Nov. 1, 1938. J. D. REIFSNYDER 2,135,219

RECEPTACLE MAKING MACHINE

Original Filed Jan. 6, 1936 3 Sheets-Sheet 1

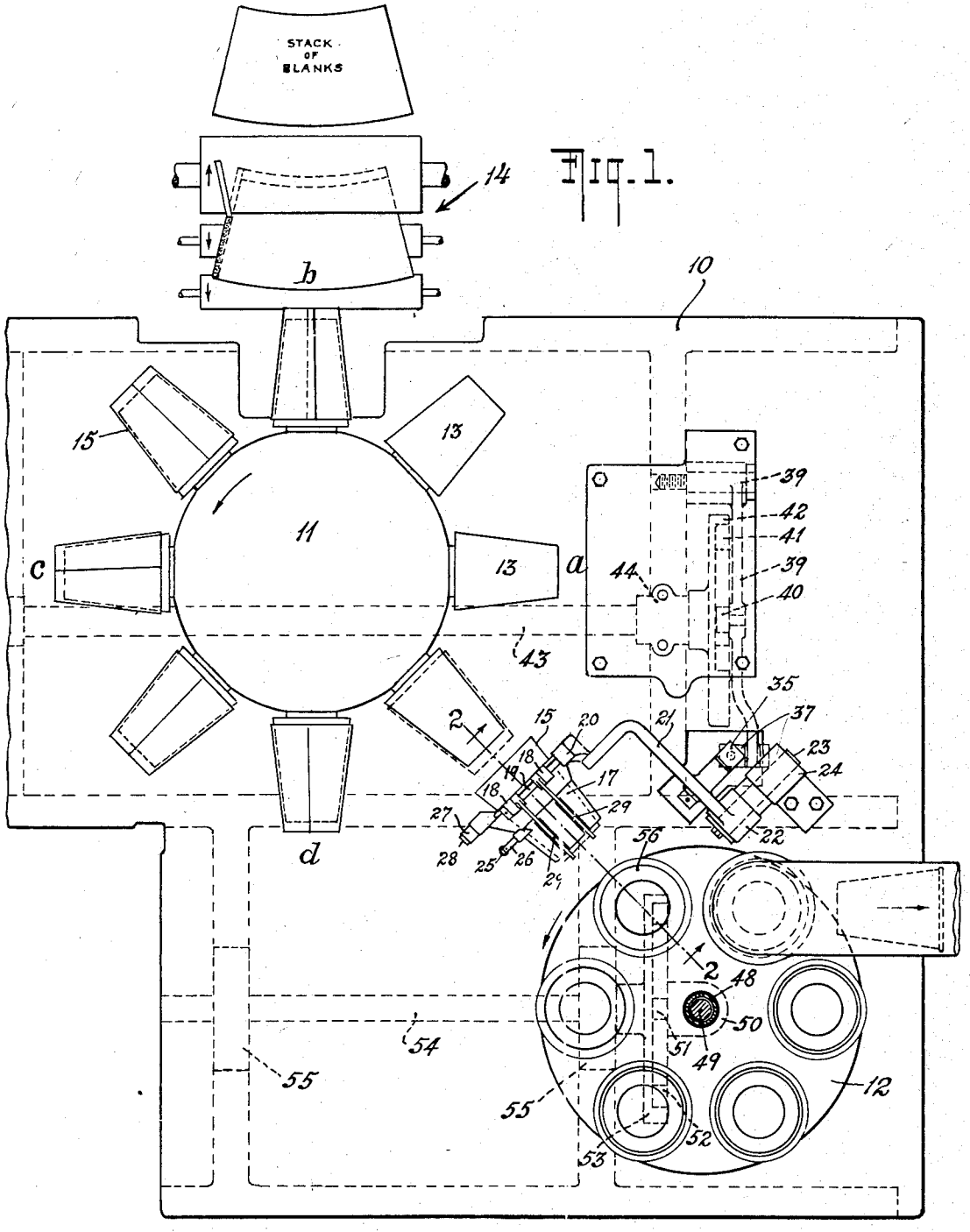



Fig. 1.

WITNESS

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Original Filed Jan. 6, 1936 3 Sheets-Sheet 2

Fig. 2.

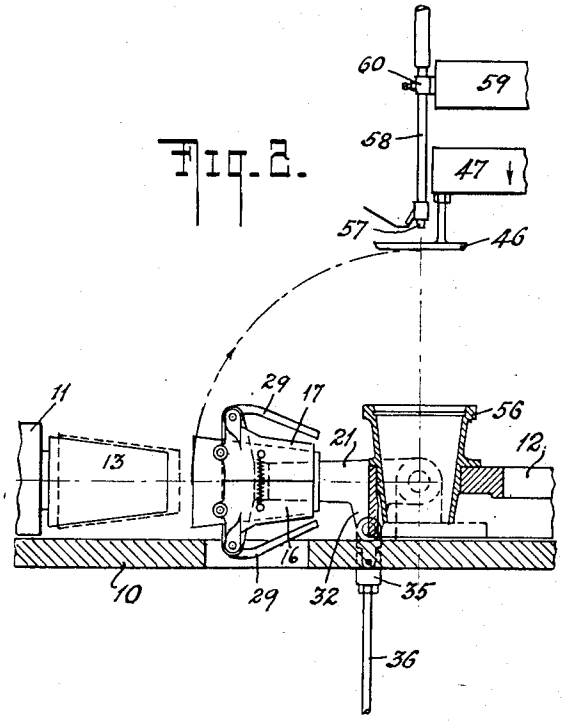



Fig. 3.

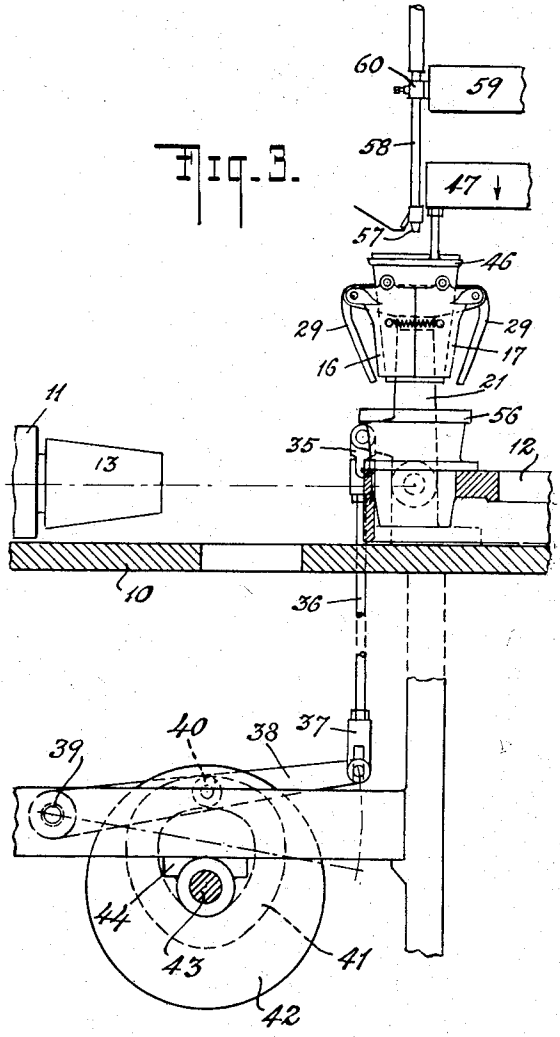
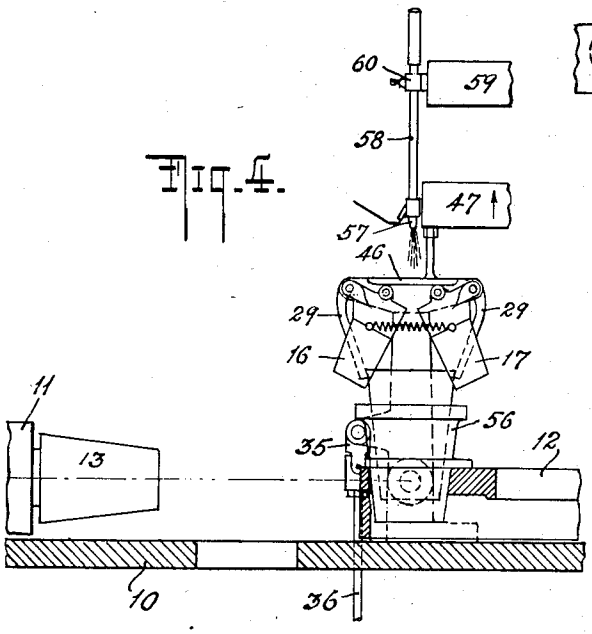



Fig. 4.




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RECEPTACLE MAKING MACHINE

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Fig. 5.

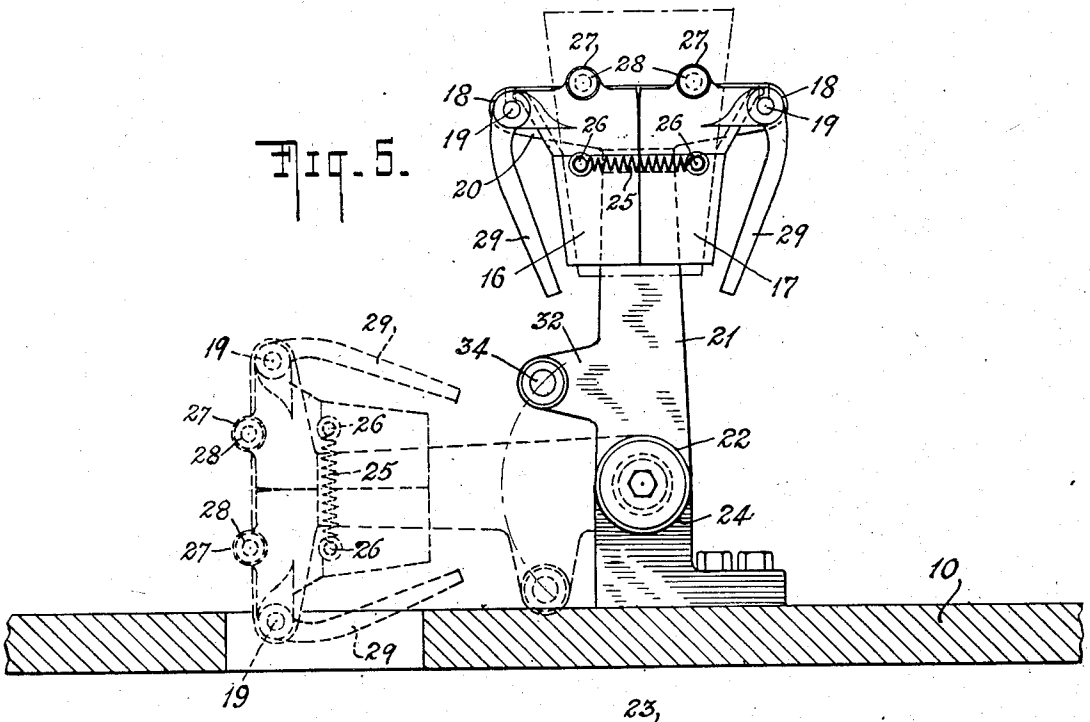
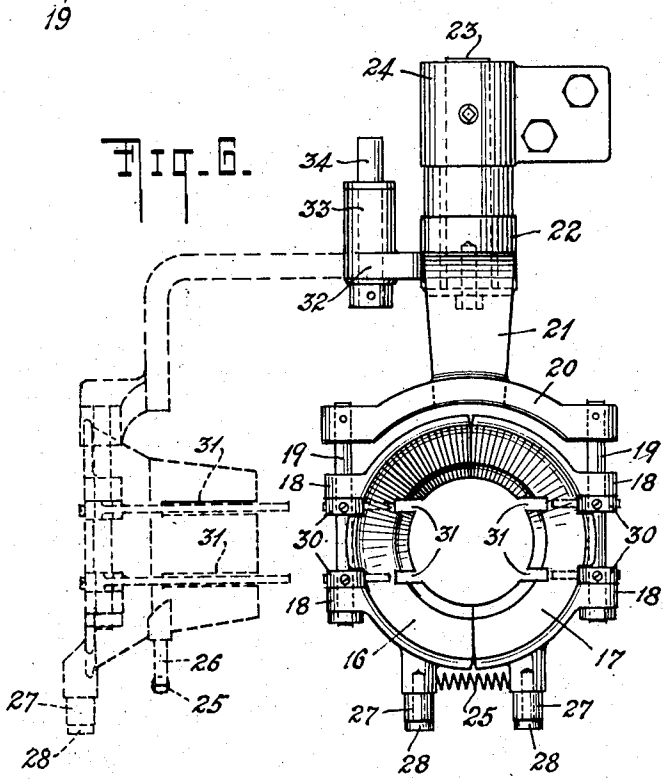



Fig. 6.




WITNESS

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Patented Nov. 1, 1938 2,135,219

# UNITED STATES PATENT OFFICE

2,135,219

## RECEPTACLE-MAKING MACHINE

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Application January 6, 1936, Serial No. 57,646
Renewed December 2, 1937

22 Claims. (Cl. 93—39.3)

This invention relates to new and useful improvements in machines for making receptacles and more particularly to a mechanism for transferring the receptacles from one part of such a machine to another during the course of their manufacture.

The invention has special application to that class of machines which are employed in the manufacture of cups for drinking and similar purposes from light, thin material, as for instance, paper. In one form of these machines, the cut blanks for the body and bottom of the cups are delivered to a revolving turret having outwardly projecting mandrels, which are positioned just above the main operating table of the machine and upon which the body and bottom blanks are assembled and secured together during the step-by-step movement of the turret. The partially completed cups are then transferred to female dies on a second revolving turret where, during the step-by-step movement of such turret, they are subjected to mechanism for curling the top edges of the cups and for forming grooves or shoulders in the bodies thereof when the cups are to be provided with covers. Heretofore, in transferring the cups from one turret to the other, it has been the practice to discharge the cups from the mandrels of the first turret into a curved chute which extended over and led to the dies carried by the second turret, by blasts of air when the mandrels of the first turret came into line with the chute during their rotational movement. It will be seen that this arrangement necessitated that the second or finishing turret be positioned below the main operating table of the machine, which complicated the construction of the machine and removed the operations being carried out on the finishing turret from the view of the operator, who usually stands on the opposite side of the machine near the body and bottom blank feeding mechanism. Another disadvantage of this arrangement is that the cups are liable to rest improperly in the dies after being dropped from the discharge end of the chute.

The object of the present invention, therefore, is to provide an improved transfer means which will properly and positively transfer the receptacles from one portion of a receptacle-making machine to another portion thereof, will enable the construction of such a machine to be simplified and will make the operation thereof more practical.

With the above and other objects in view, my invention consists in certain novel features in construction and in combinations and arrangements as more fully and particularly set forth in the following description and illustrated in the accompanying drawings, in which Fig. 1 is a plan view of a portion of a cup-making machine embodying my invention, the turrets and associated parts being shown in outline; Fig. 2 is a vertical section of a portion of the machine showing the transfer device in position to receive a cup from a forming mandrel of the first turret; Fig. 3 is a similar view in an advanced step showing the transfer device in position to deposit the cup into the female die of the second turret; Fig. 4 is a similar view showing the cup being discharged from the transfer device into the die of the second turret; Figs. 5 and 6 are enlarged front and top views, respectively, of the cup-carrying portion of the transfer mechanism showing in more detail the construction and arrangement of the parts thereof, its receiving position being illustrated by doted lines and its discharge position by full lines.

Referring more particularly to Fig. 1 of the drawings, the reference character **10** designates generally the portion of the main operating table of the cup-making machine on which the turrets **11** and **12** are rotatably mounted, such turrets being disposed substantially at the same level. A step-by-step rotating movement is imparted to each of the turrets by a Geneva mechanism common to machines of this type and not shown herein as it is not material to an understanding of the present invention, it being sufficient to state that the said movements of the turrets are synchronous with the operation of the several devices cooperating with such turrets for feeding the blanks and forming the cups.

The turret **11** is provided with mandrels **13** which project radially from its sides and are adapted to receive cup bottoms at the station herein designated as *a*, the base plate of the bottom delivering device being shown in outline to indicate its position with respect to the turret. After a mandrel has received a cup-shaped bottom at the station *a*, it is rotated through two steps of the turret and comes to rest at the station designated herein as *b*, where a body blank which has been fed to the turret by the mechanism designated generally as **14**, is wrapped around the mandrel and the previously mucilaged meeting edges thereof stuck together to form a cup body **15**, by mechanism not necessary to be shown or described herein. The mandrel carrying the bottom and body blanks is then moved through two steps of the turret and comes to rest

at the station *c*, bringing the unassembled blanks into line with a mechanism for performing the initial bottoming operation, namely, spinning the bottom edge portion of the body blank inwardly around the flange of the cup-shaped bottom and then as the turret further revolves, it brings said mandrel to the station *d*, where a mechanism is provided to spin the curled bottom edge portion of the cup body into close contact with the flange of the bottom so that the bottom will be tightly secured in position on the cup body. The mechanism for accomplishing the aforesaid operations are well known in the cup-making art and a further detailed description of their construction and operation is not necessary for a clear understanding of the present invention.

The next one-step rotation of the turret brings the mandrel carrying the partially completed cup 15 into position adjacent a transfer device and when in this position an air blast is delivered to blow the cup from the mandrel, the air passing through the mandrel, which may be of hollow construction or provided with air passages and impinging against the inner face of the bottom of the cup, thereby forcing the cup from the mandrel. The construction of the mandrel and the arrangement of the air lines with respect to the mandrel for accomplishing this purpose are well known in the cup-making art so that a more detailed explanation thereof is deemed unnecessary.

The discharged cup 15 is received in a substantially frusto-conically shaped hollow holding member of the transfer mechanism comprising two separable sections 16 and 17, which are pivotally supported at their outer ends on the shafts 19 so that such sections may be swung away from each other, each of said shafts extending through a pair of bearing supports 18 provided on each of the sections and being fixedly supported at one end upon an outer end of a cross bracket 20. The bracket 20 extends transversely to and is integral with the outer or upper end of a crank arm 21 which is provided at its other end with a hub 22 through which extends a stub shaft 23. A bearing 24 secured in any suitable manner to the table 10 as by means of bolts as indicated in the drawings, supports one end of the shaft 23, the shaft being fixed against rotational movement in such support by a stud bolt which extends through the bearing 24 and into such shaft. A sleeve which is positioned intermediate the hub 22 of the crank arm and the bearing 24 and a retaining washer which is secured to the outer end of the shaft 23 by means of a stud bolt and engages with the outer edge of the hub 22, serve to maintain the crank arm 21 in position on the shaft 23 and to prevent sliding movement of the same while it is rotating on the shaft 23 during the operation of the machine.

When the holding member is receiving a cup, which has been discharged from the first turret, it is in the position illustrated in Figs. 1 and 2 of the drawings and indicated by dotted lines in Figs. 5 and 6 of the drawings, the crank arm 21 thereof being in approximately parallel relation with the top surface of the table 10. Soon after the cup is deposited in said holding member, however, the latter is actuated to move it to a vertical position, as shown in Figs. 3, 5 and 6, the support 24 being so positioned on the table with respect to the finishing turret 12, that in this position of the holding member the cup 15 carried thereby is held directly above one of the female dies 56 provided in the finishing turret 12 so that when the sections 16 and 17 are swung outwardly away from each other, as will hereinafter be more fully explained, the cup will drop into the female die. The means for oscillating the holding member between its cup-receiving and cup-discharging positions comprises an extension 32 provided on the crank arm 21 intermediate its ends and on the outer end of which is supported a bearing sleeve 33 disposed parallelly with the stub shaft 23. Rotatably supported within the bearing 33 is a stub shaft 34 which is connected to a vertically disposed connecting rod 36 by a universal connection 35. The rod 36 is provided at its lower end with a universal connection 37, see Fig. 3, which connects such rod to one end of a cam lever 38 pivotally supported at its other end 39 on the frame of the machine. Supported intermediate the ends of the lever 38 is a cam roller 40 which is adapted to engage with a cam groove 41 provided in one surface of the disc 42 fixedly secured to a shaft 43. The shaft 43 is supported in bearings 44 secured to the frame of the machine and is operatively connected to the driving mechanism of the machine (not shown) from which it receives its rotational movement.

It will be apparent from the above, that as rotational movement is imparted to the shaft 43, disc 42 will rotate therewith and cause the lever 38, through the cam groove 41 and the cam roller 40, to oscillate up and down about its pivot 39 and thereby cause the crank arm 21, through the connecting rod 36, stub shaft 34 and extension 32, to oscillate on its shaft 23. When the cam disc 42 is in the position shown in Fig. 3 of the drawings, the cam groove 41 thereof and the coacting roller 40 hold the lever 38 and rod 36 in their uppermost or raised positions to hold the crank arm 21 in vertical position, thereby positioning the cup carried by the holding member over a female die in the finishing turret 12. As the disc 42, however, rotates from this position, the lever 38 and rod 36 will ride downwardly on the roller and cam groove, causing the crank arm 21 to pivot about its shaft 23 towards the turret 11 until the disc 42 has rotated through 180° from the position shown in Fig. 3, at which time the lever 38 and rod 36 will be in their lowermost position and the crank arm 21 will have moved to an approximately horizontal position so that the holding member is in position to receive a cup from the mandrel 13 of the turret 11. Continued rotation of the disc 42 will again raise the holding member into vertical position over the turret 12.

During the oscillating movements of the crank arm 21 and while the cup-holding member is in position to receive a cup from a mandrel 13 of the turret 11, the pivotally supported sections 16 and 17 of such member are held together in their closed position by a tension spring 25 which is anchored at its opposite ends upon a pair of projecting pins 26, each of which is supported in a lug formed on each of the sections 16 and 17. When positioned together in their closed or normal position, the sections 16 and 17 are so formed that they provide an upper frusto-conically shaped portion for guiding the cup discharged from the mandrel into the holder and whose walls taper outwardly at a greater angle than the walls of the cup 15 so that the diameter of the outer end thereof is materially greater than the diameter of the mouth portion of the cup and the interior surface thereof does

not contact with the exterior surface of the cup when the latter is positioned in the holding member. The lower portions of the sections 16 and 17 provide a frusto-conically shaped seat for the cup body, said seat having a diameter where it meets the lower end of the upper guide portion approximately the same as the cup 15 at a point approximately midway of the latter's length and then tapering downwardly toward the axis of such seat at the same angle as the exterior surface of the lower half of the cup body so that the lower half of the cup body snugly seats in the lower portion of the holding member.

When the holding member is in a vertical position over the turret 12, the pivotally supported sections 16 and 17 are swung away from each other against the tension of the spring 25 by an actuating shoe 46 which engages with a pair of rollers 27, one of which is provided on each of the sections 16 and 17, the roller of each section being mounted upon a stud bolt 28 which is secured in position on an outwardly extending lug integral with such section. The shoe 46 is supported on a cross head 47 (Figs. 2 and 3) which is secured at its inner end to a sleeve 48 slidably mounted on a vertical shaft 49 which is disposed axially of the turret 12, as shown in Fig. 1. The sleeve 48 is provided at its lower end with a shoe 50, having a roller 51 which engages with an internal cam 52 provided in the cam disc 53. The disc 53 is fixedly secured to one end of a horizontally disposed shaft 54 supported in bearings 55 and is suitably connected to the driving mechanism of the machine by gears (not shown). Thus, as the cam disc 53 rotates, the sleeve 48 is caused to slidably move up and down on the shaft 49, through the cam 52, roller 51 and shoe 50, giving the actuating shoe 46 a reciprocating movement in a vertical direction. The timing of the mechanism is such that the actuating shoe 46 moves downwardly during the raising of the holding member into vertical position so that when the holding member has reached the end of its upward movement and is in its discharge position, the actuating shoe 46 is positioned just above the pair of rollers 27, as shown in Fig. 3. As the actuating shoe 46 continues its downward movement to complete its stroke, it will engage the rollers 27 and force the sections 16 and 17 downwardly about their supporting shafts 19 against the tension of the spring 25, thereby causing such sections to move into opened position and releasing the cup held thereby, as shown in Fig. 4.

The sections 16 and 17 are each provided with a pair of downwardly extending guide fingers 29 which are supported at their upper ends on the shaft 19 intermediate the bearing supports 18 of the section by means of the hubs 30 integrally formed therewith. The guide fingers 29 are each fixed against rotation on the shaft 19 by means of a set screw which extends through the hub 30 thereof and engages the shaft 19. As shown in Fig. 5, each of the fingers 29 extend inwardly towards the bottom end of its associated section and downwardly to a point slightly below the bottom end of such section. Each of the sections 16 and 17 is provided at its lower or seat portion with a pair of slots 31 which extend longitudinally of such sections and are in alignment with the fingers 29 so that when the sections 16 and 17 are moved into opened position by the actuating shoe 46, the fingers enter such slots. The fingers 29 extend inwardly a sufficient amount so that as the cup drops downwardly due to the opening of the sections 16 and 17, the lower ends thereof, which extend through the slots 31, function to guide the cup in its movement towards the female die 56 of the finishing turret 12, as shown in Fig. 4, and assure a proper seating of the cup in such die.

After the sections 16 and 17 have been opened to release the cup, a blast of air is delivered to the interior thereof to speed its motion in leaving the holder and to prevent any possibility of the cup failing to pass by the ends of the guide fingers 29. The blast of air is delivered from a nozzle 57 provided at the lower end of an air pipe 58 and disposed just above the holding member when the latter is in its discharge position above the turret 12 so that the blast of air is diverted along the central axis of the cup carried by the holding member and against the bottom of such cup. The air pipe 58 is supported by a bracket 60 attached to one end of a cross arm 59 having its other end secured to the stationary shaft 49 of the turret 12 and is connected by an air hose to a suitable source of supply (not shown).

From the above detailed description, it is thought that the construction and operation of my transfer mechanism will be clearly understood and it will be observed that it enables me to simplify the construction of cup-making machines because the finishing turret can now be placed on the same level as the main operating table and to make the operation of this type of machine more practical as the final curling and grooving operations on the upper or mouth portions of the cups in a cup-making machine embodying my invention will be visible to the operator at all times. While in the above description and in the drawings I have disclosed a preferred embodiment, it is apparent that numerous modifications may be made in the construction and arrangement of my invention without departing from the scope thereof as covered by the appended claims, whose purpose it is to include and embrace any such modifications or equivalents.

I claim:

1. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means provided with a seat adapted to receive the cup as formed on said mandrel, and means for delivering a cup discharged from said mandrel to said seat, said means comprising a pivoted arm, a cup holder having separable members carried by said pivoted arm, means for oscillating said pivoted arm to bring said cup holder into position for receiving a cup discharged from said mandrel and to bring said cup holder into position over said seat, and means to operate the separable members of said cup holder to discharge the cup carried by the cup holder into said seat.

2. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means provided with a seat adapted to receive the cup as formed on said mandrel, and means for delivering a cup discharged from said mandrel to said seat, said means comprising a pivoted arm, a cup holder having separable members carried by said pivoted arm, means for oscillating said pivoted arm to bring said cup holder into position for receiving a cup discharged from said mandrel and to bring said cup holder into position over said seat, means to operate the separable members of said cup

holder to discharge the cup carried by the cup holder into said seat and means for directing an air blast into the released cup to speed its motion in leaving the cup holder.

3. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means provided with a seat adapted to receive the cup as formed on said mandrel, and means for delivering a cup discharged from said mandrel to said seat, said means comprising a pivoted arm, a cup holder having separable members carried by said pivoted arm, means for oscillating said pivoted arm to bring said cup holder into position for receiving a cup discharged from said mandrel and to bring said cup holder into position over said seat, means to operate the separable members of said cup holder to discharge the cup carried by the cup holder into said seat and means carried by said cup holder for guiding the released cup into proper seating position in said seat.

4. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means provided with a seat adapted to receive the cup as formed on said mandrel, and means for delivering a cup discharged from said mandrel to said seat, said means comprising a pivoted arm, a cup holder having separable members carried by said pivoted arm, means for oscillating said pivoted arm to bring said cup holder into position for receiving a cup discharged from said mandrel and to bring said cup holder into position over said seat, means to operate the separable members of said cup holder to discharge the cup carried by the cup holder into said seat, means for directing an air blast into the released cup to speed its motion in leaving the cup holder, and a plurality of downwardly extending fingers carried by said cup holder for guiding the downwardly traveling cup into proper seating position in said seat.

5. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means adapted to receive the cup as formed on said mandrel and means for delivering a cup discharged from said mandrel to said receiving means, said delivering means comprising a pivoted arm, a cup holder having separable sections carried by said pivoted arm, a spring carried by said sections for normally maintaining the sections in closed position to form a seat for the cup, means for oscillating said pivoted arm to bring said cup holder into position for receiving a cup discharged from said mandrel and to bring said cup holder into position over said receiving means and means to open said separable sections against the tension of said spring to deliver the cup carried by the sections to said receiving means.

6. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means adapted to receive the cup as formed on said mandrel and means for delivering a cup discharged from said mandrel to said receiving means, said delivering means comprising a pivoted arm, a pair of spaced shafts carried by said pivoted arm, a cup holder section pivotally supported on each of said shafts, a spring carried by said sections for normally maintaining the sections in position to form a seat for a cup, means for oscillating said pivoted arm to bring said sections into position for receiving a cup discharged from said mandrel and to bring said sections into position over said receiving means, and means adapted to engage said sections and rotate them downwardly about their supporting shafts against the tension of said spring whereby the cup carried by said sections is released and drops to said receiving means.

7. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means adapted to receive the cup as formed on said mandrel and means for delivering a cup discharged from said mandrel to said receiving means, said delivering means comprising a pivoted arm, a pair of spaced shafts carried by said pivoted arm, a cup holder section pivotally supported on each of said shafts, a spring carried by said sections for normally maintaining the sections in position to form a seat for a cup, means for oscillating said pivoted arm to bring said sections into position for receiving a cup discharged from said mandrel and to bring said sections into position over said receiving means, an actuator adapted to rotate said sections downwardly about their supporting shafts against the tension of said spring whereby the cup carried by said sections is released and drops to said receiving means, and a plurality of downwardly extending fingers fixedly supported on said shafts and adapted to guide the cup into proper position on said receiving means, said sections being provided with longitudinally extending slots into which said fingers enter when said sections are rotated downwardly by said actuator.

8. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of means adapted to receive the cup as formed on said mandrel and means for delivering a cup discharged from said mandrel to said receiving means, said delivering means comprising a pivoted arm, a cup holder carried by said pivoted arm adapted to receive a cup from the mandrel and operable to release such cup, means for oscillating said arm about its pivot to bring said cup holder into position for receiving a cup from said mandrel and to bring said cup holder into discharge position with relation to said receiving means, discharging means operable on said cup holder to cause the latter to release the cup and means coacting with said discharging means to cause the same to discharge the cup from said cup holder just after the latter has been brought into discharge position.

9. An apparatus such as set forth in claim 8, wherein said cup holder comprises a plurality of separable members, and spring means for holding said members in position to carry a cup, said discharge means being adapted to move said separable members into discharging position against the tension of said spring means.

10. An apparatus such as set forth in claim 8, wherein said cup holder comprises two separable sections formed to provide a frusto-conically shaped seat for a cup when in closed position and spring means normally holding said sections in

closed position, said discharge means being adapted to separate said sections against the tension of said spring means, thereby releasing the cup carried by said sections.

11. An apparatus such as set forth in claim 8, wherein said cup holder comprises two separable sections formed to provide a frusto-conically shaped seat for a cup when in closed position and being pivotally supported at their outer ends on said pivoted arm and spring means normally holding said sections in closed position, said discharge means being adapted to engage the upper end portions of said sections and pivot them downwardly away from each other against the tension of said spring means, thereby releasing the cup carried by said sections.

12. An apparatus such as set forth in claim 8, wherein said cup holder comprises two separable sections formed to provide a frusto-conically shaped seat for a cup when in closed position and being pivotally supported on said pivoted arm and spring means normally holding said sections in closed position, and said discharge means includes a reciprocating actuator adapted to engage the upper end portions of said sections on its downward stroke and pivot them downwardly away from each other against the tension of said spring means, thereby releasing the cup carried by said sections.

13. An apparatus such as set forth in claim 8, wherein said cup holder comprises two separable sections formed to provide a frusto-conically shaped seat for a cup when in closed position and being pivotally supported on said pivoted arm and spring means normally holding said sections in closed position, said discharge means including an actuator mounted for reciprocating motion in a vertical direction and adapted to engage the upper end portions of said sections on its downward stroke and pivot them downwardly away from each other against the tension of said spring means and said means coacting with said discharging means, including cam mechanism operatively connected to said actuator and adapted to move the latter on its downward stroke while the cup holder is being brought into discharge position.

14. An apparatus such as set forth in claim 8, wherein said cup holder comprises two separable sections formed to provide a frusto-conically shaped seat for a cup when in closed position and being provided with longitudinally extending slots in the lower end portions thereof and spring means normally holding said sections in closed position, said discharge means being adapted to separate said sections against the tension of said spring means to release the cup carried thereby, and a plurality of fixed guide fingers adapted to enter the slots in said sections during the separation of the latter and guide the cup in its downward movement.

15. An apparatus such as set forth in claim 8, wherein said cup holder comprises a plurality of pivoted sections and spring means for holding said members in position to carry a cup, and said discharge means includes an actuator mounted for reciprocating motion in a vertical direction and adapted to engage the upper end portion of said sections on its downward stroke and pivot them downwardly away from each other against the tension of said spring means, and including stationary means adapted to deliver an air blast into the released cup to speed it in leaving the opened sections.

16. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passage through which a blast of air is delivered to discharge a cup therefrom, of a container spaced from said mandrel and adapted to receive the cup as formed on said mandrel, a transfer mechanism adapted to catch the cup discharged from said mandrel and carry the same into position to be discharged into said container and means for causing said transfer mechanism to discharge the cup carried thereby into said container when it has reached its discharge position.

17. In a machine for making paper cups or the like, the combination with a mandrel useful in the formation of a cup and having an air passgae through which a blast of air is delivered to discharge a cup therefrom, of a container spaced from said mandrel and adapted to receive the cup as formed on said mandrel, a transfer mechanism adapted to catch the cup discharged from said mandrel and carry the same into position to be discharged into said container, means for causing said transfer mechanism to discharge the cup carried thereby into said container when it has reached its discharge position and means for directing an air blast into the discharged cup to speed its motion in leaving the transfer mechanism.

18. In a machine for making paper cups or the like, the combination with a rotatable turret having mandrels useful in the formation of cups and each of which is provided with an air passage through which a blast of air is delivered to discharge a cup therefrom, of means adapted to receive the cups as formed on said mandrels, transfer mechanism adapted to catch the cups successively discharged from the mandrels and carry the same into position to be discharged into said receiving means and means adapted to cause said transfer mechanism to discharge the cup carried thereby every time it arrives at its discharge position.

19. In a machine for making paper cups or the like, the combination with a rotatable turret having a tapered mandrel useful in the formation of tapered cups and provided with an air passage through which a blast of air is delivered to discharge a cup therefrom and having cup forming mechanisms arranged therearound to feed cup body and cup bottom blanks to such mandrel and form them into tapered cups on such mandrel, of periodically operating mechanism mounted in such machine in spaced relation to said mandrel, a tapered container adapted to receive a cup from said mandrel and rotatable means supporting said container and arranged to move said container along an arcuate path into position in the path of discharge of said mandrel with its longitudinal axis substantially in alignment with the longitudinal axis of said mandrel to directly catch a cup discharged from said mandrel by a blast of air and to carry said container with the cup deposited therein back over the same arcuate path into operative association with said periodically operating mechanism.

20. In a machine for making paper cups or the like, the combination with a rotatable turret having a tapered mandrel useful in the formation of tapered cups and provided with an air passage through which a blast of air is delivered to discharge a cup therefrom and having cup forming mechanisms arranged therearound to feed cup body and cup bottom blanks to such mandrel and form them into tapered cups on such mandrel, of a cup forming device provided in such machine in

spaced relation to said rotatable turret and said mandrel, a tapered container adapted to receive a cup from said mandrel, rotatable means supporting said container and arranged to move said container into position in the path of discharge of said mandrel with its longitudinal axis substantially in alignment with the longitudinal axis of said mandrel to directly catch a cup discharged from said mandrel by a blast of air and to carry said container with the cup deposited therein into operative association with said cup forming device, and means to discharge the cup from said container.

21. In a machine for making paper cups, the combination defined in claim 20, in which the means for discharging the cup from the container is disposed at the end of the cycle of movement of said rotative means and includes means for directing a blast of air against the cup and a reciprocating member mounted for movement relative to said air directing means and adapted to release a cup from the container.

22. In a machine for making paper cups or the like, the combination of a turret having a tapered mandrel useful in the formation of tapered cups and provided with an air passage through which a blast of air is delivered to discharge a cup therefrom, said turret being intermittently rotatable and adapted during such intermittent movement to bring said mandrel to a pause before each of a number of stations including a discharge station arranged therearound, periodically operating mechanism mounted in said machine in spaced relation to said turret and mandrel, a tapered container adapted to receive a cup from said mandrel, and intermittently rotatable means supporting said container and arranged to move said container along an arcuate path into the path of discharge of said mandrel with its longitudinal axis substantially in alignment with the longitudinal axis of said mandrel at the discharge station of said turret to bring said container to a pause before the mandrel at the time that a discharge blast of air is delivered therethrough so as to enable said container to directly catch a cup discharged from said mandrel and to carry the same with the cup deposited therein into operative association with said periodically operating means.

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