

No. 708,955.

Patented Sept. 9, 1902.

N. E. BROWN.

BASKET FORMING AND STAPLING MACHINE.

(Application filed Mar. 4, 1902.)

(No Model.)

4 Sheets—Sheet 1.

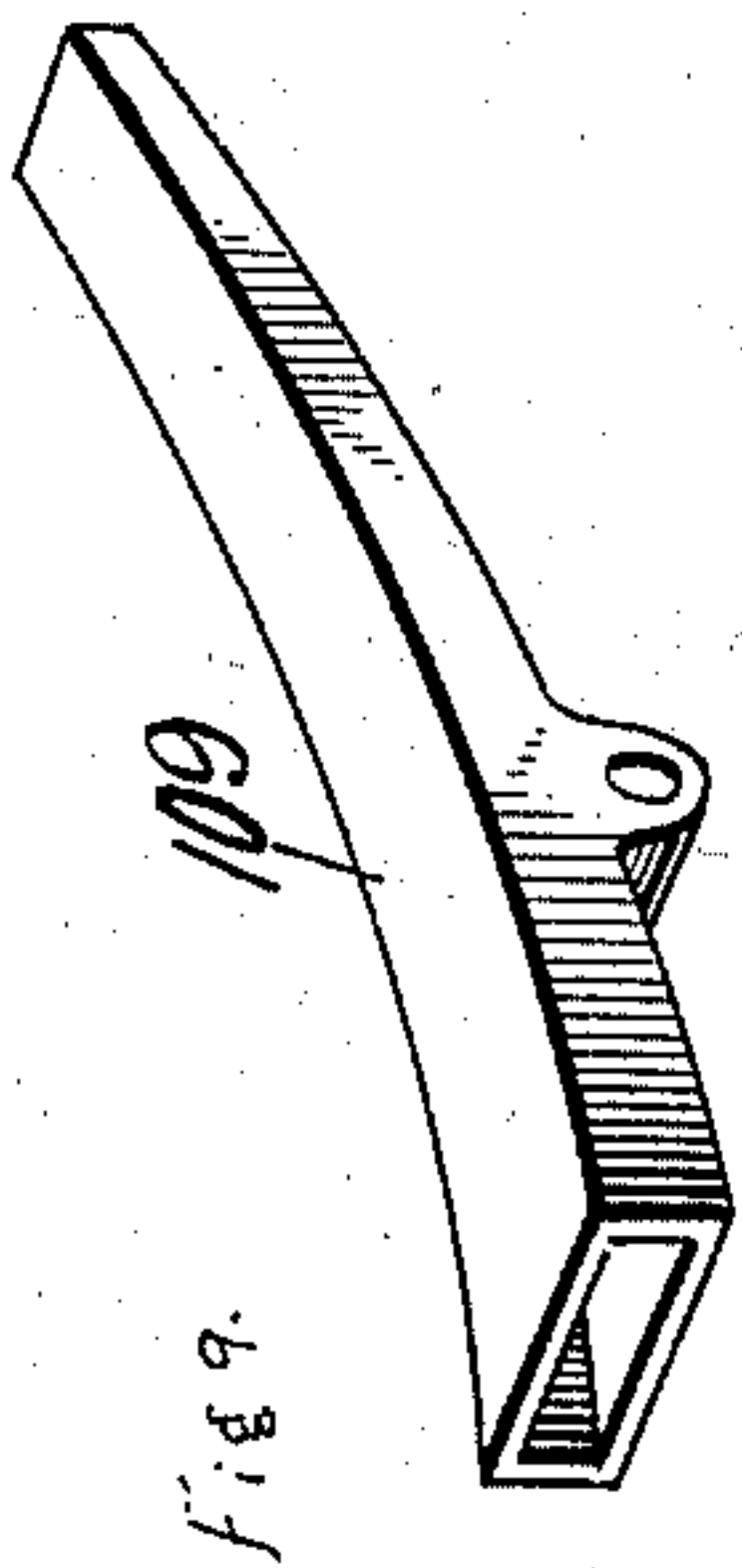


Fig. 11.

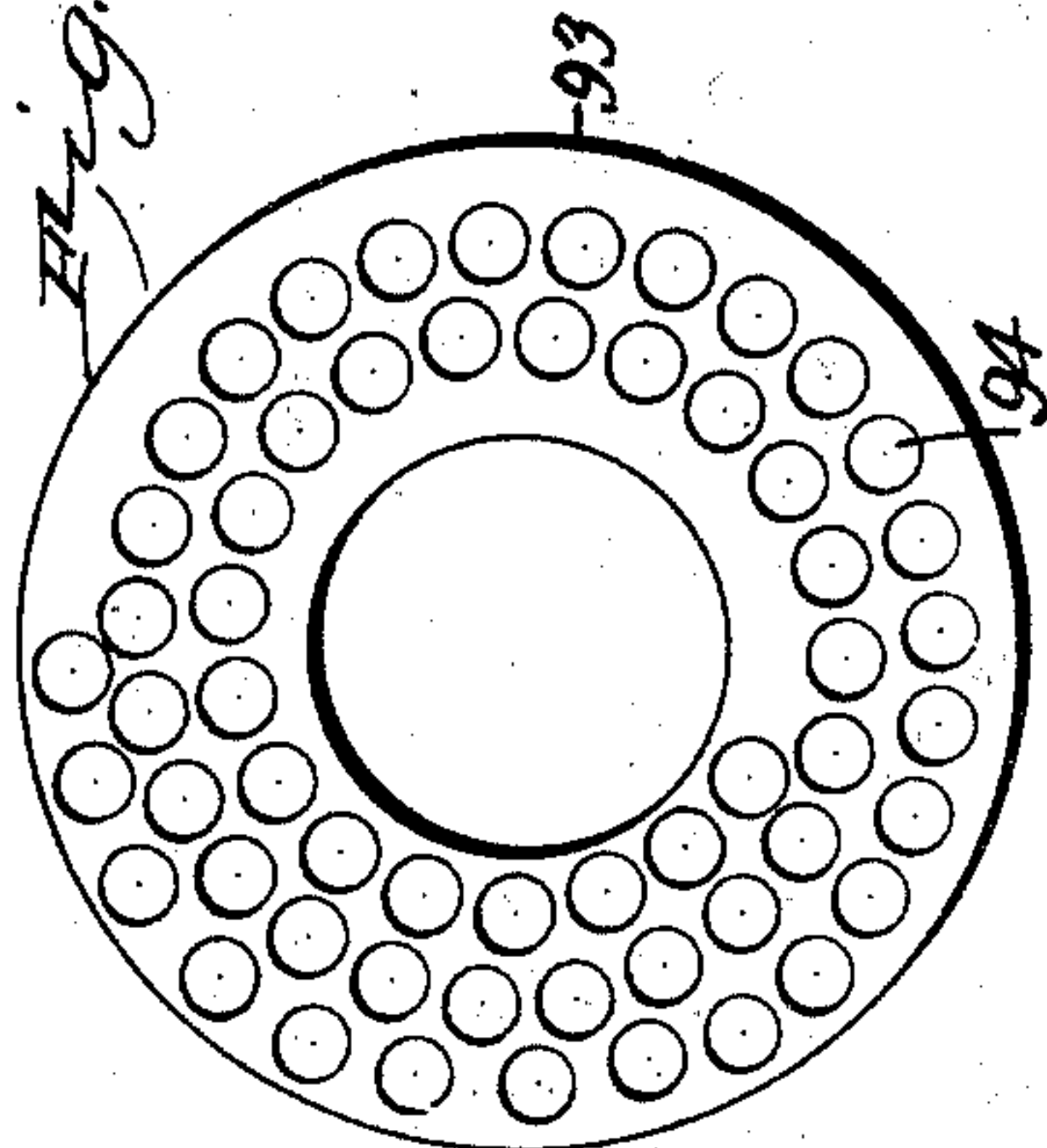
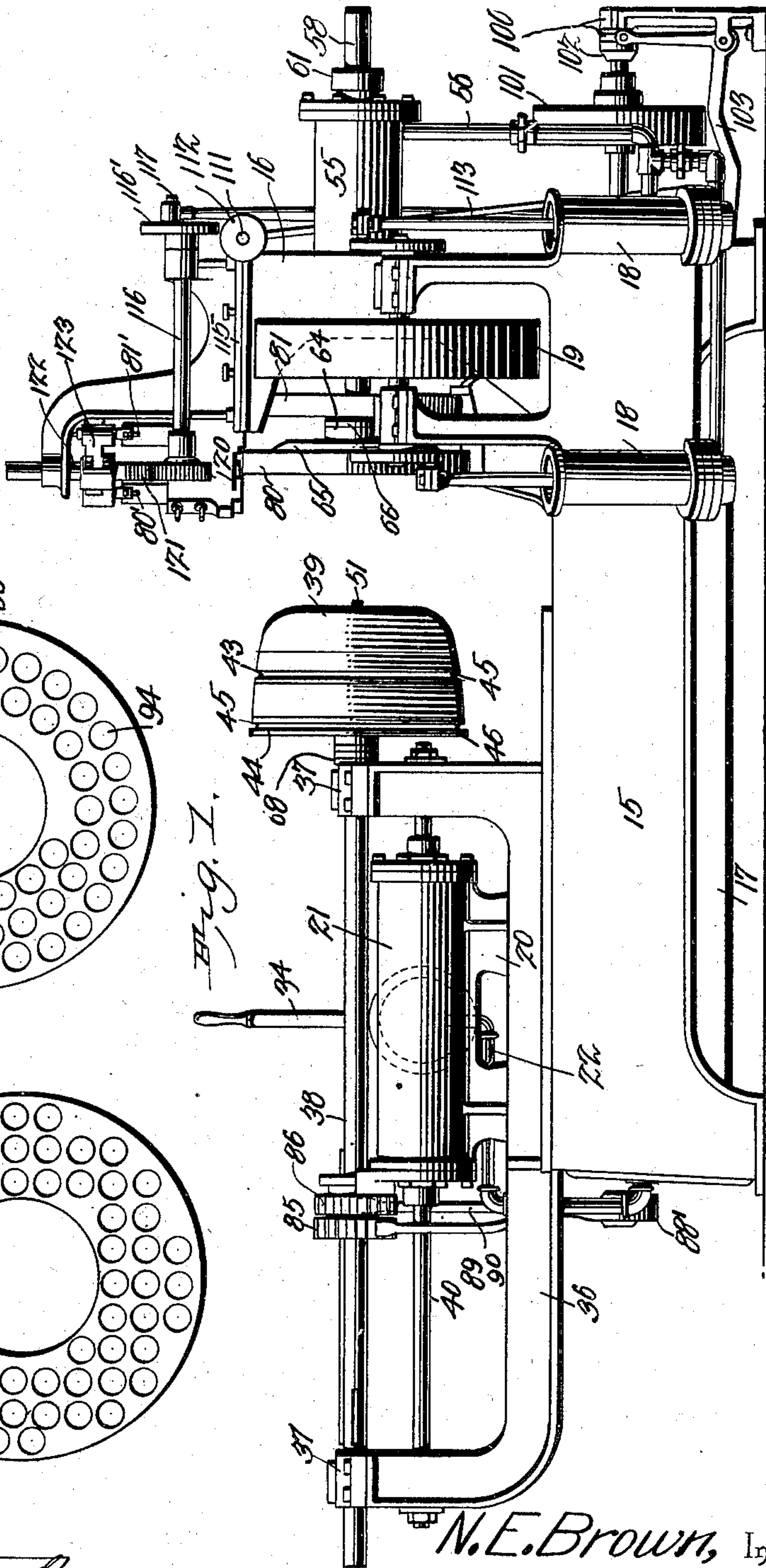
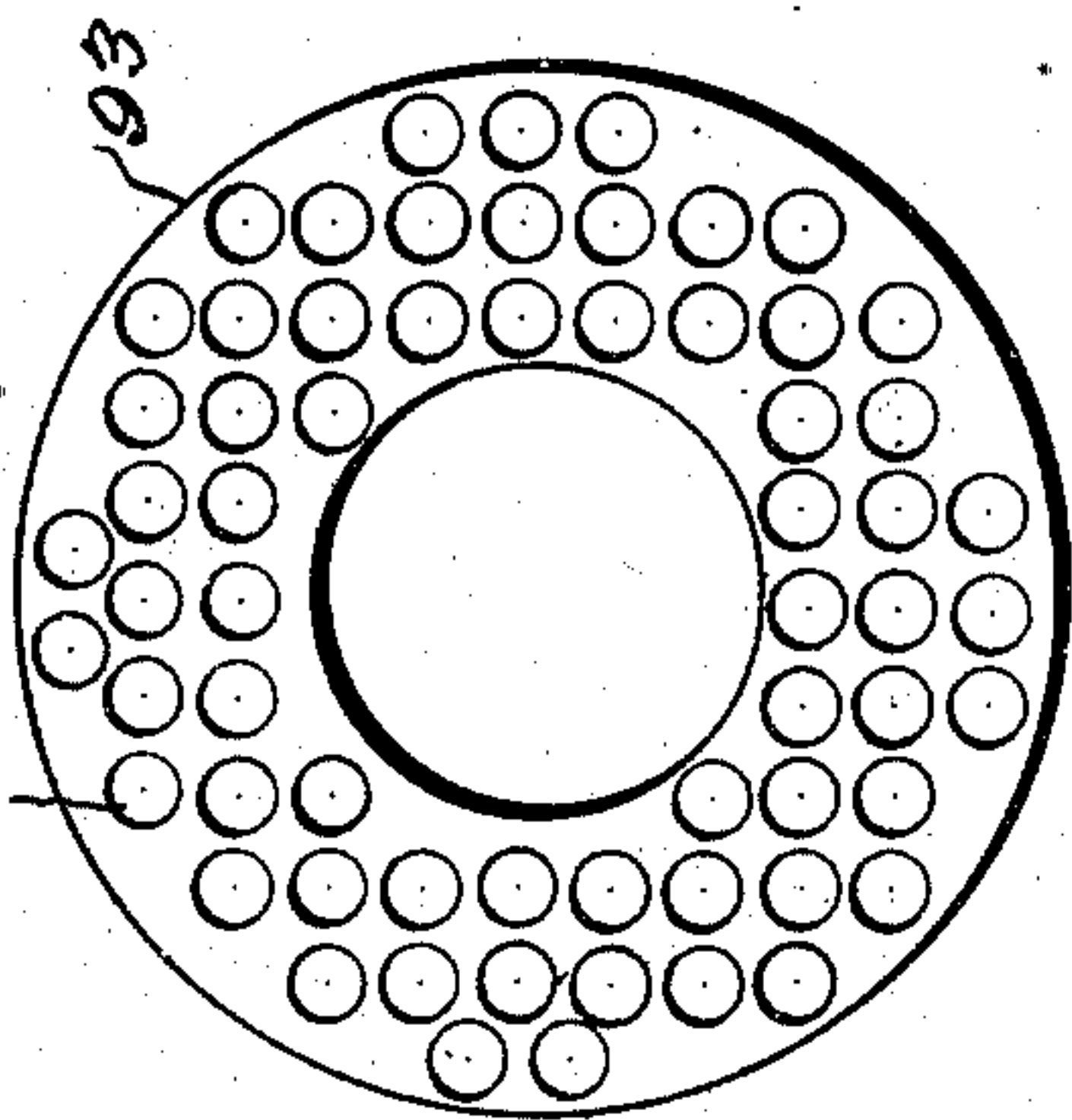


Fig. 10.



Witnesses  
*E. J. Shaw*  
*J. M. E. Parker*

N. E. Brown, Inventor  
by *C. A. Snow & Co.*  
Attorneys

No. 708,955.

Patented Sept. 9, 1902.

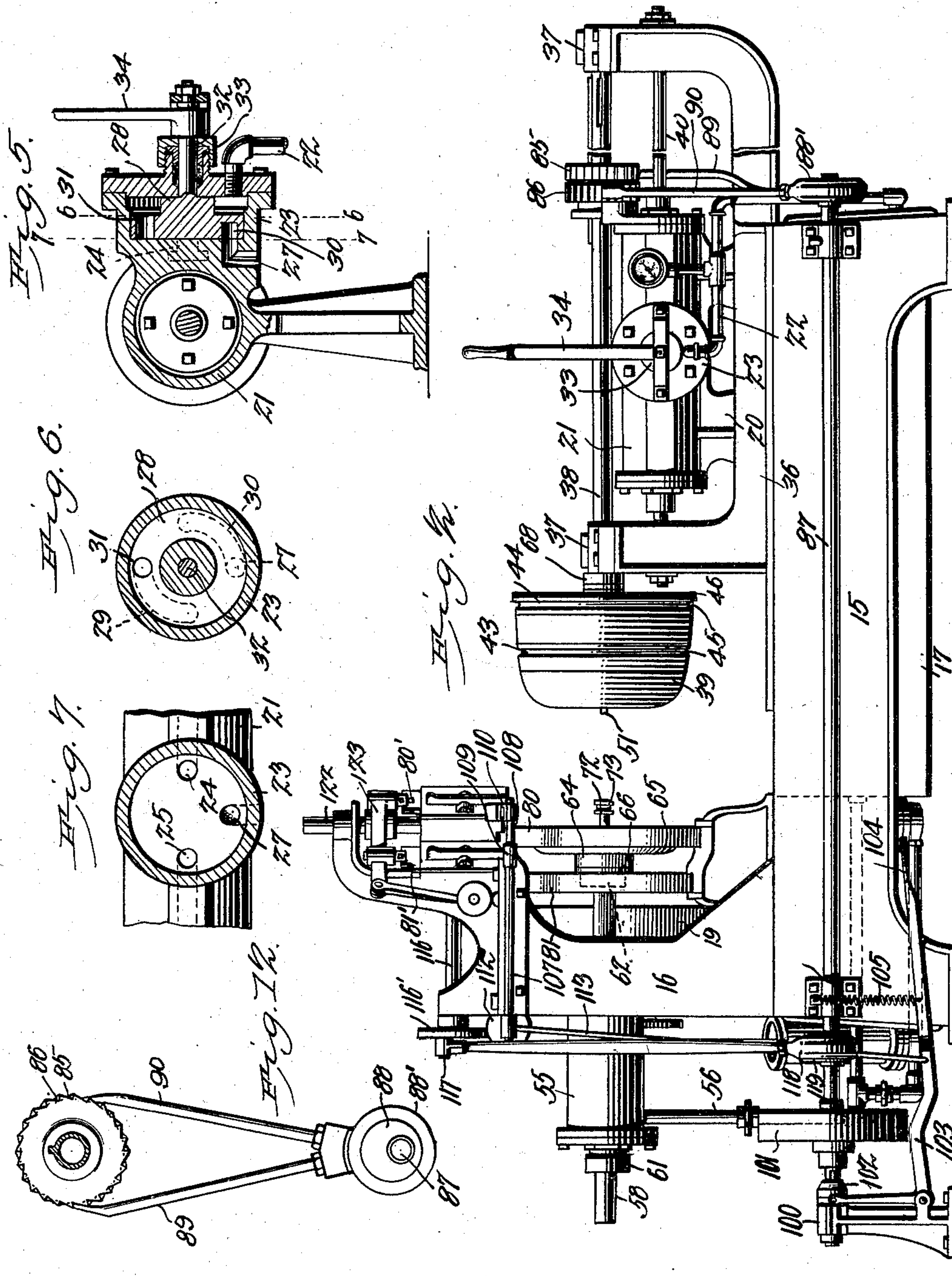
N. E. BROWN.

BASKET FORMING AND STAPLING MACHINE.

(Application filed Mar. 4, 1902.)

(No Model.)

4 Sheets—Sheet 2.



Witnesses  
*E. J. Stewart*  
*John E. Parker*

N. E. BROWN, Inventor.  
by *Chas. H. Brown*  
Attorneys



No. 708,955.

Patented Sept. 9, 1902.

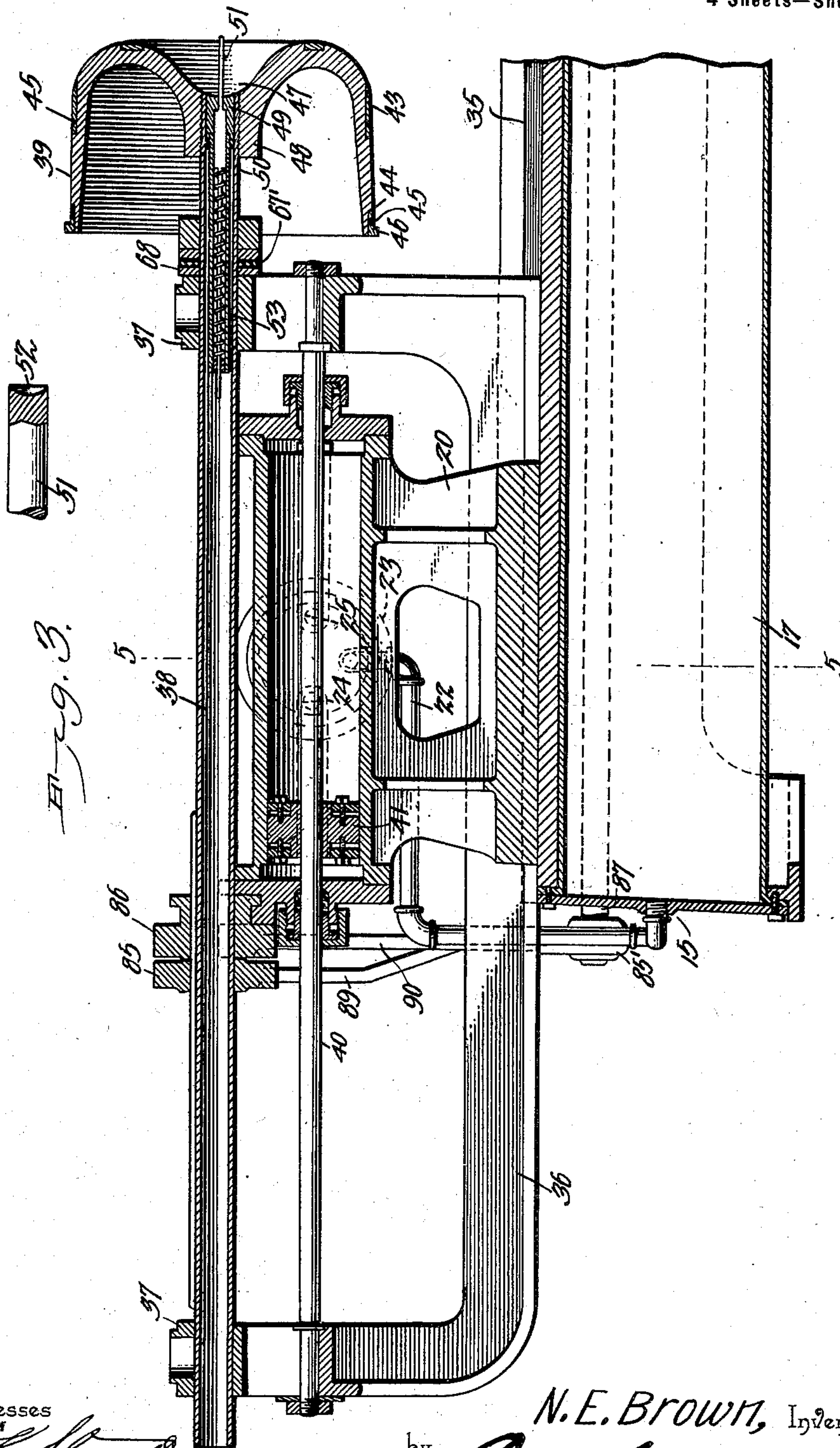
N. E. BROWN.

BASKET FORMING AND STAPLING MACHINE.

(Application filed Mar. 4, 1902.)

(No Model.)

4 Sheets—Sheet 3.



Witnesses  
*E. J. Hewitt*  
*J. M. Carter*

N. E. BROWN, Inventor.  
by *C. A. Snow & Co.*  
Attorneys





# UNITED STATES PATENT OFFICE.

NORMAN E. BROWN, OF ST. JOSEPH, MICHIGAN, ASSIGNOR TO ST. JOSEPH IRON WORKS, OF ST. JOSEPH, MICHIGAN, A CORPORATION OF MICHIGAN.

## BASKET FORMING AND STAPLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 708,955, dated September 9, 1902.

Application filed March 4, 1902. Serial No. 96,681. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN E. BROWN, a citizen of the United States, residing at St. Joseph, in the county of Berrien and State of Michigan, have invented a new and useful Basket Forming and Stapling Machine, of which the following is a specification.

My invention relates to certain improvements in basket-making machinery, and has for its principal object to construct a machine by which the assembled staves or webs may be molded and pressed into proper form at a single operation and then retained in position while the basket-hoops are stapled.

A further object of the invention is to provide forming dies or molds of such nature as to provide for the successive operation of various parts of the mold on different portions of the basket being formed and to prevent any premature movement or excessive pressure which would tend to destroy the staves.

A further object of the invention is to provide a machine which may be readily controlled by the operation of a single valve.

A still further object of the invention is to so construct the mold with staple mechanism as to insure the clenching of the ends of each staple driven through the hoops.

A still further object is to provide mechanism for securely holding the basket-staves in proper position during the winding and securing of the hoops.

With these and other objects in view, as will appear when the invention is better understood from the following detailed description, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is an elevation, partially in section, of a basket forming and stapling machine constructed in accordance with my invention. Fig. 2 is a similar view looking from the opposite side of the machine. Fig. 3 is a sectional elevation of a portion of the machine, drawn to a somewhat-larger scale. Fig. 4 is a similar view of the opposite end of the machine. Fig. 5 is a transverse sectional elevation through the governing-valve on the line 5 5 of Fig. 3. Figs. 6

and 7 are sectional elevations through the valve-casing on the lines 6 6 and 7 7, respectively, of Fig. 5. Fig. 8 is a view illustrating a slight modification of one of the stave-confining rings. Fig. 9 is a detail view of the hoop-guides employed for guiding the hoops to the basket. Figs. 10 and 11 are detail views of a portion of one of the thrust-bearings employed. Fig. 12 is a detail view of the step-by-step feeding and locking mechanism for rotating the basket under the staple-drivers.

Similar numerals of reference are employed to designate corresponding parts throughout the several figures of the drawings.

The machine is intended principally for the construction of baskets of that class in which a number of staves are bent into form and secured together by three hoops, two of which are disposed at the top edge of the basket—one on the inside and one on the outside—the remaining hoop being arranged on the outer portion of the basket about midway between the top and bottom. This form of basket is in common use, and while the machine herein described, and illustrated in the accompanying drawings, is intended principally for the manufacture of such baskets it will be understood that various other forms of baskets, boxes, and other receptacles may be manufactured by slight alteration either in the process hereinafter described or by suitable modification of the shape of the basket-forming dies.

Referring to the drawings, 15 indicates a suitable bed or base having at one end an upright frame 16 for the reception and support of one of the forming-dies and the staple forming and driving mechanism. In the base or forming a part thereof is a reservoir 17, into which air is forced under any desired pressure by a pair of air-pumps 18, carried by the framework and driven through the medium of a belt-wheel 19 from any suitable source of power. The air-compressor may be of any ordinary type and may form a machine separate and apart from the device forming part of the present invention and located, together with the reservoir, at any suitable distance from the basket-making machine, or the compressor may be employed



to maintain in the reservoir a supply of fluid other than air, or a liquid, such as water or oil, may be employed as a means of operating the machine.

5 To the fixed bed of the machine is secured a web or standard 20, carrying or forming part of the cylinder 21, which is adapted to receive fluid under pressure from the reservoir through a conducting-pipe 22, leading  
10 to a valve-chest 23, located at one side of the cylinder. The valve-chest is circular in form and provided with a bottom seat having two inlet-ports 24 and 25, communicating with the opposite ends of the cylinder, and an exhaust-  
15 port 27, leading to the outer air. In the valve-chest is a disk valve 28, having on its lower surface two grooves 29 and 30, extending each through a range of about ninety degrees, there being a passage 31 extending through  
20 the disk and placing the groove 29 in constant communication with the compressed air in the valve-chest. Owing to the length and relative positions of the grooves and ports, any movement sufficient to place the groove  
25 29 opposite one or other of the cylinder-ports will place the opposite cylinder-port in communication with the exhaust, so that the air is at all times under perfect control and may be allowed to enter either end of the cylin-  
30 der. For convenience in operation the disk valve is provided with a stem 32 extending out through a stuffing-box 33 and provided with a suitable operating-lever 34.

Mounted in suitable guides 35 in the oppo-  
35 site sides of the machine-bed is a reciprocatory frame 36, provided at its opposite ends with bearings 37 for the reception of a hollow rotatable shaft 38, which carries at one end a mold or die member 39. Secured to the op-  
40 posite ends of the frame, parallel with the shaft 38, is a piston-rod 40, which extends through suitable stuffing-boxes in the cylinder 21 and is secured to a suitable piston 41 within said cylinder, the introduction of air  
45 to the cylinder causing a movement of the piston, the frame 36, and all its connected parts in either direction.

The contour of the mold 39 will vary in accordance with the character of the baskets  
50 being manufactured; but for the formation of bushel-baskets of the character ordinarily manufactured I employ a substantially cup-shaped mold 39, formed, preferably, of malleable iron and having two staple-clench-  
55 ing dies 43 and 44, each of which is formed of a ring of steel or other metal of sufficient strength and density to turn the points of the staples, each ring being provided with a groove  
45 of a width sufficient to receive the ends of the staples as the latter are driven through the hoops and staves. The ring 44 at the edge of the mold is provided with an annular flange 46, against which may rest the hoop usually placed inside the top edge of the bas-  
60 ket, the flange serving to prevent the displacement of the hoop while the staves are being bent into place. The central portion

of the outer end of the mold is concaved, as shown at 47, to permit of the inward crimp-  
70 ing or bending of the staves at the central bottom portion of the basket, and the mold is at this point extended inwardly in the form of an integral ring or collar 48, which may be screwed on the threaded end of the shaft 38.

In the outer end of the hollow shaft 38 is  
75 secured a collar 49 for the support of a tube 50, in which is guided a pin 51, normally held with its outer concaved end 52 in the position illustrated in Fig. 3 by means of a compres-  
80 sion-spring 53, the outer end of the pin extending beyond the outer line of the mold, so as to engage with the central portion of the basket-web before the mold moves into con-  
85 tact with the same. This pin will yield during the operation of the machine to an extent sufficient to permit the central portions of the webs or staves to enter the concaved portion  
90 49 of the mold to produce the inwardly-extending and centrally-disposed crimp of the basket and when the basket is finished will act as an ejector to remove the same auto-  
95 matically from the mold.

On the upright portion 16 of the frame is  
secured a cylinder 55 of a diameter somewhat  
95 smaller than the cylinder 21, the smaller cylinder 55 being in constant communication with the pressure-reservoir through a supply-pipe 56. In the cylinder, the inner end of which has openings communicating with the  
100 outer air, is a piston 57, carrying a hollow piston-rod 58, one end of which is closed air-tight by a plug 59, and this end of the piston-rod being guided by a stuffing-box 61 on the cylinder. The movement of the piston and  
105 rod is limited in one direction by the contact of the piston with the end of the cylinder, and in the opposite direction its movement is governed altogether by the extent of forward  
110 movement of the basket mold or form 39. At a point outside the cylinder there is secured to the end of the hollow piston-rod a collar  
115 62, having an annular flange 63, which fits within the rearwardly-extending annular flange 64, secured to or forming part of a pressure-plate 65, which holds the bottom of  
120 the basket against the mold during the bending of the webs or staves to form the vertical sides of said basket. The pressure-plate is held from displacement on the flange 63 by a small ring 66, secured to the rear end of  
125 the flange 64 and fitting over the rear vertical face of the flange 63. To permit free rotative movement of the pressure-plate when turning with the mold or form during the stapling  
130 operation, a ball-bearing 67 is introduced between the adjacent faces of the collar and pressure-plate. A similar ball-bearing 67' is introduced between a collar 68 on the shaft 38 of the mold in order to permit free rotative  
135 movement of the parts, these bearings being of the construction more fully illustrated in Figs. 10 and 11.

The hollow piston-rod 58 is in communication with the cylinder 55 and the reservoir



through a port or passage extending through the wall of the rod at a point to the rear of the piston 57. In the smaller cylinder formed by the piston-rod is a piston or plunger 71, the outer end of which is reduced in diameter and extends out through a guiding-opening formed at the center of the pressure-plate 65, a collar 72 being placed at the extreme end of the piston or plunger 71 and forming one member of a ball-race, the opposite portion of which is formed by a disk 73, mounted on a stem 74, projecting into a recess in the end of the plunger, and suitable antifriction-balls being introduced between the collar and the disk in order to permit the independent rotation of the latter. In the outer face of the disk 73 is formed a centrally-disposed recess 76, in alinement with the recess 52 of the spring-pressed pin 51, these two recesses being adapted for the reception of the opposite ends of the nail or pin by which the webs or staves are secured together to form a substantially circular blank prior to being placed in the machine and bent into basket form.

In order to bend the staves over the basket mold or form 39, I employ a pair of stationary rings 80 81, arranged one to the rear of each of a pair of staple-drivers 80' 81', carried and driven by the mechanism hereinafter described and so arranged that when the basket-mold is moved inwardly to the limit of the stroke one of the staple-drivers will be in vertical alinement with one of the staple-clenching rings on the basket-mold and the other with the second staple-clenching ring on such mold. The basket-forming rings 80 and 81 are therefore so arranged and disposed as to hold the staves closely to the mold at points immediately in advance of the plane of the respective drivers and staple-clenching rings. The ring 80 is slightly larger in diameter than the ring 81, and the latter is of sufficient diameter to permit the free passage of the pressure-plate therethrough when the latter is forced to the basket-forming position by the mold-actuating piston. Each ring has its inner basket-engaging surface convexed in cross-section in order not to bind too firmly on the staves, and each forms part of or is secured to one element 83 of a ball-race, the opposite element of which is formed by a stationary ring on or secured to the frame, suitable antifriction-balls being placed in the ball-race in order to permit free rotative movement of the rings as the basket and mold are turned. The basket-forming rings overcome a serious objection to machines of this type in that they dispense with the employment of a female die of such size as to come into intimate contact with a very considerable area of the staves being bent into shape, resulting in injury to the basket and increasing frictional resistance when the male and female dies are separated to release a finished basket. Further than this, there has heretofore, so far as I am aware, been no provision for binding the staves to the periph-

ery of the mold at points between the two stapling dies or drivers, the staves spreading at varying angles, in accordance with their resiliency, and their outer edges remaining at some distance from the inner edge hoop placed on the staple-clenching ring prior to the movement of the mold or form. By providing the two revoluble forming-rings I am enabled to hold the staves firmly to the mold or form at points close to the staple-driving mechanism and am thus enabled to obtain better results and more perfect baskets. In some cases I may employ a single forming-ring of the character illustrated in Fig. 8 and may dispense with the auxiliary inner ring for engagement with the lower part of the basket.

In the operation of the machine as thus far described, the parts being in the position illustrated in Figs. 1, 3, and 4 and the cylinder 55 and the piston-rod cylinder 58 being in communication with the reservoir, a bundle of staves, assembled to form a web, is placed in proper position between the mold 39 and the pressure-plate 65. The valve 28 is then turned to place the inlet-port 24 of cylinder 21 in communication with the pressure-supply, causing a movement of the piston, the frame 36, the shaft 38, and mold 39 in the direction of the pressure-plate. The center portion of the web will first be caught between the center of the pin 51 and the disk 76 at the end of the plunger 71, the spring of the pin 51 yielding under the greater pressure exerted by the compressed air in the piston-rod cylinder 58 and resulting in the forcing of the central portions of the staves into the concaved end of the mold 39, thereby forming the inwardly-extending crimp common to baskets of this type. The superior area of the cylinder 21 will enable the pressure exerted on its piston to force the plunger 71 to the rear to an extent dependent of the web, and the web will then come into contact with the face of the pressure-plate 65. The web thus held is still carried in the direction of the pressure-plate and comes into contact successively with the forming-rings 80 and 81, being gradually bent over the mold or form 39 and the staves confined in place at points adjacent to the hoops. The area of the cylinder 21 is greater than the area of the cylinder 55, which carries the pressure-plate, and as both are in communication with the same source of power and under the same pressure the greater area of the cylinder 21 will enable the actuating fluid to travel the mold 39 rearwardly to the forming position and immediately under the hoop-feeding and staple mechanisms described hereinafter, the grooves of the staple-clenching rings being immediately under the staple-drivers 80' and 81'. After the basket has been formed by the mold and rings it becomes necessary to rotate both the mold and rings to wind the outer hoops on the staves, the rotation being necessarily intermittent in order that the staple-drivers



may operate to force staples through the hoops and staves at proper intervals. The intermittent rotative movement is imparted to the shaft 38 by means of a pawl-and-ratchet mechanism, the ratchet member being in the form of two ratchet-wheels 85 and 86, each secured rigidly to the shaft and each having the same number of teeth—twenty-four in the present instance—the teeth of one ratchet-wheel facing in a direction opposite to the teeth of the other wheel. The two wheels may be formed integral, if desired, and provided with a flanged collar adapted to a suitable recess formed on one of the heads of the cylinders 21, the wheels being thus held from longitudinal movement, but being free to rotate with the shaft 38, to which they are secured by a suitable spline or feather.

At one side of the machine and extending longitudinally thereof is a shaft 87, having an eccentric 88, on which is placed an eccentric-strap 88'. To the strap are secured two pawls 89 and 90, the pawl 90 engaging with the ratchet-wheel 86 and being somewhat longer than the pawl 89, which is adapted to engage with the ratchet-wheel 85. In the operation of this portion of the mechanism each rotation of the shaft 87 will result in an upward movement of both pawls, the longer pawl resting at the beginning of the upward movement immediately in contact with the radial face of the tooth against which it is to operate, while the opposite pawl is at a distance from the radial face of the tooth with which it is to engage and interlock equal to the length of two teeth of the ratchet-wheel. The upward movement is to the extent of a single tooth, and as both pawls receive the same degree of movement the pawl 90 will move the tooth with which it is engaged through a space equal to one tooth, resulting in a corresponding movement on the opposite side of the ratchet-wheel 85. As the ratchet-wheel 85 is moved to the extent of one tooth and the locking-pawl is also moved to the extent of one tooth in the opposite direction, it follows that at the end of the stroke of the pawl 89 said pawl will come into locking engagement with a tooth at the proper time, and will thus prevent any excessive rotative movement of the ratchet-wheels and the mold-carrying shaft to which they are connected. This movement takes place during the upward movement of the staple-drivers, and on the downward movement of the staple-drivers the basket-mold is held from movement in either direction by the engagement of the pawls of the oppositely-facing ratchet-wheels.

The ball-bearings are thrust-bearings which receive the strain resulting from the engagement of the mold-sections during the formation of a basket and are each formed of a pair of bearing-rings, between which is a plate 93, having balls so arranged as to make contact with the entire area of said rings, the openings 94 being arranged in such manner

that the center of each is at a different radial distance from the center of the ring than is the center of any of the other openings. This may be accomplished by arranging the openings in a spiral line or by dividing the surface area of the ring into a series of squares, the center of the central square being eccentric to the center of the ring, as indicated in Figs. 10 and 11. In this manner the wearing-face of the ring is divided into as many ball-contact surfaces, each comprising a complete circle, as there are balls in the ring 93. In the present case some sixty-three or sixty-four balls are shown, which travel in independent but concentric circular lines, and as the wearing-face is comparatively narrow it will be seen that the entire area of the rings is in contact with the balls, considerably increasing the life of the rings and the bearings.

The rings 93 act merely as a cage for retaining the balls in proper relative position and rotates freely with said balls when the device is in operation. In a machine of this type there is considerable pressure employed in forming the staves, and this form of bearing has been found useful in taking up the thrust and decreasing the frictional resistance in the turning of the mold and basket under the stapling-drivers.

The shaft 87, which has been previously referred to, extends along one side of the frame of the machine, being supported by suitable bearings carried by the frame, and at its outer end being adapted to a bearing in a standard 100. On the shaft is a loose belt-wheel 101, which is driven from any suitable source of power and is clutched to the shaft by a suitable clutch 102 under the control of the operator, the movable clutching member being connected to one arm of a pedal-lever 103, fulcrumed to brackets on the standard 100 and having a pedal-plate 104 in convenient position for the operator. The pedal is normally held in elevated position with the clutch disengaged by a tension-spring 105, the downward movement of said pedal-lever against the stress of the spring causing the engagement of the clutch and the operation of the various parts of the machine which are connected to the shaft 87.

At one side of the upper portion of the upright frame 16 are swiveled bearings 107 for the reception of a horizontal rock-shaft 108, to which are secured hoop-guides 109, each guide being in the form of an elongated tapering box, through which a hoop-strip may be fed to the basket. At the outer end of the shaft 108 is secured a lever 111, carrying an adjustable weight 112, which normally will hold the hoop-guides with their inner ends depressed and adjacent to the basket. The lever 111 is connected at a point intermediate of its length to a rod 113, the lower end of which rests on the pedal-lever 103, being held in contact with said lever by the weight 112, and the downward movement of the pedal-lever against the stress of the spring 105 caus-



ing a corresponding movement of the rod 113 and the adjustment of the hoop-guides to operative position.

The staple-driver or staple forming and driving mechanism employed in connection with this machine may be of any desired character, and only a small number of the more important members of the stapling mechanism have been illustrated in order that the operation of the machine may be understood.

On the top of the upright portion of the main frame is secured a staple-machine frame 115, having bearings for the support of a horizontally-disposed shaft 116, to the outer end of which is secured a crank-disk 116', having a pin 117, by which it may be connected to an eccentric-strap 118, surrounding an eccentric 119 on the shaft 87, the relative sizes and positions of the parts being such that the rotation of the shaft 87 will impart a rocking movement to the shaft 116. On the inner end of the shaft 116 is a pinion 120, which engages a rack 121 in a vertically-disposed bar 122, guided in suitable boxes or other supports in the frame and carrying a movable frame 123, in which are supported staple forming and driving slides 80' 81', one of which is arranged in alinement with each of the staple-clenching rings of the mold when the latter has been moved full forward and carries a basket-form ready for stapling. The staple-drivers are immediately in alinement with the hoop-guides 109 and 110, one being in front of each hoop-guide and acting simultaneously to drive staples through the hoops and staves as the mold and basket are turned, the hoops being gradually wound around the basket and two staples being driven, one in each of the hoops, at the end of each intermittent movement.

As the stapling-driving mechanism may be of any desired form, further explanation or illustration of its construction is deemed unnecessary.

While the construction herein described, and illustrated in the accompanying drawings, represents the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. In a basket-making machine, the combination with a mold or form, of a pressure-plate, pressure-actuated devices tending to force the mold and plate toward each other, one of such devices exerting a force greater than that exerted by the other, and a stationary forming-ring through which the mold passes in the formation of a basket.

2. In a basket-making machine, the combination with a pair of coöperative basket-clamping devices one of which is shaped to form a mold for the basket, of fluid-pressure cylinders connected one to each of such de-

vices, one of such cylinders being larger in area than the other, and a stationary forming-ring through which said devices are forced by the larger cylinder in the process of forming a basket.

3. In a basket-forming machine, the combination with a pair of basket-clamping means, one of which is shaped to form a mold for the basket, of a stationary forming-ring, and means for forcing the basket-clamps partially through said ring.

4. In a basket-forming machine, the combination with a basket-clamp and a mold for co-operation therewith, of a stationary forming-ring, through which the clamp and mold are forced, and means for actuating said clamp and mold.

5. In a basket-forming machine, the combination with a basket-clamp and a mold, of means for actuating the same, a clamping-ring adapted to engage with that portion of the basket between the hoops, and means independent of both the clamp and mold for the support of said ring.

6. In a basket-forming machine, the combination with mechanism for driving a double row of hoop-securing staples, of a basket-clamp, a mold, means for actuating the same, a clamping-ring adapted to engage with and hold the staves to the mold at a point between the two lines of staples, and means independent of both the clamp and mold for supporting said ring.

7. In a basket-forming machine, the combination with mechanism for driving a double row of hoop-securing staples, of a basket-mold, a pressure-plate coöperating therewith, and a clamping-ring arranged in a vertical plane between the staple-drivers, and means for forcing the pressure-plate and mold through said ring.

8. A basket-forming machine, comprising a plurality of laterally-fixed rotatable forming-rings, a mold, a pressure-plate adapted to engage the bottom of the basket-blank, and means for forcing the mold and pressure-plate through said rings.

9. A basket-forming machine, comprising a plurality of laterally-fixed forming-rings, a mold, a pressure-plate adapted to clamp the blank against the bottom of the mold, and means for forcing the mold and the pressure-plate through said rings.

10. A basket-forming machine, comprising a pressure-plate, means for exerting a constant pressure thereon, a laterally-fixed basket-forming ring, a basket-mold adapted to pass through said ring, and pressure-actuated devices exerting a force superior to that acting on the pressure-plate and serving to force the basket-blank and the pressure-plate through said ring.

11. In a basket-forming machine, a pair of basket-engaging elements, a fixed basket-forming ring for coöperation therewith, a pressure-cylinder connected to each element and one of such cylinders having a greater area



than the other, a pressure-supply with which the smaller cylinder is in constant communication, and a valve-controlled passage leading from said pressure-supply to the larger cylinder.

12. In a basket-forming machine, a pair of concentrically-disposed basket-engaging devices, concentrically-disposed pressure-cylinders, a pressure-supply with which both cylinders are in constant communication, a basket-mold adapted to cooperate successively with said basket-engaging devices, a pressure-cylinder for actuating said basket-mold, said pressure-cylinder being of an area greater than the combined area of the said two concentric cylinders, and a valve-controlled passage leading from said pressure-supply to the mold-actuating cylinder.

13. In a basket-forming machine, the combination with a basket-mold having a concaved bottom portion, of a yielding ejector-pin carried by said mold and normally projecting beyond the outer line of the mold, a crimp-forming plunger between which and the pin the basket-blank is primarily engaged, a yielding pressure-plate adapted to engage with the basket-blank after the formation of the crimp, and a stationary forming-ring through which both the pressure-plate and mold are forced.

14. In a basket-forming machine, the combination with a basket-mold having a concaved bottom portion, of a yielding ejector-pin carried by said mold and normally projecting beyond the outer line of the mold, a crimp-forming plunger between which and the pin the basket-blank is primarily engaged, means for exerting pressure on the plunger to effect the formation of a central crimp in the blank, a pressure-plate having its engaging surface normally disposed to the rear of the crimp-forming plunger, a laterally-fixed rotatable forming-ring, and means for forcing the mold successively into contact with the crimp-forming and pressure plate.

15. In a basket-forming machine, the combination with a basket-mold having a concaved bottom portion, of a yielding ejector-pin carried by said mold and normally projecting beyond the outer line of the mold, a

crimp-forming plunger between which and the pin the basket-blank is primarily engaged, a yielding pressure-plate adapted to engage with the basket-blank after the formation of the crimp, a pair of spaced forming-rings through which the pressure-plate and mold are forced with the basket-blank.

16. In a basket-forming machine, the combination with a reciprocatory basket-mold having a concaved bottom portion, of a basket-forming ring, a pressure-plate, a cylinder, a pressure-supply with which said cylinder is in constant communication, a piston disposed in the cylinder, a hollow piston-rod secured to the piston and to the pressure-plate, said hollow piston-rod forming an auxiliary cylinder in communication with the main cylinder, a plunger disposed within the auxiliary cylinder, a crimp-former carried by said plunger at a point in advance of the pressure-plate, and means for reciprocating the basket-mold to effect the successive engagement of the blank with the crimp-former, the pressure-plate and the forming-ring.

17. In a device of the class specified, two concentrically-disposed cylinders, each having a piston and piston-rod, the piston-rod of the larger cylinder serving as the smaller cylinder, basket-engaging devices carried by both of the piston-rods, and an auxiliary mold or form adapted to coact with said devices.

18. In a basket-forming machine, a frame, a stationary cylinder carried thereby, a piston in said cylinder having a piston-rod connected to the piston and extending through the opposite cylinder-heads, a carriage guided on the frame and connected rigidly to the opposite ends of said piston-rod, a shaft mounted in bearings in said carriage, a basket-mold carried by the shaft, and means for cooperating with the mold to effect the formation of a basket.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NORMAN E. BROWN.

Witnesses:

J. H. JOCHUM, Jr.,

FRANK S. APPLEMAN.