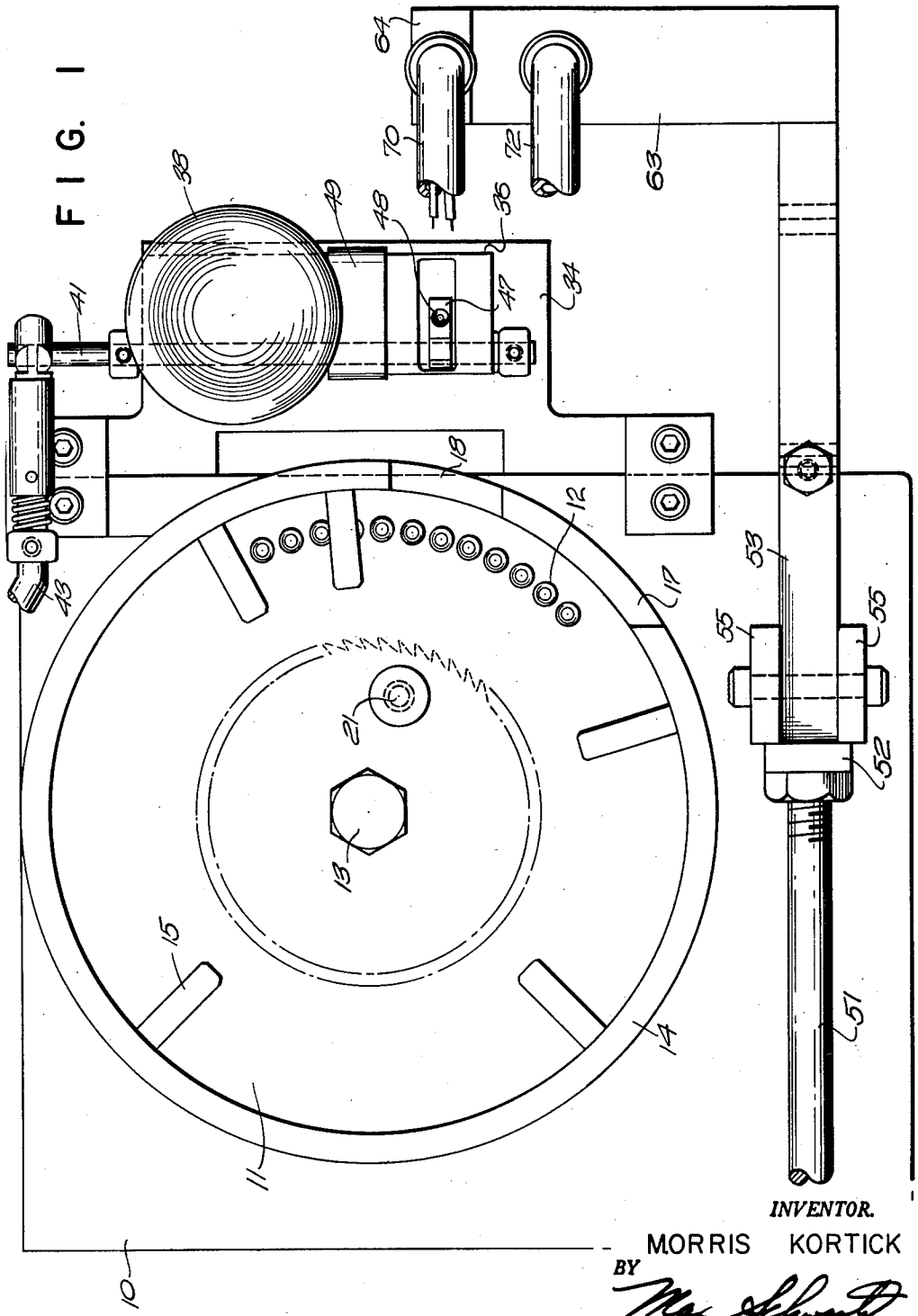
July 14, 1964 M. KORTICK 3,140,972

SEMI-AUTOMATIC ORNAMENT GLUING MACHINE

Filed Aug. 31, 1960 4 Sheets-Sheet 1

FIG. 1



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SEMI-AUTOMATIC ORNAMENT GLUING MACHINE

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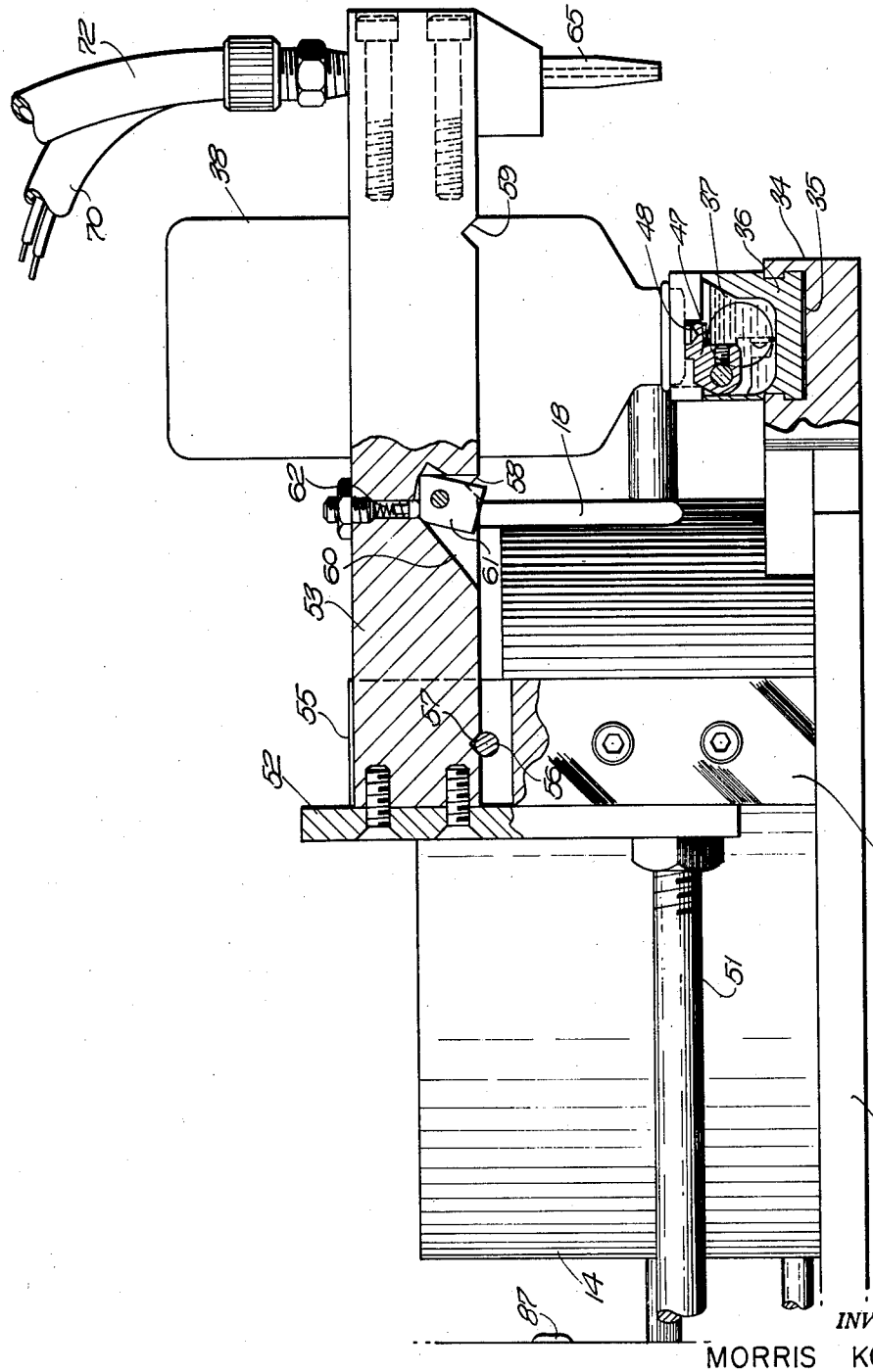


FIG. 2

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SEMI-AUTOMATIC ORNAMENT GLUING MACHINE

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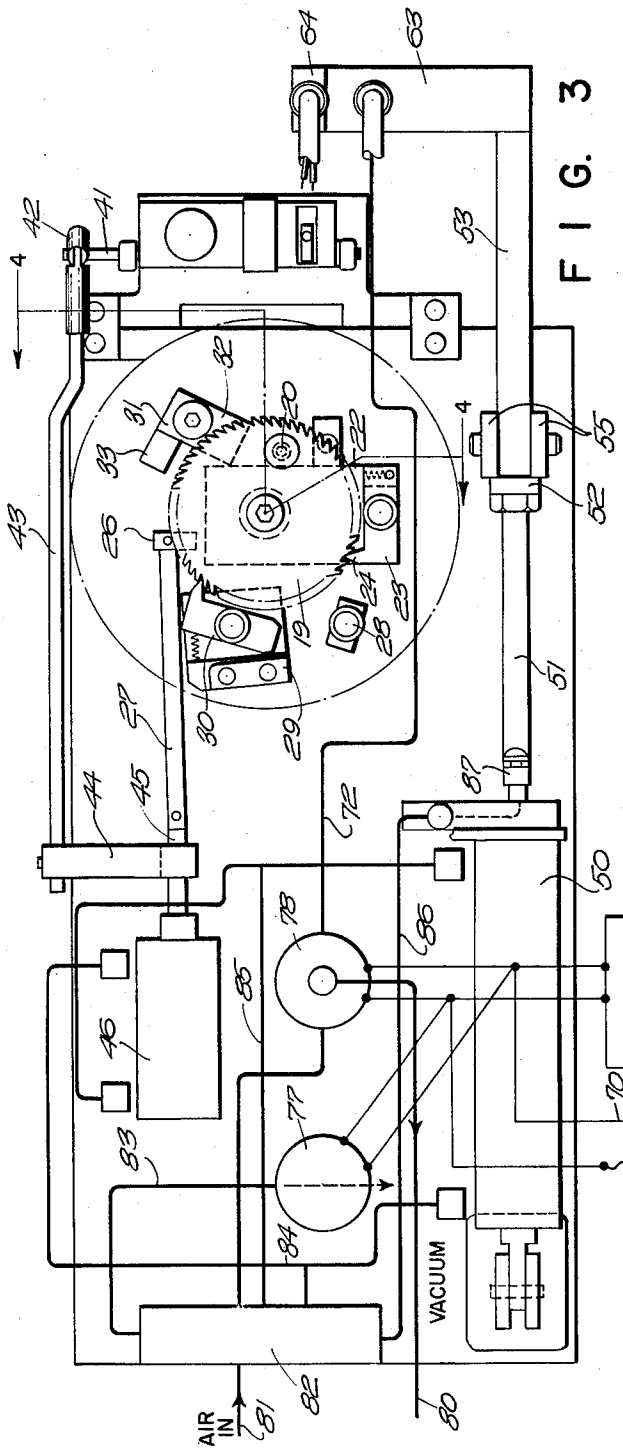


FIG. 3

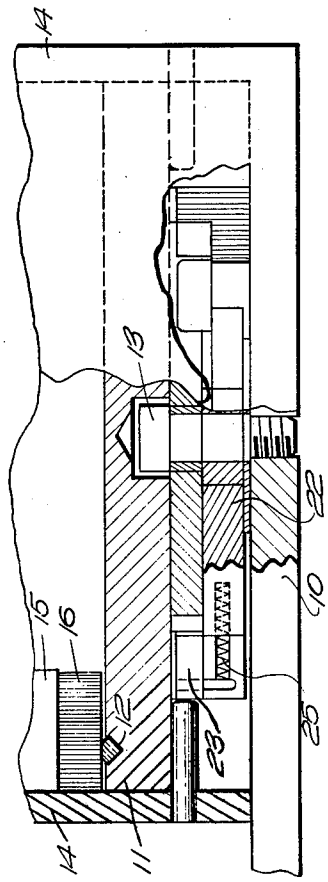


FIG. 4

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SEMI-AUTOMATIC ORNAMENT GLUING MACHINE

Filed Aug. 31, 1960 4 Sheets-Sheet 4

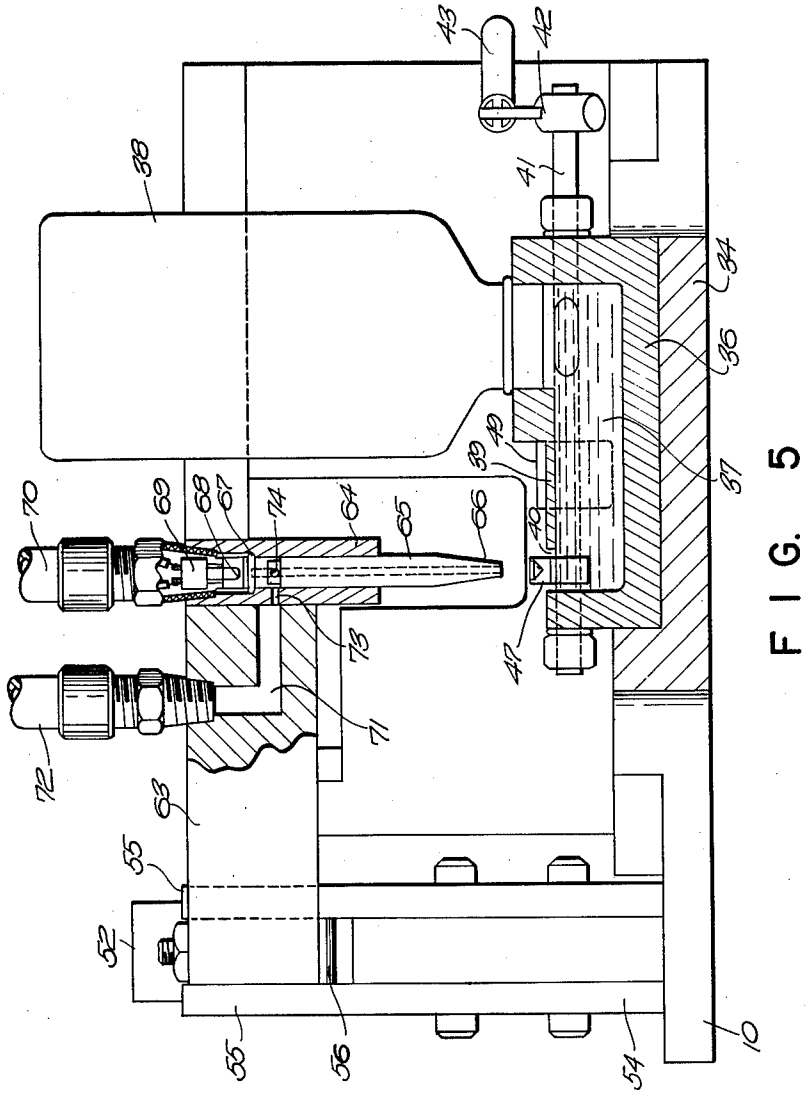


FIG. 5

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United States Patent Office 3,140,972 Patented July 14, 1964

3,140,972

SEMI-AUTOMATIC ORNAMENT GLUING MACHINE

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Filed Aug. 31, 1960, Ser. No. 53,089
31 Claims. (Cl. 156—566)

My present invention relates to the jewelry art and more particularly to a semi-automatic machine for gluing ornamental stones such as rhinestones into prepared settings.

The principal object of the present invention is to provide a semi-automatic machine for eliminating most of the manual labor heretofore required in gluing ornaments on articles of jewelry.

Another object of the present invention is to provide a semi-automatic gluing machine which materially speeds the gluing operation by preparing the ornament or stone and the glue prior to assembly with the article.

A further object of the present invention is to provide a semi-automatic machine which will glue the rhinestones into position without spreading excess glue on to the article of jewelry and thus saving a cleaning operation.

Another object of the present invention is to provide a semi-automatic gluing machine which is simple in construction and operation and readily adaptable to many variations including multiple assemblies.

With the above and other objects and advantageous features in view my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following in conjunction with the accompanying drawings and more particularly defined in the appended claims.

In the drawings,

FIG. 1 is a plan view of the operating portion of the machine embodying my invention.

FIG. 2 is a side elevation thereof.

FIG. 3 is a plan view, partially diagrammatic and partially broken away of the operating portion and the control and drive portions.

FIG. 4 is an enlarged section on line 4—4 on FIG. 3.

FIG. 5 is a front elevation, partially in section of the operating portion.

Jewelry ornaments such as rhinestones are held in stamped settings with prongs that are bent over in a manner similar to the settings of real diamonds. However, a great deal of the costume and other types of ornaments are cast. In such constructions a tapered opening is cast for each rhinestone which must be glued into the opening. For a great many years this gluing operation has been performed manually. The operator deposits a measured drop of glue into the opening, picks up the rhinestone with a pair of tweezers right side up and deposits the rhinestone into the opening. Many of the pins and brooches and other ornaments require 15 or 20 stones to each piece. It can well be appreciated that the manual assembly is slow and costly. Where a great deal of production is required hundreds of girls are sometimes hired for the sole purpose of gluing rhinestones into pieces of costume jewelry.

The present invention provides a machine which eliminates most of the slow laborious labor required in the gluing operation, removes the guesswork from the amount of glue to be placed in the opening and provides for a much more rapid and cleaner operation. The machine of the present invention is only semi-automatic because it still requires that the operator hold the article of jewelry in position for the setting of the stone. However, it can easily be rendered completely automatic if there is to be a large volume of any one particular design.

This feature will be apparent after the description of the operation of the machine. Also, the machine has been illustrated for gluing one rhinestone at a time. This is for illustrative purposes only. The machine can readily be adapted to glue a multiplicity of stones simultaneously.

In handling rhinestones one of the most difficult problems is the positioning of the tiny stone in right side up position for proper feeding. The present invention utilizes the hopper feed principle shown in my copending application entitled Automatic Ornament Setting Machine, Serial No. 845,204, filed October 8, 1959, and in my copending application entitled Automatic Finding Assembly Machine, Serial No. 43,783, filed July 19, 1960, now Patent No. 3,099,068. These applications utilize a rotating plate having openings which hold a rhinestone in one position only. This plate is made the bottom of a hopper holding a large number of stones. Thus the rotating plate always presents a stone in right side up position to an operating head.

Referring more in detail to the drawings, the machine of the present invention is mounted on a rectangular base **10** with the stone handling and operating portion mounted at the front of the base **10** as shown in FIG. 3 and the control and drive portions mounted to the rear of the base **10**. The stone handling and operating portion includes the hopper and hopper drive illustrated in FIGS. 1, 2, 3 and 4. The hopper comprises a plate **11** having a plurality of stone holding openings **12** extending adjacent the circumference thereof. The plate is rotatably mounted on a pivot post **13** which is mounted in the base **10**, see FIG. 4. The hopper wall comprises a cylindrical member **14** which slides over the plate and rests on the base. The hopper wall is provided with a plurality of spaced radial wall portions **15** having brushes **16** at their bottom edges contacting the upper surface of the plate **11** for properly positioning the rhinestones in the openings **12** in the manner more fully disclosed in my copending applications above referred to. Viewing FIG. 1, the upper right hand quarter of the cylinder **14** is provided with a lower portion **17** which permits movements of the carrying arm hereinafter to be described. Adjacent the portion **17** is a gap **18** which permits entry of the pickup head hereinafter to be described.

Rotation of the plate **11** is clockwise and is provided by the mechanism mounted beneath the plate and shown in FIGS. 3 and 4. A ratchet wheel **19** is mounted on the pivot pin **13** and is provided with a centering opening **20**. The plate **11** is provided with a depending pin **21** which enters the opening **20** to ensure the alignment of one of the stone holding openings **12** with the movement of the pickup head through the gap **18**. Beneath the ratchet wheel **19** is a rectangular block **22** also pivoted on the pin **13**. Viewing FIG. 3, the lower end of the block is provided with a pawl **23** pivotally mounted on the block **22** and having a tapered finger **24** which engages the peripheral teeth of the ratchet wheel **19**. The pawl is held in yielding engagement with the ratchet wheel by the spring **25**, FIG. 4. The opposite end of the block **22** is provided with an extended arm **26** to which the operating arm **27** is pivotally attached. When the arm **27** is reciprocated it will force the block **22** to pivot back and forth around the pivot pin **13**. This will cause the pawl **23** to move the ratchet wheel in a clockwise direction carrying the plate **11** with it. A small block **28** is fastened to the base **10** forwardly of the pawl **23** to act as a stop, so that the block **22** will move in a clockwise direction only so far and no further. This motion is equivalent to the movement of three of the stone openings **12** on the plate **11**. The plate **11** is provided with a number of openings which will not divide by three. For example **56** openings may be provided. This means that each opening must make three revolutions before it is again

positioned in alignment with the pickup head. This ensures that when the opening is thus aligned a stone will be positioned therein in right side up position and the machine will not miss.

Moving clockwise around the ratchet wheel **19** and just beyond the stop member **28** is a block **29** secured to the base **10** and beneath the plate **11** on which a pawl **30** is pivoted, the pawl **30** also engaging the teeth on the ratchet wheel **19**. This pawl **30** is a stop element which prevents rearward movement on the ratchet wheel **19** when the pawl **23** is being swung counterclockwise. On the other side of the wheel **19** is a second stop block **31** which is generally L-shaped and pivotally mounted on the base **10**. The second stop block is provided with a portion **32** which is in the path of forward motion of the block **22**. When the block **22** is feeding it engages the portion **32** and pivots it until the other end **33** clamps on to the teeth on the ratchet wheel. At high speed this prevents overriding and ensures the stopping of the plate **11** in alignment with the pickup head.

The glue dispenser is mounted forwardly of the hopper feed as shown in FIGS. 1, 2, 3 and 5. The base **10** is provided with a short forwardly extending portion **34** having a transverse dovetail groove **35**. A block **36** is slidably mounted in the groove and locked in place by a suitable set screw (not shown). As can be seen in FIG. 5, the block **36** is pushed in from the right of the portion **34** until it abuts the solid end of the groove to the left to properly position the gluing dispenser. The block **36** constitutes a glue reservoir **37**. The container of glue **38** is inverted to the right as shown in FIG. 5 so that the glue enters the reservoir **37** and fills the portion to the left. The portion to the left is provided with a cover **39** having an opening or slot **40**. A shaft **41** extends through the block **36** adjacent the upper edge as shown in FIGS. 1 and 5. The outer end of the shaft is provided with an arm **42** extending at right angles thereto to which a detachable operating arm **43** is attached. The operating arm **43** runs parallel to the arm **27** as shown in FIG. 3, and at the rear end thereof is connected by a transverse bar **44** to a piston rod **45** which operates the arm **27**. The piston rod **45** is connected to a piston that is slidably mounted in a fluid cylinder **46**. With this construction the arms **27** and **43** operate simultaneously. Reciprocation of the arm **43** will cause a oscillating movement of the shaft **41**. Adjacent the other end of the shaft **41**, is a dipper **47** having a conical opening **48**. The opening **48** is of the same angle and shape as the bottom of a rhinestone. However, the depth of the opening **48** is equal to one half of the height of the bottom portion of a rhinestone. As shown in FIG. 2 when the arm **43** moves forwardly to rotate the shaft **41** the dipper **47** moves through an angle of 90 degrees into the glue reservoir **37**. When the arm **43** moves in the opposite direction the shaft **41** is rotated in the opposite direction and the dipper **47** turns upwardly with the opening **48** filled with glue. The glue level in the reservoir **37** is maintained from the bottle **38**. If the glue is extremely heavy it can be force fed by putting an opening in the top of the bottle as viewed in FIG. 5 and forcing air into the bottle. Various devices for ensuring a proper flow of glue from this type of dispenser can be used. An auxiliary sliding cover **49** may be positioned on the cover **39** for closing the reservoir slot **40** when the machine is not in use to prevent the glue from drying out.

The pickup on the rhinestones is provided by the construction shown to the right in FIG. 1 and is also illustrated in FIGS. 2, 3 and 5. A cylinder **50** is provided with an operating piston rod **51** which is attached at right angles to the bottom of a vertical bar **52**. The upper end of the bar **52** is bolted to the end of an elongated operating arm **53**. Mounted on the base **10** is a post **54** which comprises at its upper end spaced bearing arms **55**. The operating arm **53** slides between the arms **55**. A

fixed shaft **56** extends transversely between the arms **55** so that the bottom of the arm **53** rides on the shaft **56** as shown in FIGS. 2 and 5. With this arrangement reciprocation of the piston rod **51** will cause reciprocation of the bar **53** on the shaft **56**. The bottom edge of the arm **53** is provided with a transverse V-shaped groove **57** adjacent its rear end. A second transverse V-shaped groove **58** is positioned intermediate the ends and a third V-shaped groove **59**, slightly deeper than the grooves **57** and **58** is positioned towards the front end. When the bar **53** is reciprocated there will be a drop at each groove in both forward and backward movements. However, in back of the central groove **58** is a slot **60** in which a small block **61** is pivotally mounted under the tension of the spring **62**. As can be seen in FIG. 2 when the bar **53** is reciprocated rearwardly the block **61** will fill the groove **58** and allow it to ride over the shaft **56** without dropping. However, on the forward movement the block **61** will be kicked rearwardly and will allow the shaft **56** to enter the groove **58**. Since the device operates at extremely high speeds and the groove **58** is not required during the rearward movement of the arm **53**, the above construction reduces unnecessary noise, vibration and wear at this point.

Mounted at the forward end of the arm **53** and at right angles thereto is a block **63**. The free end of the block **63** is provided with a depending block **64** having a vertical opening therethrough as shown in FIG. 5. A hollow pickup cylinder **65** is slidably mounted in the opening in the block **64**. The lower end of the cylinder **65** is tapered at **66**. The upper end is provided with a collar **67** which rides in a wider portion of the vertical opening and forms a stop for the lowermost position of the cylinder **65**. The upper end of the cylinder **65** bears against a spring pin **68** which operates an electrical switch **69** connected by wires **70** to the hookup shown to the left in FIG. 3. The block **63** is provided with an L-shaped passageway **71**, the vertical leg of which is connected by a flexible hose **72** to the control mechanism shown to the left in FIG. 3. The horizontal leg of the passageway **71** communicates with the interior of the cylinder **65** through a passageway **73** in the block **64** and an opening **74** in the cylinder **65**.

The actual gluing operation takes place as follows:

The bar **53** moves rearwardly carrying the head with the cylinder **65** through the gap **18** in the hopper **14**. Simultaneously the rods **27** and **43** move forwardly so that the plate **11** is rotated three spaces and the dipper **47** is submerged in the glue. When the arm **53** is pulled rearwardly until the groove **59** rides over the shaft **56** it will drop downwardly sufficiently for the bottom end of the cylinder **65** to contact a rhinestone in the plate **11**. A vacuum pressure is flowing through the cylinder **65** by way of the various passageways and the flexible hose **72**. As the cylinder **65** picks up the stone by vacuum pressure it moves forwardly and is lifted out of the groove **59** to raise the stone sufficiently to clear its opening **12** and be carried forward. During this forward motion the rods **27** and **43** are moving rearwardly and the dipper **47** is moving upwardly to the position shown in FIG. 2 with the cavity **48** loaded with glue. As the groove **58** reaches the shaft **56** the bar **53** again drops to dip the stone into the cavity **48**. The distances are such that the stone will enter the cavity approximately .020 inch from the bottom. The glue will surround the lower half of the rhinestone and any excess or overflow will squirt over the sides of the dipper leaving the top of the stone clean. The arm **53** then carries forwardly into the final forward position shown in FIG. 2 with the shaft **56** in the groove **57**. The operator holds a piece of jewelry with one of the settings directly under the rhinestone and moves it upwardly so that the rhinestone enters the setting and is glued therein. The moment the operator touches the rhinestone the cylinder **67** is pushed upwardly against the pin **68** and trips the electrical switch **69**. This changes the vacuum pressure to a blowing action for a split second to clear the

passageway in the cylinder 65 and also immediately and rapidly pulls the arm 53 rearwardly for a new cycle. Note that because of the groove 57 the initial rearward movement of the arm 53 will lift the arm and the front end so that the cylinder 65 is lifted from the manually held article of jewelry as it is pulled away from it. This prevents snagging or interference with raised portions of the jewelry. The device is now ready for another cycle and the gluing of another rhinestone. The action is so rapid that when the operator picks up one rhinestone and turns the article of jewelry to the next cavity, the head is actually in forward position and ready with another glued rhinestone.

The entire action as hereinabove set forth is controlled by the electrical and pneumatic arrangement shown to the left in FIG. 3. Referring to FIG. 3, the electrical portion of the control comprises the source of power 75 controlled by a master switch 76. The source of power is controlled by the switch 69 shown diagrammatically as being in the line 70 but actually positioned in the operating head as shown in FIG. 5. The switch 69 sends current to a solenoid valve 77 and a solenoid valve 78 and to a counter 79 which counts the number of stones.

The pneumatic system is shown in heavy black lines and comprises a vacuum line 80 which leads to the solenoid valve 78, another line 72 from the solenoid valve 78 to the operating head 63. The air pressure line 81 leads to a bleeder valve 82 which is connected at one end by a line 83 to the solenoid valve 77. The valve 82 is also connected by a line 84 to the front end of the cylinder 46 and the rear end of the cylinder 50. Another line 85 is connected to the rear end of the cylinder 46 and the front end of the cylinder 50. The bleeder valve is controlled by a line 86 extending to an operating button 87 positioned in the path of rearward movement of the vertical bar 52. The relation of the operating portion to the operation of the device as above described may now be described as follows:

The operator's contact with the rhinestone closes the switch 69. The resultant current opens solenoid valve 77 to exhaust which bleeds air and exhausts it from the back of cylinder 50 and the front of cylinder 46. Simultaneously solenoid valve 78 switches from vacuum pressure to blowing pressure through line 72. There is a slight hesitation as the pressure drops and then the piston in the cylinder 50 moves rearwardly and the piston in the cylinder 46 moves forwardly both under positive air pressure. The pickup head is thus moving rearwardly as the plate is being turned and the dipper drops into the glue. When the arm 53 reaches its rearward movement so that the groove 59 drops over the shaft 56 the cylinder 65 picks up another rhinestone. Note that as soon as the operator has picked up the first rhinestone and removed the pressure from the cylinder 65, the switch 69 is again opened and the solenoid valve 78 is again applying a vacuum pressure to the head through the hose 72. At the rearmost point of the arm 53 the bar 52 hits the button 87 which operates the bleeder valve 82 to bleed the pressure from the back of the cylinder 46 and the front of the cylinder 50 and reversing the direction of movement to complete the cycle.

The operation of the device is extremely rapid there being only a slight hesitation at the end of the rearward movement sufficient to allow the cylinder 65 to pick up a rhinestone from the plate 11. At the end of the forward movement the device will stop until the operator reverses the action by picking off the rhinestone and tripping the switch 69. The device thus applies a proper amount of glue to the bottom portion of each rhinestone so that the operator can position the rhinestone in its prepared opening without spreading excess glue over the rhinestone or over the article of jewelry.

The device has been illustrated with a single cylinder 65 picking up a single rhinestone. However, where production warrants the cylinder 65 can comprise a multiple

head designed to pick up a plurality of rhinestones in the manner shown in my copending application Serial No. 43,783 above referred to. The gluing dipper can be provided with a multiplicity of openings and an entire finding can thus be loaded simultaneously with a plurality of stones. If desired the device can also be equipped with the type of feed mechanism shown in my copending application so that the findings can be automatically fed beneath the operating head thus rendering the device completely automatic. These additions are economically sound only where large quantities of a single design are to be run.

The device is purely illustrative in many respects. The gluing arrangement may readily be changed. For example, the rhinestone can be dipped directly into the glue reservoir by raising the reservoir. This would require a more careful maintenance of the level of the glue in the reservoir. The operating portions, using compressed air cylinders can also be changed to a completely electrical system using reversing motors. Other variations will be readily apparent to a person skilled in the art.

I claim:

1. In an ornament gluing machine, a base, a hopper mounted on said base and including intermittently rotated means for feeding an ornament to a pickup position, means on said base fixed from movement with respect thereto for retaining a level of glue at a glue station, means mounted for reciprocating movement on said base in a direction generally parallel with said base for picking up an ornament from said pickup position, and means for reciprocating said pickup means in timed relation to movement of said hopper wherein said ornament is moved to said glue station for the deposit of glue on the bottom thereof and is then moved to an assembly position.

2. In an ornament gluing machine, a base, a hopper mounted on said base comprising a cylindrical hollow member and a feed plate mounted for intermittent rotation on said base and forming the bottom of said hopper, said feed plate having spaced openings adjacent the periphery thereof for receiving ornaments therein, means for intermittently rotating said feed plate, means on said base and fixed with respect thereto for retaining a level of glue at a glue station, and means mounted for reciprocating movement on said base for picking up an ornament from said feed plate, said pickup means moving said ornament to said glue station wherein glue is deposited on the bottom thereof, said pickup means thereafter moving said ornament to an assembly station.

3. In an ornament gluing machine, a base, a hopper mounted on said base comprising a cylindrical hollow member and a feed plate rotatably mounted on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to periodically locate an ornament at a pickup station, means interrelated to said intermittently rotating means for retaining a level of glue at a glue station, and means on said base movable in timed relation with respect to said rotating means for picking up an ornament from said pickup station, said pickup means moving said ornament to said glue station for depositing glue on the bottom of the ornament and thereafter moving said ornament to an assembly position.

4. In an ornament gluing machine, a base, a hopper mounted on said base comprising a cylindrical hollow member and a feed plate rotatably mounted on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to periodically locate an ornament at a pickup station, said intermittently rotating means including a ratchet wheel rotatably mounted on said base and having peripheral teeth formed thereon, said feed plate being mounted on said ratchet wheel and fixed for movement

therewith, a pawl pivotally mounted on said base and engaging said ratchet wheel, means for intermittently oscillating said pawl and thereby intermittently rotating said feed plate to periodically locate an ornament at said pickup station, means on said base for retaining a level of glue at a glue station, and means on said base for picking up an ornament from said pickup station and for moving said ornament to said glue station wherein glue is deposited on the bottom of the ornament, said pickup means thereafter moving said ornament to an assembly station.

5. In an ornament gluing machine, a base, a hopper mounted on said base comprising a cylindrical hollow member and a feed plate rotatably mounted on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to successively move said ornaments to a pick-up station, said rotating means comprising a ratchet wheel rotatably mounted on said base, said feed plate being mounted on said ratchet wheel for movement therewith, a pawl pivotally mounted on said base and engaging said ratchet wheel, means for intermittently oscillating said pawl, means on said base coordinated with the movement of said intermittent oscillating means for retaining a level of glue at a glue station, and means on said base operated in timed relation with respect to said intermittent oscillating means and glue level retaining means for picking up an ornament at said pickup station and then moving said ornament to said glue station for the deposit of glue on the bottom of the ornament, said pickup means thereafter moving said ornament to an assembly position.

6. In an ornament gluing machine, a base, a hopper mounted on said base including a feed plate that forms the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to periodically position an ornament at a pickup station, means on said base movable in relation to the movement of said intermittently rotating means for retaining a level of glue at a glue station, means on said base for picking up an ornament from said pickup station, and means for reciprocating said pickup means in timed sequence with respect to the movement of said intermittently rotating means for moving said pickup means to said glue station for the deposit of glue on the bottom of the ornament, said pickup means thereafter being movable to an assembly position.

7. In an ornament gluing machine, a hopper including a rotatable member for successively feeding ornaments to a pickup station, means for intermittently rotating said rotatable member, means for retaining a level of glue at a glue station including a trough that is fixed with respect to said hopper, means interconnected to and movable in timed relation with the movement of said rotatable member for lifting a predetermined quantity of glue from said trough at said glue station, and means mounted for reciprocating movement in a direction generally parallel with said rotatable member for picking up an ornament from said pickup station, said pickup means being movable in timed sequence with respect to said rotatable member and glue lifting means for moving said ornament to said glue station wherein glue is deposited on the bottom of the ornament, said pickup means thereafter moving said ornament to an assembly position.

8. In an ornament gluing machine, a hopper including a rotatable member for feeding an ornament to a pickup station, means for intermittently rotating said rotatable member, means for retaining a level of glue at a gluing station, said glue retaining means including a trough that is fixed in position with respect to said hopper, means for lifting a predetermined quantity of glue from said trough to a glue applying position comprising a shaft extending into said trough, a dipper secured to said shaft, means responsive to movement of said intermittently rotating means for oscillating said shaft to move said dipper into and out of said glue, and means mounted for reciprocating movement on said base in a direction generally parallel thereto and in timed sequence with respect to said rotatable member for picking up an ornament from said pickup station and thereafter moving said ornament into said dipper, wherein glue is deposited on the bottom of the ornament, said pickup means thereafter moving said ornament to an assembly position.

9. In an ornament gluing machine, a base, a hopper mounted on said base comprising a cylindrical hollow member and a feed plate mounted on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to periodically locate an ornament at a pick-up station, means for retaining a level of glue at a glue station including a trough fixedly mounted on said base, a container of glue mounted on said trough open side down for maintaining a predetermined level of glue therein, and means on said base mounted for reciprocating movement for picking up an ornament at said pickup station, said pickup means moving said ornament to said glue station for depositing glue on the bottom thereof and thereafter moving said ornament to an assembly position.

10. In an ornament gluing machine, a base, a hopper mounted on said base comprising a cylindrical hollow member and a feed plate mounted on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to locate one of said openings at a pickup station, means for retaining a level of glue at a glue station including a trough mounted on said base, a container of glue mounted on said trough open side down for maintaining a predetermined level of glue therein, and means mounted on said base for reciprocating movement in timed sequence with respect to said intermittently rotating means for picking up an ornament from said pick-up station and for moving said ornament to said glue station wherein glue is deposited on the bottom thereof, said pickup means thereafter moving said ornament to an assembly position.

11. In an ornament gluing machine, a base, a hopper comprising a cylindrical hollow member and a feed plate mounted for intermittent rotary movement on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to locate one of said openings at a pickup station, means on said base for retaining a level of glue at a glue station, said glue retaining means including a trough, and means for lifting a predetermined quantity of glue from said trough at said glue station, said glue lifting means including a shaft extending into said trough, and a dipper fixed to said shaft, means movable with said intermittently rotating means for oscillating said shaft to move said dipper into and out of said glue, and means mounted for reciprocating movement on said base for picking up an ornament from said pickup station and moving said ornament to said glue station wherein glue is deposited on the bottom of the ornament by said dipper, said pickup means thereafter moving said ornament to an assembly position.

12. In an ornament gluing machine, a base, a hopper comprising a cylindrical hollow member and a feed plate rotatably mounted on said base and forming the bottom of said hopper, said feed plate having spaced ornament receiving openings adjacent the periphery thereof, means for intermittently rotating said feed plate to locate one of said openings at a pickup station, said rotating means including a ratchet wheel mounted on said base and secured for rotation with said feed plate, a pawl

pivotally mounted on said base and engaging said ratchet wheel, means for intermittently pivoting said pawl to intermittently rotate said feed plate, means on said base for retaining a level of glue at a glue station, said glue retaining means including a trough, a shaft extending into said trough, and a dipper fixed to said shaft, and means movable with said intermittently rotating means for oscillating said shaft to move said dipper into and out of said glue, and means mounted for reciprocating movement on said base for picking up an ornament at said pickup station and moving said ornament to said glue station wherein glue is deposited on the bottom of the ornament, said pickup means thereafter moving said ornament to an assembly position.

13. In an ornament gluing machine, a base, a hopper mounted on said base and including a rotatable member for feeding an ornament to a pickup station, means for intermittently rotating said rotatable member, means mounted on said base and secured against movement with respect thereto for retaining a level of glue at a glue station, and means mounted for reciprocating movement on said base in a direction generally parallel thereto for picking up an ornament from said pickup station, said pickup means including a hollow pickup cylinder having a vacuum pressure therein whereby said ornament is picked up at said pickup station by said pickup cylinder and moved to said glue station for the deposit of glue on the bottom of the ornament, said pickup means thereafter moving said ornament to an assembly position.

14. In an ornament gluing machine for mounting ornaments in an ornamental article, a base, a hopper mounted on said base and including a rotatable member for feeding an ornament to a pickup station, means mounted on said base and secured against movement with respect thereto for retaining a level of glue at a glue station, means on said base for picking up an ornament at said pickup station including an arm mounted for reciprocation on said base in a direction generally parallel thereto, a pickup head secured to said arm and having a hollow depending pickup cylinder, means for applying a vacuum pressure to said pickup cylinder, and switch means mounted in said pickup head above said cylinder for initiating the cycle of operation of said machine and being actuated by said pickup cylinder when said cylinder is mounting an ornament in an ornament article.

15. In an ornament gluing machine for mounting ornaments in an ornamental article, a base, a hopper mounted on said base and including means for feeding an ornament to a pickup station, means fixed to said base for retaining a level of glue at a glue station, means on said base for picking up an ornament from said pickup station and carrying said ornament to an assembly station, said pickup means including an elongated bar mounted for reciprocation, an arm secured to one end of said bar, a pickup head mounted on said arm and having a hollow depending pickup cylinder, means for applying a vacuum pressure to said pickup cylinder, and means for dipping said bar at the pickup, gluing and assembly stations wherein said ornament is picked up, glue is applied thereto and said ornament is assembled in the ornamental article.

16. In an ornament gluing machine, a base, a hopper mounted on said base including a feed plate having spaced ornament receiving openings formed therein adjacent the periphery thereof, means for intermittently rotating said feed plate to periodically feed an ornament to a pickup station, means on said base for retaining a level of glue at a glue station, means mounted for reciprocation on said base in a direction generally parallel thereto for picking up an ornament at said pickup station and for moving said ornament to said glue station wherein glue is deposited on the bottom of the ornament, said pickup means including a pickup member and means for applying a vacuum pressure to said pickup member for picking up said ornament at said pickup station for the transfer thereof to said glue station and then to an assembly station.

17. In an ornament gluing machine, a base, a hopper mounted on said base including rotatable means for feeding an ornament to a pickup station, glue retaining means fixedly mounted on said base for retaining a measured quantity of glue therein, means mounted for reciprocation on said base in a direction generally parallel thereto for picking up an ornament at said pickup station, said pickup means moving said ornament to said glue retaining means for depositing glue on the bottom of the ornament and thereafter moving said ornament to an assembly position, said pickup means including a pickup head having a hollow depending pickup cylinder, and means for applying a vacuum pressure to said pickup cylinder for picking up ornaments at said pickup station.

18. In an ornament gluing machine as set forth in claim 17, said glue retaining means including a dipper mounted for rotation in said trough and having a glue cavity for retaining the measured quantity of glue therein, and means for rotating said dipper in said trough and thereby depositing the measured quantity of glue in said cavity.

19. In a machine for gluing ornaments into an ornamental article having ornament receiving cavities, a base, means rotatably mounted on said base for successively feeding said ornaments right side up to a pickup station, means mounted for reciprocation on said base in a direction generally parallel thereto for picking up an ornament at said pickup station and moving it to a glue station, and means cooperating with said pickup means for depositing a predetermined quantity of glue on the bottom of said ornament whereby said pickup means then moves said ornament to an assembly position for insertion into an ornament cavity.

20. In a machine for gluing ornaments in an article provided with ornament receiving cavities, a base, a hopper mounted on said base and being adapted to receive said ornaments therein, said hopper including means rotatable with respect to said base for transferring said ornament in oriented position to a pickup station, the longitudinal axes of said ornaments being substantially vertical in the oriented position thereof, an ornament pickup head mounted for reciprocating movement on said base in a direction that is generally perpendicular to the longitudinal axes of said oriented ornaments, a glue station fixed with respect to said base and including means for retaining a measured quantity of glue therein, means for intermittently rotating said transferring means for periodically moving an ornament to said pickup station, and means movable in timed relation with respect to said intermittently rotating means for reciprocating said pickup head, wherein said pickup head is moved to said pickup station when said transferring means is stationary to pick up an ornament located thereat, said pickup head then being moved by said reciprocating means to said glue station for receiving the measured quantity of glue and thereafter being moved to an assembly station for deposit in a cavity in said article.

21. In an ornament gluing machine, a base, a hopper mounted on said base and being adapted to receive a plurality of ornaments therein, said hopper including means for orienting said ornaments in right-side-up position prior to the transfer thereof to a glue station, means for picking up said oriented ornaments and transferring them to said glue station, means responsive to movement of said picking up and transferring means for applying a measured quantity of glue to the underside of said ornaments, and means for moving said pickup means with a reciprocating motion in a direction that is generally perpendicular to the oriented position of said ornaments between said hopper and a station for assembling said ornaments in an ornamental article.

22. In a machine as set forth in claim 21, means for

intermittently rotating said hopper to periodically move an ornament to said pickup station, and means interconnected to said intermittently rotating means for presenting the measured quantity of glue at said glue station.

23. In an ornament gluing machine, a base, a hopper including means mounted for intermittent rotation on said base and being adapted to receive a plurality of ornaments therein, means in said hopper for orienting said ornaments in right-side-up relation so that they will be disposed in proper position for receiving glue thereon and for transfer to an assembly station, the longitudinal axes of said ornaments being generally vertical in the oriented position thereof, means movable in response to said intermittent rotating means for picking up said oriented ornaments in said hopper and for first transferring them to a glue station and then to said assembly station, and means for reciprocating said pickup means in a direction that is generally perpendicular to the longitudinal axes of said oriented ornaments between said assembly station and said hopper for successively picking up said ornaments and transferring them to said glue and assembly stations.

24. In apparatus for securing ornaments to articles of jewelry, a hopper including means mounted for intermittent rotation and being adapted to receive said ornaments therein, means for orienting said ornaments so that they are located in right-side-up position in said hopper, the longitudinal axes of said ornaments being generally vertical in the oriented position thereof, a fixed glue station spaced from said hopper and including glue holding means for retaining a measured quantity of glue therein and for receiving said ornaments for deposit of the measured quantity of glue on the undersurface thereof, and a pickup member movable with respect to said hopper and said glue station and including a pickup head that picks up an ornament in said hopper, and means for reciprocating said pickup member between said hopper and an assembly station in a direction that is generally perpendicular to the longitudinal axes of said oriented ornaments, said reciprocating means including means for dipping said pickup head in said glue holding means only during the movement of said pickup member from said hopper to said assembly station.

25. In apparatus as set forth in claim 24, said means mounted for intermittent rotation including a circular feed plate having a plurality of spaced openings formed therein adjacent the periphery thereof, said ornaments being deposited in said openings in oriented position prior to the transfer thereof to said glue station, the intersection of the line extending through the center of said feed plate and an opening therein with the line that extends through the longitudinal axis of said pickup member defining a pickup station, said pickup head being movable in timed relation by said pickup member to said pickup station for picking up the ornament located in oriented position thereat.

26. In apparatus for mounting an element on an article of manufacture, a base, a hopper mounted on said base and including a circular feed plate having a plurality of openings formed therein adjacent the periphery thereof, each of said openings being adapted to receive an element therein, means mounted for reciprocation on said base for picking up said elements at a pickup station in said hopper and for transferring them to a point of assembly with said article of manufacture, said pickup station being defined by the intersection of a line extending through the center of said plate and one of said openings with a line extending through the longitudinal axis of said pickup and transfer means.

27. In apparatus as set forth in claim 26, means for intermittently rotating said feed plate to periodically position one of said openings at said pickup station, said intermittently rotating means including locating means, corresponding locating means formed on said feed plate and engaging the first-named locating means wherein said feed plate is positively located with respect to said pickup and transfer means, so that the openings in said feed plate will always be moved to said pickup station.

28. In apparatus as set forth in claim 26, means for applying a measured quantity of glue to said elements prior to the transfer thereof to the assembly point, said glue applying means including a container that is periodically moved to a glue supply source wherein said container is filled with glue, means interconnected to said intermittently rotating means for moving said container into said source of glue and in timed relation to the movement of said pickup and transfer means, so that the element picked up by said pickup and transfer means is moved to said container when said container has the measured amount of glue therein, and means for dipping said elements in said container for applying the glue thereto.

29. In an ornament gluing machine, a base, a hopper mounted on said base including rotatable means for feeding an ornament to a pickup station, glue retaining means fixedly mounted on said base for retaining a measured quantity of glue therein, means mounted for reciprocation on said base for picking up an ornament at said pickup station, said pickup means moving said ornament to said glue retaining means for depositing glue on the bottom of the ornament and thereafter moving said ornament to an assembly position, said pickup means including a pickup head having a hollow depending pickup cylinder, means for applying a vacuum pressure to said pickup cylinder for picking up ornaments at said pickup station, said rotatable means including a feed plate having a plurality of ornament receiving openings formed therein, and means for intermittently rotating said feed plate to position an opening at the pickup station, said intermittent rotating means being movable in timed relation with respect to said reciprocating means so that said reciprocating means is movable to said pickup station for picking up an ornament when said feed plate is stationary.

30. In a machine for gluing ornaments in an article provided with ornament receiving cavities, a base, a hopper mounted on said base and being adapted to receive said ornaments therein, said hopper including means rotatable with respect to said base for transferring said ornaments in oriented position to a pickup station, an ornament pickup head mounted for reciprocating movement on said base, a glue station fixed with respect to said base and including means for retaining a measured quantity of glue therein, means for intermittently rotating said transferring means for periodically moving an ornament to said pickup station, means movable in timed relation with respect to said intermittently rotating means for reciprocating said pickup head, wherein said pickup head is moved to said pickup station when said transferring means is stationary to pick up an ornament located thereat, said pickup head then being moved by said reciprocating means to said glue station for receiving the measured quantity of glue and thereafter being moved to an assembly station for deposit in a cavity in said article, said pickup head being normally movable in a plane that is elevated with respect to the level of said pickup and glue stations, and means associated with said reciprocating means for vertically dipping said pickup head at said pickup and glue stations for respectively picking up said ornament and applying glue thereto.

31. In a machine for gluing ornaments in an article provided with ornament receiving cavities, a base, a hopper mounted on said base and being adapted to receive said ornaments therein, said hopper including means rotatable with respect to said base for transferring said ornaments in oriented position to a pickup station, an ornament pickup head mounted for reciprocating movement on said base, a glue station fixed with respect to said base and including means for retaining a measured quantity of glue therein, means for intermittently rotat-

ing said transferring means for periodically moving an ornament to said pickup station, means movable in timed relation with respect to said intermittently rotating means for reciprocating said pickup head, wherein said pickup head is moved to said pickup station when said transferring means is stationary to pick up an ornament located thereat, said pickup head then being moved by said reciprocating means to said glue station for receiving the measured quantity of glue and thereafter being moved to an assembly station for deposit in a cavity in said article, said means for retaining a measured quantity of glue therein including a glue trough having a dipper rotatable therein that is formed with a cavity that corresponds in size to the bottom portion of said ornaments, and means for rotating said dipper in said trough for filling said cavity, the filled cavity containing the proper quantity of glue to be applied to an ornament.

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