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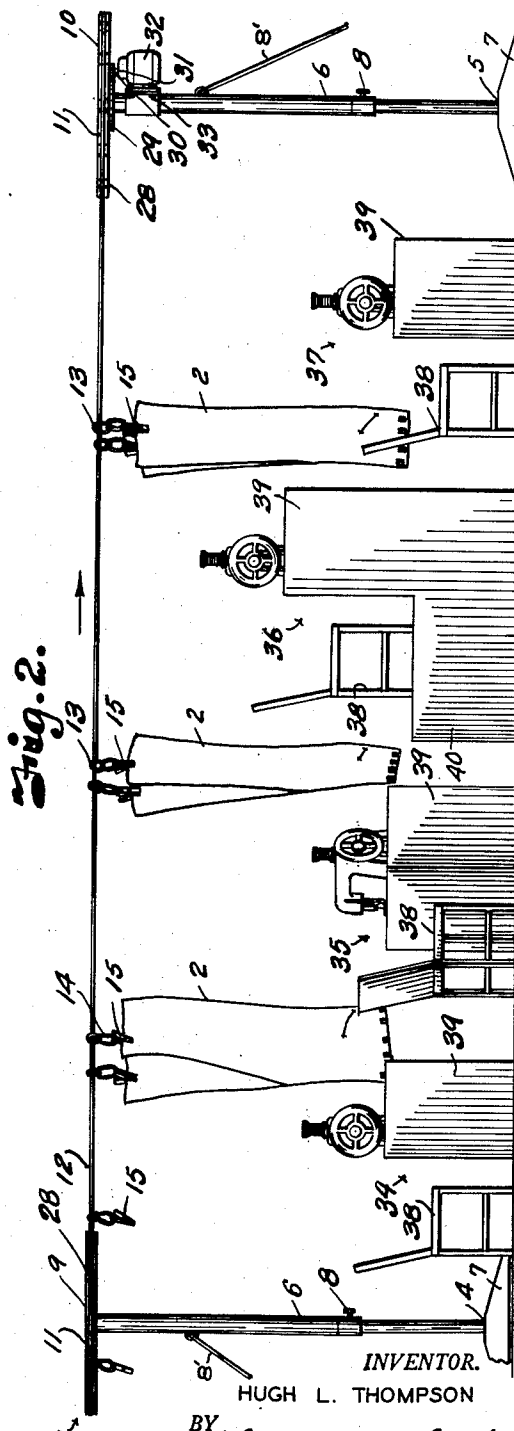
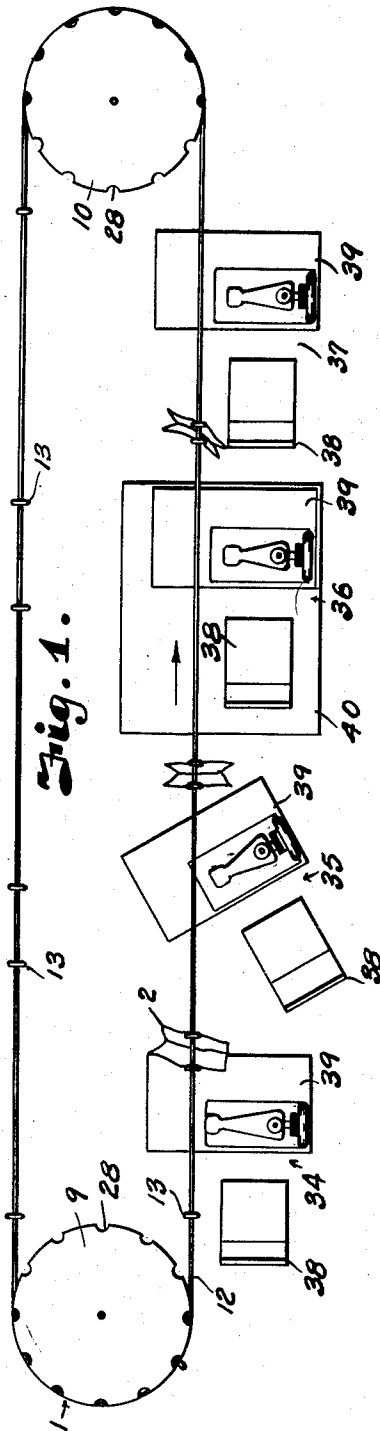
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2,582,178

GARMENT CONVEYER

Filed June 10, 1946

2 SHEETS--SHEET 1



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2 SHEETS—SHEET 2

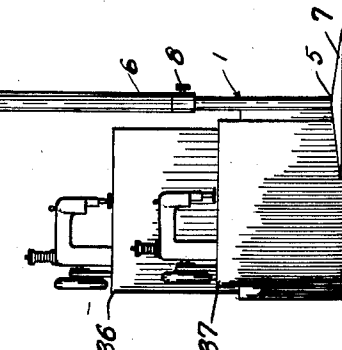
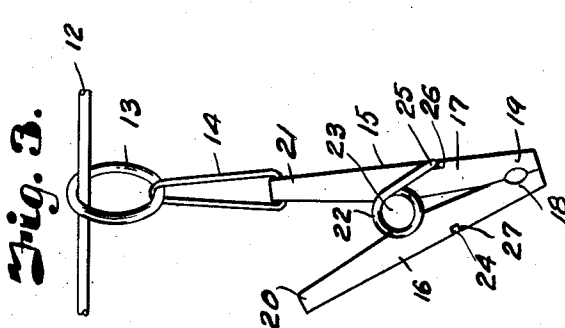
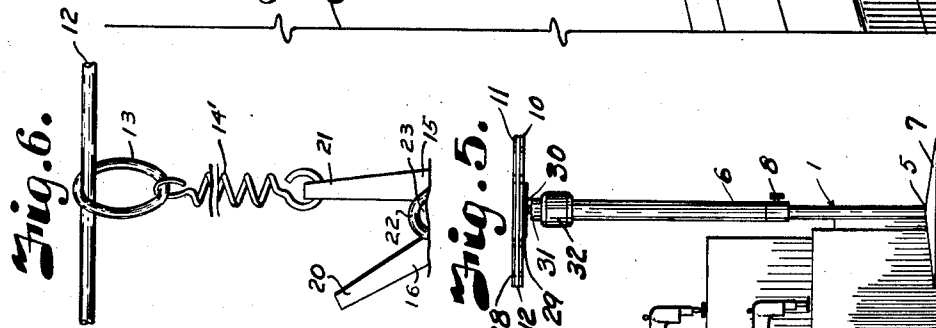
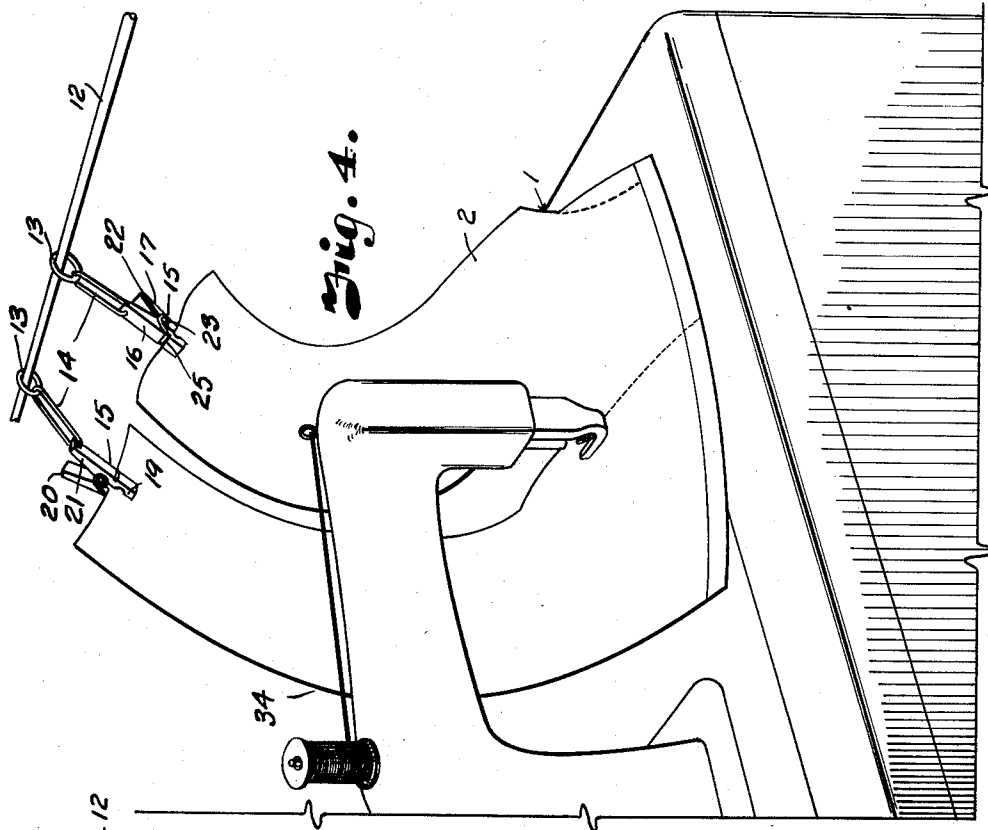


Fig. 3.

Fig. 5.

Fig. 4.

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GARMENT CONVEYER

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5 Claims. (Cl. 198—19)

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This invention relates to apparatus for carrying articles under manufacture or assembly through various work stations, for example, parts of garments to the sewing, button attachment, and other work performing stations required for the completion of garments.

Heretofore in the assembly of garments, an operator must pick up parts on which she works, arrange the parts in their required relation and then perform her allotted part of work on the garment. As an operator finishes her allotted work, the garments are piled in a stack to await removal to the next operator. It is obvious that much time is lost in picking up, sorting, and arranging the parts before an operator starts the actual work. Also, for many reasons, garments may accumulate at one operator's station while the succeeding operator has finished her work supply. Such irregular movement of the work is not inductive to good and efficient work or in a uniform high standard of quality in the finished product. It is also difficult for supervisors to make inspections and to efficiently adjust the work to be carried on by each worker so as to maintain a smooth, steady flow of production. Other difficulties are that the parts are likely to be mixed, that is, parts cut from one fabric may be incorporated in a garment with parts cut from another piece of fabric with the result that the finished garment may have different shades in parts thereof. In many cases the garments are soiled by dropping on the floor or the cloth becomes wrinkled and disarranged. Many of these difficulties are also present in the straight line progressive piece systems now in use by many manufacturers.

Therefore, the principal objects of the present invention are to overcome these difficulties by providing a garment conveyer wherewith partly finished garments are carried in successive order from one operator to the next; to provide for support of the garments by the conveyer while they are being worked upon by the operators; to provide a conveyer which permits better observance of the flow of production and inspection of the garments by the supervisors; and to provide for location of the operators at different elevations relatively to the conveyer so that the operating machine is in position to act on the work while the work is supported from the conveyer.

In accomplishing these and other objects of the invention hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a plan view of a conveying apparatus and associated work performing machines ar-

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ranged in accordance with the present invention.

Fig. 2 is a longitudinal elevational view of the apparatus.

Fig. 3 is a perspective view of one of the garment clips and its supporting ring.

Fig. 4 is an enlarged perspective view illustrating support of the garments by the conveyer while they are being worked upon at one of the operator's stations.

Fig. 5 is an end view of the apparatus.

Fig. 6 is a modified form of garment attaching means.

Referring more in detail to the drawings:

1 designates an apparatus for facilitating assembly of the parts of an article of manufacture; for example, garments such as work pants, indicated at 2 in the drawing. Work pants are usually assembled from two main parts, a front composed of a right front and a left front and a back composed of a right back and a left back which require certain operations thereon before the front and back parts are united. For example, operations involved in completing the backs are:

- 25 Serge the backs
- Dart the backs
- Set the left pocket
- Set the right pocket
- Finish the left pocket
- 30 Finish the right pocket

The operations carried upon the fronts of the garment are:

- 35 Serge the fronts
- Set and finish the watch pocket
- Set the front pockets
- Sew the buttonhole fly on left front
- Sew button fly on right front

The operations carried on in assembling the backs and fronts are:

- Sew the outseams
- Sew the inseams
- Sew on the band
- 45 Sew on curtain
- Serge edges of backs from waist to crotch
- Face button fly
- Stitch band
- Tack and stitch down buttonhole fly
- 50 Buttonhole pants and pockets
- Seat seam from top of waist to bottom of fly
- Tape crotch
- Sew on buttons
- Tack belt loops
- 55 Tack pockets

In view of the above operations, the assembly of work pants may best involve the use of at

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least three conveyers of the type illustrated, one for carrying the backs to the stations at which the above mentioned operations of the backs are performed, one for use in connection with work on the fronts, and a finished line conveyor to facilitate completion of the assembly and finish of the garments. However, any number of conveyers may be used or the length of the conveyers may vary to accommodate the required operating stations in finishing any given type of workpiece.

In the illustrated instance a conveyor includes laterally spaced stands 4 and 5 each including telescoping sections 6 supported on a base 7 and which are adapted to be adjusted for height upon loosening of a clamping screw 8. If necessary the stands may be braced by guys 8' to maintain stability thereof. Journalled on the upper ends of the stands are wheels 9 and 10 having grooves 11 in the periphery thereof to accommodate an endless cable 12 such as a wire, rope, or the equivalent. The cable 12 preferably has a smooth exterior for mounting a plurality of rings or the equivalent 13 that are adapted to be frictionally engaged therewith or to slide relatively thereon. Flexibly attached to the rings 13 by connectors 14 are clips or pins 15 having substantially the shape of a clothespin as shown in Fig. 3. The connectors may be formed of stretchable material such as rubber or they may be coil springs 14' as shown in Fig. 6. The clip illustrated includes a pair of pivoted levers 16 and 17 having gripping jaws 18 and 19 on one of their ends to engage a workpiece therebetween. The other end of the levers serve as handle portions 20 and 21 by which the jaws may be moved apart against action of a coil spring 22. The coil spring 22 is wrapped about the pivot connection 23 between the levers and which has its ends 24 and 25 engaging in notches 26 and 27 of the respective levers.

The periphery of the wheels 8 and 9 have transverse grooves or recesses 28 to accommodate the rings 13 therein when the rings are being carried around the periphery of the wheels, for example, the wheel 9. One of the wheels, for example, wheel 9, carries a ring gear 29 meshing with the pinion gear 30 that is fixed to the armature shaft 31 of a variable speed motor 32. The motor 32 is mounted in position on the post 5 by a bracket 33. The conveyor cable or strand 12 is thus adapted to move along a line of work stations 34, 35, 36 and 37 and returned on the opposite side of the wheels so as to travel along additional stations if desired. The stations 34 may be equipped with the machines necessary to perform the work to be accomplished on the workpieces carried by the conveyor such as a sewing machine, button attaching machine and the like. The machines are located at a level with the work to be accomplished on the respective workpieces. For example, the machine at the station 34 may be used for operating on a part of a garment near the waistband. Therefore, when the garment is attached to the clips and suspended from the link portions thereof, the machine will be at a convenient level to permit the operator seated on the chair 38 to sew the waistband while the garment is supported from the cable of the conveyor.

As long as the operator is holding onto the garment or the garment is in the machine the cable will merely slide through the rings. However, when the operator finishes the work and

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pushes the garment away from the machine, the weight of the garment on the rings will cause the rings to be moved along the cable until the lower portion of the garment strikes a part of the next station 35 so that it is in position for the operator of the next station to effect the work allotted to her after she has completed her work on the preceding garment and has been moved along to the next station.

The operator at the next station 36 may be required to work on a higher portion of the garment. Therefore, the machine will be carried on a stand 39 and the operator's seat is supported on a platform 40 as best shown in Fig. 2.

Should one of the operators get behind with her work the garments which have been worked upon at a preceding station will be carried along by the conveyor cable and will be stopped when they strike a part of that operator's work station; for example, the table on which the machine is supported. The garments will continue to accumulate and be supported in position, but the operator may quickly grasp the first garment, move it into sewing position which when completed frees the garment for travel to the next station. Should an operator get too far behind with her work the system may be planned so that another operator may be provided for that particular work on the garment. Then, the first operator may let every other garment go by so that the second operator's work is in timed relation with the other operator's.

In using the apparatus, the height of the cable from the floor may be adjusted to suit the length of the workpieces, and the stations arranged along the conveyor in desired sequence. The operator at the first station would take a part of a garment at a time from a pile and attach it by one of the clips to one of the rings of the conveyor or she might first do her work and then clip the garment to a pair of adjacent clips being carried on the cable of the conveyor. When the work is completed, release of the garment permits the cable to pick up the garment and carry it to the next station where it stops in position to be engaged by the next operator. This operator may perform her allotted work and the garment passed on to the next operator and so on until it passes the last work station of the conveyor. The garment may then be removed and applied to a succeeding conveyor where it is carried along the various work stations associated therewith.

During movement of the workpieces along the conveyor they are readily inspected by the supervisor. The garments are supported while being worked upon at their respective stations so that it is not necessary for the operator to support and position the garment preparatory to performing her allotted work. The garments are also supported off of the floor so that they are not apt to become soiled or disarranged.

It is obvious that the set up at the various stations might be changed from time to time due to change in style of the garment or the method of making the same. It is also obvious that various set-ups may be provided for different types of garments that may be manufactured. The fact that the apparatus described is adapted to be easily and quickly altered permits the efficient and economical machining of various garments to be produced by the machine.

From the foregoing it is obvious that the conveyor furnishes the operators with an orderly flow of work and that by use of the conveyor

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there is a substantial reduction in the time required in handling of the work as it is brought close to the operator in a convenient position. All the garments are delivered to that operator in the same position and handling of the work away from the machine is practically eliminated.

It is also obvious that the parts of the garment cannot become mixed. This is a very important feature as it will eliminate shading which often results when a garment is made of fabric cut from different pieces of goods. The ease with which help may be given to every operator should they lag behind is also a feature of the invention and helps to maintain a steady flow of garments through the production lines. The individual movement of the respective workpieces also permits the increased visual control by the supervisors.

Use of the conveyers provides for more usable and clearer floor space as many of the tables, bins, baskets and the like ordinarily used in connection with manufacture of garments are eliminated.

What I claim and desire to secure by Letters Patent is:

1. An apparatus for carrying the parts of a garment to a plurality of work performing stations including an endless cable, means supporting the cable with a run of said cable passing said work performing stations, carriers on the cable having only a frictional engagement with the cable, clips for attachment to the parts of the garment and flexible means connecting the clips with said carriers for suspending said parts with the weight of the parts providing the force necessary to effect movement of the work carriers when said parts are freely suspended from the cable, said carriers being slidable on the cable when the parts suspended therefrom are worked upon at the respective stations.

2. An apparatus for carrying the parts of a garment to a plurality of work performing stations including an endless cable, means supporting the cable with a run of said cable passing said work performing stations, carriers on the cable having only a frictional engagement with the cable provided with means for suspending said parts with the weight of the parts providing the force necessary to effect movement of the work carriers when said parts are freely suspended from the cable, said carriers being slidable on the cable when the parts suspended therefrom are worked upon at the respective stations, and flexible connections between the part engaging means and the carriers to permit adjustment of the parts at said work performing stations while the carriers remain in frictional contact with the cable.

3. An apparatus for carrying parts of a garment to a plurality of work performing stations including laterally spaced wheels disposed in a substantially horizontal plane, standards for supporting the wheels to rotate about vertical axes, an endless cable extending around the wheels to provide a longitudinal run of said cable adapted for operating along the series of stations, workpiece supporting clips, rings connected with said clips and loosely and completely encircling said cable for frictionally engaging the cable under weight of the workpieces to carry the work-

pieces with movement of the cable, said connections being flexible to permit turning of the workpieces about in various directions while the workpieces are detained at the stations and the cable passes freely through the rings, and means for rotating one of said wheels.

4. An apparatus for carrying parts of a garment to a plurality of work performing stations including laterally spaced wheels disposed in a substantially horizontal plane, standards for supporting the wheels to rotate about vertical axes, an endless cable extending around the wheels to provide a longitudinal run of said cable adapted for operating along the series of stations, workpiece supporting clips, rings connected with said clips and loosely and completely encircling said cable for frictionally engaging the cable under weight of the workpieces to carry the workpieces with movement of the cable, said connections being flexible and having resilient portions to permit turning of the workpieces about in various directions while the workpieces are detained at the stations and the cable passes freely through the rings, and means for rotating one of said wheels.

5. An apparatus for carrying parts of a garment to a plurality of work performing stations including laterally spaced wheels disposed in a substantially horizontal plane, standards for supporting the wheels to rotate about vertical axes, an endless cable extending around the wheels to provide a longitudinal run of said cable adapted for operating along the series of stations, workpiece supporting clips, rings connected with said clips and loosely and completely encircling said cable for frictionally engaging the cable under weight of the workpieces to carry the workpieces with movement of the cable, said connections being flexible to permit turning of the workpieces about in various directions while the workpieces are detained at the stations and the cable passes freely through the rings, means for rotating one of said wheels, said supports including telescoping sections to adjust height of the cable, and means interconnecting said sections to support the sections in adjusted position.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
788,542	Leue	May 2, 1905
1,335,331	Gunderson	Mar. 30, 1920
1,434,532	Davala	Nov. 7, 1922
1,766,645	Johansson	June 24, 1930
1,860,704	Constable	May 31, 1932
1,981,124	Schmidt	Nov. 20, 1934
2,264,032	Webb	Nov. 25, 1941
2,280,221	Dambach	Apr. 21, 1942
2,347,578	Rohr	Apr. 25, 1944
2,425,141	Bernau	Aug. 5, 1947

FOREIGN PATENTS

Number	Country	Date
231,586	Great Britain	Apr. 3, 1925