C. H. HOWARD.

BAG.

APPLICATION FILED FEB. 26, 1917.

1,363,196. Patented Dec. 21, 1920.

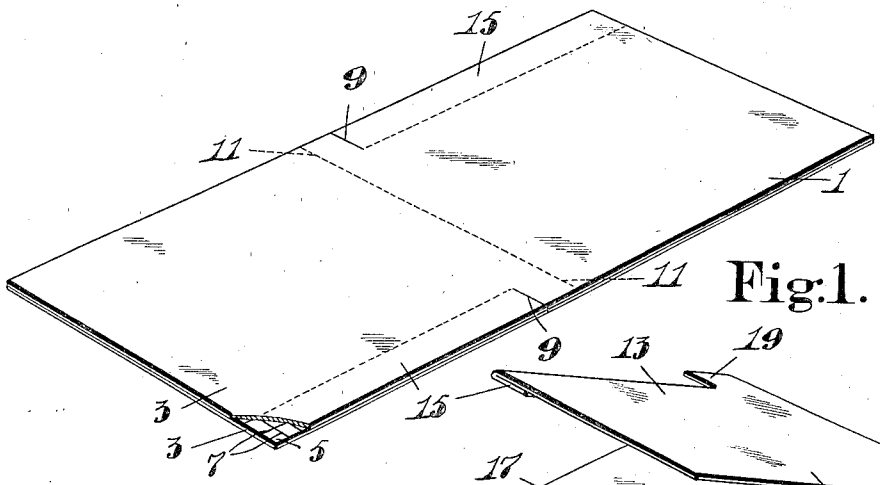


Fig:1.

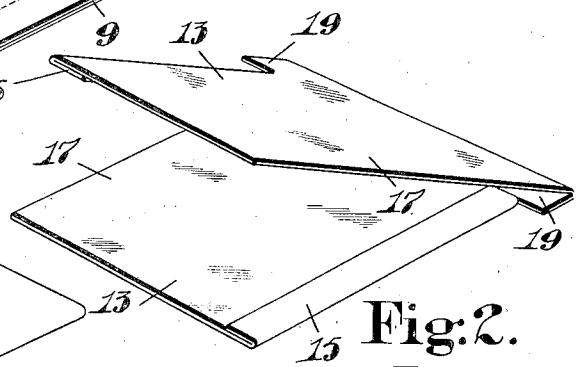


Fig:2.

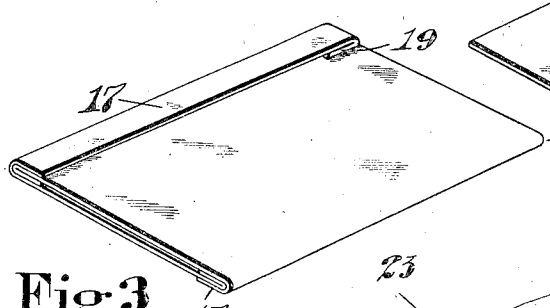


Fig:3.

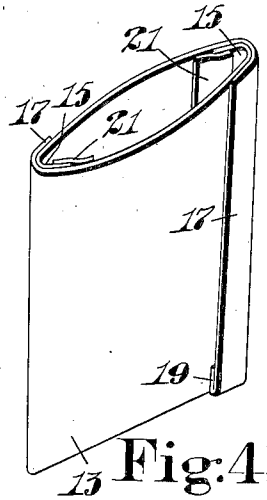


Fig:4.

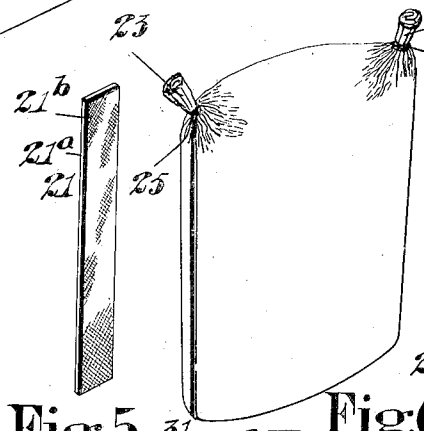


Fig:5.

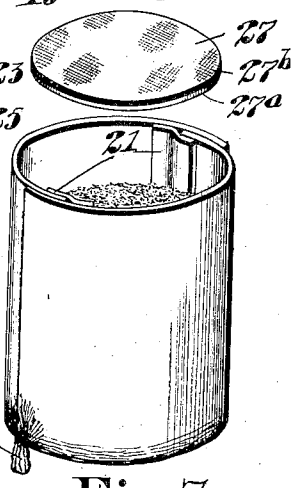


Fig:6.

Fig:7.

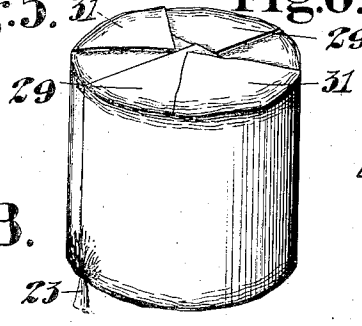


Fig:8.

INVENTOR
Charles H. Howard
BY
Robt. P. Harris.
ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES H. HOWARD, OF SAUGUS, MASSACHUSETTS, ASSIGNOR TO PAPER PRODUCTS MACHINE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

BAG.

1,363,196. Specification of Letters Patent. Patented Dec. 21, 1920.

Application filed February 26, 1917. Serial No. 150,931.

To all whom it may concern:

Be it known that I, CHARLES H. HOWARD, a citizen of the United States, residing at Saugus, in the county of Essex and State of Massachusetts, have invented an Improvement in Bags, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to bags, and more particularly to bags for receiving cement.

Paper bags for this purpose must be strong, cheap, and impervious to moisture. Black asphaltum and other water-proof adhesives commonly used for rendering paper sheets impervious to moisture while excellent for waterproofing purposes, lack sufficient strength to hold the seams of the bag together when tensioned by the weight of the cement in the bag.

Certain forms of glue or non-waterproof adhesives have adequate strength for the purpose, but if exposed at the seams to moisture exterior of the bag, these adhesives become softened, release their hold, and permit the bag to burst open with consequent loss of cement therefrom.

On the other hand, if the non-waterproof adhesive is applied to the seams so that it is not exposed to the outside atmosphere, the moisture in the adhesive will be unable to escape through the waterproofed paper of which the bag is made and the adhesive will not dry and harden properly, but will remain soft and ineffective to hold the seams together.

If the bag is permitted to remain open, the moisture in the adhesive in some of the seams may escape through the open end of the bag, but this requires a considerable length of time, and prevents the bags from being quickly and cheaply manufactured and packed in bunches in readiness for use. Also, if the tops of such bags are secured by a non-waterproof adhesive, either the adhesive is exposed to the outside atmosphere, or the moisture in the adhesive is unable to escape through the waterproofed paper of which the bag is made, and consequently the adhesive will be unable to set properly and secure the parts together.

Various forms of bags have been constructed having special valves through which the cement is fed to fill the bag and then these valves are closed; but these valve bags are expensive to manufacture, inconvenient to fill, and otherwise objectionable.

One of the objects of the present invention is to provide a bag which may be quickly and readily made and its seams closed by a strong adhesive which is so applied that it will dry quickly and set without being exposed to the outside atmosphere.

Another object is to provide a bag in which the moisture in the adhesive for the seams and for closing the top of the bag is absorbed by the material with which the bag is filled.

Another object of the invention is to provide a bag which may be simultaneously made and filled.

And still another object of the invention is to provide a bag which may be filled through one end, inverted, and handled from the opposite end.

The character of the invention may be best understood by reference to the following description of one good form of bag illustrated in the accompanying drawing, wherein:

Figure 1 is a perspective view of a blank from which the bag may be made;

Fig. 2 is a perspective view of the blank folded to present turned-in margins for the side seams of the bag;

Fig. 3 is a perspective view of the side margins turned over onto the body of the blank;

Fig. 4 is a perspective view of the bag in the form shown in Fig. 3 opened somewhat and supplied with internal binding strips for securing the side seams;

Fig. 5 is a perspective view of one of the binding strips;

Fig. 6 is a perspective view of the bag having its bottom corners gathered and served with cord to shape the bag and provide handles therefor;

Fig. 7 is a perspective view of the bag inverted and filled with material and in readiness to receive a cover shown in perspective above the bag; and

Fig. 8 is a perspective view of the filled bag showing the method of folding over the end thereof on top of the cover.

Referring to the drawing: The bag shown therein comprises a blank 1 (Fig. 1) which may be died out of suitable sheet ma-

terial. In the present instance of the invention a composite sheet is employed comprising outer paper lawers 3. 3 having a layer 5 of black asphaltum or other suitable waterproof material between them. To strengthen the sheet, reinforcing cords or filaments 7, preferably extending longitudinally and transversely of the sheet, may be interposed between the outer paper layers and embedded in the waterproof layer.

Slits 9, 9 may be made in the side edges of the blank conveniently in the course of the operation of dieing out the blank from the sheet material. Preferably these slits are offset and at opposite sides of a median line 11, 11 extending transversely to the blank.

Next, the blank is folded on said median line 11, 11 as will be noted in Fig. 2, to present opposed sides 13, 13 for the bag. Opposite margins 15, 15 of the sides may then be folded inward toward the inner faces of said sides. This will leave side margins 17, 17 projecting beyond said folded margins 15, 15. These margins 17, 17 are then coated with black asphaltum or other suitable waterproof adhesive and folded about the bends of the margins 15, 15 so that the outer margins will adhere to the inner margins and to the outside portions of the sides adjacent the same.

The edge slits of the blank being offset from the median line of the blank causes the margins 15, 15 to terminate short of said line, thereby leaving projections 19, 19 which may be folded with the outer margins 17, 17 and secured by the adhesive to the outer faces of the sides of the bag. This is an important feature since the fold at the bottom of the bag is doubled at the corners, thereby closing the open ends of the fold appearing in Fig. 2 and preventing leakage at said corners as will be noted in Fig. 3.

The waterproof adhesive at the margins sets quickly and renders the seams thereat waterproof, but as stated, the waterproof adhesive lacks adequate strength to secure the seams when placed in tension by the weight of material in the bag. These seams may be strengthened and secured in the present instance of the invention by a pair of binding strips 21, 21 (Fig. 5), comprising a layer 21^a of strong paper or other suitable pervious material coated with a layer 21^b of glue or other strong adhesive. These strips are introduced into the bag so that they overlap the inner margins 15, 15 and the adjacent portions of the sides of the bag, as will be noted in Fig. 4.

The moisture in the glue cannot escape through the waterproof sides and margins 15, 15 of the bag, but since the binding strips are pervious and not of waterproof material, the moisture may escape therethrough.

In order that the moisture in the binding strips may be quickly absorbed, the bag may be filled with cement or other absorbent material concurrently with or immediately after applying the binding strips. If means is used for positively introducing the cement into the bag, this means also may be desirably used to apply the binding strips to the bag, the procedure being such that the strips are moistened, introduced to and pressed against the inner surfaces of the margins 15, 15 and the adjacent portions of the bag. The bag with the binding strips applied thereto, and the cement therein is shown in Fig. 7. The cement will quickly absorb the moisture from the glue on the binding strips through the paper of said strips, thereby causing the glue to set quickly and secure the side margins of the bag together with sufficient strength to prevent any possibility of the bursting open of the seams of the bag from the weight of the material therein or in the handling of the same.

Previously to the filling of the bag, the bottom corners of the bag may be gathered as at 23 and be served and secured by cords 25. There are several advantages in this. It contributes to the desired shape of the bag, increases the strength of said corners, positively binds together the parts of the bag at the corners of the bag so as to prevent leakage thereat, and provides a pair of handles which may be readily grasped in handling the bag.

After the bag has been filled as described, the upper open end thereof is closed. To accomplish this, a cover 27 may be provided, conveniently died out of sheet material to present a shape conforming to the contour of a horizontal section of the filled bag. This cover comprises a layer of paper 27^a or other suitable material having on the upper face thereof a layer 27^b of glue or other strong adhesive.

This cover is introduced into the bag on top of the cement or other material therein with the adhesive face of the cover uppermost.

Then the opposed side portions 29 are folded over toward one another onto the adhesive face of said cover and become secured thereto. One of these portions may overlap the other and be secured thereto by black asphaltum or other waterproof adhesive.

Next the opposed upper side portions 31 are folded over toward one another onto the said portions 29 and are secured thereto by black asphaltum or other waterproof adhesive.

Preferably the portions 29, first folded, should be sufficiently large to cover the cover. Thus, the strong adhesive of the cover is united to a complete end closure and the strength of the adhesive is available to insure a strong, permanent bottom.

When the bag is completed, it has a waterproof closure throughout and therefore there is no opportunity for the moisture in the glue or the cover to escape to the outside atmosphere. However, since the cover is pervious to moisture, the latter is quickly absorbed by the cement through the cover and therefore the glue quickly sets and strongly secures the upper side portions 29 to the cover.

The amount of moisture absorbed from the binding strips and cover is too small to materially affect the cement.

The end of the bag last described forms a more appropriate bottom than top, and the end of the bag having the served corners forms a more appropriate top than bottom, consequently, the bag may be inverted end-for-end so that the handles thereof will be uppermost and accessible for moving the bag from place to place, as desired. Preferably the bag should be inverted promptly upon completion thereof so that the weight of the package will bear upon and press the folded-over end portions 29 and 31 into secure adhesive engagement.

The bag may be quickly and readily made by the method described. Since the bag is made and filled concurrently, the two processes are performed with a minimum number of operations and in a minimum amount of time. The delay and expense in separately making, bunching and marketing the bags are eliminated.

Also, a bag is produced which is not only waterproof throughout, but also is strong and able to withstand the handling thereof and the weight of the heavy material with which it is filled. The cover not only contributes to the tight closure of the bottom of the bag, but also serves as a desirable reinforcement therefor.

The bag may be simply and cheaply made of reinforced paper and adhesives. It dispenses with valves and other expensive devices and materials.

The bag described may not only be used for packaging cement, but obviously may also be used for packaging other materials, as desired.

It will be understood that the invention is not limited to the particular bag described herein, but that extensive deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What is claimed is:—

1. A waterproof bag for cement and other materials, comprising a bottom and opposed sides formed of waterproof paper, said sides having overlapped margins extending from the bottom toward the opposite end of the bag, a waterproof adhesive securing said margins together, a pair of internal securing strips extending longitudinally of said margins within the bag, each of said strips having portions superposed on the body of one of said sides and the margin of the other side and secured thereto by a non-waterproof adhesive, and a cover adapted to rest on top of the material in the bag, the upper portion of said sides being folded over and having the internal strips secured to the cover by a non-waterproof adhesive.

2. A closed waterproof bag for cement and other materials comprising a bottom, top and opposed sides of waterproof material, said sides having overlapped margins extending from the bottom toward the top of the bag, a waterproof adhesive securing said margins together, and a pair of internal securing strips extending longitudinally of said margins within the bag, each of said strips having portions superposed on the body of one of said sides and the margin of the other side, and a non-waterproof adhesive for securing said strip to said body and margin.

3. An air tight bag for cement or other absorbent material comprising a waterproof bottom, and opposed waterproof sides having overlapped margins, a waterproof adhesive securing said margins together, a pair of internal strips superposed on said margins and adjacent portions of said sides within the bag, a moisture-containing, non-waterproof adhesive securing said strips to said margins and portions and a cover adapted to rest on the material in the bag, the upper portions of said sides being folded over onto said cover, a non-waterproof adhesive securing the upper portions of said sides to said cover, the non-waterproof adhesive of the strengthening strips and cover being rendered effective by absorption of moisture therefrom by the absorbent material in the air-tight bag.

In testimony whereof, I have signed my name to this specification.

CHARLES H. HOWARD.