C. METTLER.

BREAD WRAPPING MACHINE.

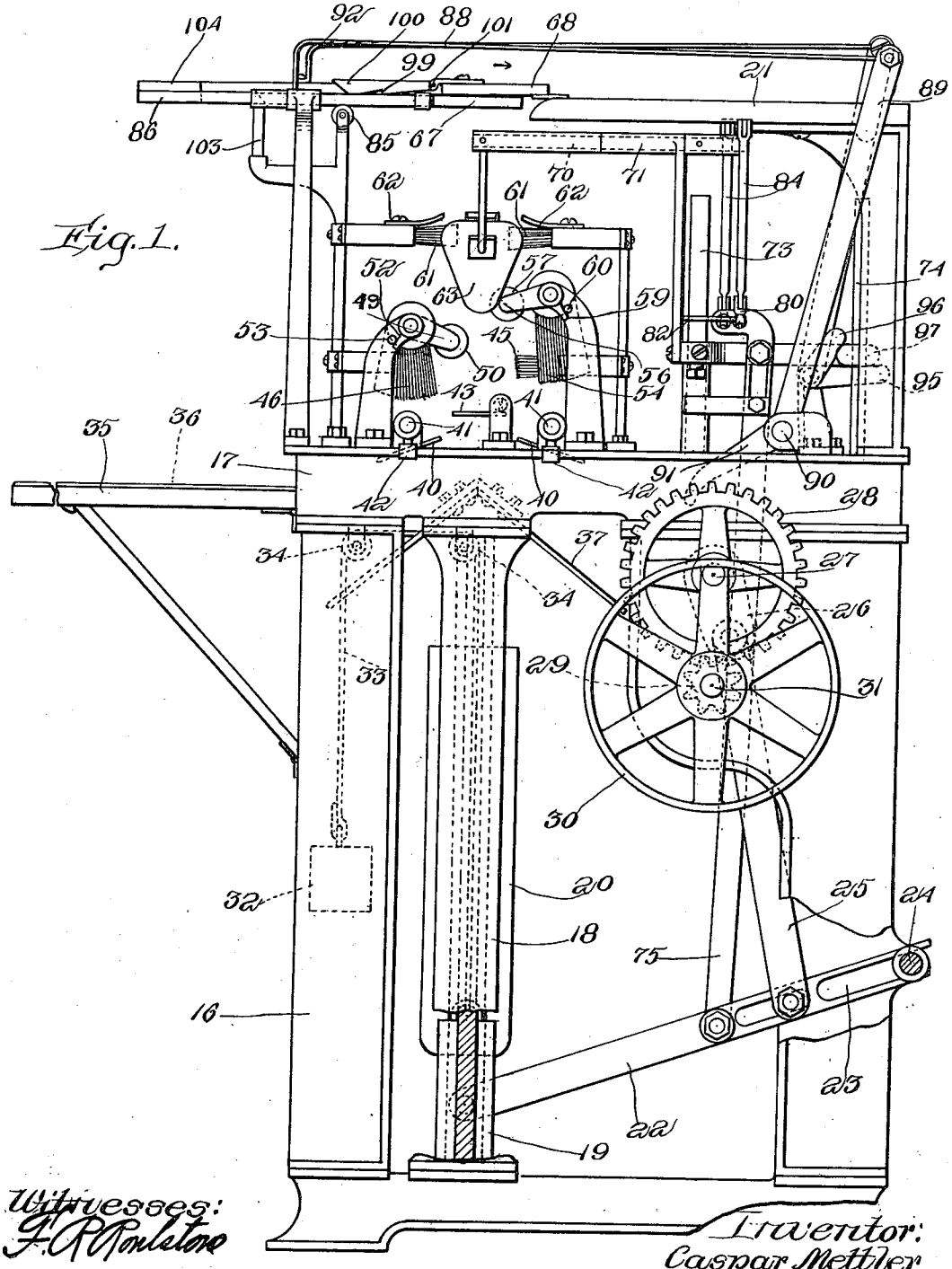
APPLICATION FILED OCT. 12, 1909.

1,140,522.

Patented May 25, 1915.

8 SHEETS—SHEET 1.

Fig. 1.



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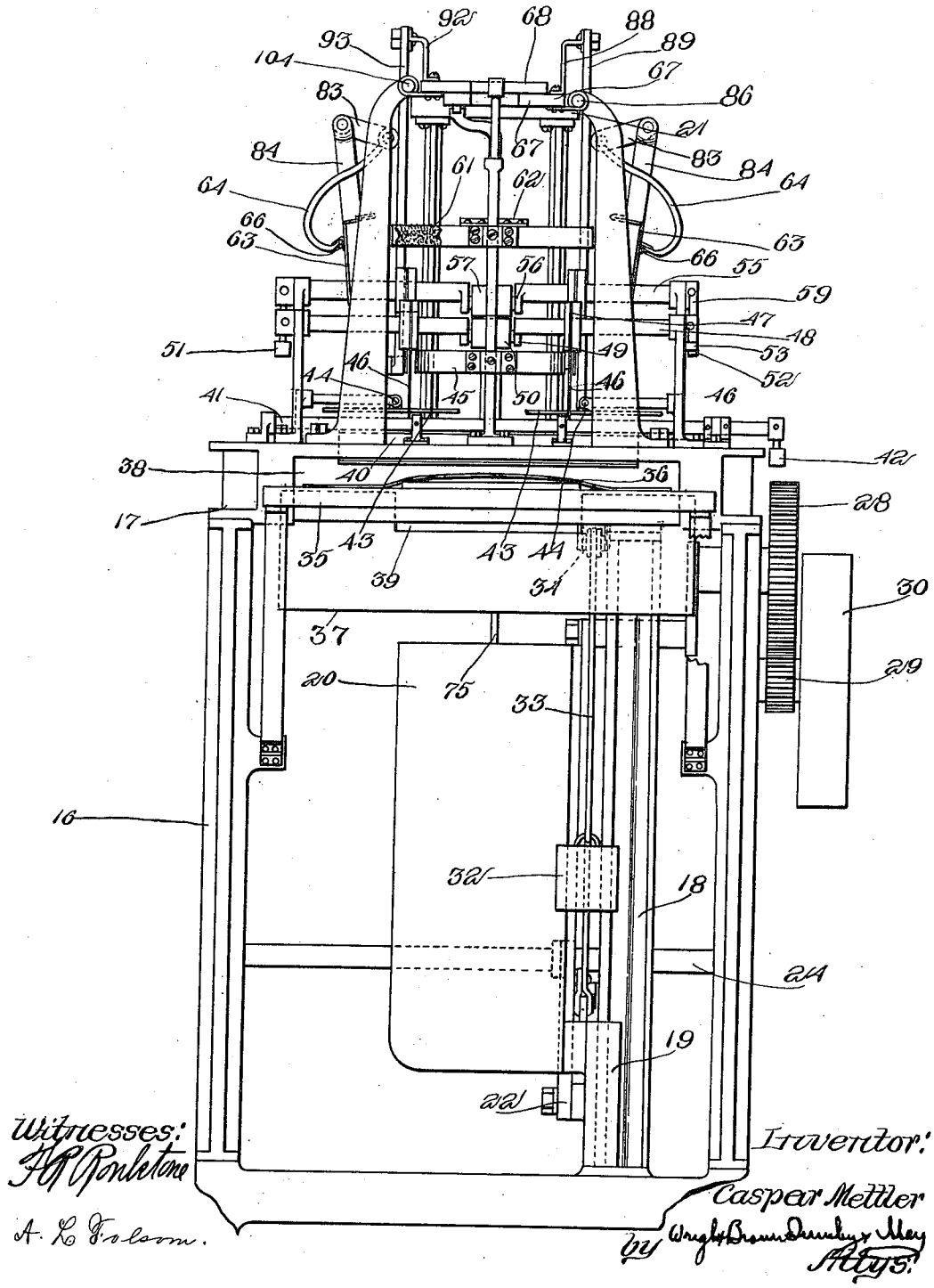
8 SHEETS—SHEET 2.

Fig. 2.



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8 SHEETS—SHEET 3.

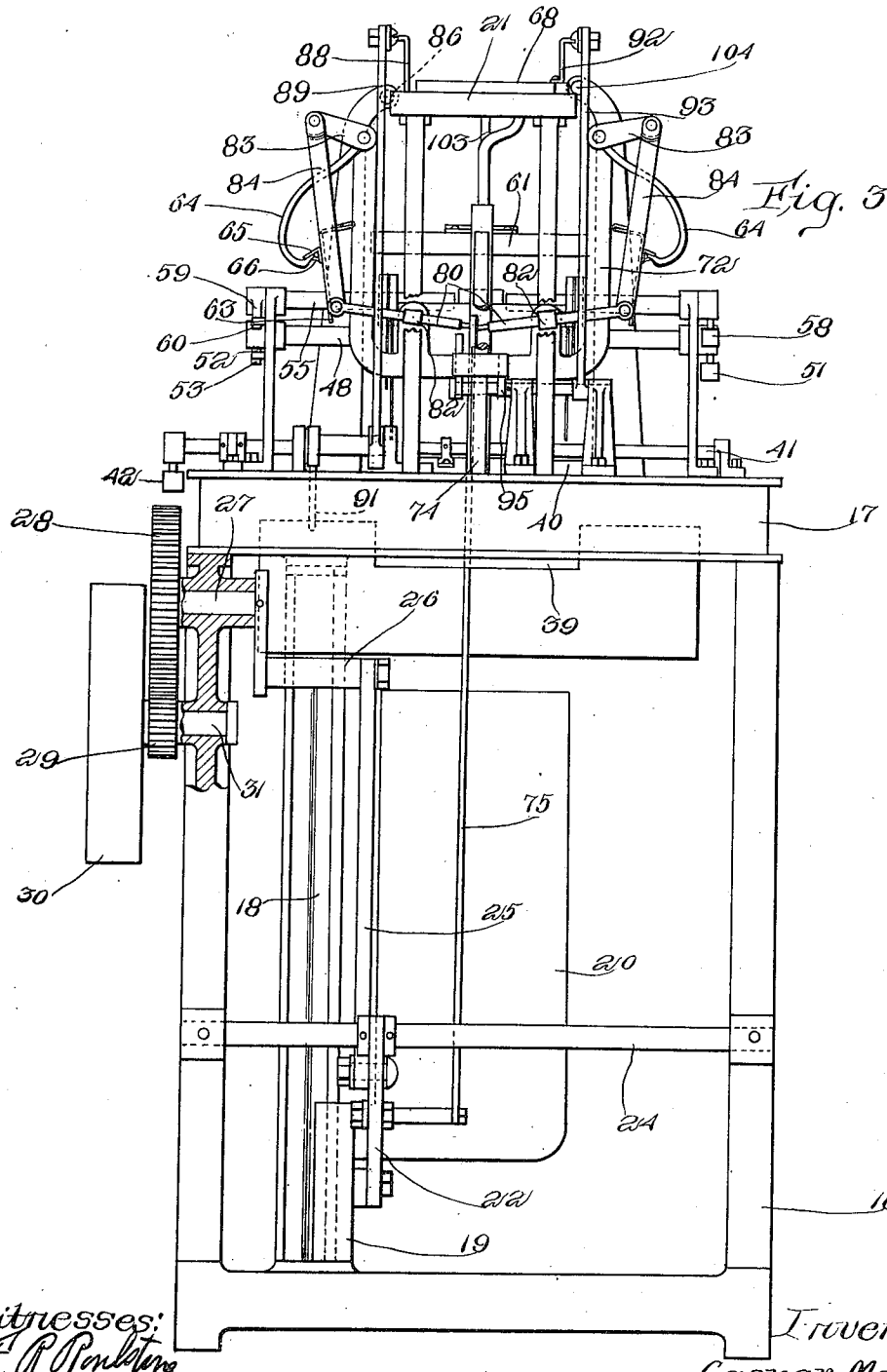

Fig. 3.

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8 SHEETS—SHEET 4.

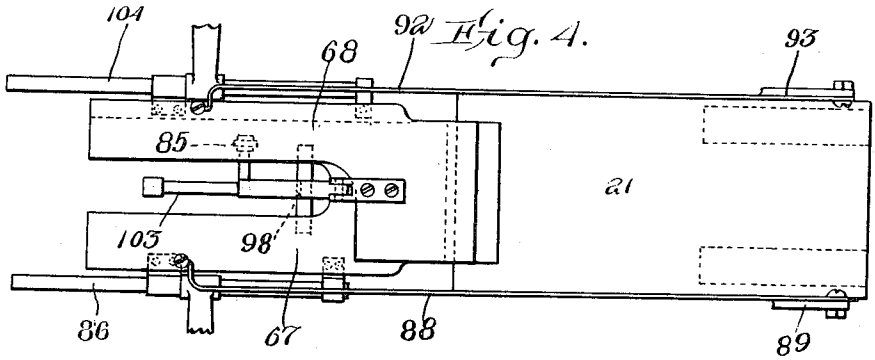

Fig. 4.

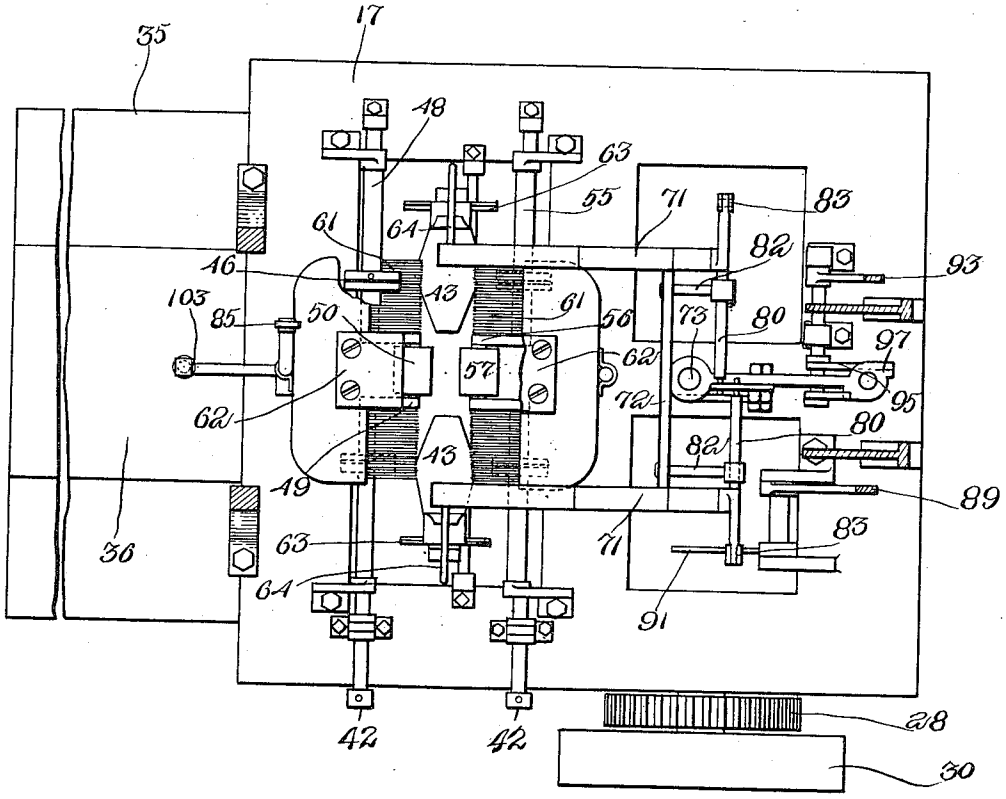

Fig. 5.

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8 SHEETS—SHEET 5.

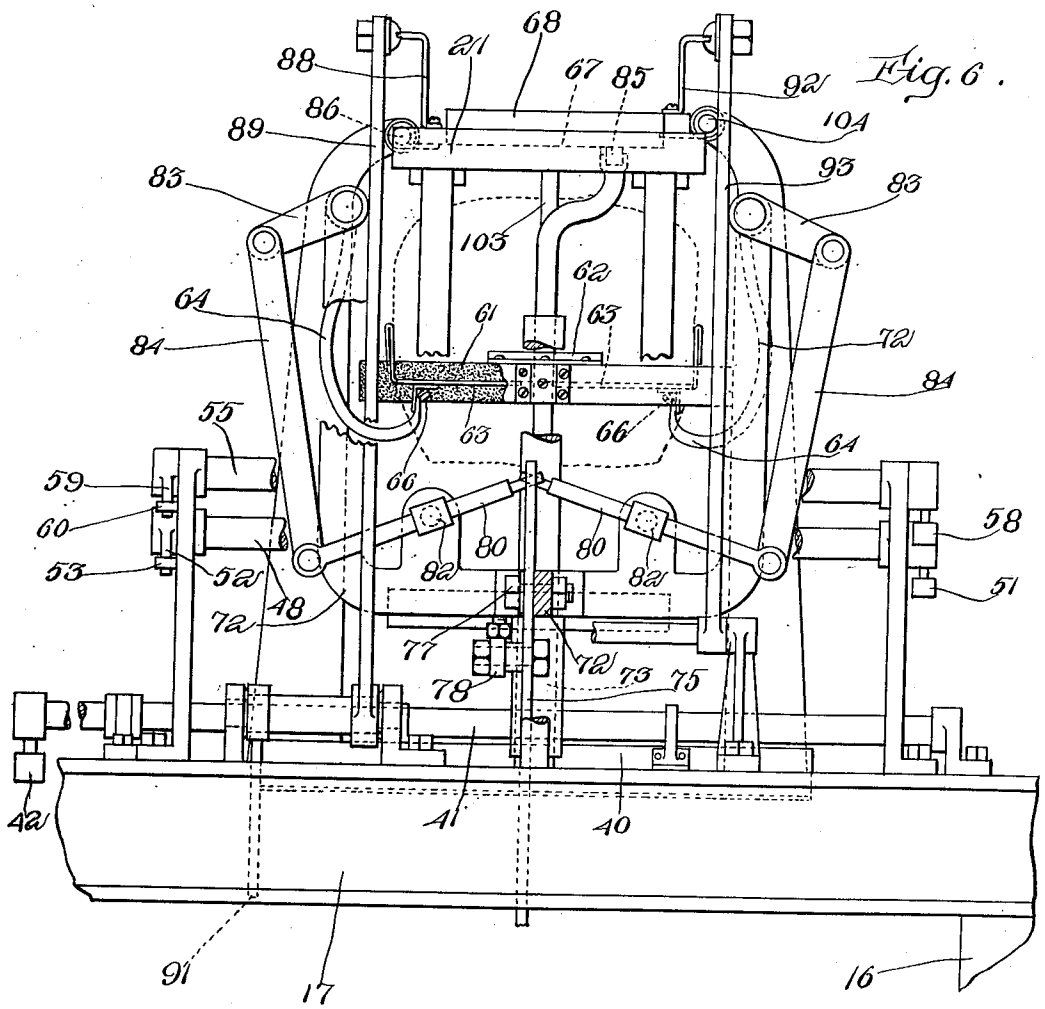

Fig. 6.

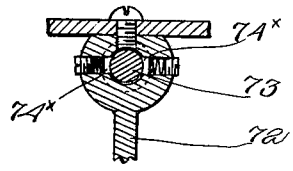

Fig. 7.

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8 SHEETS—SHEET 6.

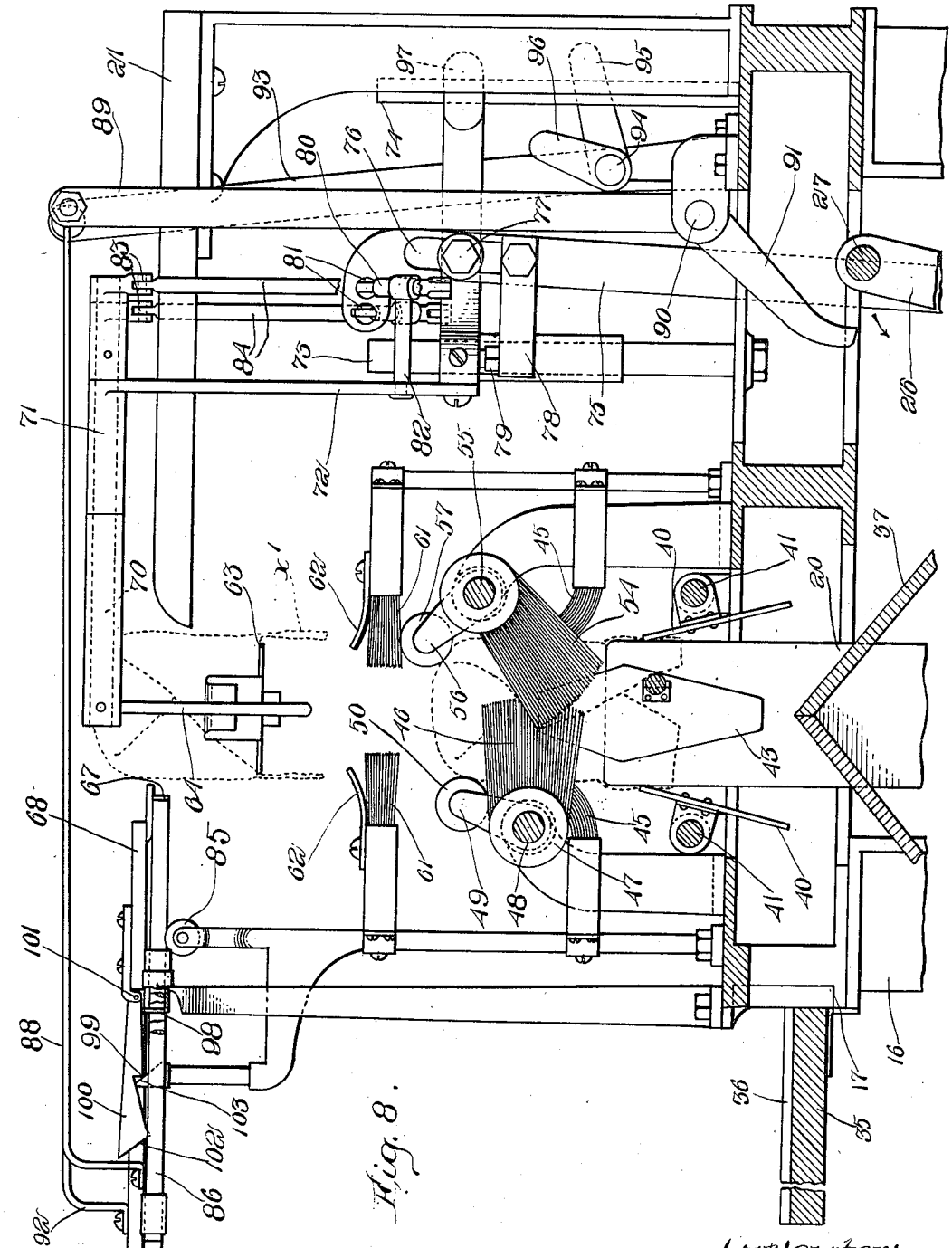

Fig. 8.

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8 SHEETS—SHEET 7.

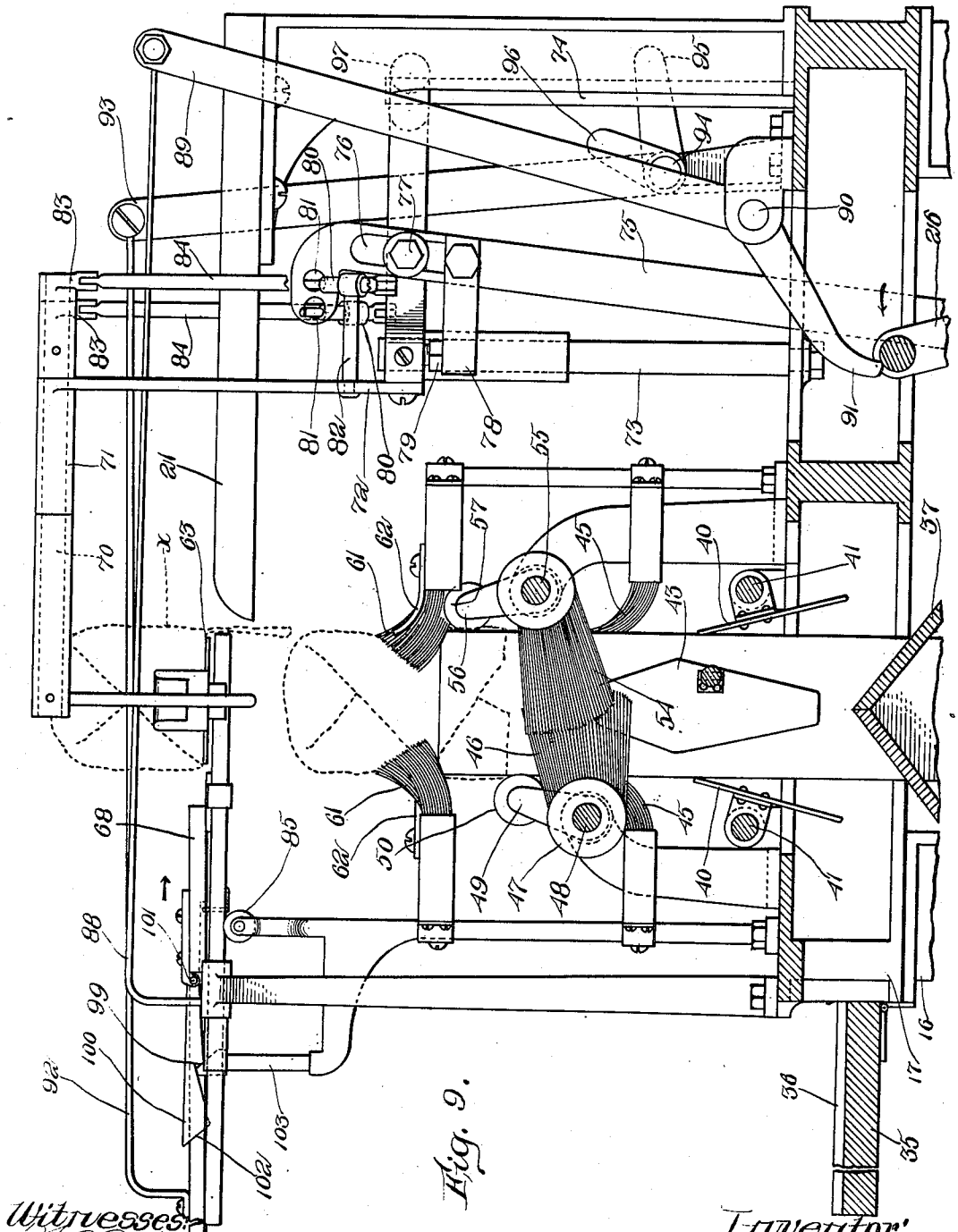

Fig. 9.

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8 SHEETS—SHEET 8.

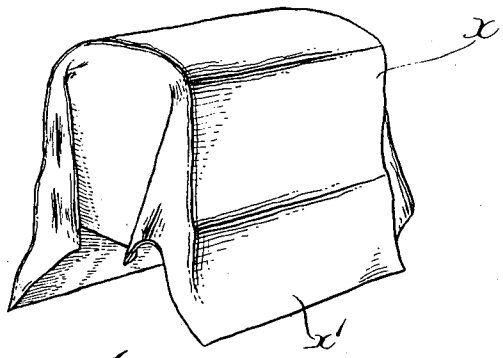


Fig. 10.

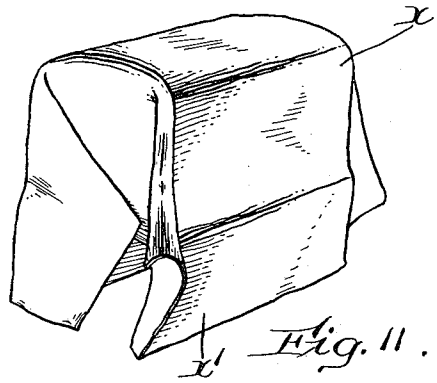


Fig. 11.

Fig. 13.

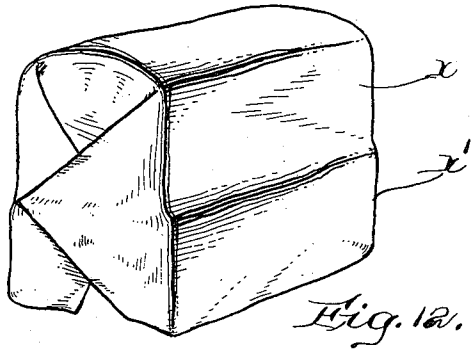
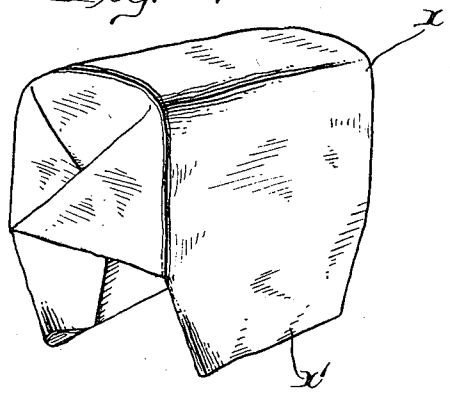


Fig. 12.



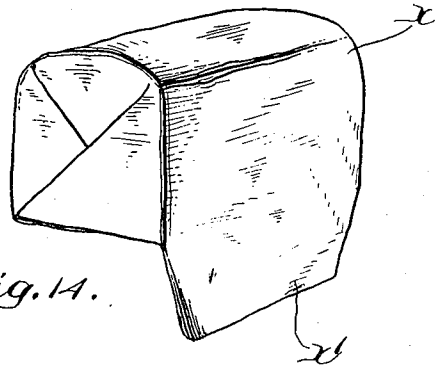


Fig. 14.

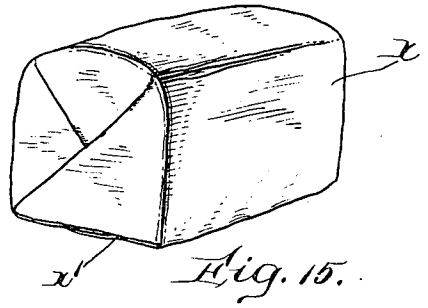


Fig. 15.

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UNITED STATES PATENT OFFICE.

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BREAD-WRAPPING MACHINE.

1,140,522. Specification of Letters Patent. Patented May 25, 1915.

Application filed October 12, 1909. Serial No. 522,329.

To all whom it may concern:

Be it known that I, CASPAR METTLER, of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Bread-Wrapping Machines, of which the following is a specification.

This invention relates to a machine for wrapping a sheet of paper about an article and is especially adapted to machines for wrapping articles such as loaves of bread.

The wrapping operation is effected by bodily movement of the loaf in conjunction with a series of successively operative wipers some of which may be stationary and others of which may be movable.

In carrying out the invention, it has been found to be convenient to move the loaf upwardly from a relatively low position to a position in a higher plane and to arrange the wipers between the lower and upper planes in position to be engaged by the loaf in transit. For this purpose an elevator is provided for moving the loaf with relation to the wipers and although the accompanying drawings do not illustrate any automatic means for feeding the loaves, one by one, to the elevator, it is proposed to ultimately furnish means for so feeding the loaves.

For the purpose of present description, it may be assumed that the loaves are placed upon the elevator in any convenient way whether automatically or manually.

The machine herein illustrated is provided with means for supporting the sheet between the loaf in its lower position and the wiping devices. The loaf in advancing toward the wiping devices engages the sheet and carries it toward the wiping devices and continued upward movement of the loaf results in folding the sheet against the perpendicular surface of the loaf. It is immaterial so far as the present invention is concerned whether the sheets are fed automatically or manually to the position in which they are engaged by the loaf.

It may be stated that the wiping devices are divided into two sets, namely, preliminary wipers and final wipers. The elevator by which the loaf is first moved is provided for moving the loaf into engagement with the preliminary wipers. The elevator, after completing its active stroke, returns to receive another loaf, leaving the elevated loaf in engagement with the preliminary wipers. From this position, the loaf is further elevated to the final wipers. The supplemental elevating means serves the additional purpose of folding portions of the sheet under the ends of the loaf, the folding occurring prior to the raising of the loaf by said means.

The supplemental lifting devices, after raising the loaf to its highest plane where it is engaged by the final wipers, remain stationary for a brief period while one of the final wiping devices operates upon the sheet. This final wiping device moves under the loaf in its elevated position and receives the loaf when the supplemental lifting devices descend.

The machine is provided with a platform to which the wrapped loaves are delivered. The wiping device which receives the loaf from the supplemental lifting devices supports the loaf in the plane of the delivery platform; and the sheet, when the loaf is in this position, has a single tab which, when folded, completes the wrapping of the sheet. A pusher is provided for transferring the loaf from its support to the platform and the final tab of the sheet is folded by engaging the end of the delivery platform with a wiping action.

It is proposed to ultimately provide means for applying a small quantity of paste upon the inside of the final tab in order that the sheet may be confined in its wrapped position when the final tab is closed.

For the purpose of explaining the present invention, it is sufficient to state that the machine herein illustrated is adapted to be equipped with pasting means of this kind but said means is purposely omitted from the drawings in order to avoid confusion in illustrating the wrapping mechanism.

Referring now to the drawings which illustrate one form in which the invention may be embodied,—Figure 1 represents a side elevation of a bread-wrapping machine. Fig. 2 represents an elevation of the feed end of the machine. Fig. 3 represents an elevation with some parts in section of the delivery end of the machine. Fig. 4 represents a top plan view of the delivery platform. Fig. 5 represents a horizontal section of the machine on a plane immediately below the delivery platform. Fig. 6 represents an elevation with parts broken

away of the delivery end of the machine. Fig. 7 represents a horizontal section of a friction device hereinafter explained. Fig. 8 represents a longitudinal section of a part of the machine showing the elevator about midway of its upward stroke. Fig. 9 represents a view similar to Fig. 8 showing the elevator at the upper extreme of its stroke. Figs. 10, 11, and 12 represent perspective views of a partially wrapped loaf showing the successive operations as performed by the preliminary wiping devices. Fig. 13 represents the next succeeding stage of the wrapping operation which is effected by the supplemental lifting devices which transfer the loaf from the preliminary to the final wipers. Fig. 14 represents a perspective view showing the succeeding folding operation. Fig. 15 represents a completely wrapped loaf.

The same reference characters indicate the same parts wherever they occur.

Referring first to Fig. 1, the frame of the machine is indicated at 16 and is provided with a bed 17 upon which the several wiping devices are mounted. The frame is provided with a vertical guide 18 upon which a sliding block 19 is mounted, said block being provided with a carrying member 20 hereinafter termed an elevator. In the position shown by Fig. 1, the elevator is at its lowest extreme, where the articles to be wrapped are placed upon its upper surface. A delivery platform 21 is mounted upon the bed 17 above the wiping devices hereinafter described and the elevator 20 after receiving the loaf is raised for the purpose of moving the loaf into coöperative relation with the wiping devices from which the loaf is transferred to the delivery platform 21.

The elevator is actuated by a lever 22 which has a longitudinal slot 23 and which embraces a fulcrum 24. Motion is imparted to the lever by a pitman 25 of which one end is connected to a crank 26. The crank is affixed to a crank shaft 27 mounted in a bearing in the frame 16 and provided with a gear 28. The gear is here shown as driven by a pinion 29. The pinion is here shown as affixed to a pulley 30 mounted upon a stud 31 mounted in the frame 16. A counterweight 32 is attached to one end of a cord 33 of which the other end passes over idle pulleys 34 and is attached to the slide 19 to relieve the lever 22 of the greater part of the weight of the elevator.

A feed table is indicated at 35 for supporting a pile of sheets which are to be wrapped around the loaves. The feed table is provided with a central longitudinal rib 36 by which the pile of sheets is arched for the purpose of giving the sheets the necessary rigidity to facilitate edgewise movement thereof.

37 represents a stationary holder which is adapted to support a sheet in the path of the elevator. The sheets may be fed from the table 35 to the holder 37 through an opening 38 in the end of the bed 17. (See Fig. 2). The holder 37 is formed with an opening 39 through which the elevator 20 may pass.

Above the bed 17, the machine is provided with various forms of wiping devices by which the sheet is folded about the loaf when the loaf is moved with relation to said devices. The devices are arranged in pairs of which the pair which first engages the loaf is indicated at 40. The wipers 40 may be composed of any flexible material such as leather and are attached to rockshaft 41, mounted in stationary bearings upon the bed.

As shown by Fig. 1, the rockshafts are provided with weights 42 by which their normal positions are determined. The wipers 40 are intended to fold the sheet over the longitudinal horizontal edges of the top of the loaf.

The next wipers in order of operations are indicated at 43. These wipers are preferably formed of sheets of thin metal and they are arranged to fold the sheet against the ends of the loaf. The wipers 43 are mounted upon horizontal pivots 44 (Fig. 2) and their weight is so distributed with relation to their pivots that they normally occupy horizontal positions as shown by Figs. 1 and 2.

The next wipers in the order of operations are indicated at 45. These wipers are stationary and are preferably composed of brush bristles. Their effect is to wipe the sheet against the longitudinal sides of the loaf and to remove wrinkles from the sheet and draw it tightly over the top and sides of the loaf.

The next wipers in the order of operations are indicated at 46. These wipers are preferably composed of wire bristles and they are mounted in holders or bases 47 and affixed upon a rockshaft 48. The rockshaft 48 is provided with an offset 49 in the form of a crank and the offset portion is provided with a roll 50 which initially lies in the path of the loaf. For the purpose of determining the initial position of the wipers 46, the shaft 48 is provided with a weight 51 which tends to turn the shaft and to move a finger 52 into engagement with a stop pin 53. (See Figs. 1 and 2.) The loaf, after engaging the wipers 45 engages the roll 50 and imparts oscillation to the rockshaft 48. The wipers 46 are arranged so as to move across the ends of the loaf and to fold the projecting portions of the sheet against the ends. A similar pair of wiping devices is indicated at 54. The wipers 54 are also preferably composed of wire bristles and are mounted in a similar manner upon a

rockshaft 55. The rockshaft 55 is likewise provided with a crank portion 56 and a roll 57 which is adapted to be engaged and displaced by the loaf. The rock-shaft 55 is likewise provided with a weight indicated at 58 and with a finger 59 which is adapted to engage a stop pin 60. The rockshafts 48 and 55 are both mounted in stationary bearings but the shaft 55 is in a higher plane than the shaft 48 and is therefore adapted to be operated subsequently to the shaft 48.

Fig. 8 represents the roll 50 in the position to which it is moved by the loaf and the wipers 46 are at the inner extreme of their folding stroke. The roll 57 on the other hand is in process of being displaced and the wipers 54 are in process of folding a portion of the sheet over the wipers 46. It will be noticed that the wipers 43 after being tilted to upright position by the loaf remain in engagement with the sheet and that those portions of the sheet which are subsequently folded by the wipers 46 are folded upon the outer surfaces of the wipers 43. The wipers 43 are, however, so thin as to be no detriment to the subsequent folding operations, and those portions of the sheet which are folded over these wipers are free to slide from them as the loaf continues to rise.

Referring now to Fig. 10, a sheet of paper is indicated at x and is folded over the top, the longitudinal sides and the ends of a loaf. This condition of the sheet is the result of the operations performed by the wipers 40 which fold the sheet against the sides, the wipers 43 which fold the sheet against the ends, and the brush wipers 45 which supplement the wipers 40 in smoothing the sheet upon the top and sides. The wipers 43, after folding the sheet against the ends of the loaf, remain in operative engagement during the subsequent operations of the brush wipers 46 which fold the sheet over one side against the ends as indicated by Fig. 11. After the operation of the wipers 46, the wipers 54 operate in turn to fold the sheet from the other side of the end folds previously made leaving the sheet in the position shown by Fig. 12. The wipers 43 meanwhile remain confined by the corner folds but as the loaf continues to rise, the wipers 43 are free to pull out through the bottom of the folds.

The upward limit of the elevator 20 is shown by Fig. 9 in which position the loaf is engaged by stationary brush wipers 61 and additional wipers 62. The wipers 62 are composed preferably of flexible material such as leather but it is desirable that these wipers have sufficient tenacity to support the loaf when the elevator descends. The wipers 62 are of the shape shown best by Fig. 5 and they are adapted to engage the sides of the loaf midway between the ends. The brush wipers 61, however, are open between the ends for the purpose of providing free action of the wipers 62. The outer extremities of the brush wipers extend beyond the ends of the loaf and they are therefore adapted to confine the portions of the sheet which are folded over the corners of the loaf and against the ends. The loaf, when engaged by the wipers 61 and 62, is temporarily supported while the elevator descends to receive another loaf.

From this position the loaf is raised by supplemental lifting devices 63 which elevate the loaf to the horizontal plane of the delivery platform 21. The supplemental devices are of angular form as shown by Figs. 3 and 6, and are arranged and operated to engage the adjoining portions of the ends and bottom of the loaf. These devices are mounted upon swinging arms 64 by means of pivots 65 and the arms are provided with stops 66 which limit the tilting motion of the devices 63. The devices 63 are given one form of a four-way motion. They are first moved toward each other, then raised in unison, then moved away from each other and dropped in unison to the position from which they again move toward each other. The mechanism for imparting the four-way motion is hereinafter explained.

When a loaf is supported by the wipers 61 and 62, the lifting devices 63 move from the position shown by Fig. 3 toward each other to grasp the loaf. In grasping the loaf, the upper ends of the devices 63 first engage the ends of the loaf, and as the arms 64 continue to swing inwardly the devices 63 are tilted upon their pivots 65 so that their lower ends swing inwardly and upwardly into contact with the bottom of the loaf. In so moving, the bottom plates fold the ends of the wrapper toward each other, and against the bottom of the loaf, as shown by Fig. 13. When the lifting devices have completed their movement toward each other, they are elevated in unison and thereby transfer the loaf from the preliminary wipers to the plane of the delivery table. In the upper position, the lifting devices remain stationary for a brief period during which a wiper 67 is projected under the loaf. This movement of the wiper 67 folds one side of the projecting portion of the sheet to the position shown by Fig. 14 and the lifting devices 63 are immediately separated, thereby depositing the loaf upon the wiper 67 which then becomes a support for the loaf. When the loaf is in this position, the final tab x', Fig. 14 extends downwardly between the adjacent edges of the wiper 67 and the delivery platform 21. The final movement imparted to the loaf is imparted by a pusher 68 which moves in the direction of the arrow in Figs. 8 and 9. This action of the pusher serves to transfer

the loaf from the supporting wiper 67 to the delivery platform, and the final tab x' is thereby moved into engagement with the edge of the delivery platform. As the loaf continues to advance, the tab x' is wiped over the edge of the platform and finally laid against the corresponding tab folded over the opposite edge of the loaf and the sheet is then completely wrapped as indicated by Fig. 15. While the loaf is supported upon the wiper 67, and while the final tab x' projects downwardly as shown by Fig. 14, a supply of paste may be applied to the inner surface of the tab either manually or automatically, as desired, so that when the final tab is folded, the previously folded portions of the sheet will be confined thereby.

The mechanism for actuating the lifting devices 63, the wiper 67 and the pusher 68 receives its motive power from the crank shaft 27.

The arms 64 which support the lifting devices 63 are carried by rockshafts 70, which are mounted in bearings 71 formed upon a vertically movable carriage 72. The carriage is mounted to slide upon guide rods 73 and 74 and is alternately raised and lowered by a pitman 75 whose lower end is connected to the lever 22. The upper end of the pitman is formed with a longitudinal slot 76 which is occupied by a stud 77 carried by the carriage 72. The upper end of the pitman is also provided with a projection 78 which is adapted to engage the under side of an abutment 79 upon the carriage 72. When the pitman 75 is raised, the projection 78 engages the abutment 79 and raises the carriage 72.

Fig. 7 illustrates a friction device by which the carriage 72 is connected to the guide rod 73. Said devices comprise spring followers 74^x inserted in a portion of the carriage 72 where they are adapted to engage the rod 73 with yielding tension. They are preferably provided with adjusting screws by which the degree of tension may be varied. The pitman 75 after reaching the upper extreme of its movement, immediately descends but the carriage 72 remains at its upper position temporarily by reason of the frictional engagement of the followers 74^x with the guide rod 73. When, however, the pitman 75 has descended so far as to engage the upper side of the stud 77, the carriage 72 is positively depressed. The purpose of providing a short dwell of the carriage 72 at its upper position is to support the loaf above the plane of the wiper 67 while the latter is being projected to loaf-supporting position. The same motion of the pitman 75 is employed for moving the lifting devices 63 toward and from each other and is effected through the medium of levers 80 which extend through apertures 81 in the upper end of the pitman. The levers 80 are pivoted at 82 (see Fig. 6), and the pivots are carried by the carriage 72. The outer ends of the levers 80 are connected to arms 83 by means of links 84. The arms 83 are affixed upon the rockshafts 70 which carry the lifting devices 63. The relative movement of the pitman 75 occasioned by the slot 76, moves the levers 80 first in one direction and then in the other direction and thereby moves the lifting devices 63 toward and from each other in the appropriate order to complete the four-way movement hereinbefore mentioned.

One side edge of the wiper 67 has a hinged connection with a supporting rod 86, which extends parallel to the delivery table 21. The wiper is adapted to slide with relation to its supporting rod 86 and is otherwise supported by a roll 85. The wiper is affixed at one end of a rod 88 of which the other end is pivotally connected to a lever 89. The lever is mounted upon a fulcrum 90 and has an arm 91 which lies in the path of rotation of the crank 26. The crank is rotated in the direction of the arrow in Fig. 9 and by engagement with the arm 91, it projects the wiper 67 into loaf-supporting position. The pusher 68 is affixed at one end of a rod 92 of which the other end is pivotally connected to an arm 93. The arm is affixed upon a rock shaft 94 which is further provided with bell crank arms 95 and 96. The carriage 72 is formed with a lug 97 which is adapted to engage the arm 95 to rock the shaft 94 in one direction and to engage the arm 96 to rock the shaft in the other direction. When the carriage 72 is depressed and when it is near its lower extreme of movement, the lug 97 engages the arm 95 with the result that the pusher is moved in the direction indicated by the arrow in Figs. 8 and 9. While the lug is in the act of depressing the arm 95, the arm 96 is rocked into the path of the lug in which position it is adapted to be engaged and displaced upon subsequent upward movement of the lug. As a result of upward movement, the shaft 94 is rocked in the opposite direction and the pusher is returned to its initial position. The return movement of the pusher is employed for returning the wiper 67 to its initial position and for this reason the wiper is provided with a projection 98 which is adapted to be engaged by a shoulder 99 formed upon a latch 100. The latch is mounted upon the rear end of the pusher by means of a pivot 101. And the free end of the latch is formed with a beveled face 102 which is adapted to engage a correspondingly beveled face of a fixture 103. It will be noted from the foregoing explanation that the wiper 67 is advanced prior to the pusher 68. The pusher upon being advanced moves far

enough to enable the shoulder 99 to pass over the projection 98. When the pusher is returned, it carries with it the wiper 67 until the free end of the latch engages the fixture 103. The latch is sufficiently raised by the fixture to disengage the shoulder 99 from the projection 98 whereupon the wiper is detached from the pusher and the pusher may continue to move without the wiper.

The pusher is supported in the manner shown by Figs. 2 and 6. A supporting rod 104 similar to the rod 86 is provided for supporting one side edge of the pusher which has hinged connection therewith. The hinged member is adapted to slide upon the rod and the other side of the pusher is otherwise supported by bearing upon the upper surface of the wiper 67.

Having thus explained the nature of my said invention and described a way of making and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is:

1. In a machine for wrapping a sheet of paper about an article, means for moving the article, means adapted to fold the wrapper against the article, and means adapted to be engaged by the foremost face of the article and to be displaced thereby from the path of the article, said displaceable means being connected with said folding means to actuate the latter under the impulse of the moving article to fold the wrapper against another face of the article.

2. In a machine for wrapping a sheet of paper about an article, the combination with an elevator for the article, and wipers adapted to be engaged by the article, of means adapted to be engaged and moved by the foremost face of the article, and additional wipers connected to said means to be operated thereby.

3. In a machine for wrapping a sheet of paper about an article, means for moving the article bodily, wipers for folding a sheet over edges of the article transverse to the direction of movement, and folding means operated by the foremost face of the article for folding the sheet over edges of the article extending in the direction of movement.

4. In a machine for wrapping a sheet of paper about an article, means for moving the article, and movable means mounted in different positions longitudinally of the path of movement of the article and adapted to be actuated successively by side portions of the moving article for folding portions of the sheet successively against end portions of the article.

5. In a machine for wrapping a sheet of paper about an article, pivotally mounted wipers adapted to be operated by movement of the article to fold a sheet over transverse edges of the article, and means for folding previously folded parts of the sheet over said wipers.

6. In a machine for wrapping a sheet of paper about an article, pivotally mounted wipers adapted to be engaged by the foremost face of the article and turned on their pivots to fold a sheet over edges of the article, and means for folding the sheet over said pivotally mounted wipers.

7. In a machine for wrapping a sheet of paper about an article, wipers adapted to fold a sheet over edges of the article, and means actuated by the article for folding the sheet over opposite edges of each of said wipers.

8. In a machine for wrapping a sheet about an article, an elevator for the article, stationary wipers adapted to be engaged by the article on the elevator and to fold a sheet backwardly against the article, said wipers being also adapted to support the article at the position to which it is elevated, and means for removing the article from said wipers.

9. In a machine for wrapping a sheet about an article, an elevator for the article, stationary wipers adapted to be engaged by the article on the elevator and to first fold the sheet and then support the article and confine the folded sheet at the position to which the article is elevated, and means for removing the article from said wipers, said means being also adapted to confine the folded sheet.

10. In a machine for wrapping a sheet about an article, means for moving the article bodily, and pivoted weighted wipers normally intersecting the path of the article and adapted to be displaced by the foremost face of the article.

11. In a machine for wrapping a sheet about an article, means for moving the article bodily, pivoted weighted wipers, and means connected to said wipers and normally intersecting the path of the article for actuating the wipers, said means being adapted to be displaced by the foremost face of the article, and said wipers being adapted to fold the sheet toward the article over edges thereof.

12. In a machine for wrapping a sheet about an article, preliminary means for partially wrapping the sheet, pivoted members for engaging the partially wrapped article, and means for moving said pivoted members bodily to cause them to fold the sheet and lift the article.

13. In a machine for wrapping a sheet of paper about an article, means operated by the article for folding a sheet over an edge extending in the direction of movement of the article, and independent means likewise operated by the article for folding the sheet over another similar edge, said means and independent means being adapted to be op-

erated one after the other whereby the second folded portion of the wrapper may be folded upon the first folded portion.

14. In a machine for wrapping a sheet of paper about an article, means for supporting such article and sheet in a partly wrapped condition, means arranged to lift such article and sheet from said supporting means, said lifting means being arranged to fold portions of the sheet against the bottom of the article, and means arranged to coact with the bottom of the article to take the article from said lifting means and keep said portions against the bottom of the article.

15. In a machine for wrapping a sheet of paper about an article, two separated sets of devices for folding a sheet, said sets being adapted to act successively upon the sheet, operating mechanism for said devices, and means adapted to perform an additional folding operation, to carry the article within the partly wrapped sheet from the first set of folding devices, and to support the article in operative position for the successive set of folding devices.

16. In a machine for wrapping a sheet of paper about an article, means for supporting such article and sheet in a partly wrapped condition, means arranged to lift such article and sheet from said supporting means, and means arranged above said supporting means to fold the sheet against the bottom of the article, said lifting means being arranged to fold the sheet against the bottom of the article and support the article in position to be operated upon by said folding means.

In testimony whereof I have affixed my signature, in presence of two witnesses.

CASPAR METTLER.

Witnesses:
A. L. FOLSOM,
P. W. PEZZETTI