May 26, 1953 A. W. DUNCAN 2,639,802

CONVEYER BELT DRIVING UNIT

Filed Oct. 21, 1949 2 Sheets-Sheet 1

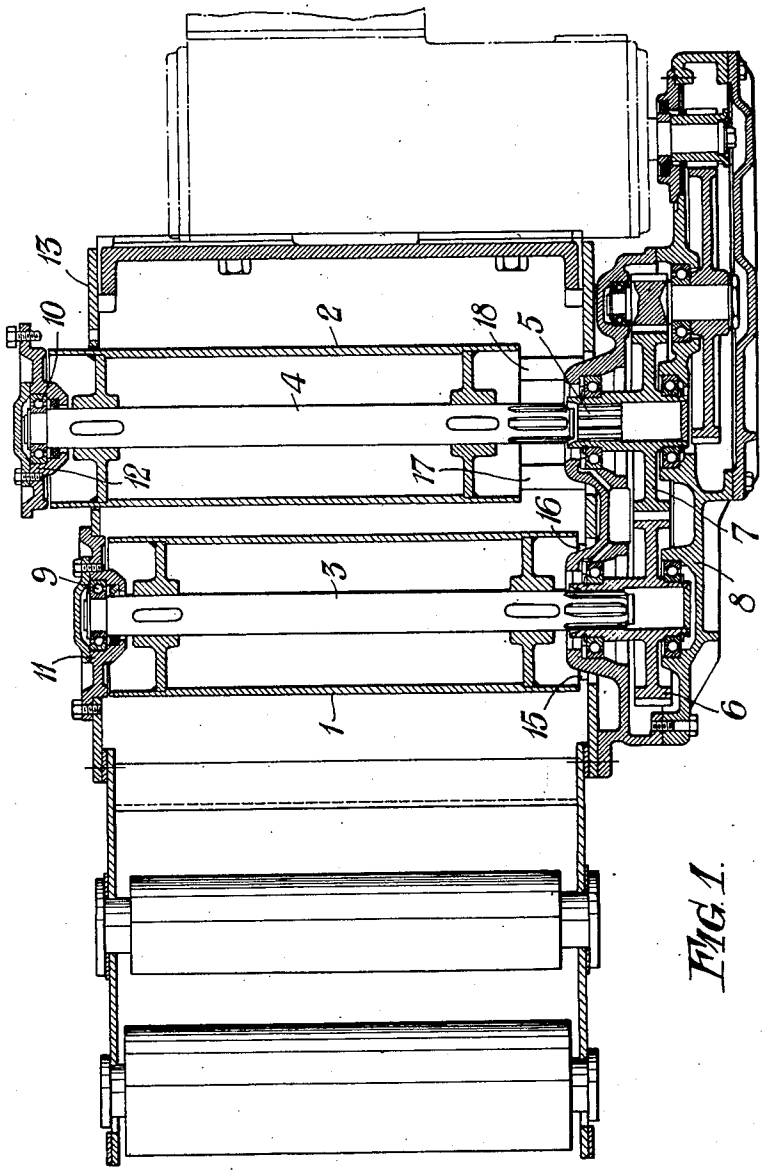


FIG. 1.

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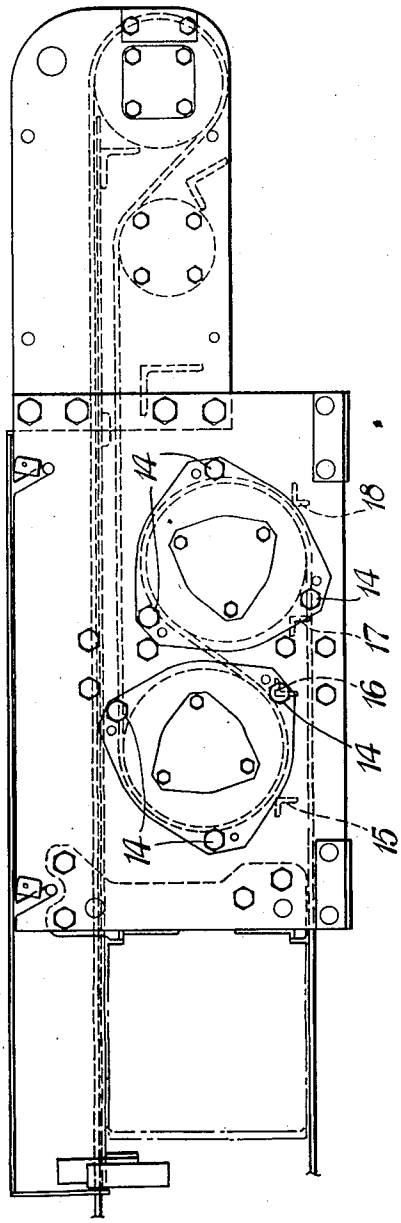


FIG. 2.

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UNITED STATES PATENT OFFICE

2,639,802

CONVEYER BELT DRIVING UNIT

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Application October 21, 1949, Serial No. 122,829
In Great Britain October 26, 1948

3 Claims. (Cl. 198—203)

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In the construction of underground belt conveyor driving units of the two drum type it is customary to mount the driving drums in anti-friction bearings carried in housings either forming part of or mounted in the side plates forming the main frame-work of the unit. The arrangement is generally such that removal of the drums involves dismantling the main framework, thus causing considerable delay in the event of a drum, drum shaft or bearing failure, or causing routine servicing to be prolonged. The object of this invention is to provide a construction of belt conveyor driving unit in which the two driving drum units can be withdrawn and replaced rapidly and simply without disturbing any other part.

In my co-pending application No. 122,828 of even date there is described a conveyor belt driving unit in which the framework comprises rigid steel side plates spaced by frames of suitable form, one of which also acts as the spigot mounting frame for the driving motor located across the back of the unit. A reduction gear box is dowelled and bolted to one side plate and has two bosses protruding inwards through apertures in the side plate on the centre lines of the two driving drums. Mounted in the gear box are the two gear wheels driving the drums and these gears are of special form having enclosed tubular splined portions to receive the splined ends of the driving drum shafts.

The present invention provides a means of mounting driving drums in conveyor belt units to render them easily removable and is especially applicable to units as described in the above application though the invention is also applicable to other units when slidable couplings are provided in the drives to the drums. According to the invention the idle end bearings of a belt driving drum is carried in a removable housing spigotted into the side plate of the driving unit frame, the spigot diameter of the housing being greater than the drum diameter and the drum shaft being slidably engaged by the driving gear, so that, on removal of the housing, the drum and shaft may be slid out as a unit without disturbing any other parts.

Preferably the slidable coupling comprises correspondingly splined parts on the gear wheel and drum shaft; and preferably cross frame members are arranged in such proximity to the lower periphery of the drum as to act as supporting guides as the drum is slid in or out.

The above and other parts of the invention are embodied in one constructional form which will now be described in some detail by way of example

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with reference to the accompanying drawings in which:

Fig. 1 is a horizontal section through a conveyor belt driving unit,

Fig. 2 is a side elevation of the unit.

This form is designed for application to a driving unit and reduction gear as described in my co-pending application No. 122,828.

Each driving drum unit comprises a drum 1, 2 of any suitable type keyed to a shaft 3, 4 one end of which is splined to engage the internal splines 5 of the tubular portions of the corresponding drum driving gear wheel 6, 7 in the reduction gear box 8 and the other end of which is carried in an anti-friction bearing 9, 10 mounted in a housing 11, 12 spigotted into and bolted to the opposite side plate 13. The spigot diameter of these housings is greater than the drum diameter so that, when the bolts 14 holding the housing are removed, the whole drum unit can be withdrawn and replaced through the side plate 13 without disturbing any other part.

The frames 15, 16, 17, 18 within the driving unit are arranged to support the drums 1, 2 when being inserted or withdrawn sufficiently closely for the lead on the splined shafts to engage the lead on the internally splined tubular portions of the gear wheels. Thus the fitting of a drum unit consists simply of pushing it inwards until the splines meet, rotating it slightly until the splines come into line and pushing it home. The outer end housing being lifted into line at the same time. The housing bolts are then fitted.

I claim:

1. In a conveyor having side plates between which a belt is disposed longitudinally, a belt drive assembly comprising a belt drive drum mounted transversely between said side plates, shaft means supporting said drum and fixed therewith, one said side plate having an opening of a size to pass said drum and shaft means, a housing removably mounted on the outside of said one side plate and across said opening, means releasably securing said housing to said one side plate, an idler bearing in said housing journalling one end of said drum shaft means, coupling means on the other end of said drum shaft means, and drive means including a rotatable element journalled on the other said side plate and having coupling means cooperative with said shaft coupling means, whereby said drum may be mounted or removed axially through said side plate opening at its idler end without dismantling the drive means.

2. In a conveyor as defined in claim 1, said

shaft and drive element coupling means being of the key type that is connectable and disconnectable by relative axial movement.

3. In a conveyor as defined in claim 2, transverse frame members rigidly connected between said side plates to form a unit frame, said members being in close proximity to said drum and forming supporting guides for the drum as it is moved axially during mounting and dismounting, and mutually engageable leads on the coupling end of said shaft means and on said drive element coupling means for guiding said coupling means into cooperative engagement when the drum is slid across said transverse frame members into operative position.

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