Dec. 6, 1932. F. E. NODINE 1,890,335

SEPARABLE FASTENER AND METHOD OF MAKING SAME

Filed April 18, 1931 2 Sheets-Sheet 1

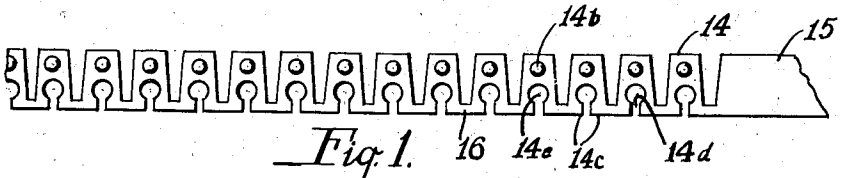


Fig. 1.

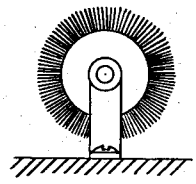


Fig. 2.

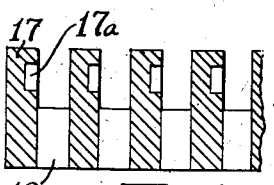


Fig. 3.

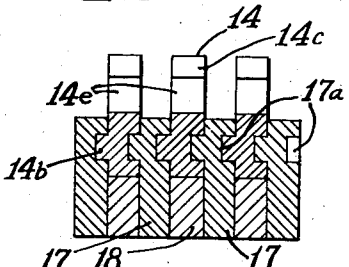


Fig. 5.

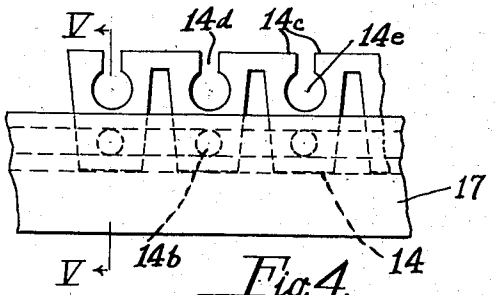


Fig. 4.

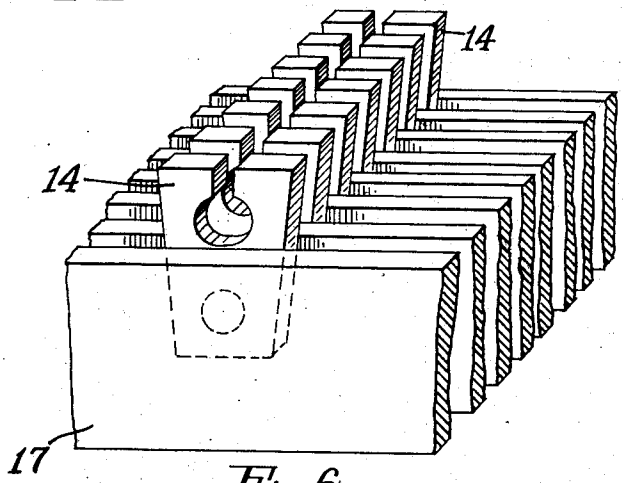


Fig. 6.

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SEPARABLE FASTENER AND METHOD OF MAKING SAME

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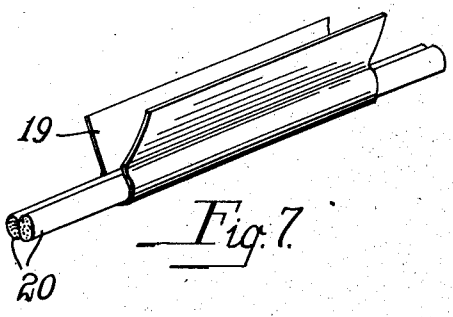


Fig. 7.

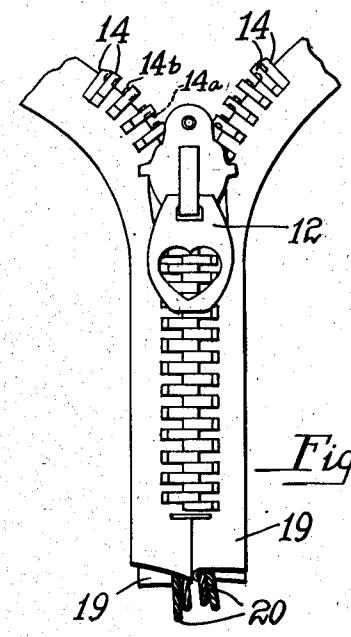


Fig. 10.

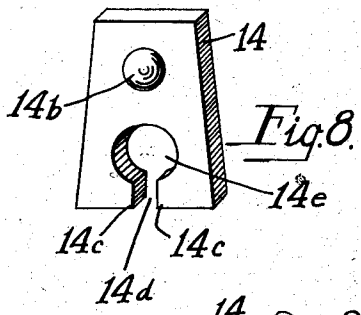


Fig. 8.

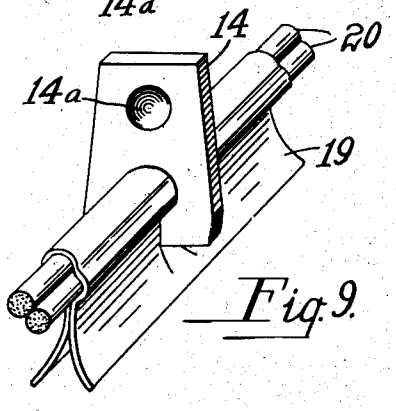


Fig. 9.

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UNITED STATES PATENT OFFICE

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SEPARABLE FASTENER AND METHOD OF MAKING SAME

Application filed April 18, 1931. Serial No. 531,115.

This invention relates broadly to interlocking clasps such as are generally disclosed in United States Patent to Judson 504,038 of August 29, 1893 or British Patent 14,358 of June 19, 1912, and in particular to an improved method for making and/or assembling the individual clasp elements or members.

An object of this invention is to simplify the operations of manufacturing such interlocking fasteners.

A further object is to produce a new and improved method for forming and assembling the separate clasp or fastener members.

These and other objects which will be made apparent throughout the further description of my invention are accomplished by means of the procedure herein defined and which is to some extent, illustrated in its separate steps throughout the various figures of the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of a series of fastener elements shown in a connected series and with a strip from which they are formed, and illustrates generally the first step in my method of procedure.

Fig. 2 diagrammatically illustrates a buffing or grinding wheel which may be employed, if desired, in connection with the one step of my method of procedure.

Fig. 3 is a fragmental side elevation of what may be termed a magazine or multiple clamp for holding strips of fastening members (shown in Fig. 1) during the preliminary operation of securing each individual fastening member to a carrier element.

Fig. 4 is a fragmental side elevation of the magazine shown with a portion of a strip of fastener members in place in it.

Fig. 5 is a fragmental sectional view along the line V—V of Fig. 4, and illustrates three clasp or fastener members or strips of members in place in the magazine or multiple clamp.

Fig. 6 is a fragmental perspective view of the magazine diagrammatically illustrating the relative location of the separate strips when in the magazine, and also illustrating the fact that a magazine, such as illustrated, may be employed in the operation of assembling separated fastener members on a single carrier element.

Fig. 7 is a perspective view diagrammatically illustrating an assembling or carrier element, such as may be employed in connection with my method of procedure.

Fig. 8 is a perspective view of an individual clasp or fastener member made in accordance with my method of procedure.

Fig. 9 is a perspective view diagrammatically illustrating a fastener member in place on the carrier element; and

Fig. 10 is a fragmental plan view illustrating the fastener members in place on a carrier element and shows some of the members in interlocked position and others disengaged from that position.

Various methods of procedure have been contemplated and also employed for manufacturing the individual fastener members and for assembling them on a carrier strip or element such, for example, as a strip of fabric, but it is my observation that all previous methods are difficult to perform and involve the use of complicated and expensive machinery. It should be noted that the individual fastener members, such as are usually employed commercially, are small and are consequently difficult to handle. This difficulty is not only encountered in the operation of forming the individual fastener members, but also in the operation of accurately spacing them along, and of securing them to the carrier element. In this connection it should be borne in mind that each fastener element, in effect, cooperates with two other fastener elements when in the interlocked position, and that it is therefore necessary to accurately space the individual members on each carrier element so that they are capable of effectively engaging and cooperating with the accurately spaced members on the opposed carrier element. As commercially employed, the carrier elements with the accurately spaced fastener members secured thereon, are suitably secured to the opposed edges of an opening, which it is desired to close, and the interlocking members on opposed edges of the opening may either be moved into engagement with

each other to close the opening or they may be disengaged preparatory to spreading the opposed edges.

For convenience of interlocking and disengaging these interlocking members a slide 12 (illustrated in Fig. 10) is associated with each assembled series of members 14 and is so arranged that as it is moved in one direction it moves the successive cooperating members 14 of the opposed series into cooperative relation so that the corresponding elements of opposed series interlock and thereby fasten the opposed edges of the opening together. A movement of the slide 12 in the opposite direction, successively moves the cooperating members of the two series out of engagement with each other and also separates one series from the other.

From the foregoing it is apparent that each individual fastener member 14 must not only be accurately formed, but that the members must also be accurately spaced along the carrier element so that each member will properly cooperate or interlock with a corresponding member of the opposed series.

My invention contemplates a simple operation for accurately forming the individual elements. As shown in Fig. 1, members 14 are stamped, pressed out, died, and/or punched from a metallic or other suitable strip 15. The arrangement is preferably such that the strip is introduced between the jaws or dies of the combined press and punch in such a way that each pressure stroke of the press will, in effect, complete at least one element 14, but will not completely sever the element from the strip. The fastener elements are retained in strip form, in order that they may be more readily handled, grouped, or positioned while they are being treated, and/or associated with or mounted on suitable carrying elements of cord-tape or the like. The strip is moved forward, after each pressure stroke of the press, an amount such that each successive stroke forms one or more members 14, and this procedure is continued until the entire strip is transformed into a strip of members 14. I have found it more convenient to substantially form but one such member at each stroke of the press.

As shown in the drawings, each member 14 somewhat resembles a letter A. It will be noted, as seen from Figure 1, that each A-shaped element 14 is disposed or positioned in such a manner that its sides are spaced from adjacent A-shaped elements of the same strip and is connected only at its feet or base to those adjacent elements. As a result, the lugs or feet connecting the A-shaped elements 14 need only be severed, in order that each element will be independent of adjacent elements of the same strip. It is provided on one side with a socket 14*a* and at the other side with a protuberance or lug 14*b* (Fig. 5). The lug and the socket are located in line with each other and are formed by the die members during the operation of punching out the metal of the strip 15 in the preliminary operation of completing each member 14 or in the operation of forming a strip of members 14. The base of each member is provided with opposed jaws 14*c*, which are located on opposite sides of a recess 14*d*, which opens out into a substantially circular aperture 14*e*. As shown in Fig. 1, the members 14 are somewhat substantially completed, but since they are not severed from each other, may be said to be only partially completed; as a result, the jaw end of each member 14 may be said to be finally completed by removing the remaining portions 16 of the strip which form connecting lugs between the individual members.

It will be noted that the strip of members 14 is so formed from the original strip 15, that the members 14 are located side by side with their bases at one side of the strip and their lug and socket portions at the other side of the strip. I consider it important to retain the members 14 connected together in strip formation where it is desired to store or ship the members for subsequent assembly on the carrier elements, since this contributes to ease of handling in subsequent operations. I also consider important the above described and herein illustrated relative arrangement of the members 14 in the strip formation, where it is desired to employ the multiple assembly operation hereinafter described. It should, however, be said that the partially completed members 14 may be retained in strip formation in any convenient way. That is to say, the connecting lugs 16 between the individual members 14, need not necessarily be located at the bases of the members as shown in Fig. 1, but may be located at or adjacent to the lug and socket portion of each member or even intermediate the ends of the member, and such a variation may be made from the preferred arrangement illustrated, without detracting from the advantages gained by multiple assembly.

It will, of course, be understood that the usual mechanisms may be employed for advancing the strip 15 so that it occupies desired successive positions with relation to the dies of the press, and that means, such as are ordinarily employed for such purpose, may be utilized for accurately positioning the strip with relation to the dies of the press. It will, however, be apparent that the strip may be manually advanced and positioned, since with my method of procedure special mechanism is not necessary and is certainly not essential to the carrying forward of the method.

After a strip of members 14 has been formed as previously described, it may be buffed or polished not only for the purpose of removing sharp edges and such fins as may have been formed in the previous operation,

but also for the purpose of removing such lubricant as may have been employed in connection with the punch and press operation, or such other foreign material as may have accumulated on the strip. In Fig. 2 I have diagrammatically illustrated a rotary buffer, but it will be understood that a grinder as well as a buffer may be employed in the operation of smoothing up the strip and removing foreign material.

I have found that by punching out and forming the members 14 and at the same time retaining them in strip formation I materially simplify the succeeding operations necessary for assembling the individual members on carrier elements. I have also found that the procedure of so forming the members 14 that their bases are located along one longitudinal edge of the strip, materially simplifies and cheapens subsequent operations. Of course, a plurality of element strips may be formed from a single strip, but it may be advantageous to form the elements or members as stated above, in order that their bases lie along a common longitudinal edge. After the strips illustrated in Fig. 1 are formed they may, of course, be stored, awaiting subsequent operations, or they may be shipped as an article of commerce if it is found convenient to form the strips in one location and complete the assembly some place else.

In the operation of assembling the members on a carrier element the strips are preferably maintained intact until a carrier element is associated with each individual member 14. In Fig. 3 I have more or less diagrammatically illustrated a magazine or multiple clamp which is employed in what I have termed the multiple assembly operation, i. e., the operation of introducing a carrier element into cooperative relation with each of the individual elements 14 of each strip. As there shown, the magazine consists essentially of clamping elements 17 which are alternately arranged with spacers 18. Each clamping element projects beyond the spacing element a determined amount and is provided with a groove 17*a* which extends throughout its length. The grooves are so positioned and arranged that when a strip, such as illustrated in Figs. 1 or 4, is in place in the multiple clamp, the lugs 14*b* formed on it, will project into the groove. It is therefore apparent that the spacers 18 are of such height, with relation to the location of the grooves 17*a* in the elements 17, as to properly position each individual member 14 so that the lug 14*b* is received by the groove 17*a* and so that the base projects beyond the end of the clamping elements 17 with its recess 14*d* in position to receive a carrier element.

It will be noted that the clamping elements are so proportioned as to length that the aperture 14*e* of each member 14 is wholly exposed when a strip of these members is in place in the multiple clamp. The spacers 18 are of such width as to insure proper spacing of the members 14 along their individual carrier elements.

It will be apparent that any suitable means may be employed for moving and holding the elements 17 into contact with the spacers 18 and into clamping engagement with the strips of members 14, located in the multiple clamp as shown in Figs. 4 and 5. For this purpose the elements 17 and spacers 18 may be loosely assembled in a tray of suitable dimensions and a clamp screw or its equivalent may be employed at one end of the tray for engaging the adjacent element 17 and in this way forcing the cooperating elements 17 and 18 into cooperating relation or into clamping relation with the strips assembled in the multiple clamp.

In Fig. 5 I have more or less diagrammatically illustrated a portion of the multiple clamp shown in connection with three strips of the members 14. In Fig. 6 I have also shown a portion of the multiple clamp in connection with a transverse line or series of the members 14. It will be understood that each member 14 may represent a connected strip of these members, such, for example, as is illustrated in Figs. 1 and 4 and that therefore each clamping element 17 and each spacer 18 is, in the embodiment here described, of sufficient length to cooperate with an entire strip of the members 14. In assembling a plurality of strips in the multiple clamp, the strips are so located with relation to each other that the individual members 14 of different strips are aligned with each other, as illustrated in Fig. 6. That is to say, each individual member 14 is included in an aligned series of members 14, which extends at an angle (preferably at right angles) across the line of length-direction of the strips. In other words, each individual A-shaped element 14 of a given strip of elements 15 is laterally and transversely aligned in a substantially side-by-side relation with, as well as spaced from, a given A-shaped element 14 of each of the other strips of elements. In this way I provide for the accurate spacing of the members 14 of the carrier element and I also provide a convenient and easy way of associating the carrier elements with the members 14.

In Fig. 7 I have diagrammatically illustrated a carrier element. As there shown, it consists of a piece of tape 19 which is folded along its center line so as to partially enfold or envelop two cords 20, which are shown laid side by side. It will, of course, be understood that a single cord may be employed, that the two cords may be twisted about each other, or that a preliminarily shaped piece of tape may be employed, but I find it cheap and convenient to employ separate cords and

tapes and in addition I also find that the carrier element so formed is more durable and materially less expensive than carrier elements now in use, and is more conveniently applied to the article with which the fastener is to be employed. In addition, I consider the tape enfolded cord an important, though possibly not an essential feature of the entire method here set forth.

After the strips of members 14 are secured in place in the multiple clamp, the carrier elements are introduced into the apertures 14*e* of the individual members 14. This operation merely consists in forcing the cord or cords 20, partially enveloped by the enfolding tape 19, through the recesses 14*d* and into the portion of each recess designated as aperture 14*e* and it will be apparent that after this operation is completed the multiple clamp then holds a plurality of strips which are associated with a plurality of transversely extending carrier elements. That is to say, each strip of members 14 will be associated with as many carrier elements as there are members 14 in the strip.

It should also be noted that the number of strips contained in the multiple clamp will be determined by the desired number of members 14 on each carrier member. For example, if it is desired to form an interlocking fastener substantially three inches long the multiple clamp will necessarily contain at least 33 strips of members 14 if it is necessary to space the members 14 eleven to the inch along the carrier element. In this connection it will be understood by those familiar with the type of interlocking fastener here involved, that the spacing of the members 14 on the carrier element is of material importance, and is dependent on the design and dimensions of the lug and socket portion of the members 14.

After the carrier elements are associated with the strips as described, the clamping pressure between the members 17 and the strips is released and all the strips are removed from the multiple clamp in one operation, since they are all connected together by means of the several carrier elements. I have found that it is convenient to merely loosen the end plate associated with the multiple clamp and thus release the clamping pressure and then slide the strips longitudinally of the members 17 until all of the lugs 14*b* of each strip are freed from the engagement of the grooves 17*a*. The individual members may then be separated from the strips of which they form a part by cutting away the connecting lugs 16. This operation may be accomplished either before or after the strips are removed from the multiple clamp but no matter how it is accomplished it results in the formation of an individual series of fastener members located on and properly spaced along a carrier element. The jaws of each member 14 may then be compressed—i. e., moved toward each other for the purpose of firmly gripping the carrier element and thereby permanently securing each member in place on the element.

Various means may be employed for separating the individual members from the strip formation and for clamping the members to the carrier elements and both these operations may be accomplished while the members 14 are still in place in the multiple clamp. For the purpose of this description it is, however, sufficient to say that the members 14 may be separated one from the other by a shearing operation, and that their jaws may be compressed into clamping engagement with the carrier element by suitably formed pliers or similar pressure applying devices.

It will be apparent that the operation of shearing away the connecting lugs 16 between the members 14 of each strip may be accomplished at any desired time with relation to the stringing of the members 14 on the carrier elements. For example, it may be found convenient to sever the individual members 14 from the strip formation while they are retained in the clamp and either before, after or during the operation of inserting the carrier element into the recess apertures 14*e* of the individual members 14. While I have illustrated and described the grooves 17*a* of the clamping members, it will be apparent that the primary function of these grooves is to receive the lugs 14*b* and to aid in positioning the individual members 14 in place in the clamp. From this it will be apparent that the clamping elements 17*a* may be provided with depressions or lugs for aiding the operation of positioning the various strips or the various members 14 in the clamp. It will also be apparent that a clamp such as I have illustrated and described may be employed for assembling and holding in position a single series of the members 14, as illustrated in Fig. 6. While such a clamp would not have all the advantages herein described, in that it would not contribute to the multiple assembly operation, it would, however, simplify the procedure of assembling the members 14 on, and accurately spacing them along the carrier element.

It will also be apparent that the mode of assembling the members on the carrier elements makes it possible to provide a simple form of so called "top stop" at the end of the series of members on each carrier strip. As shown in Fig. 10, the top stop may consist merely of two members 14 located immediately adjacent to each other instead of being spaced apart. It is apparent that such an assembly of members on each carrier element may be provided for by merely locating two of the formed strips 15 of elements 14, adjacent to each other in the multiple clamp or magazine. That is to say, the endmost spacer

18 in the series of elements 17 and spacers 18, may be of double width so as to provide a space, between two adjacent elements 17, for receiving two of the formed or substantially completed member strips 15. If desired, the spacer may be of sufficient width to receive three such member strips, and in this way provide additional strength for the top stop.

As I have said, I consider the general form of the carrier element here disclosed, and the procedure employed in associating that carrier element with the members 14 an important feature, since both contribute to the superiority and cheapness of the interlocking fastener produced. It will be noted that by employing a single piece of tape folded over a cord or cords as illustrated in Figs. 7, 9 and 10, I not only avoid the necessity of preliminarily preparing the tape for association with the members 14, but I also obtain a strong structure, in that the tape is reinforced by the cord or cords and is, in effect, of double strength, because it presents a double edge for being secured to the material with which the fastener is to be used. In addition, the double edge simplifies the operation of securing the fasteners to the material with which they are to be used.

For example, it is unnecessary to hem or selvage the edge of the material, since its edge may merely be introduced between the two edges or folds of the tape, and the tape may then be secured to it by sewing or stitching operation. This final operation, of course, makes the tape appear to be a single tape, but, as noted, it encloses the unfinished edge of the material.

As has been pointed out, the operation of associating the carrier element with the members 14 is quite simple. The tape may, in effect, be laid across the base of each individual member 14 so that its center line corresponds with the position of the recess 14*d* of the member. The cord or cords 20 may then be laid along the tape and then forced through the recess 14*d* into the enlarged portion of the recessed termed aperture 14*e*. This will carry the tape into the aperture and, in effect, enfold the cord or cords within the tape. It is, of course, apparent that the tape may be preliminarily folded to partially enfold the cord or cords as shown in Fig. 7, and, if this is done, the operation of associating the tape and cords with the members 14 is to that extent simplified.

While I have described the procedure embodying my invention as carried forward by hand or by simple tools it will be apparent that the procedure may be carried forward by automatic mechanisms so cooperating as to minimize the amount of handling of the separate parts of the completed fastener strips, but that in any event, the simplicity of the method outlined insures simplicity of mechanism and the reduction of the cost of production. An added advantage is that the second operation above described may be accomplished without the difficulty that would be encountered if an attempt were made to grind and/or buff a single member 14, and that this operation may be accomplished so as to remove from the member strips all lubricant or other foreign matter which would soil the fabric carrier elements.

While I have described what I now consider to be the preferred method of producing interlocking fasteners of the type here illustrated, it will be apparent to those skilled in the art that some or all of the steps herein described may be somewhat modified, some may be omitted, and that some variation in the order of the steps here described, may be made without departing from the spirit and scope of my invention as defined by the appended claims.

What I claim is:

1. The method of assembling a plurality of elements on a carrier which includes, grouping a plurality of strips of elements in a transversely aligned relation with respect to each other, and thence associating a carrier with an element of a plurality of strips of the group.

2. The method of assembling a plurality of elements upon a plurality of carriers which includes, grouping a plurality of strips of elements in a transversely spaced and aligned relation with respect to each other, and thence, associating a carrier with an element of each strip of the group.

3. The method of assembling a plurality of elements on a carrier which includes, grouping a plurality of unitary strips of elements in a transversely aligned relation with respect to each other, clamping the strips in such relation, and subsequently, mounting each element of a strip upon a carrier common to an opposite element of an adjacent strip of the group.

4. The method of assembling a plurality of elements upon a plurality of carriers which includes, grouping a plurality of strips of elements, transversely aligning the elements of each strip of the group with the elements of the other strips of the group, so that each element will be part of a transverse line of elements, and thence, mounting elements of a transverse line upon a carrier.

5. The method of assembling a plurality of elements upon a plurality of carriers which includes, grouping a plurality of strips of elements, transversely aligning the elements of each strip of the group with the elements of the other strips of the group, so that each element will be part of a transverse line of elements, and thence, mounting elements of a transverse line upon a carrier, and finally, severing the elements from their strips.

6. The method of assembling a plurality

of elements which includes, grouping a plurality of strips of elements and aligning the elements of a strip with the elements of other strips of the group, and thence while the strips are grouped and aligned, assembling the transversely aligned elements of the group as units.

7. The method of assembling a plurality of elements which includes, grouping a plurality of strips of elements and aligning the elements of a strip with the elements of other strips of the group, holding the strips in such grouped and aligned relation while assembling a transverse line of elements, and subsequently, severing the assembled transverse line of elements from adjacent elements of the strips of the group.

8. The method of assembling a plurality of elements which includes, grouping a plurality of strips of elements and aligning the elements of a strip with the elements of other strips of the group, holding the strips in such grouped and aligned relation while assembling a transverse line of elements, releasing the strips from a held relation, and severing the elements of a strip from each other.

9. The method of assembling a plurality of elements which includes, grouping a plurality of strips of elements and aligning the elements of a strip with the elements of other strips of the group, holding the strips in such grouped and aligned relation while assembling a transverse line of elements into a unit, severing the assembled transverse line of elements from adjacent elements of the strips of the group, and releasing the strips from a held relation.

10. The method of assembling fastener elements on carriers which includes, grouping a plurality of strips of the elements in a spaced relationship with respect to each other, transversely aligning each individual element of each strip of the group with individual elements of the other strips of the group for providing an aligned series of elements extending across the length line of direction of the strips, associating a separate carrier element with each aligned series of elements in the group, permanently securing the elements to the associated carriers, and severing each element from adjacent elements of its strip.

11. The method of manufacturing assemblies which includes, forming a plurality of elements in strip form, grouping a plurality of the strips in a transverse relation with respect to each other. and holding the strips in such relation while assembling the elements into a plurality of transverse series.

12. The method of manufacturing assemblies which includes, forming a plurality of elements in strip form, grouping a plurality of the strips in a side-by-side relation with respect to each other, and holding the strips in such relation while transversely assembling elements of the strips.

13. The method of manufacturing fastener assemblies which includes, forming a plurality of fastener elements in strip form, grouping a plurality of the strips in a side-by-side and spaced relation with respect to each other, holding the strips in such relation while assembling the strips into a transverse series of elements.

14. The method of manufacturing fastener assemblies which includes, forming a plurality of fastener elements in strip form, grouping a plurality of the strips in a side-by-side and spaced relation with respect to each other, holding the strips in such relation while assembling elements of each strip on transversely extending carriers.

15. The method of manufacturing fastener assemblies which includes, forming a plurality of elements in strip form, grouping a plurality of the strips in a side-by-side and spaced relation with respect to each other, applying a force for holding the strips in such relation, mounting a transverse line of elements taken across the group of strips upon a carrier element, and subsequently, releasing the force.

16. The method of manufacturing fastener assemblies which includes, forming a plurality of elements in strip form, grouping a plurality of the strips in a transversely aligned and spaced relation with respect to each other, applying a force for holding the strips in such relation, mounting each transverse line of elements taken across the group of strips upon a carrier, severing each element from adjacent members of the strip, and releasing the holding force.

17. The method of manufacturing fasteners which includes, simultaneously stamping and pressing out a strip of metal into a plurality of joined fastener elements, grouping a plurality of strips of the joined elements in a side-by-side and aligned relationship with respect to each other, holding the strips in such relationship while assembling elements of each strip on a transversely extending carrier.

18. The method of manufacturing fasteners which includes, forming a plurality of fastener elements with carrier-receiving-recesses therein while retaining the elements in strip form, grouping a plurality of the strips in a side-by-side and transversely aligned relation with respect to each other, holding the strips in such relation while inserting a flexible carrier into the recesses of a transverse line of elements taken across the group of strips, and rigidly securing the elements to the carrier.

19. The method of manufacturing fasteners which includes, forming a plurality of fastener elements with carrier-receiving-recesses therein while retaining the elements

in strip form, grouping a plurality of the strips in a side-by-side and transversely aligned relation with respect to each other, holding the strips in such relation while inserting a flexible carrier into the recesses of a transverse line of elements taken across the group of strips, rigidly securing the elements to the carrier, and subsequently, severing each element from adjacent elements of their strip.

20. A method of producing interlocking fasteners which includes, forming recessed individual fastener elements while retaining them in strip form, placing a plurality of formed strips in a laterally spaced relationship with respect to each other, aligning each strip of the group in a lateral direction, inserting a carrier element in the form of a cord-enclosing tape into the recess of an element of each strip of the group with the edges of the tape projecting beyond the recesses, severing each element from the strip of which it forms a part, and finally distorting a portion of each element to rigidly secure the elements to their carrier.

21. A method of producing interlocking fasteners which includes, forming a plurality of fastener elements with recesses therein while retaining them in strip form, grouping a plurality of formed strips in a transversely spaced and aligned relationship with respect to each other, aligning each individual element of the group of strips transversely with respect to opposite elements of the other strips in the group, and inserting a flexible carrier into recesses of the aligned elements of the group of strips while said strips are being held in the above mentioned relationship, severing each member from the strip of which it forms a part, and compressing jaws of the recesses of each element to grip the carrier associated therewith.

22. A method of producing interlocking fasteners which includes, forming individual fastener elements with carrier-receiving-recesses while retaining them in strip form, grouping a plurality of the strips in a spaced relationship, transversely aligning the carrier-receiving-recesses of the individual elements with opposite elements of the group for providing a series of aligned elements in the group, inserting a flexible carrier into the recesses of the elements of each series of aligned elements while the strips are so grouped and aligned, severing each element from the strip of which it forms a part, and finally, rigidly securing jaws of the recesses of each element to the carrier associated therewith.

23. The method of producing fasteners which includes, forming fastener elements while retaining them in strip form, buffing the so-formed strips, grouping a plurality of the strips in a laterally spaced relationship with respect to each other, transversely aligning each individual member of each strip with respect to an individual member of another strip for providing a plurality of series of transversely aligned elements, mounting the elements of each series upon a separate carrier, and finally, rigidly securing said elements to their carriers.

24. A plurality of A-shaped interconnected fastener elements in strip form, the sides of each element being spaced from the sides of adjacent elements of the same strip, the feet of each element being connected by a separable lug to the feet of adjacent elements.

25. A plurality of A-shaped interconnected fastener elements in strip form, the sides of each element being spaced from the sides of adjacent elements and the bases of each element being located along a common longitudinal edge of the strip.

26. The method of assembling a plurality of elements on a carrier which includes, holding a plurality of elements on a longitudinal line with respect to each other, grouping a plurality of lines of elements in a transversely aligned relation with respect to each other, and thence transversely associating a carrier with an element of a plurality of longitudinal lines of the group.

In testimony whereof, I have hereunto subscribed my name this 16th day of April, 1931.

FRANK E. NODINE.