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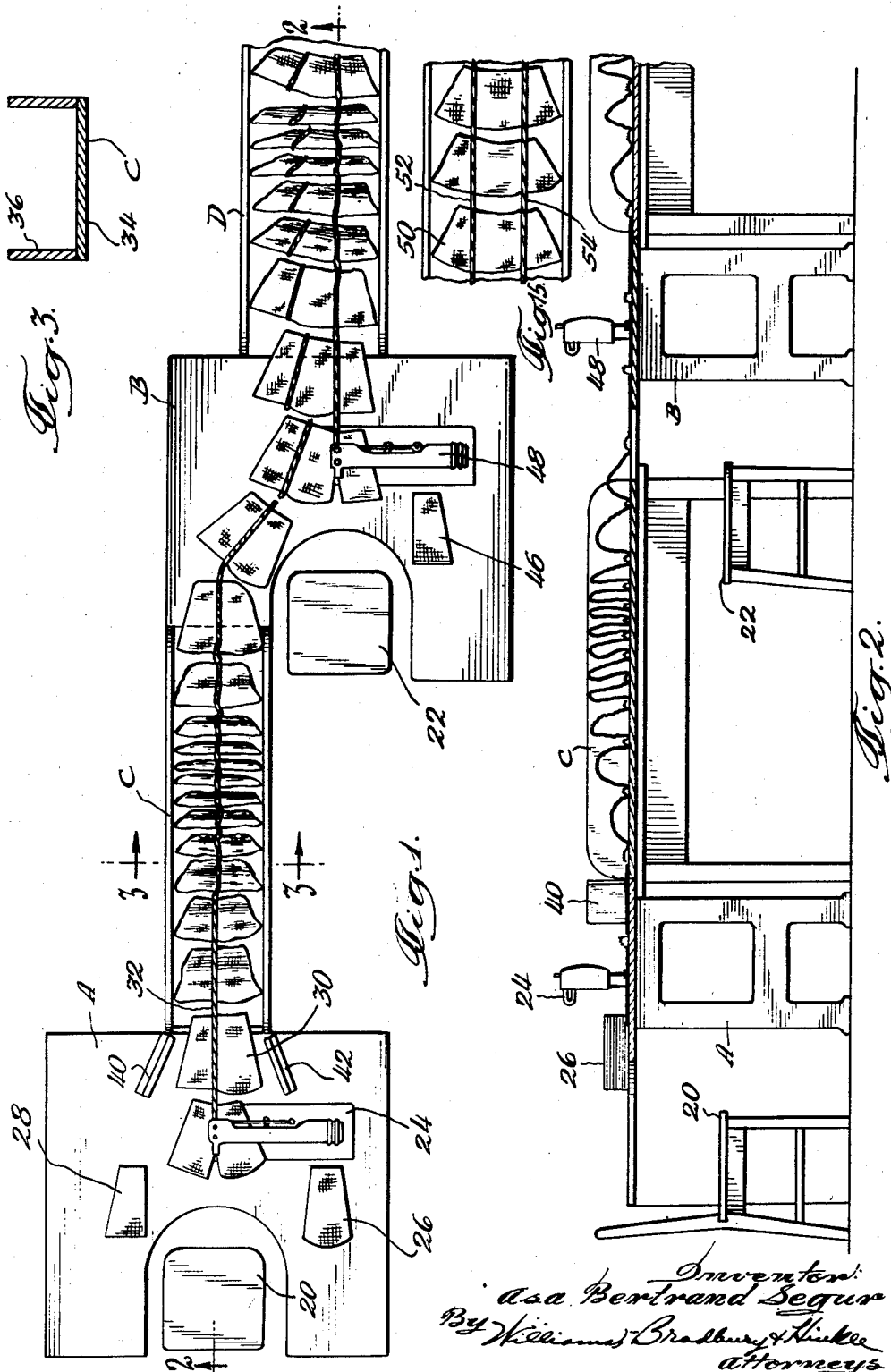
A. B. SEGUR

2,492,925

PROCESS FOR CHAIN OPERATIONS

Filed March 12, 1946

3 Sheets-Sheet 1



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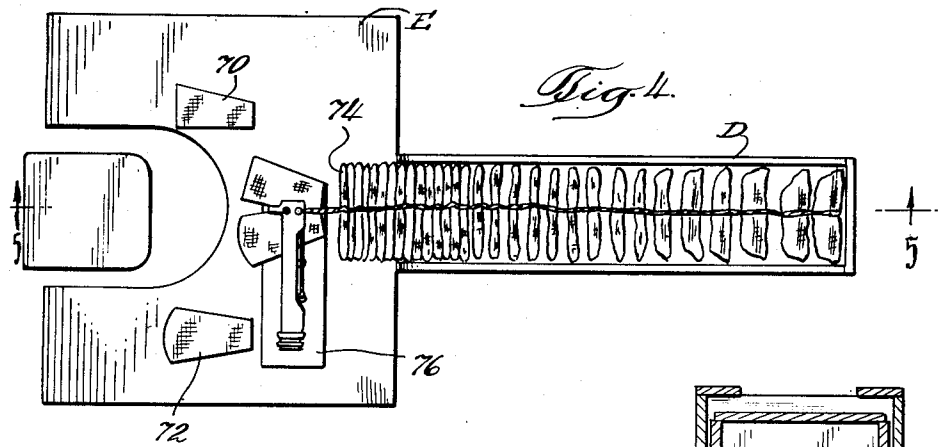
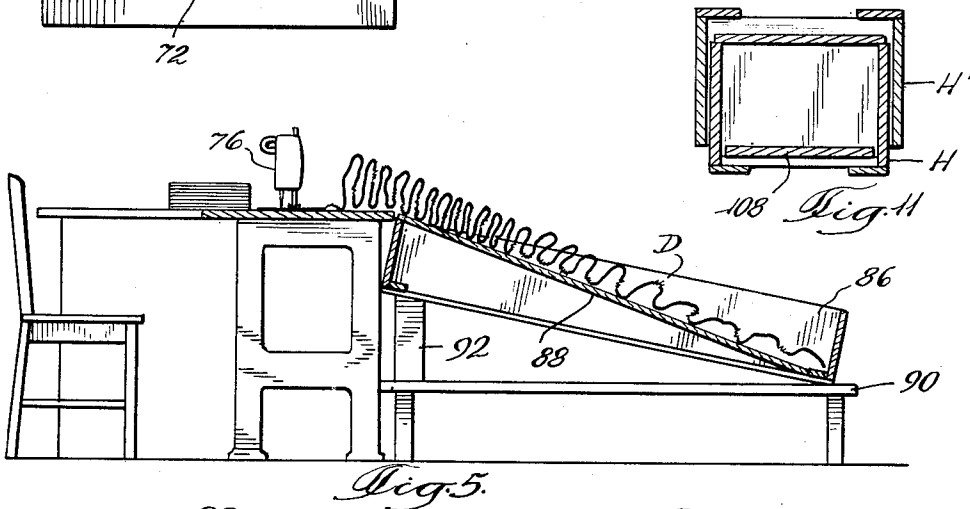
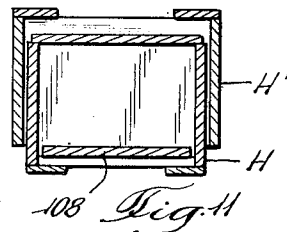
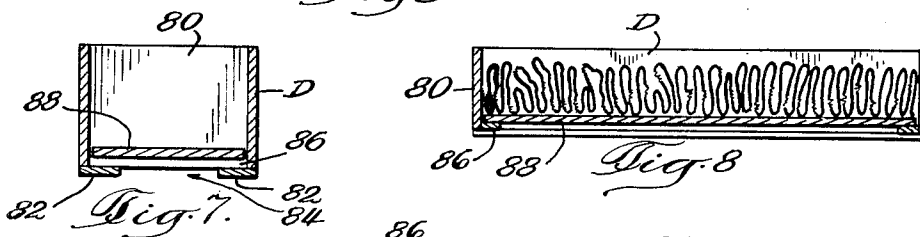
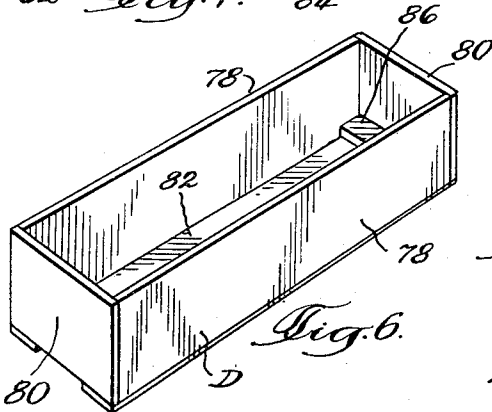
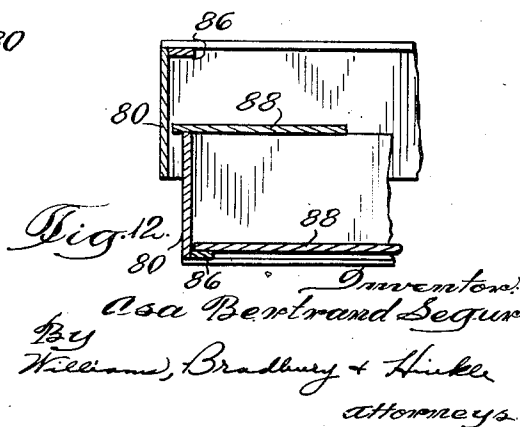
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3 Sheets-Sheet 2



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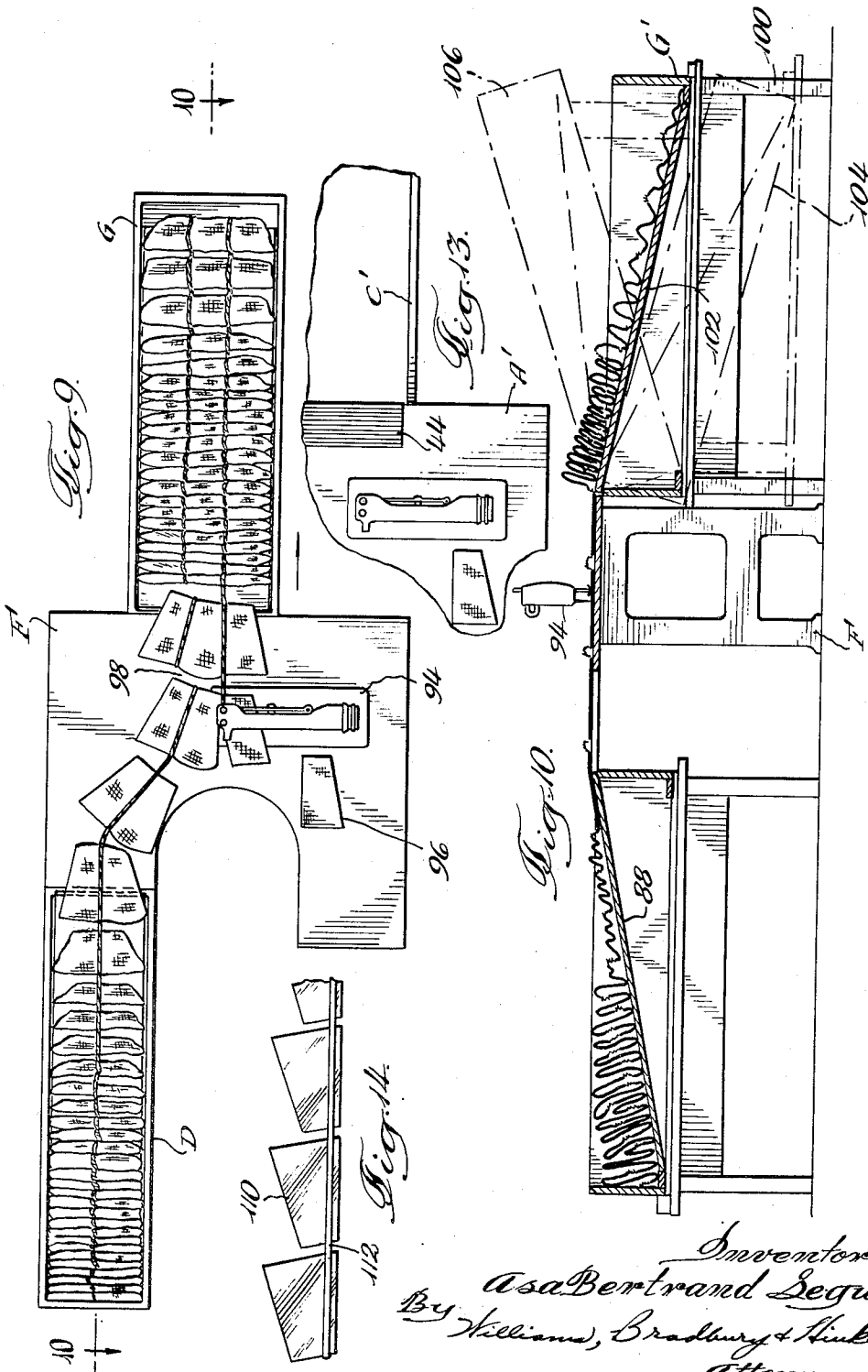
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PROCESS FOR CHAIN OPERATIONS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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PROCESS FOR CHAIN OPERATIONS

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5 Claims. (Cl. 2-243)

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My invention relates to process and apparatus for chain operations and is especially adapted for but not limited to the chain sewing of garments and like articles.

In the mass production manufacture of garments and like articles, it is common to carry on the production sewing by means of what is sometimes known as section work. In section work one operator sews only one particular part of each garment. The output of this operator then is made available to a second operator who effects a further operation on the output of the first operator, and the output of the second operator is passed on to a third operator, and so on until the garment is completed. In this type of manufacture each operator quickly and efficiently performs the same operation on an exceedingly large number of garments.

When an operator completes her sewing operation on a first garment, she attaches this first garment to a second garment and each succeeding garment by means of a thread or series of threads to form what is generally known as a chain. This chain is allowed to flow into some suitable receptacle until a predetermined number of garments, or lot, have been sewed by such operator. The sewing operator or another operator then cuts the garments apart and stacks them for the next operator who in turn removes each garment separately to perform a sewing operation thereon and form a new chain which in turn is cut apart before the garments are turned over to a third operator.

It has long been known that in many cases it would be highly advantageous to transfer the chain from one operator to the next and to perform successive sewing operations on the chain without cutting it apart between operators. Heretofore, however, this has not been feasible because of twisting and tangling of the chain and the loss of time and effort required to straighten out and rearrange the garments before performing a second operation thereon. It is therefore the usual custom to cut apart the garments of a chain between successive operations on such garments.

An object of my invention is to provide new and improved process and apparatus whereby the garments forming part of a chain need not be cut apart between successive operations on such garments.

Another object of my invention is to provide new and improved process and apparatus whereby a natural fold or lay is formed in the garments of a chain and such lay is preserved in

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transferring the chain from one operation to the next.

Another object of my invention is to provide new and improved apparatus which is inexpensive and widely adaptable to permit great flexibility in applying the process to specific manufacturing conditions.

Another object of my invention is to provide new and improved process and apparatus adapted to a wide variety of manufacturing operations wherein flexible articles or flexible parts are connected together in a chain by sewing, continuous strips, or in any other similar manner in the course of manufacture.

Other objects and advantages will become apparent as the description proceeds.

In the drawings:

Fig. 1 is a top plan view of a production layout embodying a preferred form of my invention;

Fig. 2 is a vertical sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is a transverse sectional view through the chute of Fig. 1 and is taken on the line 3-3 of that figure;

Fig. 4 is a top plan view of a modified form of production layout;

Fig. 5 is a sectional view taken on the line 5-5 of Fig. 4;

Fig. 6 is a perspective view of the guiding and receiving tray forming part of the apparatus shown in Figs. 4 and 5;

Fig. 7 is a transverse sectional view of the tray of Fig. 6;

Fig. 8 is a longitudinal sectional view through a guiding and receiving tray showing the arrangement of a chain during transfer from one operator to another;

Fig. 9 is a top plan view of a production layout for performing a second sewing operation on the chain formed in the production layout of Figs. 4 and 5;

Fig. 10 is a sectional view taken on line 10-10 of Fig. 9;

Fig. 11 is a transverse sectional view showing two guiding and receiving trays arranged for transferring and inverting a chain;

Fig. 12 is a partial longitudinal sectional view through a similar arrangement of trays;

Fig. 13 is a partial view of a modified form of production layout utilizing a piece of friction material in the path of the chain to facilitate the formation of a natural fold or lay;

Fig. 14 is a view of a chain of cellophane articles connected by a plastic strip; and

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Fig. 15 is a view showing a chain in which the original stitching is maintained intact through a second sewing operation.

Referring particularly to the embodiment of my invention shown in Figs. 1 and 2 of the drawings, I have therein illustrated a production layout comprising a first sewing table or position A with a chair 28 for a first sewing operator and a second sewing table or position B with a chair 22 for a second operator. A suitable sewing machine 24 is located on the table A. The operator who utilizes this table is engaged in sewing together two blanks 26 and 28 to form a partially completed garment 30. The entire time of the operator at station A is occupied in sewing together blanks like the blanks 26 and 28 shown in the drawing to form the partially completed garments 30 which are connected by threads 32 to form a chain, as clearly indicated in these figures.

As the partially completed garments 30 leave the table A they are pushed into a chute indicated generally by the letter C. As more clearly shown in Fig. 3, the chute C comprises a bottom 34 and sides 36 and 38. The sides of the chute are spaced so that they closely correspond to the natural width of the garments 30 and closely confine these garments as they are pushed lengthwise of the chute from table A to table B. In some instances, it is desirable to facilitate the entry of the garments into the chute C by means of guides 40 and 42 which are illustrated in Fig. 1 as being located on the table A adjacent the entrance to the chute C.

As the operator at table A pushes the garments to the right as viewed in Figs. 1 and 2, each garment slides over the adjacent part of the upper surface of the table A and the bottom of the chute C and this surface offers just sufficient friction to cause each garment to buckle or fold and assume a natural fold or lay and a definite position relative to the garments immediately preceding it in the chain. The chain of garments travels in a straight line from table A to table B and the chute C maintains the natural lay or fold of the garments and their relative position with respect to each other whereby twisting, turning, rumpling, mussing, and rearrangement of the garments in the chain is prevented.

When my new and improved process and apparatus is being utilized in the manufacture of very flexible cloth garments, the surfaces of the tables and the surface of the bottom of the chute C may be smooth and offer little frictional resistance since very little resistance is sufficient to provide the desired natural fold or lay of the garments as they are pushed over such a surface. My process and apparatus, however, may be used in the manufacture of articles of leather, plastics, and other flexible material having different degrees of flexibility. In each instance the surface over which the article passes as it leaves the sewing machine 24 or other chain forming apparatus must offer just sufficient frictional resistance to create a natural fold or lay when the rear end of the garment is pushed with sufficient force to advance the garment. In some instances it is desirable to provide a short relatively rough surface over which the articles pass to form the desired natural lay or fold. Such an arrangement is illustrated in Fig. 13 wherein the table A' is provided with a strip of sandpaper 44 or other suitable friction material immediately adjacent the entrance of chute C'.

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At table B the second operator withdraws the garments from the chute C while these garments are still part of the chain and performs a second operation thereon. In the production layout shown in Figs. 1 and 2 this second operation consists of sewing a third blank 46 to each garment by means of a sewing machine 48. In Fig. 1 the garments are cut apart by hand or any suitable automatic means immediately prior to the sewing of the third blank to each garment, and a feature of my invention lies in the fact that the cutting apart of the garments formed into a chain at one operation may be absorbed as a part of the subsequent operation whereby the expense and delay of a separate cutting operation may be avoided.

It is not necessary to my invention however that the garments in a chain formed by one operation be cut apart prior to performing a second operation thereon, and in some production layouts it may be desirable to maintain the chain for several successive operations without cutting apart the garments comprising the chain. In some production layouts it may even be desirable to maintain the original chain of stitching even after a second chain of stitching has been formed. Such an arrangement is shown in Fig. 15, wherein the garments or other articles 50 are connected by a chain of stitching 52 formed at a first operation and a second chain of stitching 54 formed at a subsequent operation.

After each garment has had the third blank 46 sewed thereto as shown in Fig. 1, such garment is pushed toward a second chute D in such manner as again to form a natural fold or lay and such natural fold or lay is maintained by the closely confining walls of the chute D through which the garments pass as they are pushed toward a third operation which may be another sewing operation or any other type of manufacturing operation. Since the width of the garments has been increased by the addition of the blanks 46, the chute D is wider than the chute C, but in each size of chute the garments are closely confined.

The embodiment of Figs. 1 and 2 contemplates a production layout wherein the chain travels directly from one operator to the other in a continuous flow. Such an arrangement, however, is not always possible or desirable, and in some circumstances it is preferable to deposit a particular chain into a guiding and receiving tray in which the chain then can be transferred from one operator to the next. In Figs. 4 and 5 I have shown such a modified arrangement of my invention. In these figures the operator at station E sews together the blanks 70 and 72 to form a chain of partially completed garments 74. As each garment leaves the sewing machine 76 it is pushed to form a natural lay or fold, and as the folded garments are shoved from the table E they pass into a guiding and receiving tray D.

The guiding and receiving tray D is shown more clearly in Figs. 6 and 7 and comprises side walls 78, end walls 80, and bottom cleats 82 having a longitudinally extending space 84 therebetween. Transverse stops 86 are attached to the bottom cleats 82 immediately adjacent each end of the box and an adjustable partition 88 is adapted to fit snugly in the tray D and rest upon the stops 86 when in the lowered position shown in Fig. 7.

In the production layout of Figs. 4 and 5 the tray D is supported in an inclined position with its right hand end resting on a relatively low bench 90 and its left hand end resting on an ad-

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ditional support 82. The movable partition 88 is illustrated as having its right hand end engaging a stop 86 and its left hand end resting upon one of the box ends 80 and located in the plane of the table E so that there is no substantial gap between the upper surface of this table and the adjacent upper surface of the partition 88. The inclined position of the tray D is only one of several positions which this tray may assume as is hereinafter more fully explained in connection with the description of Fig. 10.

As most clearly shown in Fig. 5, the garments assume a natural fold or lay immediately after leaving the sewing machine 76 and preserve their relative relationships as they pass into the tray D, although in this particular arrangement they tend to spread out at the end of the chain remote from the sewing machine, as indicated in the drawing. The contour of the tray D, however, closely confines the garments and prevents all twisting, turning, mussing, and change of relative positions between the various garments of the chain and thereby preserves the chain in proper condition for a subsequent operation. After the chain has been formed, the partition 88 is lowered to the position shown in Fig. 8 and the chain may then be transferred without mussing to a second station such as the station F of Figs. 9 and 10.

In Figs. 9 and 10 a tray D containing a chain of garments has its movable partition 88 outwardly inclined so that the end adjacent the table F is higher and is on a level with the top of the table. The tray D is in alignment with the part of the table F to which the garments may be moved in a straight line, and thereafter each garment is guided by the operator's hand to a sewing machine 94 where an additional blank 86 is sewed to each garment.

The threads forming the first chain may be cut in any suitable manner as indicated at 88. A new chain is formed by the thread which attaches the blanks 86 to the remainder of the garments or other articles. As the garments leave the sewing machine 94 they are pushed toward the tray G and assume a natural lay and natural position relative to preceding and succeeding garments. Guides like the guides 40 and 42 of Fig. 1 may be located adjacent the entrance to the tray G if desired to facilitate the introduction of garments thereinto. The close fitting tray G maintains such natural position and relationship and may be used to transport the chain to a further sewing position or to any other position for a different type of operation on the garments.

In the layout of Figs. 9 and 10 the tray G is illustrated as resting upon a bench 100 with the main body of the tray G in horizontal position and the adjustable partition 102 downwardly inclined in a direction away from the table F. This is only one possible arrangement of the tray G and it is to be understood that the position of this tray will be varied to suit different manufacturing requirements. Under some conditions it may be desirable to provide a greater downward inclination to the partition 102 and to accomplish this the tray G may be placed in the dotted line position indicated by reference character 104. Under other conditions it may be desirable to have the movable partition 102 assume an upward incline away from the table F and this can be accomplished by raising the tray to the dotted line position indicated by reference character 106. A feature of my invention lies in the adaptability

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of the apparatus to accommodate different manufacturing requirements.

One advantage of my invention lies in the maintenance of a predetermined relationship between the partially completed garments of the chain so that these garments are in a most advantageous position for performing a subsequent operation. In some instances it is necessary or desirable to invert the chain in order to present the garments to the next operator in the most advantageous position and relationship. In Figs. 11 and 12, I have shown trays H and H' of such size that one can be telescoped within the other. The tray H would be positioned to receive the chain formed in a particular sewing operation. After the entire chain had been fed into the tray H, the movable partition 108 would be moved to lowermost position as shown in Fig. 11 so that the chain would assume a position like that shown in Fig. 8. Thereafter the tray H' would be telescoped over the tray H as shown in Figs. 11 and 12, and then the two trays turned upside down. Since the chain is snugly held in the tray H during the inversion operation, the garments would not be mussed but would retain their natural shape and relationship with respect to each other. Thereafter, the small tray H could be removed and the tray H' positioned with respect to a sewing station in a manner similar to that of the tray D in Fig. 9, or in any other suitable manner.

While my invention is well adapted to the mass sewing of garments and other articles, it is not limited to such use but is capable of general application in the manufacture of relatively flat or sheet-like material such as cloth, leather, plastics, etc. In Fig. 14 I have illustrated a chain of cellophane articles 110 to which a plastic strip 112 has been welded by hot pressing operation, or in any other suitable manner. As each cellophane article 110 leaves the apparatus which applies the strip 112 thereto such article can be pushed at its rear end over a table top or other surface providing the requisite degree of frictional resistance to cause the article to buckle and assume a natural lay or fold and then pushed lengthwise of a confining chute or into a guiding and receiving tray in the same manner in which the garments are handled in the several production layouts shown in Figs. 1, 2, 4, 5, 9, and 10, or in any other suitable layout to meet the particular requirements of a given manufacturing procedure.

While I have illustrated only a few production layouts utilizing my novel apparatus and adapted to manufacture garments and other flexible articles according to my novel process, it is to be understood that my invention may assume numerous other forms and includes all variations, modifications, and substitutions coming within the scope of the appended claims.

I claim:

1. That process of manufacturing garments and other articles which comprises attaching together a multiplicity of flexible sheet-like panels to form an article part at one operating station and at the same station continuing the attaching operation to attach together succeeding sets of panels to form additional article parts all linked together into a continuous chain with each other and with the first-mentioned article part, pushing each article part on a substantially planar supporting surface to cause the material of each part to buckle upwardly having a width substantially equal to the width of an article part

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and resisting movement thereof to cause the material of the article parts to buckle upwardly in a substantially uniform manner while maintaining in a substantially straight line the attachments connecting the panels of a set, confining the side edges of the material of said parts, and transferring said chain to a second operating station while maintaining said confinement.

2. That process of manufacturing garments and other articles which comprises sewing together a set of panels to form an article part at one operating station and at the same station continuing the sewing operation to sew together succeeding sets of panels to form additional article parts all linked together into a continuous chain with each other and with the first-mentioned article part, pushing each article part over a substantially planar surface to cause the material of each part to buckle upwardly in a substantially uniform manner while maintaining in a substantially straight line the seams connecting the sets of panels, confining the side edges of the material of said parts, transferring said chain to a second sewing station, and maintaining said confinement and relative relationship of the article parts of the chain during transfer.

3. That process of manufacturing garments and other articles which comprises sewing together two panels to form an article part at one operating station and at the same station continuing the sewing operation to sew together succeeding pairs of panels to form additional article parts all linked together into a continuous chain with each other and with the first-mentioned article part, pushing each article part over a substantially planar resisting surface to cause the material of each part to buckle upwardly in a substantially uniform manner while maintaining in a substantially straight line the seams connecting the pairs of panels, confining the side edges of the material of said parts, storing said chain, transferring said chain to a second sewing station, and maintaining said confinement and relative relationship of the article parts of the chain during storage and transfer.

4. That process of manufacturing garments and other articles which comprises sewing together two panels to form an article part at one

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operating station and at the same station continuing the sewing operation to sew together succeeding pairs of panels to form additional article parts all linked together into a continuous chain with each other and with the first-mentioned article part, pushing each article part over a substantially planar resisting surface to cause the material of each part to buckle upwardly in a substantially uniform manner while maintaining in a substantially straight line the seams connecting the pairs of panels, confining the side edges of the material of said parts, and continuously transferring said chain to a second sewing station while maintaining said confinement and relative relationship of the article parts of the chain:

5. That process of manufacturing garments and other articles which comprises sewing together two panels to form an article part at one operating station and at the same station continuing the sewing operation to sew together succeeding pairs of panels to form additional article parts all linked together into a continuous chain with each other and with the first-mentioned article part, pushing each article part over a substantially planar resisting surface to cause the material of each part to buckle upwardly in a substantially uniform manner while maintaining in a substantially straight line the seams connecting the pairs of panels, and transferring said chain to a second sewing station while maintaining the relative relationship of the article parts of the chain.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,205,821	Thompson	Nov. 21, 1916
1,643,707	Elman	Sept. 27, 1927
1,910,200	Bucking	May 23, 1933
2,327,252	Dickerson	Aug. 17, 1943
2,362,017	May	Nov. 7, 1944
Re. 19,571	Schmidt et al.	May 14, 1935