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MACHINE FOR WRAPPING BUTTER

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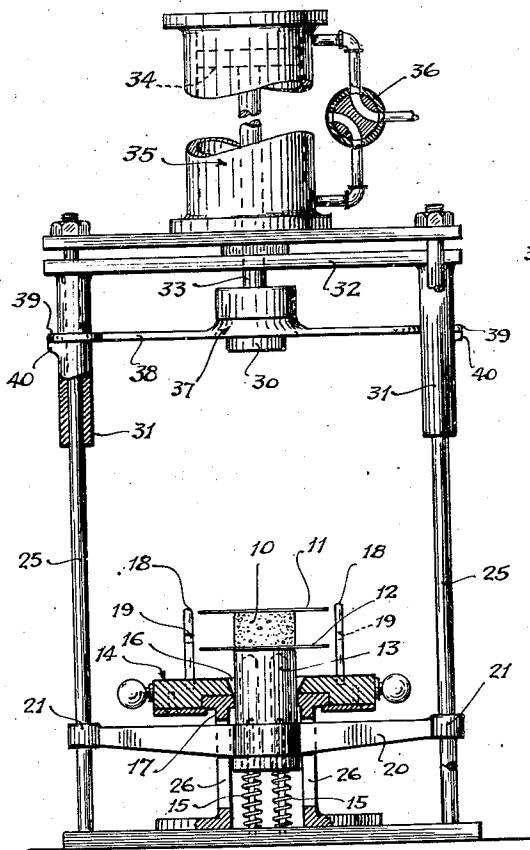


Fig. 1

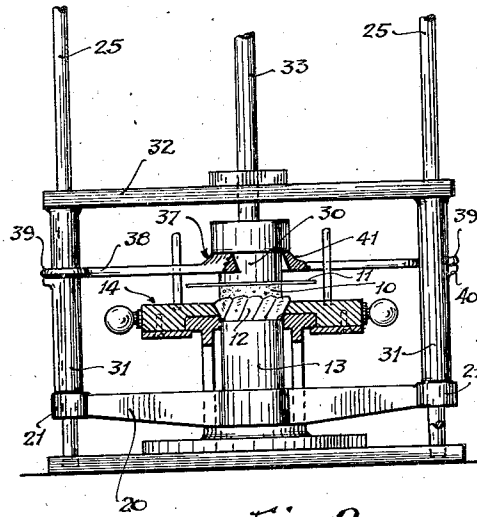


Fig. 2

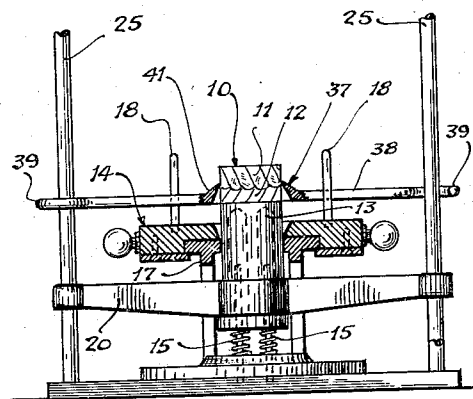


Fig. 3

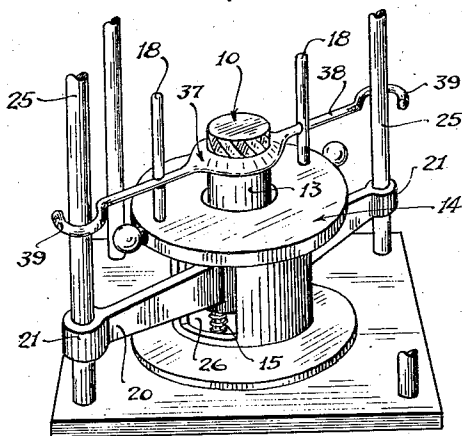


Fig. 4

ATTEST-
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MACHINE FOR WRAPPING BUTTER

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11 Claims. (Cl. 93—2)

This invention relates to a machine for wrapping an article and more particularly to a means for pleating and folding a wrapper to make a neat package.

It is an object of this invention to provide a machine that will uniformly pleat and fold a wrapping material around an article.

It is another object of this invention to provide a machine for rapidly creasing and folding a wrapping material around a deformable product such as butter.

It is another object of this invention to provide a package wherein a part of the wrapper may serve as a dish in which the article may be disposed for subsequent use.

Other objects will appear below.

In the drawing:

Figure 1 is a side elevation of the machine partly broken away showing the parts in their respective positions with an article and the wrapping material disposed on the article support.

Figure 2 is a side elevation of the machine partly broken away showing the positions of the parts after one of the wrappers has been driven through one of the forming dies.

Figure 3 is a side elevation of the machine partly broken away showing the positions of the parts after the bottom wrapper has been folded and pleated around the article and with the article and wrapper driven through the other die to complete the pleating and folding of the package.

Figure 4 is a perspective of the view shown in Figure 3.

In the past, mechanical means for pleating wrappers around articles have been proposed and means have been provided to engage a wrapping material disposed on each side of an article to pleat and fold the material against the article. The present invention is an improvement on machines of this type and as will be seen, the article being wrapped is first lightly clamped onto an article support to be thereafter manipulated through suitable forming dies whereby the wrapping material is first pleated and then folded against the article to provide a neat and attractive package.

The die means here disclosed are effective to pleat and fold first one wrapper and then another wrapper over the ends of the article, then sealing means are applied to hold the wrappers in place. Manually or automatically controlled drive means may be utilized to effect the proper sequence of events and a rapid and uniform packaging of the articles is obtained.

Referring more particularly to the drawing, the article to be wrapped, indicated as 10, is disposed between two sheets of wrapping paper 11 and 12 and the article and the wrapping material are then placed on an article support 13 as shown in Figure 1. The support 13 is movably mounted to reciprocate through a forming die 14, but it is normally urged upwardly with respect to the die as shown in Figure 1, by springs 15. The die 14 is provided with a suitably configured aperture 16 to properly crease the wrapper 12 when it is driven therethrough as will appear below and the die 14 is rotatably mounted on the supporting frame 17. Suitable means may be connected to the die 14 to permit it to be turned and integral with the die are the upstanding latching rods 18 which are each provided with the notches 19. The rods 18 serve to center the wrappers 11 and 12 as they are assembled on the support 13 with respect to the article being wrapped and also engage and support another die means for pleating and folding wrapper 11.

Integral with the article support 13 and normally urged upwardly therewith by springs 15, is the cross arm 20. The cross arm 20 extends laterally on each side of the article support and is provided with bearing surfaces 21 at its extreme ends, which surfaces slide on the bearing rods 25. The supporting frame 17 integral with the bed of the machine is provided with suitable slots 26 in each side thereof so that the arm 20 may move vertically with the article support.

A piston 30 is positioned above the article support and in alignment with it and when the piston is moved downwardly it engages the upper surface of the wrapper 11 to clamp the wrappers and article lightly against the article support. Spacers 31 integral with the piston 30 slide on the vertical rods 25 to engage the ends of cross arm 20 and the spacers are carried by the crosshead 32 fixed to the piston rod 33. The piston 30, spacers 31, crosshead 32, and the piston rod 33 all move as a unit and the spacers are related to the piston so that after the piston clamps the article against the support, the spacers engage the cross arm 20 to move the article and article supports through die 16 without crushing or compressing the article too severely.

The piston rod 33 may be driven downwardly by any suitable means such as the driving head 34 working in the air cylinder 35. Compressed air may be delivered over the driving head 34 through a control valve 36 and air may be ex-

hausted from the lowermost side of the cylinder 35 while the driving head moves downwardly.

Carried with the piston 30 and spacers 31 is another forming die 37 having arms 38 integral therewith. At their outer ends, arms 38 are provided with hooks 39 shaped to closely engage spacers 31 and the hooks are engaged above lugs 40 so that the die 37 is carried downwardly with piston 30 and is aligned thereby with die 14.

As the article support 13 moves downwardly from the position shown in Figure 1 to the position shown in Figure 2, the wrapper in passing through the die 14 is pleated in a regular manner by the configured aperture 16 and after the article and wrapper have reached the position shown in Figure 2, the die 14 is rotated about its mounting on the bed 17. The pleats formed by die 14 are neatly folded against the article during this rotation and also, the latching pins or arms 18 are carried with the die 14 as it rotates such that the pins 18 will carry notches 19 into engagement with the arms 38 of forming die 37. The pins 18 and notches 19 engaging the arms 38 will drive the hooks 39 out of engagement with the spacers 31 so that the die 37 will then be supported from die 14. The die 37 is of course disposed in concentric relation with respect to the piston 30 and when the piston is retracted upon proper manipulation of the valve 36, the die 37 will remain supported from die 14 in proper alignment with the article clamped on the support 13 such that wrapper 11 is pleated in this die.

As the piston 30 and spacers 31 are retracted, the cross arm 20 will be raised by springs 15 and the article support 13 will be lifted from the position shown in Figure 2 to the position shown in Figure 3. The wrapper 11 will be forced through the forming die 37 as the support 13 moves upwardly whereby this wrapper is pleated. Die 37 is formed to first pleat the wrapper and to then fold the pleats against the article when it is forced through the die 37, and to perform the folding operation the die 37 is provided with a cylindrical upper surface which engages the pleats formed to lay them neatly against the article. It will be noted that the springs 15 cause the article and article support to closely follow the retracting piston so that the article is lightly clamped in position while the pleating of the wrapping material takes place.

When the support with the article has reached the upper end of its stroke and piston 30 has been fully retracted, the article and the pleated and folded wrapper will be projected through the die 37 in substantially the manner shown in Figure 3 so that the operator may place a rubber band or other sealing strip around the completed package to hold the wrappers 11 and 12 tightly against the article.

The die 37 may be provided with an upper surface 41 that slants inwardly toward the article, which surface may serve to guide the sealing band into position against the wrapped article. After the sealing band has been placed around the package, the article may be removed by lifting it vertically through the die 37 and the machine may then be set up for the next operation.

After the article has been withdrawn, the die 37 may be removed from the notches 19 and manually reset to the position shown in Figure 1 so that the machine will be ready to receive another article with its wrapping materials.

To summarize the operation of this machine, an article may be placed on the article support between wrappers 11 and 12 which are centered upon the support by pins 18. After the article

and wrappers have been so placed, the piston 30 is driven downwardly along with the die 37 and spacers 31 so that the article is first clamped against the support and as the piston continues downwardly, wrapper 12 is subsequently forced through the die 14 to pleat the wrapper. As soon as the spacers 31 reach the lowermost point of their stroke and the piston 30 has forced the article through the aperture 16, the die 14 is rotated to fold the pleats against the article and to remove the die 37 from its support on piston 30 and spacers 31 to hold it in fixed position over die 14 so that upon the return of the article on support 13, the die 37 will pleat the wrapper 11.

After the wrapper 12 has been pleated and folded, piston 30 is retracted and the article is delivered upwardly through the forming die 37 by springs 15 positioned behind the cross arm 20, the piston 30 being lifted by the pneumatic motor 35. The movement of the wrapper and article 11 through the die 37 effects a pleating and folding of the wrapper and the packaging of the article is completed when a sealing band is applied.

The machine above described may be used for pleating and folding wrappers around any article having a regular configuration and a substantially uniform cross-section. It will be noted that the dies 14 and 37 should closely approximate the cross-section of the article to pleat the wrapper and fold it neatly to the article and the apertures in the dies are provided with suitable ridges and valleys to effect the desired pleating pattern. The article support 13 and the piston 30 are preferably also of substantially the same cross-section as the article being wrapped so that no undue strains will be developed at the edges of the article when the wrapper is turned therearound as the assembly passes through either one of the dies.

By reason of the structure just described wherein the article support and the driving piston 30 have substantially the same cross-section as the article, a particular advantage is obtained whereby deformable materials such as butter, cheese and other semi-plastic or semi-solid articles may be driven through the dies to pleat and to fold the wrappers. The piston 30 as above explained will lightly engage the article and the real power drive to move the assembly through die 14 is supplied through the spacers 31 and cross arm 20. The article cannot be crushed and the piston 30 will serve to merely hold the article in proper position on the support as it is manipulated through the dies with its wrappers.

The spacers 31 are also operative to prevent a crushing of the deformable object during the upward stroke and springs 15 drive the article support against the spacers to hold the article fixed to the support as the piston retracts so that wrapper 11 is driven through die 37.

The dies, article support, spacers and driving piston, could obviously all be made removable so that other means of desired cross-section could be substituted therefor in order to package any article having a particular shape.

In packaging an article such as butter or cheese, in one form of the invention, one of the wrappers, preferably the under wrapper 12, could be made of a relatively heavy but workable material suitable for serving as a convenient container for the article after it is unpacked. The wrapper being self-sustaining might even be printed in an artistic manner to provide a dish in which the article could be used on the table.

While the above is a description of the preferred

construction of this invention and one mode of its application, many modifications may occur to those skilled in the art all of which are contemplated to be within the scope of the following claims.

I claim:

1. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, a forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, means to effect the movement of the article on said support through one of said dies and then through the other of said dies to pleat and fold said material around the article.

2. A machine for forming a package around an article comprising a support to receive the article with a wrapping material disposed on each side thereof, means to urge said support in one direction, a forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, means to effect the movement of the article on said support through one of said dies and said urging means then driving the article on said support through the other of said dies to pleat and fold said material around the article.

3. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, a forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, said movable support being disposed between both of said dies for movement longitudinally through one of the dies, means to effect the movement of an article on said support through said one die and then through the other of said dies to pleat and fold both of said wrappers around the article.

4. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, said movable support having a supporting surface the dimensions of which are the same as the cross-sectional dimensions of the article disposed on the support, a forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, means to effect the movement of an article on said support through one of said dies and then through the other of said dies to pleat and fold said material around the article.

5. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, a rotatably mounted forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, means coacting between said forming dies whereby one die is supported from the other die, means to effect the movement of an article on said support through one of said dies and then through the other of said dies to pleat and fold said material around the article.

6. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, a rotatably mounted forming

die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, said last named die being movable into a position adjacent said first named die, and means coacting between said dies whereby said last named die is supported from said rotatably mounted die, means to effect the movement of an article on said support through one of said dies and then through the other of said dies to pleat and fold said material around the article.

7. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, a forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, said last named die being provided with a guiding surface surrounding the die forming means, means to effect the movement of an article on said support through the one of said dies and then through the other of said dies to pleat and fold said material around the article, the guide surface on said other die being utilized after the article has been pushed through said other die to direct a sealing band into position around the article whereupon the completed package may be withdrawn from the machine.

8. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, a forming die positioned to engage said material on one side of said article and another forming die positioned to engage the material on the other side of said article, reciprocating drive means to effect the movement of an article on said support through one of said dies and then through the other of said dies to pleat and fold said material around the article, said drive means having a stroke of length to just force the article through the first named die means and thereafter being retracted whereby the article may be moved through the last named die.

9. A machine for forming a wrapper around a deformable article comprising a movable support to receive the article with a wrapping material disposed on each side thereof, means to pleat said material on each side of the article including means to clamp the article lightly against said movable support, one forming die positioned to engage the material on one side of said article and another forming die positioned to engage the material on the other side of said article, and driving means to effect the movement of the article and wrapping material clamped to said support through said one die and thereafter through said other die whereby said material may be pleated and folded around the article to complete the package.

10. A machine for forming a wrapper around a deformable article comprising a movable support to receive the article with a sheet of wrapping material disposed on each side thereof; said support being mounted for reciprocatory movement and having a cross arm integral therewith; said support being mounted to be normally urged in one direction; means to urge said support in said direction; one forming die positioned to engage one of said sheets of the wrapping material and another forming die movable into a position to engage the other sheet of material on the other side of said article; driving means to effect the movement of the article on said sup-

port through said one die including means to engage the article on said support to hold it firmly and having means to engage said cross arm to drive the support, wrapper, and article through said one forming die whereby said sheet of material may be pleated and folded around the article; said urging means of the movable support driving said article and said other sheet of wrapping material through said other die when said driving means is retracted whereby said other sheet of wrapping material may be pleated and folded around said article.

11. A machine for forming a wrapper around an article comprising a movable support to receive the article with a sheet of wrapping material disposed on each side thereof, said support being mounted for reciprocatory movement and having a cross arm integral therewith, said support being mounted to be normally urged in one direction, means to urge said support in said direction, a forming die disposed in concentric relation with respect to the axis of movement of

5 said support and positioned to engage one of said sheets of wrapping material, driving means to effect the movement of the article on said support through said die, said driving means including a clamping means reciprocable into engagement with the article disposed on said support and spacing means integral with said clamping means to engage said cross arm whereby the clamping means is positively spaced from said support a distance slightly less than the thickness of said article so that the article is first lightly clamped against said support and upon further reciprocation of said driving means one of said wrappers is forced through said die, 10 another die removably supported on said driving means, and means coacting between said dies to remove said other die from said driving means and to support it in alignment with said first named die to pleat said other sheet of 15 wrapping material as said driving means is retracted. 20

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