

May 24, 1938.

R. N. DOBLE

2,118,551

TEA BAG, COFFEE BAG, AND THE LIKE, AND METHOD OF MAKING THE SAME

Filed Oct. 19, 1937

2 Sheets-Sheet 1

Fig. 1.

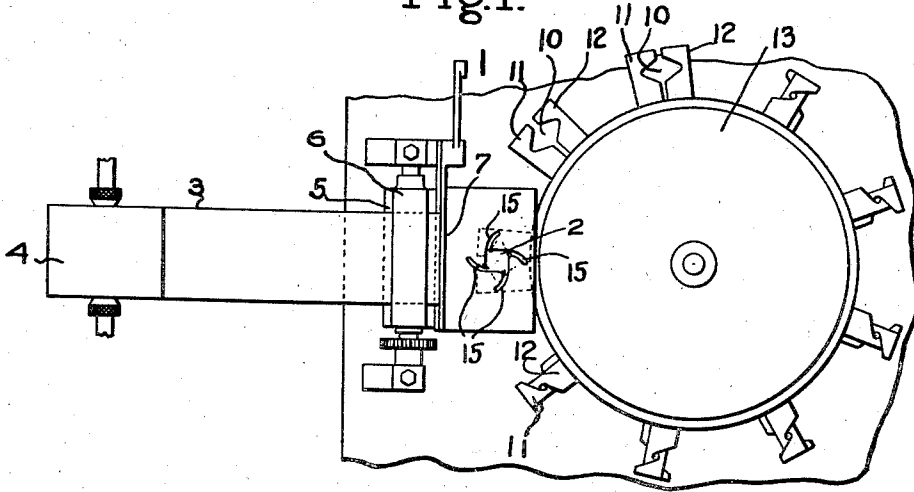
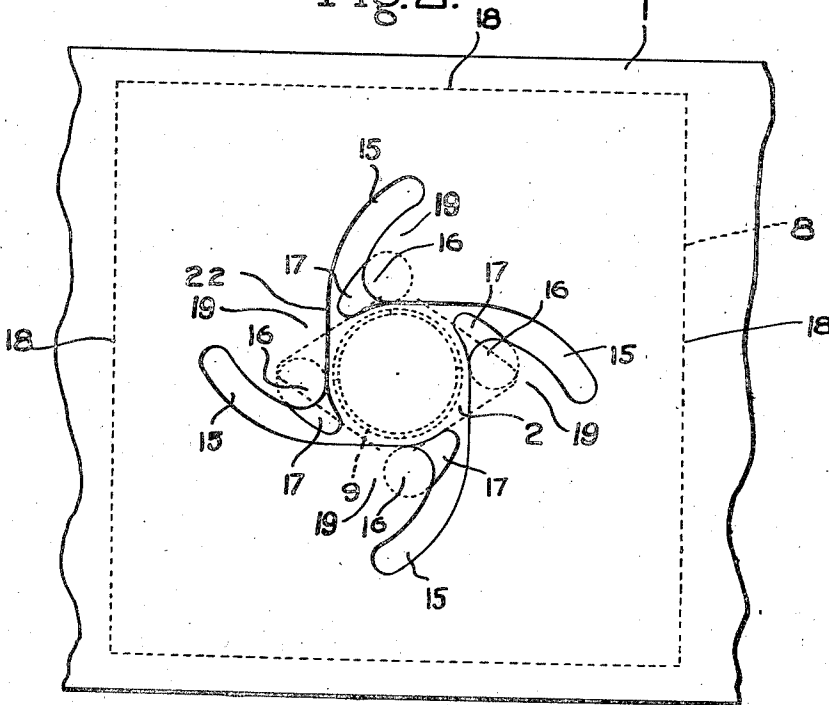


Fig. 2.



Inventor.
Ralph N. Doble
by *Harold Smith & Tennant.*
Attys.

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2 Sheets-Sheet 2

Fig.3.

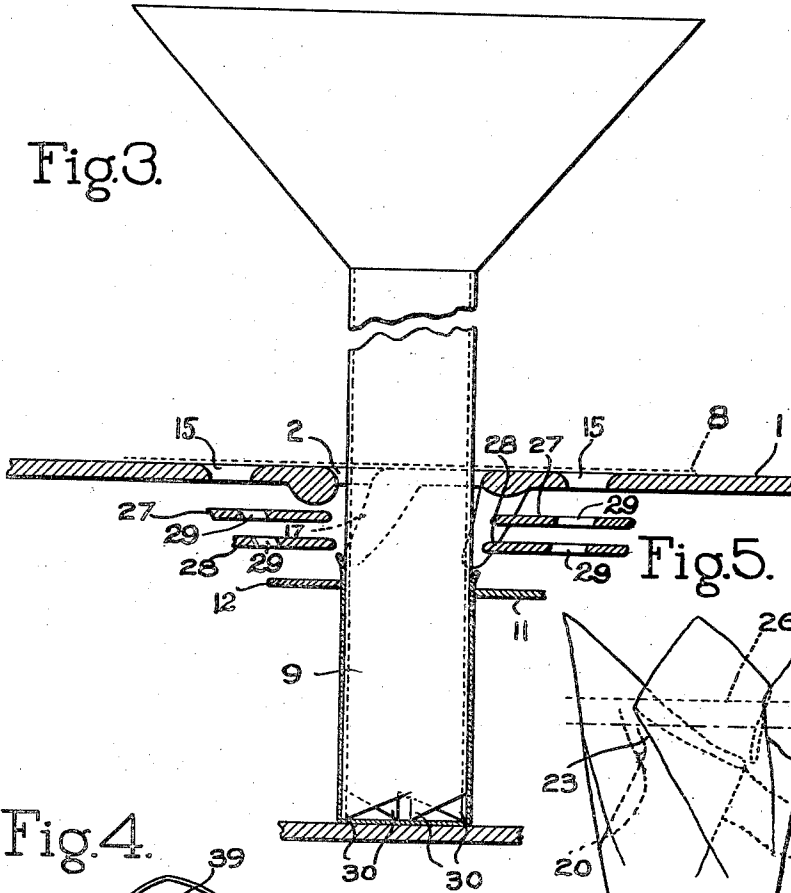


Fig.5.

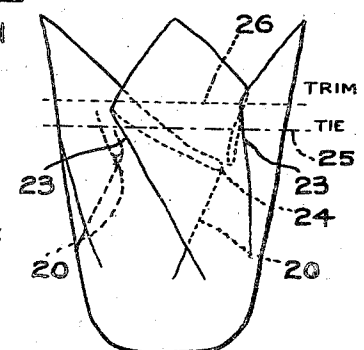


Fig.4.

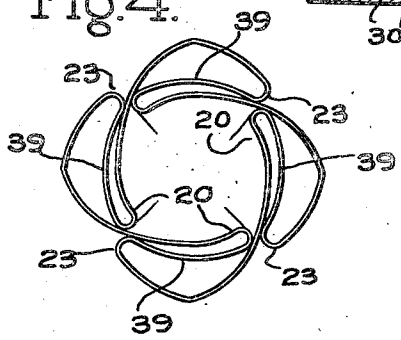
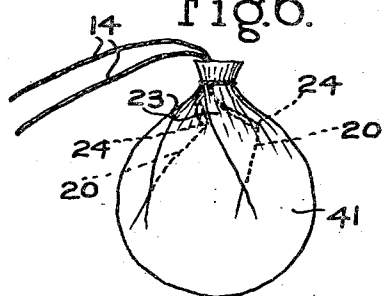


Fig.6.



Inventor.
Ralph N. Doble
by *Heard Smith & Tennant*
Attys.

UNITED STATES PATENT OFFICE

2,118,551

TEA BAG, COFFEE BAG, AND THE LIKE, AND METHOD OF MAKING THE SAME

Ralph N. Doble, Hingham, Mass.

Application October 19, 1937, Serial No. 169,763

10 Claims. (Cl. 99—77.1)

This invention relates to the manufacture of tea bags, coffee bags and the like, and particularly to the manufacture of bags of the so-called "pouch" type.

5 One of the principal objects of the invention is to provide a novel tea bag or coffee bag of the pouch type having a predetermined capacity which requires less material for the manufacture thereof than is required in tea bags or coffee bags
10 of the pouch type as now commonly made.

A further object of the invention is to provide a novel method of making such a tea bag or coffee bag.

15 A common method of making a tea bag or coffee bag of the pouch type is to place a blank of bag material, usually a gauze fabric, on a supporting plate which has a bag-forming opening therein with the opening centrally situated beneath the blank, and then to force the blank
20 through the opening by means of a combined bag-forming and filling tube with the result that the bag material becomes folded up around the filling tube by the edges of the bag-forming opening. While the filling tube still remains
25 within the partially formed bag a charge of tea, coffee or other ingredient is delivered into the tube and thus into the bag, after which the tube is withdrawn, the marginal portions of the blank are gathered together to close the mouth of the
30 bag and a tie string or other fastening device is then secured to the closed mouth of the bag.

The blank which is commonly used is a square blank, and when the blank is being forced through the bag-forming opening of the supporting
35 plate by means of the bag-forming and filling tube the central portion of each side of the blank as well as the corner portions of the blank are folded up against the tube in an indeterminate manner. Because the radial distance from the
40 center of the blank to the center of each side is less than the radial distance from the center of the blank to each corner, said corners of the blank will extend above the center portion of the side edge of the blank when the blank has been formed
45 into the bag shape by being forced through the bag-forming opening, and in order to make a tight bag it has been customary to apply the fastening device to the mouth of the bag at a point in which the entire edge of the blank will
50 be above the fastening device. In other words, the fastening device is usually applied to the mouth of the bag at a point below the location of the center portion of the side edges of the blank when they have been gathered together to
55 form the bag. After the bag has been tied or

the mouth of the bag has been fastened then the projecting corners are usually trimmed off a short distance above the fastening device. Where a bag is made in this way it is necessary to use a blank which is large enough so that when the
5 tie string or fastening device is placed on the mouth of the bag below all the edges of the blank the bag will still have sufficient capacity to hold the desired amount of tea or coffee.

My present invention provides a novel tea bag
10 or coffee bag and a novel way of making said bag by which a tight bag can be made even when the tie string is placed above a portion of the edges of the blank, and this makes it possible to make a bag having a given capacity from a blank
15 of smaller dimensions than would be required to make a bag of the same capacity if the tie string were placed below all the edges of the bag material as has heretofore been done. In forming my
20 improved bag I employ a supporting plate which is constructed so that as the blank of bag material is forced therethrough by the bag-forming and filling tube, the central portion of each side of the blank will be formed into an inner fold
25 which is overlapped and enclosed by another or outer fold formed from the corner portions of the blank. The bag is completed by gathering the mouth thereof together and applying the fastening device at a point above the edge of the
30 interior folds, and when this is done the exterior folds are clamped tightly around the interior folds, thus holding the interior folds closed so that there is no opening adjacent the mouth of the bag through which the tea, coffee or other con-
35 tents of the bag can leak out even though the entire edge of the bag material is not gathered into the tie string or fastening device and a portion of the edge of the bag material is located below the tie string.

In order to give an understanding of the in-
40 vention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

In the drawings;

45 Fig. 1 is a fragmentary plan view of a portion of a bag-forming machine embodying my invention and illustrating the special supporting plate employed to produce the above described results;

Fig. 2 is an enlarged plan view of the support-
50 ing plate;

Fig. 3 is a vertical fragmentary sectional view illustrating the operation of the combined bag-forming and filling tube in making the bag;

Fig. 4 is a somewhat diagrammatic view show-
55

ing the partially formed bag in plan view and illustrating the relation of the interior and exterior folds;

Fig. 5 is a side view of the partially formed bag illustrating the manner in which the bag material is folded as it is forced through the bag-forming opening;

Fig. 6 is a view of the completed bag.

Inasmuch as the present invention relates to the supporting plate and its bag-forming opening and the manner in which the blank of bag material is formed by said plate, I have not thought it necessary to illustrate herein a complete machine but have only shown such portions of a bag-forming machine as may be necessary to give a proper understanding of the invention. In Fig. 1, 1 indicates the supporting plate which has a bag-forming opening 2 therein. The bag material 3 is shown as being in the form of a strip or web which is taken from a supply roll 4 and is fed to the supporting plate 1 through the medium of feed rolls 5, 6. After a suitable length of the bag material has been fed over the supporting plate 1 then such length is cut off from the strip 3 by means of a suitable shear device 7, and the portion which is thus cut off then constitutes a blank of bag material from which a bag is formed. This blank is usually square and is illustrated by the dotted lines 8 in Figs. 2 and 3. After the blank 8 has been placed in position over the bag-forming opening 2 said blank is formed into a bag by means of a bag-forming and filling tube 9 which is forced downwardly against the blank 8 and through the opening 2, thereby causing the outer portions of the blank of bag material to be folded up around the tube by the edges of the bag-forming opening 2.

During the downward movement of the tube 9 the bag material is not only forced through the opening 2 but also forced into or through the opening 10 between two jaw members 11, 12 that are mounted on a suitable turret 13, as shown in Fig. 3.

After the bag has been thus formed a charge of tea, coffee or other ingredient is deposited in the tube 9 and thus into the bag, and the tube is then withdrawn, after which the jaws 10 and 11 are closed together to close the mouth of the bag and a tie string or fastening device 14 is then applied to the bag to hold the mouth closed. The upwardly projecting corners of the bag material are then trimmed off thereby to produce a bag 41, as shown in Fig. 6.

The parts thus far described, with the exception of the supporting plate 1, are or may be of the same construction as illustrated in Patents No. 1,700,672, January 29, 1929, No. 1,857,662, May 10, 1932, and No. 1,911,805, May 30, 1933.

According to my present invention I employ a supporting plate having a bag-forming opening of special construction which is designed to fold the bag material around the tube 9 in a special way so that a tight bag will be formed even if the tie string or fastening device is placed above the edge of the center portion of each side of the blank. This makes it possible to use a smaller blank for a bag of a predetermined capacity than could be used if a tie string were placed entirely below the entire edge of a folded blank.

The bag-forming opening in the plate 1 has the central open portion 2 and four curved slots 15 extending outwardly therefrom, said slots forming between them fold-forming portions 16. The plate is formed on its under side with an inclined finger 17 extending downwardly from each fold-

forming portion 16, each finger having a sort of tangential arrangement with respect to the central portion of the opening, and inclining in a direction opposite to that of the adjacent slot 15.

The square blank 8 of bag material is fed onto the supporting plate in the position shown in dotted lines 2 with the fold-forming portion 16 opposite the central portions 18 of the sides of the blank. As the bag-forming tube 9 is entered into the bag-forming opening 2 the portions 19 of the blank 8 forming the central portion of each side thereof are formed into a fold 20 around one of the fold-forming portions 16, and each corner portion 21 of the blank is formed by the edge 22 into a fold 23 which is oppositely disposed from the adjacent folds 20, and which is also located on the outside of one of the folds 20. The folds 20 into which the portions 19 of the blank are formed may be termed "inside folds", and the folds 23 formed by the edge 22 and the slots 15 which are located outside of the folds 20 may be termed "outside folds". In forming these inside and outside folds 20 and 23, the outer side of the inside fold, which is indicated at 39 in Fig. 4, constitutes the inner side of the outside fold, this portion 39 being common to both folds. The relative position of each slot 15 and the adjacent folding portion 16 and finger 17 cause the inside folds 20 to hug the tube 9 and cause the outside folds 23 to overlap the inside folds as best seen in Figs. 4 and 5. The overlapping fold formation which is thus initiated by the fold-forming portions 16 and fingers 17 is maintained by the jaws 11, 12 as the bag is forced through said jaws by the tube 9, and when the charge of tea, coffee or other ingredient has been deposited in the bag and the tube 9 has been withdrawn, this overlapping relation of the folds 20 and 23 is still maintained when the jaws 11 and 12 are closed together to close the mouth of the bag. After the bag has been formed and filled and the mouth has been closed by the jaws 11 and 12, then the tie string or fastening device 14 is applied to the closed mouth of the bag and I propose to apply such fastening device to the bag mouth above the ends 24 of the folds 20, as indicated by the dot and dash line 25 in Fig. 5. Although the fastening device 14 is placed on the bag above the ends 24 of the inner folds 20, yet since these inner folds are tucked within the exterior folds 23 and are closely held in their tucked-in relation by the tightening of the fastening 14 there is no possibility that the contents of the bag may leak out over the edges 24 of the folds 20.

By having the tie string or fastening device placed above the ends 24 of the inner folds 20 it is possible to make a bag having a given capacity from a smaller piece of bag material than if the tie string were placed below the edge 24. This means that for making bags of a certain size it is possible by means of my invention to use a web 3 of bag material which is narrower than that formerly used and to use a shorter length of such web 3 for forming each bag.

In my improved bag 41 the corner portions only of the blank are located above the tie string and fastening device, and the central portions 18 of the side edges of the blank are located below the tie string or fastening device, but because such portions 18 are formed into interior folds which are tucked within or overlapped by the folds formed from the corner portions of the blank there is no possibility that the contents of the bag will leak out over the edges 24 of the inner folds.

In Fig. 5 the dotted line 26 indicates the line along which the corners of the bag may be trimmed off after the fastening device has been secured thereto.

In order to assist in making the folds 20, 23 I may, if desired, employ additional folding plates 27, 28 beneath the supporting plate 6, said additional plates 27, 28 being carried by the fingers 17 and having slots 29 corresponding to the slots 15. These additional plates 27, 28 serve to hold the folds 20 and 23 in their overlapping relation as the bag material is carried through the plates and into and between the jaws 11 and 12.

The bottom of the tube 9 is shown as having a stepped or toothed surface presenting a plurality of teeth 30. The purpose of these teeth is to prevent the bag material from twisting out of its proper position during the initial movement of the tube 9 into and through the opening 2.

I claim:

1. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened in their gathered-together relation by a fastening device, in which the bag material constituting the side walls of the bag is formed into inner and outer overlapping folds arranged alternately in a predetermined order, said outer folds overlapping the adjacent inner folds.

2. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened in their gathered-together relation by a fastening device, in which the bag material constituting the central portion of each side of the blank is formed into an inner fold and each corner portion of the blank is formed into an outer fold which overlies the adjacent inner fold.

3. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened in their gathered-together relation by a fastening device, in which the bag material constituting the central portion of each side of the blank is formed into an inner fold extending in one direction circumferentially of the bag and the corner portions are formed into exterior folds which extend in the opposite direction circumferentially of the bag and overlie the inner folds.

4. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened in their gathered-together relation by a fastening device, in which the bag material constituting the central portion of each side of the blank is formed into an inner fold extending in one direction circumferentially of the bag and the corner portions are formed into exterior folds which extend in the opposite direction circumferentially of the bag and overlie the inner folds, and in which the fastening device is located above the ends of the inner folds.

5. The method of making a tea bag, coffee bag and the like which consists in forming a rectangular blank into the form of the bag by turning

the outer portions of the blank upwardly, and in so doing forming the central portion of each side of the blank into an inner fold extending from adjacent the bottom toward the top of the bag, and forming each corner portion of the blank into an outer fold which is oppositely disposed to and overlaps the adjacent inner folds.

6. The method of making a tea bag, coffee bag and the like which consists in forming a rectangular blank into the form of the bag by turning the outer portions of the blank upwardly, and in so doing forming the central portion of each side of the blank into an inner fold extending from adjacent the bottom toward the top of the bag, forming each corner portion of the blank into an outer fold which is oppositely disposed to and overlaps the adjacent inner folds, and then securing a fastening device tightly around the neck of the bag into a position above the upper end of the inner folds.

7. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened in their gathered-together relation by a fastening device, in which the bag material constituting the side walls of the bag is formed into inner and outer folds arranged in a predetermined order with each inner fold situated back of and overlapped by an outer fold.

8. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened together in their gathered-together relation, in which the bag material constituting the side walls of the bag is formed into shorter inner folds and longer outer folds, said inner and outer folds being arranged in a predetermined order with each shorter inner fold situated back of and overlapped by a longer outer fold.

9. A tea bag, coffee bag and the like of the pouch type made from a rectangular blank of bag material having its edges gathered together and fastened together in their gathered-together relation, in which the bag material constituting the side walls of the bag is formed into shorter inner folds and longer outer folds, said inner and outer folds being arranged in a predetermined order with each shorter inner fold situated back of and overlapped by a longer outer fold, and in which the fastening device is located above the ends of the shorter inner folds.

10. The method of making a tea bag, coffee bag and the like which consists in forming a rectangular blank into the form of a bag by turning the outer portions of the blank upwardly, and in so doing forming the central portions of the sides of the blank into inner folds extending from adjacent the bottom of the bag toward the top of the bag arranged in a predetermined order, and forming the corner portions of the blank into outer folds which are also arranged in a predetermined order and which overlap and enclose the inner folds.

RALPH N. DOBLE. 65