Nov. 26, 1935. P. A. LAVERGNE ET AL 2,022,425

WRAPPING MACHINE

Filed Feb. 23, 1932 3 Sheets-Sheet 1

FIG. 1.

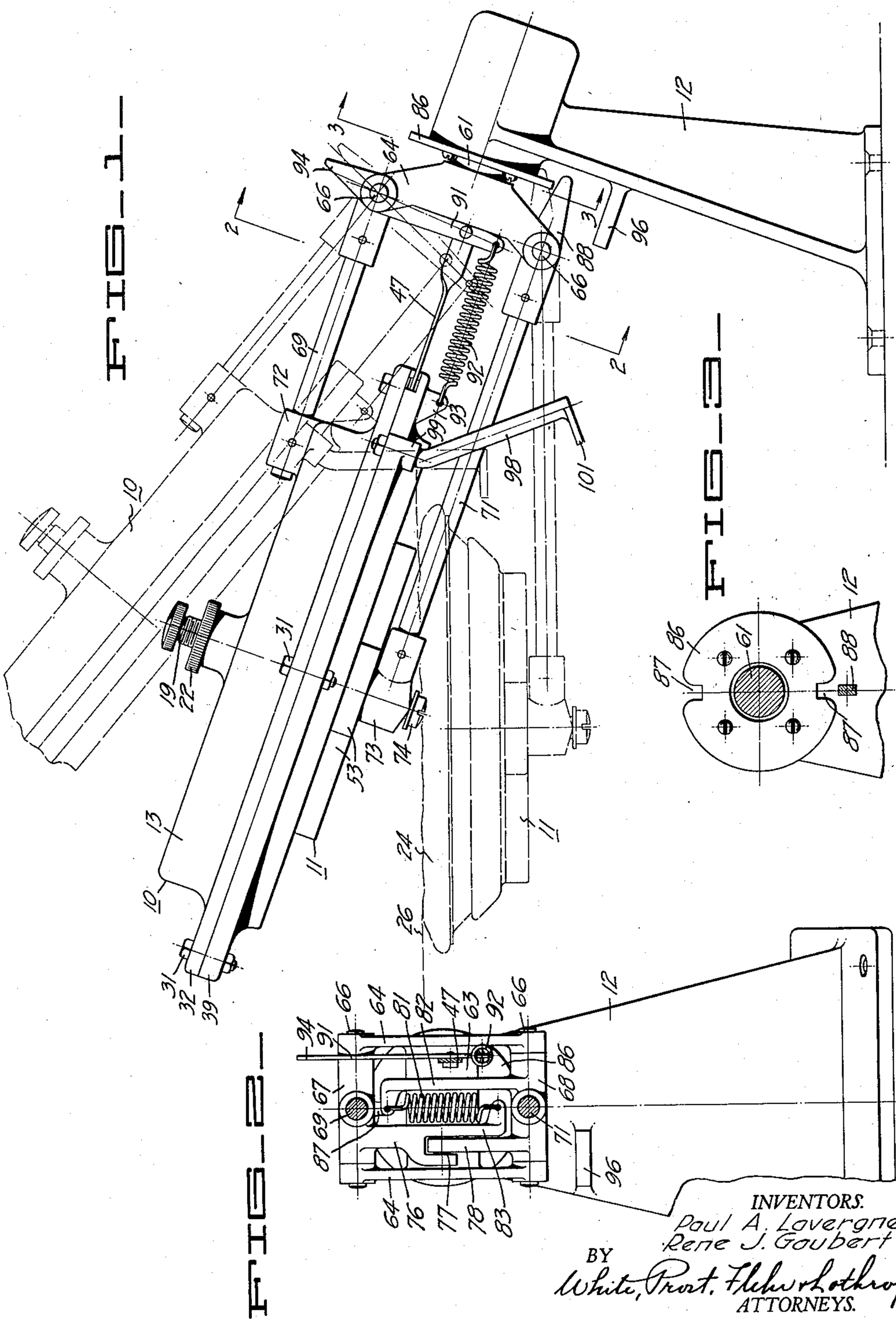

FIG. 3.

FIG. 2.

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WRAPPING MACHINE

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FIG-5

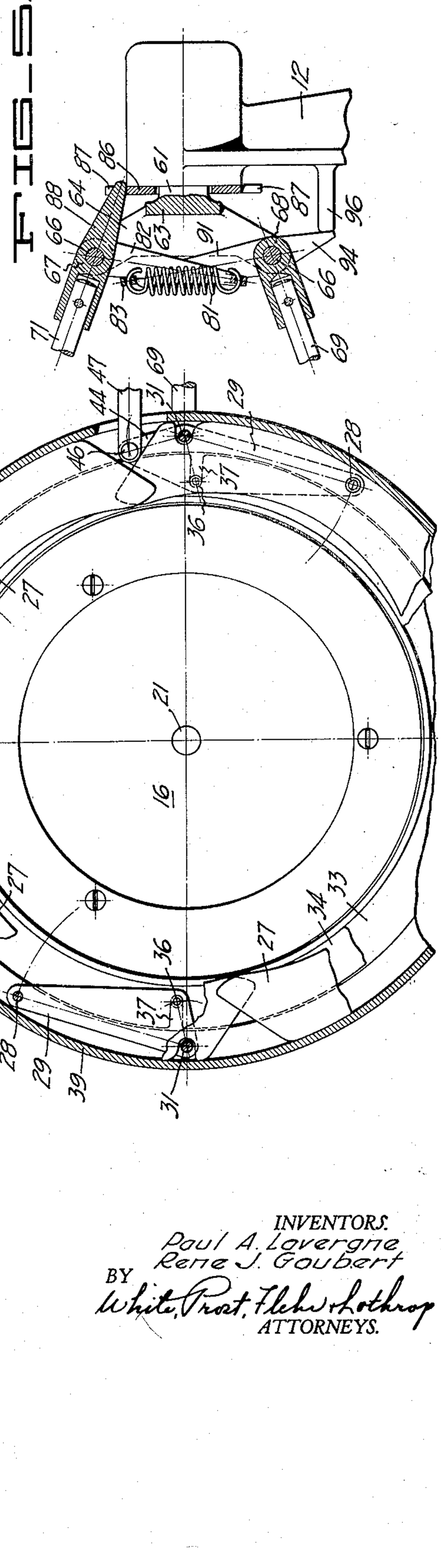

FIG-6

FIG-4

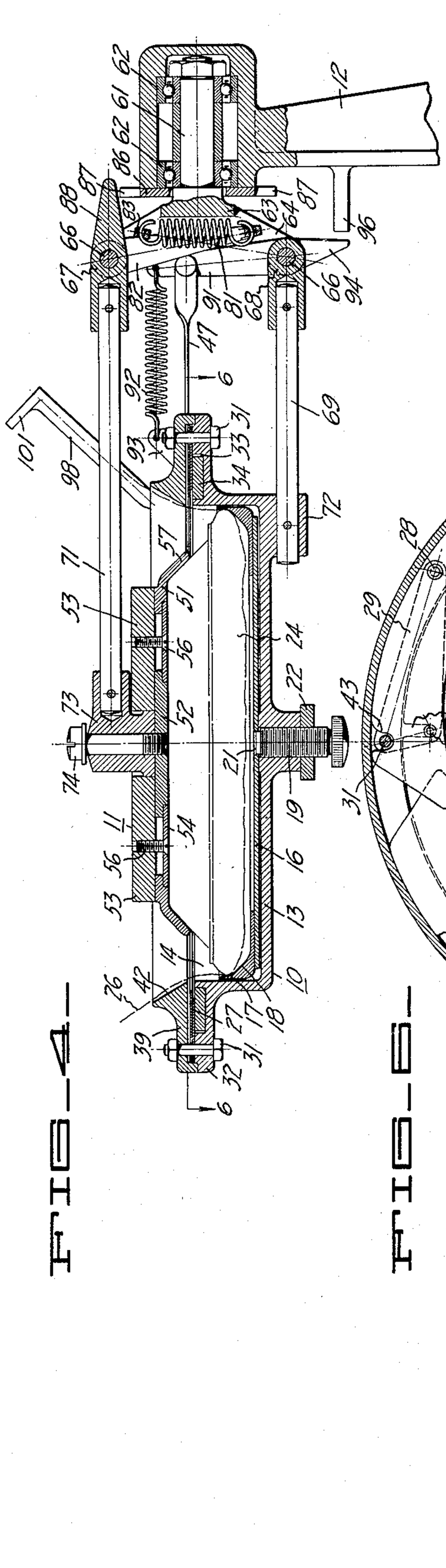

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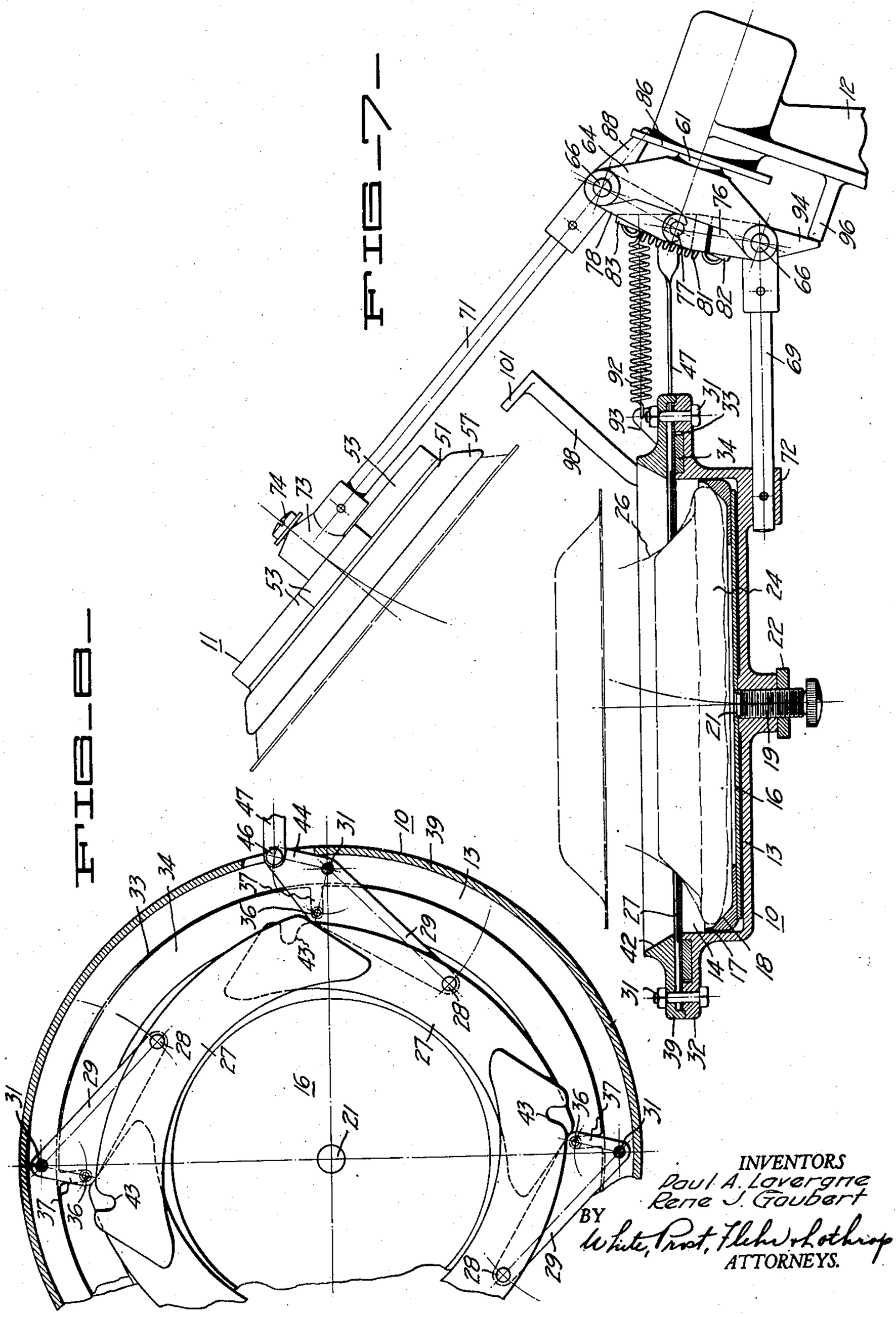
FIG-7-



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UNITED STATES PATENT OFFICE

2,022,425

WRAPPING MACHINE

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Application February 23, 1932, Serial No. 594,450

17 Claims. (Cl. 93—2)

This invention relates generally to machines for wrapping pies or like articles, with sheets of suitable wrapping material, such as "Cellophane."

In wrapping pies or the like, it has been common to utilize a suitable sheet of wrapping material such as cellophane, of somewhat greater width and length than the diameter of the pie to be wrapped. This wrapper is placed over the top side of the pie and the edge portions turned over the lower side, about the periphery of the pie. The pie together with its wrapper is then placed on a paper or cardboard plate, which serves to retain the wrapper in proper position. It is obvious that to carry out such wrapping operations manually, without the aid of a machine, not only requires considerable time and labor, but may also cause mutilation of the pie. Furthermore, manual wrapping necessitates insanitary human contact with the pie, and it is also difficult to properly position the wrapper in order to secure uniformly good results.

It is a general object of the present invention to devise a machine for wrapping pies or the like which will minimize the manual labor required in such operations, and which will enable wrapping of a given number of pies in a minimum of time. The invention is further characterized by the fact that it enables uniformly grood results with respect to the manner in which the wrapper is applied, and also minimizes human contact with the pie.

A further object of the invention is to devise a machine of the above character which will be relatively simple in construction, which can be readily manipulated by comparatively unskilled operators, and which can be manufactured at relatively low cost.

A further object of the invention is to devise means in a machine of the above character for enabling an adjustment to accommodate the machine to pies of different thicknesses.

Another object of the invention is to generally improve upon the means utilized for turning the edge portions of the sheets of wrapping material over the periphery of the pie being wrapped.

Further objects of the invention will appear from the following description in which the preferred embodiment of the invention has been set forth in detail in conjunction with the accompanying drawings. It is to be understood that the appended claims are to be accorded a range of equivalents consistent with the state of the prior art.

Fig. 1 is a side elevational view, illustrating a machine incorporating the present invention.

Fig. 2 is a cross sectional detail taken along the line 2—2 of Fig. 1.

Fig. 3 is a cross sectional detail taken along the line 3—3 of Fig. 1.

Fig. 4 is a side elevational view in cross section illustrating details of certain working parts of our machine.

Fig. 5 is a side elevational detail in cross section showing certain parts illustrated in Fig. 4, in a different operating position.

Fig. 6 is a cross sectional detail taken along the line 6—6 of Fig. 4.

Fig. 7 is a side elevational view similar to Fig. 1, but illustrating one of the pie engaging structures in cross section, and further illustrating the pie engaging structures in open position with respect to each other.

Fig. 8 is a view similar to Fig. 6, but illustrating certain working parts in a different operating position.

Referring particularly to Fig. 1 of the drawings, the modification illustrated therein comprises a pair of relatively movable structures 10 and 11, adapted to engage opposite sides of a pie to be wrapped. A suitable support or base member 12 serves, in conjunction with other means to be presently described, to support structures 10 and 11 during their operating movements.

A suitable form for structure 10 is illustrated in detail in Figs. 4, 6, 7 and 8. It consists of a body portion 13 of suitable material such as aluminum or an aluminum alloy, which is annular in contour, and which is formed to provide an annular pocket 14. Positioned within pocket 14 there is a pie engaging member 16, formed to provide an annular flange portion 17. Flange portion 17 affords an inner peripheral bevelled surface 18, adapted to engage the peripheral edge of the pie to be wrapped, as illustrated in Fig. 4. For reasons to be presently explained, it is preferable to so secure member 16 with respect to the body 13, that the depth of the member 16 with respect to pocket 14 can be adjusted. For this purpose there is shown a screw 19, threaded into body 13, the inner end of this screw having a connection 21 with the central portion of member 16. Screw 19 can be fixed in any desired adjusted position by a lock nut 22.

It may be explained at this point that in the operation of our machine, when a pie 24 occupies the position illustrated in dotted lines in Fig. 4, a wrapper 26 is interposed between it and the pie engaging member 16. As suitable means for carrying the peripheral edge portion of the wrapper 26 over the peripheral edge of the pie, while the

pie occupies a position with respect to structure 10 illustrated in Fig. 4, we provide a plurality of blade or knife-like members 27. These members 27 are made of suitable metal, and are preferably sufficiently thin to afford a certain amount of resilience or give. For mounting these members, and for affording movement of the same between retracted and projected positions, each member 27 is shown having a pivotal connection 28 with a link 29. Each link 29 is in turn pivoted upon a pin or bolt 31, carried by the flange portion 32 of body 13. The inner face of flange portion 32 is shown provided with an annular recess 33, serving to receive an annular ring 34. Ring 34 is free to oscillate or rotate a certain amount in either direction with respect to the body 13. Each of the links 29 is also provided with a pin 36, projecting into a slot 37 formed in ring 34. Upon rotating ring 34 in one direction, say counter-clockwise as viewed in Fig. 6, links 29 are likewise caused to rotate in a clockwise direction, to project members 27 inwardly and in a general radial direction. It may be explained at this point that members 27 preferably have curved inner edges, so that in their projected position, they fit about the pie as shown in Fig. 7. It may be also explained that when members 27 are in their projected positions, and as they are being projected, they are free to align themselves about their respective pivotal connections 28. To properly retain members 27 and to protect these parts and associated elements, there is shown an annular cover member 39, which is secured to flange portion 32 by suitable means such as the bolts 31. The inner peripheral surface 42 of cover member 39 is made divergent, to facilitate introduction of pies into pocket 14. Members 27 are shown provided with slots 43, so that bolts 31 do not interfere with their movements.

In order to effect actuation of ring 34 which in turn effects projection and retraction of members 27 in unison, one of the links 29 is shown provided with a projecting lever portion 44, having a pivotal connection 46 with an actuating rod 47. Reciprocation of rod 47 causes oscillation of ring 34 between certain limits.

One suitable form for construction 11 is illustrated in detail in Fig. 4. In this case the structure incorporates magnetic means whereby it will function to attract and retain a tin plated steel pie plate. such as is commonly used in the baking of pies. Thus structure 11 has been illustrated as comprising an outer annular member 51, made of magnetic material such as steel, and an inner metallic disk 52 concentric with respect to member 51, and likewise made of magnetic material. Spanning disk 52 and member 51 are a plurality of permanent electromagnets 53, in the form of hard steel bars capable of retaining considerable magnetism. The inner faces of member 51 and disk 52 are recessed to receive an annular member 54 of non-magnetic material, such as aluminum. The assembly is shown held together by screws 56 which serve to clamp member 54 and bars 53, upon member 51 and disk 52. Member 51 is shown provided with a flanged portion 57, of such dimensions that it will fit upon the bottom of a metal pie plate. Obviously members 51 and 52 being of magnetic material, constitute pole pieces for the electromagnets 53, so that a metallic pie plate placed upon structure 11 will magnetically adhere thereto until manually removed.

For mounting structures 10 and 11 to the support 12, we have shown means including a stud shaft 61, journaled within the head of support 12, by suitable means such as the ball bearing assembly 62. Fixed to one end of shaft 61, there is an enlarged head 63, carrying webs 64. Webs 64 serve to carry the spaced parallel pivot pins 66, upon which the hubs 67 and 68 are mounted (Fig. 2). The axis of pivot pins 66 are substantially equidistant from and at right angles to the axis of shaft 61. Mounted upon and extending forwardly from the hubs 67 and 68, are the support arms 69 and 71. The forward ends of these support arms are suitably connected to structures 10 and 11. For example, the forward end of arm 69 is shown attached to a lug 72 formed upon the body 13 of structure 10, while the forward end of arm 71 is shown attached to a lug 73, which in turn is connected to disk 52 by suitable means, such as screw 74.

By virtue of the fact that structures 10 and 11 are carried by arms 69 and 71, which in turn can swing about the axis of pins 66, it is evident that these structures are free to swing apart or towards each other. In order to cause such movements to occur in unison, an arm 76 is shown fixed to hub 67 (Fig. 2). Arm 76 carries a pin 77, disposed within a slot formed in the end of another arm 78. Arm 78 is in turn fixed to hub 68. Not only does the interconnection between arms 76 and 78 cause structures 10 and 11 to move in unison, but they also cause these structures to be at all times in substantial symmetry with respect to the axis of shaft 61.

To effect counter-balancing of structures 10 and 11 and also to afford means tending to retain these structures in either closed position (illustrated in solid lines in Fig. 1) or in open position (illustrated in dotted lines in Fig. 1), we provide a counter-balancing tension spring 81 as shown in Fig. 2. One end of spring 81 is attached to the end of an arm 82, fixed upon hub 68, while the other end of the spring is attached to an extension 83 of arm 76. For closed position of structures 10 and 11, the tension of spring 81 is such that these structures are biased towards each other. Likewise when the structures are placed in open position, spring 81 forms a holding bias preventing the closure of the structures except upon application of manual force.

For reasons which will be presently apparent, it is preferable to provide means for locking structures 10 and 11 in closed position, except for two angular positions with respect to the axis of shaft 61. To accomplish this result, the head of support 12 is provided with a disk 86, positioned concentric with respect to shaft 61. The periphery of disk 86 is provided with two radial slots 87, positioned 180° apart, and in a vertical plane (Fig. 3). Extending adjacent the periphery of disk 86, there is a finger 88, which is fixed to hub 67. Obviously hub 67 cannot rotate, to permit movement of structures 10 and 11 to open position, unless finger 88 is in registry with one of the slots 87. To provide for reciprocation of actuating bar 47, we preferably provide means operating automatically responsive to movements of the structures 10 and 11. This bar 47 is shown pivotally connected to a lever 91, which is pivotally carried by pivot pin 66. A tension spring 92, connected between a lug 93 formed in structure 10, and lever 91, serves to urge lever 91 in a counter-clockwise direction as viewed in Fig. 4. That portion 94 of lever 91 extending beyond the corresponding pivot pin 66, is adapted to cooperate with a lug 96 formed upon support 12. Assuming that structures 10 and 11 occupy

the position illustrated in Fig. 4, upon movement of these structures apart, downward movement of structure 10 tends to carry with it lever 91 in a counter-clockwise direction. However, lever 91 is prevented from rotating by engagement with lug 96. Retaining lever 91 therefore remains stationary while structure 10 moves downwardly, thus causing ring 34 to be rotated a given amount, to project members 27. When structures 10 and 11 are again moved to closed position, tension spring 92 serves to cause relative inward movement of actuating bar 47 to cause members 27 to be retracted. In the event structures 10 and 11 are turned about the axis of shaft 61, to any other position or positions, movement of the same apart to open position will not be accompanied by projection of members 27, due to the fact that lever 91 will rotate about its associated pivot pin 66.

While the machine described above is completely operative of itself, it is desirable to provide gauging means to facilitate proper positioning of a sheet of wrapping material. Thus we have shown a pair of gauge bars 98 suitably fixed to structure 10 by means of lugs 99. The ends of bars 98 are shown provided with forwardly turned end portions 101. Rods 98 project at an angle from the inner face of structure 10, and are spaced apart equal distances laterally from the arm 71. With the machine positioned as illustrated in Fig. 1, with structures 10 nd 11 in open position, as illustrated in dotted lines, bars 98 assume an upright position.

Operation of our machine can be explained as follows:—Structures 10 and 11 are first positioned as illustrated in dotted lines in Fig. 1, with structure 10 uppermost. A pie, together with a metal pie plate in which the pie has been baked, is positioned upon structure 11. The operator then takes a sheet of suitable wrapping material, such as plain or moistureproof cellophane, and positions the same over the top of the pie. While the contour of the wrapper may vary, a square shape gives good results. The wrapper should of course be centralized with respect to the pie, and in effecting such centralization, the operator may contact the rear edge of the wrapper with the gauge bars 98. The operator then moves structures 10 and 11 to closed position, as illustrated in solid lines in Fig. 1. Following closure of structures 10 and 11, they are rotated bodily about the axis of shaft 61, to position structure 10 lowermost as shown in Fig. 4. Fig. 4 also shows position of the pie 24, and the positioning of the wrapper 26. It will be noted that in closing the structures 10 and 11 upon the pie, the pie has been forced in pocket 14, until its edge rests upon the bevelled surface 18. Likewise the edge portions of the wrapper have been caused to assume a position such as indicated in dotted lines in Fig. 4. The operator now again moves structures 10 and 11 apart, and in effecting such movement, members 27 are automatically projected as has been previously explained. Projecting of members 27 serves to carry or turn the edge portions of the wrapper over the edge of the pie as shown in Fig. 7. When structures 10 and 11 are moved apart in that step of the operation just described, the metal pie plate adheres to structure 11. The operator then places a paper or cardboard pie plate over the exposed portion of the bottom of the pie, care being taken to cause the corner and edge portions of the wrapper to be retained between the cardboard pie plate and the bottom of the pie. The operator likewise removes the metal pie plate from structure 11, simply by applying manual force. Following these operations structures 10 and 11 are again moved to closed position, and again inverted to the position shown in solid lines in Fig. 1. Upon closing structures 10 and 11, members 27 are retracted, and with the structures in the position illustrated in Fig. 1, they can be opened to remove the wrapped pie from the structure 11.

It is obvious from the above that our machine has many desirable characteristics. Its operation is relatively simple, requiring a minimum amount of labor, so that a maximum number of pies can be wrapped in a given period of time. The pie is not mutilated during the wrapping operation, no insanitary human contact with the pie is involved, and the wrapper is applied relatively smoothly and tightly with uniformly good results. In the event that the pies vary as to thickness, a compensating adjustment can be made by setting screw 19, so that the machine will receive a pie of a given thickness without mutilation. The self aligning character of the members 27 makes for tight wrapping, and also tends to minimize mutilation. The symmetrical arrangement of structures 10 and 11 with respect to the axis of shaft 61 facilitates turning of these structures about the axis of this shaft, with a minimum of effort, and the structures once positioned will remain in any given angular position required to carry out the mode of operation previously set forth. The fact that the structures 10 and 11 are caused to move in unison in symmetry with respect to the axis of shaft 61, likewise makes it possible for an operator to effect opening and closing movements of the structures merely by applying manual force to the periphery of structure 10, rather than to apply forces to both structures 10 and 11. The provision of structure 11 which is magnetic in character, makes it possible to introduce the pies together with the metal pie plates in which they are baked, although for the sake of simplicity if it is desired the magnetic character of structure 11 can be omitted and the pies first removed from their metal baking pans being introduced into the machine for a wrapping operation. However presence of the metal pie plate upon the pie at the time of introduction, is desirable as it tends to prevent crumbling of the edges of the pie. It is also possible to carry out the wrapping operation where it is desired to market the pies in the metal plates in which they are baked, in which event no paste-board plates are employed, and the metal plates are not removed until the wrapping operation is completed and the metal plates have been repositioned upon the bottom of the pies, at which time the plates are removed together with the wrapped pies.

A further characteristic of structure 11, particularly when it is magnetic, is that it facilitates centralization of the pie introduced into the machine. It may be pointed out that in place of employing magnetism for attracting pie plates to structure 11, the force of pneumatic suction can be employed. In most commercial baking of pies no great force is required to remove the metal pie plates. In our machine such removal is facilitated because the pie plates are removed angularly,—that is along the arc of a circle—, rather than perpendicularly.

We claim:

1. In a machine for wrapping pies or the like, a pair of relatively movable structures adapted

to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie.

2. In a machine for wrapping pies or the like, a pair of relatively movable structures adapted to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, and means for effecting actuation of said means responsive to relative movement between said structures.

3. In a machine for wrapping pies or the like, a pair of relatively movable structures adapted to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, and supporting means serving to permit inversion of said structures.

4. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, and means for mounting said structures for movement relative to each other and for rotation about a common axis.

5. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, means for supporting said structures for movement toward and away from each other and for rotation about an axis lateral to the general direction of said first named movement, and means for effecting actuation of said first named means responsive to relative movement between said structures.

6. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, means for mounting said structures for movement toward and away from each other and for rotation about an axis lateral to the general direction of said first named movement, and means for effecting actuation of said first named means responsive to relative movement between said structures, said last named means being effective only when said structures are in a certain angular position with respect to said common axis.

7. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, means for mounting said structures for movement toward and away from each other and for rotation about an axis lateral to the general direction of said first named movement, said axis being likewise substantially parallel to the plane of the engaged pie when said structures are in closed position upon the same, means for effecting actuation of said first named means responsive to relative movement between said structures in a direction away from each other, and means for rendering said last named means effective only when said structures are in one position with respect to said axis.

8. In a machine for wrapping articles such as pies, a support, a shaft journaled to said support, a pair of structures carried by said shaft, said structures being movable toward and away from each other and being adapted to engage opposite sides of the article to be wrapped, means serving to retain said structures in substantial symmetry with respect to the axis of rotation of said shaft, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the articles, and means serving to effect actuation of said last named means responsive to relative movement between said structures.

9. In a machine for wrapping pies or the like, a pair of relatively movable structures adapted to engage opposite sides of the pies, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, and means carried by the other structure for releasably retaining a pie plate thereto.

10. In a machine for wrapping pies or the like, a pair of relatively movable structures adapted to engage opposite sides of the pies, one of said structures including means for turning the edge portions of a sheet of wrapping material over the peripheral edge of the pie, and magnetic means carried by the other structure for releasably retaining a pie plate thereto.

11. In a machine for wrapping pies or the like, a pair of pie supporting structures adapted to engage opposite sides of the pies, means for mounting said structures for opening and closing movements relative to each other, and for movement to effect inversion of both said structures simultaneously, and magnetic means carried by one of said structures for releasably retaining a pie plate thereto.

12. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, one of said structures including wrapper folding means, and means for mounting said structures for opening and closing movement relative to each other and for rotation of said structures in unison about a common axis, each of said structures being formed to afford an independent support for the pie.

13. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, one of said structures including wrapper folding means, and means for mounting said structures for movement toward and away from each other and for rotation of both said structures about an axis lateral to the general direction of said first named movement, each of said structures being formed to afford an independent support for the pie.

14. In a machine for wrapping pies or the like, a pair of structures adapted to engage opposite sides of the pie, a fixed support, one of said structures including wrapper folding means, journal means connecting said structures to said support, whereby both said structures can be simultaneously rotated about a common axis to effect inversion of the same, and means interconnecting said structures whereby they can be moved away and toward each other, in substantial symmetry with respect to the axis of said rotation and lateral thereto, each of said structures being formed to afford an independent support for the pie.

15. In a machine for wrapping pies or the like, a support, a shaft journaled to said support, a pair of pie-engaging structures carried by said shaft, one of said structures including wrapper folding means, said structures being adapted to be moved toward and away from each other and

being adapted to engage opposite sides of a pie to be wrapped, each of said structures also being formed to afford an independent support for the pie, mechanism serving to maintain said structures in substantial symmetry with respect to the axis of said shaft, irrespective of their positioning relative to each other, and means serving to retain said structures in either open or closed position.

16. In a machine for wrapping pies or the like, a support, a shaft journaled to said support, a pair of pie-engaging structures carried by said shaft, one of said structures including wrapper folding means, each of said structures being adapted to engage opposite sides of a pie to be wrapped, each of said structures also being formed to afford an independent support for the pie, means enabling movement of said structures toward and away from each other, means to maintain said structures in substantial symmetry with respect to the axis of said shaft, irrespective of their positioning, and counterbalancing means co-operatively associated with said structures.

17. In a machine for wrapping pies or like articles, a pair of relatively movable structures adapted to engage opposite sides of the article, one of said structures including means for turning the edge portions of a sheet of wrapping material over the article, said one structure being also formed to provide an article-receiving pocket of adjustable depth.

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