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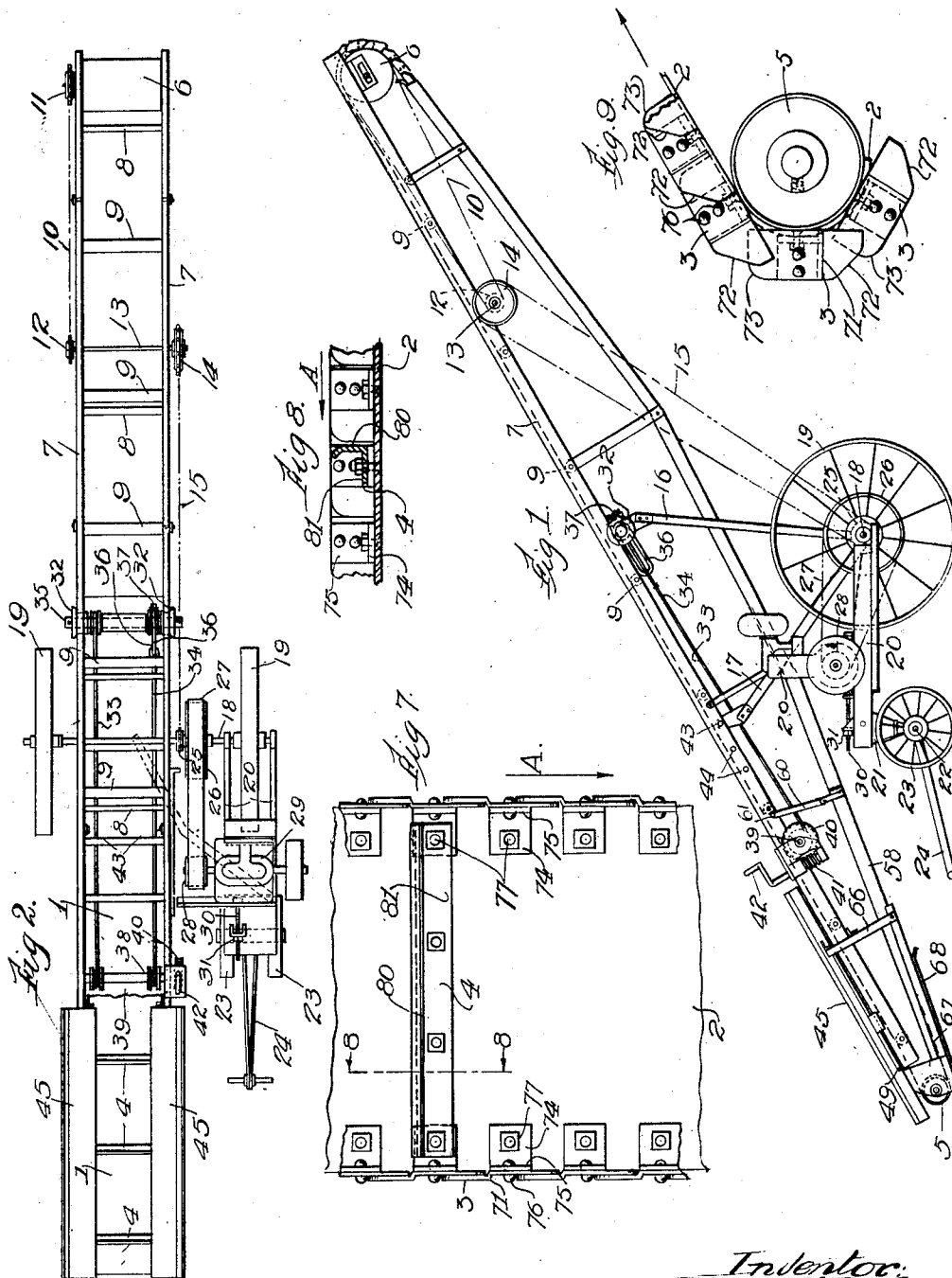
H. H. BARBER

1,728,652

PORTABLE CONVEYER

Filed Nov. 30, 1923

2 Sheets-Sheet 1



Witness:
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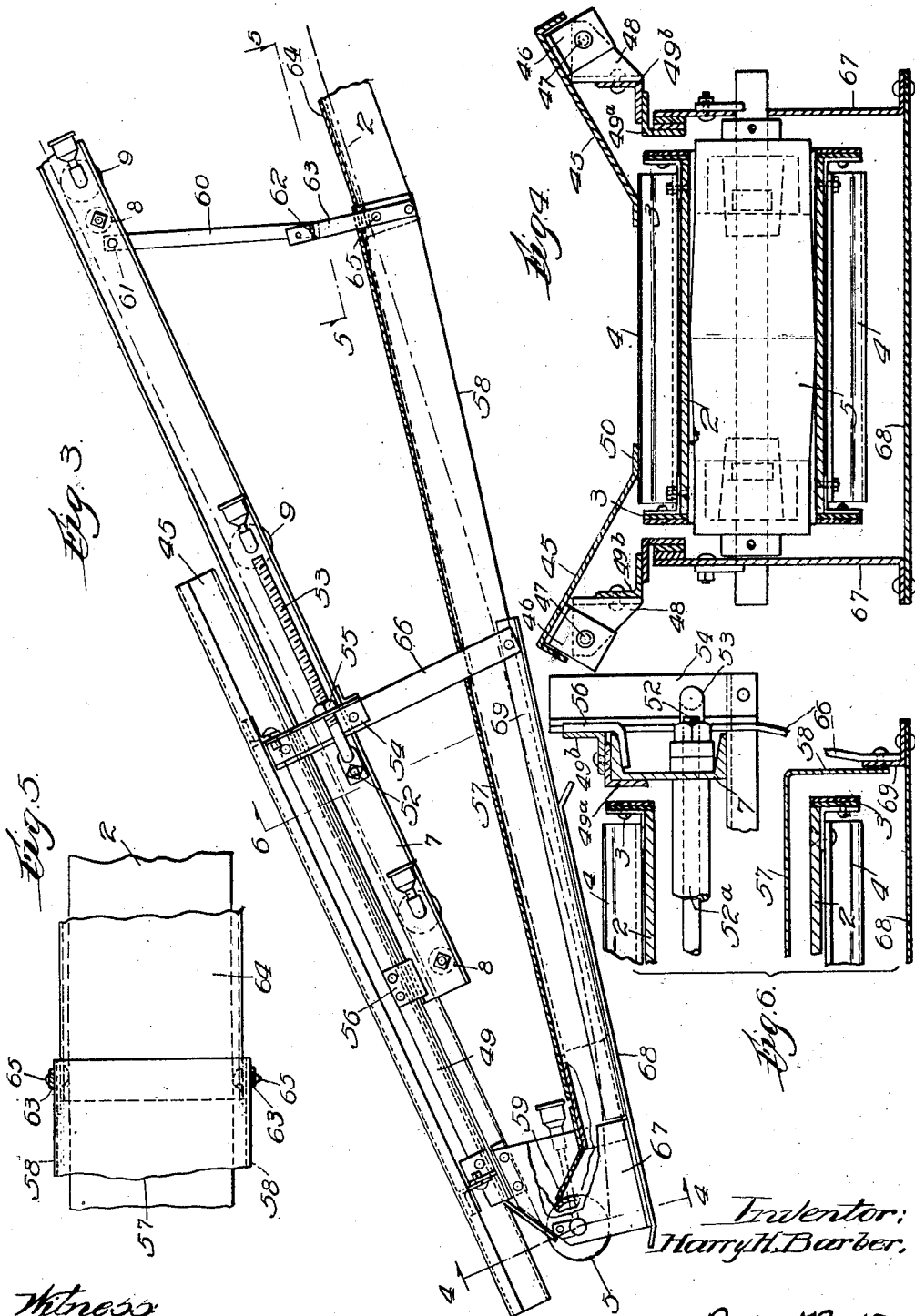
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Witness
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UNITED STATES PATENT OFFICE

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PORTABLE CONVEYER

Application filed November 30, 1923. Serial No. 677,627.

The purpose of this invention is to provide a portable conveyer of simple construction and a truck on which it may be easily moved about, the truck being also adapted to carry an engine or motor connected for operating the conveyer. It consists of various features and elements of construction and their combination hereinafter described and shown in the drawings as indicated by the claims.

10 In the drawings:

Figure 1 is a side elevation of a conveyer and its truck embodying this invention.

Figure 2 is a top plan view of the same with conveyer frame raised to horizontal position.

Figure 3 is an enlarged side elevation of the lower portion or loading end of the conveyer with certain parts broken away to reveal details of the structure.

20 Figure 4 is a transverse section taken as indicated at line 4—4 on Figure 3.

Figure 5 is a detail section taken as indicated at line 5—5 on Figure 3.

25 Figure 6 is a transverse fragmental section looking in the direction of the arrow at line 6 on Figure 3.

Figure 7 is a detail plan view of a fragment of the conveyer belt.

30 Figure 8 is a detail section taken as indicated at line 8—8 on Figure 7.

Figure 9 is a detail side elevation of a fragment of the belt rounding the tail pulley.

As illustrated in the drawings this conveyer is shown provided with a belt, 1, which consists of a fabric portion, 2, fitted with articulated side flanges, 3, and transverse flights, 4, which are hereinafter more fully described. The belt, 1, travels over drums, 5 and 6, at the lower and upper ends of the frame respectively and said frame is composed principally of side members, 7, which may be in the form of steel channels as shown in Figure 6 connected at intervals by cross ties, 8, and also provided with auxiliary supporting rollers, 9, for the belt, 1. The belt is driven through a chain, 10, connecting a sprocket wheel, 11, which is rigid with the drum, 6, and a sprocket, 12, on a countershaft, 13, journaled transversely in the frame and carrying a second sprocket, 14, driven by a

chain, 15, from any suitable source of power, such as an engine or motor portably associated with the conveyer.

The conveyer frame is supported by two pairs of struts or braces, 16 and 17, which extend divergently from an axle, 18, upon which they are pivotally mounted, and said axle, 18, is supported on large carrying wheels, 19, positioned at opposite sides of the conveyer frame. The remainder of the truck is disposed entirely at one side of the conveyer frame and consists of horizontal frame members, 20, 20 extending forwardly from the axle, 18, at opposite sides of one of the wheels, 19, connected together at their forward ends by a casting, 21, which carries a kingbolt or other swivel connection for the short axle, 22, of a pair of steering wheels, 23. A handle, 24, extending from the axle, 22, is provided for use in drawing the conveyer about from place to place.

As shown in the drawings the chain, 15, is driven from a sprocket wheel, 25, journaled to rotate on the axle, 18, and secured rigidly to a pulley, 26, connected by a belt, 27, with the drive pulley, 28, and the shaft of the engine, 29, said engine being supported on the frame members, 20. The engine base is slidably secured in position and is adjustable for tightening the belt, 27, threaded adjusting rods, 30, being provided with nuts, 31, for this purpose.

When moving the conveyer from one place to another the frame members, 7, may be swung about the axle, 18, into approximately horizontal position thus lifting the lower end of the frame off the ground. As the weight of the structure is nearly balanced about the axle, 18, the device can be maneuvered usually by one man using one hand to support the frame in this position and the other hand for drawing the truck. It will be observed that the swinging movement of the frame does not affect the condition of the drive chain, 15, or other drive connections since the power passes through the sprocket wheel, 25, and belt wheel, 26, which are journaled upon the axle, 18, about whose axis the frame members, 7, are swung.

Further adjustment of the conveyer frame

for altering its angle of inclination in use and thus changing the height at which it delivers material is provided for by fitting the upper end of the struts, 16, with rollers, 32, upon which the frame members, 7, rest without other securement to the struts, 16. The angle between the struts, 16, and the struts, 17, is then varied by means of a pair of chains or cables, 33, 34, anchored to the axle, 35, which carries the rollers, 32. To permit of equalizing the length of the cables, one of them, the cable, 34, is connected to the axle, 35, by a U-bolt, 36, having nuts, 37, which may be adjusted to shorten or lengthen the cable, 34, as may be required. The ends of the cables, 33, 34, pass over winding spools or drums, 38, on the shaft, 39, whose worm gear, 40, meshes with a worm, 41, having a driving crank, 42, mounted at the side of the conveyer frame near its lower end within convenient reach of the operator. Since the struts, 17, are attached to the frame members, 7, by pivots, 43, the movement of the rollers, 32, toward such pivots, 43, swings said members about the pivots increasing the angle between the members, 7 and 17, and results in raising the upper end of the frame; while the opposite adjustment of said rollers, 32, will lower the discharge end of the conveyer. The weight of the parts is relied upon primarily to maintain contact of the members, 7, with the rollers, 32.

A further range of adjustment may be secured by providing several sets of pivot holes, 44, for the pivots, 43, which connect the struts, 17, to the side frames, 7.

At the lower end of the conveyer a sort of hopper is formed of a pair of inwardly sloping wings, 45, which are held in place by brackets, 46, pivotally attached at 47, to brackets, 48, secured to extension members, 49, attached for sliding adjustment upon the end portions of the frame members, 7. The lower edges of the wings, 45, are bent at 50, to ride upon the edges of the flights, 4, as they pass under them; and by reason of their pivotal connections at 47, said wings may be readily swung back, clear of the belt for removal of any material which may occasionally become wedged between the belt flanges, 3, and the side frame members.

The tightening of the belt, 2, is effected by sliding adjustment of the extension frames, 49, upon the channels, 7, to each of which channels there is anchored at 52 a threaded tension rod, 53, which passes through an opening in a bracket, 54, said bracket being secured rigidly to a portion of the extension frame, 49. By adjustment of the nut, 55, on the rod, 53, the bracket, 54, and with it the frame, 49, is crowded along toward the end of the frame member, 7, and the belt, 2, is thus placed under the desired tension. As shown in the drawings the extension frame, 49, is composed of two angle members forming a Z-bar, the depending flange of the lower

member, 49^a, riding upon the inner face of the channel, 7, and the upstanding flange of the other member, 49^b, extending substantially in the same vertical plane as the outer edges of the channel flanges. Thus a bent clip, 56, attached to the angles, 49^b, extends under the upper flange of the channel, 7, to guide and retain the parts throughout the range of sliding adjustment.

Notwithstanding the flanges, 3, on the belt, 2, there is likely to be some spillage of material, which, if it reach the return ply of the belt and thus lodge upon its under surface, will cause trouble at the drum, 5. Under the loading hopper which consists of the wings, 45, there is provided an apron or cover, 57, extending entirely over the lower ply of the belt, 2, and formed with depending marginal flanges, 58. At the forward or lower end the apron carries a scraper blade, 59, which rests upon or against the surface of the drum, 5, and removes therefrom any foreign material which may reach that surface. A considerable portion of the weight of the apron, 57, acts to maintain this contact of the scraper blade, 59, and to follow up its wear since the only other support of the apron consists in links, 60, pivotally hung at 61, on the side frames, 7, and pivotally connected at 62, with rigid straps, 63, extending upward from the flanges, 58, of the apron.

At the lower end of the conveyer the shaft or axle of the pulley, 5, is mounted in plates, 67, supported by the extension frame members 49; and the pulley is supported just off the ground by a plate or shoe, 68, connecting the bearing plates, 67, and extending under the lower ply of the belt for a short distance. Reinforcing angle members, 69, extend further for connection with hangers, 66, depending from the frame members, 49, adjacent the brackets, 54.

For most uses the form of belt shown in Figures 7, 8 and 9 is preferred. It comprises a flexible web, 2, for which a rubber-coated belting fabric is quite suitable, and metallic side flanges, 3, of articulated construction. Each unit of the side flanges includes a plate upstanding at the edge of the web, 2, with its trailing end portion offset, as shown at 71, to overlap the leading end of the next plate. This arrangement is of especial advantage at the loading end of the conveyer, permitting the outer surfaces of the side flanges to draw smoothly past the material in the pile from which the belt, 2, is being filled. By mitering the upper rear corners of the side plates, as shown at 72, I avoid the possibility of particles becoming caught or wedged between the ends of the overlapped plates as they pass around the tail pulley, 5, and vary their angular relation to each other, as indicated in Figure 9. Preferably the forward corners, 73, are slightly rounded.

Each of the side plates is furnished with a

rigidly extending mounting foot, 74, which may comprise one arm of an angle member whose other arm, 75, is secured to the inner face of the side plate, as by rivets, 76. I find it desirable to have the foot, 74, extend from the plate at a little distance above the lower edge of the plate, so that the lower marginal portion of said plate will overhang the edge of the belt web, 2, thus protecting it from abrasive wear and greatly prolonging its useful life. Each foot piece, 74, is attached to the belt by a single fastener, such as a bolt or rivet, and it is found convenient to utilize the same bolts for securing the ends of the cross-flight, 4, as shown in Figure 7. These cross-flights are formed of angle rail, with one leg, 81, thus attached at its ends, and at intermediate points, to the belt, 2, and with the other leg upstanding from the belt and preferably bent, as shown in Figure 8, with the upper edge slightly overhanging the belt surface and leaning in the direction of travel shown by the arrow, A. The cross-flights stiffen the belt laterally at intervals, but by reason of the flexibility of the web, it will sag slightly between flights, forming pockets which will carry more material and hold it more securely than if the belt remained perfectly flat.

HARRY H. BARBER.

I claim:—

1. A conveyer belt comprising a flexible load supporting web with metallic side flanges, each having a mounting foot secured to the web, but extending inwardly from the edge thereof for a small proportion of the belt width, leaving the middle portion of the web unstiffened by such foot pieces; and rigid cross flights at intervals on the web, attached thereto, adjacent the marginal flanges, and also at intermediate points beyond the inner ends of the mounting feet of said flanges, whereby the web is held up to the cross flights and adapted to sag between said flights, forming pockets to carry the load.

2. A conveyer belt comprising a flexible load supporting web with articulated side flanges, each flange member having a mounting foot secured to the web by a single fastener and extending inwardly from the edge of the web for a small proportion of the belt width, leaving the middle portion of the web unstiffened by such foot pieces; and rigid cross flights arranged at intervals on the web, attached at their ends by the same fasteners which secure the side flange members, and also secured to the web at intermediate points beyond the inner ends of the mounting feet of said flanges, whereby the web is held up to said cross flights and permitted to sag between said flights, forming pockets to carry the load.

3. In a conveyer belt a side flange comprising a succession of overlapping plates, each plate having its trailing end portion sharp-