March 16, 1965 P. V. OSBORN, JR 3,173,601

DISPENSING SHEET MATERIAL IN PREDETERMINED LENGTHS

Filed Aug. 23, 1962 2 Sheets-Sheet 1

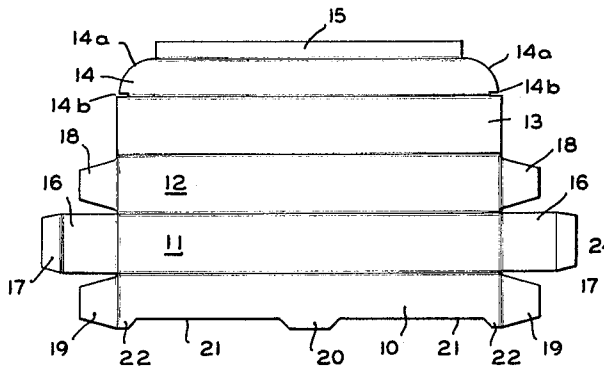


FIG. 1

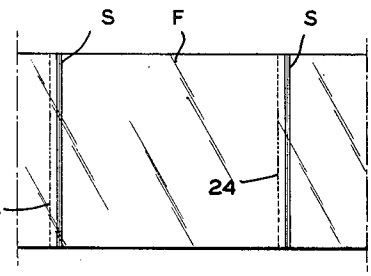


FIG. 2

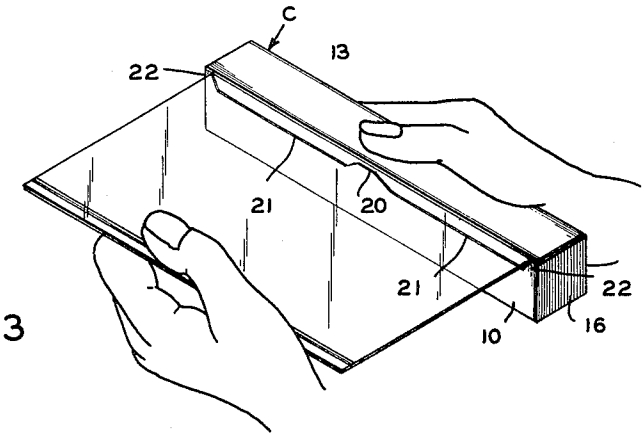


FIG. 3

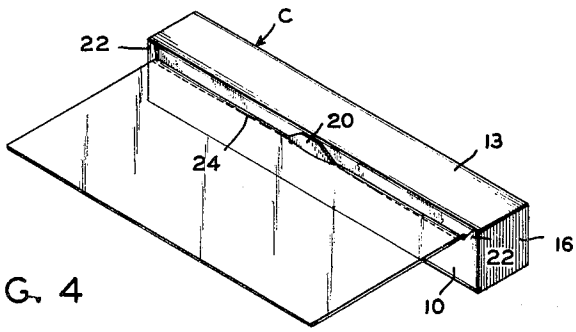


FIG. 4

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March 16, 1965 P. V. OSBORN, JR 3,173,601

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Filed Aug. 23, 1962 2 Sheets-Sheet 2

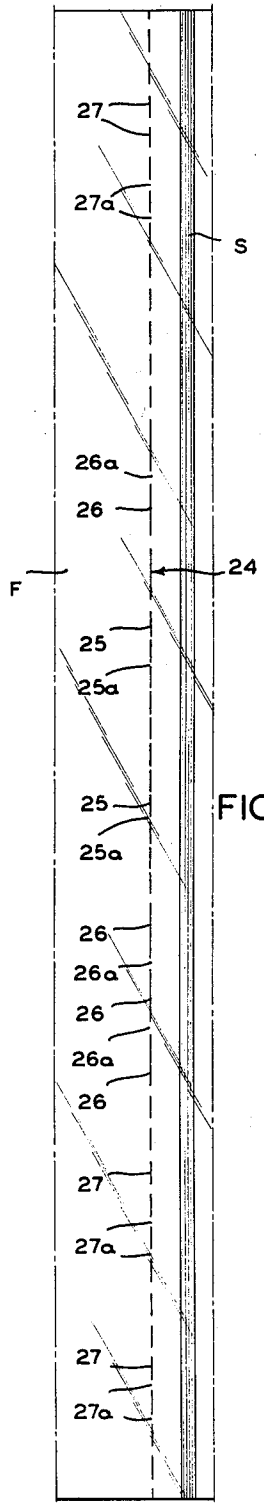


FIG. 6

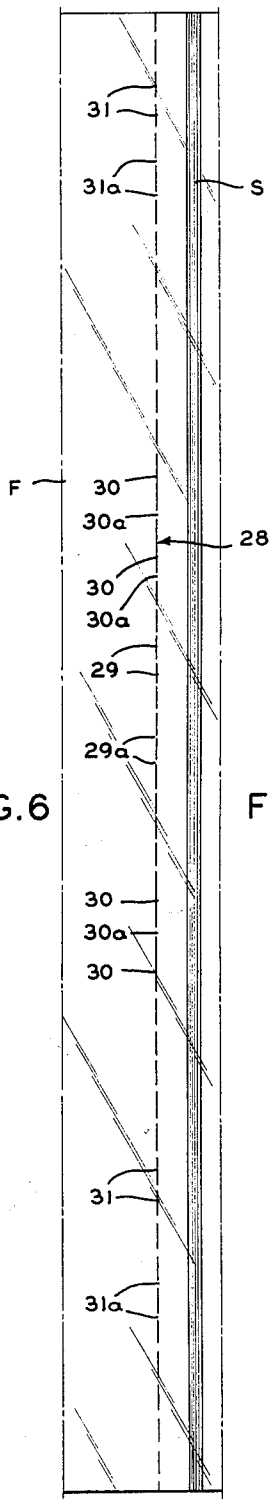
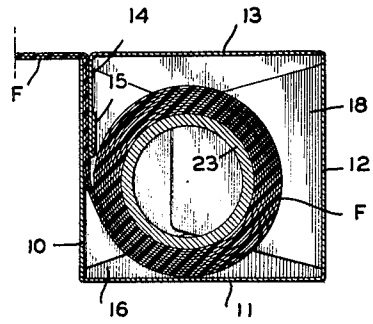


FIG. 7

FIG. 5



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DISPENSING SHEET MATERIAL IN PREDETERMINED LENGTHS

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4 Claims. (Cl. 229—53)

This invention relates to the packaging of sheet material and to the dispensing thereof from a continuous strip, whether in roll or other form. More particularly, this invention relates to a novel continuous length of such material and to the dispensing thereof in predetermined lengths.

It is a further object of the present invention to provide a novel container in which a continuous length of prefabricated sheet material, whether in roll or zig-zag or other folded form, may be packaged conveniently for shipment and storage and from which such material may be dispensed readily in predetermined lengths, the commercial requirements of such a container including economy of manufacture, ease of assembly, automatic means for insuring precise separation in predetermined lengths along predetermined lines of severance, and inherent strength to withstand normal handling until the contents have been exhausted.

It is a still further object of the invention to provide a continuous length of sheet material having novel transverse lines of severance whereby predetermined lengths may be detached successively.

Further objects and advantages of the invention will be readily apparent from the following specification, taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a plan view of a blank of sheet material, such as cardboard or the like, which when set up will produce a shipping, storing and dispensing container constructed in accordance with the present invention.

FIGURE 2 is a fragmentary plan view of one embodiment of continuous sheet material especially designed for dispensing in accordance with the present invention.

FIGURE 3 is a perspective view of the shipping, storing and dispensing container of FIGURE 1 illustrating a portion of a continuous roll of sheet material being withdrawn therefrom.

FIGURE 4 is a perspective view similar to FIGURE 3, a predetermined length of sheet material having been withdrawn from the carton or container to severing position.

FIGURE 5 is a transverse sectional view taken along the line 5—5 of FIGURE 3.

FIGURE 6 is a fragmentary plan view, on a slightly enlarged scale, of a portion of sheet material illustrating one form of novel transverse line of severance; and

FIGURE 7 is a fragmentary plan view, also on an enlarged scale and similar to FIGURE 5, illustrating a modified form of transverse line of severance.

As shown in the drawings, particular reference being had to FIGURE 1 thereof, a novel carton or container C for shipping, storing and dispensing predetermined lengths of sheet material which has been prepared in continuous roll or folded form, may be produced or set up from a blank of suitable sheet material, such as cardboard or the like.

Desirably this blank will include a front wall 10, bottom wall 11, rear wall 12 and top wall or cover 13, suitable score or fold lines being provided between such wall portions. The free edge of the top or cover 13 is provided with a front flap portion 14 and this flap portion, in turn, is provided with a reinforcing tab 15 desirably of lesser length intended for adhesive or other attachment to the lower surface of the flap portion, the extending corner portions of the flap being rounded as illustrated at 14*a* for purposes of convenience in closing and opening the container.

Integral end wall portions 16 are provided on the bottom wall 11 and each of these end wall portions includes an integral top end flap 17. The rear wall portion 12 includes a contiguous end wall flap 18 at each extremity thereof, intended for attachment, as by adhesive engagement, or the like, to the inner surface of the adjacent end wall portion 16. The front wall portion 10 also is provided with a contiguous end wall flap 19 at each extremity thereof, intended for attachment, when the carton or container is set up, in any desired manner as by adhesive engagement or the like, to the companion end wall flap 18 and associated end wall portion. To provide for convenient assembly, suitable score or fold lines are provided between adjacent wall portions and end flaps and, for nicety of fit, when the container blank is stamped out or otherwise produced, slots 14*b* may be provided between the top wall portion 13 and the front flap portion 14 at the opposed extremities of the score line therebetween.

The upper free edge of the front wall portion 10 is provided with an arresting tab portion 20. Desirably, this arresting tab is centrally located and is formed by notching or cutting away the material of said front wall on either side of the arresting tab as indicated at 21, these notches extending longitudinally along the upper edge of the front wall portion and terminating short of the extremities thereof to provide tab or guide portions 22.

There has been illustrated in FIGURE 2 of the drawings suitable material for packaging and dispensing from the container described in detail hereabove. Such material, as stated, may be a plastic film in sheet or other form and, in a preferred embodiment of the invention, such material may be a thermoplastic tubular film F flattened to provide front and rear walls and sealed transversely as at S to provide a continuous length of bag-like containers disposed in end-to-end relationship. It will be understood that where uniform spacing is provided between successive seals, each container will be of identical length or size; however, this is not critical to the present invention and bags of random sizes may be produced in a single length of material.

Located adjacent each transverse seal S is a tear or severance line which, desirably, is created by spaced lines of slit-like perforations extending inwardly from each edge of the sheet material or film, it being understood that where tubular material is employed both front and rear walls contain such slit-like perforations and these lie in overlapping relationship. It will be further understood that, with the accessible extremity of the tubular film F sealed transversely, severance along the next adjacent tear or severance line, which is located immediately adjacent to another transverse seal, will produce a bag-like container having a sealed bottom and an open mouth created by the act of severance.

A suitable supply of material or film may be packaged for reception within the container of the present invention by rolling such film upon a core 23 (as shown in FIGURE 5 of the drawings) or such material may be folded upon itself, in zig-zag manner with return bends, the manner of storage within the carton being of secondary importance it being necessary only that the material or contents be so arranged as to be susceptible of ready withdrawal through the dispensing opening of the container.

The precise manner in which the severance or tear line is produced has been found in practice to be particular importance and one embodiment thereof has been illustrated in detail in FIGURE 6 of the drawings. It is

essential that this line of severance offer varying degrees of resistance to separation along the length thereof. To carry this into practice, a centrally located portion of greatest susceptibility to separation is provided, this portion being in direct alignment with the arresting tab **20**. Thus, as film is withdrawn from the container and passed in a downward direction over the upper edge of the front wall **10** of the container, the arresting tab **20** will penetrate the tear or severance line immediately upon contact with the readily frangible central portion thereof, and thus continued forward movement of the film is brought to an abrupt stop with the material per se, on each side of the arrestnig tab, coming to rest upon the notched surfaces **21**, this position being illustrated in FIGURE 4 of the drawings. Exertion of continued pressure upon the material will result in automatic severance along the tear line and in this manner individual bag-like containers may be severed successively, as desired, from a continuous length thereof.

In the embodiment of the invention illustrated in FIG. 6, the tear or severance line indicated generally at **24** is created by a plurality of spaced split-like perforations. The slits **25** of the central portion thereof are relatively short in length and are closely spaced, the tie portions **25***a* therebetween being extremely narrow in width. On either side of the central portion **25** of the tear or severance line, a portion of increased resistance to severance is provided. As shown, this portion includes a minimum of three spaced slits **26**, the length of each of such slits being slightly greater than twice the length of the slits of the central portion of the tear line and the width of tie portions **26***a* between the slits **26** having a corresponding ratio to the width of the tie portions **25***a*. On the outer sides of the portions **26**, and extending to the free edges of the film or material, the tear or severance line is comprised by spaced slits **27**, these approximate the length of the slits **25**; however, the tie spaces **27***a* therebetween are of a width substantially greater than the width of the tie spaces **25***a* and slightly less than the width of the tie spaces **26***a*.

Thus, as sheet material F is dispensed from the container **10** and successively separated into predetermined lengths, controlled severance takes place along each tear line **24**. The arresting tab **20**, as stated above, immediately penetrates the centrally located portion of greatest frangibility created by the slit-like perforations **25** and extremely narrow tie portions **25***a*. Forward movement of the sheet material or film is retarded temporarily by reason of the restraining influence of the relatively wide tie portions **26***a* between the intermediate portion of slit-like perforations **26**; it will be understood, however, that this retarding of movement is readily overcome by the exertion of continued pressure whereupon severance reaches the more closely spaced slit-like perforations **27** and the tie portions **27***a* therebetween offer but little resistance to automatic completion of the act of separation.

Another important feature and beneficial result which has followed the discovery that a severance line of the character described hereabove provides for novel and improved results is that there are no serious manufacturing problems in connection with the rolling of the film in appropriate commercial lengths for packaging. A tear line created by spaced slits will not separate under the influence of the normal pressures required during the rerolling operation. This is particularly true where olefin films of very thin gauge are employed, including the polyethylene, polypropylene, and the like.

Continuous lengths of film which have been manufactured initially in one continuous roll and provided with spaced tear or severance lines produced in the novel manner described in detail hereabove may be rerolled, upon cores or the like, into commercial lengths at reasonably high rates of speed without any partial separation or distortion occurring at the severance lines by reason of the tension required to produce tightly wound packages. However, where increased rates of speed are desired, a modified arrangement of the slit-like perforations has been found to be advantageous.

This is illustrated more particularly in FIGURE 7 of the drawings where the slits **29** of the central portion of the severance line indicated generally at **28** are relatively short in length and are closely spaced, the tie portions **29***a* therebetween being extremely narrow in width, thus providing a readily frangible central portion substantially identical to that disclosed in FIGURE 6 of the drawings. On either side of this central portion of the severance line, a portion of increased resistance to separation is provided and this portion includes a lesser number of spaced slits **30**, but two being illustrated, and the length of each of such slits being substantially greater than the length of the slits **29** and the width of the tie portions **30***a* therebetween having a corresponding ratio to the width of the tie portions **29***a*. On the outer sides of the portions **26**, and extending to the free edges of the material or film, the tear or severance line is comprised by spaced slits **31** which approximate the length of the slits **29**; however, the width of the tie spaces **31***a* therebetween are substantially greater than the width of the tie spaces **29***a* and slightly less in width than that of the tie spaces **30***a*.

The dispensing operation is closely related with respect to either form of severance line illustrated, a slightly greater speed of separation taking place where the two spaced portions of increased resistance include a lesser number of elongated slits.

The operation of the dispensing container described hereabove is particularly simple. The top cover **13** is lifted and the free edge of the material to be dispensed is withdrawn to some slight extent; the cover than is closed with the front flap portion **14** extending downwardly between the free material and the remainder of the supply (as illustrated in FIGURE 5 of the drawings), the material now being in dispensing position and supported upon the upper edges of the guide portions **22** and arresting tab **20** as also shown in FIGURE 3.

Continued withdrawal of material will result in the arresting tab **20** penetrating the centrally located portion of greatest frangibility created by the slit-like perforations **25** and extremely narrow tie portions **25***a* and at which time the forward movement of the material is brought to a stop with the material per se, on opposite sides of the central portion thereof, coming to rest upon the notched surfaces **21**, this position being illustrated in FIGURE 4 of the drawings. Exertion of continued pressure will result in automatic severance along the remainder of the spaced slit-like perforations, the speed of separation increasing after the portions of increased resistance have been passed, and in this manner individual bag-like containers may be successively severed, as desired, from a continuous length thereof.

During the act of severance, some small distortion of the material takes place whereby the severed portions thereof, along each tear line, extends outwardly and angularly in overlying relationship with respect to the notches **21** and thus is restrained from dropping within the container out of immediate reach. In this manner the material of the roll (or otherwise packaged material) remains available for grasping whereby withdrawal and severance of the next successive length may be accomplished.

There has thus been described a novel shipping, storing and dispensing container and a novel continuous length of sheet material from which predetermined lengths thereof may be dispensed and automatically severed. While in the embodiment illustrated and described, thermoplastic film sealed transversely to provide detachable bags has been exemplified, it will be understood that the inventive concept is not thus limited since film, paper, or other materials in single or multiple sheet or in other pre-fab-

ricated form may be packaged and dispensed in the manner taught with equal facility. Similarly, with respect to the container per se, various structural modifications thereof may be undertaken.

Thus, the invention is not considered limited by that which is shown in the drawings and described in the specification and reference therefore is had to the appended claims for summaries of the essential features of the invention including novel features of construction and novel combinations of parts as well as novel method of production, for all of which protection is desired.

What is claimed is:

1. A continuous length of flattened thermoplastic tubular film provided with spaced transverse seals and a severance line immediately adjacent each of said seals, each severance line including a central portion of greatest frangibility and a portion of lesser length and of increased resistance to severance located on each side of said central portion, the remainder of said severance line extending outwardly to both edges of said film being of greater resistance to severance than said central portion but of lesser resistance than said portions of increased resistance.

2. A continuous length of film as set forth in claim 1 where said central portion comprises a plurality of relatively short spaced slit-like perforations having extremely narrow tie portions therebetween.

3. A continuous length of film as set forth in claim 2 where said intermediate portions of increased resistance to severance comprises a plurality of spaced slit-like perforations each of which is at least twice the length of the slit-like perforations of the central portion, the width of

the tie spaces between the slit-like perforations of said portions of increased resistance being at least twice the width of the tie spaces of said central portion.

4. A continuous length of film as set forth in claim 3 where the remainder of the severance line on each outer side of the intermediate portions of increased resistance comprises a plurality of spaced slit-like perforations of approximately the same length as those of the central portion, the width of the tie portions between the slit-like perforations of said remainder of the severance line being greater than that of the central portion but lesser than that of the portions of increased resistance.

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