Feb. 28, 1939. R. K. SLOCUM 2,148,587

METHOD OF MAKING PACKAGES

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

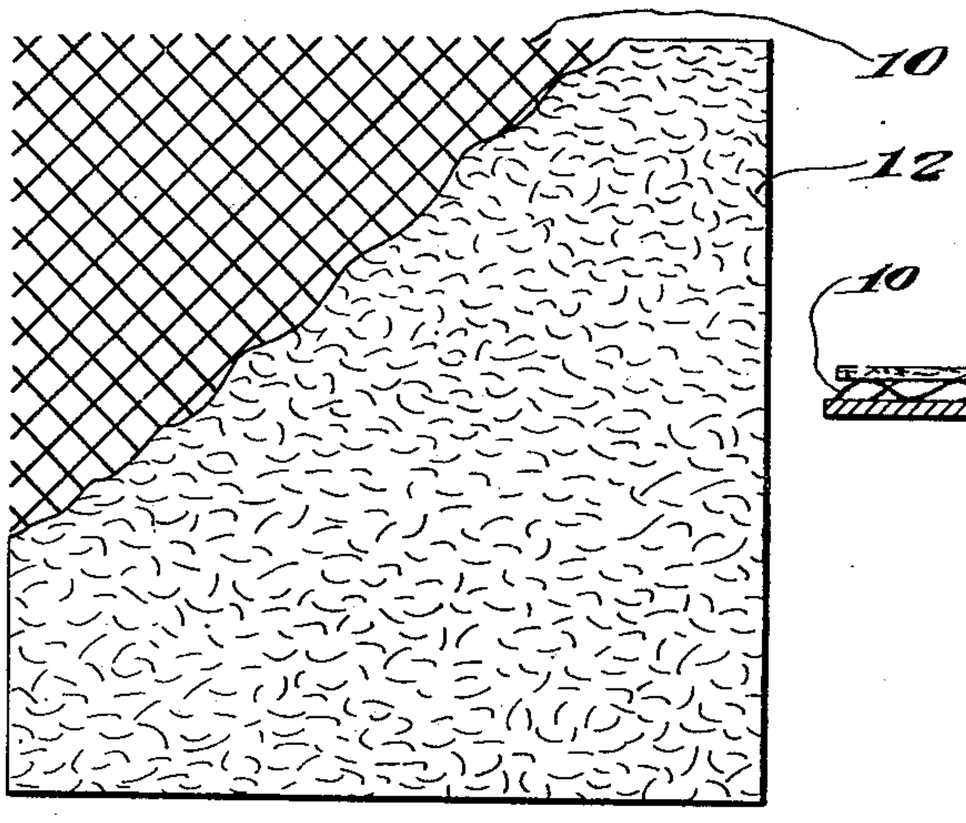

Fig. 1

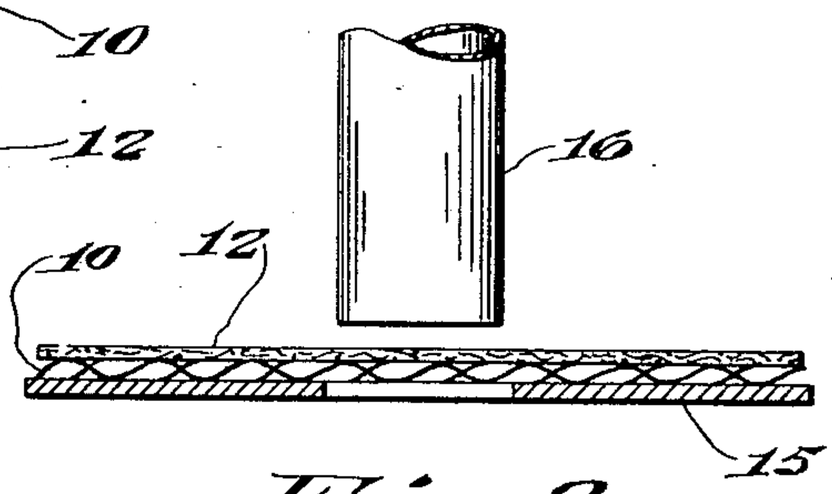

Fig. 2

Fig. 3

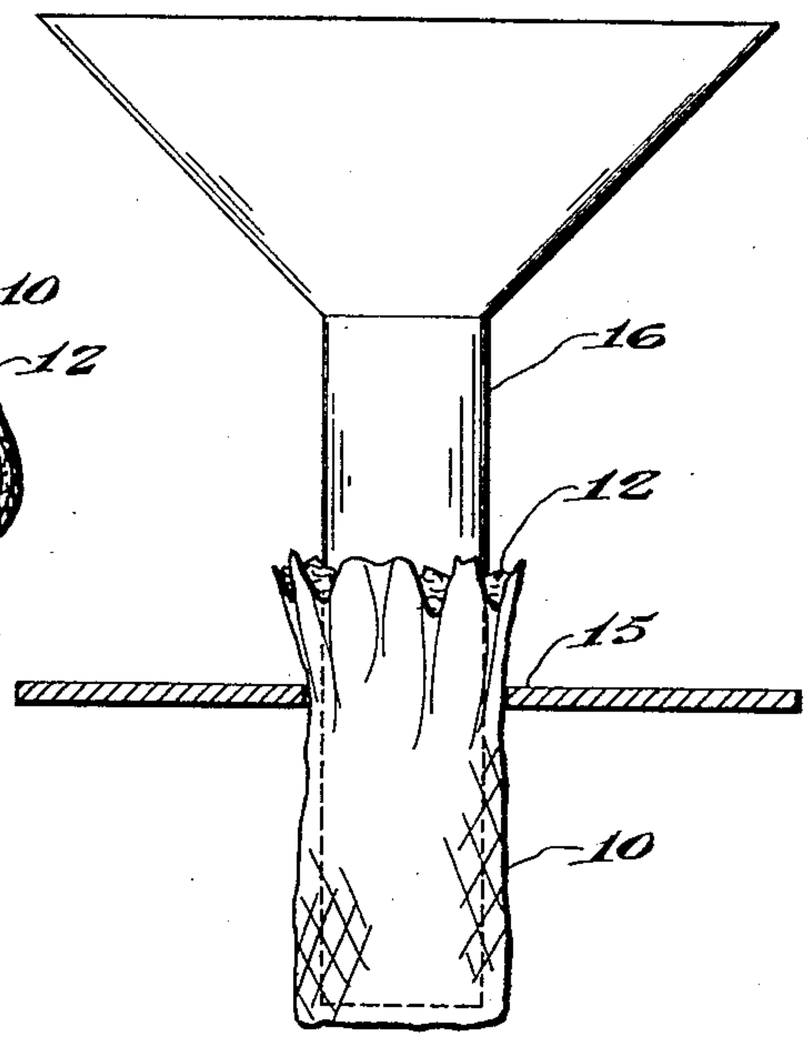

Fig. 5

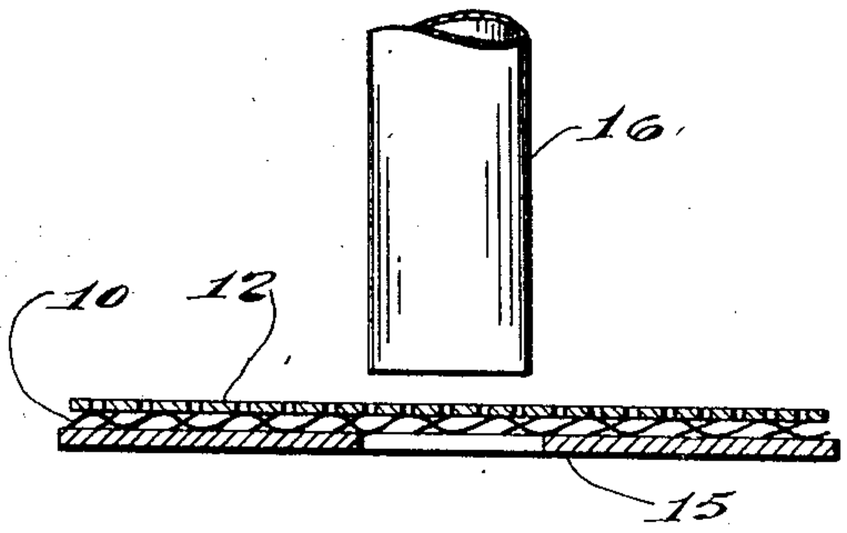

Fig. 4

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Fig. 6

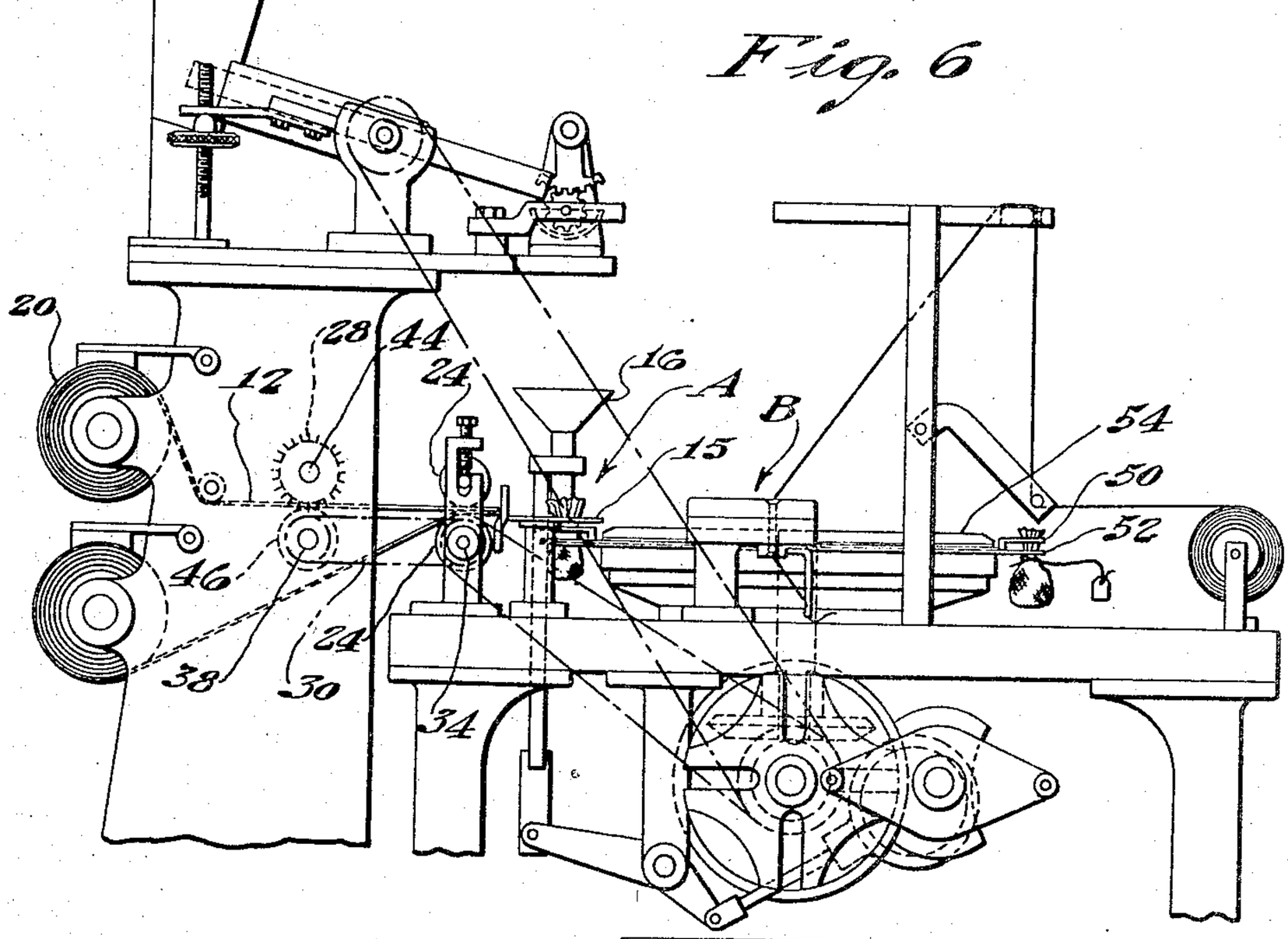
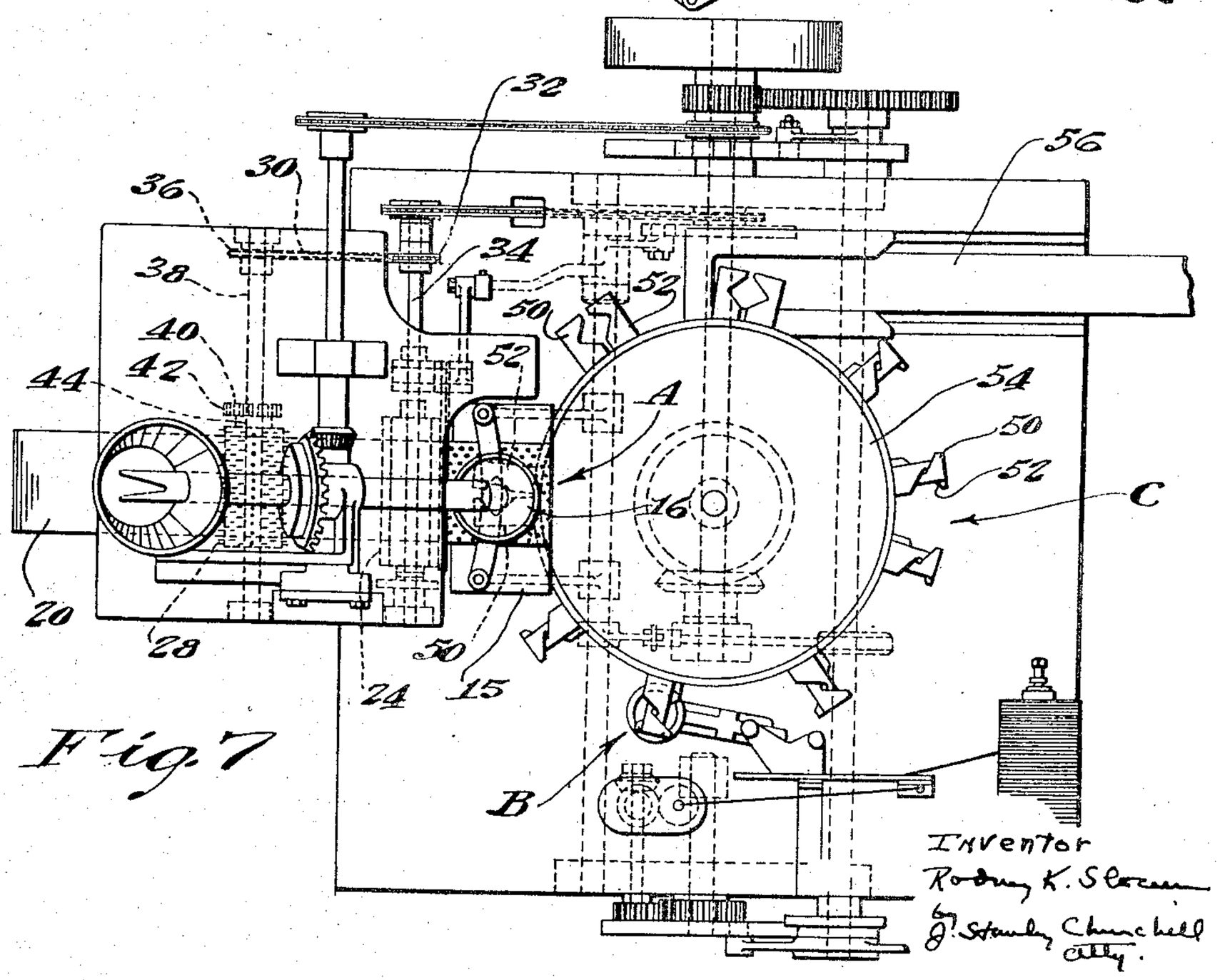


Fig. 7



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UNITED STATES PATENT OFFICE

2,148,587

METHOD OF MAKING PACKAGES

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Original application October 8, 1936, Serial No. 104,612. Divided and this application February 17, 1937, Serial No. 126,225

5 Claims. (Cl. 93—3)

This invention relates to a method of making a package comprising a perforate bag containing a material such as tea, coffee or the like.

The invention has for an object to provide a novel method of 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 method hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings the improved package and apparatus for practicing the method has been illustrated 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 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 for Package and method and apparatus for producing the same.

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. The method of making a package for use in the production of an extract comprising simultaneously feeding two separate flat sheets in superposed relation, the under sheet comprising a relatively open mesh fabric sheet and the upper sheet comprising a fibrous sheet having relatively small interstices, simultaneously forming both sheets into a bag open at its top with said upper sheet comprising the inner bag, filling the double jacketed bag thus formed with a commodity, then simultaneously contracting the neck portions of both bags and applying a fastening device about the contracted neck portions to close the bag.

2. The method of making a package for use in the production of an extract comprising simultaneously feeding two separate flat sheets in superposed relation, the under sheet comprising a relatively open mesh fabric sheet and the upper sheet comprising a fibrous sheet having relatively small interstices, simultaneously forming both sheets into a bag open at its top with said upper sheet comprising the inner bag, filling the double jacketed bag thus formed with a commodity, then contracting the neck portion of the outer open mesh fabric bag and applying a fastening device about the contracted neck portion to close the bag.

3. The method of making a package for use in the production of an extract comprising simultaneously feeding two separate flat sheets in superposed relation, the under sheet comprising a relatively open mesh fabric sheet and the upper sheet comprising a fibrous sheet having relatively small interstices, simultaneously forming both sheets into a bag open at its top with said upper sheet comprising the inner bag, filling the bag thus formed with a commodity, then contracting the neck portion of the outer open mesh fabric bag and attaching a handle comprising a string and a tag about the contracted neck portion of said outer open mesh bag.

4. The method of making a package for use in the production of an extract comprising first forming a composite sheet of an open mesh fabric and a fibrous sheet having relatively small interstices and capable of acting as a filter, then forming a bag with the relatively open mesh fabric comprising the outer bag and the fibrous sheet as a liner therefor, contracting the neck portions of the double jacketed bag, filling the bag with a commodity and applying a fastening device about the contracted neck portions to close the bag.

5. The method of making a package for use in the production of an extract comprising first forming a composite sheet of an under sheet of relatively open mesh fabric and an upper sheet comprising a thin paper web capable of acting as a filter, forming a bag from the composite sheet thus formed with the thin paper web comprising a liner for the outer open mesh bag, filling the bag and contracting and fastening the neck portions to close the bag.

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