March 4, 1952 O. J. B. ORWIN 2,588,282

CONVEYER

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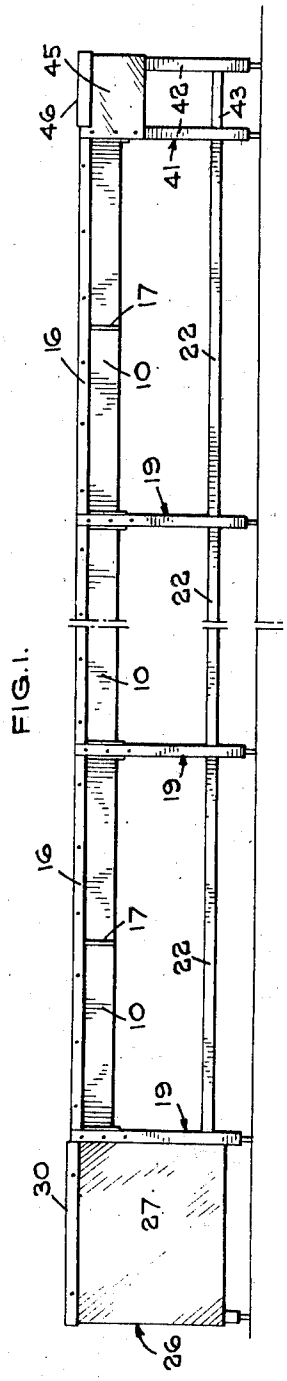


FIG. 1.

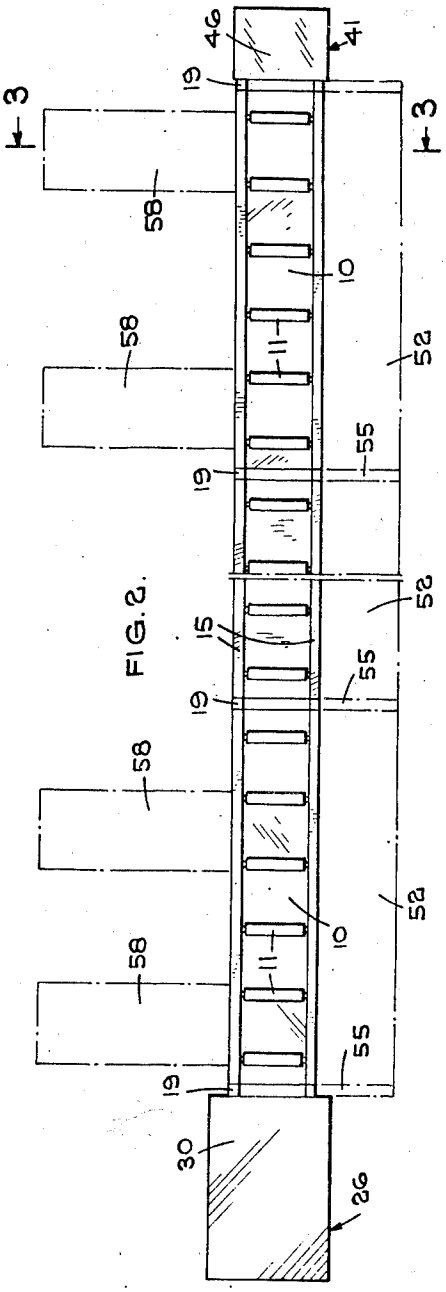


FIG. 2.

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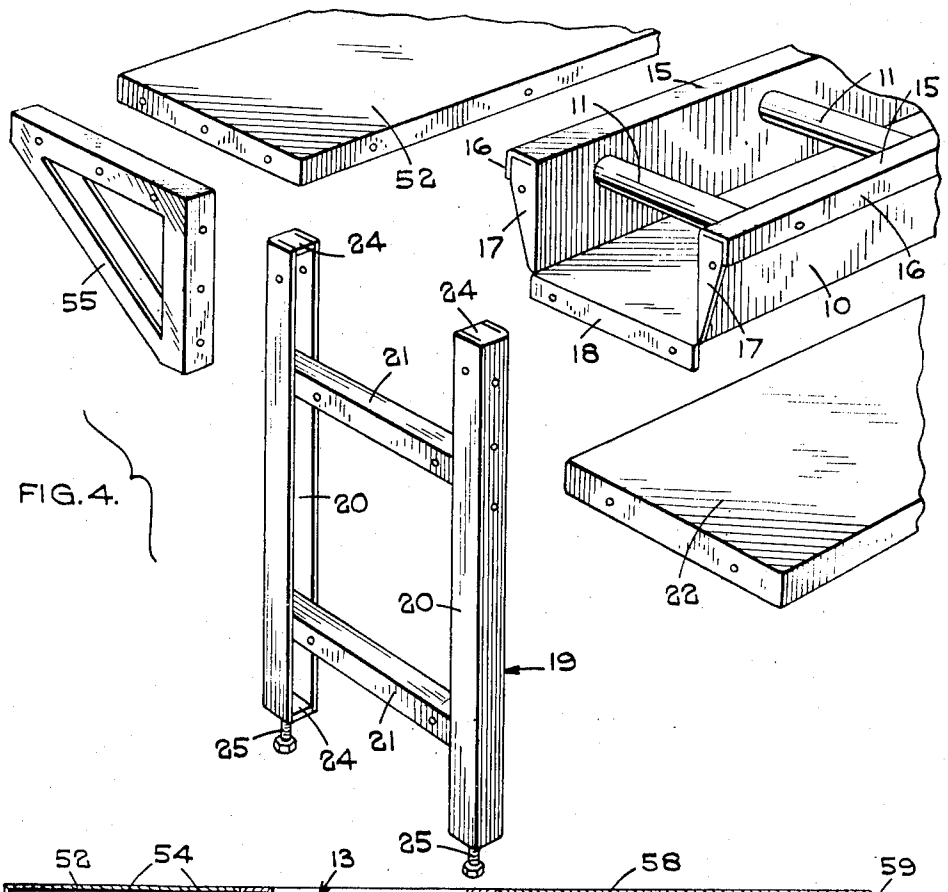


FIG. 4.

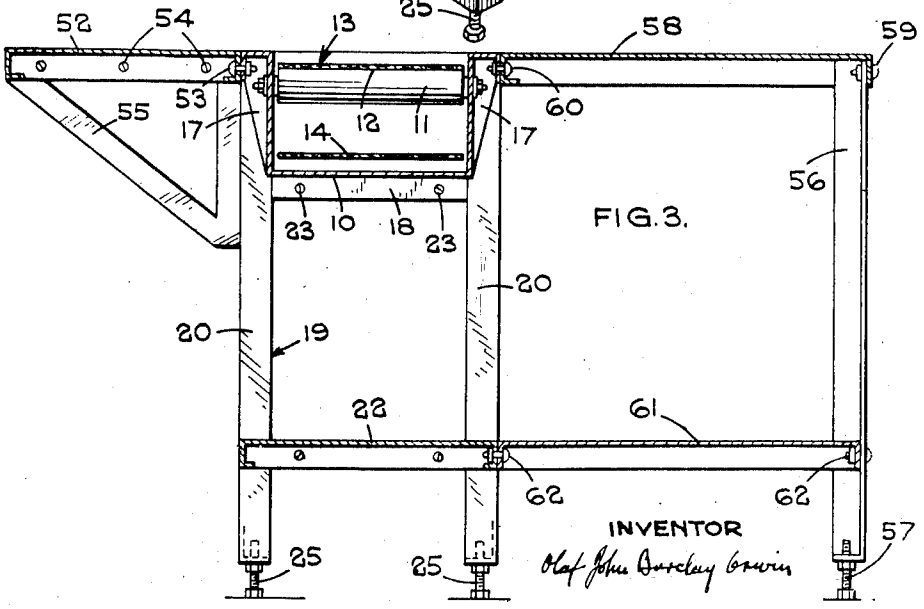


FIG. 3.

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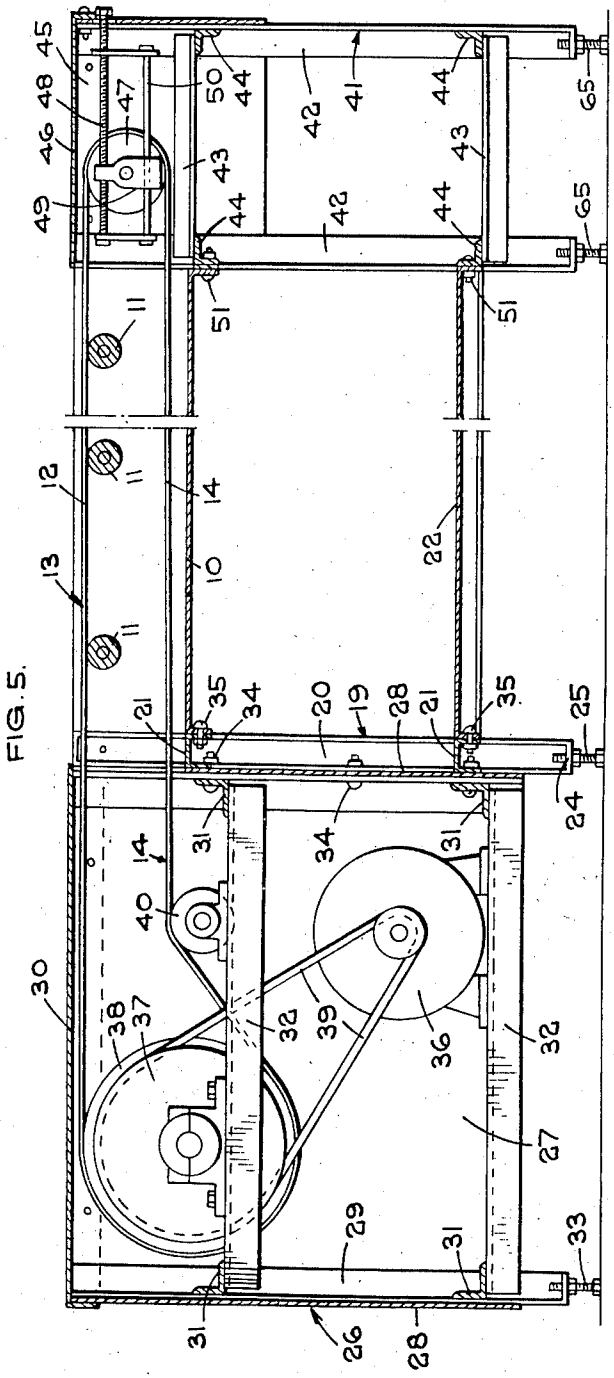


FIG. 5.

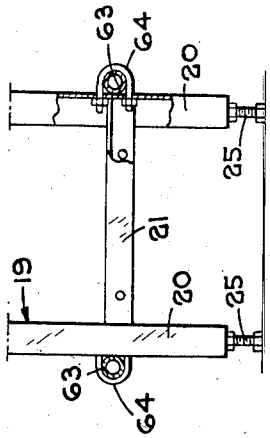


FIG. 6

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2,588,282

UNITED STATES PATENT OFFICE

2,588,282

CONVEYER

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Application December 22, 1945, Serial No. 636,746
In Great Britain December 5, 1944

3 Claims. (Cl. 198—184)

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This invention relates to conveyors, particularly those which are used in factories or stores for packing, assembly, process work, or simple conveying; and has for its object to provide a simple construction of conveyor capable of economical production and designed to permit ready alteration of its effective length, as well as the use or arrangement of side benches, side tables, foot rails or shelves in combination therewith to suit varying conditions of work, the conveyor being constructed in units for this purpose.

According to this invention the units aforesaid are made of sheet metal and include a plurality of channel section belt housings adapted to be placed end-to-end, supports adapted to be secured between the ends of adjacent belt-housings in a row of such units, a driving unit including a belt pulley adapted to be secured to one end of the row aforesaid, and a tensioning unit again including a pulley adapted to be secured to the other end of the row so that an endless conveyor belt can traverse the assembled units, all of which are made of thin sheet metal.

Referring to the drawings:

Figure 1 is a side elevation of one form of our improved sectionel conveyor.

Figure 2 is a plan view, illustrating the use of side tables and benches in conjunction with the conveyor.

Figure 3 is a transverse section, to an enlarged scale, on the line 3—3 of Figure 2.

Figure 4 is a perspective view of a belt-housing unit and a support therefor, with a side bench and shaft for application to the latter.

Figure 5 is a sectional side elevation of the conveyor, showing the internal construction of the driving and tensioning units, and

Figure 6 is a fragmentary transverse section to illustrate the method of mounting foot rails on the conveyor.

In the construction illustrated, each belt-housing unit 10 is pressed from thin sheet metal to a channel section and provided adjacent the mouth of the channel with a series of rollers 11 or skid plates adapted to support the upper run 12 of an endless conveyor belt 13 substantially flush with the upper edges of the channel, the return or lower run 14 of the belt 13 being immediately above the base of the channel.

The side walls of the channel have their free edges bent first outwardly and then downwardly as at 15 and 16 respectively, so as to provide narrow frame members on each side of the belt 13, these members being strengthened at the ends of the unit 10 (and preferably also at intermediate positions) by sheet metal gussets 17 or struts welded thereto and to the outside of the channel.

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The base of the channel may have a downwardly directed flange 18 at each end thereof.

These belt-housing units 10 are preferably made to a standard length, say six feet, and between their ends supports 19 are provided, each comprising a pair of sheet metal legs 20 connected by a pair of transverse members 21, preferably in the form of inverted channel pressings, the upper transverse member 21 being so positioned that its top forms a continuation of the base of the adjacent belt-housing units 10 whilst the lower member 21 provides a support for a shelf 22. The vertical legs 20 may also be formed as channel section pressings, arranged in this case with the flanges directed inwardly or they may be of closed rectangular section. The gussets 17 and flanges 18 at the ends of the belt-housing units 10 may be drilled to receive bolts 23 which pass through the legs 20 and transverse members 21 of the supports 19 and serve to secure the whole assembly together so that a continuous housing for the conveyor belt 13 is provided.

The ends of the support legs 20 may be closed as at 24, the lower closures preferably carrying screwed feet 25 so that the level of the conveyor may be adjusted.

The driving unit 26 consists of a sheet metal container comprising side and end plates 27, 28 connected by corner pieces 29 of angle section and provided with a flanged cover 30. Transverse angle members 31 disposed at different levels support longitudinal bearers 32, and the corner pieces 29 at one end may be provided with adjustable feet 33, whilst the angle members 29, 31 at the other end of the unit may be secured by bolts 34 to a support 19 which is itself bolted at 35 to the endmost belt-housing channel 10 and shelf 22.

A power unit, such as an electric motor 36, is supported on the lower bearers 32 within the driving unit 26, a pulley 37 carried by the upper bearers and associated with a pulley 38 over which the conveyor belt 13 passes, being driven by a chain or belt 39 from the motor 36. Preferably a jockey pulley 40 is provided to support the underside of the lower run 14 of the belt 13 at a suitable height.

The tensioning unit 41 provided at the opposite end of the conveyor comprises four angle-section corner members 42 provided with adjustable feet 65 and connected by longitudinal and trans-

verse members 43, 44 which are arranged at two different levels, the upper part of the structure being enclosed by side and end plates 45 and a cover 46.

Within this enclosed upper part of the structure is arranged a pulley 47 around which the conveyor belt 13 passes, this pulley 47 being so mounted that it can be adjusted in a horizontal plane by means of screw-and-nut gearing for the purpose of adjusting the belt tension. The gearing aforesaid may comprise screws 48 disposed horizontally at opposite sides of the structure, the associated nuts constituting bearings 49 which carry the ends of the pulley spindle and are further supported upon plain guide bars 50.

This tensioning unit 41 is attached to the adjacent belt-housing unit by means of bolts 51, and it will be obvious that the length of a conveyor so constructed can be altered at will by inserting additional belt-housing units 10 and supports 19, or by removing existing ones.

When conveyors are used for assembly work it is often necessary or desirable to provide side tables or side benches at or adjacent to which operators sit and work, and the position and form of these tables requires to be arranged according to the nature of the articles being carried by the conveyor. The present invention therefore envisages a conveyor which can be built from units in accordance with the purpose for which it is to be used and which can incorporate tables, benches and shelving capable of being altered at will.

The work benches, when used, are preferably of sheet metal and each comprises a flanged panel 52 adapted to be mounted flush with the top of a belt-housing unit 10 and secured to the adjacent downward flange 16 thereof by means of bolts 53. The ends of these bench units 52 may be connected by bolts 54 to triangular sheet-metal brackets 55 secured to the sides of the support legs 20.

The side tables include two or four leg portions 56 provided with adjustable feet 57 and constructed similar to those of the supports 19, a sheet metal top 58 disposed flush with the top of the adjacent belt-housing channel 10 being formed with gussets for attachment to the legs 20 of the supports 19, or their end flanges may be secured to the legs 56 at 59 and also secured to the supports 19 or the marginal flanges 16 of the belt-housing units 10 by means of bolts 60. At a lower level, the table is preferably provided with sheet-metal undershelving 61 bolted at 62 to the legs 56, as well as to the supports 19 and/or shelves 22. These table units can be secured at any position on either side of the conveyor belt 13, and if desired, two or more such tables may be disposed end to end at right angles to the length of the belt.

The supports 19 may carry at least one foot rail in the form of a tube 63 secured to the legs 20 by U bolts 64 so that it also serves to connect the supports 19 rigidly together.

What I claim then is:

1. An endless belt conveyor comprising, an endless conveyor belt, a plurality of channel-section belt housing units housing both runs of the belt, belt supporting elements extending between the sides of said channel-section units supporting thereon the upper run of the conveyor belt, said belt housing units being detachably connected together in alignment with one another, a belt driving unit connected detachably to one end of said assembled belt housing units, said belt driving unit including both a belt driving pulley adapted frictionally to drive said conveyor belt and also means for driving said pulley, a belt tensioning unit connected detachably to the other end of said assembled belt housing units, said tensioning unit including a belt tensioning pulley and means for adjusting said pulley longitudinally of said belt, said belt housing units having detachably secured thereto supporting units, and said supporting units including downwardly projecting portions adapted at their lower ends to rest freely upon a floor and support the belt housing units freely thereon.

2. An endless belt conveyor comprising, an endless conveyor belt, a plurality of sheet metal channel-section belt housing units housing both runs of the belt, integral transversely extending flanges on the ends of said sheet metal units, sheet metal supporting units secured detachably between said transversely extending flanges of said belt housing units, a belt driving unit connected detachably to one end of said assembled belt housing units, said belt driving unit including both a belt driving pulley adapted frictionally to drive said conveyor belt and also means for driving said pulley, a belt tensioning unit connected detachably to the other end of said assembled belt housing units, said tensioning unit including a belt tensioning pulley and means for adjusting said pulley longitudinally of said belt, and said supporting units including downwardly projecting portions adapted at their lower ends to rest freely upon a floor and support the belt housing units freely thereon.

3. An endless belt conveyor comprising, an endless conveyor belt, a plurality of sheet metal channel-section belt housing units housing both runs of the belt, integral stiffening flanges on the edges of the sides of said channel-section units extending horizontally outwardly from said side edges and terminating in downwardly projecting edge flanges, integral transversely extending flanges on the ends of said sheet metal units, sheet metal supporting units disposed between said transversely extending flanges of said belt housing units, said supporting units and transversely extending flanges having bolt holes, bolts extending through said holes connecting said supporting units detachably to said transversely extending flanges, a belt driving unit connected detachably to one end of said assembled belt housing units, said belt driving unit including both a belt driving pulley adapted frictionally to drive said conveyor belt and also means for driving said pulley, a belt tensioning unit connected detachably to the other end of said assembled belt housing units, said tensioning unit including a belt tensioning pulley and means for adjusting said pulley longitudinally of said belt, and said supporting units including downwardly projecting portions adapted at their lower ends to rest freely upon a floor and support the belt housing units freely thereon.

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