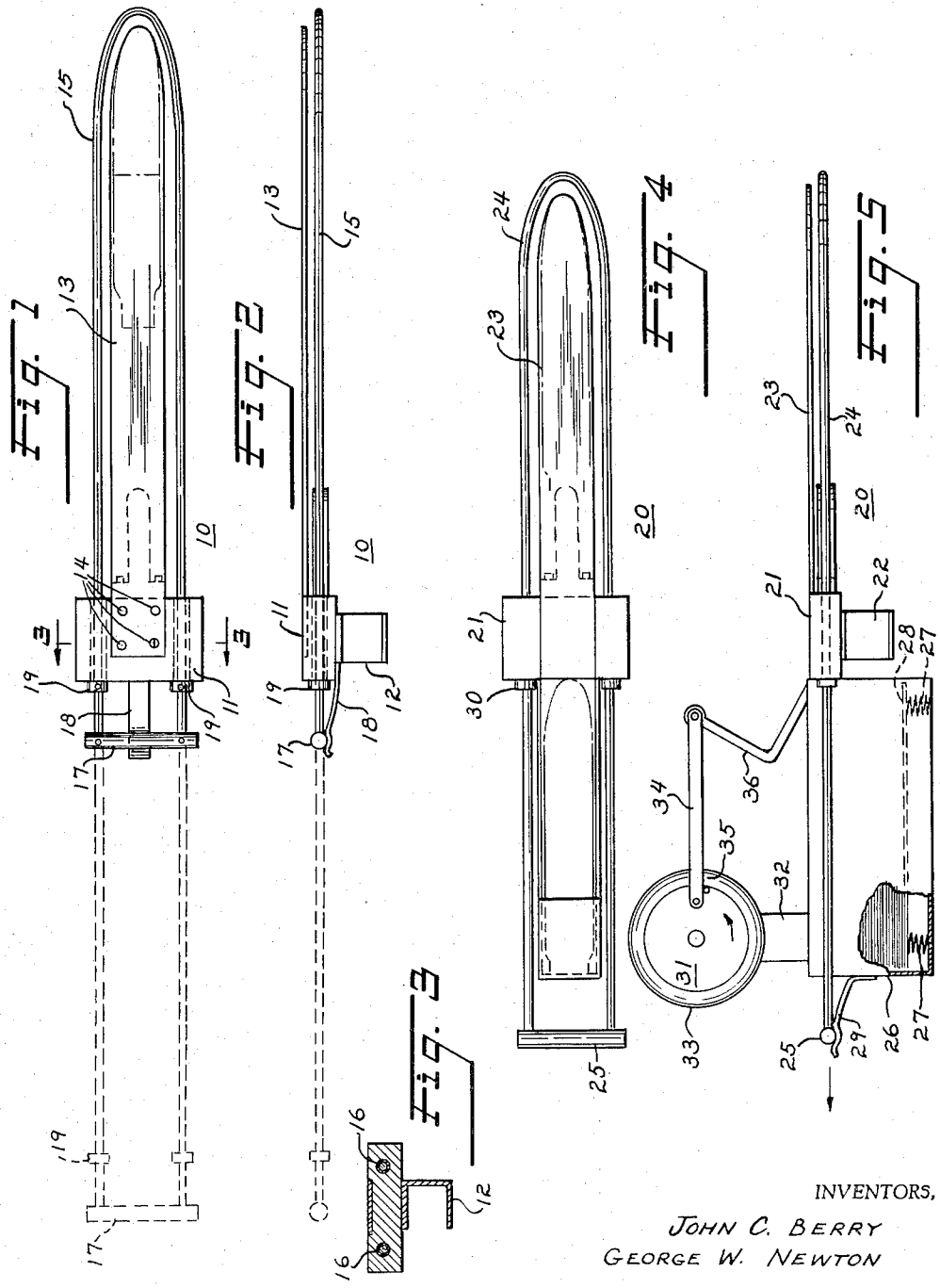
Feb. 14, 1961 J. C. BERRY ET AL 2,971,302

STOCKING PACKAGING MACHINE AND METHOD

Filed Feb. 12, 1957 2 Sheets-Sheet 1



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STOCKING PACKAGING MACHINE AND METHOD

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Fig. 6

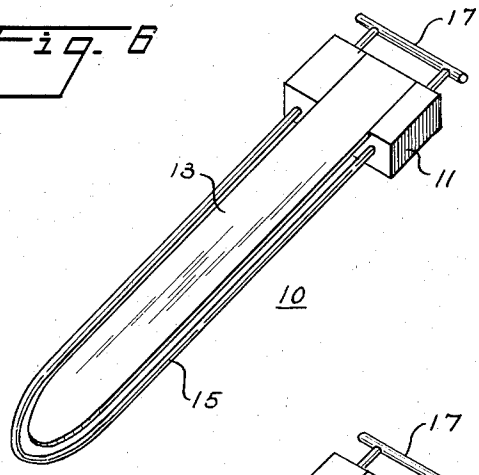


Fig. 8

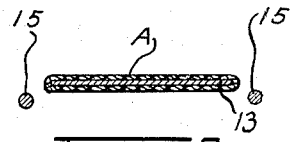


Fig. 7

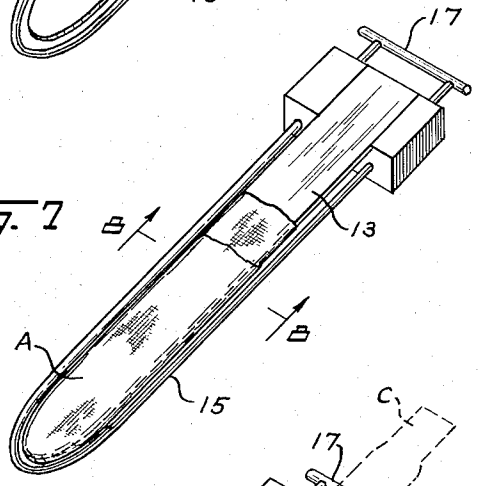


Fig. 10

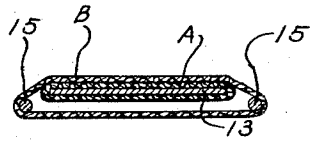


Fig. 11

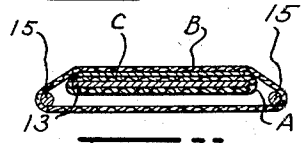


Fig. 12

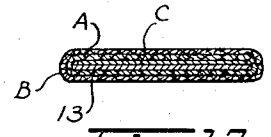
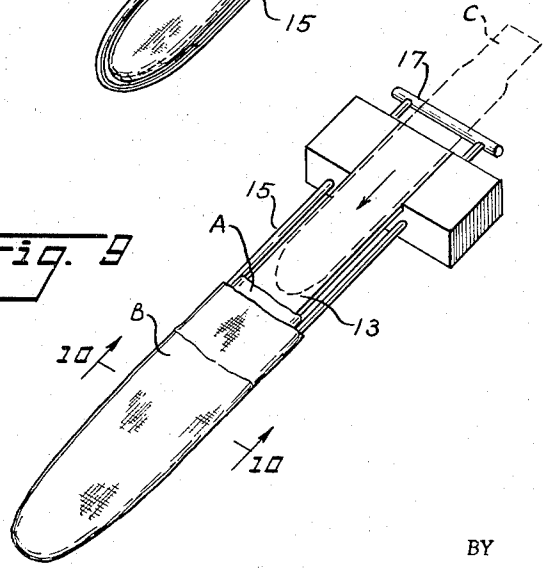


Fig. 9



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United States Patent Office 2,971,302
Patented Feb. 14, 1961

2,971,302

STOCKING PACKAGING MACHINE AND METHOD

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Filed Feb. 12, 1957, Ser. No. 639,686

7 Claims. (Cl. 53—26)

The present invention relates to a packaging machine, and more particularly to a packaging machine for producing stocking packages of the one board type as exemplified by U.S. Patents Nos. 2,696,295 and 2,742,149, issued on December 7, 1954, and April 17, 1956, respectively, to John C. Berry, and U.S. Patent application Serial No. 621,335, filed by John C. Berry on November 9, 1956, as well as the two board type exemplified by U.S. Patent No. 2,748,930, issued to J. A. Power on June 5, 1956. In the stocking packages of the one board type shown in the above noted Berry patents, a wide variety of stocking packages are disclosed and claimed in which either two stockings are placed in enveloping relationship over a single cardboard insert in a flat, slightly tensioned relationship, or one stocking is placed flat against one face of a cardboard insert and a second stocking envelopes the insert and the stocking in a flat, tensioned relationship. In both procedures, a neat, compact, and extremely attractive stocking package is produced which has virtually revolutionized the marketing of stockings and has received widespread commercial acceptance by virtually the entire hosiery industry. In the two board type of package, two cardboards are provided with each carrying a single stocking in enveloping relationship. The cardboards are secured to one another to complete the formation of the stocking package.

Several types of packaging machines have been employed heretofore in producing these types of stocking packages. However, such machines have possessed one or more disadvantages which have been found undesirable. Certain of the machines have been cumbersome and complicated, and expensive in initial cost. Others have possessed no versatility and have been limited in use to a single type of package.

It is therefore a principal object of the present invention to provide a new and novel packaging machine for producing all types of stocking packages.

Another object of the present invention is the provision of an extremely simple packaging machine having virtually no moving parts.

Yet another object of the present invention is the provision of a packaging machine that is extremely low in initial cost and requires no maintenance whatsoever.

Still another object of the present invention is the provision of a packaging machine that possesses universal utility with all forms of stocking packages in which one or more stockings is placed on a cardboard insert.

A further object of the present invention is the provision of a new and novel method of packaging stockings.

A still further object of the present invention is the provision of a packaging machine that will enable an operator to obtain a greater production rate.

Other and additional objects will become manifest from the ensuing description taken in conjunction with the accompanying drawings.

Broadly stated, the packaging machine of the present invention comprises base means, first fixed frame means

lying in a horizontal plane secured at one end to said base means, and second frame means lying in a horizontal plane secured to said base means, said first and second frame means being in superposed relationship with respect to one another.

To the accomplishment of the foregoing and related ends, the present invention then consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain means in the carrying out of the invention, such disclosed means illustrating, however, but one of various ways in which the principle of the invention may be employed.

The present invention is illustrated by way of example in the accompanying drawings, in which:

Figure 1 is a top plan view of a stocking packaging machine made in accordance with the present invention.

Fig. 2 is a side elevation of the packaging machine shown in Fig. 1.

Fig. 3 is a cross-sectional view taken on lines 3—3 of Fig. 1.

Fig. 4 is a top plan view of a modified form of a stocking packaging machine made in accordance with the present invention in which automatic feeding means are employed.

Fig. 5 is a side elevation of the packaging machine shown in Fig. 4.

Fig. 6 is a perspective diagrammatic view of a stocking packaging machine made in accordance with the present invention with no stockings present thereon.

Fig. 7 is a perspective view of the machine shown in Fig. 6 with a stocking present on one support means.

Fig. 8 is a cross-sectional view taken on lines 8—8 of Fig. 7.

Fig. 9 is a perspective view of the machine shown in Fig. 6 with two stockings present thereon.

Fig. 10 is a cross-sectional view taken on lines 10—10 of Fig. 9.

Fig. 11 is a cross-sectional view similar to that shown in Fig. 10 with a cardboard insert present therein.

Fig. 12 is a cross-sectional view similar to that of Fig. 11 in which one frame means has been withdrawn forming the stocking package, which is now ready for withdrawal from the machine.

Referring now to the drawings, and with particular reference to Figs. 1–3, an illustrative embodiment of a stocking packaging machine made in accordance with the present invention and generally designated by reference numeral **10** is shown.

The stocking packaging machine **10** comprises a base member **11** preferably in the form of a steel or similar metal block. A C-clamp or similar fastening member **12** is secured to the under surface of the base member **11** in order to secure same to a work table or like production equipment. It is to be understood, however, that the base member **11** may be secured to a work table by a variety of means other than that illustrated. Similarly, it may be necessary, in certain instances, to have the base member positioned above the work table or the like. This may be accomplished by providing an intermediate stand which may be secured at one end to the under surface of the base member **11**, with the opposite end being secured to the fastening or securing means.

A thin, oblong board or frame member **13** is secured at one end by machine screws **14** or the like to a slightly recessed portion of the top of the base member **11**, and extends outwardly therefrom in a horizontal plane. The board member **13** is preferably made from fine machined, light gauge aluminum to provide a strong, smooth surface over which a stocking may be pulled in a stretched, tensioned, and enveloping relationship rapidly and without harm to the stocking. The width of the board mem-

ber 13 is such that it will be somewhat wider than the greatest width of any part of the cardboard insert used in the stocking package, and will correspondingly place any stocking pulled thereon in a stretched, tensioned state. The length of the board member 13 is greater than the length of the cardboard insert to be used in forming any stocking package regardless of whether the stocking employed is of the stretched nylon type, combination yarn type, cotton type, or wool type, in order to provide the machine operator with proper working space to pull the stockings over the board member 13, and to place the cardboard insert therein in a manner to be more fully described hereinafter. It should be noted that the board member 13 may be made by reversely bending a metal rod or the like in the same manner as the second frame member hereinafter described.

A second frame member 15 is provided which is secured at one end to the base member 11 and extends outwardly therefrom in a horizontal plane and in a superposed relation with respect to the cardboard member 13. As shown, the frame member 15 lies in a plane parallel to but slightly spaced from the plane of the board member 13. This arrangement is preferred, since it readily enables an operator to stretch a stocking over the board member 13 without hindrance from the frame member 15. Secondly, with certain types of stocking packages, it is desirable to have the outer stocking in spaced relationship with respect to the inner stocking. It is to be understood, however, that the board member 13 and the frame member 15 need not be offset with respect to one another, although this arrangement is preferred. The frame member 15 is preferably in the form of an elongated metal rod bent upon itself and possesses an elongated configuration in substantial conformity to, but slightly larger than that of, the configuration of the board member 13. The width of the frame member 15 is slightly greater than the width of the board member 13 such that when a stocking is placed thereon in a stretched condition, the stocking on one side will be slightly spaced from a stocking carried by the board member 13 in enveloping relationship. The frame member 15 may be made from any metal tubing or rods, such as, for example, aluminum. The metal should be finely machined to a high, smooth finish to prevent damage to the stockings when pulled thereover.

The opposite ends of the reversely bent frame member 15 are received and slidable within spaced openings 16 extending completely through the base member 11 to enable the frame member 15 to be moved back and forth in a horizontal plane, in a manner to be more fully described hereinafter. The opposite free ends of the frame member 15 are united to one another by a cross rod 17 which will function as a handle means to push the frame member 15 back and forth. A spring catch 18 is secured to the under surface of the base member 11 and extends rearwardly therefrom to receive and retain the cross rod or handle 17, thereby holding it in a locked position, as shown in Fig. 2. The length of the spring catch 18 must be such that when the handle 17 is received therein, the opposite end of the frame member 15 will extend just forward of the free end of the board member 13.

To limit the forward movement of the frame member 15, each arm thereof is provided with a stop collar 19, which is positioned just forward of the handle means 17 for a distance such that when the handle 17 is locked in the spring catch 18, the stop collars 19 will abut the base member 11. To limit the rearward travel of the frame member 15, a stop member 19*a* in the form of a rigid, metal finger, rod, or strip is secured to the base member 11 and extends forwardly therefrom and in the same plane as the frame member 15. The length of the stop member 19*a* will be such as to abut the forward end of the frame member 15, as shown in Fig. 2 in broken lines, when it is pulled rearwardly and clear of the stocking enveloping same. This particular arrangement just described will enable the frame member 15 to be locked in superposed relation with respect to the board member 13 to permit the stockings to be placed thereon in a manner more fully described hereinafter, and yet will readily permit the frame member 15 to be withdrawn, when necessary, to complete the formation of the desired stocking package. However, the arrangement just described is solely for illustrative purposes, since there are other means readily available which will permit the locking of the frame member 15 in the desired position.

Reference is now to be had to Figs. 4 and 5 wherein a modified form of stocking packaging machine, generally designated by reference numeral 20, is shown in which automatic means are provided to insert the cardboard insert into or between the stockings. The stocking packaging machine 20 is provided with a base 21 and a C-clamp 22 of the same general design in the corresponding parts shown in the form of the invention of Figs. 1–3. A thin, oblong board or frame member 23 is secured at one end to the top of the base member 21 in the same manner as the board member 13 of the first form of the invention shown in Figs. 1–3. In the modified form of the invention, the board member 23 will possess the same width as the board member 13, but its length will be considerably less since the need for the working space is eliminated.

A second frame member 24 is secured to the base member 11 and extends outwardly therefrom in the same general relationship as the frame member 15 of the first form of the invention hereinbefore described. Each side arm of the frame member 24 extends through openings in the base member 21 and is slidable with respect thereto. The side arms of the frame member 24 extend well beyond and rearwardly of the base member 21, and are connected to one another by a cross bar or handle means 25.

A cardboard insert receptacle 26 is positioned between the side arms of the frame member 24 and rearwardly of the base member 21 and functions as a hopper means for a plurality of cardboard inserts carried therein in stacked relationship. The bottom of the receptacle 26 is provided with spring means 27 which support a free floating bottom plate which will continuously urge the cardboard inserts carried in the receptacle 26 upwardly. The rear end face of the receptacle 26 is provided with a rearwardly extending spring catch 29 to receive and retain the cross rod or handle 25, thereby holding it in a locked position, as shown in Fig. 5. The dimensions of the spring catch 29 will be substantially identical with the spring catch 18 of the first form of the invention hereinbefore described. Each side arm of the frame member 24 is provided with a stop collar 30, which is positioned well forward of the handle means 25 for a distance such that when the handle 25 is locked in the spring catch 29, the stop collars 30 will abut the base member 21.

A transfer mechanism generally designated by reference numeral 31 is provided in association with a receptacle 26 to automatically insert a cardboard form into or between the stocking to complete the formation of the stocking package. The transfer mechanism comprises a vertical support 32 with the upper free end thereof supporting a power driven driving wheel or cam 33 in journaled relationship. A first link arm 34 is secured at one end to the driving wheel 33 in offset relationship with respect to the center point thereof. Stop means 35 are positioned on the wheel 31 in close proximity to and in cooperative relationship to the first link arm 34 to insure the back and forth motion of the first link arm 34 during the rotation of the driving wheel 43. A V or L-shaped second link arm 36 is secured at one end to the free end of the first link arm 34. The second link arm 36 is so constructed that upon rotation of the driving wheel 33, it will pass from one end to the other

of the receptacle 26 to enable a cardboard insert to be pushed forward into or between the stockings carried by the board member 23 and the frame member 24. The free end of the second link arm 36 is provided with finger means to facilitate the forward transfer of the cardboard insert from the receptacle 26 to board member 23.

Reference is now to be had to Figs. 6–12 wherein diagrammatic perspective views are shown to illustrate the operation of the stocking packaging machine shown in Figs. 1–3 in forming a stocking package. In Fig. 6, the stocking packaging machine 10 is shown with the board member 13 and the frame member 15 in locked operating position and ready to receive the stockings to be packaged. To form the stocking package, a first stocking A is pulled over the board member 13 in stretched and tensioned enveloping relationship therewith, as shown in Figs. 7 and 8. A second stocking B is then pulled over the frame member 15 in a tensioned, stretched, enveloping relationship, with the cuff portion of the outer stocking B being placed in substantial alignment with the cuff portion of the first stocking A. This operation results, as shown in Fig. 10, in the outer or second stocking B being in enveloping engagement with the top face of the inner or first stocking A, and the remaining portion of the outer stocking B being spaced from but enveloping the remaining portion of the first or inner stocking A. This operation provides a spaced area between the stockings within which the cardboard may be inserted between the first stocking A and the second stocking B, as indicated in Fig. 9 and clearly shown in Fig. 11. To complete the formation of the stocking package, the frame member 15 is pulled rearwardly, causing the second stocking B to snugly snap into enveloping relationship with the first stocking A and the insert C. The stockings A and B and the cardboard insert C are then pulled off the board member 13, folded, if desired, and riders or bands or the like applied, thereby producing a stocking package which conforms to that stocking package disclosed and claimed in U.S. application Serial No. 621,335, filed by John C. Berry on November 9, 1956. The method for forming this particular stocking package likewise constitutes a part of the invention disclosed and claimed in the aforementioned Berry application.

To form a stocking package in conformity with the stocking packages disclosed and claimed in the Berry Patents Nos. 2,696,295 and 2,742,149 hereinbefore identified, the first stocking A is pulled over the board member 13 and the second stocking B is pulled over the frame member 15 in the same manner shown in Figs. 7–10. The cardboard C is then inserted between the board member 13 and the first stocking A. The frame member is then pulled rearwardly, resulting in the first stocking A enveloping the cardboard member C on the frame member 15, with the second stocking B enveloping the first stocking A, as shown in Fig. 12. Alternatively, with this type of package, the frame member 15 may be withdrawn prior to inserting the cardboard insert C, resulting in the outer stocking B enveloping the first stocking A. The insert C is then placed between the board member 15 and the first stocking A. With this form of package, it is not essential, as hereinbefore indicated, that the board member 13 and the frame member 15 be in offset relationship with respect to one another, although for ease of operation and maintenance of production, offsetting in general is preferred.

To form the so-called one-on-one or two board type of stocking package exemplified by U.S. Patent No. 2,742,149, the first stocking A is pulled over the board member 13 in the manner hereinbefore described. The stocking B is then pulled over the outer frame member 15. A cardboard insert is placed between the first stocking A and the second stocking B, and the two are then pulled forwardly off of the frame member 15 to form one-half of the stocking package. A second cardboard insert is then placed between the board member 13 and the first stocking A and fitted therein. The first stocking A and the cardboard insert are pulled off of the board member 13 to constitute the second half of the stocking package. In this operation, it is noted that the frame member 15 is not withdrawn rearwardly but remains in locked position throughout the formation of the stocking package. An alternative method that may be employed in forming the two board type of packaged stockings is to withdraw the frame member 15 rearwardly before making the package. One stocking is then pulled over the board member 13 and the cardboard inserted therein, and the cardboard with the enveloping stocking is pulled off the board member 13. The operation is repeated and the resulting two stockings, each enveloping a cardboard insert, are then secured to one another to complete the formation of the stocking package.

The present machine is of particular utility in forming cuffed anklets of the type worn by children in which the cuff is turned upon itself when the stocking is worn. To package this type of stocking, a stocking is pulled over the board member 13 and a second stocking pulled over the frame member 15. The frame member 15 is then withdrawn rearwardly. The cuffs of the stocking are then reversely folded upon themselves with the cuff of the first or inner stocking folded over the cuff of the outer or second stocking. The cardboard insert is next placed between the board member 13 and the first stocking and the insert with the two stockings are then withdrawn from the board member 13. The formed stocking package is then folded upon itself and the toe portion of the package is then tucked in between the folded cuff portions of the stockings to hold the stocking package in a folded state. An alternative method in forming a cuffed package may be employed in which the cuffs will not be folded prior to inserting the cardboard. Rather, the two stockings are pulled over the two frame members 13 and 15 as in the usual manner. The cardboard insert is then inserted with the end of the insert being positioned well within the stockings, i.e., about half-way beyond the free end of the cuff portions. The cuffs may then be folded upon themselves with the resulting fold line being in substantial alignment with the top edge of the insert. The stockings and insert are then withdrawn and folded in the manner hereinbefore described to complete the formation of the stocking package.

In the operation of the form of packaging machine shown in Figs. 4 and 5, the stockings will be pulled over the frame members 23 and 24 in the manner hereinbefore described. The operator then actuates the driving wheel 33 to cause the link arm 36 to push the cardboard insert forward from the receptacle 26 into or between the stockings. After the insert is positioned, the stockings and insert are pulled off and the desired package then formed.

While, as hereinbefore indicated in the description of the operation of the packaging machine, the frame member is pulled rearwardly to insure a proper enveloping of one stocking with respect to the other, it is to be noted, however, that it is possible to operate the present packaging machine in forming certain stocking packages without rearwardly withdrawing the frame member 15. However, in general, greater production is achieved and a much neater package is obtained by having the frame member 15 withdrawn from the outer stocking to enable the same to snap into snug engagement with the inner stocking.

While there have been described herein what are at present considered preferred embodiments of the invention, it will be obvious to those skilled in the art that modifications and changes may be made therein without departing from the essence of the invention. It is therefore to be understood that the exemplary embodiments are illustrative and not restrictive of the invention, the scope of which is defined in the appended claims, and

that all modifications that come within the meaning and range of equivalency of the claims are intended to be included therein.

We claim:

1. A stocking packaging machine comprising base means, elongated board means lying in a horizontal plane and secured at one end to said base means, U-shaped rod means lying in a horizontal plane secured to said base means, said rod means being slidable in a horizontal plane with respect to said base means, said board means and rod means being in superposed relationship with respect to one another, with said rod means being of a width greater than the width of said board means and lying in a plane parallel to and spaced from the plane of said board means.

2. A stocking packaging machine in accordance with claim 1 wherein handle means are provided at the free ends of said U-shaped rod means.

3. The stocking packaging machine comprising base means, board means lying in a horizontal plane and secured at one end to said base means, frame means lying in a horizontal plane and secured to said base means and being slidable in a horizontal plane with respect thereto, said frame means being of a width greater than said board means, stop means to limit the back and forth movement of said frame means, and means to lock said frame means in superposed relationship with respect to said board means.

4. A stocking packaging apparatus comprising base means, first means for receiving a stocking pulled thereover in tensioned enveloping relationship therewith mounted at one end on said base means and extending outwardly therefrom in a substantially horizontal plane, and separate second means for receiving a stocking pulled thereover in tensioned enveloping relationship with said first stocking on said first frame means and mounted at one end on said base means and extending outwardly therefrom in a substantially horizontal plane, said first and second means being in separated superposed relationship with respect to one another with one of said means having a width greater than the width of the other of said means.

5. A stocking packaging apparatus in accordance with claim 4 and further comprising holding means carried by said base means for receiving the one of said first and second means having the greater width in movable relationship therewith whereby said one of said first and second means is movable back and forth in a horizontal plane with respect to said base means and the other of said first and second means.

6. A stocking packaging apparatus in accordance with claim 4 further comprising cardboard insert hopper means secured to said base means between the side edges of said means having the greater width, and means for transferring one at a time cardboard inserts carried in said hopper means to said first means for engagement with a stocking when placed thereover.

7. A stocking packaging machine comprising base means, elongated board means for receiving a stocking pulled thereover in tensioned enveloping relationship therewith mounted at one end on said base means and extending outwardly therefrom in a substantially horizontal plane, and frame means for receiving a stocking pulled thereover in tensioned enveloping relationship movably mounted at one end on said base means and extending outwardly therefrom in a substantially horizontal plane, said frame means being movable back and forth in a horizontal plane with respect to said base means and said board means, said board means and said frame means being in superposed relationship with respect to one another with said frame means lying in a plane substantially parallel to but spaced from the plane of said board means, said frame means being of a width greater than said board means.

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