

Feb. 28, 1928.

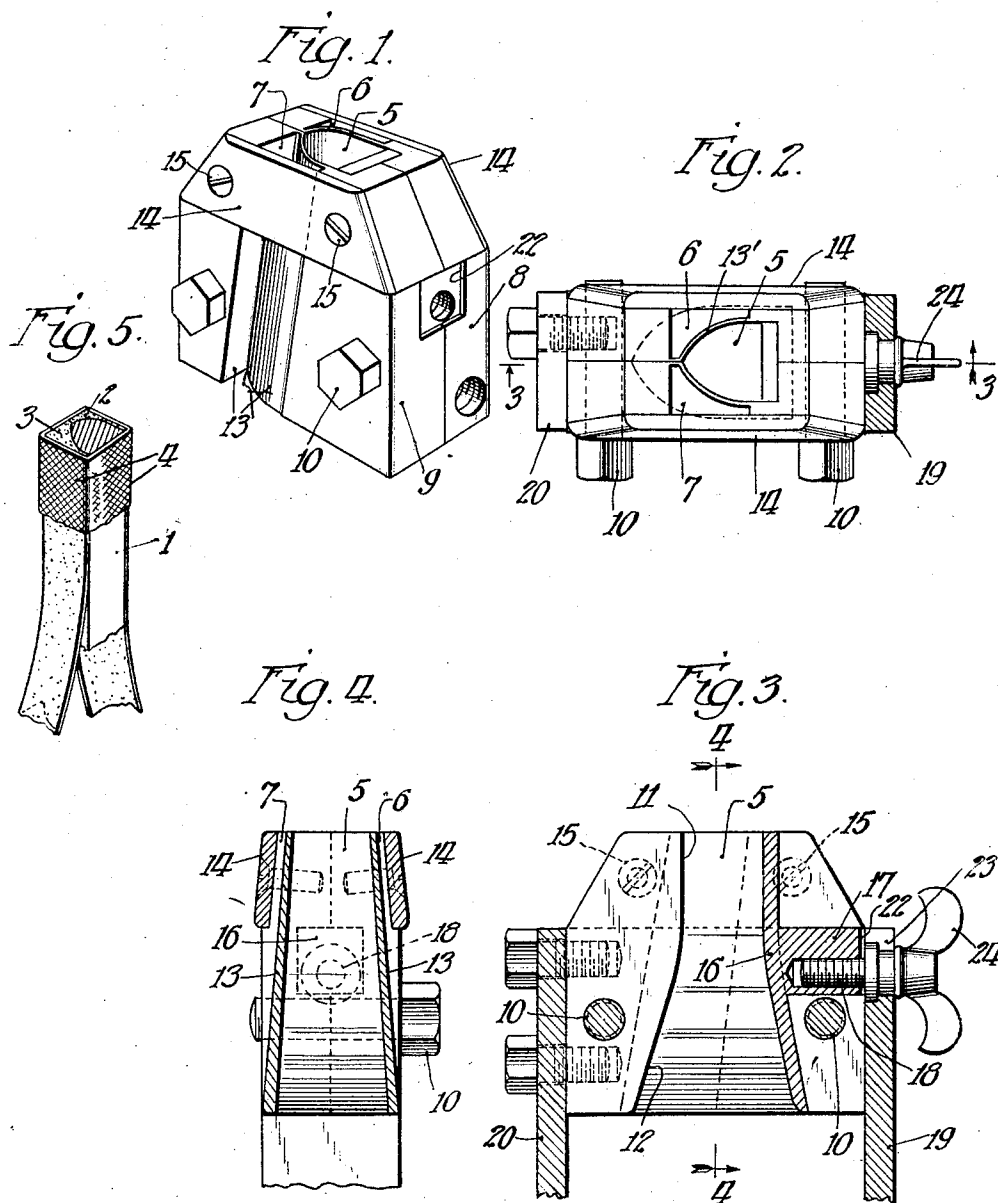
1,660,514

W. LORENTZ

PACKING FORMING APPARATUS

Filed Oct. 2, 1922

2 Sheets-Sheet 1



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Fig. 6.

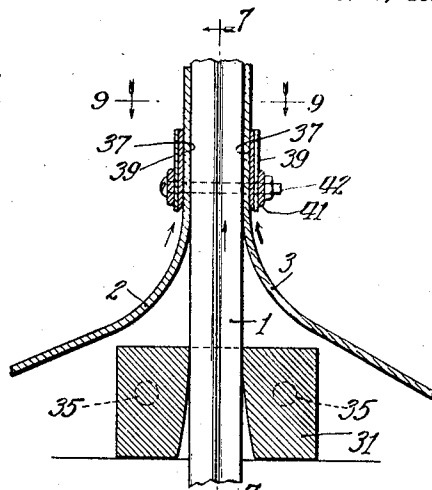


Fig. 7.

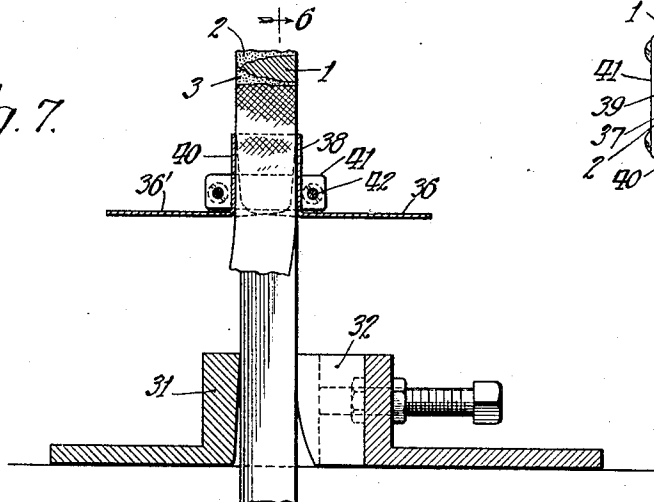


Fig. 8.

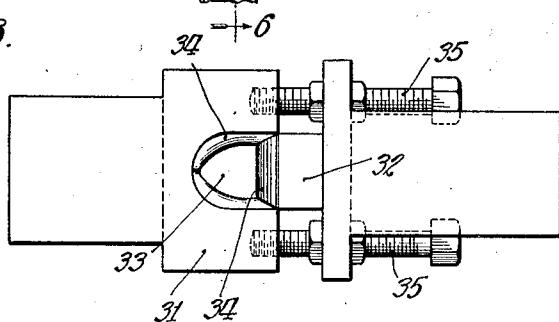
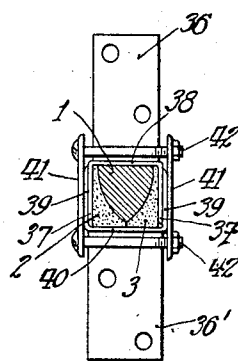


Fig. 9.



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UNITED STATES PATENT OFFICE.

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PACKING-FORMING APPARATUS.

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My invention belongs to that general class of devices known as packing forming apparatus, and more particularly to a mechanism or apparatus particularly adapted to be placed between a supply of material which may be initially or partially formed or not, as the case may be, and between a braiding machine or any equivalent apparatus, which will serve to secure the several parts of the packing together, the apparatus being designed to be used in connection with the manufacture of packing made up of a plurality of parts or elements, all arranged together and maintained in relation to each other so as to provide a unitary structure. It is particularly designed to be used in the manufacture of what may be termed flexible metallic packing, and preferably that type of metallic packing which is provided with a rubber, elastic, resilient or other backing, insert or core. The invention has among its objects the production of an apparatus of the kind described that is simple, convenient, durable, compact, efficient, reliable and satisfactory for use wherever found applicable. More particularly it has as an object the production of a guide or die which will lay the parts together in a predetermined relationship and also accurately gauge or reshape or resize the metallic body or other part, depending on the type of packing so that a uniform product is produced. Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts,

Fig. 1 is a perspective view of one form or embodiment of the invention;

Fig. 2 is a top plan view of the same;

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken substantially on line 4—4 of Fig. 3;

Fig. 5 is a perspective view illustrating the type of packing which may be made up or formed by the particular type of die shown;

Fig. 6 is a sectional view taken on line 6—6 of Fig. 7, illustrating a modified construction;

Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 6;

Fig. 8 is a bottom view of the member 31 shown in Fig. 7; and

Fig. 9 is a sectional view taken substantially on line 9—9 of Fig. 6.

Referring to the drawings, in which the preferred embodiment of the device is shown, it may be mentioned that this particular die is adapted to form up and assemble the elements in packing similar to that shown in Fig. 5, this particular type of packing being merely illustrative of numerous arrangements, kinds, and styles of elements which may be assembled together to produce the packing. In the packing illustrated 1 represents a suitable body, for instance a metallic body or facing, for example, made up of soft or other metal sheets, strips or ribbons, or wire, shreds or the like, and 2 and 3 a backing insert or core made up of rubber, asbestos or any suitable equivalent material which is preferably yielding, elastic or resilient, the several parts being assembled and maintained together by means of a braided cover 4, or any equivalent securing means. In describing the packing, I do not wish to be understood as in any way limiting the use of the apparatus to making a packing similar to that shown in Fig. 5, as the packing itself forms no part of the present invention, and the apparatus shown and constituting my invention may be modified or varied in details depending upon the particular type of packing to be made, their sizes, shapes and materials employed. This packing is illustrated because the type of die or forming apparatus shown has been designed to produce this particular type.

Referring particularly to Figs. 1 to 4, I provide what may be termed a die member provided with openings or passages 5, 6 and 7, corresponding in size and shape to the elements 1, 2 and 3. The particular die shown is made up of a plurality of parts 8 and 9 of the desired material, size and shape, which may be secured together by screws or bolts 10 or the equivalents. The purpose of making the same in a plurality of parts is for convenience in using and constructing the die, and consequently I do not wish to be understood as intimating that the details of construction in this connection are limited to the particular construction shown, as various die makers may have various ideas as to the most desirable way to construct the same. The die is provided with an opening or throat 5, as mentioned, the discharge end of which substantially corresponds for a portion of its distance with the throat or discharge end 11, and corresponding in contour to the product to be discharged therefrom while the throat at the inlet is preferably flared, that is, it tapers toward the discharge end, as indicated at 12. The wall should be substantially smooth, and in fact as the material is passed therethrough it takes on a polish, so that the material passing therethrough generally does so with very little friction even though it may be compacted or compressed, sometimes to a considerable extent. The guide-ways or passages 6 in the particular device shown correspond in contour and size with the elements 2 and 3, these being in the nature of grooves, as indicated at 13 in the parts 8 and 9 shown, plates 14 being provided for maintaining the elements in the grooves. These plates may be secured in place by screws 15 or the equivalent. Obviously, the plates 14 may be integral with the parts 8 and 9 if desired, this, as before mentioned, being immaterial.

I have shown the device provided with an adjustable member 16 arranged in the passage 5, and which may be adjusted to gauge, resize, reform or vary the sizes of the packing discharged so that a uniform product may be produced, or the product slightly varied by making the part 1 larger or smaller, as the case may be. As shown, part 16 is provided with the part 17 arranged to cooperate with an adjusting member 18. The die, as shown, is mounted in supports 19 and 20, which may be as desired. I have illustrated how the part 19 may be slotted, as indicated at 23, and formed to engage the flange on the screw 18, which screw is provided with a thumb or wing nut end 24. Obviously, turning the screw 18 will control the position of the part 16. Generally I prefer to provide a slight clearance at the end of 17, as indicated at 22. The material passing through the die will prevent inward

movement of the member 16, while the screw will maintain it against spreading. By adjusting the piece 16 or by replacing it by pieces of different sizes or shapes, the product discharged may be varied at will.

In the manufacture of the packing of the type shown in Fig. 5, the body 1 is fed up through the openings 3, and parts 2 and 3 through the openings 6 and 7, it being immaterial as to just how the feeding is done through the part, but ordinarily the packing is pulled through, the parts 2 and 3 being laid in place or assembled in the desired relation with the body 1. After being so assembled, the parts are secured together in any suitable manner, not necessary to describe herein, the braiding 4 being merely illustrative of one method of fixing them and maintaining them in the desired relation as a unitary structure. In making the die, one advantage of making the same in two parts 8 and 9, divided so as to permit the separation of the same and opening of the space 5, is that after the machine has been in operation and there is packing passing through, it is a comparatively easy matter to slip off one guide, former or die and insert a new one so as to vary the size or shape, or the arrangement of the parts without severing the packing elements particularly the body 1 making it possible to operate and make continuous lengths of packing, varying the size from time to time, or arrangement of the parts, without stopping the machine except for the change of the die. Of course, the parts 2 and 3 may be modified in size and shape and the body 1 may have more or less material fed to the die, as the case may be, but in the main there is a continuous and unbroken strip of packing. This saves some loss of time, as the change may be made in this manner much quicker than where the strip is severed and restarted through the machine, covering machine, etc. As before stated, I do not wish to limit myself to the particular details of construction illustrated, as the different dies may vary some, depending upon the type of packing to be made.

I have illustrated a modified construction of forming apparatus in Figs. 6 to 9, in which 31 represents a die having an opening 33 therethrough corresponding with the opening 5 in the other die, 32 being an adjustable member for controlling the forming of the body. I have shown in this instance a die suitable for making packing similar to that previously described. In this case the entrance side of the opening is flared, as indicated at 34, the parts being secured together and the adjustment controlled by means of the bolts 35 or their equivalents. This particular part shapes the body, while a cooperating part is arranged in proximity thereto for applying the cooperating parts 2

and 3 to the body 1. As shown, there is provided plates 36 and 36' which are formed with wings 37 and 39 respectively, and 38 and 40, the same being adapted to form an opening corresponding in size to the finished packing product. The two parts are maintained in operative relation by means of plates 41 and the bolts 42, or equivalent means for the purpose. In this case the body 1 is passed through the shaping and sizing die 31 and thence as it passes through the assembling die mentioned, the several parts of the packing are assembled together separately to be fixed or secured together in any suitable manner.

In the claims wherein I refer to a packing consisting of a plurality of elements or parts which are to be assembled or laid together in a desired manner to produce a finished product, I wish to be understood as not limiting myself to the specific sizes, shapes, arrangements or materials referred to in the preceding description, nor do I wish to limit the use of the forming die or apparatus to use in connection with any particular type of apparatus for initially forming the packing prior to its being guided or controlled by the die, nor with any particular mechanism for covering, fixing, joining, wrapping, braiding or otherwise securing the parts together, the present apparatus being designed to receive the materials whether initially formed or not and to assemble them or arrange them together in a desired manner, whereby they may be maintained in the desired relation in any preferred manner or by any suitable fixing means. The particular apparatus shown and described may be adapted and used for forming, shaping, sizing and assembling the parts, or for any one or more of these purposes, either any single operation referred to or such ones combined as may be desired.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

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

1. In a device of the kind described and in combination, a die comprising separable relatively stationary parts detachably secured together to form a unitary structure and having an opening therethrough corresponding in contour to a desired packing element whereby when the element is passed through the opening it will be properly shaped and gauged as to size, said die having a line of division of the parts to permit removal of the die without severing the packing element and provided with separate openings for the passage of a plurality of

cooperating packing elements, said last mentioned openings arranged with their discharge ends in close proximity to the first mentioned opening.

2. A guide for packing forming machines comprising suitable parts detachably secured together and provided with a plurality of openings for the passage of a plurality of independent packing elements therethrough, said die provided with means for varying the size of one of said openings as desired.

3. A die of the kind described, provided with an opening therethrough of the desired contouring and having means positioned in the opening at one side thereof for varying the size of said opening, said opening flared at the receiving end thereof, said die having separate passages arranged at either side of said opening for guiding cooperating elements to the element passed through the first mentioned opening, said openings substantially corresponding in contour to the elements to be passed therethrough and arranged in close proximity to the first mentioned opening whereby when the elements are simultaneously passed through all of the openings they will be brought together in close relation and be discharged substantially as a single product preparatory to securing them together into a unitary structure.

4. In a device of the kind described and in combination, two cooperating parts detachably secured together and constructed to provide a suitably shaped flared opening through the same, an interengaging part arranged in said opening and forming one side wall thereof and movable to vary the size of the opening, means for securing said movable part in a desired adjustment, said cooperating parts each having a passage therethrough adjacent the opening at either side thereof and opposite said movable part.

5. In a device of the kind described and in combination, a die comprising separable relatively stationary parts detachably secured together to form a unitary structure and having an opening therethrough corresponding in contour to a desired packing element whereby when the element is passed through the opening it will be properly shaped and gauged as to size, said die having a line of division of the parts to permit removal of the die without severing the packing element and provided with separate openings for the passage of a plurality of cooperating packing elements, said last mentioned openings arranged with their discharge ends in close proximity to the first mentioned opening, and removable guide plates forming one side wall of the last mentioned openings.

6. In a device of the kind described and in combination, a forming die constructed with a tapered opening therethrough for the pas-

sage and shaping of a packing element, said opening corresponding in contour to the desired contour of the element in the finished product, adjustable means for varying the size of said opening, said die having separate openings upon opposite sides of the tapered opening forming cooperating means for applying a plurality of cooperating elements to the packing element in a desired relation therewith preparatory to securing the parts together to form a unitary structure, and guide plates forming one side wall of the second-mentioned openings. 10

In testimony whereof, I have hereunto signed my name.

WILLIAM LORENTZ.