March 17, 1953 W. F. VICKERS 2,631,715

PORTABLE AND EXTENSIBLE CONVEYER

Filed Nov. 18, 1947 2 SHEETS—SHEET 1

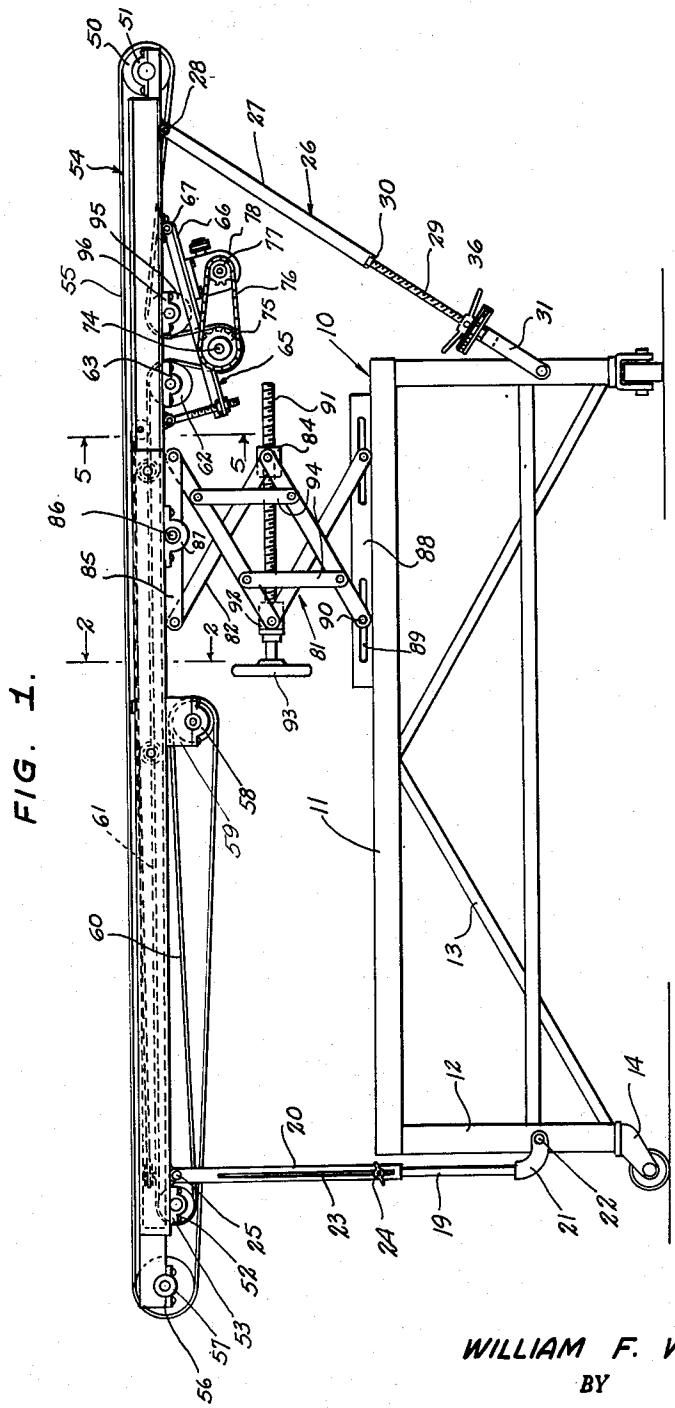


FIG. 1.

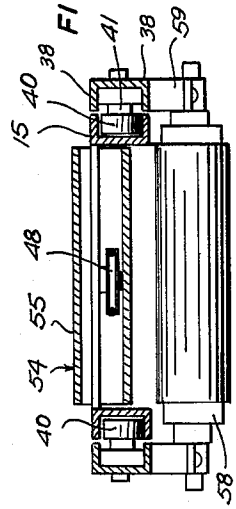


FIG. 2.

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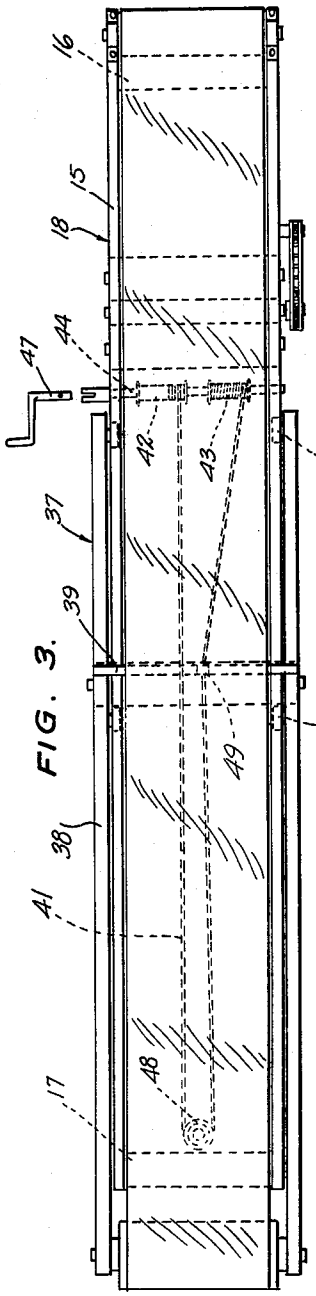


FIG. 3.

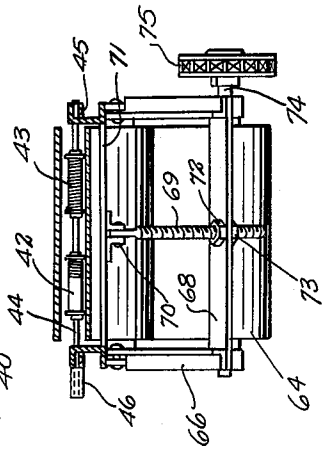
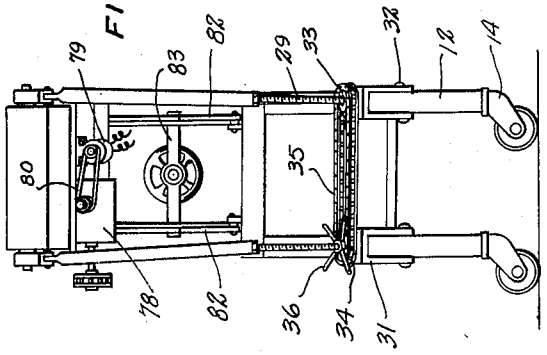


FIG. 5.

FIG. 4



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UNITED STATES PATENT OFFICE

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PORTABLE AND EXTENSIBLE CONVEYER

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Application November 18, 1947, Serial No. 786,609

2 Claims. (Cl. 198—139)

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This invention relates to a portable conveyor for use in piling or loading material.

An object of this invention is to provide a conveyor of the portable type which is so constructed that the operative portion of the conveyor may be extended or retracted to the desired length.

Another object of this invention is to provide an extensible or telescoping conveyor which also includes means whereby the conveyor may be angularly adjusted or tilted to the desired degree.

A further object of this invention is to provide in a conveyor of this kind an improved means whereby the tilting screws at one end of the device may be operated as a unit.

A further object of this invention is to provide in a conveyor of this kind a lazy tong elevating or lowering means whereby the conveyor may be raised or lowered to the desired degree.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a detail side elevation of a conveyor constructed according to an embodiment of this invention,

Figure 2 is a sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a plan view of the device,

Figure 4 is a detail end elevation of the device, and

Figure 5 is a sectional view taken on the line 5—5 of Figure 1.

Referring to the drawings, the numeral 10 designates generally a mobile frame or base structure which includes a platform 11 having extending downwardly therefrom legs 12 which are braced by means of downwardly divergent bracing members 13 extending from the central portion of the platform or base 10.

The legs 12 have mounted on their lower ends caster wheels 14 so that the frame or base structure may be readily shifted from one point to another.

The platform 11 has disposed thereabove a pair of elongated outwardly facing channel members 15 which are connected together adjacent their opposite ends by connecting plates 16 and 17. The channel members 15 which constitute an inner conveyor frame are supported in vertically adjusted and angularly adjusted position with respect to the frame or base 10 by adjustable supporting means.

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The conveyor frame which comprises the channel members 15 and generally designated as 18, is supported at one end by means of a pair of telescoping supporting members which include an inner member 19 and an outer member 20. The inner member 19 which is the lower member is secured at its lower end to a curved bracket arm 21 which is pivoted as at 22 to a leg 12 at one end of the base 10.

The tubular member 20 is formed with an elongated slot 23 through which a bolt 24 carried by the lower member 19 extends and the bolt 24 includes a wing nut for tightening the two telescoping members 19 and 20 against endwise movement.

The upper member 20 is pivoted as at 25 to the lower side of a channel member 15. There are two supporting extensible members each comprising telescoping members 19 and 20 at one end of the frame or base 10.

The frame 18 has secured to the opposite end thereof extensible supporting and bracing members generally designated as 26. The bracing members 26 include an upper tubular member 27 which is pivoted as at 28 to a channel or frame member 15. A threaded shaft 29 extends from the lower end of the tubular member 27 and is threaded at its upper portion through a nut 30 which is fixed to the lower end of the tubular member 27.

The shaft 29 is journalled at its lower end in a U-shaped bearing 31 which is pivoted as at 32 to the adjacent leg 12 of the frame 10. The U-shaped members 31 are disposed in inverted position with the parallel sides thereof straddling the adjacent legs 12.

The shafts 29 have fixed thereto sprockets 33 and 34 which are connected together by means of a chain 35. One of the sprockets and preferably sprocket 34, has fixed thereto a wheel 36 so that the sprockets may readily be rotated in unison so as to thereby rotate the two shafts 29 together for extending or retracting the bracing members 26 and thereby effecting a tilting of the conveyor.

The conveyor frame also includes an extensible frame structure generally designated as 37. The frame structure 37 is formed of inwardly facing parallel channel members 38 which are connected together by means of at least one connecting bar 39. The channel members 38 have secured to the inner sides thereof rollers 40 which are mounted on bearings fixed to the insides of the channels 38. The rollers 40 engage in the outwardly facing channels 15. There are two pairs

of these rollers 40 which are lengthwise spaced apart as shown in Figure 3, so that the channel members 38 will be held co-planar with the channel members 15.

The extensible frame 37 is adapted to be either extended or retracted by means of a cable or flexible member 41 which is wound about a pair of drums 42 and 43 carried by a shaft 44. The shaft 44 is journalled in bearings 45 which are carried by the channel members 15 and one end of the shaft 44 has a socket 46 secured thereto for engagement by a crank 47.

The flexible member 41 is wound clockwise about one of the drums and counter-clockwise about the other drum so that rotation of the shaft 44 will effect winding of the cable 41 on one of the drums and unwinding of the cable from the other drum. The cable or flexible member 41 is trained about a pulley 48 which is fixed to the forward connecting bar 17 and an intermediate point of the cable 48 is fixed as at 49 to the connecting or cross bar 39.

The inner conveyor frame 18 has mounted at one end thereof a roller 50 which is journalled in bearings 51 and a second roller 52 is rotatably carried by the opposite end of the inner frame 18, being rotatably carried by bearings 53. An endless conveyor belt 54 is trained about the rollers 50 and 52 and the upper or operating run 55 of the belt 54 is extended from the top of roller 50 over the top of the conveyor frame and is then trained over a roller 56 journalled in bearings 57 which are carried by the outer end of the extensible conveyor frame 37.

The belt 54 is then extended beneath the conveyor frame and is trained under a pulley 58 which is dependingly supported from bearings 59 carried by the frame 37.

The belt is then extended as indicated at 60 forwardly beneath the roller 52 and is then extended from roller 52 as indicated at 61 to an idler roller 62 which is journaled in bearing 63 carried by the frame 18. A driving roller 64 is journaled in a vertical adjustable or swinging frame 65 disposed beneath the frame 18. The swinging frame 65 includes a pair of side or parallel bars 66 which are pivoted as at 67 to the lower sides of the channel members 15. The bars 66 are then extended forwardly and downwardly, and are connected together by means of a connecting bar 68.

A threaded shaft 69 is pivotally secured at its upper end as indicated at 70 to a cross bar 71 which is connected between the channel members 15, and the shaft 69 extends downwardly and outwardly through the connecting bar 68. A pair of adjusting nuts 72 and 73 are threaded on the shaft 69 engaging on the upper and lower sides respectively of the connecting bar 68 so that the swinging frame 65 can be angularly adjusted to provide for taking up slack in the conveyor belt 54.

The roller 64 has fixed thereto a shaft 74 which has mounted on one end thereof a sprocket 75. The sprocket 75 has trained thereabout a chain 76 which is also trained about a driving sprocket 77 operatively connected with a speed reducing means 78 which is fixed to the swinging frame 65.

A motor 79 is fixed to the swinging frame 65 and is operatively connected with the speed reducing means 78 by means of a belt 80.

The conveyor frame structure which comprises the two frames 18 and 19, is adapted to be elevated or lowered by means of a lazy tong elevating means generally designated as 81. The elevating means 81 includes two lazy tong members 82 which are connected together by means of connecting bars 83 and 84 and the lazy tong members 82 have their upper lengths pivotally connected together by means of an upper connecting bar 85 which is pivotally mounted on a shaft 86 extending between the channel members 15 and rockably mounted in bearings 87.

The lowermost lengths of each lazy tong structure 82 are slidably mounted in upstanding bars or flanges 88 formed with elongated slots 89 through which pins 90 carried by the lowermost lengths of the lazy tongs are adapted to slidably engage. An adjusting threaded shaft 91 is swivelly mounted through a block 92 which is carried by the connecting bar 83 and is threaded through the connecting bar 84 as shown in Figure 1.

The shaft 91 has secured thereto a hand wheel 93 so that this shaft may be manually adjusted to provide for the desired elevation of the conveyor structure. The pivotal mounting of the upper ends of the lazy tong members will permit the conveyor frame structure to be tilted to any desired angle.

As shown in Figure 1, the lazy tong structure 82 includes connecting bars 94 which are connected between a pair of the lengths forming the lazy tong so that these lengths will be held in spaced, parallel relation. The belt 54 is extended upwardly from beneath the driving roller 64 and passed over a second idler roller 95 which is journaled in bearings 96 fixed to the channel members 15 outwardly from the bearings 63.

The conveyor belt 54 is then extended outwardly beneath and about the end roller 50.

In the use and operation of this device, the motor 79 is connected to a source of electric current supply. The conveyor frame structure may be raised or lowered to the desired degree by rotation of the hand wheel 93 which will either extend or retract the lazy tong structure 81. The conveyor may be maintained in either a horizontal position as shown in Figure 1, or the conveyor may be inclined to the horizontal by lowering either end thereof.

The conveyor may either be extended or retracted as to its length by rotation of drum shaft 44 so that the conveyor may be of the desired length. With a conveyor as hereinbefore described, the material may be transferred quickly and from one point either above or below the point of discharge, and due to the mobile frame on which the conveyor is mounted, this conveyor can readily be shifted to any selected point.

Having thus described my invention, what I claim is:

1. In a conveyor, a base, a pair of longitudinally conveyor belt trained over said end rollers, said aligned frame members slidably connected to provide a conveyor frame, conveyor belt rollers on the opposite ends of said frame, an endless belt having an upper flight extending along the top of said frame and a lower flight extending along said frame beneath said upper flight, idler roller means on said frame over which the lower flight is trained at points between said end rollers, a belt adjusting frame pivoted on said conveyor frame and depending therefrom at a declining angle, a drive roller on said adjusting frame under which a portion of the lower flight of the belt is trained from said idler roller means, motor means on the adjusting frame operatively connected to said drive roller to drive the conveyor belt, extensible means extending

between and connected to said conveyor frame and said adjusting frame, said extensible means being arranged to be extended to take up slack in the conveyor belt when the conveyor frame members are contracted and to be contracted to provide slack in the conveyor belt as the conveyor frame members are extended, means mounting said conveyor frame on said base, and means for extending and contracting said frame members relative to each other.

2. In an adjustable conveyor, a conveyor belt frame composed of longitudinally extensible frame members, a base, and means mounting said belt frame on said base comprising a first vertical member rising from said base and connected at its upper end to one end of one of said conveyor frame members, and a second vertical member rising from said base and connected at its upper end to an end of the other conveyor frame member, said first and second vertical members being pivoted at their upper ends to the frame members and individually extensible and contractible to vary the height of said conveyor frame above said base and the inclination of said conveyor frame with respect to said base, and lazy

tongs on said base beneath one of said conveyor members and engaged therewith for tilting said conveyor frame upwardly at an acute angle to said base on the axis of the pivotal connection of one of said vertical members with one of said frame members.

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