

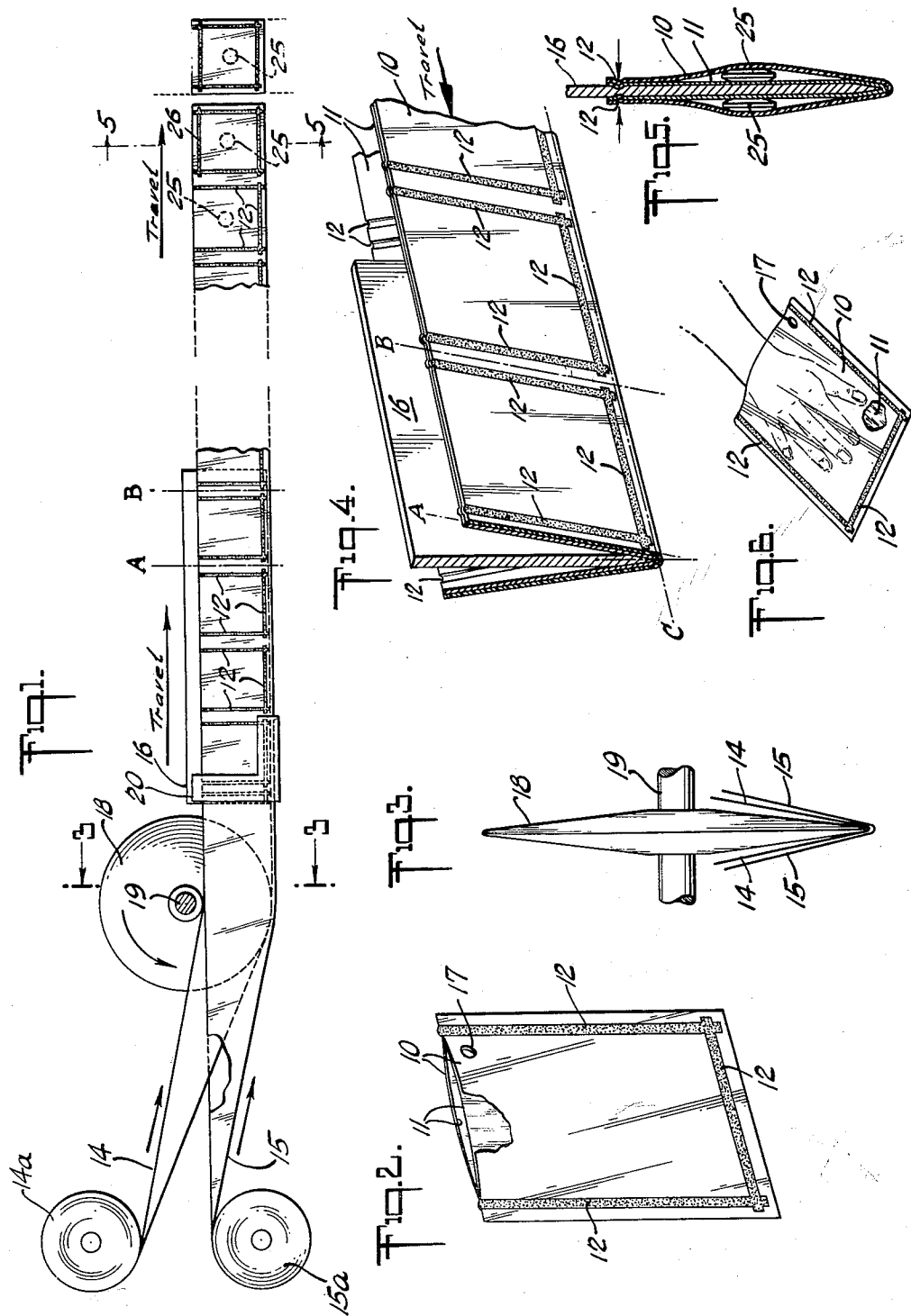
March 26, 1963

H. F. WATERS
BAG-LIKE ARTICLES AND PROCESS AND APPARATUS
FOR MAKING THE SAME

3,082,585

Filed Nov. 25, 1958

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

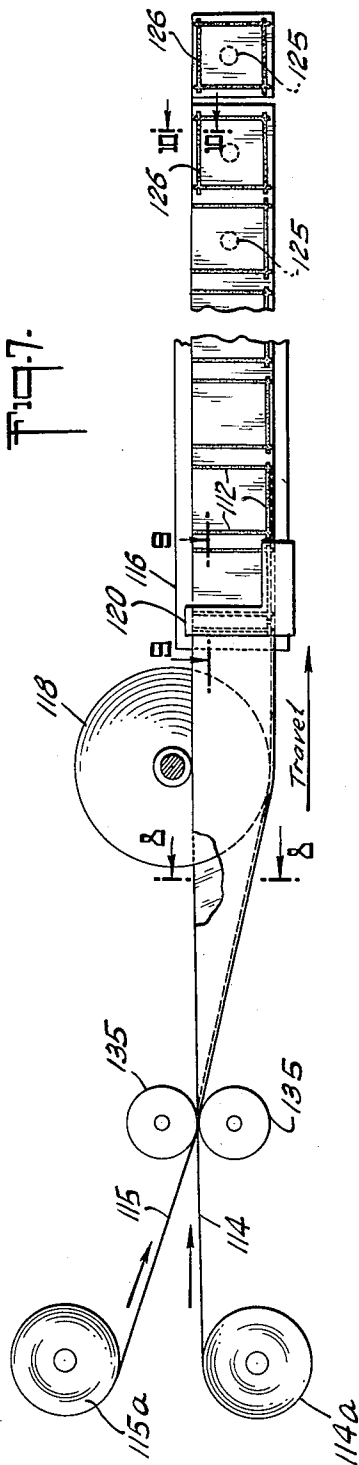


Fig. 8.

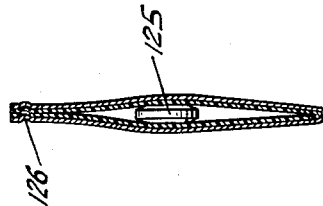


Fig. 9.

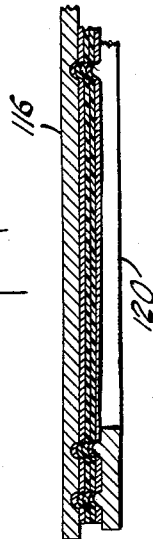


Fig. 10.

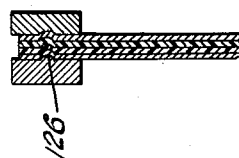
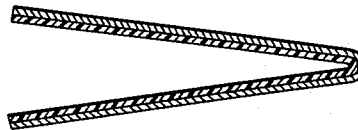


Fig. 11.



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3,082,585

BAG-LIKE ARTICLES AND PROCESS AND APPARATUS FOR MAKING THE SAME

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2 Claims. (Cl. 53-180)

This invention relates to bags and bag-like articles, to processes for their manufacture, and to apparatus suitable for use in their production. More particularly this invention is concerned with articles of the character indicated which are in the nature of cleaning devices, such as facecloths and shoe cloths.

Many hotels, motels, and the like, provide washcloths and shoe cloths for their guests. Conventional shoe cloths are usually non-reusable articles, that is, they are generally used by only one guest and then discarded. Washcloths, on the other hand, are usually re-used but must be laundered after each use and preferably packaged before being supplied to a succeeding guest. Both the shoe cloths and the washcloths of the type indicated are either larger pieces of single-layer cloth or they are in smaller double-layer form adapted to receive the fingers of the user for use as a mitt. In either case, the conventionally-available articles are generally formed from a relatively expensive fabric or other cloth with extensive stitching. However, from a practical standpoint, it is most desirable that they be as inexpensive as possible in order to minimize the expense of supplying them to guests. There is, therefore, an important need for facecloths, shoe cloths and like articles which do not embody the expensive materials and constructions now conventionally found.

It is an object of the present invention to provide an improved cleaning device.

It is a further object of the present invention to provide an improved cleaning device in the form of a mitt.

It is another object of the present invention to provide an improved cleaning device in the form of a mitt having a minimum of cloth fabric.

It is a further object of the present invention to provide an improved cleaning device in the form of a mitt having a minimum of cloth fabric formed without sewing.

It is another object of the invention to provide a process for manufacturing facecloths and shoe cloths in the form of mitts, and other bag-like articles.

It is a still further object of the invention to provide apparatus for making bags and bag-like articles such as facecloths and shoe cloths in the form of mitts.

These and other objects are attained by the present invention which may best be understood by reference to the accompanying drawings which show preferred embodiments of the invention, but it will be understood that variations and substitutions may be made within the scope of the claims.

FIG. 1 is a side elevational view of an apparatus embodying features of the present invention whereby a plurality of bag-like articles may be formed from continuous webs;

FIG. 2 is a perspective view of a facecloth or shoe-cloth formed in accordance with the present invention;

FIG. 3 is a sectional view, partly in elevation, of the plow of the apparatus shown in FIG. 1 as seen approximately along the line 3-3 of FIG. 1;

FIG. 4 is a perspective view of the associated webs in the course of formation into bag-like articles in the apparatus of FIG. 1;

FIG. 5 is a sectional view, taken approximately along the line 5-5 of FIG. 1;

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FIG. 6 is an elevational view of a facecloth or shoe-cloth of the present invention, showing its manner of use.

FIG. 7 is an elevational view similar to that of FIG. 1 showing a modified form of apparatus;

FIG. 8 is a sectional view of the webs entering the apparatus of FIG. 1, taken approximately along the line 8-8 of FIG. 7;

FIG. 9 is a sectional view taken approximately along the line 9-9 of FIG. 7;

FIG. 10 is a similar sectional view taken approximately along the line 10-10 of FIG. 7; and

FIG. 11 is an end elevational view, partly in section, of the completed article formed in the apparatus of FIG. 1.

Referring to the drawings, and more particularly to FIGS. 1, 3 and 4, two webs 14 and 15 are fed from supply rolls 14a and 15a, respectively, and are brought in superposed relationship into engagement with a rotary former element or "plow" 18 mounted upon an axle 19 which forms the superposed webs into a double-ply or "nested" V as shown in FIG. 3. The V-shaped nested webs move on to receive a resilient backing plate 16 of rubber or the like and then pass between a plurality of transverse and longitudinal heat-seal bars which cooperate with the resilient backing plate 16 and heat-seal together the superposed web portions on each side of the plate 16 along a longitudinal line adjacent the apex of the V and along parallel spaced-apart transverse lines as indicated at 12 in FIG. 1.

Heat sealing is a well-known securing method adapted, for example, for sealing a heat sealable plastic sheet such as polyethylene to itself or something else by the use of a hot iron. The plastic softens, becomes adhesive, and upon cooling becomes less adhesive but retains its bond to the material to which it was pressed while warm and adhesive. In FIG. 1 only one face of the V is shown but it will be understood that the opposite face on the other side of the plate 16 is similarly engaged and heat-sealed by heat-seal bars. The heat seals thus form a plurality of joined bag-like elements along each arm of the V, i.e. on each side of the plate 16, the elements being joined longitudinally by the continuity of the superposed webs and being joined laterally along the apex of the V. It will be seen, however, that by severing the webs along lines between the pairs of parallel transverse heat-seals and adjacent the apex of the V there will be provided a plurality of individual bag-like elements each consisting of a wall formed by the web 14 and a wall formed by the web 15. Thus, in the machine shown in FIG. 1, after the heat seals have been applied the V-shaped webs move on to a severing station provided with knives or other cutting elements of any convenient type (not shown) which sever the webs in the manner indicated, i.e. along the lines A, B and C shown in FIGS. 1 and 4. The severing means form no part of the present invention and means such as shown in my Patent No. 2,444,685 may be suitably used.

In the embodiment illustrated in FIG. 1, the heat-seal bar 20 is L-shaped and has two sets of heat-seal lines or surfaces for transversely sealing the web with parallel laterally-spaced-apart seals and a further set for heat-sealing along a longitudinal line. It will be understood, however, that I may use individual heat-sealing units for the transverse seals and for the longitudinal seals and that, in the case of the transverse seals I may use a heat seal of sufficient width that the severing means may act to cut down the middle of the wide seal to leave a heat seal along the edge of each of the thus-separated units. Illustrative heat-sealing means are shown, for example in my Patent No. 2,262,480.

Feeding of the webs is advantageously effected inter-

mittently between strokes of the heat-sealing elements and of the severing means and any convenient feeding or web-advancing means cooperating with the "plow" 18 may be employed, such as the means described in my above-mentioned Patent No. 2,444,685.

As seen in FIG. 2, it will be observed that the cleaning device of the present invention comprises a plastic or the like web 10 which may be transparent, as shown, and a web of cloth 11 or the like. The two webs are adhered together at lines 12 by heat sealing.

To form the cleaning device the web 15 is of plastic and the web 14 is of cloth, or the like, the two webs being simultaneously fed into the heat-sealing and cutting machine in the form of nested V's, as described above with the plastic web 15 on the outside. The heat-sealing elements for the heat-seal lines 12 act by pressing against the plastic and pressing the plastic against the cloth, thus forming the seal. The resilient plate 16 inserted in the V makes it possible for the heat-sealing elements on both sides to be pressed simultaneously to form two mitts with each stroke of the machine. A hole 17 may be provided by means of a punch (not shown) of any convenient type for hanging up the mitt.

The plastic web or sheet is not necessarily transparent, but it is a heat sealing material such as polyethylene so that neither sewing nor gluing are necessary.

The cloth may be woven cloth, e.g. cotton cloth, or it may be a non-woven cotton or like cloth. In the case of a shoe-cloth it is preferably a soft chamois type cloth and in the case of a facecloth it may be rough, e.g. terry cloth.

Not only does the heat seal obviate the necessity for sewing, but only one side of the mitt need be cloth. Furthermore, the plastic sheet may readily be printed with advertising or descriptive matter if desired. An inexpensive cleaning device is thus provided which may be used by hotels as a disposable item.

It will be understood that by the term "cloth" I contemplate not only woven or knitted fabrics as well as non-woven materials, or the like, as mentioned, but also materials produced by flocking of a flexible base as by the application of cotton, nylon, rayon or like floc on a base of polyethylene, polyvinyl chloride, or other plastic materials, as by means of a suitable adhesive. When the mitt of this invention is for use as a face-cloth, the plastic sheet may advantageously be perforated at various portions of its area in order facilitate out-flow of water from the pocket between the two layers. Such perforation of the plastic sheet or the imprinting of advertising material or other text is advantageously effected while the sheet is still in continuous web form, i.e. before it is fed to the mitt-forming machine of FIG. 1.

It will be understood that bag-like articles other than the mitts above-described may be made within the scope of this invention. The machine of FIG. 1 makes it possible to double the capacity of known bag-forming machines by effecting the formation of two bags simultaneously on each side of the plate 16 by reason of the fact that pairs of hot heat-sealing bars are simultaneously run against two resilient surfaces, with the webs to be sealed interposed. Furthermore, the machine of FIG. 1 may be extended to provide for filling and closing of the bags thus formed. Thus, as shown at the right of FIG. 1, the bags, while still in web form, i.e. before being severed are filled in conventional manner with any suitable commodity indicated generally at 25, and the bags are then closed by heat-sealing as indicated at 26, after which the bags are severed as described above. In this form of operation, the severing indicated at A, B and C at the center of FIG. 1 is thus transferred to a later stage of operation and the bags are retained in integral web form until after they have been filled and closed.

In accordance with a further aspect of this invention, "duplex" or plural-ply envelopes or bags may also be formed in a highly efficient manner. Such bags or enve-

lopes are suitable, for example, for the packaging of liquids and normally damp or wet commodities. In the packaging of liquids, such as oil, milk, and the like, containers and bags may be used provided the inner surface thereof is moistureproof. Such a container can be made from a laminated sheet provided the moistureproof lamina is the one in contact with the liquid. A suitable laminated sheet may be formed for example of a sheet of Pliofilm or the like laminated to paper. Thus, referring to FIG. 7 there is shown a modified form of the apparatus of FIG. 1 which is particularly adapted for the formation of such duplex or plural-ply containers. In FIG. 7, wherein parts corresponding to those shown in FIG. 1 have been given like reference numerals to which 100 has been added, the supply rolls 114a and 115a are like the rolls 14a and 15a except that they are transposed so that the plastic web 115 lies over web 114 so that when the V is formed the plastic web will be on the inside. After leaving the rolls 114a and 115a, the webs 114 and 115 pass between heating rollers 135 which apply heat and pressure to the two webs and seal the plastic web to the other web which is suitable of paper. The rollers may be heated electrically, by gas, or by other known means. The laminated web is then moved into contact with rotary "plow" 118 which gives it the V-configuration referred to above so that the resultant V-shaped web is similar to the webs in FIG. 1 except that the two webs are laminated together with the plastic web on the inside. The resilient plate 116, instead of lying between the arms of the V as in FIG. 1, however, lies on the outside of one of the arms, as seen in FIG. 7 wherein it is behind the V-web formation, and the heat-sealing elements are on the opposite side of the V, as indicated by the L-shaped heat-sealing bar 120, which is like the bar 20 of FIG. 1.

As in the embodiment of FIG. 1, the webs may be severed between the pairs of transverse heat seals 112 to provide open-mounted duplex envelopes or bags, or, as shown at the right in FIG. 7, the integral but heat-sealed web may be moved on to conventional filling stations (not shown) to receive the wet or moist commodity to be packaged, indicated at 125, and subsequently closed by heat-sealing at 126, and then severed to separate individual packages.

While I have referred above to heat-sealing by means of heat-sealing elements cooperating with a resilient surface, it will be understood that the heat-sealing step may also be effected by means of opposed pairs of heat-sealing elements acting upon opposite sides of the web, as indicated in FIG. 10 and as shown in my Patent No. 444,685.

It will be further understood that various other changes and modifications may be made in the embodiments described above and shown in the drawing solely by way of illustration without departing from the scope of the invention as defined in the appended claims. For example, in the embodiment of FIG. 7, the heating rollers 135 may be omitted or they may be used but not heated. In this case the web plies will not be sealed to each other by these rollers and the envelope or bag which is eventually formed will have plural-ply walls in which the plies are secured only along the heat-seal lines applied downstream of the rollers 135. Similarly, the horizontal or longitudinal heat seal line adjacent the fold or crease line of the V-shaped webs may be omitted and the transverse heat seal lines extended across the fold. It is intended, therefore, that all matter contained in the foregoing description and in the drawings shall be interpreted as illustrative only and not as limitative of the invention.

What I claim is:

1. An apparatus for making a bag-like article from a plurality of webs of sheet material which comprises means for superposing said webs, means for deforming said webs along a longitudinal crease line to form a V-shaped configuration with two outwardly diverging legs each con-

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sisting of the plurality of plies defined by said webs, means for heat-sealing the webs in each leg along a longitudinal line parallel to said crease line and along transverse lines perpendicular to said crease line, said transverse lines being arranged in pairs of spaced-apart lines, a resilient plate disposed between said legs to back-up the heat-sealing means, and means for severing said legs transversely between the lines of each of said pairs of lines.

2. An apparatus as defined in claim 1, further comprising second heat-sealing means to form a second longitudinal heat-seal line extending between said pairs of transverse lines but spaced from said first-named longitudinal line.

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