

[54] **METHOD OF MAKING A MAGAZINE INSERT**

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[58] Field of Search 270/4, 20, 21, 32, 37, 38, 270/53, 52, 5, 6, 8, 10, 12, 16; 156/384, 443, 510, 589

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[57]

ABSTRACT

A machine for making a magazine insert which includes the combination of a printing press and a modification of a web-press jaw folder by the addition of glue applying nozzles located at the input side of the folding apparatus to apply adhesive to a ribbon to be folded in a predetermined manner. In addition, the ribbon may be perforated with the application of adhesive on either side of the perforation lines to provide an insert which may be bound to a primary magazine and removed said bound portion therefrom.

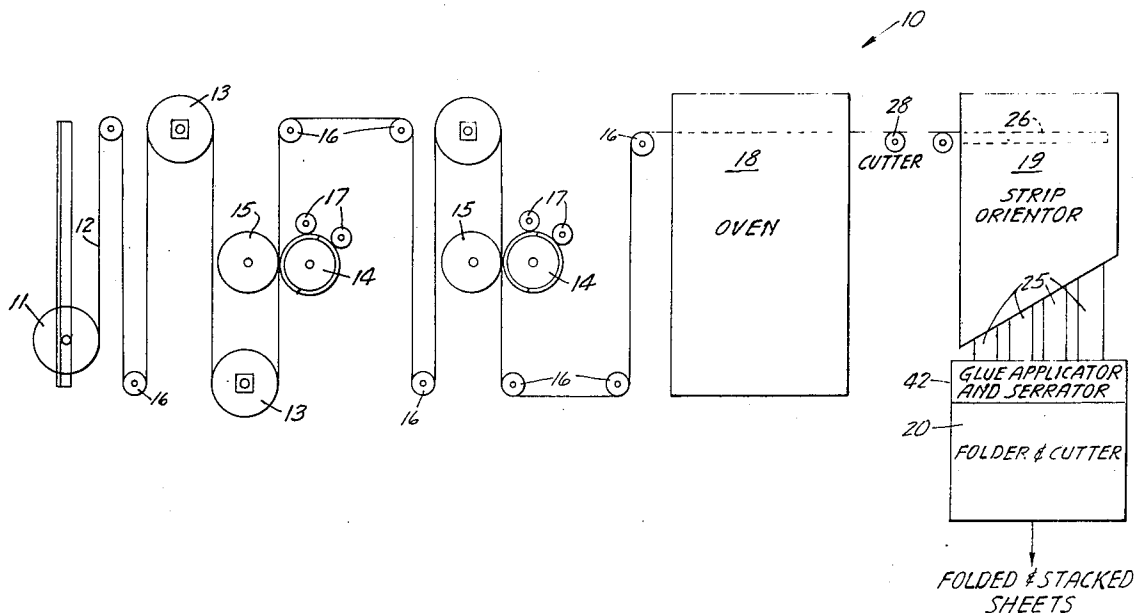
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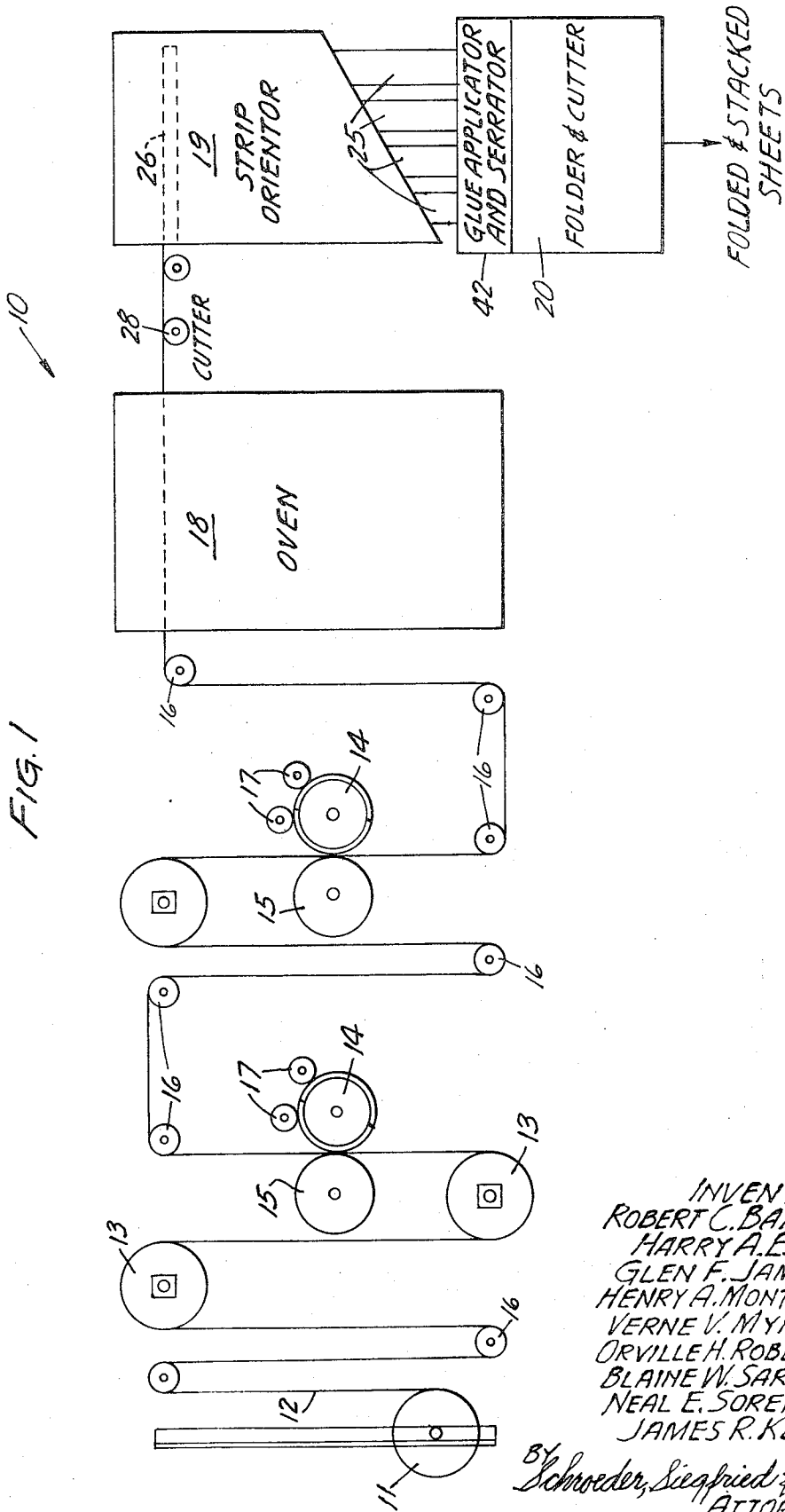
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7 Claims, 7 Drawing Figures





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FIG. 2

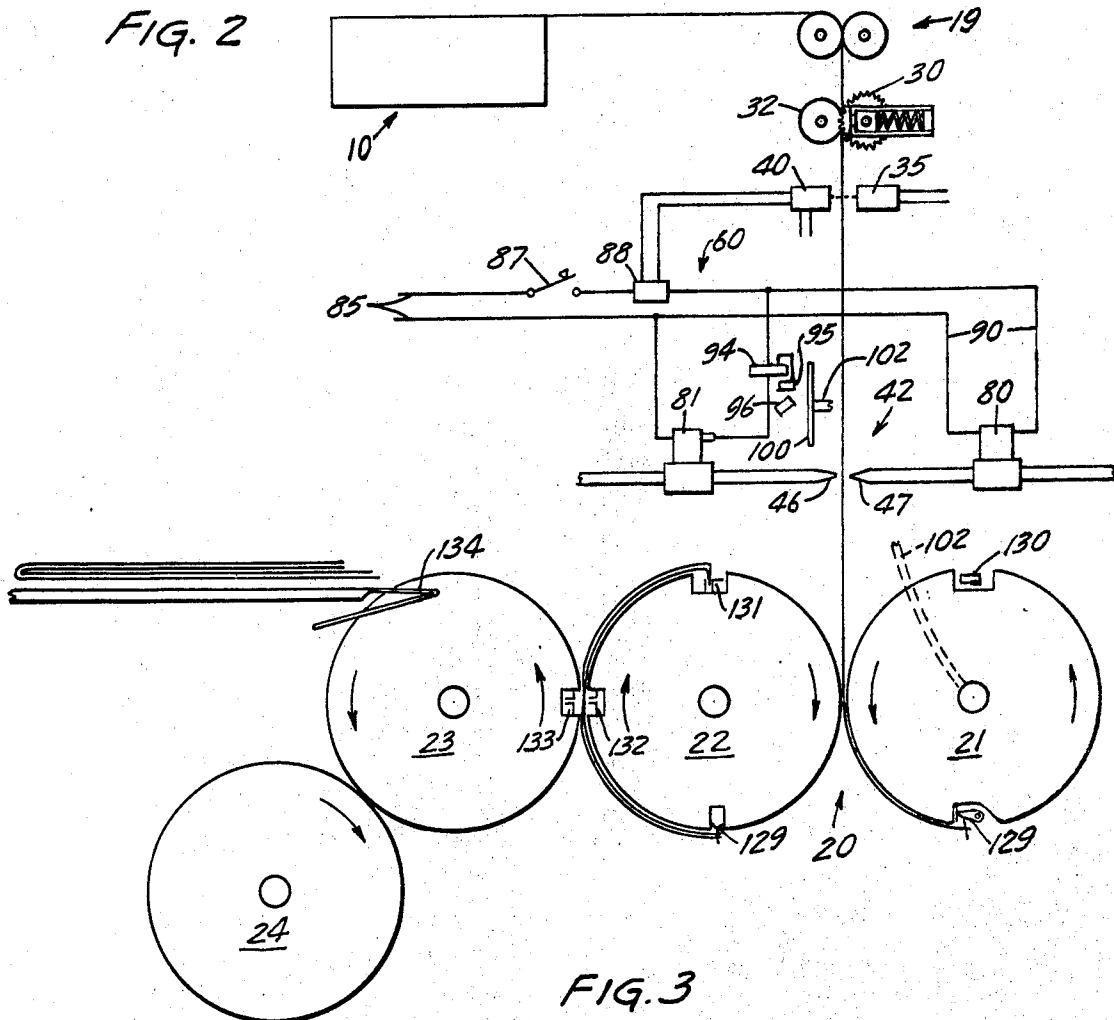
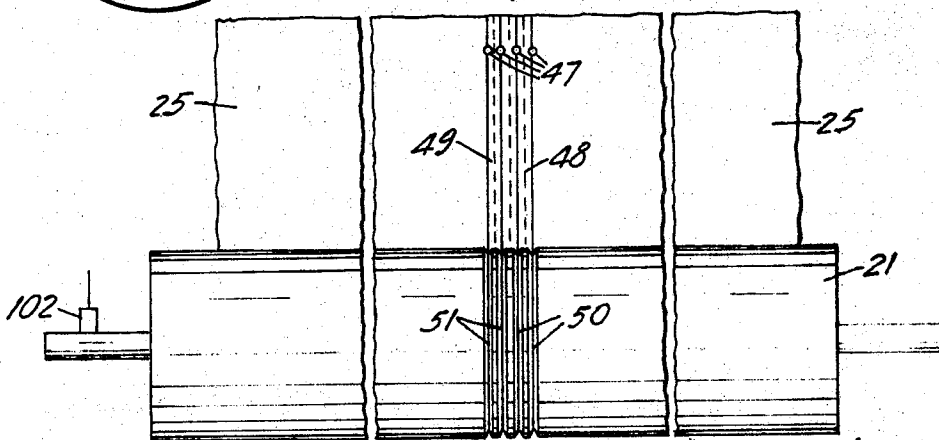
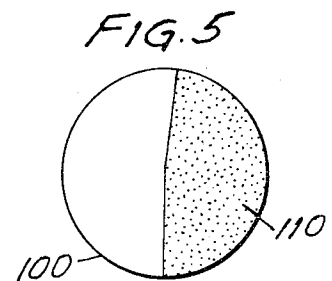
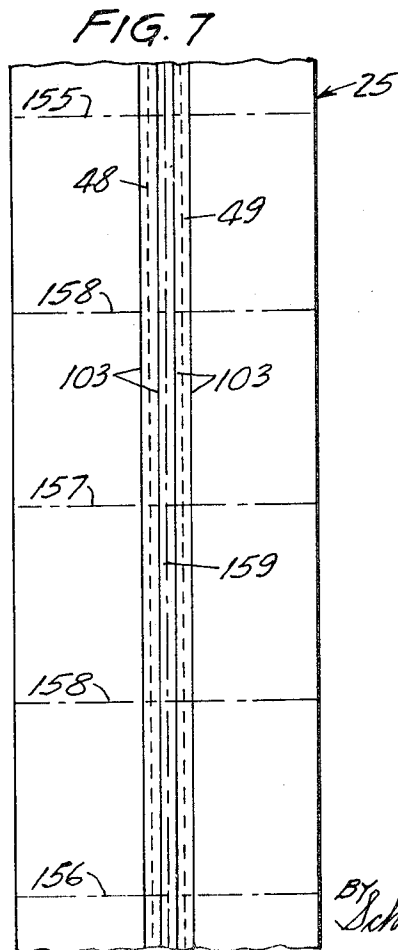
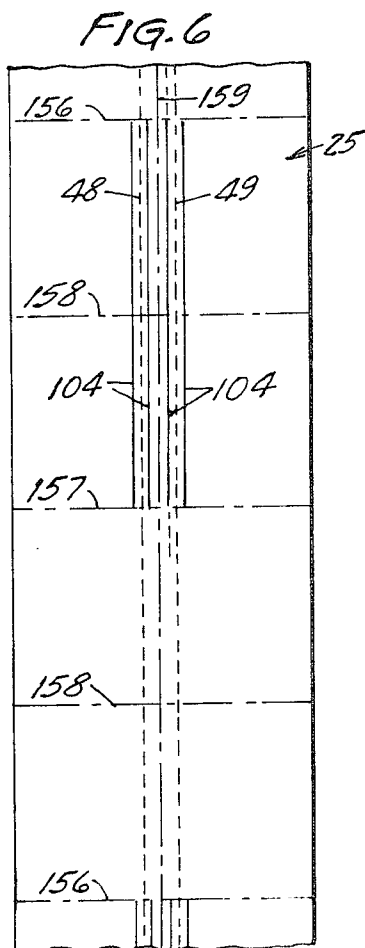
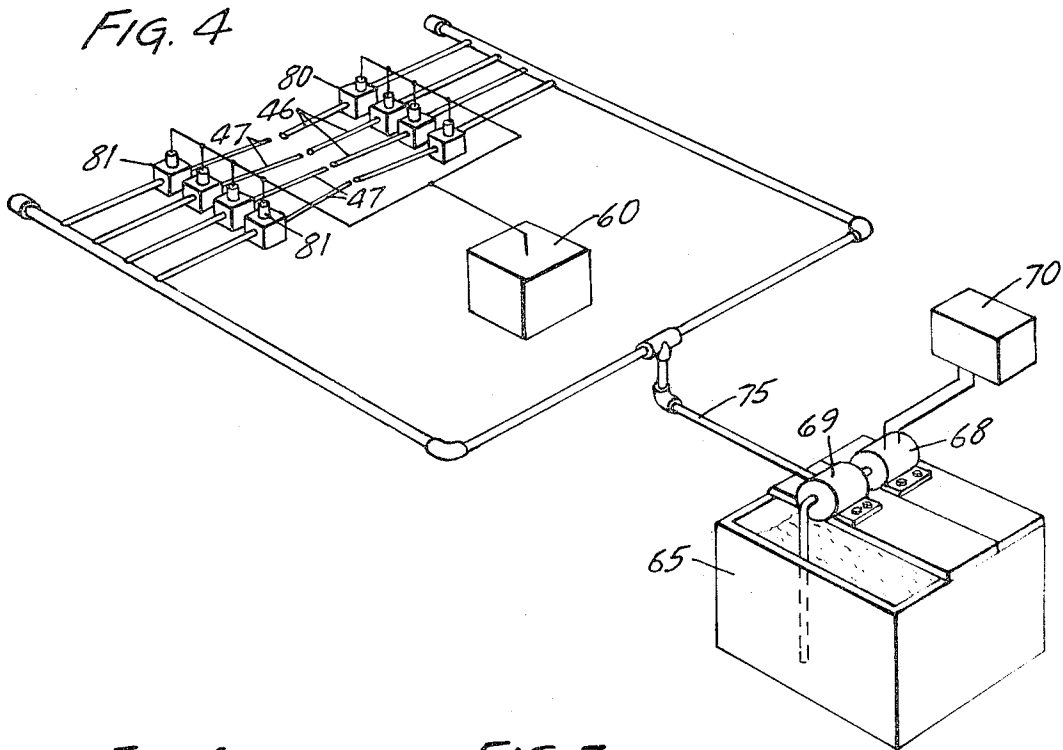


FIG. 3



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METHOD OF MAKING A MAGAZINE INSERT

My invention relates to machinery and the method for making magazine inserts or the equivalent and more particularly to an improved machine which makes a separately bound plural page printed insert adapted for securement in a primary magazine or paper.

At the present time, magazine or paper inserts comprising a plurality of pages of printed material to be inserted into a primary publication, such as a magazine, are generally printed, cut and folded in the same manner as the primary magazine and are bound thereto as a part of the primary magazine through various types of bindings. Such inserts are becoming extensively used in advertising and the principal requirement of the same is that these can be readily removed by the reader from the primary magazine or paper. In present day printing, binding methods are utilized which generally require damage to the primary magazine by destruction of the binding to remove such inserts. Where such inserts are not separately bound to make them readily accessible or removable, a disadvantage arises in that such inserts are subject to becoming lost, misplaced or separated from the primary magazine prior to the time when such inserts would normally be removed by a reader.

The improved machine of the present invention prints and forms the insert from a continuous ribbon of printed material in which the ribbon is separated or severed into webs and the webs folded through a web jaw folding apparatus to provide the desired number of pages for the insert. Prior to folding, the web or ribbon has glue applied to the same in a continuous line type application with several such lines in spaced parallel relationship forming a perfect binding for the insert. The insert material is also perforated with the glue applied to either side of perforation lines so that the insert itself is bound through the application of the glue and the portion inserted into the primary magazine is similarly bound so as to facilitate insertion but eliminate the problem of destroying the binding on the primary magazine as the insert is removed. The improved machine incorporates into conventional flap folding apparatus a structure to apply the adhesive or glue to the ribbon of printed material prior to the folding function. The machine also incorporates a perforating means for providing the separation lines of the ribbon which is thereafter formed into the ribbon which become the insert. In addition, the improved machine includes control apparatus for the glue applying structure to apply the glue in a continuous line type application on certain surfaces of the ribbon and in predetermined sequence on other portions of the ribbons so that when folded in the folding apparatus, the glued lines will match and form the binding for the insert. This will provide an insert which will be readily removable from the primary magazine in which it is placed without destruction of the binding and without the requirement of separate or special binding applications.

It is therefore the principal object of this invention to provide an improved machine for making a magazine insert.

Another object of this invention is to provide an improved machine for making a magazine insert which is readily removable from a primary magazine as a bound article and which is suitable for application to the primary magazine through any suitable binding.

Another object of this invention is to provide in an improved machine of this type a simplified structure for applying glue as the binding medium for the insert in a proper direction and location to bind the insert on either side of perforation lines.

Another object of this invention is to provide a simplified modification to conventional printing apparatus which provides an improved and new magazine insert.

These and other objects of this invention will become apparent from a reading of the attached description, together with the drawings, wherein:

FIG. 1 is a schematic view of the improved machine incorporated for making a magazine insert;

FIG. 2 is a diagrammatic view of another portion of the improved machine for making a magazine insert showing modifi-

cation of a conventional web-press jaw folder with structure for applying glue to the webs which are folded therein, a structure for perforating the web and control apparatus for the same;

FIG. 3 is an elevation view of a portion of the machine of FIG. 2 showing relationship of parts;

FIG. 4 is a schematic view of a portion of the glue applying apparatus of the machine, together with the control for the same;

FIG. 5 is an elevation view of a rotatable target for the electric eye portion of the control for the machine of FIG. 1;

FIG. 6 is an elevation view of the portion of a ribbon showing the application of adhesive to one side thereof; and

FIG. 7 is an elevation view of the opposite side of the ribbon shown in FIG. 5 showing the application of adhesive thereto.

The improved machine for making a magazine insert described and claimed herein, is directed to making an end product or magazine insert of the type shown and claimed in the co-pending patent application of Robert C. Bailey, et. al. entitled "Magazine Insert and Method Of Making The Same," Ser. No. 823,248, filed May 5, 1969 now U.S. Pat. No. 3,588,085. This magazine insert is characterized by a binding edge adapted to be secured by means of either a perfect binding or saddle stitching within a primary magazine with adhesive between adjacent pages of the magazine insert along lines extending generally parallel to the binding edge and with the pages being perforated throughout their length between the lines of adhesive and the binding so that the insert may be torn along the perforated edge free of the primary magazine and be utilized as a bound article acceptable to the trade without impairing or damaging the binding of the primary magazine. The magazine insert may take a plurality of forms in which adhesive is applied continuously to both sides of the ribbon or web or intermittently on one side and continuously on another depending upon the number of pages involved and the number of folds to be made in the same. In its variety of forms, each of the pages of the insert will be secured to its next adjacent page at opposite sides of a line of perforation which secures the binding edges together and the edges of the insert when removed.

The improved machine for making the magazine insert incorporates any type of conventional printing press having connected thereto a cutting and folding portion which latter structure is recognized in the printing art as a web-press jaw folder. The printing press may take a variety of forms and is commercially available in the printing industry. One such machine is produced by the American Type Founders, Inc., Box 48, National, Tennessee 37202, under Ser. No. W-848. Another type is manufactured by The Miehle Goss Dexter Company, 5601-31st Street West, Chicago, Illinois 60650, under Ser. No. RU-56781112. Similarly the folding portion of the apparatus or the web-press jaw folder may take a variety of forms and is also commercially available in the printing industry. One such machine is produced by the American Type Founders, Inc., also under the Ser. No. W-848. Another type is manufactured by the Miehle Division, The Miehle Goss Dexter Company, under Ser. No. RF-4. Regardless of its form, the printing machine is adapted to take paper in rolled form and direct it through a series of press rollers which include printing plates of various types and with various colors and direct the continuous strip through a baking oven and slitter to a portion of the press in which the slit strips or ribbons are oriented to be fed into a web-press jaw folder in a continuous line. At this point the individual ribbons are cut to predetermined web length and folded. Since these primary portions of the apparatus are conventional, they are shown schematically on the drawings for simplicity and incorporated herewith are the modifications which provide the improved machine for making the magazine insert. It prints the paper stock and slits the same into printed ribbons after which the individual ribbons are perforated and have adhesive applied thereto, cut to insert length and folded to provide the magazine insert.

In FIG. 1 we have shown schematic arrangement of a printing press and web-press jaw folder apparatus for making the improved magazine insert. This improved machine, while incorporating a conventional press and web-press jaw folder, includes modifications which will be hereinafter described. Thus in FIG. 1, the printing press is shown generally at 10. It receives paper stock, as indicated by the roll 11, to provide a continuous strip 12 of paper which is fed through a series of guide rollers 16 and over drive rollers 13 to a printing drum 14 where it passes between the printing drum and a press roller 15 to have material imprinted thereon. The printing drums include the conventional plates which are attached thereto and suitable and linking rollers such as is indicated at 17, ink the surface of the plates in a conventional manner. As is shown in FIG. 1, two such printing drums and a plurality of drive rollers are incorporated to suggest a multi-colored printing of matter on the paper 12 which after printing is fed through an oven 18 to dry the ink thereon. As would be seen schematically on FIG. 1, the continuous strip is then directed to a cutter 28 and strip orienter, indicated generally at 19, which includes a plurality of orienting guide rollers 26 which will separate the individual ribbons cut by the cutters 25 and direct the same simultaneously into the glueing portion 42 of the machine and into the web-press jaw folder, indicated generally at 20. The strip orienter and cutters are normally part of the printing press and the web-press jaw folder is a separate unit added thereto for folding and cutting portions of the ribbon into folded and printed sheets.

In FIG. 2 the individual ribbons 25 with the printed matter thereon are directed from the printing press over the guide rollers toward the web jaw folding apparatus with perforating apparatus and glueing apparatus (to be later described) positioned therebetween. The web jaw folding apparatus which is shown schematically at 20 incorporates a plurality of cylinders 21, 22, 23 and 24 which are journaled in the suitable frame and driven to rotate relative to one another, as will be hereinafter described. The ribbon 25, as it leaves the guide structure, is perforated by means of spring loaded perforating wheels 30 bearing against rollers 32 which operate to place perforating lines throughout the extent of the ribbon which will be cut and folded to form the insert. As shown schematically in FIG. 2, for a single ribbon section a suitable photo-cell detecting apparatus, indicated by a light source 35 and photo-cell 40, detect the presence of the ribbon as an overall control means for the glue applying apparatus, indicated generally at 42. Such apparatus is incorporated in the improved machine for each of the plurality of ribbons in a side-by-side relationship. The latter incorporates a plurality of nozzles 46, 47 positioned on either side of the ribbon such that the ribbon passes therebetween. In the preferred form of the machine, pairs of perforating wheels 30 are positioned in side-by-side relationship to define tear lines in each web or ribbon which, when folded, for the magazine inserts. For simplicity only one set of apparatus for one ribbon will be hereinafter defined.

The plurality of nozzles 46, 47 positioned on either side of a ribbon are for the purpose of this disclosure nozzles positioned on either side of the perforation lines which are identified at 48, 49 in the sections of the ribbons shown in FIGS. 6 and 7. As will be seen in FIG. 3, the nozzle tips 47 will be spaced to either side of the lines 48, 49 to apply adhesive thereto. The nozzles 46, 47 are juxtapositioned so as to apply adhesive to opposite sides of the ribbon in parallel lines as the ribbon 25 moves downwardly from the strip orienter 19 to the web-press jaw folder. The application of glue or adhesive to the continuous ribbon 25 as it reaches the web-press jaw folder, wherein it is folded and severed into web lengths with the adhesive being positioned on either side of the ribbon or over certain portions thereof, will present a glued surface to the surface of the drums 21, 22, 23 and 24 of the folding apparatus. As will be seen in FIG. 3, drums 21, 22, 23 have grooved surfaces 50, 51 (for each ribbon) positioned thereon which align with the surface of the ribbon or web having the perforations and glue applied thereto so that the glue will not be deposited on the exposed surface of the drums.

As shown in FIGS. 2 and 4, the nozzles 46, 47 are controlled from an electrical circuit, indicated generally at 60, to apply the adhesive or glue to the ribbon in a predetermined manner. The adhesive or glue is obtained from a source of the same, indicated by container 65, having associated therewith a pump 69 driven by a motor 68 which is controlled from an electrical controller, indicated generally at 70. The pump is connected through tubular conduit lines 75 leading respectively to the grouping of nozzles each of which has associated therewith separate valves, indicated generally at 80 and 81 respectively, the valves controlling flow of the adhesive from the pump or pressure source through the nozzles 46, 47. The valves are controlled from the electrical circuit 60 which includes conductors 85 and a manually operated switch 87 together with a failsafe controller 88 which controls flow of electric current to the valves through a circuit indicated by conductors 90 directly to the valves 80. The valves evidenced by the valve block 81 have in series therewith a controller 94 which is controlled from a photo-cell 95. The latter is operated by a light source 96 and rotating target 100 which reflects light from the source 96 back through the photo-cell 95 controlling the operation of the controller 94 to selectively energize the valves 81 in a predetermined manner. The rotating target 100 is mechanically connected by a cabling connection, indicated generally at 102, to the rotating drums, such as is indicated by the dotted line, to be synchronized with the position and operation or rotation thereof. Thus, the valves 80 are each controlled from the control circuit for simultaneous energization whenever the manual switch 87 is closed and the controller 88 is operative indicating presence of a ribbon between the photo-cell 40 and the light source 35.

Glue or adhesive will be applied along the lines indicated at 103 on either side of the perforation lines 48, 49 such as is indicated by one side of the web section or ribbon in FIG. 7. The valves 81 controlling flow through the nozzles 46 on the opposite side of the ribbon, are controlled from the photo-cell light source and target combination 95, 96, 100 controlling the controller 94 in series with the valves 81. The photo-cell energization is governed by the rotating target 100 which has approximately one-half of its surface dark, as indicated at 110 in FIG. 5, with the other half being light so as to cause the light from the source 96 to be reflected onto the photo-cell 95 to energize or close the circuit of the controller 94 during one-half the time in which it takes the target 100 to complete one revolution. The target 100 is connected to the drums or cylinders, as indicated by the mechanical connection 102 in FIG. 2 and shown similarly coupled in FIG. 3 to the shaft of the drum 21. Thus, as the target completes one revolution with each revolution of the cylinder, adhesive will be applied in four parallel lines to one side of the ribbon, as indicated in FIG. 6, along one-half of the length of a severed ribbon whose length is equal to the circumference of the drum 21. It will be readily appreciated that as a result the adhesive will be applied to the side of the web or ribbon shown in FIG. 6 in four parallel lines, as indicated thereon, and intermittently so that half the length of each section of the ribbon will have adhesive applied thereto while the other half will be devoid of such adhesive. The positioning of the nozzles relative to the web or ribbon applies the adhesive in two pairs of parallel lines along and at opposite sides of each of the perforating lines 48, 49 with one side being continuous on the other discontinuous, as indicated above.

As the ribbon 25 reaches the web-press jaw folder, cylinder 21 is provided with pins 129 which engage and secure the leading edge of the ribbon and draw the ribbon between the cylinders 21, 22 until a folding tucker 130 is directly opposite folding jaws 131 of cylinder 22. At this point, the folding jaws 131 are opened and the tucker 130 is caused to be extended by cams (not shown) into the jaws of the folding jaw 131 on cylinder 22 causing the ribbon 25, which when cut becomes a signature, to be folded thereover. The folding jaws 131 clamp onto the folded ribbon 25 or signature and carry it around the cylinder 22. The folding jaws 131, which formerly held the leading edge of the signature 25 are now retracted releasing

the leading edge and permitting the folded signature to go with cylinder 22 to a position shown at the left-hand side of the cylinder as depicted schematically in FIG. 2. A folding tucker 132 on cylinder 22 reaches a position shown in FIG. 2 where it is caused to extend into folding jaws 133 of cylinder 23 causing the already once folded signature 25 to be folded again thereover. The folding jaws 133 then clamp upon the now twice folded signature and carry it around to a position where stripping fingers 134 which extend into grooves (not shown) in the cylinder 23 strips the folded signature or insert therefrom. As the folding jaw 133 of cylinder 23 grabs a now twice folded insert, the folding jaws 131 of cylinder 22 release the same. The folding jaws 133 of cylinder 23 release just prior to the arrival of the twice folded signature at the stripping fingers 134. Suitably spaced conveying apparatus carry the folded inserts or signatures away from the web-press jaw folder to a delivery table. Incorporated in cylinder 21 and not shown is a knife which is correlated with the pins 129 so that at a point where the knife and pins 129 on cylinder 22 meet, the knife precedes the pins to sever the ribbon forming the signatures. The leading edge of the ribbon is then picked up by the pins 129 on cylinder 21 which are projected radially outward through the ribbon and the spring loaded knife (not shown) cuts the ribbon against a slot (not shown) in cylinder 21 to release the trailing edge of the leading signature and create the leading edge of the trailing signature. As indicated in FIG. 2, the trailing edge of the leading signature is attached to the pins 129 of cylinder 22 for the second fold. This folding machinery by itself is well known in the printing industry and is shown and described herein to clarify the added structure to the machine which makes the improvement in the apparatus for the magazine insert. The modification to the folding machinery consists primarily in the addition of grooves 50, 51 therein aligned with the adhesive lines 104, 103 to minimize the collection of adhesive on the cylinders.

As will be seen in FIGS. 6 and 7, the first fold of the ribbon 25 is made at a point midway between the length of the signature which extends from the end of the ribbon, shown in FIG. 6 and identified at the numeral 157, to a line identified by the numeral 156. The first fold is made midway between the ends along a fold line, indicated by the numeral 157, so that the lines of adhesive 103 and the upper half of the signature, as shown in FIG. 6, will be applied to meet the same line on the lower half thereof. If desired, the adhesive can be applied throughout only half of the length of the signature depending upon the drying time of the adhesive since the surface is folded on one another will adhere thereto. When this fold is accomplished, it will be seen that one side of the once folded ribbon 25 now bears a line of adhesive 104. The second fold of the ribbon 25 folds the signature toward the line of adhesive 104, this fold being made along the line 158. It will be readily appreciated that the line of adhesive 104 may extend only over one quarter of the length of the severed signature or web if the adhesive is of such characteristics as to dry and adhere to the portion having no adhesive thereon. A center line, indicated at 159 in the folded web, indicated that the insert so formed may be folded on itself longitudinally of the extent of the ribbon and transverse to the fold lines 157, 158 to provide a magazine insert of 8 pages which may be attached to a primary magazine through a saddle stitching operation. It will also produce two magazine inserts 4 pages each adapted for perfect binding through a severing operation on the completed insert along the center line 159. Thus, by using four parallel lines of adhesive positioned in pairs on either side of the perforating lines, the improved machine produces as a part of normal printing and folding operation a magazine insert which may consist of 8 pages adapted for saddle stitching to a primary magazine or two magazine inserts of 4 pages each adapted for a perfect binding procedure in the primary magazine.

It will be recognized that by modification of the web jaw folding press an increased number of folds may be made to the ribbon to increase the number of pages thereon. Thus, if three

transverse folds are utilized, then the lines of adhesive 104 extends along three-quarters of the length of the signature, three transverse folds may be accomplished to provide a single magazine insert consisting of 16 pages which is adapted to be saddle stitched to a primary magazine. Such a thrice folded signature, when cut longitudinally along the dividing or reference line 159 will provide two magazines of 8 page inserts adapted for a perfect binding type insert. The improved machine may be readily adjusted through the shape of the target 100 or that is the ratio of light to dark surface thereon to selectively position adhesive on one surface of the ribbon over a predetermined extent of the same desired for the particular number of folds involved. Similarly, both sets of nozzles may be adjusted if desired depending upon where it is desired to apply the adhesive in the construction of the magazine insert. It will be readily recognized that while we have shown a single ribbon or web directed to the folding drums that several webs will normally be positioned in a side-by-side relationship and the drums so modified with the plurality of sets of grooves therein and a plurality of sets of nozzles appropriately positioned with respect to the individual webs for a simultaneous folding operation.

What is claimed is:

1. A method of forming a magazine insert consisting of:

- printing on a continuous strip of paper in a repetitive manner and in a side-by-side relationship information forming the printed material of the magazine insert;
- cutting the continuous strip into a plurality of continuous ribbons of printed material and guiding the ribbons into a folding and glueing apparatus in a spaced parallel relationship;
- weakening the material of each of said ribbons throughout along a line extending parallel to the extent of the material and intermediate the width of the ribbon;
- applying adhesive to one side of the ribbon along a pair of spaced parallel lines on either side of the weakened line; and
- cutting the continuous ribbon into signatures and folding each signature upon itself transversely of the lines of adhesive at least once and approximately midway between the ends with the sides of the signature bearing the adhesive to the inside, thereby causing the portions of said signature at one side of said fold to be secured throughout substantially its entire length to the portions of the other side of the fold.

2. The method of forming a magazine insert of claim 1 in which the application of adhesive to one side of the signature takes place substantially throughout its entire length and in spaced parallel lines to either side of the weakened line commencing adjacent one of its edges and simultaneously applying adhesive to the opposite side of the signature in a pair of spaced parallel lines to either side of the weakened line commencing adjacent said one of its edges and extending less than the entire length of the signature.

3. The method of forming the magazine insert of claim 2 in which the application of adhesive to said other side of said signature takes place substantially over one-half the length thereof and in which the folding of the signature is effected by folding said one side of said signature upon itself such that the spaced parallel lines of adhesive contact one another and including an additional fold of the signature in which the adhesive on the opposite side thereof is folded on itself.

4. The method of forming a magazine insert of claim 2 in which the folding of the signature is effected by more than one fold with each fold being in a direction to bring surfaces of the signature on either side of the fold with adhesive thereon into aligned contacting relationship.

5. The method of forming a magazine insert of claim 1 in which the weakening of material of said ribbon forming the signature takes place along at least a pair of lines disposed intermediate between the sides thereof and in which the application of adhesive to the one side of said signature is in spaced parallel lines to either side of said lines of weakened material.

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6. The method of forming a magazine insert of claim 1 in which the plurality of ribbons are simultaneously weakened and thereafter have adhesive applied thereto with said severing of the ribbons into signatures for each ribbon taking place simultaneously and with a simultaneous folding of the signature.

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7. The method of forming a magazine insert of claim 1 in which the folding of the signature is effected such that the adhesive applied to the surfaces does not come in contact with the folding apparatus.

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