Feb. 6, 1962 B. R. ASBURY 3,019,580

WIDE BACK TENSION PLATE FOR BREAD WRAPPING MACHINE

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Fig.1

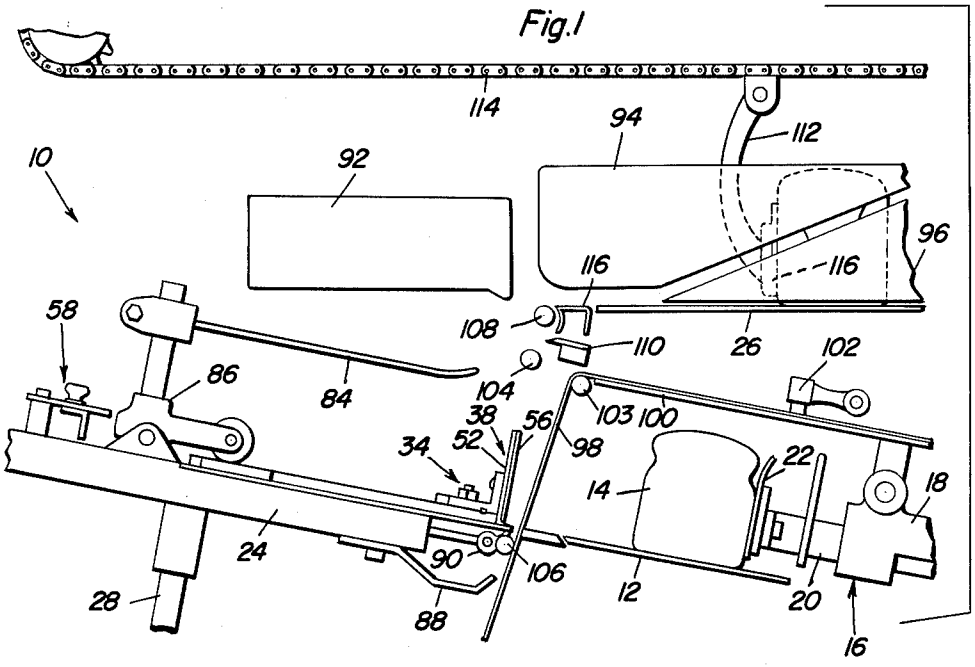
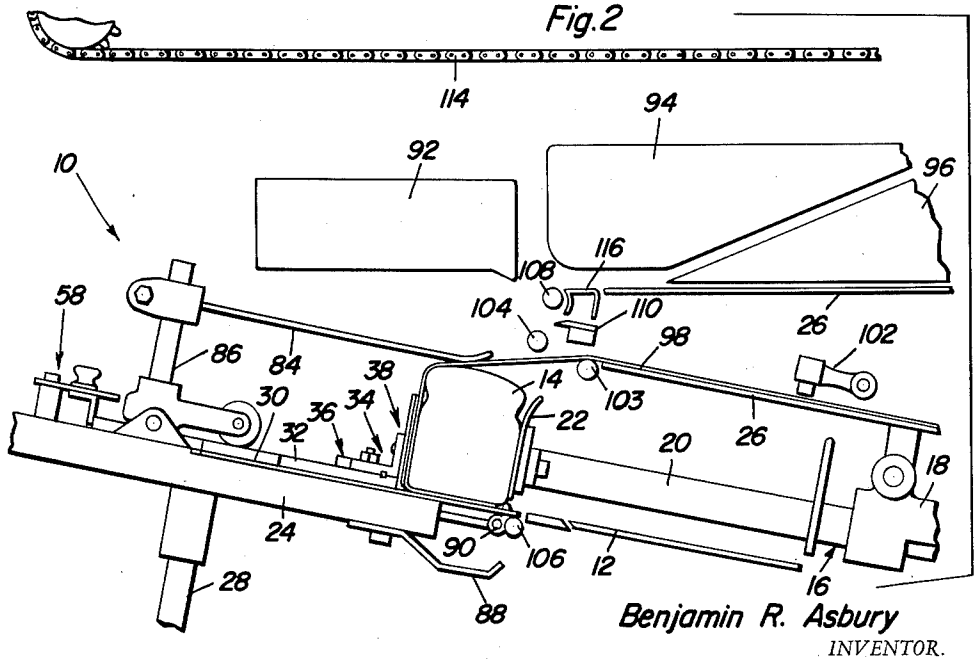


Fig.2



Benjamin R. Asbury
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Fig.3

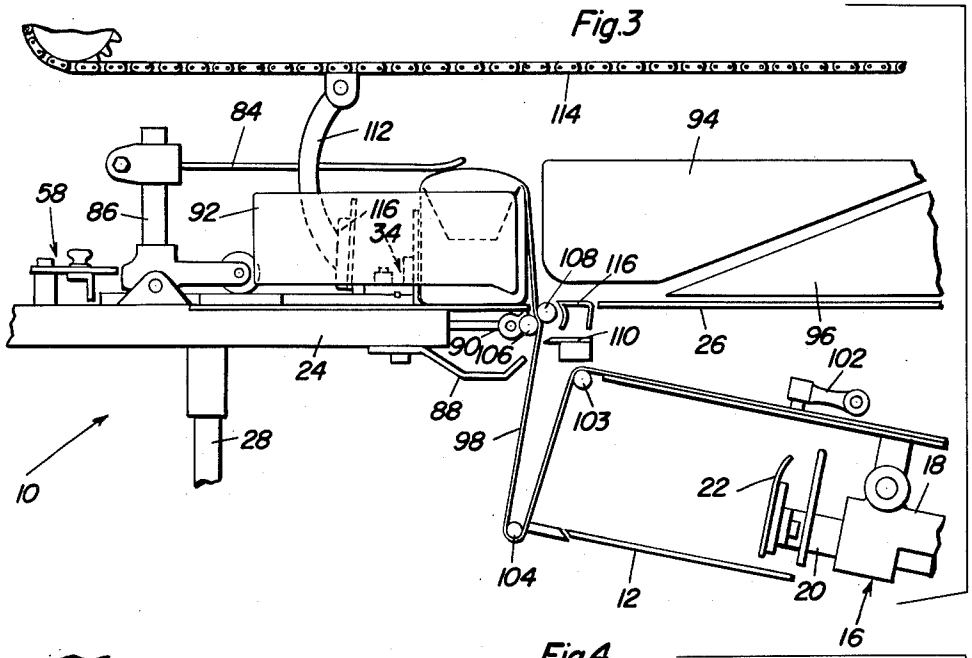
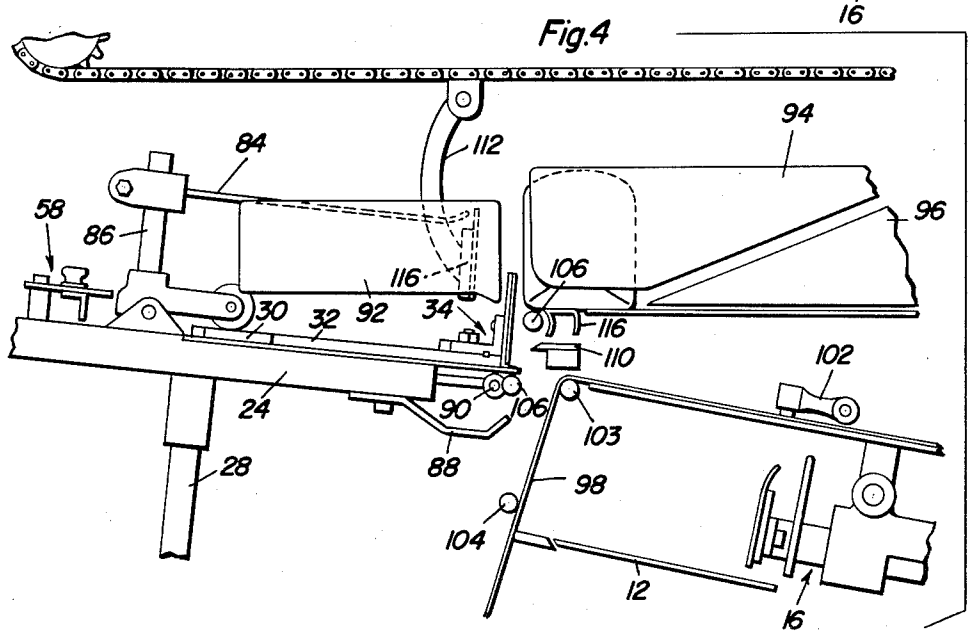


Fig.4



Benjamin R. Asbury
INVENTOR.

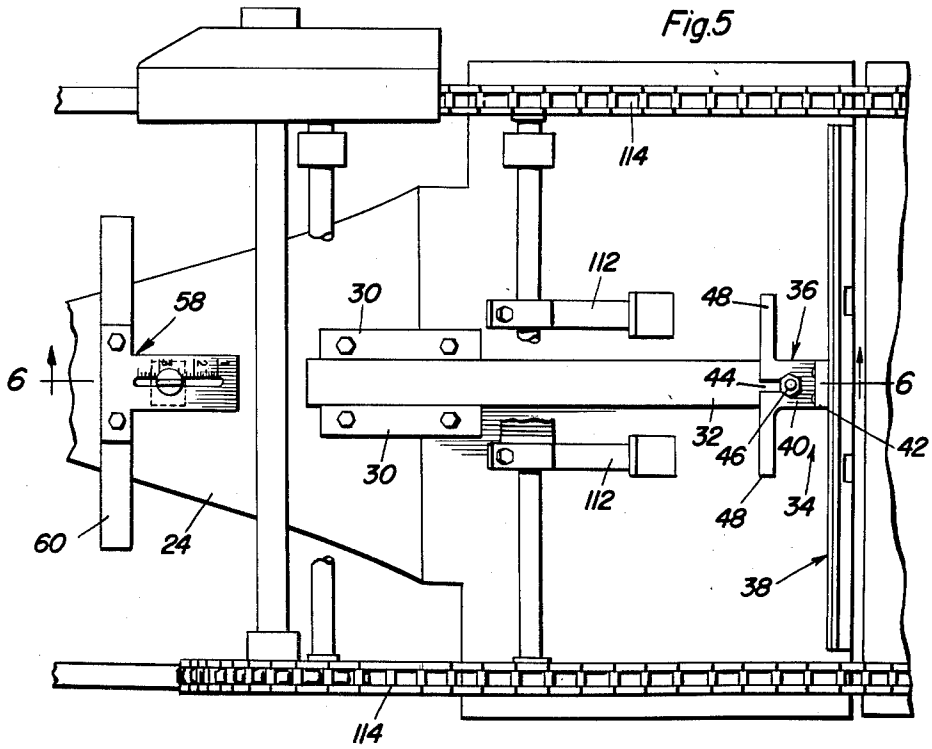
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Fig.5



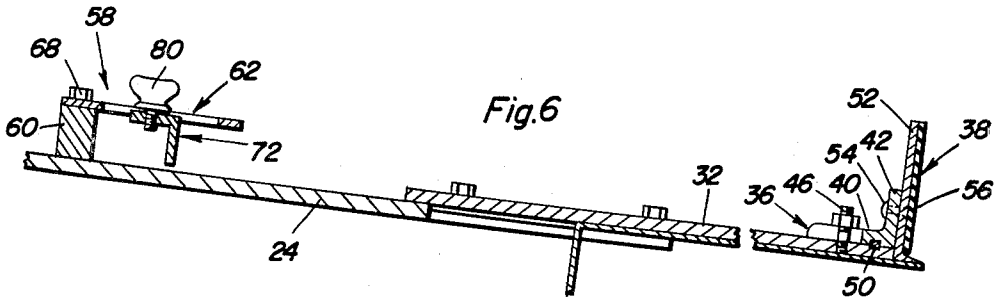


Fig.6

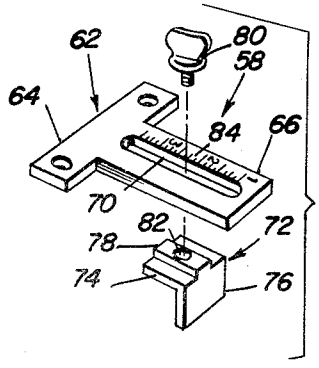


Fig.7

Benjamin R. Asbury

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson Attorneys

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WIDE BACK TENSION PLATE FOR BREAD WRAPPING MACHINE

Benjamin R. Asbury, High Point, N.C.
(896 Broughton NE., Orangeburg, S.C.)

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This invention relates in general to new and useful improvements in bread wrapping machines, and more specifically to a novel back tension plate assembly.

In a bread wrapping machine the back tension plate has two primary purposes in the wrapping of a loaf of bread. First, it acts as a support for a loaf of bread to keep the slices of such loaf even. Secondly, it offers resistance against the wrapping paper to keep the wrapping paper from slipping around the slices during the wrapping procedure. However, because of the construction and arrangement of parts of existing machines, the heights of the back tension plates have been restricted and it has been necessary to provide openings in the back tension plates for the passage of pusher arms. This, accordingly, greatly reduces the effective size of the back tension plate and the control which it has during a wrapping procedure.

It is therefore the primary object of this invention to provide an improved back tension plate and pusher arm arrangement wherein the back tension plate is of an increased height and is generally continuous, the pusher arms being adjusted whereby the pusher arms engage the mounting bracket for the back tension plate so as to move the back tension plate forwardly as the pusher arms swing forwardly and thus clear the back tension plate without the necessity of forming openings in the back tension plate for the passage of the pusher arms.

Another object of the invention is to provide a novel back tension plate unit and pusher arm arrangement wherein the back tension plate unit includes a conventional slide bar, a relatively high back tension plate which is continuous throughout its length, and a mounting bracket which secures the back tension plate to the slide bar, and the pusher arm arrangement being so adjusted whereby the pusher arms thereof, as they swing forwardly, will strike the rear edge of the mounting bracket and thus advance the back tension plate out of the path of the pusher arms, this arrangement permitting the back tension plate to be both continuous and of a greater height.

Another object of the invention is to provide a back tension plate which has a greater resistance to the slippage of paper thereby, the back tension plate being of increased size and being generally continuous as compared to previous back tension plates, and the paper engaging face of the back tension plate being provided with a friction increasing facing so as to greatly increase the resistance of the back tension plate to movement of paper relative thereto.

Another difficulty encountered in bread wrapping machines is the fact that as the rate of wrapping is increased, the rate of movement of the loaf of bread is necessarily increased. Thus, as the loaf of bread strikes the back tension plate it tends to slide the back tension plate rearwardly on the lifter table, the acceleration of the back tension plate has become such that rearward movement of the back tension plate is not stopped with the rearward movement of the loaf of bread with the result that in many instances the back tension plate moves rearwardly out of engagement with the paper and thus the desired purpose of the back tension plate is defeated.

It is therefore a further object of this invention to provide a stop member for use in conjunction with a back tension plate, the stop member being positioned on the lifter table in alignment with the slide bar for the back tension plate and having the stop element engageable by the slide bar to prevent excessive rearward movement of the back tension plate.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a schematic sectional view taken through a bread wrapping machine which has been modified in accordance with the present invention and shows a loaf of bread in its initial position on the runway bottom plate ready to be transferred to the wrapping mechanism, and a second loaf of bread in the final stages of being wrapped;

FIGURE 2 is a schematic view similar to FIGURE 1 and shows the loaf of bread in its initial engagement with the wrapping paper and in the act of being transferred from the runway bottom plate to the lifter table with the loaf of bread forcing the paper against the back tension plate and the back tension plate being in its rearmost position;

FIGURE 3 is a schematic view similar to FIGURE 1 and shows the lifter table in its elevated position with the wrapping paper wrapped about the loaf of bread and the mounting bracket for the back tension plate about to be engaged by the pusher arms;

FIGURE 4 is another schematic view similar to FIGURE 1 and shows the loaf of bread after it has been transferred from the lifter table to the bottom folder plate by the push arms and the wrapping paper severed therefrom;

FIGURE 5 is a fragmentary plan view of that portion of the bread wrapping machine which includes the lifter table and shows the specific mounting of the back tension plate and the stop member for limiting the rearward movement of the back tension plate;

FIGURE 6 is a fragmentary longitudinal sectional view taken substantially upon the section line 6—6 of FIGURE 5 and shows further the details of the mounting of the back tension plate and the stop member; and

FIGURE 7 is an enlarged exploded perspective view of the stop member and shows the specific details thereof.

Referring now to the drawings in detail, it will be seen that there is illustrated in FIGURE 1 a portion of a bread wrapping machine which is referred to in general by the reference numeral **10**. The bread wrapping machine which has been modified is an American Machine and Foundry Company Standard Wrapping Machine. However, the general principles involved will be found in other bread wrapping machines and thus the invention is not intended to be limited to this particular type of machine.

The bread wrapping machine **10** includes a runway bottom plate **12** to which a sliced loaf of bread **14** is delivered in a manner which plays no part in the present invention. Positioned to the right or forwardly of the loaf of bread **14** is a pusher assembly **16** which includes a mounting fixture **18**, an extensible bar **20** and a pusher head **22**, the pusher head **22** being adapted to engage the loaf of bread **14** and move the loaf of bread **14** from right to left off of the runway bottom plate **12**.

The bread wrapping machine **10** also includes a lifter table **24** which is mounted for pivotal movement from a position aligned with the runway bottom plate to an elevated position aligned with a bottom folder plate **26**, the bottom folder plate **26** overlying the runway bottom plate **12**. Movement of the lifter table **24** is accomplished by means of an arm **28** in the conventional manner.

Suitably secured to the lifter table **24** is a pair of spaced guide blocks **30** between which a slide bar **32** is

mounted for sliding movement. Secured to the forward or right end of the slide bar 32 is the back tension plate assembly which is the subject of this invention, the back tension plate assembly being referred to in general by the reference numeral 34.

The back tension plate assembly 34 includes a special mounting bracket which is referred to in general by the reference numeral 36 and a special back tension plate which is referred to in general by the reference numeral 38 (FIGURES 5 and 6). The mounting bracket 36 includes a base portion 40 and an upstanding portion 42. The base portion 40 has a centrally located longitudinal slot 44 in which a fastener 46 is mounted. Also, the base portion 40 has at the rear part thereof a pair of outwardly directed arms 48. Furthermore, the base portion 40 is interlocked with the slide bar 32 by means of a transverse key 50 (FIGURE 6).

The back tension plate 38 includes a back tension plate member 52 which is relatively high and is continuous as to compared existing back tension plates. The back tension plate member 52 is permanently secured to the mounting bracket 36 by suitable fasteners, such as rivets 54. The front face of the back tension plate member 52 is provided with a friction increasing facing 56 which is preferably in the form of a sponge rubber product.

Also carried by the lifter table 24 rearwardly or to the left of the slide bar 32 is a stop member which is referred to in general by the reference numeral 58. The stop member 58 utilizes a transversely extending mounting bar 60 which is carried by the lifter table 24. Secured to the top surface of the bar 60 is a generally T-shaped support 62 which includes a transverse flange 64 and a longitudinal flange 66. The transverse flange 64 is secured to the bar 60 by means of fasteners 68. The longitudinal flange 66 is provided with a longitudinal slot 70.

The stop member 58 also includes a stop element 72. The stop element 72 is L-shaped and includes a horizontal flange 74 and a depending vertical flange 76. The upper surface of the horizontal flange 74 is provided with a longitudinal rib 78 which is received in the slot 70. A suitable fastener 80 extends down through the slot 70 and into an internally threaded bore 82 in the horizontal flange 74 to clamp the stop element 72 in an adjusted position with respect to the support 62. The stop element 72 is positioned by means of indicia 83 on the longitudinal flange 66. In this manner the stop element 72 may be adjustably positioned to compensate for the various widths of different type loaves of bread. It is to be understood that the vertical flange 76 of the stop element 72 is positioned for engagement with the rear or left edge of the slide bar 32 to limit the rearward movement of the back tension plate assembly 34 although it may engage other parts of the back tension plate.

The bread wrapping machine 10 also includes such conventional items as a top support bar 84 which is mounted on the lifter table 24 by means of a suitable support 86. Also carried by the lifter table 24 at the forward end thereof and at the underside thereof is a shear bar 88 and retaining fingers 90.

Although the first folder for folding the paper at the ends of the loaf have not been shown, the bread wrapping machine is illustrated as having a second folder plate 92, a third folder plate 94 and a fourth folder plate 96 at opposite ends of the loaf of bread to be wrapped.

Also, the bread wrapping machine 10 includes a paper guide plate 100 with which is associated a clamp pad assembly 102 to clamp the paper 98 in which the loaf of bread 14 is to be wrapped, at the time the paper is being cut. The paper 98 passes over a paper guide roller 103 and down in front of the runway bottom plate 12. Disposed to the left of the runway bottom plate 12 is a lap roller 104 for the paper 98. Also, carried by the right part of the lifter table 24 is a roller 106. The roller 106 will be formed in sections spaced transversely of the lifter table 24. A final roller 108 is disposed to the left of the bottom folder plate 26 and controls the tension of the paper 98. Positioned adjacent the roller 108 is a knife 110 for shearing the paper 98 against shear bar 88 at the desired time in a conventional manner.

The bread wrapping machine 10 also includes a series of pusher arms 112 which are carried by endless chains 114. The movement of the pusher arms 112 at the time of their operation is horizontal. Slip on plates 116 are mounted on the lower ends of the pusher arms 112 and may be of an increased size when used with the present invention.

Operation

Reference is now had to FIGURE 1 wherein a loaf of bread 14 about to be wrapped is positioned on the runway bottom plate and the free end of the paper web 98 is depending below the runway bottom plate 12. The pusher assembly 16 is now actuated so as to move the loaf of bread 14 from right to left onto the lifter table 14 and into engagement with the back tension plate assembly 38. This results in the clamping of the paper web 98 against the frictional facing 56 of the back tension plate 52 by the loaf of bread 14. The loaf of bread 14 is moved to the left until it is completely seated on the lifter table 24, as is best illustrated in FIGURE 2. At this time the paper web 98 is disposed about the bottom, one side and a part of the top of the loaf of bread 14. Also, the paper web 98 is held in engagement with the top of the loaf of bread 14 by the top support bar 84.

The lifter table 24 now is swung upwardly into alignment with the bottom folder plate 26 at which time the roller 104 is moved downwardly in its position in advance of the runway bottom plate 12 to assure the proper feeding and tensioning of the paper web 98. The paper web 98 is now wrapped about the top of the loaf of bread 14 and extends down along the side of the loaf of bread 14 which heretofore has not been covered. When in the position illustrated in FIGURE 3, the ends of the paper web 98 have received the first two of four folds.

As the pusher arms 112 move from left to right, the pusher arms engage the arms 48 of the mounting bracket 36 and move the back tension plate unit 34 to the right so as the pusher arms 112 continue to move forwardly and the lifter table 24 begins to move downwardly, movement of the loaf of bread 14 onto the bottom folder plate 26 is assured and the pusher arms 112 clear the back tension plate 52 even though it is of an increased height. Simultaneously with this movement, the paper web 98 is sheared by the knife 110 and the free end thereof drops downwardly in front of the runway bottom plate 12 for engagement with the next loaf of bread.

The pusher arms 112 move the loaf of bread 14 over a sealer 116 as it moves onto the bottom folder plate so as to seal the free edge of the paper web 98. As the loaf of bread 14 is moved along the bottom folder plate 26, the third and fourth folders 94 and 96 complete the folding of the paper 98 about the ends of the loaf of bread 14.

Although the operation of the bread wrapping machine 10 remains substantially the same with the exception of the fact that the point of engagement between the pusher arms 112 and the back tension plate unit is changed and the rearward movement of the back tension plate unit is controlled, these changes, together with the improved construction of the back tension plate, greatly increases the efficiency of the bread wrapping machine and substantially reduces the slippage of the wrapping paper with respect to the loaf of bread. This, of course, is a necessary feature.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is belived to be unnecessary. However, since numerous modifications and changes will readily occur

to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a bread wrapping machine, a back tension plate unit and a pusher arm arrangement, said back tension plate unit including a slide bar, a generally continuous back tension plate and a mounting bracket securing said back tension plate to said slide bar, and said pusher arm being timed to engage said mounting bracket to move said back tension plate forwardly with said pusher arm clearing said back tension plate, and a stop member engaged by said slide bar to positively limit rearward movement of said back tension plate unit, said stop member including a support and a stop element adjustably carried by said support, whereby various sizes of loaves may be wrapped.

2. In a bread wrapping machine having a lifter table movable in a vertical direction for lifting a partially wrapped loaf of bread for engagement by a pusher arm, a back tension plate, a slide bar slidably mounted on the lifter table, a mounting bracket connected to the back tension plate and fixed to the slide bar with the end of the mounting bracket being spaced from the rear surface of the back tension plate, the front face of the back tension plate being covered with sponge rubber for increasing the frictional engagement of the back tension plate with the wrapping paper for the loaf of bread, a stop member mounted on the lifter table, said stop member including a transverse stop element adjustably secured in position in relation to the lifter table and disposed for engagement with the rear edge of the slide bar for limiting the rearward movement of the back tensioned plate for preventing the back tensioned plate from completely leaving the loaf of bread and wrapping paper therefore due to acceleration of the back tensioned plate when the loaf of bread is pushed onto the lifter table, said mounting bracket having the terminal end thereof spaced from the rear surface of the back tensioned plate and disposed in the path of movement of the pusher arms whereby the pusher arms will engage the bracket in spaced relation to the back tensioned plate when the lifter table is in an elevated position for moving the slide bar, back tensioned plate, and loaf of bread off of the lifter table with the lifter table then being automatically lowered whereby the pusher arms which are disengaged from the mounting bracket as the lifting table lowers will pass over the top edge of the back tensioned plate and engage the loaf of bread, thereby providing for a continuous back tensioned plate having a greater height than were the pusher arms engaging directly the rear surface of the back tensioned plate.

3. In a bread wrapping machine, a back tension plate unit and a pusher arm, said back tension plate unit including a vertically movable support, a slide bar mounted on said support, a back tension plate, a bracket rigidly mounting said tension plate on the slide bar at one end thereof, said bracket extending longitudinally of the slide bar and having a terminal end forming an abutment spaced from the rear surface of the back tension plate, said pusher arm being timed to engage the abutment on said bracket for moving the slide bar and back tension plate along the support, the spacing between the rear surface of the back tension plate and the abutment enabling the pusher arm to pass over the back tension plate when the support moves downwardly thereby engaging the pusher arm with the article in front of the back tension plate without the pusher arm contacting the back tension plate as it moves downwardly in relation to the article.

4. The structure as defined in claim 3 together with a stop member disposed in the path of movement of the slide bar, and means adjustably mounting the stop member on the support for adjustably and positively limiting the rearward movement of the slide bar and back tension plate.

5. The structure as defined in claim 4 wherein said back tension plate approximates the size of the article disposed against the front face of the back tension plate, a covering of sponge resilient material on the front face of the back tension plate for frictional gripping engagement with the article over a major portion of the service of the article.

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