

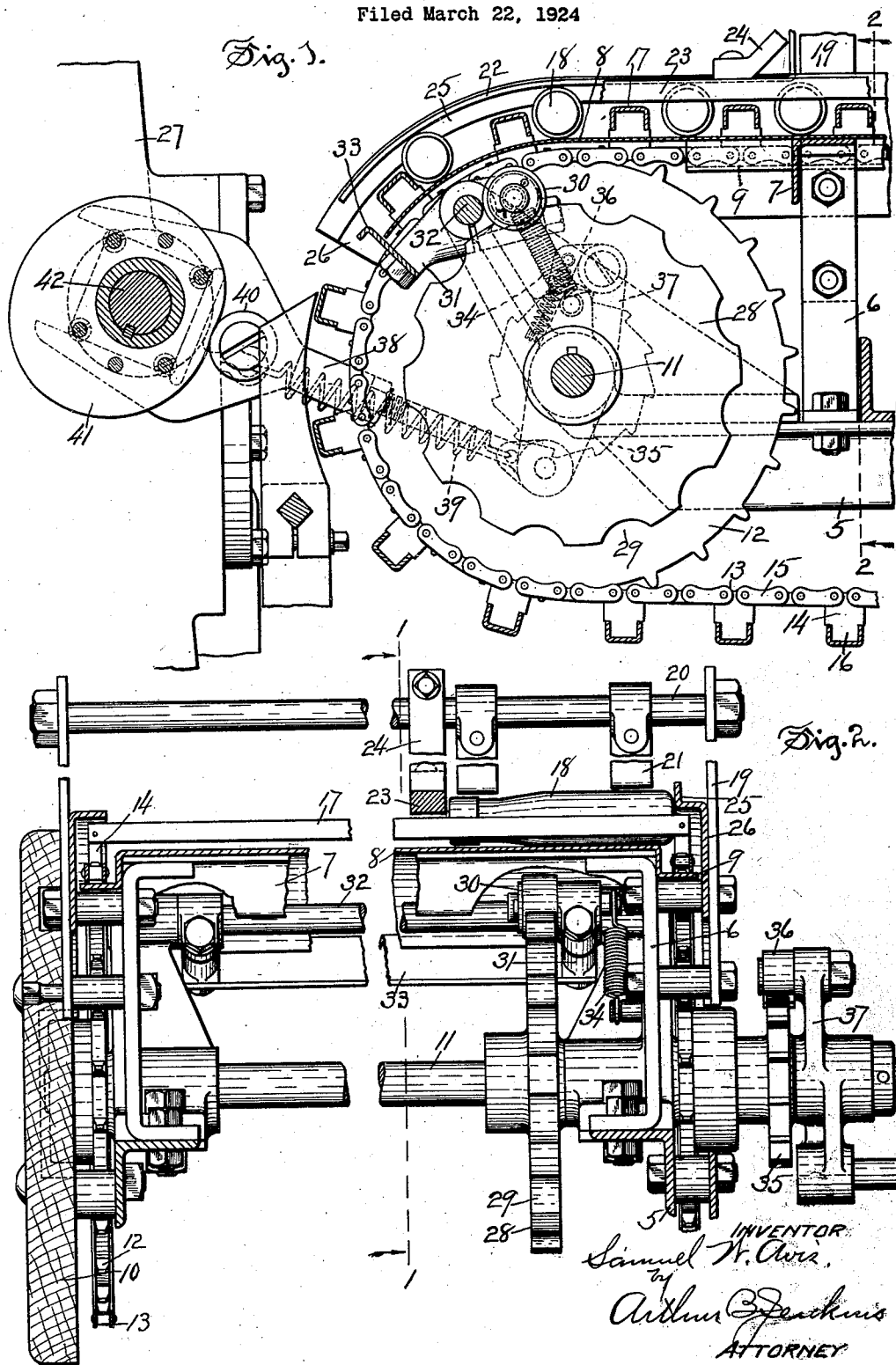
June 17, 1930.

S. W. AVIS

1,763,738

CONVEYER

Filed March 22, 1924



UNITED STATES PATENT OFFICE

SAMUEL W. AVIS, OF WEST HARTFORD, CONNECTICUT, ASSIGNOR TO THE FULLER BRUSH COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT

CONVEYER

Application filed March 22, 1924. Serial No. 701,234.

My invention relates to the class of devices employed for moving articles from one point to another, and more especially for delivering articles to mechanisms for performing operations upon them, and an object of my invention, among others, is to provide a conveyer that shall be simple in construction and particularly efficient in its mode of operation.

One form of device embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a view in longitudinal section through one end of my improved conveyer mechanism showing its relationship with respect to a machine of which it forms a part, and which is to perform operations upon articles delivered to it by said conveyer, the plane of section being denoted by the dotted line 1—1 of Figure 2,

Figure 2 is a view in cross section on a plane denoted by the dotted line 2—2 of Figure 1 with the central portion of the mechanism broken out.

My improved conveyer comprises a frame that may be constructed in any suitable manner to support the operative parts of the mechanism, as herein shown this frame comprising side bars 5 extending lengthwise on opposite sides of the frame near the bottom, said bars comprising the main parts of the frame and being supported in any suitable manner, as by legs, not shown. There side bars, as herein shown, are of angle iron, and uprights 6 are secured to and project upwardly therefrom at opposite ends of the frame, and cross bars 7 are supported upon and secured to said uprights at each end of the machine, as particularly shown in Figure 2 of the drawings. A table 8 composed of sheet metal is secured to the cross bars 7 and projects along the entire upper part of the frame, this table having flanges 9 that serve as supports for the conveyer chain and to be hereinafter described. A back piece 10, preferably of wood, is secured to the back side of the frame and extends for substantially its

full length and also for substantially its entire height, this back piece being secured in any suitable manner, as by bolts.

At each end of the side bars 5 bearings are formed for supporting shafts 11, the shaft at one end of the frame only being shown. Sprocket wheels 12 are secured to each of the shafts 11 at opposite sides of the frame and conveyer chains 13 are mounted upon each pair of sprocket wheels, said chains extending the whole length of the frame

These conveyer chains are of special construction and comprise blocks 14 located between and connected by links 15, each of said blocks having lugs 16 that are received within conveyer bars 17 at each end of said bars. These bars are formed of channel iron and the blocks 14 are spaced sufficiently to separate the bars a suitable distance apart to receive handles 18 between them, said handles being pushed along the upper surface of the table 8 by the movement of said bars caused by the operation of the chain 13. Posts 19 are secured to bolts projecting from the uprights 6 on each side of the frame and at each end thereof, and a retainer supporting rod 20 is secured to said posts at the front end of the conveyer.

Retainers 21 are secured to the rod 20, these being of any suitable number and projecting downwardly from the rod and each having a retaining finger 22 extending toward the delivery end of the machine, as shown in Figure 1, and preferably curved downwardly at the end to follow the curved path of the handles or other articles 18 around the sprocket wheels 12. These fingers serve to retain said handles or other articles from outward displacement from between the bars 17, and a guide bar 23 is adjustably supported above the table 8 extending lengthwise thereof to form a path for travel of the articles or handles 18 along said table. As shown herein this guide bar is secured to the lower end of a guide bar support 24 adjustably attached to the supporting rod 20, as shown in Figure 2 of the drawings. This adjustable mounting of the guide bar permits the width of the path for the articles 18 to be varied to accommodate articles of different length, the opposite side

of said path being formed by a flange 25 on the upper edge of a cover plate 26 having the chain 13 inclosed herein at the upper edge of the machine. Means are provided for removing the articles or handles from the conveyer, and when thus removed they may be delivered, as contemplated by the machine illustrated and described herein, to a machine for performing certain operations upon said articles or handles, as for affixing screw eyes thereto, the frame 27 of such a machine being partially shown in Figure 1 of the drawings herein. This removing device or ejector comprises an ejector actuating wheel 28 secured to the shaft 11 and having peripheral notches 29 to receive an ejector roller 30 mounted on a stud projecting from the side of an ejector rocker arm 31 adjustably supported by an ejector shaft 32 suitably mounted for rocking movement in the side parts of the conveyer frame, there being preferably one of said rocker arms at each side of the machine, as shown in Figure 2 of the drawings, but a single actuating wheel in contact with one of said arms only, which arm is the ejector actuating arm.

An ejector plate 33 is secured to the ends of said rocker arms and projects across the conveyer at the end of the table 8. An ejector actuating spring 34 is secured at one end to the actuating arm and at its opposite end to the frame of the machine and is employed to impart actuating movement to said arm and to the ejector to rock said arm and ejector in one direction, in which movement the roller 30 enters one of the notches 29 in the wheel 28, a reverse movement being given to said arm and ejector by the projections between said notches on said wheel.

The ejector plate is shown in its ejecting position in Figure 1 of the drawings, from which it will be seen that the handles or articles 18 are moved outward from between the bars when they arrive opposite to said ejector, at which time one of the notches is positioned opposite the roller in the step-by-step movement of the conveyer chain.

As a means for imparting step-by-step movement to the conveyer a ratchet wheel 35 is secured to the shaft 11 and is engaged by a pawl 36 pivotally mounted on a conveyer actuating arm 37 pivotally supported on the shaft 11 and spring pressed into engagement with the teeth of the ratchet wheel, as shown by dotted lines in Figure 1.

A conveyer actuating rod 38 is pivotally attached to the actuating arm 37 at that end opposite the pawl 36, this rod comprises two sections adjustably connected as by means of interengaging screw threads, a spring 39 attached at one end to the arm and at the other end to the frame 27 imparting idle movement to the arm 37 and pressing a roller 40 into contact with a conveyer actuating cam 41 secured to a conveyer actuating shaft 42 rota-

tably mounted in the frame 27 and operated by mechanism supported in said frame, all of the parts just above described being shown in Figure 1 of the drawings only. The section of the rod 38 connected with the shaft 42 is forked to straddle a block of angular construction rotatably mounted on said shaft, as shown in dotted lines in Figure 1 of the drawings.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:—

1. A conveyer comprising an endless flexible conveyer member having spaced receiving openings, a table underlying said opening to sustain articles for movement thereon by said conveyer, means for operating said conveyer member, including a driven supporting shaft therefor, and means operable by turning of said shaft for removing articles from said openings while the conveyer is moving.

A conveyer comprising an endless flexible conveyer member having spaced receiving openings, a table underlying said openings to sustain articles for movement thereon by said conveyer, an ejector having ejecting movement into said openings, means for moving the ejector into said openings each time the openings arrive opposite the ejector and while the conveyer is moving, and means for operating said conveyer member including a driven supporting shaft therefor operatively associated with the ejector.

3. A conveyer comprising two endless side members each having spaced lugs, channeled bars to receive lugs within the channel in the bars to secure said bars to said lugs, a table underlying the spaces between said bars to retain articles therebetween, and means for operating the conveyer.

4. A conveyer comprising two endless chains formed of regularly spaced blocks joined by links and each having a lug, bars of channel form to receive said lugs within the channels for the purpose of securing the bars to the chains, a table underlying the chains to retain articles between said bars, and means for operating the conveyer.

5. A conveyer comprising an endless member having regularly arranged spaces to receive articles, side bars forming the boundaries of said spaces, one of said side bars being adjustably positioned with respect to the other side bar, and a table underlying said spaces to retain articles thereon.

6. A conveyer comprising means to receive articles, a shaft to support said conveyer,

means for operating said shaft, a peripherally notched ejector actuating wheel secured to said shaft and having projections between its notches to actuate the ejector, an ejector comprising an arm having a member to enter said notches and to be forced therefrom by said projections, means for pressing said arm to cause said member to enter said notches each time one of the notches arrives opposite said member and while the conveyer is moving, and means for supporting said arm.

7. A conveyer comprising an endless conveyer member including bars spaced apart to provide openings for the reception of articles, means independent of said conveyer for supporting said articles while being moved by said conveyer a pair of pivotally mounted ejector arms, an ejector plate secured to said arms and extending across the space between them, a periphery notched ejector wheel, a member upon one of said arms to be received in said notches, and means for resiliently pressing said member into said notches to impart ejecting movement to the ejector while the conveyer is moving.

8. A conveyer comprising a frame including side parts, a table extending across the space between said side parts and having down bent vertical portions terminating in horizontal flanges at its opposite edges, conveyer chains arranged to travel upon said flanges, and means connecting said chains and spaced apart to provide receiving openings on said table.

9. A conveyer comprising a frame including side parts, a table extending across the space between said parts and having down bent vertical portions terminating in horizontal flanges at its opposite edges, conveyer chains arranged to travel upon said flanges, members connecting said chains and spaced apart to provide receiving openings between said parts, and a cover plate enclosing said flanges and providing a pocket within which the side parts of said chains travel.

10. In combination, a conveyer including a pair of endless sprocket chains connected at intervals by cross bars, a table associated with the upper run of the conveyer for supporting articles placed between the cross bars until reaching the delivery end of the conveyer, said conveyer having a transverse rotatable supporting shaft at its delivery end provided with sprocket wheels about which said chains pass, a further transverse shaft supported beneath the delivery end of the table and above said supporting shaft, rocker arms carried by said further shaft at the inner sides of said sprocket wheels, an ejector plate connecting said rocker arms at the delivery end of the table, and means for rocking said rocker arms to alternately retract the ejector plate out of the path of said cross bars and project it into the spaces between successive ones of said

cross bars to successively discharge articles from between said cross bars.

11. In combination, a conveyer including a pair of endless sprocket chains connected at intervals by cross bars, a table associated with the upper run of the conveyer for supporting articles placed between the cross bars until reaching the delivery end of the conveyer, said conveyer having a transverse rotatable supporting shaft at its delivery end provided with sprocket wheels about which said chains pass, a further transverse shaft supported beneath the delivery end of the table and above said supporting shaft, rocker arms carried by said further shaft at the inner sides of said sprocket wheels, an ejector plate connecting said rocker arms at the delivery end of the table, means for rocking said rocker arms to alternately retract the ejector plate out of the path of said cross bars and project it into the spaces between successive ones of said cross bars to successively discharge articles from between said cross bars, said last named means embodying a peripherally notched wheel fixed on the supporting shaft, and an actuating member carried by one of the rocker arms tracking on the periphery of said notched wheel.

12. In combination, a conveyer including a pair of endless sprocket chains connected at intervals by cross bars, a table associated with the upper run of the conveyer for supporting articles placed between the cross bars until reaching the delivery end of the conveyer, said conveyer having a transverse rotatable supporting shaft at its delivery end provided with sprocket wheels about which said chains pass, a further transverse shaft supported beneath the delivery end of the table and above said supporting shaft, rocker arms carried by said further shaft at the inner sides of said sprocket wheels, an ejector plate connecting said rocker arms at the delivery end of the table, and means for rocking said rocker arms to alternately retract the ejector plate out of the path of said cross bars and project it into the spaces between successive ones of said cross bars to successively discharge articles from between said cross bars, said last named means being wholly within the path of movement of said conveyer.

13. In combination, a conveyer including a pair of endless sprocket chains connected at intervals by cross bars, a table associated with the upper run of the conveyer for supporting articles placed between the cross bars until reaching the delivery end of the conveyer, said conveyer having a transverse rotatable supporting shaft at its delivery end provided with sprocket wheels about which said chains pass, a further transverse shaft supported beneath the delivery end of the table and above said supporting shaft, rocker arms carried by said further shaft at the inner sides of said sprocket wheels, an ejector

plate connecting said rocker arms at the delivery end of the table, and means for rocking said rocker arms to alternately retract the ejector plate out of the path of said cross bars and project it into the spaces between successive ones of said cross bars to successively discharge articles from between said cross bars, said last named means being wholly within the path of movement of said conveyer, and embodying an operative connection between one of the rocker arms and said supporting shaft.

14. A conveyer comprising an endless conveying element embodying a pair of endless flexible members connected at intervals by cross bars, means for supporting and driving said conveying element, a table for supporting articles placed between said cross bars until they reach a point of discharge, a rod rigidly supported transversely of and above the table, and retaining fingers suspended from said rod and extending longitudinally of the conveyer above the table in position to engage and retain the articles upon the table and between the cross bars while being moved by the latter.

15. A conveyer comprising an endless conveying element embodying a pair of endless flexible members connected at intervals by cross bars, means for supporting and driving said conveying element, a table for supporting articles placed between said cross bars until they reach a point of discharge, a rod rigidly supported transversely of and above the table, and retaining fingers suspended from said rod and extending longitudinally of the conveyer above the table in position to engage and retain the articles upon the table and between the cross bar while being moved by the latter, one of said retaining fingers being movably suspended from the rod for lateral adjustment toward or away from the other retaining finger to cooperate with articles of different lengths.

16. A conveyer comprising an endless conveying element embodying a pair of endless flexible members connected at intervals by cross bars, means for supporting and driving said conveying element, a table for supporting articles placed between said cross bars until they reach a point of discharge, a rod rigidly supported transversely of and above the table, a longitudinal guide bar suspended from the rod for adjustment laterally of the conveyer above the table, and a fixed longitudinal guide member at one side of the conveyer adapted to cooperate with said guide bar for guiding articles of different lengths while being moved on the table.

SAMUEL W. AVIS.