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Schriber

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[54] **PORTABLE GLUE APPLICATOR FOR COLLATING MACHINE**

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[52] U.S. Cl. **118/211**, 118/206, 118/221, 118/260, 118/264

[51] **Int. Cl.**.....**D05c 1/16**

[58] **Field of Search**.....118/206, 211, 212, 118/221, 260, 264, 266

[56] **References Cited**

UNITED STATES PATENTS

2,800,871	6/1957	Hoag	118/221
3,672,328	6/1972	Kardon	118/221

Primary Examiner—Henry S. Jaudon
Attorney—Lawrence B. Biebel et al.

[57] **ABSTRACT**

A housing containing one or more magnets provides a cantilever support for a pair of spaced and parallel rods which extend outwardly over one or more web sets moving therebelow over a table section of a collator. The leading rod supports a wheel frictionally driven by the upper web and also a spotting disk linked to the wheel and having a plurality of spaced, arcuate applicator surfaces circumferentially aligned with the periphery of the wheel. A glue dispensing nozzle is mounted on the trailing rod and is rotatable between a raised position with the nozzle applying glue to the arcuate surfaces of the spotting disk which in turn apply the glue to the web in spot form, and a lowered position with the nozzle positioned for applying glue directly onto the moving web in strip form. The leading rod is adjustable in height to accommodate varying widths of webs or webs sets passing over the table. A manifold supplies glue to a plurality of outlets along the table, and the applicator includes a quickdisconnect fitting so that it may be moved to any position along the table and quickly connected to any one of the outlets.

10 Claims, 5 Drawing Figures

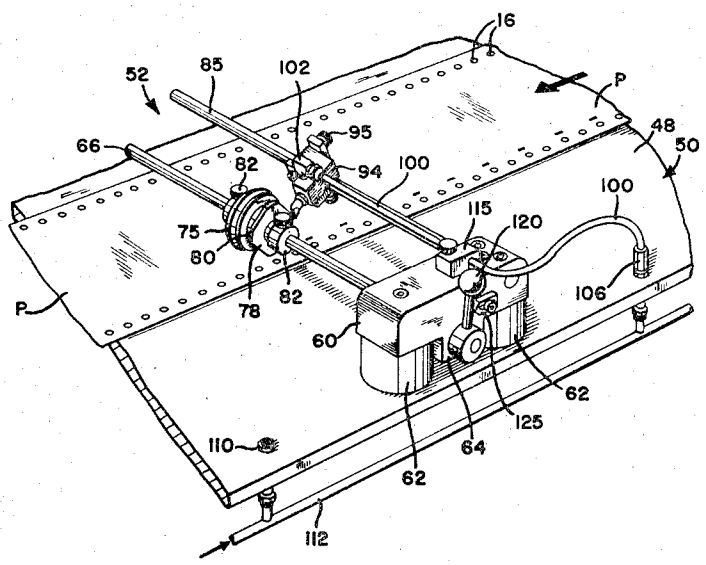


FIG-1

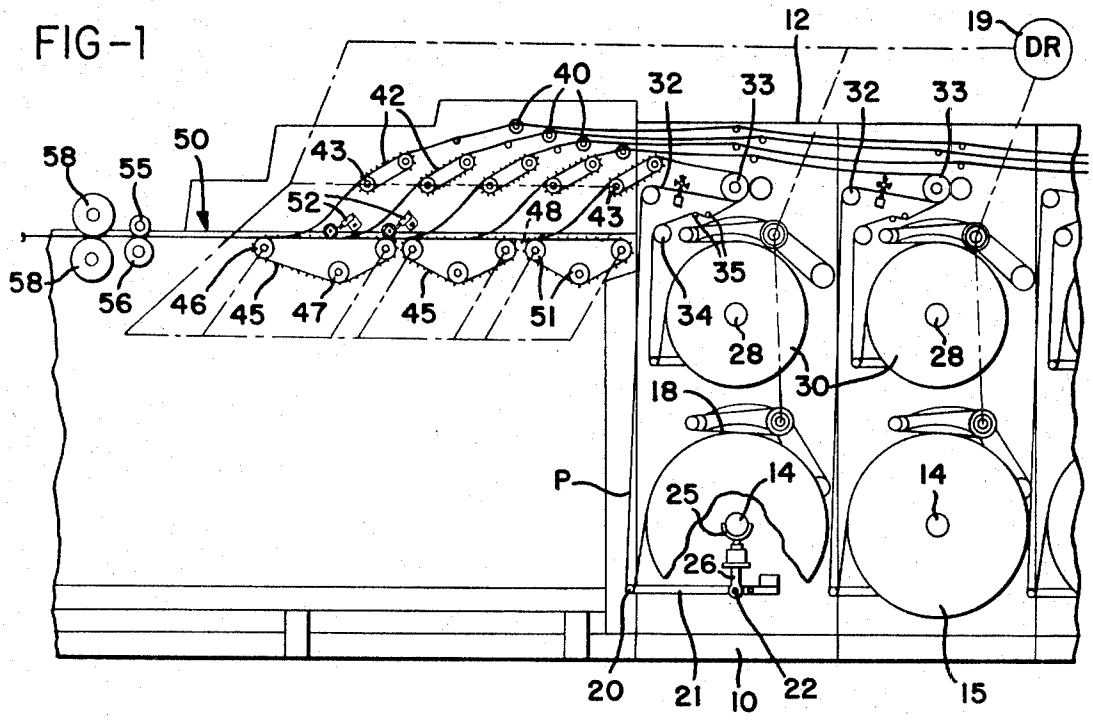
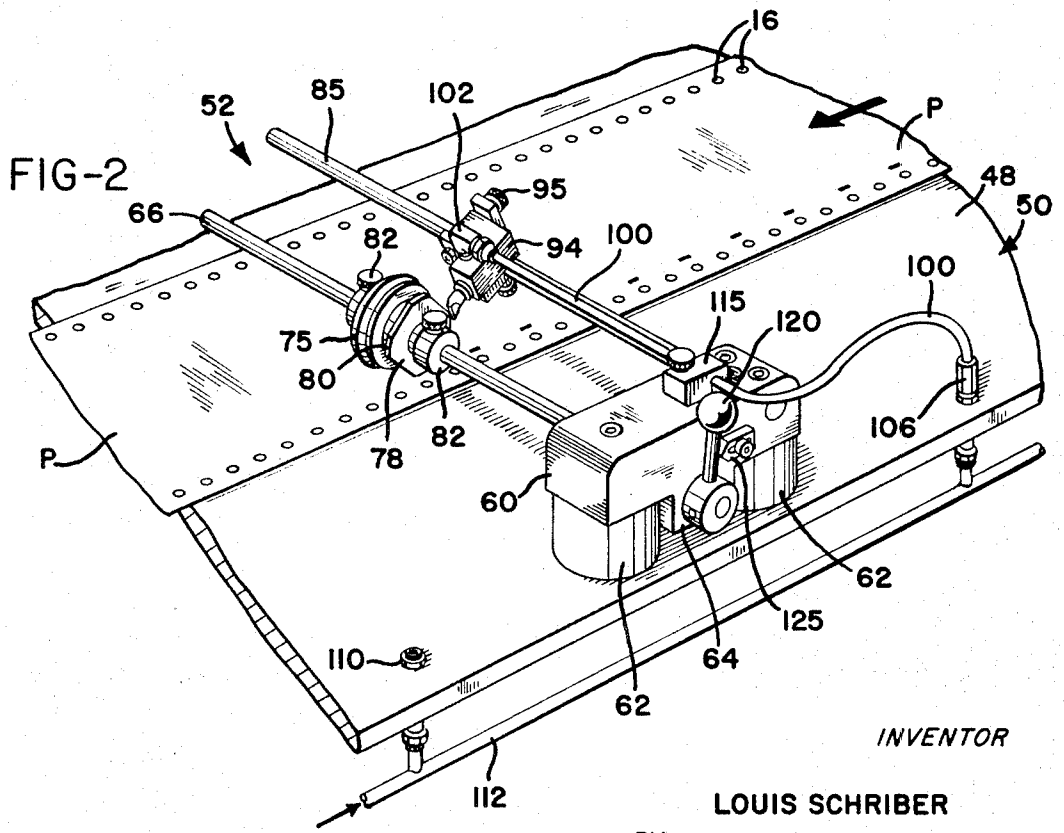


FIG-2



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FIG-3

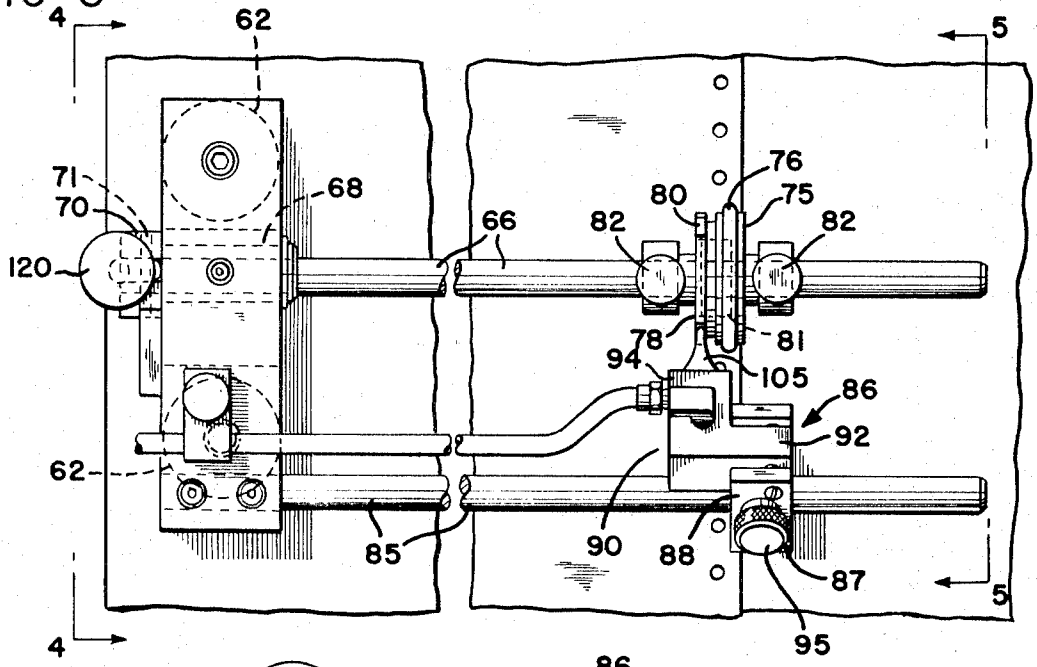


FIG-4

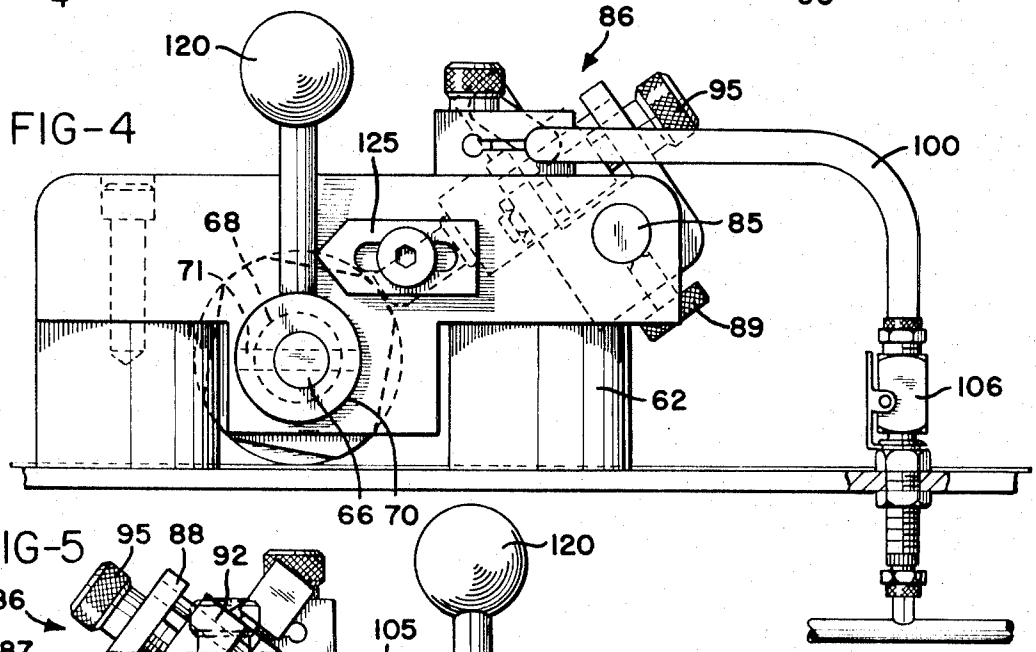
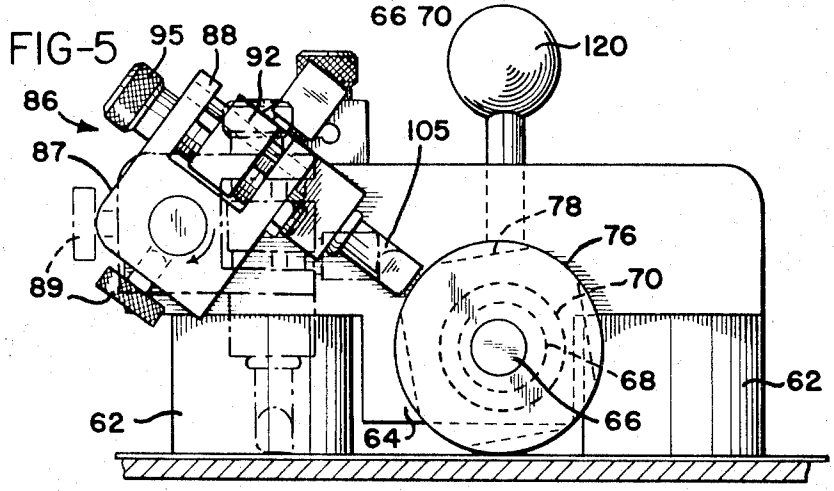


FIG-5



PORTABLE GLUE APPLICATOR FOR COLLATING MACHINE

BACKGROUND OF THE INVENTION

In a collating machine for assembling a plurality of paper webs and transfer webs into continuous forms, as for example, the collator generally disclosed in U.S. Pat. No. 3,303,083 which issued to the assignee of the present invention, webs are directed from paper supply rolls mounted on horizontally spaces spindles and are collected in overlapping relation along a horizontal path on a platform or table. The webs are generally conveyed on the upper surface of the table by an endless pin conveyor, such as disclosed in U.S. Pat. No. 2,859,035, which delivers the collected webs to a pair of cross perforation rolls and then to a zig-zag folding machine or the like.

The carbon web may be glued or otherwise affixed between pairs of paper webs. Generally this has been done with mechanism which is a permanent part of the collator, with individual gluers built into the web supply parts of the machine, at fairly widely spaced locations. Such gluing apparatus, for example, as disclosed in U.S. Pat. Nos. 2,334,485 and 3,303,083. These units are supplied independently, and cannot be easily removed from the machine when they are not needed, as when only specific web sets are being attached.

SUMMARY OF THE INVENTION

The present invention is directed to an improved portable glue applicator for collating machines which is positionable on a collating table at any position along the path of the web. The apparatus further provides for applying glue to a web in either spot form or in continuous strip form.

In accordance with the invention, the improved glue applicator includes a small portable housing containing one or more magnets which maintain the applicator in a desired position along the path of the web. The housing supports a pair of spaced and parallel rods extended over the assembly table of the collator, above the moving webs, and adapted to support apparatus for dispensing glue onto the webs therebelow. One supports a wheel having a tire or driving surface adapted to be driven frictionally by the moving web. A spotting disc is linked to the wheel for rotation therewith, and includes a plurality of arcuate surfaces adapted to engage the web intermittently and, when the arcuate surfaces are supplied with glue, to apply the glue to the web in a succlusion of spots.

The second or trailing rod includes a rotatably adjustable glue dispenser adapted to receive glue from a source and to dispense it through a nozzle. The dispenser is movable between a raised position adjacent the spotting disc for dispensing glue onto the arcuate surfaces thereof and a lowered generally vertical position for dispensing the glue directly onto the web in strip form. The wheel, disc, and dispenser are all adjustable lengthwise of the rods.

In the preferred embodiment the leading rod is mounted in an eccentric within the housing, and the eccentric is rotated by a control arm to adjust the vertical height of the rod and also the pressure of the wheel on the web or web sets. An adjusting mechanism on the housing provides a reference to return the control arm to the desired position for a particular run. Additionally, the nozzle is adjustable for cooperation with the height of the spotting disc or the height of the web or web sets.

Another feature of the invention, which provides additional flexibility, is a glue supply manifold conveniently mounted along the path of the web and including a plurality of outlets fitted within the table itself or disposed adjacent the table. A flexible conduit connected to the glue dispensing apparatus includes a quick-disconnect fitting which is easily attached to any one of the outlets. The quick-disconnect fitting enables the glue applicators to be removed quickly from the machine or to be moved to any position along the table where the webs are assembling.

It is accordingly a primary object to the present invention to provide a portable glue applicator for a collator, having the improved flexibility of being positionable at any position along the path of the web; to provide a glue applicator which supports a glue dispenser over the path of the web in cantilever fashion and is capable of applying the glue to the web in spot form or in strip form; to provide such a glue applicator which is adjustable to accommodate varying thicknesses of webs or web sets.

These and other objects of the invention will become apparent from the following description, the attached drawing and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a somewhat schematic side elevational view of a collating apparatus using a glue applicator constructed in accordance with the invention;

FIG. 2 is a partial perspective view of a glue applicator of the invention, and showing a glue manifold disposed along the length of the collator table for supplying glue to a number of outlets;

FIG. 3 is a top view of a glue applicator with the rods and the table broken to shorten the drawing;

FIG. 4 is a view taken along line 4—4 of FIG. 3;

FIG. 5 is a view taken along line 5—5 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The collating apparatus shown in FIG. 1 includes an elongated base 10 from which extends a vertical frame or wall 12. A series of horizontally arranged parallel spindles 14 are supported by the frame wall 12 for free rotation and receive corresponding rolls 15 of paper webs P which may have longitudinally spaced marginal perforations or feed holes 16(FIG. 2). In a conventional manner, each roll 15 is located or unwound by a surface engaging belt 18 supported by a pivoted frame and connected to a drive. Each belt 18 is driven so that the web is fed positively into the machine.

Each paper web P is directed from its roll 15 around a tension control rod 20 supported by a counterbalanced 21 arm having a pivot axis 22. A pneumatic brake 25 is mounted on the wall 12 under each of the spindles 14 and has an actuator rod 26 which is pivotally connected to the arm 21. When the tension in one of the paper webs P begins to drop below a predetermined value, the corresponding rod 20 moves downwardly and causes the brake to slow the corresponding spindle 14 so that the drive belt 18 slips on the surface of the roll. Each web P is therefore fed at a

constant feed rate from its corresponding roll according to the demand from the machine.

A series of freely rotatably spindles **28** are supported by the wall **12** above the spindles **14**, and support rolls **30** of carbon webs C which are narrower in width that the paper webs P such that the edges of the carbon webs will be spaced inwardly of the feed rolls within the paper webs. Each of the rolls **30** is driven in a manner similar to the rolls **15**.

Each of the paper webs P is directed upwardly from its control rod **20** around a driven roller **32** and then to a roller **33**. Each carbon web C is directed upwardly from its tension rod **20** around a corresponding driven roller **34**, and then between snubbing rods **35** to join a corresponding paper web P under the adjacent roller **33**.

The sets of attached paper and carbon webs P and C are directed generally horizontally from the rollers **33** by a series of cantilever supported guide rods **40** to a corresponding series of short and inclined endless conveyors **42**. The conveyors **42** are mounted on parallel spaced shafts **43** cantilever supported by the walls **12** and driven at a common speed by a gear belt or chain drive connected to the main drive **19**.

A series of endless pin conveyors **45** are positioned in alignment below the endless conveyors **42**, and each conveyor **45** is directed around end drive sprockets **46** and an adjustable idler sprocket **47**. The upper runs of the conveyors **45** extending between the sprockets **46** lie in generally the same horizontal plane as the upper surface **48** of the collating platform or table **50**. Each of the conveyors **45** has longitudinally spaced pins **51** which project above the upper surface **48** of the platform **50**.

Each assembled set of paper and carbon webs P and C is delivered onto the upper surface **48** of the table **50** by the endless conveyors **42** (FIG. **2**) in such a manner that the web sets glide smoothly onto each other on the table **50** in overlapping relation. The pins **51** on the conveyors **45** engage the perforations **16** and move the webs along the upper surface **48** to glue applicators **52** where the web sets are glued together, between a backup roller **56** and an impact roller **55**, and then to a set of cross perforation cylinders **58** to a zig-zag folding machine (not shown).

In accordance with the invention, each glue applicator **52** (FIG. **2**) includes a housing **60** including a pair of generally cylindrical bar magnets **62** bolted thereon, which retain the applicator on the table surface **48** in any preselected position along the path of the web sets. The housing **60** includes a depending portion **64** between the bar magnets **62** from which a leading rod **66** is cantilever supported and extends outwardly perpendicular to the housing **60** and over the webs therebelow. The rod **66** is mounted within an eccentric **68** rotatably mounted within the housing portion **64**, and within an enlarged collar **70** on the side of the housing portion **64**. A pin **71** secures the collar **70** to the rod **66**.

A wheel **75** (FIG. **3**) having a circumferential frictional driving surface **76** comprised of rubber material or the like is rotatably mounted on the leading rod **66** in a position for engaging and being frictionally driven by the moving web below. A spotting disk **78** having at least one and preferably four peripherally spaced arcuate glue applying surfaces **80** aligned with the outer surface of the frictional surface **76** of the wheel is linked to the wheel by an internal bearing **81** and and rotates with the wheel **75** so that, when glue is applied to the surfaces **80**, it will be applied or transferred to the moving web in spot form. The wheel and disk assembly is slidably adjustable along the length of the leading rod **66** by a pair of adjustable locking members **82**.

A trailing rod **85** is supported at one end by the housing **60** rearwardly of and above the leading rod **66** and carries a glue dispenser **86** rotatably adapted to supply glue to the arcuate surfaces **80** of the disk **78** for spot gluing, or to apply glue directly onto the web P for strip gluing. Referring to FIGS. **4–5**, the dispenser **86** includes a U-shaped support member **87** rotatably mounted on the rod **85** and having a pair of spaced-apart arms **88**. The member **87** is adjustably secured to the rod **85** by the locking pin **89**. A generally L-shaped body **90** has a transverse leg **92** which extends between the arms **88** and is secured between the arms by an adjustment screw **95** threadably received through the arms **88** of the support member. The body **90** also includes a longitudinal leg **94** at right angles to leg **92** and having an internal passage (not shown) for dispensing glue, as follows.

The glue dispenser **86** is supplied with glue by a conduit **100** having a fitting **102** at one end attached to leg **94**. The glue travels through the leg **94** and is dispensed from a nozzle **105** formed like a runner to avoid tearing the web. In the preferred embodiment, the conduit **100** includes a quick-disconnect fitting **106** at its other end (FIG. **4**) adapted to be connected to any one of a series of supply outlets **110** on or adjacent the table **50** and supplied by a glue manifold **112**. This enables one or more glue applicators **52** to be positioned quickly in a plurality of positions along the table and to be supplied from a single source. The conduit **100** is preferably attached to the housing **60** by a retainer **115** or the like.

The glue applicator **52** operates as follows. The wheel and disk assembly is located at the desired position along the rod **66** for applying glue to the marginal edge of the moving web P, generally slightly inwardly from the marginal perforations **16** (FIG. **2**), and the locking members **82** are tightened to retain the assembly in the desired position. Before glue is supplied to the glue dispenser **86**, the pressure of the wheel **75** on the web below is adjusted by a control arm **120** attached to the collar **70**. Referring to FIGS. **4–5**, it can be seen that the control arm **120** when rotated, moves the leading rod **66** vertically, according to the eccentric **68** within the housing portion **64**. Movement of the rod to the left (FIG. **4**) raises the rod, and movement to the right lowers it toward table surface **48**.

Thus, movement of the control rod **120** will position the wheel **75** at an optimum frictional engagement position in which the control disk **78** will apply glue to the upper surface of the moving web. Each glue applicator can thus be adjusted for the thickness of the underlying web or web sets. An adjustable stop **125** on the side of the housing retains the rod **120** to maintain the position of the leading rod **66** throughout the operation.

Next, the glue dispenser **86** is moved along the trailing rod **85** to a position where the nozzle **105** is aligned with the arcuate glue applying surfaces **80** of the

spotting disk **78** (see FIG. **3**). If spot gluing is desired, the nozzle **105** is fixed adjacent the disk **78** by tightening member **89** against the rod **85**, and by adjusting the adjustment screw **95**. The conduit **100** is then connected to the manifold **112** by the quick-disconnect fitting **106**, and the apparatus is ready for spot gluing. If strip gluing is desired, the member **89** is loosened, and the dispenser **86** is rotated to a position in which the nozzle **105** is adjacent the moving web P. When the dispenser is fixed in position, the nozzle **105** is adjusted by the adjustment screw **95**. The spot wheel **78** is removed in this case as it would track the strip of glue.

From the foregoing description and accompanying drawing, it is apparent that a glue applicator constructed in accordance with the present invention provides certain desirable features and advantages. For example, one or more of the applicators may be positionable at any point on the table along the path of the webs, and may be quickly connected to a common glue manifold, which saves considerably time in setting up the apparatus for a run. In addition, it provides for spot gluing, when the dispenser is located, with its nozzle adjacent the spotting disk and thus provides a simple means for providing the flexibility needed for this type of operation.

Moreover, by providing a housing and bar magnet of substantial mass capable of supporting a pair of rods in cantilever fashion over the moving web therebelow, and by providing a simple means of adjusting the height of the leading rod, the apparatus elminates the need for a second support means on the other side of the web and enables the operator to adjust the gluing mechanism from only one side of the collating machine, thereby minimizing the number of preliminary adjustments required. In addition, as is readily evident from FIG. **2**, the rods **66** and **85** are capable of supporting two wheel and spotting disk assemblies and two glue dispensers, respectively, so that both margins of any paper web may have glue applied.

While the forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these forms of apparatus, and that changes made therein without departing from the scope of the invention.

What is claimed is:

1. In collating apparatus for assembling a plurality of paper webs moving on a path over a table, an improved glue applicator for applying glue to the upper surface of one of said moving webs,

a housing positionable on said table along the path of said webs,

support means on said housing extending over said webs,

a drive wheel rotatably mounted on said support means and having a friction surface positionable on the overlying web moving on said table,

spotting means on said support means for spotting glue on said moving web, and

glue dispensing means on said support means movable between a first position for dispensing glue onto said spotting means and a second position for dispensing glue onto said web.

2. The apparatus of claim **1** wherein said housing includes at least one magnet for retaining said housing on said table in a preselected position.

3. The apparatus of claim **1** wherein said support means comprises spaced-apart leading and trailing rods cantilevered from said housing across the path of said webs, wherein said wheel and spotting means are rotatably mounted on said leading rod and said glue dispensing means is mounted on said trailing rod.

4. The apparatus of claim **1** including means for adjusting the vertical height of said wheel to control the pressure of said wheel on said overlying web.

5. The apparatus of claim **4** wherein said adjusting means comprises an eccentric within said housing and associated with said support means, means for rotating said eccentric, and means for maintaining said eccentric at a selected rotated position.

6. The apparatus of claim **1** wherein said spotting means comprises a disc having at least one arcuate surface, and wherein said arcuate surface is aligned with said frictional driving surface of said wheel for applying glue to said overlying web with each revolution of said wheel.

7. The apparatus of claim **1** wherein said glue dispensing means includes a body on said support means and having an inlet and an outlet, glue supply means connected to said inlet, and a nozzle connected to said outlet for dispensing glue onto said spotting means and onto said web.

8. The apparatus of claim **7** including means on said body for adjusting the position of said nozzle relative to the position of said spotting wheel and said web.

9. In collating apparatus for assembling a plurality of paper webs moving together along a path over a table, an improved glue applicator for applying glue to the upper surface of one of said moving webs,

a housing positionable on said table and movable to a number of different positions along the path of said webs where different ones of said webs come together,

support arm means on said housing extending in cantilever fashion over said webs,

a drive wheel rotatably mounted on said support arm means and having a friction surface positionable on the underlying web moving on said table,

spotting means on said support arm means and driven by said drive wheel for spotting glue on said moving web,

said drive wheel and said spotting means being movable to a plurality of positions along said support arm means, and

glue dispensing means also on said support arm means and movable therealong for dispensing glue onto said spotting means for transfer to the web.

10. The apparatus of claim **9** wherein said support means comprises spaced-apart rods extending outward from said housing across the path of said webs, said drive wheel and said spotting means being rotatably mounted on one of said rods and said glue dispensing means being mounted on the other of said rods.

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