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3,007,848

METHOD OF FORMING AN EDIBLE MEDICINAL WAFER STRIP PACKAGE

Filed March 12, 1958

2 Sheets-Sheet 1

Fig. 1.

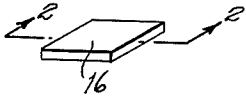


Fig. 3.

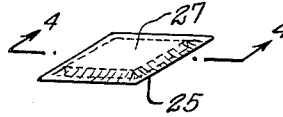


Fig. 2.

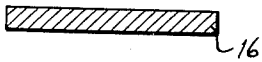


Fig. 4.

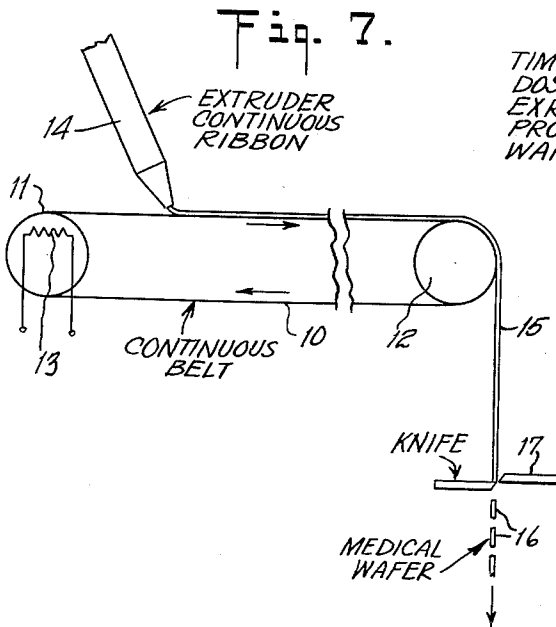
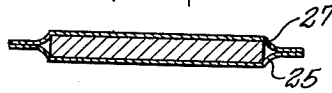
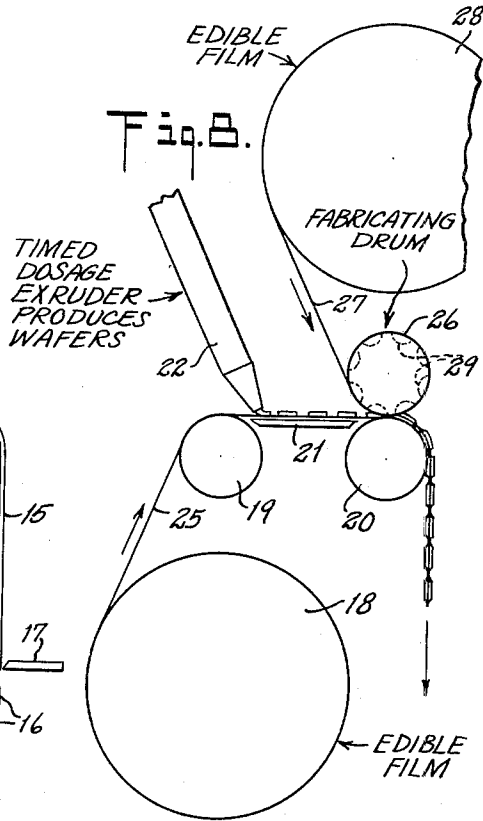


Fig. 8.



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Fig. 5.

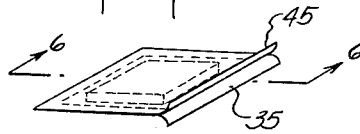


Fig. 6.

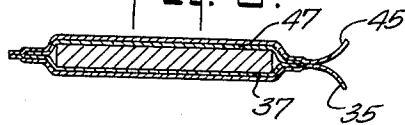
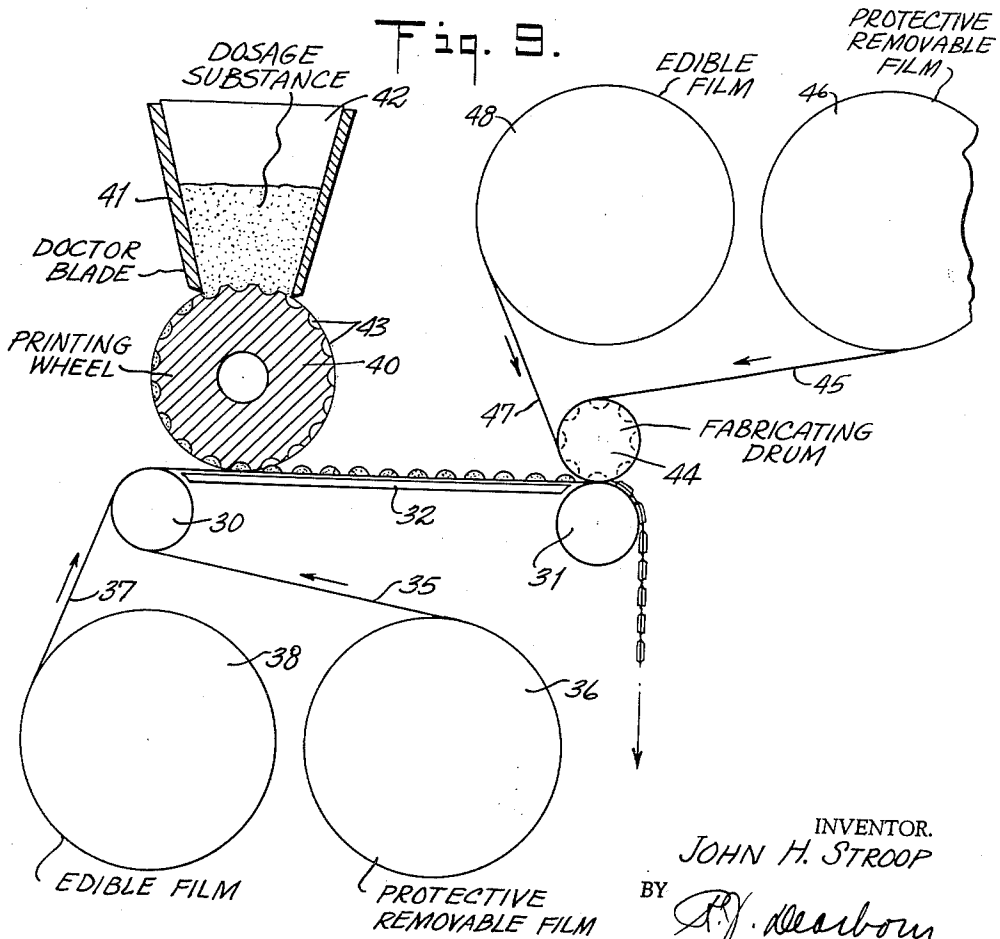


Fig. 9.



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3,007,848

## METHOD OF FORMING AN EDIBLE MEDICINAL WAFFER STRIP PACKAGE

John H. Stroop, New York, N.Y., assignor to Vol-Pak, Inc., New York, N.Y., a corporation of New York  
Filed Mar. 12, 1958, Ser. No. 720,939  
2 Claims. (Cl. 167-83)

This invention relates to a new dosage form of medicines which are intended to be taken orally and as a substitute for the other difficult-to-swallow forms, such as pills, tablets, capsules, and the like. The invention further relates to methods for producing this dosage form in a plurality of alternate ways.

The primary object of the invention is to provide a new form, which is easier to swallow than the present forms of medical dosages.

Another object is to provide a thin wafer-like article in dosage form, which is pliant and may be easily swallowed.

Another object is to provide a wafer form having a consistency which is immediately rendered slippery when the moisture of the mouth contacts it and thus produces a structure which is easy to swallow.

A further object is to provide an integral structure comprising the medical substance and a non-removable cover which is composed of an edible substance having the aforesaid characteristics and producing a slippery wafer for the ease of swallowing.

A still further objective is to produce a form of dosage such as the previous described form which has a protective cover that may be easily removed but which is an integral part of the whole.

One of the objects of the invention is to provide a method for constantly extruding a thin flat ribbon upon a belt and passing that ribbon through a rimmed knife, which will segregate the ribbon into small flat wafers.

Still a further object of this invention is to provide a method for intermittently extruding flat wafers of medicinal substance in a dosage form in timed relationship with a fabricating operation which integrally associates a cover of edible film with the dosage to produce an edible wafer-like form.

Another objective is to provide a method of creating the flat wafer-like form by imprinting the medicinal dosage on an edible film of fabricating material and creating a complete closure of the dosage.

A further objective of this invention is to use a method of imprinting the dosage on an edible film and then associating an outer protective film directly with this structure but associating the protective cover with a light-sealing adhesion, which will make this protective cover easily removable.

A further object will be to provide an unsealed margin of the protective cover, whose areas are readily grasped to facilitate the easy removal of the protective cover.

To clarify these objectives of the invention and illustrate the best embodiment of the invention now known, the accompanying drawings are referred to as follows:

FIGURE 1 is a perspective and FIG. 2 an enlarged sectional elevation of the simplest form of the invention which is an extruded edible substance, which might be of polyvinyl alcohol, carboxy methyl cellulose, or methylcellulose, or any other soluble edible substance, which can be blended with a medicinal dosage in a controlled proportion and extruded in a thin form.

FIG. 3 is a perspective and FIG. 4 is an enlarged sectional elevation of a wafer similar to that of FIGS. 1 and 2, except that a covering of edible film is added.

FIG. 5 is a perspective view and FIG. 6 is an enlarged sectional elevation of a wafer similar to that of FIGS. 3 and 4, except that an outer removable protective cover strip has been added. The cover strip is lightly sealed

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and preferably has extended edges, as shown, so that it can be easily removed from the thin wafer-like edible portion.

FIG. 7 shows diagrammatically a constant extruder implanting a thin ribbon of extrudable gelatinous and edible substance containing a percentage of medicinal substances upon a continuous belt, that belt conveying, curing and passing the ribbon of medicinally impregnated extrusion onward to a knife mechanism which is operating in a timed relationship to produce medicinal wafers, as shown in FIGS. 1 and 2.

FIG. 8 shows diagrammatically an intermittently timed dosage extruder extruding a flat series of wafers of known dimension and having a composite character of the extrudum plus a medicinal substance in whatever percentage the dosage requirement calls for. These wafers are deposited upon an edible film of material which is continuously moving between sealing dies that are enclosing the medicinal dosages between edible films. The sealing dies themselves, in this case sever the enclosing films and the separate wafers are a direct resultant of this fabricating operation.

FIG. 9 shows diagrammatically another means of applying medicinal dosages to edible films in prescribed quantities. This includes a printing wheel, which passes underneath a dosage supply chamber and printing receptacles in the printing wheel are filled with dosage quantities of a substance. The doctor blades, which are usual to this type of printing operation, remove the excess quantities of the dosage, other than that which is in the printing recesses, and these recesses then progress in their continuous passage over the infedding edible film to imprint the dosage upon the web. These webs are then all formed together in one integral mass.

The method of producing the thin wafers illustrated in FIGS. 1 and 2 may be carried out by the use of the apparatus shown in FIG. 7. This includes a continuous belt 10 mounted on drums 11 and 12 at least one of which is driven by an electric motor or other suitable means not shown. The drum 11 is heated by electric heater 13 which controls the temperature of the belt 10. A continuous ribbon of gelatinous material containing the proper proportion of medicinal substance is continuously discharged onto the top of the belt from an extruder 14. The ribbon is conditioned as it travels along the belt 10 and continues downwardly from the drum 12 in the form of a ribbon 15 which is cut into a series of medical wafers 16 by the usual form of reciprocating knife indicated at 17.

A modified apparatus is diagrammatically illustrated in FIG. 8 and is adapted to produce the medicinal wafers having edible film outer coverings as shown in FIGS. 3 and 4. In FIG. 8 edible film 25 from a roll 18 passes over drums 19 and 20 and over stationary table or support 21, and intermittent extruder 22 supplies timed dosages onto the edible film 25.

Cooperating with the drum 20 is a fabricating drum 26, and a second edible strip 27 is fed from roll 28 located above the fabricating drum. The fabricating drum has a series of pockets 29 which are coordinated in timed relation to the dosages extruded, and the edible film 27 passes between drum 20 and the fabricating drum 26 in such manner that the extruded dosages are formed between the drums, with edible film on each side. Heat may be applied to the drum 20, and the edible films are slightly wider than the dosages and extend beyond the pockets 29 of the fabricating drum. Thus the edible strips are sealed at their edges, as shown in FIG. 4. The series of medicinal units are thus interconnected and may be wound in a tight coil or they may be segregated in the individual wafers by a cutting knife, not shown.

A desirable method for producing the medicinal wafer with an outer protective covering, as shown in FIGS. 5

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and 6, may be carried out by the apparatus diagrammatically shown in FIG. 9, in which drums 30 and 31 correspond to drums 19 and 20, and table 32 corresponds to table 21. A protective removable film 35 is fed from roll 36, and such removable film 35 and edible film 37 from roll 38 are fed together over drum 30 and table 32. As shown, the protective film 35 is next to the table and the edible film 37 is above it.

A printing wheel 40 is mounted above the film 37, and a dosage of mixed gelatinous material and medicinal substances is fed onto the printing wheel in quantities controlled by the doctor blades 41 of the hopper 42, the arrangement being such that the printing wheel 40, which has a series of circumferential serrations 43, prints or deposits by a printing operation a series of spaced dosages onto the film 37.

The dosages proceed between the drum 31 and a fabricating wheel 44, which corresponds to the fabricating drum 26.

In this structure a protective film 45 from a roll 46 is fed immediately over the fabricating drum 44, and above it is fed edible film 47 from roll 48. Thus there passes between the drum 31 and the fabricating drum 44 a laminated strip which includes two outer protective films and two inner edible films between which the printed dosages are subjected to the action of the fabricating drum 44.

There is thus produced a strip composed of a series of medicinal units which are illustrated in FIGS. 5 and 6, and these may be cut into individual units by a knife, not shown.

In order to enable the protective films to be readily removed by the patient just before the medicinal unit is consumed, the protective films are made wider than the edible films on at least one side, and moreover they are lightly sealed, whereas the edible films are tightly sealed together by the cooperation of the cylindrical edges of the fabricating drum 44 and the drum 31, which together act as dies to seal the edges of the edible film together by heat or pressure or both. At the same time the outer protective films are lightly sealed to the inner films but are readily removable therefrom.

This application is a continuation-in-part of my application Serial No. 603,777, filed August 13, 1956, now U.S. Patent No. 2,836,291, for Edible Strip Package and

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Method of Making Same; which in turn is a continuation-in-part of original application Serial No. 386,370, filed October 15, 1953 now abandoned.

The foregoing description is intended to be illustrative only and variations may be made by those skilled in the art without departing from the spirit of the invention. Hence I desire that only such limitations be imposed as are set forth in the appended claims.

What I claim:

1. The method of forming a series of thin medicinal wafers in a single continuous operation that comprises continuously passing a laminated strip composed of an outer protective lamina and an inner edible lamina over a printing table, depositing the medicinal wafers thereon from a printing wheel mounted to cooperate with the printing table, supplying a dosage substance of suitable consistency to the printing wheel, adding an outer laminated strip composed of an inner edible lamina and an outer protective lamina over the wafers and passing the strips with the interposed wafers through rotary dies to fuse the inner edible laminae together and to seal the protective laminae over the edible laminae and severing the strips to form a plurality of protected medicinal wafers.

2. The method of forming a series of thin medicinal wafers in a single continuous operation that comprises continuously passing a laminated strip composed of an outer protective lamina and an inner edible lamina over a table, depositing a series of medicinal wafers thereon by extrusion, supplying a dosage substance of suitable consistency for extrusion, adding an outer laminated strip composed of an inner edible lamina and an outer protective lamina over the wafers and passing the strips with the interposed wafers through rotary dies to fuse the inner edible strips together and to seal the protective coating laminae over the edible strips and severing the strips to form protected wafers.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

222,135	Hoffman	Dec. 2, 1879
2,130,887	Kremmling	Sept. 20, 1938
2,774,313	Lombi	Dec. 18, 1956
2,836,291	Stroop	May 27, 1958