

Nov. 18, 1947.

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2,430,945

WHEELED CONVEYOR

Filed Oct. 22, 1945

2 Sheets-Sheet 1

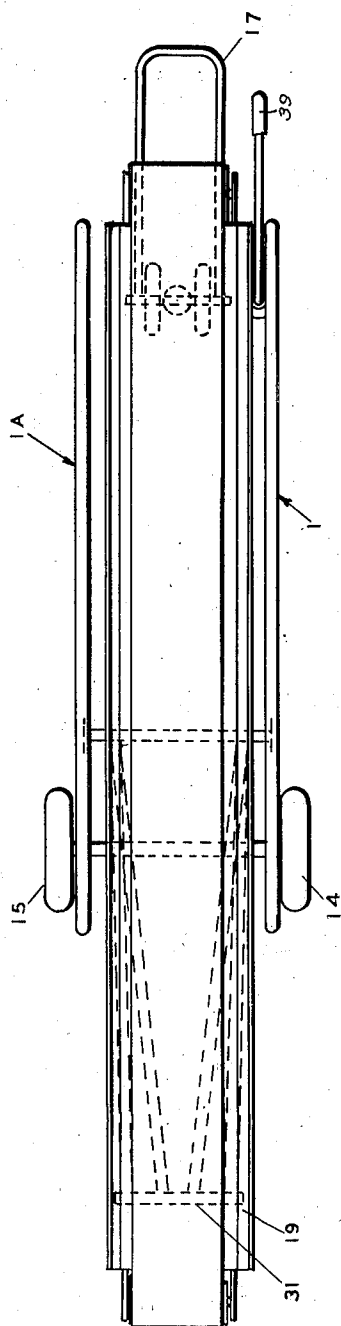


FIG. 2

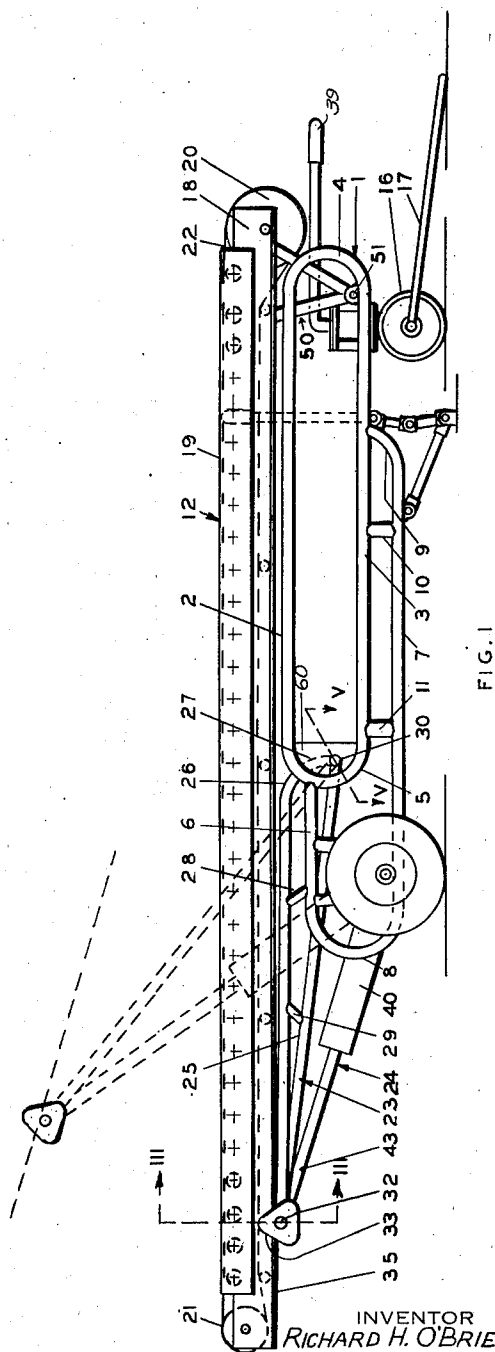


FIG. 1

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2 Sheets-Sheet 2

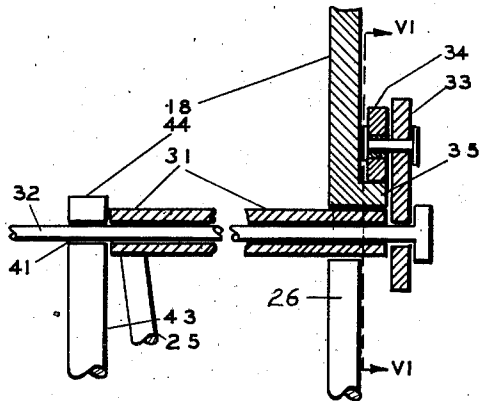


FIG. 3

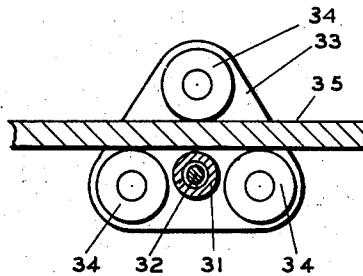


FIG. 6

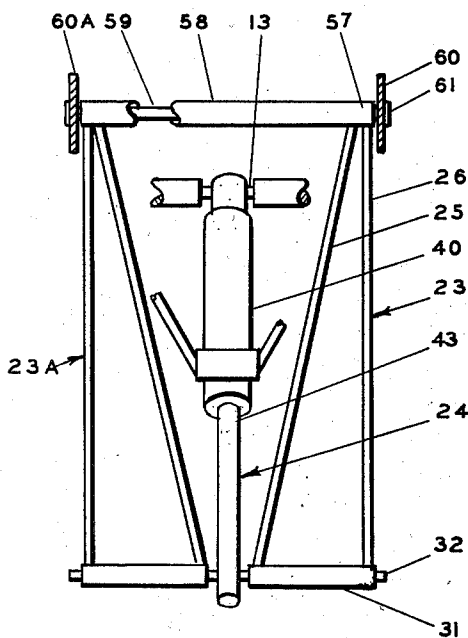


FIG. 5

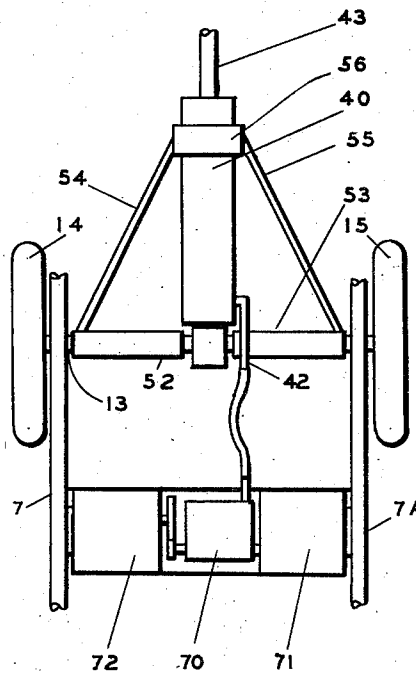


FIG. 4

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2,430,945

WHEELED CONVEYOR

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Application October 22, 1945, Serial No. 623,684

6 Claims. (Cl. 198—233)

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This invention refers to conveyors and particularly to a belt type thereof supported upon a frame which is mounted on wheels for easy moving from place to place.

With the advent of large sized aircraft requiring the storing of mail, express or baggage in the forepart of the ship there was created a need for a device which would load articles of the type named into such aircraft rapidly and economically and with a minimum requirement of labor and/or supervision. Various devices of this type have been developed including a number of previously known wheel mounted conveyors, but they have not been entirely satisfactory. To be satisfactory for this type of use the conveyor must be readily movable by a single workman or attendant, it should be self-lifting to the desired position and the movement to such position should be capable of close and accurate control, it should insofar as possible be self-contained and last, but not least, since it will normally be in full view of passengers boarding the airplane it should have an attractive appearance.

Accordingly, the principal object of my invention has been to provide a wheel mounted conveyor which can be easily and quickly moved into a desired position.

A further object of my invention has been to provide such a conveyor which will carry within itself suitable means for raising its operating portion automatically into a desired operating position.

A further object of my invention has been to provide such a conveyor which will be strong and durable and yet have an attractive appearance.

Other objects and purposes of my invention will be apparent to those acquainted with equipment of this type upon an examination of the accompanying drawings and reading of the following specification.

In the drawings:

Figure 1 is a side, somewhat schematic view of my improved conveyor showing in solid lines the conveyor in its extreme lowered position and indicating by dotted lines a portion of the conveyor and lifting mechanism in a partially raised position.

Figure 2 is a top view of my conveyor.

Figure 3 is an enlarged view of a sectional detail taken on line III—III of Figure 1.

Figure 4 is a broken, plan view of the area between the forward supporting wheels showing the mounting of the hydraulic cylinder.

Figure 5 is a top view of the conveyor raising mechanism with the part in section being taken on line V—V of Figure 1.

Figure 6 is a section taken on line VI—VI of Figure 3.

In providing a conveyor to meet the above outlined purposes I have first provided a side frame

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1 of tubular material. A first part of the side frame includes a pair of parallel horizontal members 2 and 3 joined by substantially semi-circular end members 4 and 5. A second part of the side frame is provided by a similar partial unit including the horizontal members 6 and 7 connected at one end by a curved end member 8 and connected to the first named section by the other end of member 6 and by the curved part 9. Short lengths 10 and 11 further the connection of the second part of the frame to the first part. This frame is duplicated on the other side of the conveyor and the two side frames 1 and 1a are connected by suitable horizontal tubular connecting elements.

This type of side frame provides an attractive appearance and yet by reason of its unique construction it is very strong and durable. Further, it is made from tubular material by merely bending same to provide the rounded ends and can easily be welded so that the fabrication proceeds rapidly and economically.

This frame is supported by wheels 14 and 15 mounted in any convenient and conventional manner upon an axle 13 (Figure 4) which is preferably welded to the horizontal members 7 and 7a of the side frame. The other end of the frame is preferably supported by a pair of relatively small wheels of which one is shown at 16 which are mounted on means to render them pivotable around a common center and controlled by the handle 17 which can be picked up by a single person to push or pull the conveyor into a desired position.

Suitable conveyor mechanism 12, which may be of conventional form, is mounted above the described frame elements. Said conveyor has a body part 18, extending side guards 19, a driving wheel 20 and an idler wheel 21, and a conveying belt 22. The conveyor is mounted near its rearward end on one side by a frame member 50 mounted pivotally to the frame member 3 by the plate 51 and further mounted by similar parts on its other side. The conveyor driving mechanism (not shown) may be any of various conventional types but is advantageously an electric motor, energized from any convenient source, mounted on the underside of the conveyor body part and suitably connected by gears or chains to the drive wheel 20.

The lifting mechanism comprises a pair of radius arms 23 and 23a and an hydraulic arm 24. The radius arm 23 comprises in general a group of elements presenting a triangular appearance from the side, one group on each side of the conveyor, having a straight member 25, a partly curved member 26 whose curved portion 27 completes the triangle. Supplementary braces 28 and 29 may be used as desired. These members are pivoted onto the main supporting frame in any

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convenient manner such as described in more detail hereinafter. The outer ends of the radius arms 23 and 23a are welded to a tubular member 31 which latter is mounted on a rod 32 supported by a carrier 33. The carrier 33 supports a plurality of suitable rollers 34 in a manner to ride smoothly along a flange 35 provided on the bottom of the conveyor body 18. Whatever rollers are needed may be used but a satisfactory installation can be made by having one roller above the flange and two rollers below it, as shown in Figure 6.

The hydraulic lift mechanism 24 consists of a cylinder 40 pivotally mounted on the axle 13. The spacers 52 and 53 encircle the axle between the cylinder and the frame side members 7 and its counterpart 7a on the other side of the frame. Two braces 54 and 55 extend from the spacers 52 and 53, respectively, to a band 56 encircling the cylinder 40. The cylinder is supplied in any suitable manner by oil under pressure through a conduit 42. This cylinder contains and cooperates with a suitable piston so that when oil is flowing into the cylinder it will drive forward the plunger 43. This plunger is affixed to the cross-rod 32 in any convenient manner, as by extending said cross-rod through an opening 41 in said plunger (Figure 3).

As best seen in Figure 5 the elements forming the radius arm 23 define in the top view a further triangular pattern. Said elements may be affixed at their rearward ends by welding them adjacent each other near one end 57 of the tubular member 58 which surrounds a supporting rod 59. This supporting rod is carried by plates 60 and 60a which are fastened as by welding, respectively, within the semi-circle of the end 5 of the side frame construction and the counterpart thereof on the other side of the frame (Figure 5). Any suitable conventional means 61 are affixed to the ends of the supporting rod 59 for holding it against endwise movement out of its operating position. The curved member 26 is fastened at its forward end, as by welding, near the inner end of said tubular member 31. All of these elements are duplicated on the other side of the machine as indicated in Figure 5.

As fluid, preferably oil, under pressure is forced into the cylinder 40, the plunger 43 is moved outwardly and causes the conveyor to be lifted upwardly. The oil is forced into the cylinder by means which are preferably mounted on the frame 1 and may conveniently comprise a high pressure oil pump 70 drawing oil from a reservoir 71 and driven by an electric motor 72 energized either from an external source or from storage batteries carried on the machine (not shown). This motor is, of course, independent from the motor driving the conveyor and they are each operated by convenient and independent switches, which switches may be actuated by any conveniently controllable means such as an operating handle 39.

It will be understood that this entire unit can be easily moved by a single workman or airport attendant manipulating only the handle 17. With the loading unit in place a switch is closed starting the motor 72 driving the oil pump 70 to move the actuating fluid into the cylinder 40 and force the plunger 43 outwardly. This raises the conveyor to a position such as is indicated in dotted lines in Figure 1. When the proper height is reached the motor is stopped and the fluid in the cylinder will hold the plunger in the position thus attained by which the conveyor is firmly

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held at the desired elevation. The conveyor belt may now be started in whichever direction is desired for loading or unloading the space being served, such as an airplane baggage compartment, as may be desired.

In the foregoing described device I have disclosed a movable conveyor having self-operating lifting and conveyor driving mechanisms and which will meet the various objects and purposes above set forth. It will be obvious that many modifications may be made in the embodiment herein disclosed and described without departing from the spirit of my invention and that such modifications will be included within the hereinafter appended claims excepting as said claims expressly provide otherwise.

I claim:

1. In a wheel mounted conveyor a supporting frame comprising: a side construction including first and second parallel members of equal length connected to each other at their respective ends by a pair of semi-circular members, a third member parallel to the said two parallel members and of length substantially equal thereto located in the plane extended as defined thereby and offset lengthwise with respect thereto; a fourth member parallel to the foregoing named parallel elements abutting one of said curved semi-circular members and extending therefrom a distance equal to the lengthwise offset of said third parallel member and a semi-circular element connecting the adjacent ends of said third and fourth parallel members; a curved element connecting the other end of said third parallel member with said second parallel member.

2. In a wheel supported conveyor a body frame having a side panel, comprising: a tubular element forming an elongated member with rounded ends; a second tubular element forming a second elongated element shaped as a partial member of the same size and shape as the first member displaced laterally and longitudinally from coincidence therewith and lying in the same plane as said first member; said second member being rigidly affixed to said first member.

3. In a self-lifting wheeled conveyor the combination comprising: a frame; wheels supporting said frame; a conveyor pivotally mounted at one end to a point near one end of said frame; a sliding element mounted on the conveyor body in a manner to be movable in a direction longitudinal with respect to the conveyor body but held against movement with respect thereto in any other direction; a radius arm pivotally mounted at its one end on said frame at a point intermediate the ends of said frame and pivotally affixed at its other end to said sliding element; means including a hydraulic cylinder and plunger pivotally mounted by its one end to the said frame near the other end thereof and pivotally connected by its other end with said sliding element; controllable means supplying fluid under pressure to said hydraulic cylinder whereby flow of fluid into the cylinder will drive its plunger and associated means outwardly and raise the conveyor to a selected position.

4. In a self-lifting wheeled conveyor the combination comprising: a frame; wheels supporting said frame; a conveyor pivotally mounted at its one end to one end of said frame; a sliding element mounted on the conveyor body in a manner to be movable in a direction longitudinal with respect to the conveyor body but held against movement with respect thereto in any other direction; a radius arm pivotally mounted at its

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one end on said frame at a point intermediate the ends of said frame and pivotally affixed at its other end to said sliding element; an elongatable member mounted pivotally by its one end to the other end of said frame and at its other end pivotally connected to said sliding element; hydraulic means controllably determining the selective lengthening or shortening of said elongatable member whereby selective lifting or lowering of the conveyor body may be effected.

5. In a self-lifting wheeled conveyor the combination comprising: a frame; wheels supporting said frame; a conveyor pivotally mounted at its one end to one portion of said frame; a sliding element supported by and associated with the conveyor body in a manner to be movable in a direction longitudinal of the conveyor body but held against movement with respect thereto in any other direction; a radius arm pivotally mounted at its one end on said frame at a point spaced from the pivotal mounting point of said conveyor and pivotally affixed at its other end to said sliding element; an elongatable member mounted pivotally by its one end to said frame at a point spaced from the mounting point of said radius arm and on the opposite side thereof from the mounting point of the conveyor, and the other end of said elongatable member affixed pivotally to said sliding element; means controllably effecting the selective lengthening or

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shortening of said elongatable member whereby selective lifting or lowering of the conveyor body may be effected.

6. In a self-lifting portable conveyor, the combination comprising: a frame; ground engaging means supporting said frame; a conveyor having a body pivotally mounted at its one end to one portion of said frame; a sliding member supported by the conveyor body in a manner to be movable in a direction longitudinal with respect to the conveyor body but held against movement with respect thereto in any other direction; a radius arm pivotally mounted at its one end on said frame at a point spaced from the point of mounting of said conveyor body and affixed pivotally at its other end to said sliding element; an elongatable member mounted pivotally by its one end to a point on said frame spaced from the point of mounting thereon of the radius arm and on the opposite side thereof from the point of mounting of said conveyor body, and said elongatable member being pivotally affixed at its other end to said sliding member; means controllably effecting the selective lengthening or shortening of said elongatable member whereby the selective lifting or lowering of the conveyor body around its point of pivotal support may be effected.

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