This invention relates to paper, cellulose and the like bags, the object being to provide improvements therein.

Paper, cellulose and the like bags have been formed by twisting folding one end of the tubular web and applying adhesive to both folds so as to form the bottom of the bag.

It has been found, however, that this method produces a perfectly bottomed powder-proof bag, because dry powders and flaky materials can gradually work their way around these folds to such a degree that the material of which the bag is made will burst; also because of the straining imposed on the outer sheet of the bag by the folding, there is a tendency to unfold when the bag is packed, thus helping to give access to the dry powder and the like.

The method, according to the present invention, of manufacturing a paper, cellulose or the like bag, comprises applying adhesive to the web transversely thereof before it is formed into a tube whereby when the tube is formed the two walls of the tube are united together by their internal surfaces at the place destined to be the bag bottom, applying adhesive transversely and externally of the walls of the tube, folding over the tube bottom twice, and uniting said folds together by the said externally applied adhesive.

In the accompanying drawings:

Fig. 1 is a transverse section of a paper web from which a bag tube is to be formed; and
Fig. 2 and 3 are a transverse section, and a fragmentary plan view, respectively, of a formed bag tube.

Fig. 4 is a fragmentary longitudinal section of a bag tube before folding.

Fig. 5 is a fragmentary longitudinal section of the bag tube after once folding the end thereof.

Fig. 6 is a fragmentary longitudinal section of the bag after being formed by twice folding the tube end.

Figs. 7, 8, 9, 10 and 11 illustrate alternative arrangements of applying the transverse adhesive strips.

In the drawings the thickness of the paper and of the adhesive is exaggerated for ease of illustration.

Referring to Figs. 1, 2 and 3, the paper web a is provided, before formation into a tube, and on the face adapted to be disposed within the tube, with a transverse strip of adhesive b, separate such strips being disposed at intervals of one bag tube length along the web and spaced from one intended end of a bag tube as hereinafter described so that when the formed tube is cut into bag lengths there will be one of said adhesive strips b, securing the two walls of the tube together in facial contact, near to one end of each bag length of tube. The web is also provided on one face and near to one edge with a strip of adhesive c running continuously along the length of the web. The strips of adhesive b and c may be applied to the web whilst it is passing to the tube forming mechanism of the bag-making machine. The web is then formed into a tube, the two portions e' and e'' of one wall e of the tube are attached to each other by the adhesive strip c, and the said wall e is attached to the other wall f at intervals of a bag length by the adhesive strip b.

The tube is then cut into bag lengths, and the said bag lengths are passed into a unit of the machine which will apply transverse strips of adhesive g and h, Fig. 4, to the outer face of the wall e of the tube; the two strips of adhesive may be applied at separate times or simultaneously.

The end of the tube near to which the transverse strip of adhesive b is disposed and is uniting the two walls, is then folded over once and secured by the adhesive strip g, as shown in Fig. 5. The tube is folded over a second time and again secured by the adhesive strip h, as shown in Fig. 6.

The adhesive strip b is spaced from the end of the tube so as to be positioned between the two lines of folding.

It will be seen from Fig. 6 that by forming a bag according to this invention, the walls thereof are united within the folded portion of the bag bottom next to the interior of the bag for the whole of the transverse width of the bag by the adhesive strip b and means are thereby provided to prevent powder or other materials charged into the bag seeping or creeping around the folds of the bag bottom.

It is obvious that the effect of securing the folds of the bag bottom together may be obtained by applying the strips of adhesive g and h in the positions on the wall e shown in Fig. 7, or that said strips of adhesive may be applied one to the wall e and the other to the wall f as shown alternatively in Figs. 8 and 9.

Furthermore, one wide strip of adhesive i may be applied to the wall e of the tube, as shown in Fig. 10, which will serve to secure both folds of the bag bottom.

The two strips of adhesive g and h, when applied in the positions shown in Fig. 4, may be connected together at their ends by short longitudinal strips of adhesive k as shown in Fig. 11.
Although in the description of the forms illustrated the web is described as being of paper, it should be understood that the web may be of cellulosic material, or of material like to paper or cellulose.

The invention may be applied to flat or satchel bags.

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

1. A paper, cellulose or the like bag wherein the bag bottom is formed of two folds of the two walls of the bag, a transverse strip of adhesive being disposed between each of said folds and uniting said folds together, characterised in that both walls of the bag are united together for the whole transverse width of the bag by a transverse strip of adhesive disposed between said two walls and located opposite the adhesive strip of the first fold of the walls of the bag and sealing both bottom forming folds adjacent the inner end of the folded portion of the walls against the infiltration of fine powder-like material of the contents of the bag when the same is filled, whereby a silt-proof bag bottom is provided.

2. The method of manufacturing a paper, cellulose or the like bag from a web comprising applying a strip of adhesive longitudinally of the web at one edge thereof, applying to that side of the web intended to be disposed inside of the bag transverse strips of adhesive spaced one bag length apart and extending across the central area of the web and terminating substantially equidistant of the side edges of the web, folding the web longitudinally to form a flat tube whereby said longitudinal strip of adhesive unites the edges of the web to each other and said transverse strips of adhesive interiorly of the tube unite the two walls of the tube to each other internally of the tube for the entire transverse width thereof, cutting the said tube transversely into tubular bag lengths, the cutting lines being spaced from said interior transverse strips of adhesive a distance sufficient to allow one end of each bag length to be folded twice and said transverse strips of adhesive to be located adjacent the inner end of the foldable portion of the bag length, applying two transverse strips of adhesive externally to each of said tubular bag lengths located so as to unite said folds to each other and to the walls of the bag, folding said end of the tubular bag length twice and uniting said folds to each other and to the bag walls and locating the transverse strip of adhesive of the first fold opposite the internal transverse strip of adhesive to seal both of said folds against infiltration of fine powder-like material of the contents of the bag when filled, whereby a silt-proof bag bottom is provided.

ARTHUR ASHMAN.

REFERENCES CITED

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

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,062,265</td>
<td>Haskell</td>
<td>Nov. 24, 1936</td>
</tr>
<tr>
<td>2,013,672</td>
<td>Royal</td>
<td>Sept. 10, 1933</td>
</tr>
</tbody>
</table>

FOREIGN PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>684,041</td>
<td>France</td>
<td>June 20, 1930</td>
</tr>
<tr>
<td>389,029</td>
<td>Great Britain</td>
<td>Mar. 9, 1933</td>
</tr>
<tr>
<td>772,016</td>
<td>France</td>
<td>Oct. 22, 1934</td>
</tr>
</tbody>
</table>