pair of aligned bearings 12 in which is journaled a shaft 13, rigidly secured to which is a pair of spaced sheave wheels 14.

Carried by the lower members 3 adjacent the opposite end of the frame 1 and longitudinally slidable with respect to the members 3 is a plate 15, the latter having a pair of spaced standards 16 in which is journaled a shaft 17. Also mounted on the plate 15 is a suitable motor 18 or other source of power which is operatively connected to the shaft 17 through a train of gearing comprising a pinion 19 on the drive shaft of the motor, gear 21, and the gear 22 secured to the shaft 17. Also rigidly secured to the shaft 17 are a pair of sheave wheels 23 similar to the wheels 14 on the shaft 13. Extending between the respective pairs of sheave wheels 14 and 23 positioned on opposite sides of the frame 1 are endless conveyer cables 24, the latter riding in the circumferential grooves or channels 25 in the respective sheave wheels, the upper portions of the cables 24 being positioned in U-shaped channel members 26 mounted on the upper frame members 2. These U-shaped members can constitute the upper frame 2—simplifying and reducing cost of construction. The channel members 26 are adapted to guide and support the upper portions of the conveyer cables 24, it being noted, however, that the upper or top portion of the cables 24 extend above the side walls 27 of the members 26.

The plate 15 is maintained in position by take-up bolts 28 carried by the cross member 9 and engageable with the member 29 carried by the plate 15 to urge the latter in a direction away from the sheave wheels 14, a pair of lugs 31 carried by the frame members 3 and overlying the

opposite side portions of the plate maintaining the latter in proper position with respect to the members 3. Thus, by tightening the screws 28 the pairs of sheave wheels 23 may be moved in a direction away from the wheels 14 to take up slack in the cables 24.

The operation of the device is as follows:

The shaft 17 is rotated by means of the motor 18 and connecting gearing, which in turn will rotate the sheave wheels 23, thus moving the cables 24 over the sheave wheels 14. The articles to be conveyed are placed on the upper portions of the cables 24 positioned in the guide members 26 and will be moved in the direction of cable travel, the exposed portions of the cable providing adequate surface to engage and carry the articles. If desired, rollers 32 may be employed at each end of the frame in alignment with the upper portions of the cables 24 to facilitate the placing and removing of articles to and from the conveyor.

If desired, two or more conveyer units, such as that just described, may be secured together to extend the total length of the conveyer system. Also if desired one or more of these additional units may be driven from the first unit. A portion of a second conveyer unit illustrating this construction is illustrated in Figs. 1 and 2. The second unit consists of a framework 1' similar to the framework 1 previously described. However, in this construction both pairs of sheave wheels may be mounted in the frame in the same manner as the shaft 13 and sheave wheels 14, the shaft 13' of the second unit being journaled in bearings 12' mounted on a vertically extending member 11'. Both the sheave wheels 14 of the first unit and 14' of the second unit are provided adjacent their inner faces with gears 33 and 34, respectively, the respective pairs of gears 33 and 34 on opposite sides of the frame being operatively connected to one another by intermediate pinions 35 carried by a countershaft 36 journaled in bearings 37 mounted on the vertical uprights 5' of the second unit. Thus, the motor 18 will rotate shaft 17 and sheave wheels 23 to drive the sheave wheels 14 by means of the conveyer cables 24. The sheave wheels 14 in turn through gears 33 and 34 and pinions 35 will drive the sheave wheels 14' of the second unit, and it will be noted that due to the use of the intermediate pinions 35 the wheels 14 and 14' will rotate in the same direction and at the same speed.

The two units may be held in operative position with respect to one another by any suitable means, as for example latch members 38 pivotally carried by the vertical end members of one of the units and provided with a slot 39 adapted to receive a pin 41 mounted on the vertical end member of the other unit. In the construction illustrated in Figs. 1 and 2 the latch members are shown as secured to the end members 5 of the first unit and engageable with pins carried by the corresponding member 5' of the second unit.

It will be apparent that if desired more than one additional unit could be driven from the first unit by utilizing a similar connection at the opposite end of the second unit, it being necessary, of course, to have a motor of sufficient capacity.

Illustrated in Figs. 5 and 6 is the application of the invention to a permanent installation. In this construction the actuating mechanism is positioned below the surface of a floor with each

pair of sheave wheels 44 mounted on respective shafts 45 journaled in standards 46, the latter and the wheels being positioned in suitable wells 47 in the floor. One pair of standards may be rigidly secured at the bottom of its respective well while the other may be movably mounted similar to the standards 16 of the portable unit previously described to provide a slack take-up for the cables 48. The lower portions of the cable pass through a slot 49 formed by the channel member 51, while the upper portions of the cable 48 run in guide members 52 similar to the members 26, the upper portions of the cable extending above the side walls of the members 52 in a manner similar to the construction previously described, the members 52 in the construction illustrated being secured to a channel member 53 imbedded in the floor. The open ends of the wells 47 may be closed by cover members 54, or if desired, rollers similar to the rollers 32 may be utilized. In the construction illustrated in Fig. 5 both pairs of sheave wheels 44 are positively driven by separate motors 55 and suitable trains of gearing, such a construction being particularly desirable where the respective pairs of wheels are positioned a relatively long distance apart and heavy loads are encountered.

It will be apparent from the above description that I have produced a conveyer which is relatively simple, inexpensive and very efficient. Likewise, I have produced a portable conveyer unit which may be operated with one or more similar units, as well as providing a permanently installed conveyer having a high degree of safety in operation.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence, I do not wish to be understood as limiting myself to the exact form, construction, arrangement, and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a portable conveyer, the combination of an elongated carrier comprising side frames and cross members connecting said frames to dispose the latter in parallel spaced relation to each other, casters mounted on the bottom of said carrier, a pair of standards adjacent each end of said carrier and between the side frames thereof, a shaft carried by each pair of standards, said shafts extending parallel to one another, a pair of axially spaced sheaves carried by each shaft and disposed between the side frames of the carrier, endless cables connecting corresponding sheaves on the respective shafts, power means for rotating one of said shafts carried by one pair of standards, and channeled guide members carried by said side frames having vertical walls flanking the upper runs of the cables to prevent lateral displacement thereof while in use and a runway to engage and support the upper runs of said cables intermediate said sheaves, said vertical walls providing guard means to prevent accidental manual contact between said cables and their respective runways, said cables extending above the top of said vertical walls and constituting supporting means for the articles to be conveyed, one of said pair of standards being movable relative to said carrier and between the side frames thereof toward and away from the other pair of standards for taking up slack in

said cables and to dispose the upper runs of said cables in their proper relations within said channel guide members.

2. In a conveyer, the combination of an elongated open framework comprising longitudinal frame members having vertical and horizontal supporting elements, a pair of standards at each end of and within said open framework, a shaft carried by each pair of standards, a pair of axially spaced sheaves carried within the open framework by each shaft, endless cables connecting corresponding sheaves on the respective shafts, drive means disposed within said framework for rotating one of said shafts, and channeled guide members carried by said longitudinal frame members in direct line with said cables to support the upper runs of said cables intermediate said sheaves and said longitudinal frame members providing guards at the points where the cables meet the sheaves, said cables extending above said guide members and constituting supporting means for the articles to be conveyed, said channel members having vertical sides for nesting the cables to positively prevent lateral displacement of said cables with respect to said adjacent longitudinal frame members, and said channel members being spaced inwardly from the outer side edges of the longitudinal frame members to prevent manual contact with said cables when moving said conveyer, the standards at one end of said framework being laterally movable toward and away from the other standards for taking up slack in said cables and to assure proper positioning of the cables in the channel members.

3. In a conveyer, the combination of a plurality of detachable mobile conveyer units, means for maintaining said units in fixed relationship to one another, each of said units comprising a frame, spaced sheave members supported within said frame and at the opposite ends thereof, and cables connecting the respective sheave members, said sheave members disposing parts of said cables in conveying position with respect to the frame, and certain parts of said frame being arranged and disposed substantially adjacent the points where said cables meet the sheaves

to guard against accidental manual contact at these points, and power means supported within the frame of one of said units and between one lateral set of sheaves therein, said one set of sheaves acting to guard against accidental manual contact with said power means, and transmission means carried at the connecting end of each subsequent attached unit for operatively connecting the sheaves of each presiding unit with the sheaves of an attaching unit to transmit driving power from the power means to all attached units, said transmission means being disposed within the confines of the frame and between adjacent spaced frame members whereby to guard against accidental manual contact with the parts of the transmission means when in operation.

4. In a conveyer, the combination of a plurality of detachable mobile conveyer units, means for maintaining said units in fixed conveying relationship to one another, each of said units comprising an open sided frame, spaced solid webbed sheave members supported within said frame at the opposite ends thereof and adjacent the open sides thereof, and cables connecting the respective sheave members, said sheave members disposing the upper runs of said cables in conveying position upon the frame with the lower runs thereof protectively disposed adjacent certain other members of said frame, said frame having certain parts thereof arranged to flank the points where the cables meet the sheaves to guard against accidental manual contact at these danger points, and power means including exposed gearing supported within said frame of one of said units and between one lateral set of solid webbed sheaves therein, said set of sheaves providing guard means to prevent accidental manual contact with said power means and the gearing thereof, and power transmission mechanism carried by said one unit for connecting the sheaves thereof with an attaching unit, said frame having parts thereof arranged to guard against accidental manual contact with said transmission mechanism.

JOHN H. SHARP.