

May 12, 1925.

1,537,384

J. L. SULLIVAN

WRAPPING AND SEALING MACHINE

Filed Dec. 8, 1923

FIG. 1.

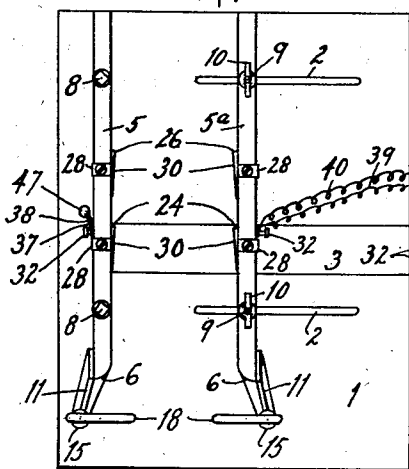


FIG. 2.

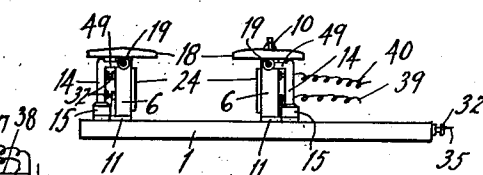


FIG. 3.

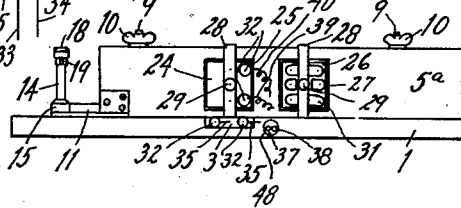


FIG. 4.

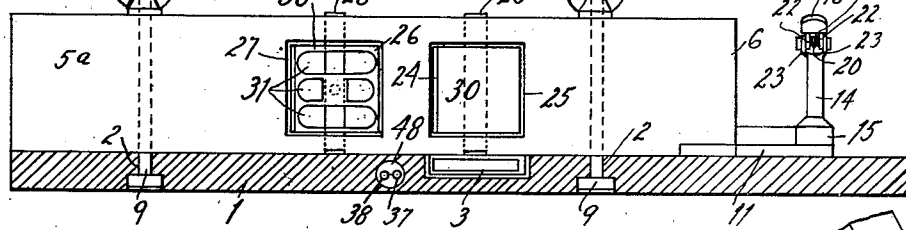
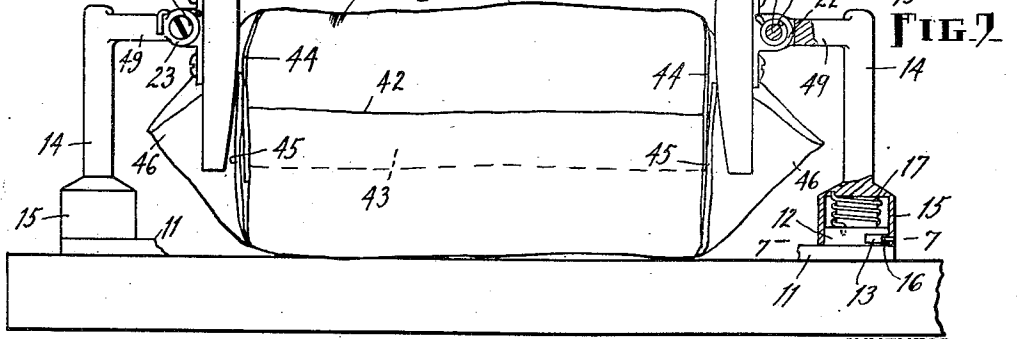


FIG. 5.



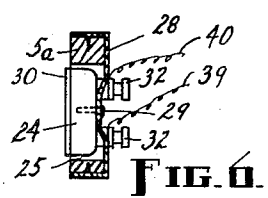
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Patented May 12, 1925.

1,537,384

UNITED STATES PATENT OFFICE.

JOHN L. SULLIVAN, OF THOMPSONVILLE, CONNECTICUT.

WRAPPING AND SEALING MACHINE.

Application filed December 8, 1923. Serial No. 679,471.

To all whom it may concern:

Be it known that I, JOHN L. SULLIVAN, a citizen of the United States of America, and a resident of Thompsonville, in the county of Hartford and State of Connecticut, have invented a new and useful Wrapping and Sealing Machine, of which the following is a specification.

My invention relates to machines for assisting in wrapping objects, such as bread, in paper and sealing the wrappers thus formed, portions of the work being done by hand, and said invention consists generally of a table top, board, plate, or other suitable flat support, which carries a transverse heating-unit, fixed and adjustable, parallel, perforated, guide bars mounted edgewise on said support and extending lengthwise thereof, securing means for the adjustable bar, heating-units and cooling plates or blocks yieldingly arranged in the perforations or openings in said bars, and certain peculiar oscillatory folders located at the entrance to the space between said bars, together with means for heating said elements, and such other parts and members as may be necessary or desirable in order to render the machine complete and serviceable in every respect, all as hereinafter set forth.

Wrappers used for the above-noted purpose are preferably composed of paraffined or waxed paper.

One object of my invention is to produce a comparatively simple and inexpensive, yet highly efficient and practicable, machine for assisting in folding at the ends and for sealing the bottom and ends of bread wrappers, or wrappers for other objects, such machine greatly expediting the operation of folding and the act of sealing the wrappers.

Another object is to afford adjustment in such machine whereby the same is capable of accommodating objects of different lengths or sizes.

A further object is to equip the machine with yielding heating-units and cooling members for the ends of the package, thus insuring that the ends of the wrapper of such package be completely, tightly, and permanently sealed, and, at the same time, making it possible so to space the guide members apart as to enable said package to be pushed between them with comparative freedom, hence without danger or liability of the paper at the ends of the package adhering to said guide members and being

torn. Obviously the above is an important and valuable feature of the machine and invention.

Other objects and advantages will appear in the course of the following description.

I attain the objects and secure the advantages of my invention by the means illustrated in the accompanying drawings, in which—

Figure 1 is a top plan of a wrapping and sealing machine which embodies a practical form of my invention; Fig. 2, a front end elevation of said machine; Fig. 3, an elevation of the machine as viewed from the right-hand side; Fig. 4, an enlarged, longitudinal section through the machine, taken on lines 4—4, looking in the direction of the associated arrow, in Fig. 1; Fig. 5, an enlarged elevation of the folders at the front end of the machine, with parts broken away and in section, and showing the wrapper on an object, as a loaf of bread, in the act of being folded at the ends; Fig. 6, a transverse, vertical section through one of the guide bars showing the heating-unit therein, and, Fig. 7, a cross section on lines 7—7, looking down, in Fig. 5.

Similar reference characters designate similar parts throughout the several views.

What in a sense constitutes the base of this machine is a flat table top or support 1, in which there are two transversely-extending slots 2. Let into the top of the support 1, transversely thereof, is a heating-element 3. In the present example the heating-element 3 is between the slots 2, but back of and nearer to the forward slot than it is to the rear slot.

Mounted on the support 1, a short distance from the left-hand, longitudinal edge thereof, is a guide bar 5. The bar 5 extends from the rear edge to a point somewhat remote from the front edge of the support 1, and the front end of said bar is rounded substantially as shown at 6. This bar rests with one longitudinal edge on the support 1, and said bar is secured to said plate by any suitable means, such as a pair of bolts 8 passed through said bar and plate. At the right of the guide bar 5 is a second guide bar 5^a, the two bars being generally similar to each other. The curved ends 6 of the bars 5 and 5^a face each other and provide a flaring mouth at the front end of the space between said bars, which facilitates the entrance of the package to such space. The

curved ends 6 also serve as folding elements for the ends of the wrapper, as will be explained hereinafter. Both bars extend over the heating-element 3, and the right-hand, adjustable bar extends over the slots 2. Two bolts 9 are passed upwardly through the slots 2 and the adjustable bar 5^a to receive thumb-nuts 10 on their upper terminals above said bar. Upon loosening the thumb-nuts 10 the bar 5^a can be moved to the right or left on the support 1 and the bolts 10 in the slots 2, to regulate or change the distance between said bar and the bar 5. After adjustment the thumb-nuts 10 are tightened to secure the movable bar again to the support 1.

Securely attached to the bars 5 and 5^a at their forward ends are two brackets 11. The brackets 11 rest on the support 1 and extend forwardly from the bars 5 and 5^a with a slightly relative divergence. At the outer end of each bracket 11 is an upwardly-extending trunnion 12, and in one side of such trunnion is an arcuate slot 13. A vertical post 14 is provided at the base with a sleeve or hub 15 which fits over the trunnion 12 and rests at the bottom edge on the base of the bracket 11, which base is flat. Extending inwardly from the hub 15 into the slot 13 is a pin 16. The pin 16 with the ends of the slot 13 limit the rotary movement of the hub 15 on the bracket 11. Within the hub 15 is a spiral spring 17 having one terminal attached to the top of said hub and the other terminal attached to the top of the trunnion 12. At the top of the post 14 is a horizontal arm 49. The slot 13 is in the outer front quadrant of the trunnion 12, and the spring 17 is arranged and adapted normally to act on the hub 15 in such a manner as to carry and retain the pin 16 against the rear end of said slot. The parts are so related that, when they are disposed in the manner just explained, the arm 49 is at right-angles to the adjacent guide bar (5 or 5^a). The post 14 can be partially rotated in the direction to carry its arm 49 toward the adjacent guide bar as far as is permitted by the pin 16 and the front end of the slot 13, such partial rotation being against the resiliency of the spring 17.

A wrapper-folding rocker 18 is pivoted at 19 to the inner or free end of each arm 49, and normally said rocker is retained, by means of a spiral spring 20, in an approximately horizontal position, with the outer terminal thereof resting on top of the post 14 of which said arm forms a part, as shown in Figs. 1, 2, 3, and 4. The spring 20 is given one or more turns around the pivot 19, and has its terminals respectively attached to or connected with the arm 49 and the rocker 18 or a bracket 21 with which said rocker is provided on the under or outer side. The bracket 21 is provided with a

pair of depending or outwardly-extending, bearing lugs 22 which are received between a pair of bearing lugs 23 forming the inner terminal of the arm 49. The pivot 19 passes through the lugs 23 and 22, and the spring 20 is on said pivot between said last-named lugs.

Obviously the two rockers 18 at their inner terminals can be swung downwardly, against the resiliency of the springs 20, so that said rockers assume an approximately vertical position, as illustrated in Fig. 5, and they can be moved inwardly or toward the bars 5 and 5^a, by the application thereto of the force necessary partially to rotate the posts 14 against the resiliency of the springs 17.

Each of the guide bars 5 and 5^a is provided with a heating-unit 24 which is located in an opening 25 in the bar directly above the heating-unit 3, and also with a cooling block 26 located in an opening 27 in said bar behind said first-named opening. A resilient strap 28 is attached to the upper and under edges of the bar 5 (or 5^a) over each of the openings 25 and therein, such strap being on the outer side of said bar. Each of the heating-units 24 and cooling blocks 26 is attached to one of the straps 28 by means of a screw 29; and each of said heating-units and blocks has an inner face, as 30, which is beveled so as to project at the rear end or edge into the space between the guide bars. The front end or edge of either heating-unit 24 or either cooling block 26 should not project beyond the inner face of the guide bar in which the same is located. Thus it is seen that the two heating-units 24 and the two cooling blocks 26 are caused, by the resilient straps 28, to extend or project into the passage between the bars 5 and 5^a in such a manner as to intercept an object which extends clear across such space and is pushed rearwardly between said heating-units and blocks and beyond the same, and be forcibly contacted with by such object, or rather forcibly contact with the object. As the object is pushed rearwardly the resilient straps 28 yield sufficiently to enable the object to pass clear of the heating-units 24 and of the cooling blocks 26. Normally, therefore, the heating-units and the cooling blocks present wedge-shaped obstacles in the path of the object, when the latter is moved rearwardly between the guide bars, but obstacles which are forced outwardly by the moving object. Each cooling block 26 has a plurality of slots 31 therein for the passage of air therethrough. The openings 25 and 27 are of sufficient size, and the resilient straps 28 are sufficiently yielding, to permit the heating-units 24 and the cooling blocks 26 to be displaced or forced outwardly at both top and bottom by any irregularities at the ends

of the packages, and thus be prevented from offering undue resistance to the passage of said packages.

The heating-units 3 and 24 are of the electrical type, and each is, therefore, provided with a pair of binding-posts 32. Two of the binding-posts 32 are at the right-hand end of the heating-unit 3, and two of such binding-posts are on the outer side of each of the heating-units 24. The circuit through the heating-units is represented diagrammatically in full in Fig. 1, and comprises main wires 33 and 34, wires 35 and 36 between said main wires, respectively, and the binding-posts 29 of the heating-unit 3, wires 37 and 38 connecting said wires 35 and 36, respectively, with the binding-posts 29 of the left-hand heating-unit 24, and wires 39 and 40 between said wires 37 and 38, respectively, and the binding-posts 29 of the right-hand heating-unit 24.

The shape, superficially, of each cooling block 26 is generally similar to that of each heating-unit 24.

In practice: Assuming that the bar 5^a, with the folder connected therewith has been adjusted to provide space between said bar and the bar 5 of the width necessary to accommodate the packages to be sealed, and permit the same to pass freely between them without danger of the paper adhering to said bars and being torn because of so adhering; and after the electric current is turned on to heat the members 3 and 24; a wrapper, indicated by the numeral 41, of paraffined or waxed paper or the like, is laid flat, and an object, as a loaf of bread, is placed bottom side up on said wrapper, when the wrapper lengthwise is folded over the sides and bottom (now uppermost) of the loaf, with the flap nearer the operator outside of or above the other flap, the partially enclosed loaf is then turned on the side which locates the bottom next to the operator, and with the fingers end portions of the wrapper are turned downwardly. Then the package without being turned is placed on the rockers 18 and forced downwardly onto the support 1, with the result that said rockers fold up portions of the ends of the wrapper outside of the portions of such ends that were previously folded down by the fingers. The ends of the package now appear substantially as shown in Fig. 5, and the rockers are vertically disposed. Next the package is pushed rearwardly on the support 1 between the guide bars 5 and 5^a, the posts 14 being partially rotated at this time and thus enabling the rockers 18 to follow the package and retain the end flaps of the wrapper in folded position until the curved end 6 of the guide bars 5 and 5^a are reached. As the package is pushed into the space between the guide bars, the outwardly-extending portions of the end flaps of the

wrapper are folded forward over the portions of such flaps as had previously been folded with the fingers and by means of the rockers 18. As soon as the package passes into the aforesaid space and clear of the rockers 18, the springs 17 and 20 act to return the posts 14 and said rockers to normal positions again. When between the forward portions of the guide bars, the package is turned one-quarter over in a forwardly direction to locate the bottom thereof and the bottom folds of the wrapper 41 underneath. This is done before the package arrives at the heating-units.

The outer and inner, longitudinal, bottom flaps are represented at 42 and 43, respectively, the portions of the end flaps which are folded with the fingers are represented at 44—44, the portions of said end flaps that are folded by means of the rockers 18 are represented at 45—45, and the portions of said end flaps that are folded by the ends 6 of the bars 5 and 5^a are represented at 46—46. The exposed edge of the flap 42 follows in the movement on its bottom of the package on the support 1, hence said flap does not become wrinkled, and covering as it does the flap 43 prevents the latter from being wrinkled.

The package is pushed rearwardly at this time until it arrives between the heating-units 24 and on that portion of the heating-unit 3 which forms a part of the floor of the space between the bars 5 and 5^a, when said package is permitted to rest long enough for the flaps 42 and 43 to be sealed, and the portions 44, 45, and 46 of the end flaps or folds to be sealed, the former by the bottom heating-unit and the latter by the end heating-units. Complete sealing of their end folds or flaps is insured because of the pressure thereon of the heating units 24 induced by the resilient straps 28 to which said heating units are attached. Meanwhile a second package is made up and pushed into the space between the guide bars and into sealing position, at the same time pushing the first package rearwardly from sealing position into a position between the cooling blocks 26 in said bars. At this time the sealed ends of the first package are subjected to pressure from the blocks 26, such pressure being produced by the resilient straps 28 to which said blocks are attached, and said ends are exposed to air which enters through the slots 31 in said blocks, whereby said ends are cooled and the sealing material is caused to harden or set. There being a less bulk of material to be sealed on the bottom of the package or wrapper, it is not necessary to provide means for cooling the same as in the case with the ends of the package or wrapper. A third package is caused to follow the second, and in due course pushes the latter out of contact with

the heating-units and into engagement with the slotted, cooling blocks 26, and the leading package is pushed by the second rearwardly beyond said blocks. In this manner one package after another is made up and passed through the machine, being securely sealed and ready for distribution by the time it arrives at the rear end of the passage between the bars 5 and 5^a.

When the package is placed on the rockers 18, said package bears on the portions of said rockers that extend inwardly from the pivots 19, otherwise the package could not be forced downwardly between the rockers onto the support 1.

In the present example, the wires 37 and 38 pass from the binding-posts 32, on the left-hand heating-unit 24, downwardly into an opening 47 in the support 1, and through such opening into a passage 48 in said support, said passage leading from said opening to the right-hand, longitudinal edge of the support. The wires 37 and 38 emerge from the support 1 at the outer end of the passage 48. The wires 39 and 40 must be of sufficient length and so arranged that the bar 5^a, in which is contained the heating-unit 24 with which said wires are connected, can be adjusted to the full extent required.

I am aware that adjustable guide members, bottom and end heating-units, and end cooling means have been employed before in the construction of wrapping and sealing machines, and do not, therefore, seek to claim such elements broadly. Nevertheless, some change in the shape, size, construction, and arrangement of the parts and members of the machine as herein described and illustrated may be made without departing from the spirit of my invention or exceeding the scope of what is claimed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, and heating-units yieldingly held in the recesses in said bars.

2. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, said bars being provided with heating-units, and cooling blocks yieldingly held in the recesses in said bars.

3. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, and heating-units and cooling blocks yieldingly held in the recesses in said bars.

4. In a wrapping and sealing machine, a support having a heating-unit therein, re-

cessed guide bars mounted on said support, one of said bars being adjustable relative to the other, and heating-units yieldingly held in the recesses in said bars, said last-named heating-units being beveled on their inner faces normally to project at their rear ends into the space between said bars.

5. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, and cooling blocks yieldingly held in the recesses in said bar, said blocks being beveled on their inner faces normally to project at their rear ends into the space between said bars.

6. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, and heating-units and cooling blocks yieldingly held in the recesses in said bars, said last-named heating-units and blocks being beveled on their inner faces normally to project at their rear ends into the space between said bars.

7. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, resilient members attached to said bars over the recesses therein, and heating-units in said recesses, said last-named heating-units being attached to said resilient members.

8. In a wrapping and sealing machine, a support having a heating-unit therein, recessed guide bars mounted on said support, one of said bars being adjustable relative to the other, resilient members attached to said bars over the recesses therein, and cooling blocks in said recesses, said blocks being attached to said resilient members.

9. In a wrapping and sealing machine, a flat transversely-slotted support provided with a heating-unit, a guide bar secured to said support and provided with a heating-unit and a perforated cooling block, a second guide bar mounted for adjustment on said support over the slots therein, and provided with a heating-unit and a perforated cooling block, threaded members passing through said slots and said second bar, and threaded members on said first-named threaded members to secure said second bar to said support.

10. In a wrapping and sealing machine, a support, guide bars secured to said support, supporting members adjacent to the forward ends of said bars, and vertical rotatable members on said supporting member, said rotatable members being provided with pivotally connected members which are adapted to be rocked in vertical planes.

11. In a wrapping and sealing machine, a

support, guide bars mounted on said support, brackets extending forwardly from the front terminals of said bars, posts mounted to rotate on said brackets, and rockers carried by said posts.

12. In a wrapping and sealing machine, a support, guide bars mounted on said support, one of said bars being adjustable, brackets extending forwardly from the front terminals of said bars, posts mounted to rotate on said brackets, and rockers carried by said posts.

13. In a wrapping and sealing machine, a support, guide bars mounted on said support, supporting members adjacent to the forward ends of said bars, posts rotatably mounted on said supporting members, said posts having arms, and rockers pivotally connected with said arms.

14. In a wrapping and sealing machine, a support, guide bars mounted on said support, supporting members adjacent to the forward terminals of said bars, posts rotatably mounted on said supporting members, said posts having arms, means to limit the movement of said posts, a spring arranged normally to retain each of said posts in a predetermined position, and rockers pivotally connected with said arms.

15. In a wrapping and sealing machine, a support, guide bars mounted on said support, supporting members adjacent to the forward terminals of said bars, posts rotatably mounted on said supporting members, and having arms, rockers pivotally connected with said arms, and springs arranged normally to retain said rockers in an approximately horizontal position.

16. In a wrapping and sealing machine, a support, guide bars mounted on said support, supporting members adjacent to the forward terminals of said bars, posts rotatably mounted on said supporting members, said posts having arms, means to limit the movement of said posts, a spring arranged normally to retain each of said posts in a predetermined position, rockers pivotally connected with said arms, and springs arranged normally to retain said rockers in an approximately horizontal position.

17. In a wrapping and sealing machine, a support, guide bars mounted on said support, supporting members having trunnions adjacent to the forward terminals of said bars, said trunnions having arcuate slots

therein, posts having hubs mounted on said trunnions, and also having arms, and provided with pins to operate in said slots and limit the movement of said hubs and posts, springs arranged in said hubs normally to retain them with their posts in predetermined positions, and rockers pivotally connected with said arms.

18. In a wrapping and sealing machine, a recessed guide bar, and a heating-unit yieldingly held in the recess in said bar.

19. In a wrapping and sealing machine, a recessed guide bar, and a cooling block yieldingly held in the recess in said bar.

20. In a wrapping and sealing machine, a recessed guide bar, and a heating-unit and a cooling block both yieldingly held in the recesses in said bar.

21. In a wrapping and sealing machine, a recessed guide bar, a resilient strap attached to said bar across the recess therein, and a heating-unit yieldingly held by said strap in said recess.

22. In a wrapping and sealing machine, a recessed guide bar, a resilient strap attached to said bar across the recess therein, and a cooling block yieldingly held by said strap in said recess.

23. In a wrapping and sealing machine, a recessed guide bar, a resilient strap attached to said bar across the recess therein, and a heating-unit yieldingly held by said strap in said recess, with one vertical edge normally projecting beyond the inner face of said bar.

24. In a wrapping and sealing machine, a recessed guide bar, a resilient strap attached to said bar across the recess therein, and a cooling block yieldingly held by said strap in said recess, with one vertical edge normally projecting beyond the inner face of said bar.

25. In a wrapping and sealing machine, a recessed guide bar, resilient straps attached to said bar across the recesses therein, and a heating-unit and a cooling block yieldingly held by said strap in said recesses, with one vertical edge of said heating-unit and one vertical edge of said block normally projecting beyond the inner face of said bar.

JOHN L. SULLIVAN.

Witnesses:

R. E. ALLBEE,
T. F. DWIGHT.