

PORTABLE CONVEYOR

This invention relates to a compact portable conveyor.

5 The main object of the present invention is to provide a conveyor with a simplified structure to make it convenient to operate and mobile to carry along with a truck without derating its original function.

10 In the delivery of general agricultural products or commodities nowadays, conveyors are widely utilised at the production locations for loading them on delivery trucks for saving both time and labour, but these types of conveyor are generally large in
15 size and heavy in weight, and cannot be carried to go readily by the same delivery truck to a terminal location for unloading the loads therefrom.

 Therefore, manual labour is required for unloading the truck when it arrives at the terminal
20 location, which creates uneconomical and time consuming problems.

 Conveyors for serving the above said purposes are categorised into two types, and their shortcomings are described as follows:

25 1. Belt type conveyor.

 As shown in Figure 1a of the accompanying drawings, this type of conveyor utilises an endless reinforced rubber belt which extends around front and rear driving rollers with a plurality of idle rollers
30 disposed therebetween for supporting the conveyor belt, but this only increases the bulk weight of the whole conveyor. Since the conveyor belt is made of synthetic fibre and rubber, it becomes loosely engaged due to fatigue, which in turn causes slip or
35 poor frictional contact between the belt and the roller surfaces, finally resulting in failure of the

whole conveyor.

2. Flat board or thin rod type conveyor.

As shown in Figure 1b of the accompanying drawings, this type of conveyor utilises two longitudinal parallel endless driving chains, one chain at each side, and extending between each pair of corresponding chain segments thereof are multiple latitudinal flat boards or rods, uniformly distributed along these two chains. Furthermore, multiple idle rollers must be provided to support the boards or rods, otherwise the conveying surface in between these two driving chains will become downwardly curved on loading.

From the above description, it can be seen that both types of conveyors are large in size and heavy in weight, and lack the mobility to be carried along by a truck for serving loading and unloading purpose at any location.

The invention provides a portable conveyor for truck use, which comprises:

a conveyor body comprising two back-to-back placed longitudinal open channel sections, which are joined together by upper and lower latitudinal bracing strips, the upper latitudinal bracing strip being provided with a support board, the lower latitudinal bracing strip being provided with two longitudinal support strips one at each side parallel to the two longitudinal channel sections for further supporting the support boards when they are bent downward due to a heavy load; the ground end of the conveyor body is provided with a mounting frame for fixing a motor; the motor mounting frame being provided with two wheels; the fore section of the conveyor body is provided with a height adjustable support footing which comprises two pairs of telescoped inner tubes and outer tubes, the inner

tubes being movable freely along their respective
outer tubes and the outer tubes being provided with
locking screws for locking the respective inner tubes
in place; the top ends of the inner tubes of the
5 support footing being mounted on the respective sides
of the conveyor body at the fore section, the ground
end of the outer tubes of the support footing being
connected together by a resilient U-shaped
latitudinal bracing strip with its U-shaped trough
10 facing the conveyor body; the distance between the
two outer tubes at the ground end of the support
footing being slightly smaller than the latitudinal
distance between the two longitudinal channel
sections of the conveyor body; and a driving unit
15 which comprises an upper section and a lower section,
both of which are provided with adjustment plates
extending into the respective channel section of the
conveyor body; each adjustment plate being provided
with a bearing and a bearing seat, the bearings
20 receiving driving shafts which are provided with
sprockets, and driving chains are wound on these
sprockets; each bearing seat is provided with a screw
bolt which is utilised for adjusting the tension of
the driving chains; the driving chains being provided
25 with evenly distributed latitudinal pushing boards
for conveying articles.

An embodiment of this invention will now be
described by way of example and with reference to the
30 accompanying drawings, of which:

Figure 1a shows the traditional belt type
conveyor;

Figure 1b shows the traditional flat board or
thin rod type conveyor;

35 Figure 2a is a side view of a conveyor according
to the invention;

Figure 2b is a top view of the conveyor shown in Figure 2a;

Figure 3 is an exposed perspective top view of the conveyor shown in Figure 2a;

5 Figure 4 is a perspective view of the support footing for the conveyor shown in Figure 2a; and

Figure 5 is an illustrative diagram which shows how the support footing of the conveyor is folded up for storage.

10 Referring to Figures 2a, 2b and 3, a conveyor body comprises two back-to-back placed C-shaped or open-channel longitudinal steel or aluminium sections which are joined together by upper and lower
15 latitudinal bracing strips 141 and 142. On the upper latitudinal bracing strips 141, there are provided inverted U-shaped support boards 15, having a flat and smooth surface for supporting the transmitted articles as well as for providing these articles, no
20 matter whether they are hard or soft, with a slide moving surface for easy transmission. On the lower latitudinal bracing strips 142, there are provided by welding two longitudinal support strips 143, one at each side parallel to the two longitudinal channels 1 for further supporting the support boards 15 when
25 they are bent downward due to heavy load. At the ground end of the conveyor body, there is provided a motor mounting frame 11, which is utilised for fixing a variable or low speed driving motor 2. On the motor mounting frame 11 are provided two wheels 13.
30 Also at the same ground end of the conveyor, there is provided a stop rack 12 for preventing conveyed articles from falling to the ground.

The driving unit for the conveyor comprises two separate driving sections, an upper driving section
35 which is located on the top end of the conveyor body, and a lower driving section which is located on the

ground end thereof, both of which are provided with adjustment plates 4, which extend into the corresponding troughs 111 of the two channels 1. Each adjustment plate 4 is provided with a bearing seat 41 whereby a bearing is mounted, and utilised for the reception of one of the ends of a driving shaft 47 which is provided with two sprockets 48, one at each side, with two conveying endless chains 16 wound respectively thereon. On each bearing seat 41 there is attached, by welding, an adjustment screw bolt 44, which is mounted on the conveyor body by two nuts 45 by way of an L-shaped adjustment seat 43, so that the adjustment plates 4 can be adjusted along the troughs 111 for tensioning the two conveying chains 16. There are provided a plurality of evenly distributed latitudinal pushing boards 18 for conveying articles by pushing. Each pushing board 18 is fixed to the two conveying chains 16 by screws at its two ends by way of respective L-shaped assembling seats 19. Also on the bottom side of each pushing board 18, there is provided a rubber cushion strip 17, which prevents the pushing board 18 from rubbing against the support boards.

Referring to Figure 4, the support footing comprises two pairs of telescoped outer and inner tubes 3 and 31 respectively. Each inner tube 31 can move freely along in its respective outer tube 3 which is provided with locking screws 32 to lock the respective inner tube 31 for effecting the conveyor height adjustment.

The top ends of the two inner tubes 31 are mounted on the respective sides at the fore section of the conveyor body by nuts 37 by way of respective side plates 35 and L-shaped steel rods 36. In this manner, the support points will not become deformed when subjected to forces from any direction. At the

ground end of the support footing, the two outer tubes are connected together by a U-shaped resilient bracing strip 33 with its U-shaped trough facing the conveyor body, the distance between the two outer
5 tubes at the same end being slightly smaller than the latitudinal distance between the two channels 1 of the conveyor body. Referring to Figure 5, when the support footing is folded up to the conveyor body, force is required to spread the two outer tubes 3 so
10 that they engage on the rims of the two channels. When it is to be utilised, the two outer tubes 3 must be pulled apart to disengage them.

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CLAIMS:

1. A portable conveyor for truck use, which
5 comprises:
a conveyor body comprising two back-to-back
placed longitudinal open channel sections (1), which
are joined together by upper and lower latitudinal
bracing strips (141,142), the upper latitudinal
10 bracing strip being provided with a support board
(15), the lower latitudinal bracing strip (142) being
provided with two longitudinal support strips (143),
one at each side parallel to the two longitudinal
channel sections for further supporting the support
15 boards (15) when they are bent downward due to a
heavy load; the ground end of the conveyor body is
provided with a mounting frame (11) for fixing a
motor (2); the motor mounting frame being provided
with two wheels (13); the fore section of the
20 conveyor body is provided with a height adjustable
support footing which comprises two pairs of
telescoped inner tubes (31) and outer tubes (3), the
inner tubes (31) being movable freely along their
respective outer tubes (3) and the outer tubes being
25 provided with locking screws (32) for locking the
respective inner tubes in place; the top ends of the
inner tubes (31) of the support footing being mounted
on the respective sides of the conveyor body at the
fore section, the ground end of the outer tubes (3)
30 of the support footing being connected together by a
resilient U-shaped latitudinal bracing strip (33)
with its U-shaped trough facing the conveyor body;
the distance between the two outer tubes at the
ground end of the support footing being slightly
35 smaller than the latitudinal distance between the two
longitudinal channel sections (1) of the conveyor



body; and a driving unit which comprises an upper section and a lower section, both of which are provided with adjustment plates (4) extending into the respective channel section (1) of the conveyor body; each adjustment plate (4) being provided with a bearing and a bearing seat (41), the bearings receiving driving shafts (47) which are provided with sprockets (48), and driving chains (16) are wound on these sprockets (48); each bearing seat (41) is provided with a screw bolt (44) which is utilised for adjusting the tension of the driving chains; the driving chains (16) being provided with evenly distributed latitudinal pushing boards (18) for conveying articles.

2. A conveyor substantially as herein described with reference to and as shown in Figures 2 to 5 of the accompanying drawings.
