E. J. CONLEY.

METHOD OF SEALING FOIL AND FOIL PACKAGE.

APPLICATION FILED MAR. 10, 1922.

**1,433,800.** **Patented Oct. 31, 1922.**

5 SHEETS—SHEET 1.

Fig. 1.




Fig. 2.

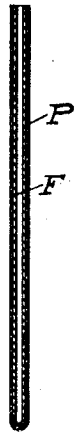
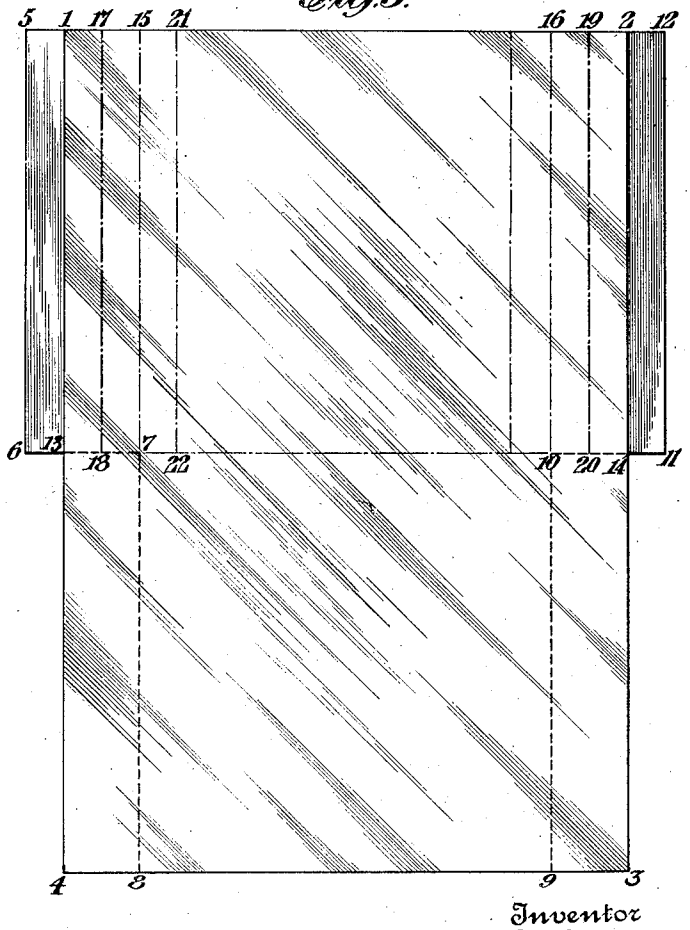



Fig. 3.




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5 SHEETS—SHEET 2.

*Fig. 4.*

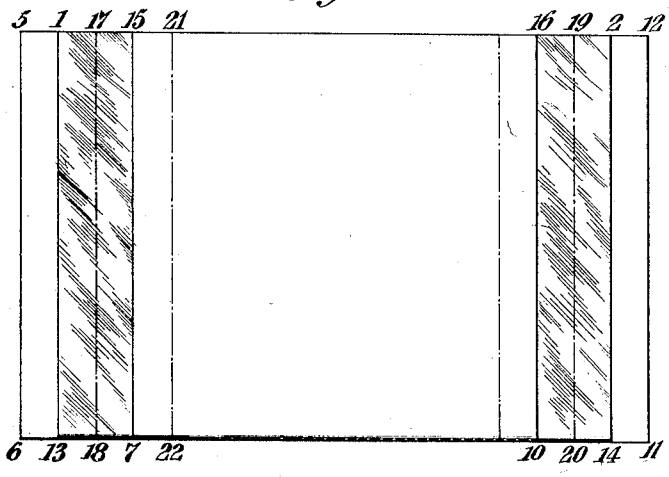
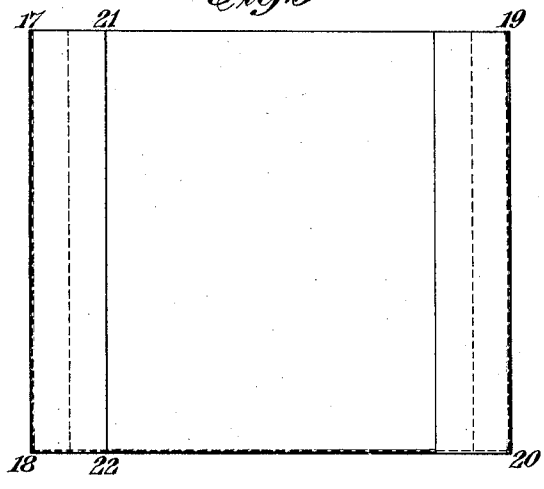



*Fig. 5*




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5 SHEETS—SHEET 3.

Fig. 6.




Fig. 7.

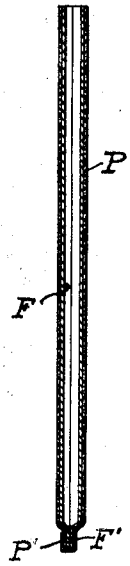
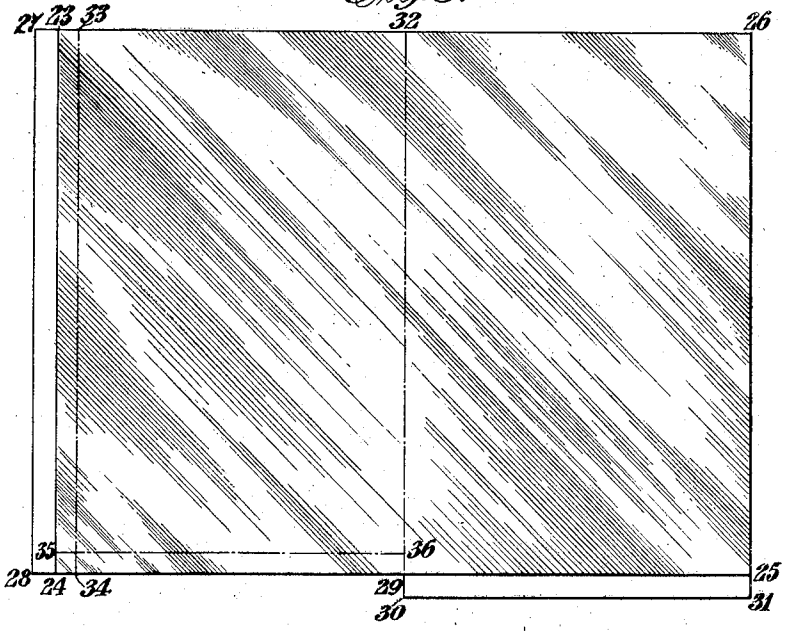



Fig. 8.




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5 SHEETS—SHEET 4.

*Fig. 9.*

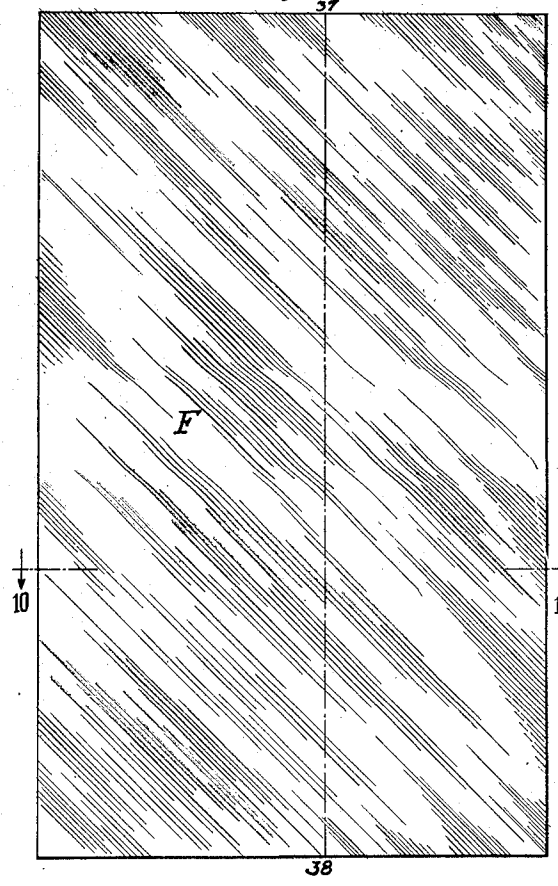



*Fig. 11.*

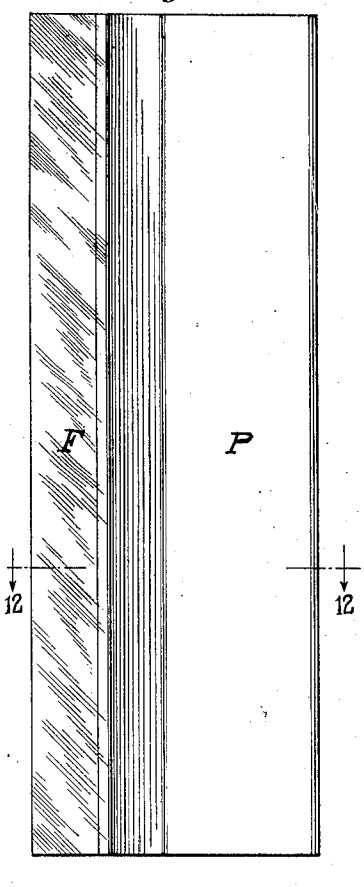



*Fig. 10.*

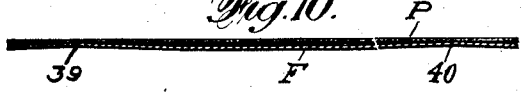
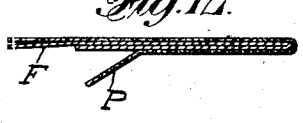



*Fig. 12.*




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5 SHEETS—SHEET 5.

Fig. 13.

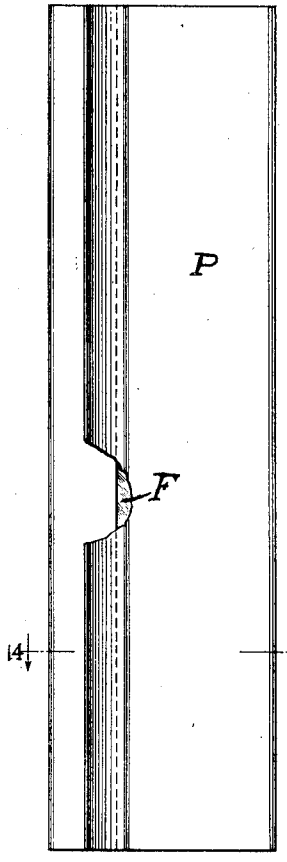



Fig. 15.

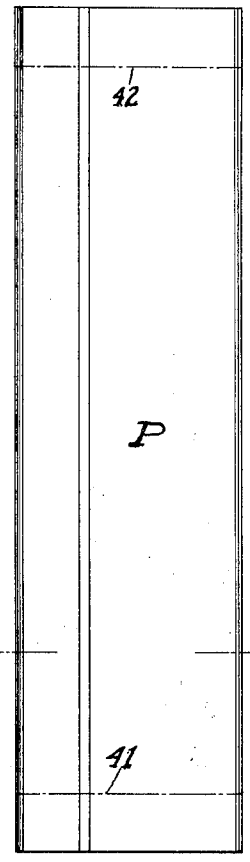



Fig. 17.

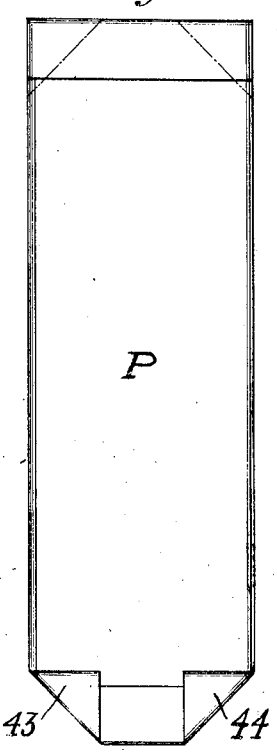



Fig. 14.

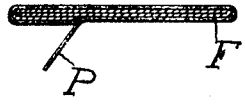
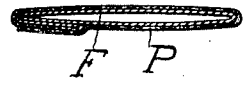



Fig. 16.




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Patented Oct. 31, 1922. 1,433,800

# UNITED STATES PATENT OFFICE.

EDWIN J. CONLEY, OF NEW YORK, N. Y.

## METHOD OF SEALING FOIL AND FOIL PACKAGE.

Application filed March 10, 1922. Serial No. 542,601.

*To all whom it may concern:*

Be it known that I, EDWIN J. CONLEY, a citizen of the United States, a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Method of Sealing Foil and Foil Package, of which the following is a specification.

This invention involves a variation in the method of forming packages as described in my previous Patent No.1,398,840, and one of its chief characteristics is a method of sealing the package by fusing the foil indirectly, that is, by applying the sealing instrument not against the foil itself but against paper or other similar material which covers the foil.

The invention may be illustrated by numerous embodiments, and the following description is intended to represent three embodiments which have been found particularly advantageous and useful.

The accompanying drawings which form part of this specification illustrate said embodiments, Figures 1 to 5 showing the first form of package, Figures 6 to 8 a second form, and Figures 9 to 16 a third form.

Figure 1 represents a section of a bag formed of foil and paper;

Fig. 2 represents a section taken at right angles to that of Fig. 1;

Fig. 3 represents the paper blank and the foil blank used for forming the bag;

Fig. 4 represents these blanks folded over on the line 6, 11;

Fig. 5 represents the folded blanks shown in Fig. 4 folded on the sides to complete the package;

Fig. 6 represents a section of a second form of bag;

Fig. 7 represents a section at right angles to that of Fig. 6;

Fig. 8 represents the foil and paper blanks used in making this second form;

Fig. 9 represents a foil blank with paper underneath for making a third form of package;

Fig. 10 represents a section thereof on line 10—10;

Fig. 11 represents these blanks folded over in the first operation of forming the package;

Fig. 12 represents a section of Fig. 11 on line 12—12.

Fig. 13 represents the second and third operations in forming this package consisting in folding over the foil and paper at their edges.

Fig. 14 represents a section of Fig. 13 on line 14—14;

Fig. 15 represents the fourth step in forming the package;

Fig. 16 represents a section of Fig. 15 on line 16—16; and

Fig. 17 represents the package completed at one end thereof.

On the various figures of the drawings, the letter P designates paper or similar material; F designates foil; P′ folded portions of the paper; and F′ folded portions of the foil.

In the illustrations of the invention of my said previous patent which are described therein, the foil is fused together by the application of a suitably heated surface directly to the foil. I have discovered that overlapping portions of foil, and particularly relatively thin foil, that is, foil less than 3/1000 of an inch in thickness, can be fused together when they are covered by paper by the application of heat to the surface of the paper and its communication to the foil through the paper without injuring or destroying the paper. This surprising fact makes it possible to fuse together the foil of a package where the foil is covered by paper, or other similar material, after the package or wrapper has been partly or wholly assembled. This reduces the number of operations required to make the package or receptacle and also reduces the danger of injury of the foil by direct contact of the heating surface with the foil, especially where there is any danger of movement of the heating surface across the surface of the foil.

With reference first to Figs. 1 to 5, there is shown a sheet of foil in the form of a rectangle 1, 2, 3, 4 which is placed upon a sheet of paper cut to form an irregular-

shaped piece denoted and defined by the numerals 5, 6, 7, 8, 9, 10, 11, 12. It will be seen that this sheet of paper is wider than the foil sheet in the upper portion and correspondingly narrower in the lower portion, these portions being defined by a median line 6, 11. When these superimposed sheets are folded over at said line 6, 11 as shown by Fig. 4 so as to bring foil in contact with foil, there will result a folded foil sheet denoted by the rectangle 1, 2, 14, 13, and the upper portion of the folded paper sheet will obviously occupy the rectangle 15, 16, 10, 7. The next operation consists in making a fold along line 17, 18 and line 19, 20, and then bringing the edge of the foil 1, 13 over into position 15, 7 with the edge of the paper 5, 6 into position 21, 22. The other side is folded in the same manner. The edges 5, 6 and 11, 12 of the paper are sealed in some suitable way as by gluing them to the body of the package. The finished package is shown in Fig. 5.

There is thus provided a package which is folded in such a manner as to bring the edges of the foil in overlapping relation to provide four thicknesses, as clearly shown in Fig. 1, in which the paper portions are on the outside as denoted by the letters P and the foil portions are on the inside as denoted by the letters F. The overlapping foil portions are shown at F′ and the overlapping paper portions at P′. When the package is thus formed, a sealing instrument heated to the proper temperature as described in my aforesaid Patent 1,398,840, is applied to the paper surface on both sides of the package adjacent the folds F′ with the result that these foil folds are sealed by fusion, the heat being conducted through the paper and there being no direct contact between the sealing instrument and the foil. No flux or solder need be used. A very secure hermetic seal is thus provided owing to the fusion and to the fact that the edges overlap. The overlapping flaps of paper at P′ may be sealed in any suitable way to the underlying paper, as, for instance, by gluing them.

In Figs. 6, 7, and 8, a second embodiment of the invention is shown, and this is also in the form of a bag. This is formed from a sheet of foil denoted by 23, 24, 25, 26 and an irregular sheet of paper denoted by 27, 28, 29, 30, 31, 26. These sheets are folded on line 32, 29 with the foil against foil, so as to bring line 25, 26 over onto line 23, 24. There is no overlapping of the foil edges in this embodiment. The extending paper flaps are suitably folded over and sealed to the paper so that their edges will occupy the resulting positions 33, 34 and 35, 36. After this step the fusion of the foil is brought about by applying a heated sealing instrument along the contacting edges, as, for example, along that portion of the paper denoted by the rectangle 35, 36, 29, 24 and rectangle 23, 24, 34, 33.

The operation may be varied by first performing the fusion of the foil and then sealing the paper flaps, but in this case also the fusing operation would preferably be conducted by applying the sealing instrument directly against the paper. The paper blank may of course be cut in some other way, provided extending flaps suitably enclose the foil.

While this method of sealing foil packages has been set forth as applied to bags, it is to be pointed out that it may be also applied to boxes and other packages having yielding or rigid contents, and in fact it is of general application wherever it is desired to seal a foil package which has already been enclosed in paper, whether or not the paper has been finally sealed about the foil package. During the fusing operation the paper need not be injured by the heat owing to the low temperature that suffices for the fusing of the foil.

A third embodiment of the invention is shown in Figs. 9 to 17. The package therein illustrated is made from sheets of foil and paper of the same size, as shown in Fig. 9, and these sheets are folded over on line 37—38 as illustrated in Figs. 11 and 12, the foil being folded to provide an extending edge. The paper may be attached to the foil in any suitable manner, as, for example, by gluing at points 39 and 40. After the foil and paper have been folded as in Figs. 11 and 12, the extending edge of the foil is folded around the other edge as shown in Figs. 13 and 14, and extending edge of the paper is brought around with it to occupy the position shown in section in Fig. 14. The final step of folding has been performed as shown in Figs. 15 and 16 by sealing down the remaining extending edge or flap of the paper. The overlapping portions of the foil may now be sealed together by fusing them with a heated sealing instrument applied to the paper which encloses the foil.

Either end of the package may now be folded on lines such as 41 or 42 and the corners may be bent over as shown at 43 and 44 to provide a more compact package. These corners may be sealed in any suitable manner. Fig. 17 shows the completed package except that the one end has not been sealed since it is necessary to leave it open for the introduction of the articles to be enclosed therein. This particular package is adapted for containing one or more cigars, and after these have been introduced the open end may be sealed in any suitable manner. There is a distinct advantage in using this package for enclosing cigars since the foil retains the cigars in their original condition, that is, it prevents the entrance of

moisture, vapors, and odors, and furthermore prevents the loss of aroma or moisture from the cigar itself. The foil is preferably very thin and neither adds appreciably to the weight of the package nor to the cost of manufacture. The fusion of the foil provides a very good hermetic seal.

By the term "relatively thin foil" in this specification, I mean a foil having a thickness less than 3/1000 of an inch.

As many apparently widely different embodiments of this invention may be made without departing from the spirit thereof, it is to be understood that I do not intend to limit myself to the specific embodiment thereof, except as indicated in the appended claims.

By "surface fusion" as occurring in the claims is meant fusion by applying heat and pressure to the surfaces of overlapping portions of foil as distinguished from heat applied to the edges of the foil.

I claim:

1. The method of uniting relatively thin foil sheets comprising covering a sheet with paper, applying a heated sealing instrument to the paper and fusing the foil sheets together.

2. In a method of forming a foil package, the steps consisting in bringing sheets of foil into surface contact and wrapping them with paper, and then sealing the foil by applying a heated sealing instrument against the paper.

3. The method of sealing a package having foil and paper coverings, comprising folding the foil on itself and folding the paper around it, and then fusing the edges of the foil by applying a heated sealing instrument against the paper adjacent said edges.

4. The method of sealing a package having foil and paper coverings, comprising folding the foil on itself and folding the paper around it, then fusing the edges of the foil by applying a heated sealing instrument against the paper adjacent said edges, and then sealing the paper along its overlapping edges.

5. The method of sealing a package having foil and paper coverings comprising bringing sheets of foil into surface contact, folding the edges over in contact with the foil, folding the paper around it, and then fusing the edges of the foil by applying a heated sealing instrument against the paper adjacent said edges.

6. The method of sealing a package having foil and paper coverings comprising bringing sheets of foil into surface contact, folding the edges over in contact with the foil, folding the paper around it, then fusing the edges of the foil by applying a heated sealing instrument against the paper adjacent said edges, and then sealing the paper along its overlapping edges.

7. A foil package formed of sheet material comprising foil and paper secured together, the edges of the foil being sealed by surface fusion.

8. A foil package wrapped in sheet material comprising paper and foil secured together, the edges of the foil being overlapped and sealed by fusion.

9. A foil package formed of sheet material comprising foil and paper secured together foil folded over on itself and sealed by fusion along its edges, and the paper having portions wider than the foil folded over and sealed.

10. A foil package formed of sheet material comprising foil and paper secured together foil folded over on itself and sealed by fusion along its edges, and paper similarly folded and having wider portions than the foil above the fold and narrower portions below it, said wider portions being folded over and sealed to the other portions of the paper.

11. A foil package comprising a sheet of relatively thin foil folded over on itself and sealed by fusion along its edges, and a paper wrapper therefor having portions wider than the foil folded over and sealed.

12. A foil package comprising a sheet of relatively thin foil folded over on itself and sealed by fusion along its edges, and a paper wrapper therefor similarly folded and having wider portions than the foil above the fold and narrower portions below it, said wider portions being folded over and sealed to the other portions of the paper.

In testimony that I claim the foregoing, I have hereunto set my hand this 9th day of March, 1922.

EDWIN J. CONLEY.