

April 19, 1938.

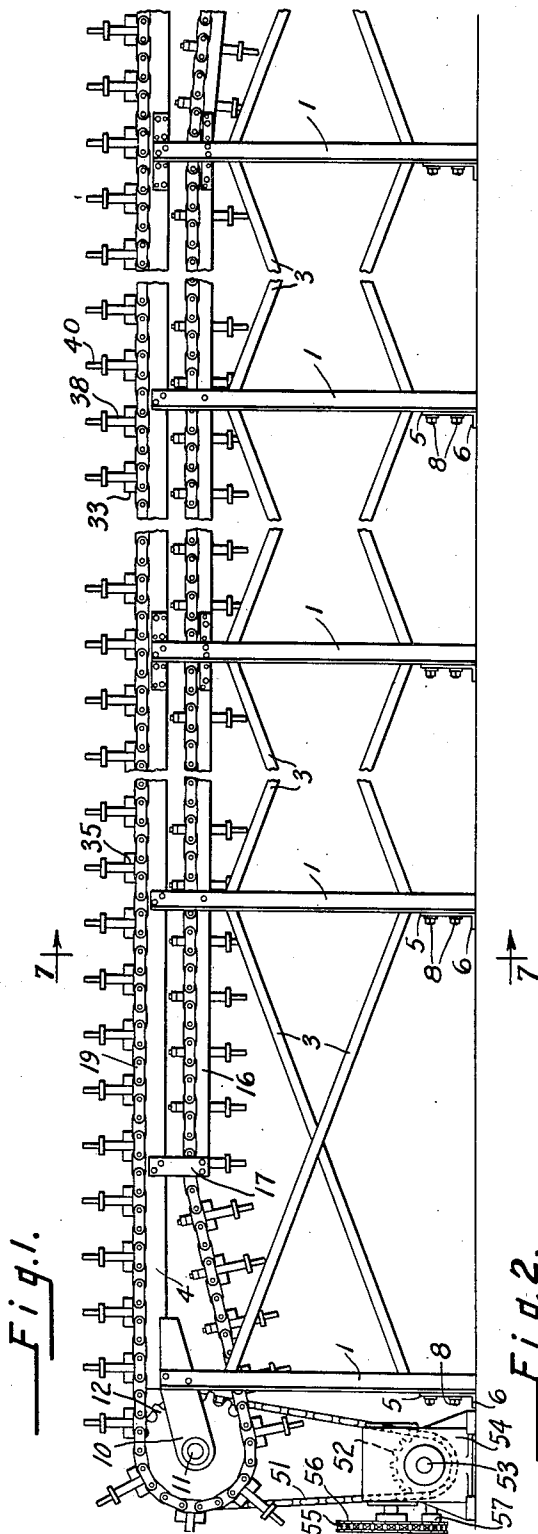
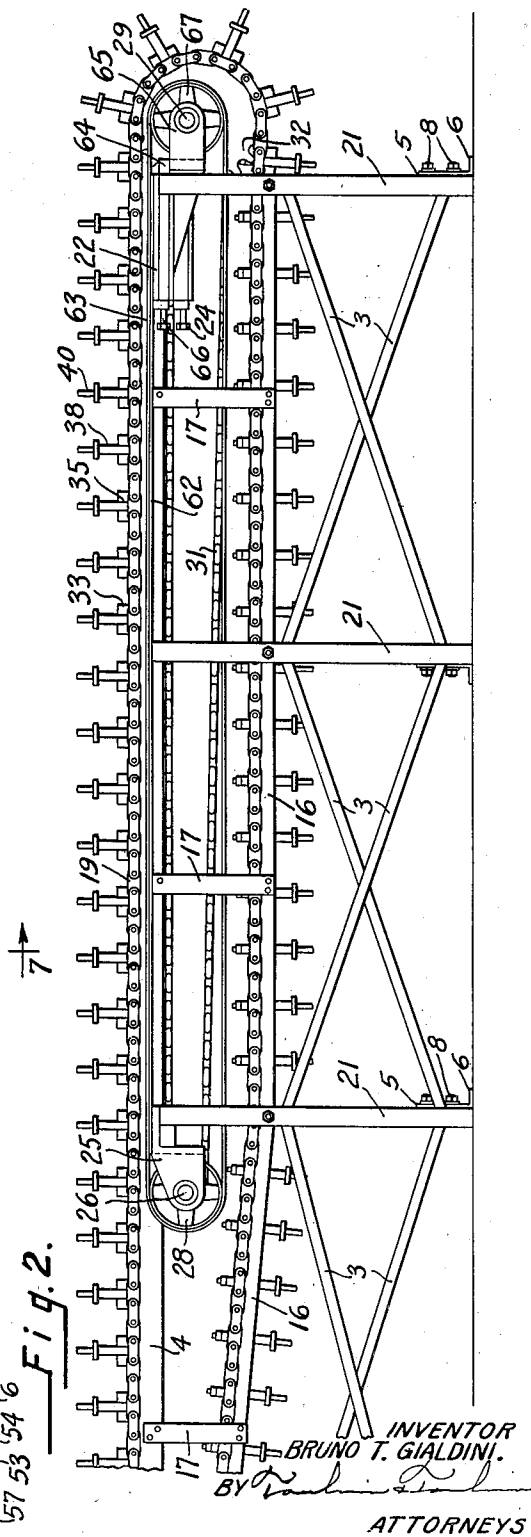
B. T. GIALDINI

2,114,486

LASTING CONVEYER

Filed March 13, 1936

4 Sheets-Sheet 1



April 19, 1938.

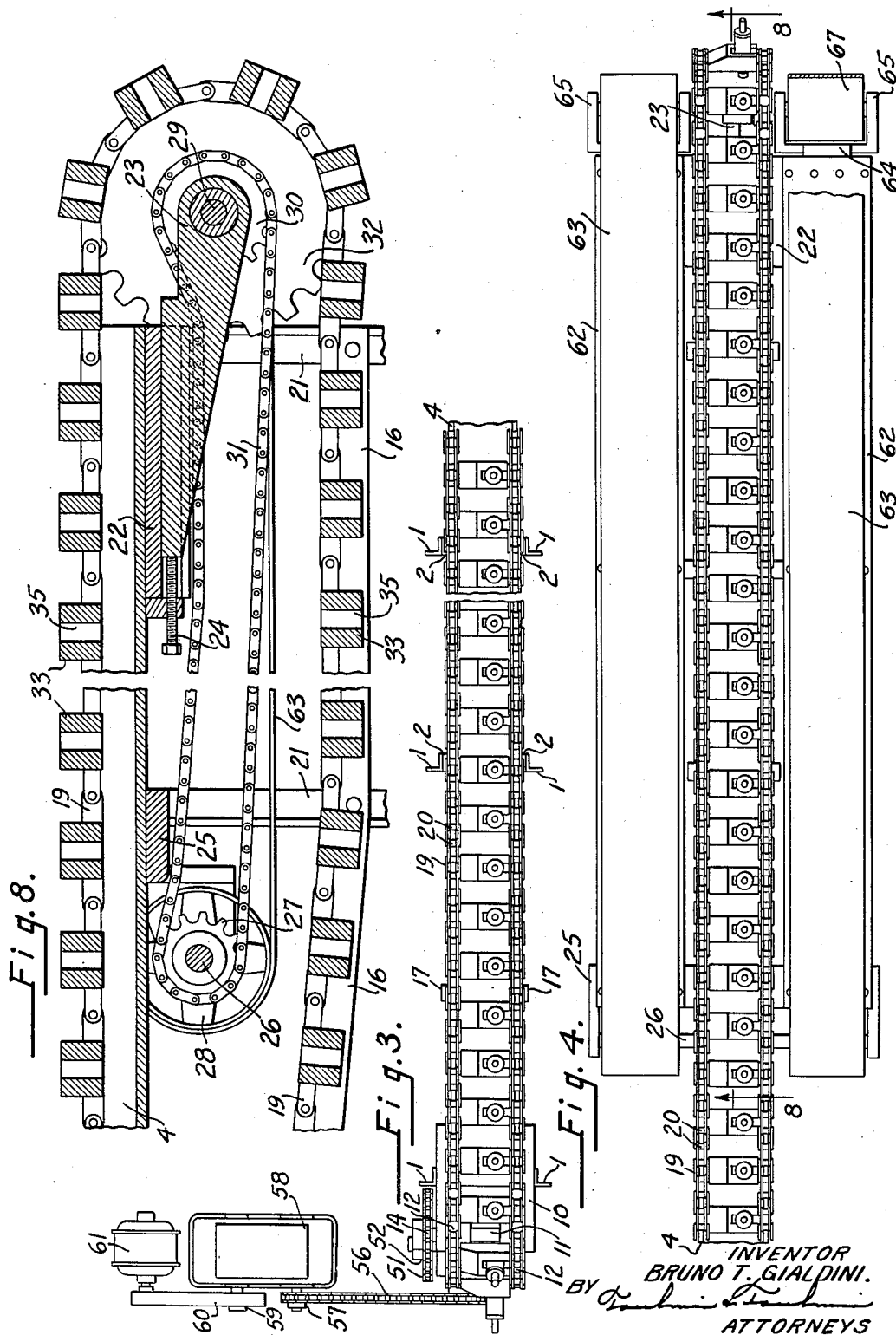
B. T. GIALDINI

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LASTING CONVEYER

Filed March 13, 1936

4 Sheets-Sheet 2



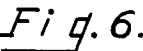
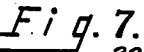
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Filed March 13, 1936

4 Sheets-Sheet 3



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LASTING CONVEYER

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4 Sheets-Sheet 4

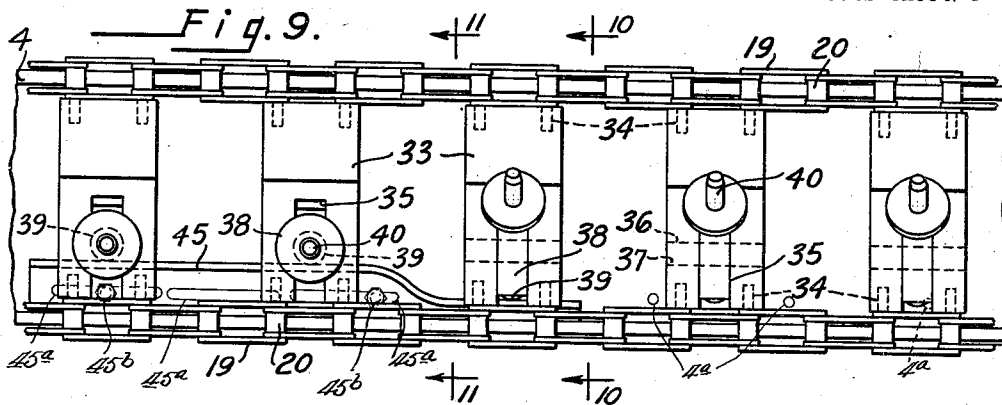


Fig. 10.

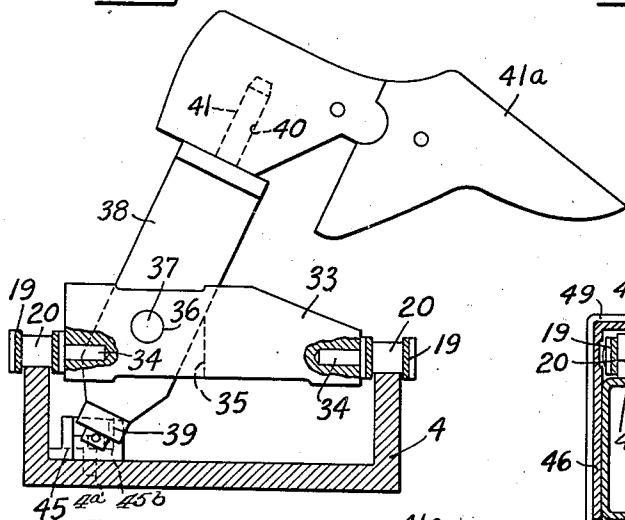


Fig. 12.

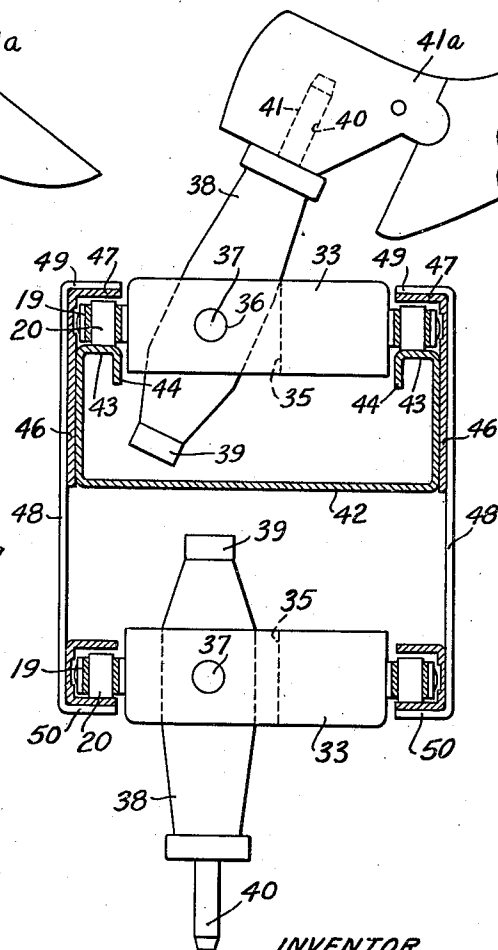
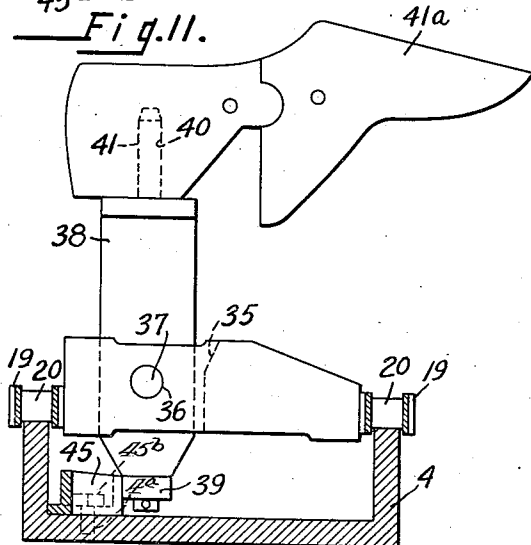


Fig. 11.



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UNITED STATES PATENT OFFICE

2,114,486

LASTING CONVEYER

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Application March 13, 1936, Serial No. 68,730

16 Claims. (Cl. 12—1)

My invention relates to conveying apparatus and particularly to such apparatus for supporting and conveying shoes during the operations of construction and assembly of the parts thereof.

It is a particular object of my invention to provide such means whereby to reduce a long operation to a number of short operations and eliminate handling them between locations operated upon.

It is a further object of my invention to provide such means whereby each operator is enabled to perform a short simple operation and thereby become skilled in speed and uniformity in the operation.

It is a further object of my invention to provide such means whereby to achieve the utmost economy of factory floor space, wherein only sufficient space for the operators and equipment need be provided and wherein aisle space for the accommodation of moving racks, which were formerly used, is eliminated.

It is a further object of my invention to provide such means wherein, during the operation, all shoes are exposed to the view of inspectors and operators at all times.

It is a further object of my invention to provide such means wherein certain operations in shoe construction may take place and wherein the conveyer provides support for the shoe during certain operations whereby the loss of time due to the necessity for removing the shoe from a carrier or rack and replacement thereof before and after the operation, is entirely obviated.

It is a further object of my invention to provide such means wherein the speed of the conveyer may be controlled within close limits, whereby the adjustment may be made to provide sufficient time for each operator to perform the respective operations correctly and thoroughly on each shoe and wherein the inducement to sacrifice thoroughness in the interest of speed is eliminated.

It is a further object of my invention to provide such means wherein the respective shoes are delivered to the respective operators in the same position and at the same height.

It is a further object of my invention to provide such means as will increase movement or turn-over of material and equipment and economy of the latter, such as lasts, due to the fact that the operator retains from the moving conveyer only the shoe upon which he is working, while the remainder of the work in construction is allowed to continue in progress to or from other operations and wherein, during the

performance of certain operations which are performed upon the conveyer, these operations are being performed while the shoe is in motion from the preceding operation to the succeeding operation.

It is a further object of my invention to provide such means which will eliminate handling time due to the clipping of coupons or noting of time on time slips in distributing shoes to the respective operators and taking them from the respective operators.

It is a further object of my invention to provide such means wherein the total elimination of the necessity for the undesirable handling of the shoes under construction by the operators is achieved whereby to eliminate the soiling of the finished shoes, which is particularly important in the construction of white shoes or shoes constructed of materials of light color.

It is a further object of my invention to provide a method of manufacture of shoes including a sequence of short simple operations performed by operators located adjacent to and spaced along the length of a slow moving conveyer of substantial length; which conveyer is especially adapted to present the work pieces to the respective operators at uniform intervals of time and in uniform and convenient position whereby to insure that each operator devotes sufficient time to the single operation performed by him and yet be prevented from rushing operations in order to produce periods of idleness.

It is a further object of my invention to utilize a conveyer speed especially adapted to provide sufficient time for the performance of those operations requiring the greatest amount of time and to compensate for the inequality of time necessary for the various operations by the use of a greater number of operators for performing those operations consuming the greatest amount of time, than is used for those operations requiring a lesser amount of time.

Referring to the drawings:

Figure 1 is a side elevational view of one end of the conveyer means, showing the chain drive sprocket and speed reducer;

Figure 2 is a side elevational view of the other end of the conveyer means, showing the chain idler sprocket;

Figure 3 is a top plan view of the end of the conveyer means shown in Figure 1;

Figure 4 is a top plan view of the other end of the conveyer means shown in Figure 2;

Figure 5 is an end elevational view of the con-

veyer means taken from the left of Figure 1, looking to the right;

Figure 6 is an end elevational view of the opposite end of the conveyer means shown in Figure 2, as seen from the right of that figure, looking to the left;

Figure 7 is an end elevational sectional view taken on the line 7—7 of Figure 1;

Figure 8 is an elevational sectional view taken on the line 8—8 of Figure 4;

Figure 9 is a fragmentary top plan view of the chain conveyer, cam means, and support therefor;

Figure 10 is a lateral sectional view in elevation taken on the line 10—10 of Figure 9;

Figure 11 is a view similar to Figure 10 taken on the line 11—11 of Figure 9;

Figure 12 is a transverse sectional view in elevation of a modified supporting means for the chain conveyer shown in Figures 9, 10 and 11.

The structure by which my invention is carried out, as herein illustrated, comprises a framework upon which is mounted, for travel lengthwise thereof, a conveyer chain having thereon transversely arranged supporting blocks, each having pivotally supported therein a transversely swingable arm having a shoe last supporting pin at the outwardly disposed end and having a roller rotatably mounted at the inner end thereof. The conveyer chain is supported by suitable support means having associated therewith removable and adjustable cam members which are adapted to cooperate with the rollers to raise the last-supporting arms to a vertical position in order to facilitate the removal of the shoe lasts therefrom. The supporting means for the chain conveyer includes a pair of sprockets disposed at each end of the supporting framework, one pair of which rotates freely and the other of which is connected with a variable speed transmission or speed reducer box which, in turn, is suitably connected to a prime mover such as a motor or engine. Conveyer belts are preferably disposed at one or both sides of the conveyer chain and may be of such extent, as may be desired, or they may be entirely omitted if found desirable. These conveyer belts may be driven from the chain drive means or, if desired, by any other suitable drive means. An additional feature of my invention relates to the means provided by me whereby the effective lengths of the various legs comprising the frame of the conveyer support may be selectively adjusted to compensate for inequalities in the level of the floor upon which the framework is supported.

One method of manufacturing shoes, to which the use of the structure of my invention is particularly adapted is as follows:

The first operator takes the lasts (having insoles attached), and places them on the conveyer belt along with uppers, box toes and counters for each.

The second operator places the box toe in the upper, removing these articles from the belt, and places an upper on each last.

The third operator removes the upper from the last, inserts the counter in the upper, picks up the last, places the upper over the last, and places the upper with the counter and box toe already assembled, on the last which is placed on the pin of the conveyer.

The fourth operator, who is the assembler, assembles the upper to the last by placing one tack at the heel while the last remains mounted on the pin on the moving conveyer.

The fifth operator removes the last and upper from the conveyer and inserts it in the pulling-over machine. The last is then replaced on the moving conveyer.

The sixth operator pulls the linings while the last and shoe are on the conveyer pin. This is done (while the conveyer is moving) manually, by the use of a pair of pincers and after the lining is pulled it is tacked in place.

The seventh operator removes the lasts having the shoes thereon from the conveyer and places them in a side-lasting machine. After side-lasting, the last and shoe are again placed on the moving conveyer.

The eighth operator for the toe lasting operation removes the last and shoe from the conveyer and pleats the toe, if this is done by a machine. If the toe lasting is done manually, the shoe remains on the conveyer and the first cam comes into action and tilts the last-supporting pin to the upright position to put the shoe in the best position for the operator to complete, manually, his operation of toe lasting.

The ninth operator removes the last and shoe from the conveyer and places them on a machine, and, after the operation of tacking the heel seat is completed, replaces the last and shoe on the moving conveyer.

The tenth operator, when the shoe is again tilted to upright position, as described above, stands at the heel side of the conveyer and pulls the tacks, while the shoe is moving on the conveyer.

The eleventh operator removes the last from the machine and performs the pounding operation on the shoe and then replaces the last and shoe on the conveyer.

The twelfth operator removes the last and shoe from the conveyer to a roughing machine and, after the roughing operation is carried out, replaces them on the moving conveyer.

The thirteenth operator, on the heel side of the conveyer, when the shoe is again tilted up by the cam as described above, inserts the shank as the shoe and last are moved by the conveyer.

The fourteenth operator removes the last and shoe from the conveyer, manually holds it and cements the bottom by means of a brush, the shoe having been in the down position when removed. After the cementing operation, the last and shoe are replaced on the moving conveyer.

The fifteenth operator inserts the bottom filler while the shoe is moving along the conveyer.

The sixteenth operator removes the last and shoe from the conveyer and places them on a drier. After the drying operation, the shoes are ready for their outsoles.

It is to be understood, of course, that the description of the various operators by the operations performed by them is merely illustrative and that the carrying out of my method may be achieved by any number of the respective operators described and that the number of the respective operators need not be equal because of the speed and facility with which certain operations may be performed.

Referring to the drawings and particularly Figures 1, 2, 5, 6 and 7, the supporting framework comprises a plurality of vertically disposed legs 1 having suitably attached at their top portions a plurality of longitudinally extending horizontally disposed spacer blocks 2. The adjacent legs 1 are connected to one another by means of angularly disposed brace members 3 which are rigidly attached thereto. Suitably secured between the spacer blocks 2 is a chain guide 4 comprising a

U-shaped channel member having the flanges thereof vertically disposed and the edges of said flanges suitably machined for a purpose which will hereinafter appear.

5 The lower ends of the transversely opposite legs 1 are connected by a vertically disposed member 5 having a horizontal flange or foot 6 and having elongated slots 7 therein, adapted to receive bolts 8 therethrough by means of which
10 bolts the legs 1 may be adjustably secured with respect to one another and to the member 5 in order to compensate for unevenness in the supporting floor structure. The aforementioned structure is that disclosed in Figures 1, 3, 5 and
15 7, and with reference particularly to those figures it will be noted that a bracket 10 is secured to the left end of the framework and carries a shaft 11, upon which is suitably attached a pair of chain sprockets 12.

20 These sprockets 12 are preferably rigidly secured to the shaft 11 in spaced relation. The shaft 11 also carries a sprocket 14 at one side thereof. Suitably disposed below the spacer blocks 2 and attached to legs 1 are similar spacer
25 blocks 15, which have chain roller guides 16 rigidly secured thereto. The chain roller guides 16, as shown particularly in Figure 1, terminate at some distance from the left end of the frame and the extreme ends of the chain roller guides
30 16 are suitably supported by means of brackets 17, which are attached to the sides of the chain guide 4. The spacer blocks 2 extend from side to side of the legs 1, but the opposite end of the framework has the side frame portions thereof
35 spaced outwardly therefrom, which side framework comprises the supporting legs 21. The legs 21 are interconnected in the same manner as the legs 1 by brace bars 3.

As shown particularly in Figure 8, a bracket casting 22 is secured to the underside of the member 4 which bracket casting 22 is supported by and secured to the tops of one pair of the leg members 21. The bracket casting 22 has a slide way therein, in which is slidably mounted the
45 bracket 23 which may be adjusted by the adjusting screw 24. Also secured underneath the member 4 and supported by and secured to the top of another pair of legs is a second bracket casting 25 which supports the shaft 26 and which
50 may be referred to as the shaft supporting bracket casting. The shaft 26 has rigidly secured thereto adjacent the center portion thereof the chain sprocket 27. Also rigidly secured to the shaft 26 at the end portions thereof is a pair of
55 belt pulleys 28. The bracket 23, hereinafter referred to, supports the shaft 29, which shaft has rigidly secured thereto at the center portion thereof a relatively small chain sprocket 30. This chain sprocket 30 is connected by means
60 of chain 31 with the above described sprocket 27, whereby the shafts 26 and 29 are supported to rotate together. At opposite sides of the chain sprocket 30 and rigidly secured to the shaft 29 is a pair of conveyer chain sprockets 32, which
65 cooperate with the sprocket 12 to support and move the conveyer over the guide members 4 and chain roller guides 16.

As may be clearly seen from Figures 1 and 2, the chain roller guides 16 adjacent the last-described end of the framework are disposed at a lower level than are the corresponding guides at the opposite end of the framework, and those guides which are at different levels are connected by means of an inclined guide at each side of
75 the framework. The chain roller guides 16 are

similarly disposed, being attached rigidly to the rails 15, as shown, for instance, in Figure 7. The chain conveyer comprises a pair of roller chains having the pin arm support blocks 33 disposed
5 therebetween. The blocks 33 are each supported by two pairs of chain roller pintles 34, which are extended inwardly for this purpose, as is clearly shown in Figure 9. Each of the blocks 33 has a transverse slot extending from one side and
10 therefore appears bifurcated in plan view, and the blocks 33 each have a bore 36 extending through the furcations thereof and perpendicular to the slots 35, which bores have pivot pins
37 disposed therein.

Pivotaly mounted on each pivot pin 37 is a
15 pin arm 38, which has rotatably secured at the lower end thereof the roller 39 and which carries at the top thereof the last-supporting pin 40 which is adapted to support a last 41a by engagement with a recess 41 therein, as shown
20 particularly in Figures 10, 11 and 12. It will be noted that the pin 40 is mounted on the longer portion of the pin arm 38, whereby the weight of the last 41a and shoe supported thereon will cause the pin arm 38 to be normally inclined, as
25 is shown in Figure 10. Adjustably mounted within the channel portion of the chain guide 4 by screw bolts 45b extending through slots 45a into bores 4a in the chain guide 4 (Figures 9, 10, and
30 11) is the cam member 45 which will cooperate with the roller 39 upon relative movement of the blocks 33 past the cam 45 to swing the pin arm 38 to a vertical position from the normal position, as may be clearly seen from a comparison
35 of Figure 10 showing the normal position of the pin arm 38, and Figure 11 showing the elevated or raised position caused by cooperation of the roller 39 with the cam 45. The details of the conveyer chains which have rollers 20 and links
40 19 are not believed to require description because these chains differ from conventional roller chains only in the extension inwardly of certain of the pintles 34, as shown particularly in Figures 9 and 10. It will be seen that the pin
45 arm support blocks 33 each remain aligned with a pair of inwardly disposed links 19 during the movement of the chain conveyers due to rotation of the supporting conveyer chain sprockets
12 and 32.

In Figure 12, I have disclosed a modification
50 of the chain conveyer support means disclosed in Figures 1 to 11 inclusive, in which modification I have substituted a substantially U-shaped pressed steel channel 42 for the guide 4. The channel 42 has the upper ends thereof inwardly
55 directed to form horizontally disposed flat roller supporting surfaces 43 and vertically disposed flat surfaces 44, which latter surfaces are adapted to cooperate with the end surfaces of the respective blocks 33 to prevent excessive transverse move-
60 ment of the chain conveyer. The sides of the channel member 42 each have inverted L-shaped angle members 46 securely attached thereto with the short legs thereof horizontally disposed and spaced from the surfaces 43 and in parallelism
65 therewith. The rollers 20 of the roller chains are received between the short leg portions 47 and the surfaces 43 of the channel 42. Rigidly secured to the outer surfaces of the inverted L-shaped members 46 is a pair of angle plates
70 48 which have inwardly directed top flanges 49 adapted to abut the portions 47 of the members 46 and lower inwardly directed flanges 50 to perform a function which will hereinafter appear. Disposed within the angle plates 48 and
75

resting upon the lower inwardly directed flanges 50 thereof is a pair of U-shaped channel members which are rigidly secured to the angle plates 48 and which receive the lower runs of the respective roller chains and provide a supporting and guiding surface for the rollers 20 of the roller chains. The angle plates 48 are adapted to have the legs 1 rigidly attached thereto. This structure is extremely less expensive than the like structure disclosed in Figures 1 to 11 inclusive and may, as will clearly appear, be substituted for the members 4 and 16 and also the spacer blocks 2 and 15. The sprocket 14, which is mounted on the shaft 11, is adapted to be connected by means of chain 51 to a sprocket 52 secured to a shaft 53, and the shaft 53 is connected by means in the housing 54 to sprocket 55, which is connected by means of chain 56 to sprocket 57 of the speed reducer or variable speed transmission, generally designated 58. The speed reducer 58 has thereon a pulley 59 which is connected by means of belt 60 to prime mover 61, which prime mover is illustrated as an electric motor, but it will, of course, be understood that any other suitable source of power may be utilized. Upon rotation of the pulley 59 of the speed reducer 58, the sprocket 57 thereof will be rotated at any desirable speed according to the adjustment made. The rotation of the sprocket 57 through chain 56 rotates sprocket 55, which in turn causes rotation of the sprocket 52 on shaft 53 at a speed reduced from that of sprocket 57. The rotation of the sprocket 52 is transmitted by means of chain 51 to the shaft 11 and the chain conveyer supporting sprocket 12, and it is thus seen that rotation of the chain conveyer supporting sprocket 12 causes movement of the chain conveyer including the pin arm supporting blocks 33, pin arms 38 and lasts 41a supported on the pins 40 lengthwise of the framework of the machine at a speed which may be controlled within narrow limits by proper adjustment of the speed reducer 58.

The rotation of the chain conveyer supporting sprocket 32, due to the movement of the chain conveyer, transmits rotation through shaft 29 to chain sprocket 30 which, through chain 31, drives the sprocket 27, which is attached to the shaft 26, which shaft, as described above, carries at either end thereof the belt pulleys 28. Supported at either side of the rails 2 with one end resting upon and secured to the bracket 25 and the other end resting upon and secured to the bracket support 64 is a plate 62, which provides a supporting table for the belt 63 hereinafter described.

Integrally secured to the right end of the framework (Figure 2) is a belt pulley bracket support 64 which supports a belt pulley bracket 65 for adjustment with respect thereto by adjustment of the set screw 66. This last described mechanism is similar to the above-described means 22, 23, 24 and operates in substantially the same manner. Secured for rotation in the belt pulley bracket 65 is a belt pulley 67 which cooperates with the above-described pulley 28 to support the conveyer belt 63. Upon rotation of the shaft 26 which is drivingly connected to the shaft 29 by the chain 31 and sprockets 27 and 30 as described above, the belt pulley 67 will be rotated in the same direction as the chain conveyer and at a speed proportional to the speed thereof, as will clearly appear (see Figure 8). The above drive connection between the chain conveyer belt and the belt conveyers, and the disposition of the latter in parallelism with and

adjacent the chain conveyer makes it possible to convey shoe parts adjacent the last conveying chain conveyer through a part of its extent and at a speed proportional to the speed of the chain conveyer for convenience of assembly of the parts to the last. The parts are thus accessible to the assemblers at all times and for each operation. While I have disclosed these belts 63 and supporting and driving means disposed on either side of the chain conveyer in Figure 4, it is, of course, to be understood that I comprehend within my invention the use of one such belt and supporting means at either side of the chain conveyer or, if desired, the elimination of both.

It is to be understood that the above description and the drawings related thereto are merely illustrative of one means of carrying out the spirit of my invention and in no wise limiting and that I intend to comprehend within my invention such variations in and adaptations of the above described structure, as will be necessary for the practice of my invention in widely varying circumstances.

It is particularly to be noted that by the use of the cam means, above described, I am enabled to cause presentation of the work to the respective operators in either of two positions, one of which, namely, that produced by the cam, being capable of being easily changed when desired by changing the position or contour of the cam. As will appear from the above description of the sequence of operations, one of these positions is more desirable for the performance of certain operations while the last and shoe are moving on the conveyer, while the other position is more desirable for the performance of certain other such operations. It is, of course, understood that the number of operations in sequence, which may be carried out in the above manner, may be varied within rather wide limits by changing the length of the conveyer as desired and by controlling the speed of the conveyer through operation of the speed reducer and that I comprehend within the spirit of my invention the practice of the method of shoe manufacture, in which any one or more of the above described operations may be omitted as well as such methods, in which other desired operations may be added to those described above.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A conveyer for use in the manufacture of shoes comprising, a frame having thereon a longitudinally disposed conveyer chain, said conveyer chain having pivotally connected between links thereof a block having a transverse slot and last-support means extending therethrough and pivoted with respect thereto for transverse swinging movement limited by the end of said slot, means to drive said chain, and means adapted to cause intermittent swinging movement of said last-support means.

2. A conveyer for use in the manufacture of shoes comprising a frame having thereon a longitudinally disposed conveyer chain, said conveyer chain having pivotally connected between the links thereof a block having a transverse slot and last-support means extending therethrough and pivoted with respect thereto for transverse swinging movement limited in one direction by the end of said slot, means including an adjustable speed reducer to selectively drive said chain at desired speed, and means adapted to cause intermittent

transverse swinging movement of said last-support means with respect to the conveyer chain.

3. A conveyer for use in the manufacture of shoes comprising a frame having thereon a longitudinally disposed conveyer chain, said conveyer chain having last-support means pivoted for transverse swinging movement, a pair of longitudinally disposed conveyer belts arranged on the frame adjacent the conveyer chain at either side thereof and having a drive connection therewith, means including an adjustable speed reducer to selectively drive said conveyer chain and conveyer belts, and means on the frame adapted to cause intermittent swinging movement of said last-support means when the conveyer is moving.

4. In a chain conveyer for supporting and presenting shoe supporting lasts to operators located at spaced positions along the sides thereof, a pair of roller chains spacedly connected by a plurality of pin arm supporting blocks mounted between inner adjacent links of the chains on extensions of the chain pintles, said blocks having therein transversely extending apertures adapted to receive a pin arm, said pin arm being pivoted for lateral swinging movement by means of a pivotal connection to the pin arm supporting block, said pin arm having a shoe last-support pin mounted at the outer end thereof and a roller pivoted at the inner end thereof, an angle member having upstanding legs adapted to support said chains, and having adjustably mounted therein a cam member adapted to cause swinging movement of said pin arm upon longitudinal travel of the pin blocks past the cam member.

5. Conveyer means for use in the manufacture of shoes comprising a frame having a pair of chain sprockets rotatably mounted at each end, said chain sprockets being adapted to support a chain conveyer and move it longitudinally of the frame, and a pair of longitudinally disposed belts arranged at either side of said chain conveyer at one end of said frame and having a driving connection with one pair of said chain sprockets, said chain conveyer including a plurality of pin arm support blocks, a pin arm pivoted in each of said blocks for swinging movement transversely of the chain conveyer, each of said pin arms having a pin at one end thereof adapted to cooperate with a recess in a shoe supporting last, said pin arms each having a roller pivoted on the other end thereof adapted to cooperate with means on the frame to cause intermittent upright positioning of each of said pin arms whereby, when the chain conveyer is moving longitudinally of the frame, the pin arms are intermittently swung upwardly into substantially vertical position whereby to present the shoe supported on the last for the convenience of an operator located adjacent the chain conveyer at one side thereof.

6. Conveyer means for use in the manufacture of shoes comprising a frame having a pair of chain sprockets rotatably mounted at each end, one pair of said sprockets being adapted to be selectively rotated at varying speeds through adjustment of a speed reducer, said chain sprockets being adapted to support a chain conveyer and move it longitudinally of the frame, and a pair of longitudinally disposed belts arranged at either side of said chain conveyer at one end of said frame and having a driving connection with one pair of said chain sprockets, said chain conveyer including a plurality of pin arm support blocks, a pin arm pivoted in each of said blocks for

swinging movement transversely of the chain conveyer, each of said pin arms having a pin at one end thereof adapted to cooperate with a recess in a shoe supporting last, said pin arms each having a roller pivoted on the other end thereof adapted to cooperate with means on the frame to cause intermittent upright positioning of each of said pin arms, said last-named means comprising a longitudinally disposed U-shaped channel adapted to guide the chain in supporting relation on the upwardly disposed legs thereof and having adjustably mounted therein a plurality of adjustable cams adapted for abutment with the rollers on the longitudinally traveling pin arms whereby, when the chain conveyer is moving longitudinally of the frame, the pin arms are intermittently swung upwardly into substantially vertical position whereby to present the shoe supported on the last for the convenience of an operator located adjacent the chain conveyer at one side thereof.

7. Conveyer means for use in the manufacture of shoes comprising a frame including pairs of vertically disposed legs supported at their lower ends by vertical transversely disposed plate members having horizontal flanges at the bases thereof, said plate members being adjustably connected to each of the respective legs connected thereby in order to provide means for compensating for unevenness in the supporting surface for said frame, said frame having a pair of chain sprockets rotatably mounted at each end, said chain sprockets being adapted to support a chain conveyer and move it longitudinally of the frame, and a pair of longitudinally disposed belts arranged at either side of said chain conveyer at one end of said frame and having a driving connection with one pair of said chain sprockets, said chain conveyer including a plurality of pin arm support blocks, a pin arm pivoted in each of said blocks for swinging movement transversely of the chain conveyer, each of said pin arms having a pin at one end thereof adapted to cooperate with a recess in a shoe supporting last, said pin arms each having a roller pivoted on the other end thereof adapted to cooperate with means on the frame to cause intermittent upright positioning of each of said pin arms whereby, when the chain conveyer is moving longitudinally of the frame, the pin arms are intermittently swung upwardly into substantially vertical position to present the shoe supported on the last for the convenience of an operator located adjacent the chain conveyer at one side thereof.

8. Conveyer means for use in the manufacture of shoes comprising a frame including pairs of vertically disposed legs supported at their lower ends by vertical transversely disposed plate members having horizontal flanges at the bases thereof, said plate members being adjustably connected to each of the respective legs connected thereby in order to provide means for compensating for unevenness in the supporting surface for said frame, said frame having a pair of chain sprockets rotatably mounted at each end, one pair of said sprockets being adapted to be selectively rotated at varying speeds through adjustment of a speed reducer, said chain sprockets being adapted to support a chain conveyer and move it longitudinally of the frame, and a pair of longitudinally disposed belts arranged at either side of said chain conveyer at one end of said frame and having a driving connection with one pair of said chain sprockets, said chain conveyer in-

cluding a plurality of pin arm support blocks, a pin arm pivoted in each of said blocks for swinging movement transversely of the chain conveyer, each of said pin arms having a pin at one end thereof adapted to cooperate with a recess in a shoe supporting last, said pin arms each having a roller pivoted on the other end thereof adapted to cooperate with means on the frame to cause intermittent upright positioning of each of said pin arms, said last-named means comprising a longitudinally disposed U-shaped channel adapted to guide the chain in supporting relation on the upwardly disposed legs thereof and having adjustably mounted therein a plurality of adjustable cams adapted for abutment with the rollers on the longitudinally traveling pin arms whereby, when the chain conveyer is moving longitudinally of the frame, the pin arms are intermittently swung upwardly into substantially vertical position to present the shoe supported on the last for the convenience of an operator located adjacent the chain conveyer at one side thereof.

9. In a last conveyer, spaced chains, interconnecting spaced transverse blocks therebetween each having a transverse slot extending from one end, last supports pivotally mounted on said blocks and projecting above and below said transverse blocks through said slots and cooperating with the ends of said slots to provide for limiting the inclination in one direction.

10. In a last conveyer, spaced chains, interconnecting spaced slotted transverse blocks therebetween, last supports pivotally mounted on said blocks and projecting through said slots above and below said transverse blocks and adapted to have their pivotal movement in one direction limited by the ends of said slots, and means for engaging with the lower end of said last supporting means for changing the angular position thereof with respect to the transverse interconnecting blocks by swinging the last supports away from said slot ends.

11. In combination, a pair of spaced tracks, associated chains having rollers adapted to ride upon the surface of the tracks, the links thereof being adapted to engage with the sides of the tracks; interconnecting spacer blocks having slots extending from one end partway therethrough and transversely arranged to connect said chains at intervals; and pivotally mounted vertically disposed last-supporting means mounted on said blocks and adapted to engage the ends of the slots to limit the pivotal movement in one direction of said last supporting means with respect to said blocks.

12. In combination, side frames comprising spaced oppositely disposed track means arranged at the top and bottom of said side frames, spaced conveyer chains having rollers thereon adapted to engage with and be guided by said spaced track means, longitudinally disposed interconnecting blocks for interconnecting said conveyer chains between their trackways; and last-supporting means pivotally mounted in said block

means and adapted to cooperate with a portion of said block means to limit the pivotal movement in one direction.

13. In combination, side frames comprising spaced oppositely disposed track means arranged at the top and bottom of said side frames, spaced conveyer chains having rollers thereon adapted to engage with and be guided by said spaced track means, longitudinally disposed interconnecting blocks for interconnecting said conveyer chains between their trackways; and pivotally disposed last-supporting means mounted in said block means, and stationary cam means for controlling the angular disposition in one direction of the last-supporting means with respect to the transverse block means and surfaces on said blocks for limiting the angular disposition in the opposite direction.

14. In combination, spaced track means, spaced chains engaging with the track means, means interconnecting the chains and arranged transversely thereof at intervals; last-supporting means pivotally mounted on the interconnecting means extending above and below the interconnecting means, means for engaging the last-supporting means to change its angular disposition; and means parallel to at least one of said chains and synchronously driven therewith comprising a conveyer belt and a supporting platform beneath said conveyer belt.

15. In combination, a pair of spaced supporting platforms, conveyer belts adapted to move over said supporting platforms, means for pivotally supporting said conveyer belts at either end thereof, a pair of spaced chains arranged between said spaced conveyer belts synchronously driven with said conveyer belts, means transversely arranged of said chains for interconnecting them, means on said transverse interconnecting means for supporting shoe lasts at different angular positions; and track means for supporting said chains, transverse interconnecting means and last-supporting means.

16. A trough-shaped means, the edges of which are adapted to support conveyer chains, and the trough of which supports a cam means, cam means located therein; conveyer chains adapted to ride upon the margins of said trough means; transversely arranged slotted blocks interconnecting said chains, vertically disposed last-supporting members arranged in the bifurcated portions of said blocks pivotally thereof and extending above and below said blocks; means on the lower end of said last-supporting means for engaging with said cam means and pin means on the upper end of said last-supporting means for engaging in the pin holes of the lasts, the portions of said blocks between the bifurcated portions thereof being adapted to limit movement of said last supporting members in one direction when they are disengaged from said cam.

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