Nov. 8, 1966 W. E. S. MATUSCHKE 3,284,077

PRODUCTION OF BOOKS AND THE LIKE

Original Filed Sept. 16, 1963 4 Sheets-Sheet 1

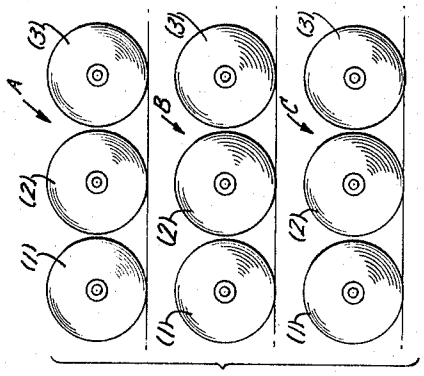


FIG. 2

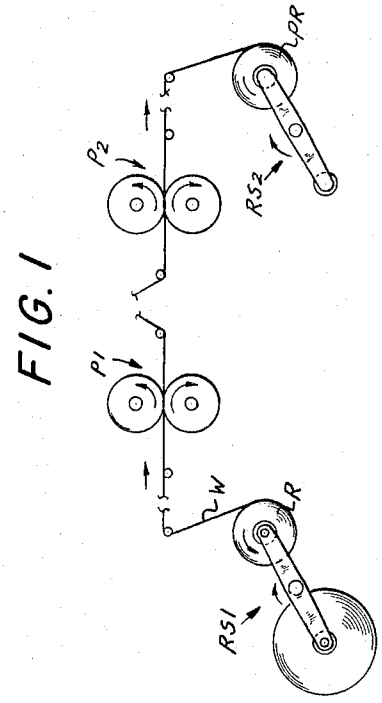


FIG. 1

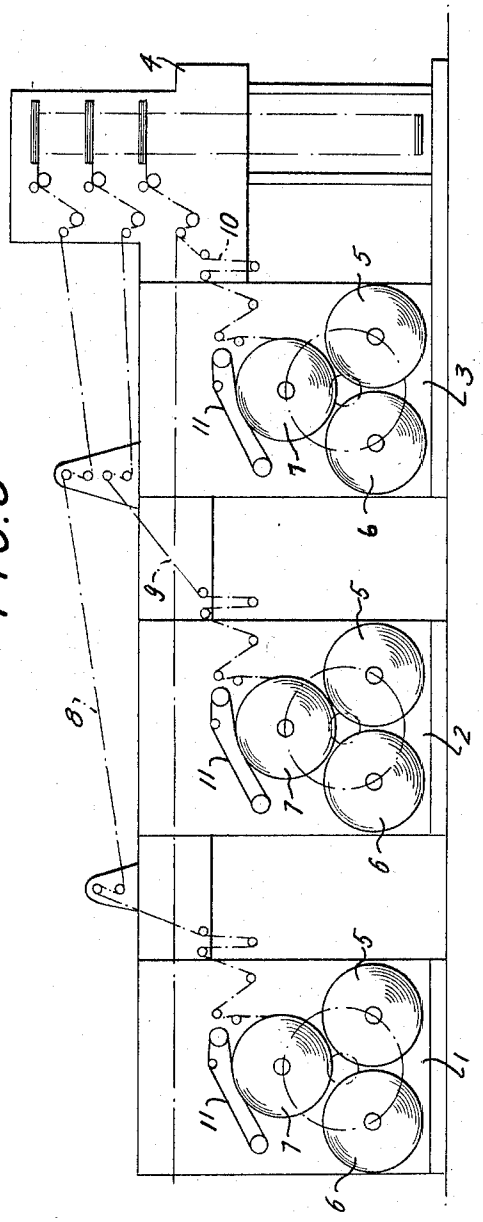


FIG. 3

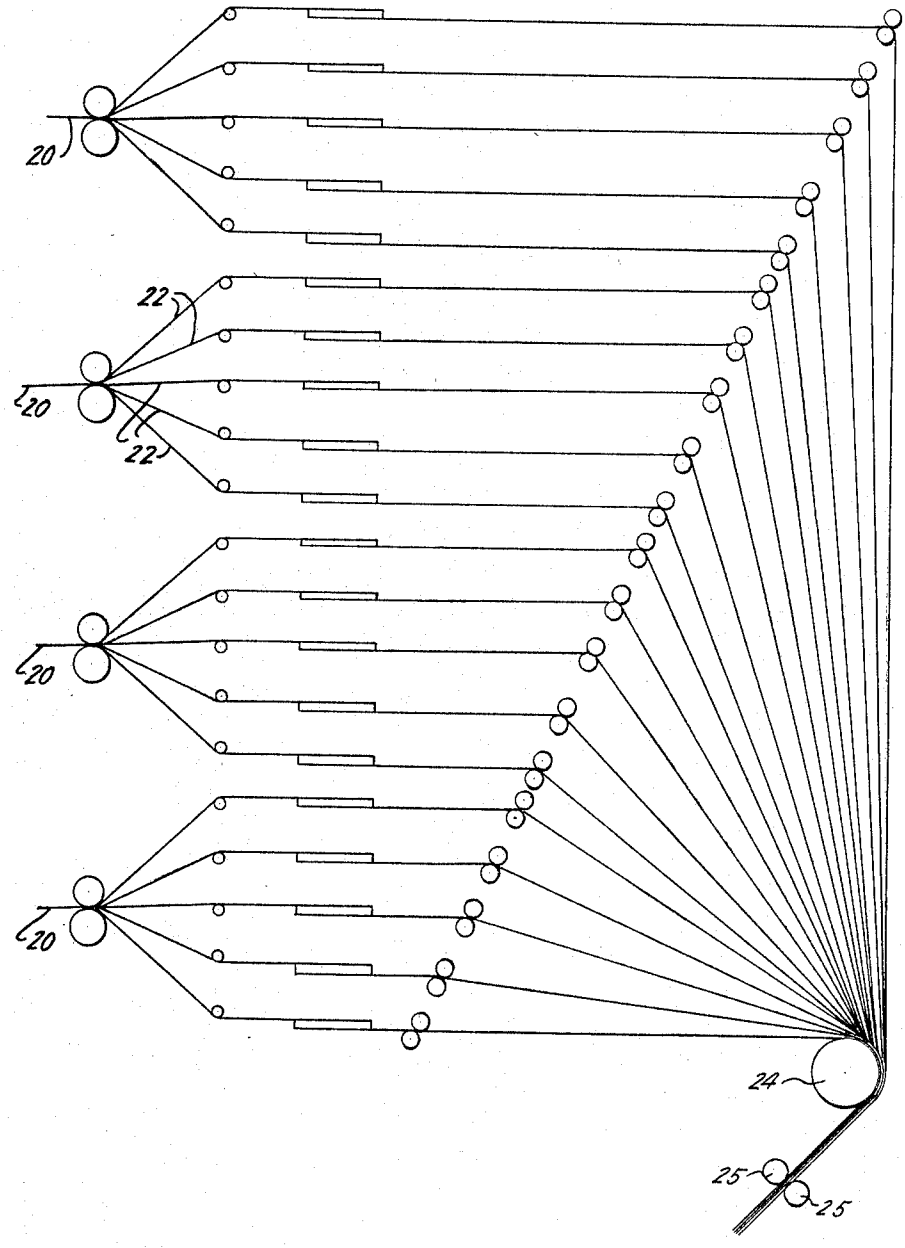
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PRODUCTION OF BOOKS AND THE LIKE

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FIG. 4



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PRODUCTION OF BOOKS AND THE LIKE

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FIG. 5

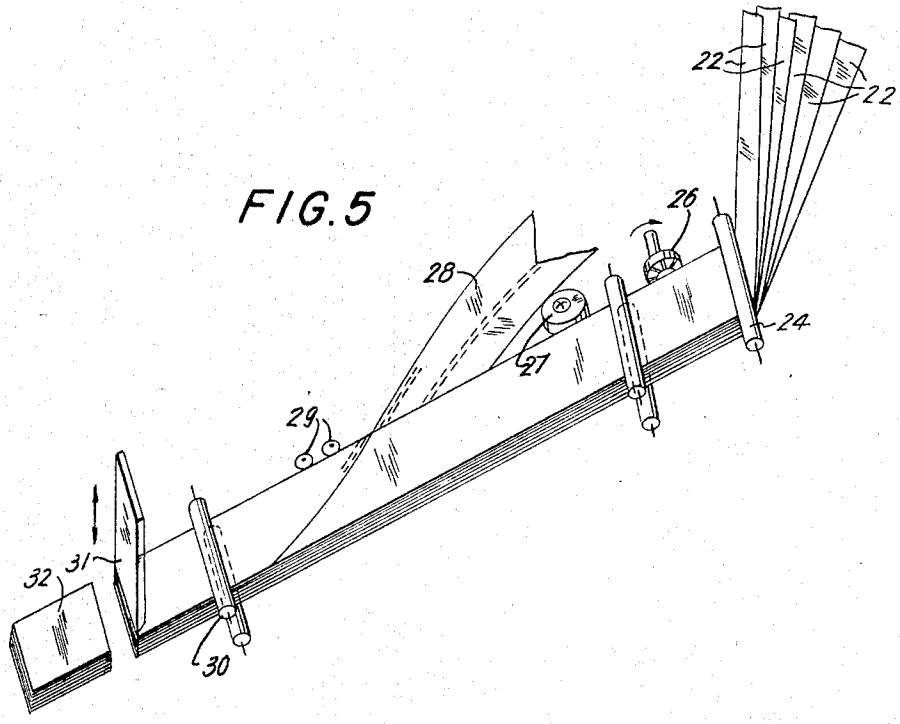


FIG. 6

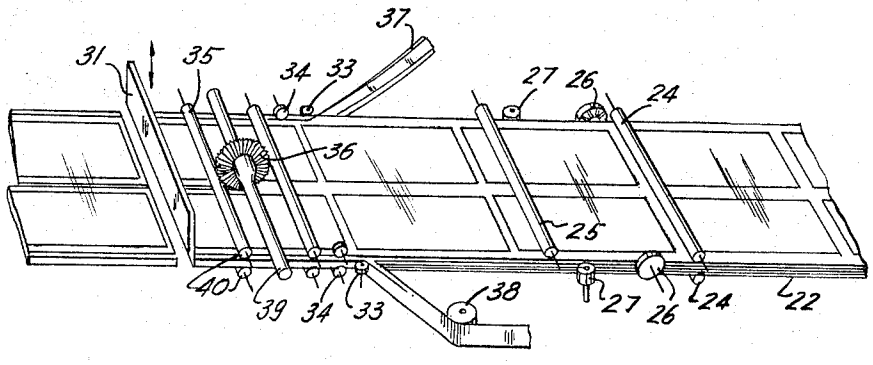


FIG. 7



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FIG. 9

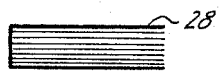


FIG. 10

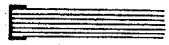


FIG. 11



FIG. 12

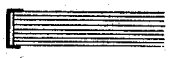


FIG. 13

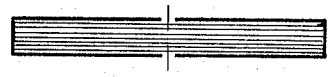


FIG. 14

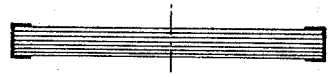


FIG. 15

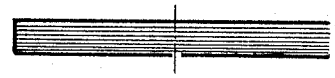
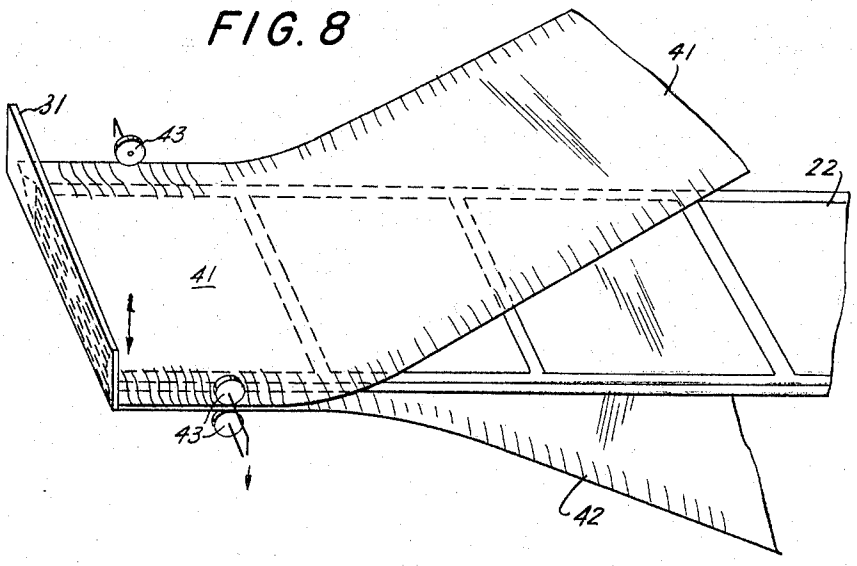


FIG. 8



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United States Patent Office 3,284,077
Patented Nov. 8, 1966

3,284,077

PRODUCTION OF BOOKS AND THE LIKE

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Continuation of application Ser. No. 309,101, Sept. 16, 1963. This application Jan. 13, 1966, Ser. No. 528,689
10 Claims. (Cl. 270—5)

This is a continuation of copending application Serial No. 309,101, filed September 16, 1963, which is, in turn, a continuation-in-part of applications Serial No. 43,759, filed July 19, 1960, and Serial No. 197,507, filed May 24, 1962, now abandoned.

This invention relates to the production of bound printed products of the nature of books, such as periodicals, paper backed editions, and the like, each consisting of a multiplicity of leaves.

As is well understood, books are often produced by rotary printing processes and are, in may instances, produced by a plurality of rotary printing presses each of which produces a signature or section of the books. One of various reasons for producing the books in sections is, for example, that each book may be required to include a decorative cover or inserted pages printed in color.

Following the production thereof the sections commonly are stacked and passed to a binding department where they are processed in several operations involving the utilization of an assembling or collating machine followed by a folding and stitching, stapling or other fastening or binding machine.

Apart from the fact that the stacking of the part-products or signatures and their transport to and processing in the binding department necessitate a considerable amount of work, the disadvantage arises that the output of the complete operation is determined by the speed of the bookbinding operations, which is considerably less than that of modern rotary printing machines.

The binding work, therefore, is usually carried out on a three-shift basis, involving large costs for night shift operatives, who, generally speaking, receive a higher rate of pay than others. If, however, night work is dispensed with and the bookbinding operations are carried out only during the daytime, the considerable disadvantage arises that the printing machines are utilized at far less than full capacity, the output of the bookbinding operations as compared with the printing output being in the ratio of approximately 1:4 to 1:5.

It is also known to have a rotary machine installation, such as a plurality of web printing machines, cooperate directly in continuous fashion with a folding apparatus and possibly a fastening means, so that the finished product is accordingly produced in a continuous process. A method of this nature certainly has the advantage of continuous operation, but it also has the essential disadvantage that the output is determined by the slowest link of the chain, so that the rotary machine or machines are not fully utilized.

The present invention has primarily for its object to provide a method of printing, assembling and binding printed part-products in the production of books such as periodicals, paper backed editions and the like, by which the capacity or output of the aggregate taking part in the production is utilized in full.

A further object of the invention consists in the provision of a method of the kind stated, in which, while utlizing the full output capacity of rotary printing machines, a continuous production of books is rendered possible.

It is another object of the present invention to provide a method for the production of books having very large number of leaves, i.e., of any desired thickness, in a

continuous manner, thus obtaining substantially higher outputs than are possible when collating, folding and stapling or stitching machines are utilized for the binding operations.

A still further object of the invention is to provide a method for the production of books which permits the conversion of existing plants from the manner of operation utilized hitherto to the manner of operation according to the invention, without excessive investments for machinery.

According to a basic concept of the present invention, the manufacture of bound multi-leaved printed products such as books or the like is carried out by producing a multiplicity of differently composed printed webs, in the form of either mono-color or multi-color prints, through rotary printing press operations which can be carried on at their full output or production rate; winding the printed webs into rolls as they are produced; conducting sets of rolls of the respective printed webs sequentially to unwinding rollstands; and from these rollstands unwinding the printed webs and feeding them continuously to and through folders or other apparatus that suitably forms them into leaf-forming ribbons and assembles and binds these ribbons into bound printed products.

In this way, the materials can be converted into products such as books at a rate corresponding to the full outputs or production rates of both the printing press or presses and the ribbon forming and binding devices, so that a maximum utilization of the facilities taking part in the production is achieved.

According to a further feature of the invention, the several differently composed printed webs are wound into respective rolls of a desired standard size, so that for each web of a given print composition there is a group or succession of rolls and the rolls of all the webs will contain practically the same amounts of printed web. Sets of rolls of the several webs, taken from the respective groups of rolls, are then conducted sequentially to the unwinding rollstands where the webs of the rolls of each are started in their respective unwinding movements to the forming and binding apparatus at the same time.

By virtue of this feature, finished books are obtained from practically the entire lengths of the printed webs making up the rolls, without interruption of the operations or the production of copies containing irregular or spliced web ends unless at the limited intervals of transition from one set of the preprinted web rolls to another set of them at the unwinding rollstands.

The rotary printing press or presses produce on each of the differently composed printed webs a continuous succession of printed areas each of which corresponds in length to at least one leaf of a book and in width to as many leaves as are to be formed from the breadth of the web. As the rolls of these webs are unwound, the webs passing from the unwinding rollstands may be folded or slot or both slit and folded to form them into narrower continuous strips or ribbons which are assembled and passed together through the binding apparatus with their respective successions of printed areas superimposed in register, so as to form a continuous succession of interconnected books which are then readily separated one from another.

It is also within the contemplation of the invention to utilize unwinding rollstands, sometimes called roll stars, by which a registered attachment or splicing, as by adhesive, of end portions of the individual lengths of printed web forming the successive rolls of each group, i.e., of each print composition, is effected so that each of the several differently composed webs will always be extending into the forming and binding apparatus. For this purpose, there may be arranged in association with that apparatus automatic splicing rollstands which in

known fashion upon a change of rolls will effect the splicing or adhesive attachment, in register, of the printed web lengths of the rolls of a new set to those of the expiring rolls without stopping the paper. The registered splicing operations may be controlled in the manner known per se by a photoelectric cell.

The present method of book manufacture can be considered in a sense to be a process making use of a storage or buffer element together with rotary web printing apparatus that delivers the printed webs into rolls, unwinding rollstands, and apparatus for forming, assembling and binding together ribbons or strips of the printed webs unwound from the rolls at these rollstands.

The mechanical facilities can be operated at their full production capacities, without need for shutdown or idle machine time, when the number of webs printed simultaneously by the printing apparatus bears the same ratio to the number of printed webs unwound and processed into the books as the rate of processing the materials through the binding apparatus bears to the rate of the printing of the individual webs.

For instance, if the binding apparatus and the printing apparatus process the respective materials at output rates of 200 and 800 feet per minute, respectively, and if eight printed webs are to be processed into the books, the ratio of the output rates is 1 to 4, and two webs are to be printed simultaneously. Two printing presses then may be operated on a schedule whereby each press will produce rolls of four differently composed webs, by printing a web of one print composition, then one of a second composition, and so on, so as to accumulate and hold in reserve as many rolls of each composition as may be desired to provide a buffer or reserve supply of one or more rolls of each of the eight webs.

After the initial accumulation of at least one roll of each of these webs, sets of rolls of all of them are conducted sequentially to the unwinding rollstands and processed from the latter into the books while the printing presses are continued in operation at full output to keep the buffer or reserve supply replenished with rolls at the rate of conversion of the webs into the finished product. The frequency of the transition from one print composition to another in the operation of each printing press then will depend upon the number of rolls of the same composition provided in the reserve supply. If that number is one, each press will print one roll of a given composition between transitions; if it is greater than one, each press may print the same number of any desired lesser number of rolls of a given composition between transitions.

Since the printed web rolls can be produced by rotary machines operating at full output, stored in groups of any desired number of rolls for any desired length of time, and reintroduced into the process whenever required for continuation of the forming and binding operations, the production of books by use of the the present method is much more flexible than in the case of known methods of book production.

According to some embodiments of the invention, the printed webs from the unwinding rollstands are passed to conventional folding and fastening apparatus where they are assembly in superimposed condition and folded to form an assembly of collated ribbons, which either before or after being severed transversely at regular intervals to separate the successive book portions, are bound together by suitable apparatus such as a conventional stapling machine or a conventional stitching machine.

According to further embodiments of the invention, which are especially advantageous for the continuous production of books composed of large numbers of printed leaves, the printed webs are formed continuously into a relatively thick assembly of longitudinally folded or slit or slit and folded ribbons, which assembly is advanced lengthwise with its many leaf-forming ribbons superimposed one over another in register; and the ribbons are bound together by applying an adhesive or bonding agent continuously to their edges along at least one edge of the assembly and applying a cover-forming or binding web continuously to the assembly over each edge thereof having the bonding agent applied thereto. The assembly then is severed at regular intervals corresponding to the length of the books in order to obtain a continuous succession of separate books or of separate double book sections to be divided longitudinally into separate books.

Illustrative embodiments of the invention are shown diagrammatically, by way of example, in the accompanying drawings wherein:

FIG. 1 is a diagram of a rotary web printing press provided with a rewind rollstand;

FIG. 2 schematically represents a reserve supply of several groups of printed web rolls;

FIG. 3 shows diagrammatically several unwinding rollstands of roll star type in association with apparatus for folding and fastening together the unwound webs;

FIG. 4 schematically represents a system for forming the printed webs passing from four such rollstands into a continuous assembly composed of many collated web strips or ribbons;

FIG. 5 is a perspective diagram of a system for applying a cover-forming binding web continuously to such an assembly;

FIG. 6 is a perspective diagram of a system for applying binding webs to both edges of such an assembly;

FIG. 7 is a diagrammatic cross section of two books or the like produced according to the procedure of FIG. 6;

FIG. 8 illustrates a further modification of the method, by which the books are provided with an outer protective cover or wrapper as they are produced; and

FIGS. 9 to 15 illustrates various alternative constructions of books produced according to modified practices of the invention.

A detailed description of the manner of printing and forming rolls of the webs to be processed into the books is not considered necessary to a full understanding of the invention.

It will be understood that one or more rotary printing presses are to be used, depending upon the number of leaves required in the books, the number of them printable on the breadth of the web accommodated by each press, and the ratio of the production speed of the printing press or presses to that of the forming and binding apparatus.

Each printing press may be of a conventional type, such as diagrammed in FIG. 1, having, for example, an unwinding rollstand RS1 supporting a web roll R from which a web W is passed through a printing couple P1, which imprints one side of the web, and then over turning bars (not shown) which invert the web so that it will be imprinted on the other side by a second printing couple P2.

Associated with the delivery end of each printing press is a rewinding rollstand RS2 supporting roll holders upon which the printed web is wound to form rolls such as the one being wound at PR. Each of these rolls is made to contain practically the same amount of printed web as every other roll formed at the printing press or presses. The printed web rolls thus formed can then be stored or placed in reserve and brought back into the further operations at the desired time.

Taking for illustrative purposes the simple case of a periodical or the like that can be produced from three printed webs by the use of conventional folding and binding apparatus that will operate at a maximum speed of about one-third the maximum speed of an available rotary printing press, FIG. 2 indicates schematically one of many roll production and storage plans that may be used. The three printed webs are accumulated in groups of rolls designed A, B and C, respectively, each of which com-

prises several printed web rolls (1), (2) and (3) of the same composition.

At regular intervals determined by the maximum output rate or speed of the folding and binding apparatus, sets of respective rolls of the three printed webs, such as the set constituted by the three rolls (1), are taken from the storage location to unwinding rollstands 1, 2 and 3 (FIG. 3) which feed the webs simultaneously to a folding and binding apparatus indicated diagrammatically at 4. The webs are unwound and fed to the apparatus 4 at a cumluative or throughput rate substantially equal to the speed printing, while the rate of feed of the individual webs is kept substantially equal to the maximum rate of speed of operation of the apparatus 4.

Meanwhile, the printing press is continued in operation to produce, for example, three rolls in succession of the composition belonging in group A, then three rolls in succession of the composition belonging in group B, and then three rolls in succession of the composition belonging in group C. Thus, by the time all the rolls initially included in the reserve supply of any one composition have been taken from storage to the respective unwinding rollstand, the reserve supply of similar rolls is at least partly replenished so that at least one new set of rolls of webs of the several print compositions will always be available to be unwound in continuation of the operations; and thus the book production can be continued at full capacity, with the printing press producing at its full output rate at all times.

Each of the several unwinding rollstands, as shown generally in FIG. 3, comprises a roll star which will carry more than one roll of the same preprinted web. As diagrammed, three rolls 5, 6 and 7 are supported on each roll star. Rollstands of this nature serve not only for unwinding the webs but also as a storage location for a reserve supply of one or more sets of the printed web rolls.

From the uppermost rolls 7 at the rollstands three differently composed printed webs 8, 9 and 10, respectively, are fed continuously over suitable guide structures to the folding and binding apparatus 4 where the several webs are assembled in superimposed relation, folded and fastened together to form a finished printed product. The cumulative rate at which the webs are fed to apparatus 4 is equal to the optimum or maximum speed of printing and, due to the use of a plurality of rollstands 1, 2 and 3, the rate of feed of each individual web may also be equal to the maximum speed of the slower operating apparatus 4.

The unwinding rollstands may each be provided in a manner known per se with automatic gumming means of a character well known to those skilled in the art, and with mechanisms whereby as the web of one roll, for example the roll 7, is exhausted, the outermost wind of the web of the next roll of the same print composition, for example roll 6, is adhesively attached or spliced to the expiring web in registered fashion. Means for driving the printed web from the roll being unwound are indicated at 11.

The construction and operation of the folding and fastening apparatus are not described or shown in detail as they also are well known to those skilled in the art.

Referring to embodiment of FIGS. 4–15 of the drawings, in FIG. 4 a plurality of leaf-forming printed webs 20 are drawn from rolls, not shown, each web 20 having been rewound as it issued from a printing machine that printed on the web a succession of printed areas which, for instance, are individually to form five leaves of a book.

As can be seen from FIG. 4, each of the leaf-forming webs is cut into a plurality of ribbon 222 which are fed lengthwise over superposed sets of turning bars 23, and the feeding is so affected that the printed ribbons 22 formed from all the webs are disposed one over the other with their respective printed areas in register so that the superimposed ribbons 22 can eventually form a succession of books with the leaves arranged in the predetermined order thereof.

The ribbons 22 are drawn together between cooperating feed rollers 24, of which only one is shown in FIGS. 4 and 5, and the assembly of them then is advanced between a further pair of feed rollers 25. According to the embodiment of FIG. 5, a rotatable rasp 26 or the like is located between the rollers 24 and 25 and engages and roughens one set of superimposed edges of the leaf-forming ribbons.

Following roughening of the edges of the assembled ribbons 22 the roughened edges thereof are engaged by a device 27 arranged to apply a bonding agent, for example glue, to the roughened edges. It will be understood that one or more devices 27 may be employed as desired.

Cover-forming material, shown as a web 28, is fed from a roll, not shown. The web 28 may have been preprinted to provide a succession of printed covers and rewound in a roll or succession of rolls as it issues from the printing machine.

The cover web 28 is applied to the opposite sides of the superimposed leaf-forming ribbons 22 and is folded into U-form, the base of the U being pressed by pressure rollers 29 against the edges of the ribbons 22 coated with bonding material so that the base of the U is bonded to said edges and forms the back or spine of a book.

The assembly is then passed between further feed rollers 30 which feed the assembly to a cutting device 31 which is reciprocable towards and away from the assembly and preferably has a component of movement in the direction of movement of the assembly during cutting so as not to interrupt the continuous movement of the assembly. The application of the cover material 28 to the superimposed leaf-forming ribbons 22 forms a succession of interconnected books, and the cutting device 31 operates to separate books 32 of the succession one from the other.

The cutting device may be of any desired kind and may consist of a guillotine or of a saw, for example a band saw or a circular saw. If desired there may be provided a system of saws spaced apart axially of a cylinder common thereto so that the saws can operate alternatively. The peripheral velocity of the cylinder is equal to that of the linear speed of the assembly or succession of connected books so that the saws travel at the speed of the assembly while affecting separation thereof.

In a modified form of the invention the cover material may be applied only to the edges to which the bonding agent is applied so as to form a back or spine for the books.

According to a still further alternative, the ribbons 22 may each have printed thereon the matter to form two sets of book leaves, the leaves being printed in succession and the two sets being in side-by-side relation with the leaves of one set aligned with those of the other set. In this instance both sets of edges of the assembled ribbons 22 are roughened and have a bonding agent applied thereto, and cover material is bonded to each of the sets of roughened edges. This modified form of the invention is not illustrated in the drawings because it is obvious that this method involves only a duplication of the process as shown in FIG. 5. According to a further alternative, the cover material may be applied only to the roughened edge or edges of the two sets to form the backing or spine for the books, or it may be of double U-form to provide covers which respectively overlie and underlie the outer ribbons 22 of the assembly.

The last mentioned method is illustrated in FIG. 6, in which some of the reference numerals are the same as those used for corresponding elements in FIG. 5. According to FIG. 6, the cover material indicated by the reference number 37 is fed to the roughened edges with the aid of rollers 38, is applied to the edges by means of rollers 33, and then is folded over the upper and lower

edges of the ribbons 22 by means of rollers 34 and fixed in place. Then the double set of ribbons 22 is separated by a saw 36 on a rotatable shaft 39 and then fed by two further rollers 40. The separated line is fed to the cutting device 31 and separated into books. In this case two sets of books or the like are simultaneously manufactured having cover material on the edges of the books. A cross section of two books provided with the cover material on the edges is schematically shown in FIG. 7.

When the method last described is employed there is formed a double succession of books which are connected end-to-end and side-by-side. Separation of the end-to-end relation is effected by the cutting devices as described above and separation of the side-by-side pairs of books also may be effected by a further cutting device, for example a saw, which may be a rotating saw, engaging the books just after or at about the same time as they are engaged by the cutting device which effects separation of the successive books.

If desired, the books may be provided with loose sheets, for example advertising matter, and these may be incorported in the books during the production thereof as described above. To this end the loose sheets are formed as a succession printed on a web (not shown) which is rewound on a roll as it issues from the printing machine. The width of the loose-leaf-forming web is less than than of the leaf-forming ribbons 22, and the loose-leaf-forming web is fed together with the webs 20 in a manner such that the edges of the loose-leaf-forming web are located between the edges of the ribbons 22 so that the bonding agent is not applied to the edges of the loose-leaf-forming web.

Also, if desired, the books may be provided with an outer protective cover or wrapper which may be made of a synthetic plastic material and which may also be transparent. The outer protective cover or wrapper is applied to the assembly or connected succession of books before separation thereof and as part of the continuous process. To this end a web of wrapping material is fed to the assembly or connected succession of books and is folded therearound in a manner as described in connection with FIG. 5, the end portions of the wrapping material being secured together as by an adhesive. If the wrapping material is a synthetic plastic material the end portions may be secured together, in known manner, by welding, for example by a high-frequency welding process.

Further, if desired, the wrapping material may be adhered, as by an adhesive, to the outer sides of the cover-forming ribbon so that in a finished book the cover is protected by a transparent wrapper unitary therewith.

FIG. 8 shows a device for applying a wrapper or an outer protective cover 41. This wrapper 41 is supplied in a similar manner as described above in respect to the web 28 but with the difference that two films or webs of wrapping material 41 and 42 are fed, one to the upper side of the assembly of printed ribbons 22 and one to its lower side. The width of these wrapping webs 41 and 42 is somewhat broader than the width of the ribbons 22. The applied webs 41 and 42 are united to each other by means of two sets of rollers 43 which for example are heated, or to which high frequency electric power is supplied, and then the ribbons are cut into books or the like by a cutting device 31.

FIGS. 9 to 15 show cross sections of books or the like manufactured in accordance with different methods of the invention. FIG. 9 shows a cross section of a book provided with a cover 28 in accordance with the method as described in connection with FIG. 5.

FIG. 10 shows a cross section of a book or the like which has been manufactured in accordance with the method as described in connection with FIG. 6.

FIG. 11 shows a cross section of a book with a cover similar to FIG. 9, but with folded back leaves covered with bonding material on the edges.

FIG. 12 shows an example similar to FIG. 11 with folded back leaves but with a cover material on only one edge, and with the ends of the cover material only partly overlapping the book.

FIG. 13 shows a cross section of two books similar to that of FIG. 11 where a cover material has been supplied from both sides, by a duplication of the process as described in connection with FIG. 5.

FIG. 14 shows two books which have been manufactured in accordance with the example of FIG. 6.

FIG. 15 discloses an example in which two books are covered by one wrapping material which has been folded around the assembly of ribbons and has its ends abutting at the lower side of the assembly.

The dash-dot lines in FIGS. 13 to 15 indicate the line of separation after the books or the like have been manufactured.

By reason of the invention it is possible to produce books of any desired thickness and size because by appropriately printing the leaves on the printing machine leaves of different sizes may be obtained and by adjusting the setting of the cutting devices the connected successive books can be separated at the desired positions.

Further, by the use of preferred methods according to the invention it is possible to produce books of any desired thickness in a continuous manner, while obtaining maximum output from both the rotary printing presses and the collating and binding machinery. The contrary is the case in respect of books which are stapled together by utilizing a folding and wire stapling operation, because in such cases the folding and stapling can be effected only with difficulty if the book has more than say 150 to 160 leaves.

The preferred methods according to the invention, moreover, result in the production of books the appearance of which is very attractive as compared with that of books produced by a folding and stapling operation, because the edges of the books produced by a folding and stapling operation in most cases appear slightly untidy and unattractive.

As far as the storage facilities hereinbefore referred to are concerned, the method according to the invention assures the advantages hereinbefore mentioned, namely, that the processing for binding is quite separate from the actual printing process, so that the printing and assembling machines can be utilized to their maximum capacities.

Compared with the methods known hitherto, the method according to the invention offers a considerably greater degree of flexibility, particularly insofar as printed webs may be drawn from rolls and combined in the collating machine, said webs having been produced in any desired manner. It is also possible, for example, to feed a web having leaves in multi-color printing into the collating machine, said web having been produced independently of the other webs to be collated therewith.

Finally, it is possible to utilize papers of different quality, as may be necessary in practice, and books including blank leaves or pages may be produced in simple manner.

What is claimed is:

1. The method of continuously producing bound multi-leaved printed products such as books and the like, which comprises

continually operating at least one rotary web printing apparatus on successive runs of continuous web material to repetitively print on said web material indicia for respective leaves of said printed products, continually winding the printed material of each of said runs as it is printed into at least one roll thereof separate from the rolls of the printed materials of the other runs, and changing the indicia printed on said successive runs in accordance with a predetermined sequence so that, at the conclusion of each said sequence, there is formed at least one set of said rolls of web material bearing different repetitive indicia

corresponding to all of said leaves of said printed products;

when at least one of said sets has been formed, unwinding continuously and simultaneously the different printed webs of all of the rolls of one of said sets and, as they are unwound, continuously forming them lengthwise into a multiplicity of ribbons having indicia thereon corresponding to all of said leaves of the printed products and continuously moving said ribbons lengthwise at a combined rate approximating the rate of production of the runs of web material by said printing apparatus, and, during the continuous lengthwise movement of said ribbons, successively assembling said ribbons together with their respective indicia in register, binding the assembled continuous ribbons and severing the bound assembly into a succession of said printed products;

and when the webs of the set of rolls being unwound are about to expire splicing them respectively to the correspondingly printed webs of another of said sets of rolls and continuing the unwinding, ribbon forming, assembling, binding and severing operations on the webs of said other set;

whereby said printed products are produced concurrently with and at substantially the rate of the production of the printed web materials.

2. The method of claim **1**, the forming of the respective unwound printed webs into said ribbons being effected by folding them lengthwise.

3. The method of claim **1**, the forming of the respective unwound printed webs into said ribbons being effected by slitting them lengthwise.

4. The method of claim **1**, the forming of the respective unwound printed webs into said ribbons being effected by slitting them lengthwise and folding lengthwise resulting slit widths of the webs.

5. The method of claim **1**, the assembling and binding operations being effected by gathering said ribbons together in superimposed relation with their respective repetitive printed indicia in register, advancing the resulting multi-leaved assembly lengthwise through a binding zone, and in said zone coating adhesive upon and then applying a binding web to at least one edge of the assembly to form a succession of said products connected one with another; and then severing the bound assembly transversely at regular intervals to separate said products.

6. The method of claim **5**, said binding web comprising portions adapted to cover outside leaves of said assembly and bearing a succession of printed cover indicia, said binding web being applied in U form to said assembly with the base of the U engaging an adhesive-coated edge of the assembly.

7. The method of claim **5**, wherein by the printing operations indicia for leaves of two printed products are printed repetitively on each run of web material in crosswise relation thereto and in the binding zone adhesive is coated upon and a binding web is then applied to each edge of the multi-leaved assembly, and in addition to severing the bound assembly transversely dividing it longitudinally to separate the printed products.

8. The method of claim **5**, including incorporating between said ribbons before the gathering thereof at least one loose-leaf-forming web of lesser width than said ribbons and with its edges located between those of said ribbons so that adhesive is not applied to the loose-leaf-forming web.

9. The method of claim **1**, said rolls being formed of practically the same amounts of the respective printed web materials and the several different webs of the rolls of each of said sets being started in the unwinding operations at practically the same time, whereby splices of the webs occur in but a few of said products.

10. The method of claim **1**, said splicing being effected by joining the webs of the rolls of said one set respectively to outermost winds of the corresponding web rolls of said other set with the respective indicia on such webs and said winds in registered relation.

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