Nov. 7, 1939. R. K. SLOCUM 2,179,024

APPARATUS FOR PRODUCING A PACKAGE

Original Filed Oct. 8, 1936 2 Sheets-Sheet 1

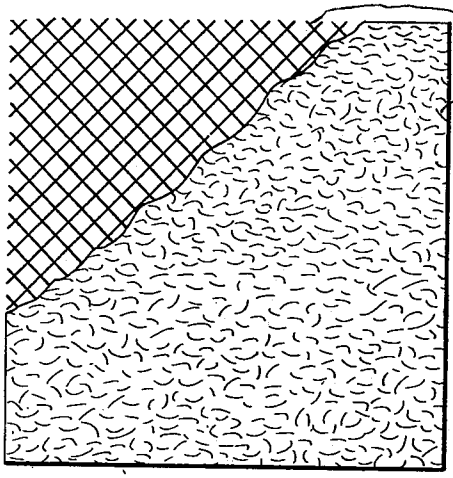


Fig. 1

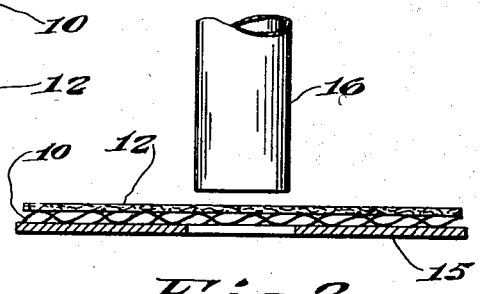


Fig. 2

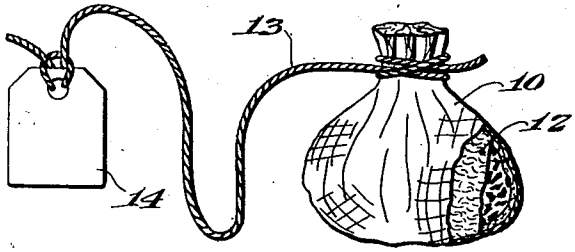


Fig. 3

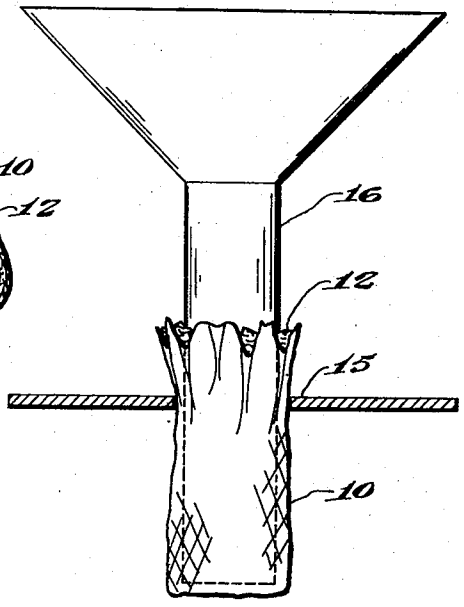


Fig. 5

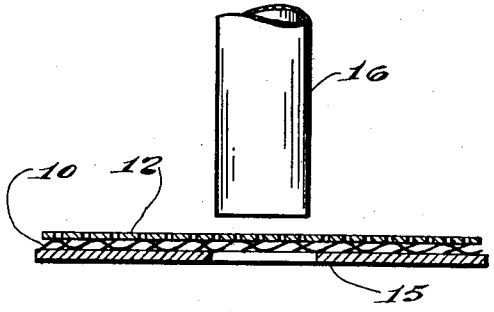


Fig. 4

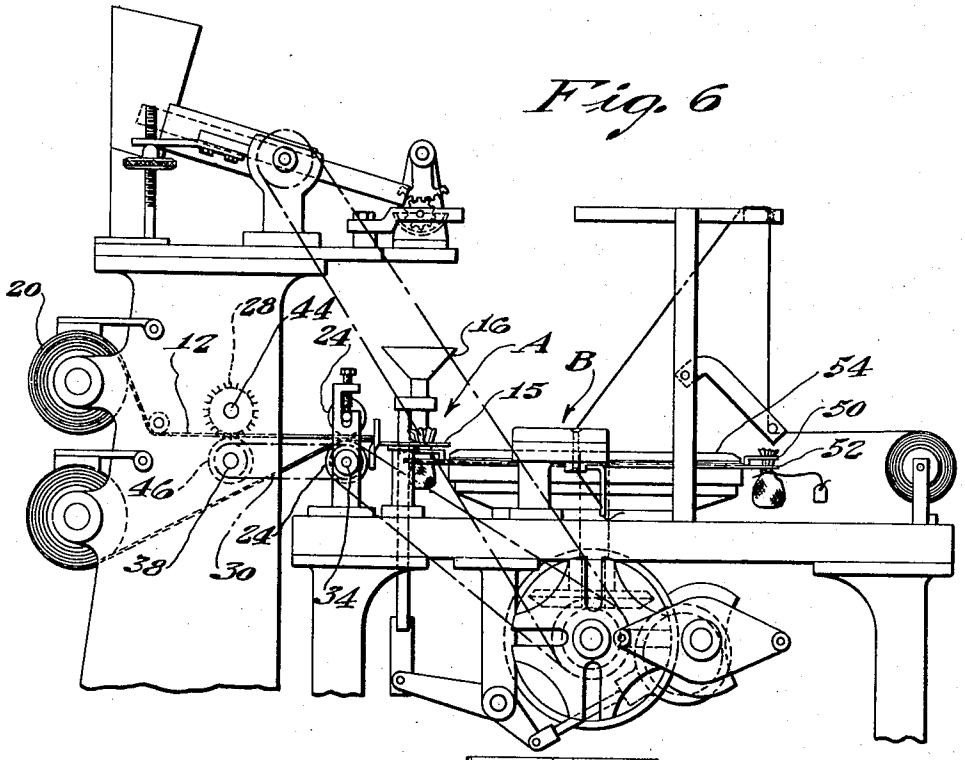
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APPARATUS FOR PRODUCING A PACKAGE

Original Filed Oct. 8, 1936 2 Sheets-Sheet 2

Fig. 6



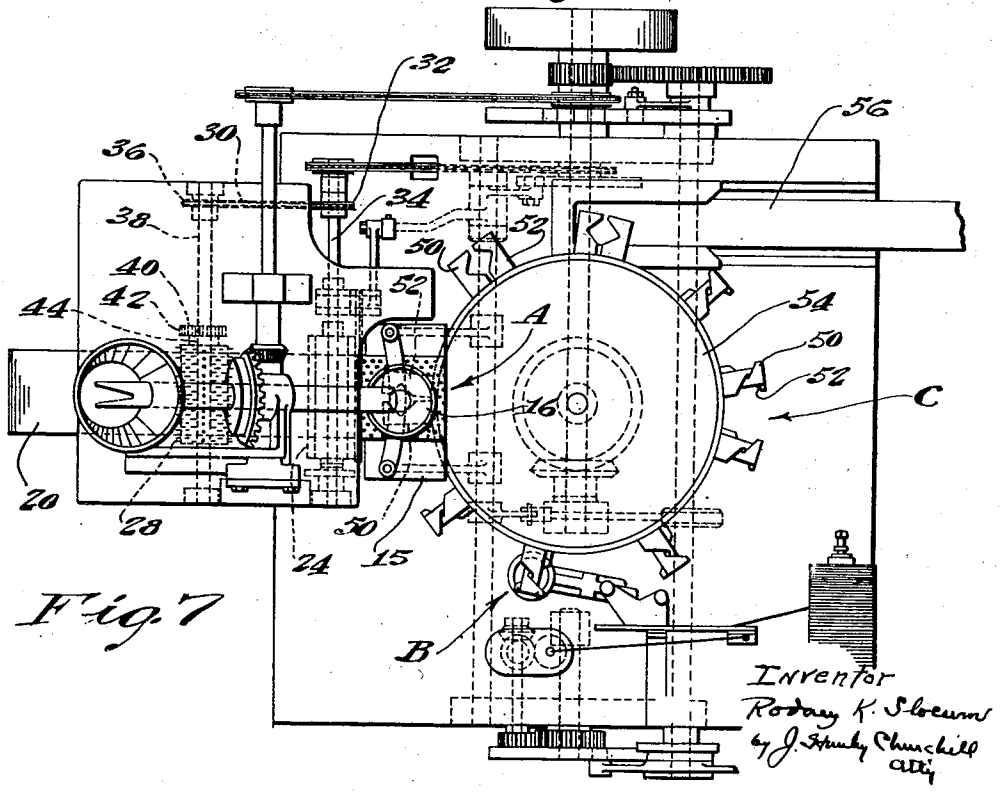


Fig. 7

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APPARATUS FOR PRODUCING A PACKAGE

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Original application October 8, 1936, Serial No. 104,612. Divided and this application February 17, 1937, Serial No. 126,226

2 Claims. (Cl. 93—3)

This invention relates to an apparatus for producing a package comprising a perforate bag containing a material such as tea, coffee, or the like.

The invention has for an object to produce a novel and improved apparatus for producing the improved package in an efficient and preferably automatic manner.

With this object in view and such others as may hereinafter appear, the invention consists in the apparatus hereinafter described and particularly defined in the claims at the end of this specification.

The drawings illustrate the preferred form of apparatus for producing the improved package, wherein Fig. 1 is a plan view of a blank comprising the inner and outer jackets superimposed on one another for forming the tea bag; Fig. 2 is a diagrammatic view illustrating one step of the method preferably employed in producing a tea bag embodying the present invention; Fig. 3 is a perspective view with parts in section illustrating the completed tea bag; Fig. 4 is a view similar to Fig. 2 illustrating a different type of material for forming the tea bag; Fig. 5 is a diagrammatic view illustrating a further step in the method preferably employed in producing a tea bag; and Figs. 6 and 7 are views in side elevation and plan respectively of the preferred apparatus for producing the present tea bag.

As far as I am aware prior to the present invention tea bags have been constructed of a single ply of gauze and in order to prevent leakage of the tea through the interstices of the gauze both during shipment and during the use of the tea bag, a very fine mesh gauze has been used. For commercial reasons it is highly desirable to reduce to a minimum the cost of the gauze. In practice it has been found that the cost of gauze forms a substantial part of the cost of a tea bag and accordingly the present invention aims to produce a novel construction of tea bag in which a much coarser and consequently less expensive gauze may be employed in the production of the tea bag and at the same time leakage of the tea out through the interstices of the gauze prevented to the end that tea bags of a construction as will permit efficient extraction of the tea with minimum contamination of the tea liquor by tea grounds or leaves may be produced more economically than has heretofore been possible.

While in its broader aspects the invention contemplates a novel package for containing various commodities, for purpose of illustration the invention has been herein illustrated as embodied in a tea bag and in a machine for producing a tea bag. In the illustrated machine shown in Figs. 6 and 7, such portions of an automatic tea bag machine of the general construction shown in the U. S. Patent to Doble, No. 1,726,060, dated August 27, 1929, have been herein shown as will enable the different features of the invention to be understood, and except as to details of construction and modes of operation to be pointed out, the present bag forming apparatus may and preferably will comprise the machine illustrated in said Doble patent to which reference may be made for a complete description thereof.

In general a tea bag embodying the invention comprises an outer bag 10 and an inner or lining bag 12 and both the outer and inner bag members 10, 12 are of an open structure adapted to permit the extraction of the tea outwardly through the interstices of the outer and inner bag members. The double jacketed bag containing the commodity may be closed in any usual or preferred manner and preferably provided with a handle comprising a string 13 and tag 14 as in the conventional form of tea bag.

The inner bag member 12 may comprise a fibrous sheet of a character capable of forming in effect a filter and the outer bag member 10 may comprise a fibrous sheet of a relatively open structure and which in the double jacketed bag forms a reenforcement for the inner or filtering bag member 12. In practice it is preferred to utilize an inexpensive cotton gauze of open structure or coarse mesh as the outer bag member. In practice the inner bag member may comprise an inexpensive paper batt, or loosely formed web, or a perforated paper sheet and in use serves to restrain the tea or the commodity within the bag and to in effect form a filter.

Referring now to the drawings, in the illustrated machine the bag forming members 10, 12, preferably in the form of sheets or webs are superimposed over a die 15 and under a forming and filling tube 16 as illustrated in Fig. 2. The outer member 10 is laid on top of the gauze or inner member 12 so that when the forming tube 16 is caused to descend to form the bag as shown in Fig. 5, the member 12 will form the inner jacket and the gauze 10 the outer jacket of the bag. For the convenience of description the inner member 12 will be referred to as the paper and the outer member as the gauze.

When the material comprising the inner member 12 is such as to require perforation, such as some grades of paper, provision is preferably made for performing the operation during the

feeding of the web from the supply roll 20, to beneath the bag forming tube 16, and as herein shown, before entering the feed rolls 24, the paper web 12 is guided past a perforating roll 28 which is driven from, and in timed relation to, one of the feed rolls 24, through a chain 30 which runs over a sprocket 32 secured to the feed roll shaft 34, and a sprocket 36 fast on a shaft 38. A gear 40 also fast on the shaft 38 meshes with a gear 42 secured to the perforating roll shaft 44. A supporting roll 46 which cooperates with the perforating roll 28 is also mounted on the shaft 38. The materials thus prepared and cut off are superimposed upon a supporting plate having the opening or die 15 formed therein, and under the forming and filling tube 16. When the character of material comprising the inner member 12 is such as to require no perforating, as for example when a loosely formed paper web, such as a batt, is utilized, then the web from the supply roll 20 is fed directly into the feed rolls 24. A perforated sheet is illustrated in Fig. 4.

Provision is made for reciprocating the tube 16 vertically to thereby force the paper and gauze down through the die 15 and form them into a pouch bag, and during such movement provision is made for depositing a predetermined quantity of tea or other desired commodity down through the tube 16 and into the interior of the formed bag. With the exception of the provision of the two supply rolls and the perforating rolls, the specific details of the apparatus thus far described and their mode of operation may and preferably will comprise those illustrated in the aforesaid Doble Patent No. 1,726,060, to which reference may be made for a complete description thereof.

As the double jacketed pouch bag is formed and filled in the manner described at the bag forming and filling station of the machine, provision is preferably made for inserting it between one set of double gripping jaws 50, 52 which are automatically opened at this station. After the bag has been formed and filled, the double gripping jaws are closed, thus closing the mouth of the bag, gripping the mouth portion at two points spaced a short distance apart, and operatively supporting the bag during the succeeding operations performed thereon, including the trimming of the surplus material from the mouth portion of the bag, the application of a closure for the mouth of the bag and of a handle comprising preferably a string 13 attached to the mouth of the bag and a tag 14 attached to the string as illustrated in Fig. 5.

In the illustrated machine it will be understood that the plurality of sets of gripping members 50, 52 are operatively supported by a rotatable disk or turret 54, and provision is made for intermittently rotating the turret 54 through successive steps by known mechanism as illustrated in said patent above referred to, so that the bag is formed and filled at one station as at A, and the gripping members 50, 52 are then operated to close the mouth of the bag and to operatively support it and convey it during the successive steps through which the turret 54 is rotated until the bag is presented to the mechanism for looping the string around the mouth of the bag, which is located at station B, and then to the mechanism for attaching the tag to the string at a succeeding station, not shown, but located at a point indicated at C. At a succeeding station means are provided for severing the string which up until this point connects two more of the containers together, and finally after the surplus material has been trimmed off the mouth portion of the bag, the jaws are opened and the completed bag is permitted to drop onto a delivery conveyor 56 to be carried away from the machine.

As above set forth, the bag forming and filling mechanism for forming and filling the bag at the station A; the loop applying mechanism for looping the string around the mouth of the bag at the station B; the tagging mechanism for attaching the tag to the string, and the succeeding mechanisms for completing the bag and delivering it onto the outgoing conveyor 56, may and preferably will comprise in details of construction and mode of operation, the corresponding mechanisms illustrated in said Doble patent to which reference may be made.

From the foregoing description it will be observed that the present double jacketed structure of package enables the use of a relatively inexpensive and relatively open mesh gauze as the outer member of the double jacketed bag. The paper which may be used for the inner bag is relatively inexpensive and the double jacketed tea bag may be produced much more economically than prior bags embodying a single ply of finely woven gauze. In addition the structure of the double jacketed bag enables a more efficient filtering medium to be employed than has heretofore been possible in the manufacture of single ply tea bags. The use of fibrous material in the nature of a paper batt or web serves as an efficient filter when reenforced by the outer gauze bag member, operating to prevent the inclusion of tea grounds or tea leaves in the extract resulting from the use of the tea ball. The illustrated machine and the method of simultaneously feeding the web materials for forming the outer and inner bags enables the double jacketed tea bag to be produced in a most economical and highly efficient manner. If found desirable, the materials for forming the outer and inner bags, such for example as the paper web and gauze web, may be combined into a composite structure capable of being handled as a unitary single web of material upon the paper making machine, or such materials may be combined by any usual or preferred form of combining apparatus before being fed into the tea bag forming machine.

This application is a division of my application Serial No. 104,612, filed October 8, 1936 which has matured into Patent No. 2,146,096, Feb. 7, 1939.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. In a tea bagging machine, in combination, bag forming means including a die and a member movable through the die to form a pouch type bag, feeding rolls, means for operatively supporting two supply rolls of bag forming material in superposed relation whereby two webs of bag forming material may be drawn in superposed relation by said feeding rolls to be fed to said bag forming means, means for perforating the upper web prior to its engagement by said feeding rolls, bag filling means, bag closing means, and means for attaching a handle com-

prising a string and a tag to the filled and closed bag.

2. In a tea bagging machine, in combination, bag forming means including a die and a member movable through the die to form a double jacketed pouch type bag comprising an inner and an outer bag, feeding rolls, means for operatively supporting two supply rolls of bag forming material, means for conducting the webs withdrawn from said rolls to said bag forming means in superposed relation, means for perforating the upper web prior to its engagement by said feeding rolls, bag filling means, bag closing means, and means for attaching a handle comprising a string and a tag to the filled and closed bag including means for applying a fastening device about the contracted neck portions of both the inner and outer bags.

RODNEY K. SLOCUM.