A. BREDENBERG.

BOOKBINDING OR COVERING MACHINE.

APPLICATION FILED JULY 13, 1916.

1,248,254.

Patented Nov. 27, 1917.

6 SHEETS—SHEET 1.

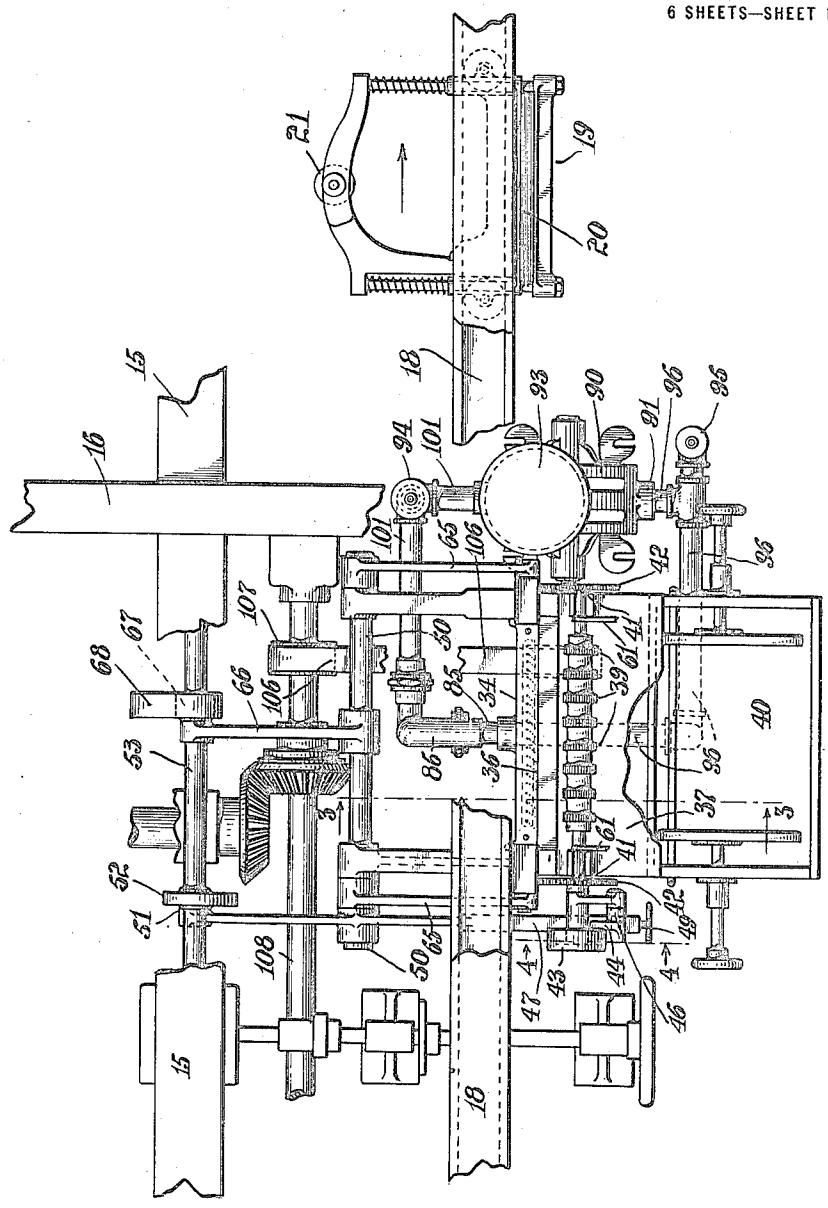


Fig. 1.

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E. Bernhardt

Inventor:

Alfred Bredenberg

by

Wm J. Dolan, Atty

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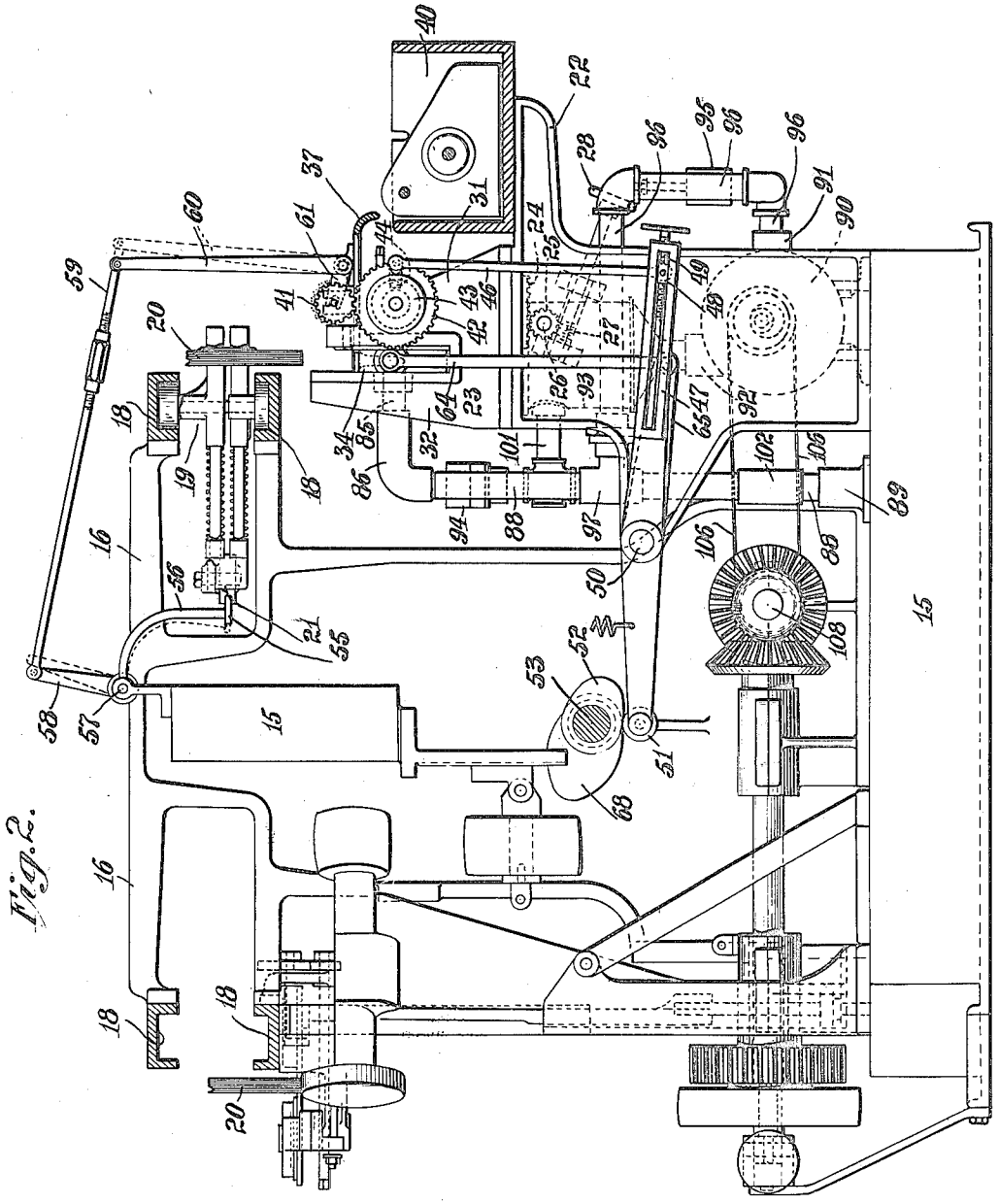


Fig. 2.

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E. Bernhardt

Inventor:

Alfred Bredenberg

by

Wm J. Dolan, Atty

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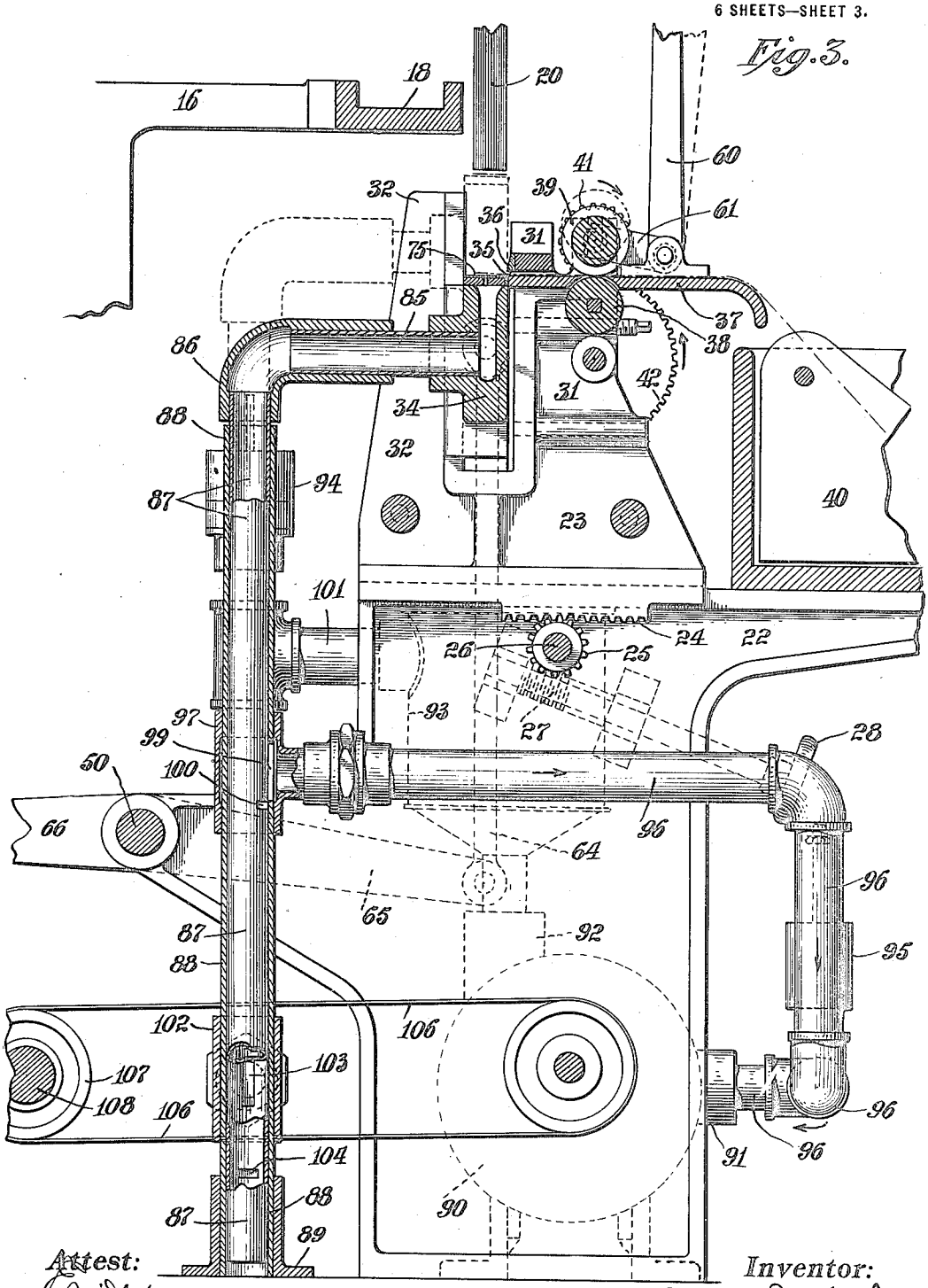
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6 SHEETS—SHEET 3.

Fig. 3.



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by

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6 SHEETS—SHEET 4.

Fig. 4.

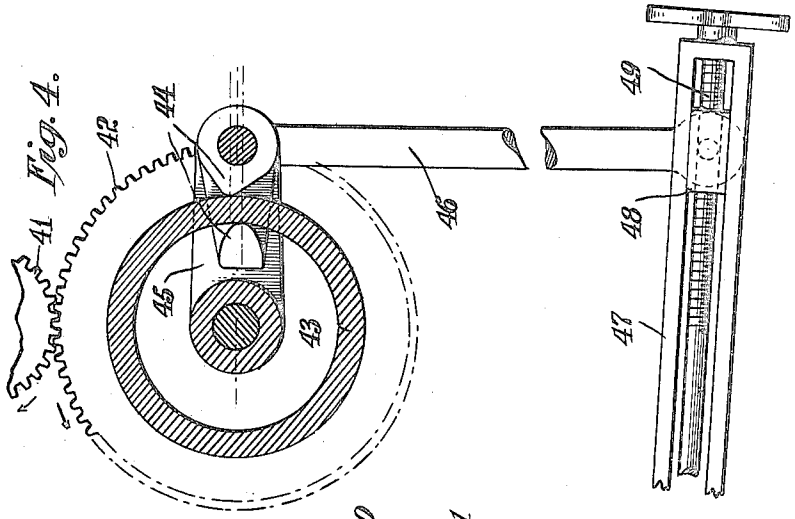
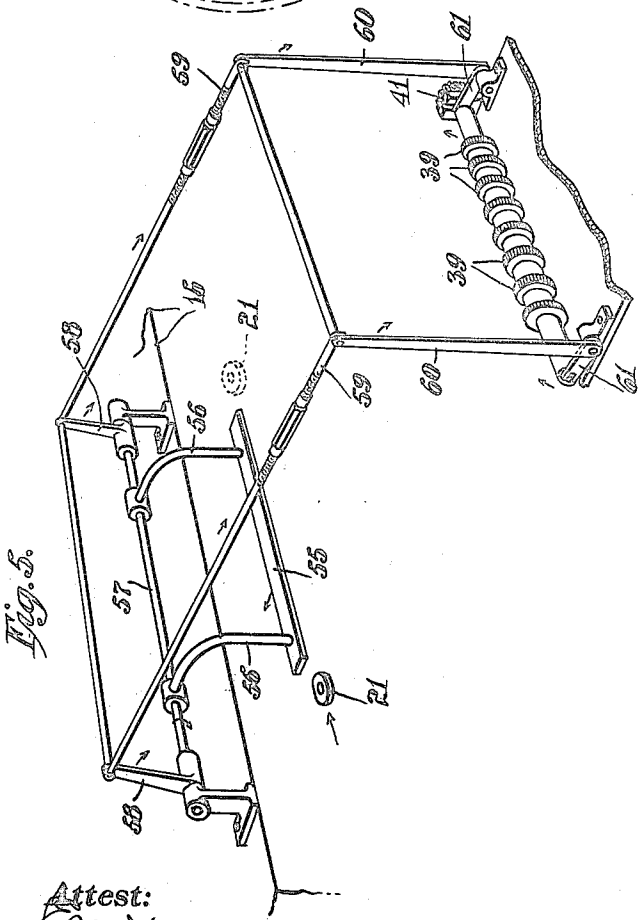


Fig. 5.



Attest:

E. Bernhardt

by

Inventor:

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Wm J. Dolan, Atty

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6 SHEETS—SHEET 5.

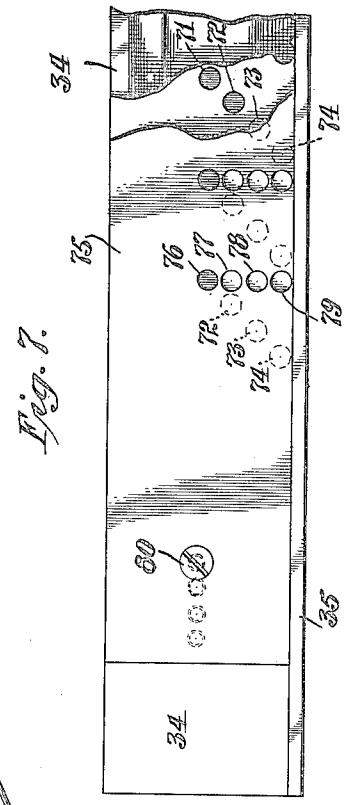


Fig. 7.

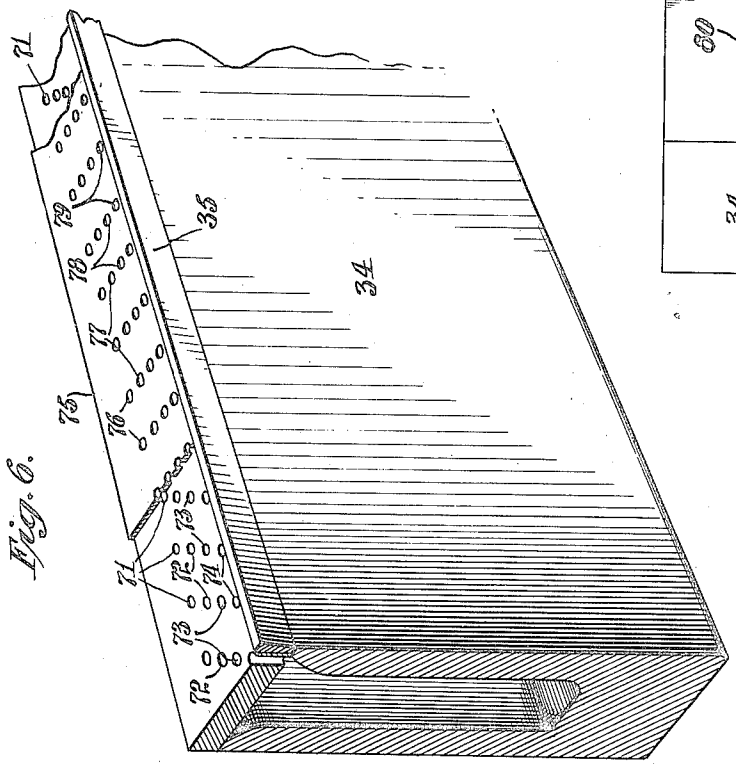


Fig. 6.

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E. Bernhardt

by

Inventor:

Alfred Bredenberg

Wm J. Dolan, Atty

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6 SHEETS—SHEET 6.

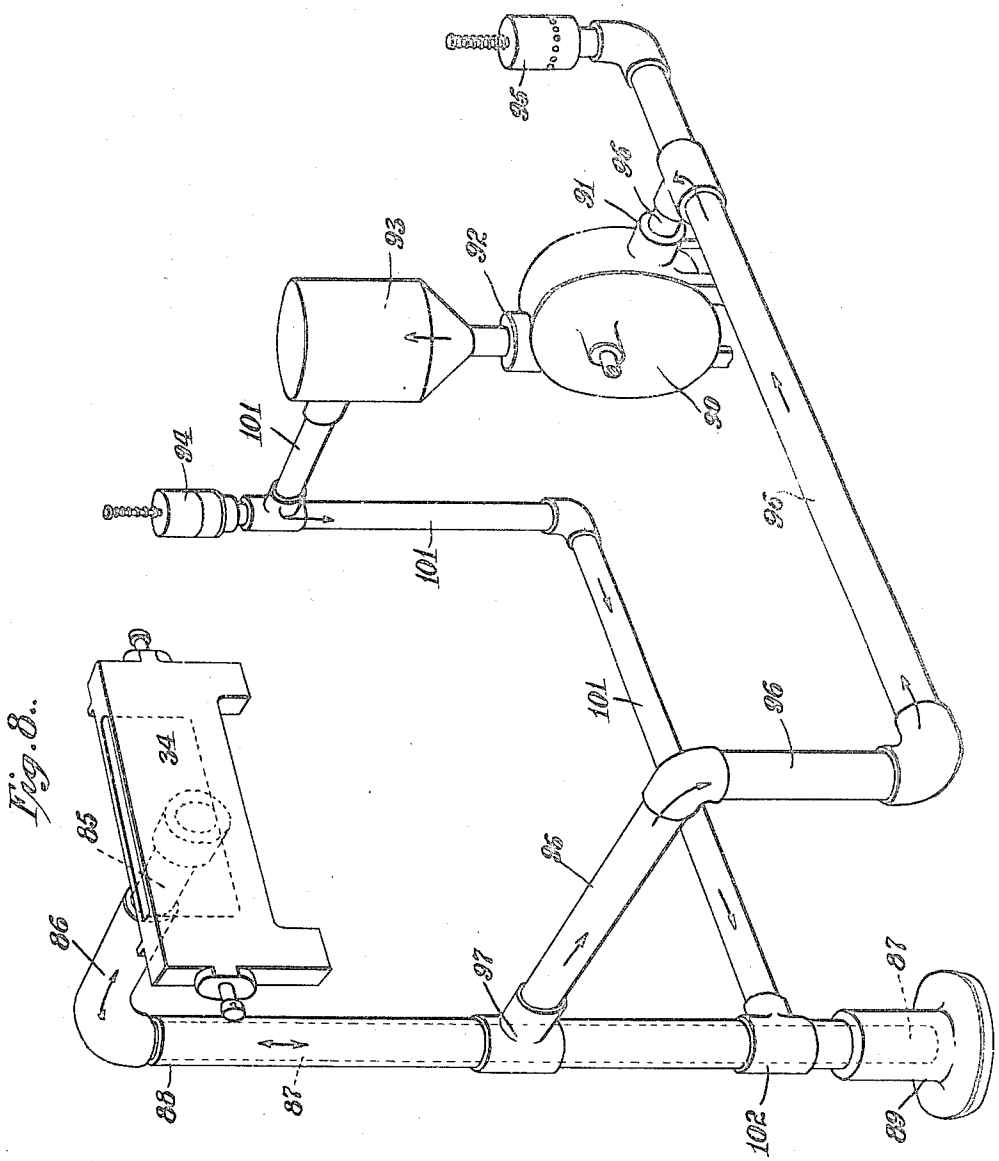


Fig. 8.

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E. Bernhardt.

by

Inventor:
Alfred Bredenberg

Wm. J. Dolan, Atty

UNITED STATES PATENT OFFICE.

ALFRED BREDENBERG, OF CHAMPLAIN, NEW YORK, ASSIGNOR OF ONE-HALF TO THE SHERIDAN IRON WORKS, A CORPORATION OF NEW YORK, AND ONE-HALF TO T. W. & C. B. SHERIDAN COMPANY, A CORPORATION OF NEW YORK.

BOOK BINDING OR COVERING MACHINE.

1,248,254. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed July 13, 1916. Serial No. 108,994.

To all whom it may concern:

Be it known that I, ALFRED BREDENBERG, a citizen of the United States, residing at Champlain, in the county of Clinton and State of New York, have invented certain new and useful Improvements in Book Binding or Covering Machines, of which the following is a specification.

This invention relates to machines for binding or covering books, and has reference more particularly to that class of machines in which the groups of leaves or signatures that are to constitute the books are presented consecutively to the mechanisms that perform the different steps involved in the binding or the covering, or the binding and covering, of pamphlets, magazines or other books.

The main object of the present improvement is to provide an improved mechanism for applying what may be termed a "strip" of crash or other fibrous or pervious material to the backs of the books, previously supplied with adhesive. The book or signature group may have had its back first trimmed and then scored or roughened, and then covered with glue or other adhesive. The strip for which the present mechanism is particularly intended is a pervious strip applied after the gluing, and subsequent to the application of the pervious strip a suitable impervious backing may be applied outside of the glue and strip. This outer backing may be a mere impervious strip, or it may be the actual book or pamphlet cover, which, after application, is to be pressed snugly into place. The pervious strip becomes permeated with the adhesive and greatly increases the effectiveness of the attachment of the leaves of the book to each other and of the cover or other backing to the book.

My prior Patent No. 1,129,064, dated February 23, 1915, shows a form of mechanism for applying a pervious or fibrous strip; and in certain respects, notably in the use of air flow for applying the strip, the present invention follows the principles of said patent.

While it has been stated that the present invention is particularly intended for the application of pervious strips to books, it will be obvious that as regards certain features of the invention it could be employed for applying impervious strips, if desired.

A particular object of the present invention is to effectively sever a strip from a continuous sheet of suitable material and to thereupon apply such strip to the book back in a more simple and expeditious manner than heretofore.

The invention thereby facilitates the plan of advancing continuously, rather than intermittently, the traveling books during the binding or covering operations. The portions of a continuous-travel machine which are omitted from the disclosure herein may be, for example, as disclosed in my copending applications No. 48,959, filed September 4, 1915; and No. 120,133, filed September 14, 1916.

To promote the object of quickening the strip-applying operation I herein dispense with the plan shown in my prior Patent 1,129,064 of vibrating the strip-holding device transversely between a position where the strip is cut and the position where it is applied to the book.

A further object of the present invention is to provide a novel and effective safety device adapted to prevent the severing or applying of a strip if for some reason there is no glued book in position to receive the same.

Other and further objects and advantages will appear in the hereinafter following description, and further advantages will be apparent to those skilled in the art.

To the attainment of the above referred to objects the present invention consists in the novel machine, mechanisms, combinations, arrangements, parts and other features herein shown and described.

The accompanying six sheets of drawings forming a part of this specification illustrate one embodiment of the present improvements, the same serving in connection with the written description to explain the novel principles involved.

Figure 1 is a plan view of a portion of a bookbinding machine including a strip severing and applying mechanism embodying the present invention; the view being broken

away at several places, and only a single one of the series of traveling book holding clamps being shown.

Fig. 2 is a left end elevation showing the mechanism of Fig. 1 and further general machine parts.

Fig. 3 is a left end elevation on an enlarged scale of certain of the parts seen in Figs. 1 and 2, partly in section on the plane 3—3 of Fig. 1.

Fig. 4 is a left view of certain details partly in section on the plane 4—4 of Fig. 1.

Fig. 5 is a perspective showing in skeleton view certain parts of the safety appliance.

Fig. 6 is a sectional perspective of the pneumatic strip handling box.

Fig. 7 is a plan view of the same.

Fig. 8 is a perspective showing certain of the pneumatic connections in skeleton view.

The mechanism hereof is like that of my said prior patent in that there is no bodily or rotary advancing movement, nor any operation involving the advance of the strip while being placed upon the book, nor any progressive application of the strip to the book; the plan herein being at the proper point of time to impel the entire strip against the book, this operation being independent of whether or not, or how, the book is traveling, so long as the mechanism is properly timed. I deem it to be new herein to provide a strip applying mechanism which is located in the binding machine at a point adjacent to the book path at a place where the book is advancing, the mechanism being timed to the precise instant so as to bodily impel the entire strip in one impelling action along its whole length so as to move into contact with the glued back of the book in proper registry therewith.

Referring first to some of the general machine parts which are common to other machines of this type, the frame may be of the usual form comprising longitudinal frame parts and base 15 and transverse frame parts 16. Around the exterior of the machine in horizontal circuit or orbit extend upper and lower guides 18, 18, along which a train or series of book clamps 19 may travel. Only a single clamp is illustrated in Figs. 1 and 2, but it will be understood that, as usual, there may be an endless train of clamps which may travel around always in one direction, and preferably with a continuous movement, so as to carry the successive books or signature groups in a constant procession from the infeed to the trimming, roughening, gluing, strip applying, cover or backing applying, cover breaking and outfeeding mechanisms, and any other mechanisms that may be desirable. The details of the book clamps 19 do not *per se* form a part of the present invention, and they may be as indicated, namely, in general accordance with my prior Patent No. 1,073,324, of September 16, 1913. The innermost members of the several clamps constitute an endless chain, the pivots between the links of which are extended and form rollers engaging the guides 18. The book or signature group 20 is held firmly between the inner clamp member and an outer clamp member, which is normally spring-pressed toward the book, but is capable of being reversely moved through cam roller 21 for infeeding and outfeeding purposes.

Generally speaking, the strip applying mechanism of the present invention comprises the following. An adjustable carriage supports some of the elements, and by its adjustment permits the strip to be accurately located with respect to the book 20. On the said carriage is mounted a cutting device comprising a pair of shearing members, at least one of which is movable. The movable shearing member or knife is employed not merely for severing a strip from the supply of material, but for moving or lifting it into proximity to the book. The movable cutting member is also in the nature of a strip holder, being provided with preferably pneumatic means for retaining the severed strip until the time when the strip is projected or ejected, preferably by a puff of air, against the glued back of the book. Rollers for feeding material to the strip cutting device are also mounted on the carriage. Associated with these parts is a safety contrivance for preventing the feeding, and thereby the cutting, of a strip when there is no book to apply it to. Finally, there are pneumatic connections and control devices working in harmony with the actuating means for the feeding and cutting devices.

Having thus indicated the nature of the following description, I will refer in detail to the elements which are shown in the drawings as constituting a convenient embodiment or illustration of the invention.

Above the machine base is a fixed supporting table 22, to which various elements are fitted, see Figs. 2 and 3. Sliding transversely or forwardly and rearwardly at the top of the table 22 is the adjustable carriage 23, which carries the feeding and strip cutting devices. For adjustment the carriage has racks 24 at its underside, engaged by pinions 25 mounted on a worm shaft 26, the worm of which is engaged by the threads of a screw shaft 27, this shaft extending forwardly and having a hand wheel 28 at its extremity. By this means the carriage may be so adjusted that the severed strip will always register accurately when applied to the book.

The carriage 23 above its sliding dovetailed base plate is formed with upward extensions or brackets 31 at the front, 32 at

the rear, between which is constituted a slideway, which is preferably vertical, for accommodating the movements of the strip shearing and holding member 34.

The shearing edge 35 of the member 34 coöperates with a fixed shearing edge 36 secured in the upper part of the bracket 31. It will be observed from Fig. 3 that a shifting movement of the member 34 will cause a shearing action between the edges 35 and 36. It will also be observed that beneath the fixed cutter 36 is a narrow space, and below that is the feed plate 37, the space permitting the material to be moved inwardly over the feed plate until the material extends beyond the shearing edge 36. The extent of the feed will determine the width of the strip to be severed. The lifting movement of the member 34 effects the shearing, and the continued movement lifts the member 34 and the severed strip to the position shown in dotted lines, wherein the strip is brought into practical contact with the lower edge, which is the glued back of the book 20. The pneumatic means to be described holds the strip by suction securely until nearly the end of the lifting movement, whereupon a reverse air flow impels the strip against the book, where it adheres after the descent of the member 34. The shearing mechanism is kept free from adhesive, since the actual application of the strip is effected without mechanical contact or pressure against the book.

Before describing the connections for effecting the upward and downward movements of the strip holding and shearing member 34 and the control of the pneumatic devices, I will describe a convenient mode of feeding the material which is to constitute the strips.

The feed plate 37 is cut away to receive an idle roller 38 beneath and opposed to the feed roller 39, which, as seen in Figs. 1 and 5, is formed with a number of collars having roughened peripheries, so that, when the feed roller is caused to rotate in contact with the material and opposed to the idle roller 38, the material will be drawn inward and forced beyond the fixed shearing edge 36.

The strip material may be provided in the form of a continuous roll upon a spool, and I have indicated a convenient form of spool holder or box 40, within which the spool may rotate as the material is drawn along, the material passing upwardly and over the curved front edge of the feed plate 37, and thence between the rollers 38 and 39, and thence between the shearing edge 36 and the feed plate to a point above the holding and shearing device 34.

To effect an automatic feeding of the material so as to give the desired width of strip for each book, the feed roll 39 at its ends is provided with pinions 41, which are engaged and rotated by gears 42. The feed should be intermittent. That is, the material should be fed over the member 34 while the latter is depressed, and the feed should cease during the shearing and return movements of the member 34. For these purposes an intermittent feed device 43—47 may be used, the details of which are indicated in Fig. 4. Attached to the shaft of the gears 42 is a drum 43, the smooth periphery of which is engaged by the double pawl device 44. This device is such that, when it is swung downwardly with its carrying arm 45, the inner pawl part slips over the drum without result, but when lifted the outer pawl part binds against the drum so as to carry the drum in a counter-clockwise direction. This turns the gears 42 and pinion 41 and roller 39 in a direction to properly feed the material.

For oscillating the double pawl 44 its carrying arm 45 is connected by a link 46 with a reciprocating lever 47. The link is pivoted to a block 48, which may be adjustably slid along the lever 47 by means of a screw shaft 49. The throw of the lever being constant, the adjustment of the screw shaft permits the throw of the link and of the double pawl to be varied at will, thus adjusting the feed of the material.

The connections for actuating the lever 47 are best seen in Fig. 2. A shaft 50 forms a fulcrum for the lever, and the lever extends rearward beyond the fulcrum to where it is provided with a roller 51, which is engaged by a cam 52 mounted on one of the longitudinal operating shafts 53 of the machine. The cam 52 is so constructed with two concentric and two eccentric portions as to cause the up and down swing of the lever 47 at the proper point of time to cause the advancing feed of the material to the proper extent.

It is desirable to prevent the feeding, cutting and impelling of a strip toward the book position if there is no glued book in the clamp. This difficulty usually arises by reason of the absence of a book in the clamp rather than the absence of glue on the book, and the following contrivance is adapted to secure the object mentioned.

The contrivance to be described operates upon the principle that the presence or absence of a book in the clamp controls the effectiveness or ineffectiveness of the feeding devices. Instead, however, of coöperating directly with the book, I find it advantageous to employ a part of the clamp 19 for the purpose. This clamp in Fig. 1 is shown partly open owing to its accommodating a book 20. If no book had been fed into the clamp, the springs would have closed the latter, thus changing the position of all of the clamp parts. I utilize the cam

roller 21, which appears at the rear end of the clamp. This roller is seen in Figs. 1 and 2 in its position when the clamp is occupied by a book. The safety connections are controlled by the position of the roller as the clamp travels along. The details are shown in Fig. 2 and in the detached perspective view, Fig. 5. Fig. 2 shows in full lines the position when the clamp properly contains a book, and in dotted lines the position when the book is lacking.

A plate of feeler 55 is located at the end of a pair of rock arms 56 in position to be displaced by the roller 21 as the latter travels from left to right, if the clamp is advancing without a book. The rock arms 56 are secured to a rock shaft 57, which is provided with upwardly extending rock arms 58, connected by adjustable links 59 with the elongated upright arms 60 of a pair of bell crank levers, whose short, horizontal arms 61 are slotted to engage a portion of the feed roll 39, the latter being fitted at its ends so as to be capable of sliding upwardly and downwardly.

In the absence of a book the parts are swung by the roller 21 to the position shown in dotted lines in Fig. 2 so that the feed roller is lifted. This lifting of the feed roller disengages it from the material being fed, and also disengages the pinions 41 from the gears 42. Either or both of these results serve to prevent the feed of the material. Consequently when the strip shearing and holding member 34 lifts as the empty clamp comes into position, there will have been no feed of the material, and therefore no strip will be cut or applied.

Coming now to the actuation of the strip severing and applying member 34, and referring particularly to Fig. 2, the member is seen to have at its two ends a pair of studs engaged by downwardly extending connecting rods 64 which at their lower ends are pivoted to a pair of rock arms 65, which are secured to the rock shaft 50 previously mentioned. This rock shaft has a third rock arm 66 extending rearwardly to where it is provided with a cam roll 67, located beneath and adapted to be engaged by a cam 68 on the operating shaft 53. The cam 68 is so shaped with two concentric and two eccentric portions as to oscillate the rock arms 66 and 65, thereby lifting and dropping the member 34 at the proper points of time.

The actuating cams 52 and 68 on the operating shaft 53 may operate against springs or otherwise, as desired.

The details of the structure of the member 34, constituting a strip cutter and holder, are indicated in Figs. 6 and 7.

The cutting or shearing edge 35 is shown as a separate piece attached at the upper, forward corner. The member generally is hollow for the purpose of air connections for applying suction or pressure. The air flow, first inward and then outward, is applied to the strip of material through apertures in the top side of the member 34. In the figures I have indicated a device for changing the arrangement of the apertures according to the width of the strip to be cut.

It will be understood that for a thinner book a narrower strip is to be cut and applied, and vice versa. For pneumatically holding and then impelling the strip a single row of apertures is sufficient. This, however, should obviously be arranged symmetrically or centrally of the strip. I have, therefore, shown four rows of apertures to accommodate the machine to four different widths of strip, or, in fact, to any intermediate widths. The first or central row 71 is adapted for the maximum width of strip, the apertures 72 for a narrower width, the apertures 73 for a still narrower width, and the apertures 74, quite close to the cutting edge, for the minimum strip width.

A convenient arrangement for putting one or another of the rows of apertures into effect is the apertured plate or valve 75 having four rows of apertures 76, 77, 78 and 79.

Transversely considered, the apertures on the valve plate 75 are arranged out of parallelism with those in the top plate of the member 34. For example, the latter are in inclined columns, while the former are non-inclined, as plainly seen in Fig. 6. By this arrangement, if the valve plate be set in the position shown, the apertures 76 register with the apertures 71, and we have air flow through these apertures only, all the others being entirely cut off. If a strip is to be employed which is of less than the maximum width, the valve plate 75 can be slid to the left in Figs. 6 and 7 so as to close the apertures 71 and 76 and to open the apertures 72 and 77, or the apertures 73 and 78, or the apertures 74 and 79, as desired. Securing screws 80 at each end of the sliding apertured plate 75 are indicated in Figs. 1 and 7, by which the plate may be securely fixed in its desired adjustment.

The pneumatic connections and control for the strip severing and holding member 34 are indicated particularly in Figs. 3 and 8, and generally in Figs. 1 and 2. As will be apparent from Fig. 3, the piping is of a telescopic nature, so as to permit the rising and falling of the member 34 between the dotted and full line positions shown. Also, the rearwardly extending pipe 85, which leads into the interior of the member 34, is relatively slidable in the curved or elbow pipe 86, so as to permit the forward and rearward adjustment of the carriage 23 previously described.

Connected to and extending downwardly from the elbow 86 is the interior pipe 87, which reaches almost to the base 15 of the

machine. This vertically movable pipe 87 is fitted snugly within an exterior, stationary pipe 88, which reaches completely to the base and is there secured in an air-tight manner by a flange coupling 89.

It is the preferred plan of the suction mechanism hereof to effect its control automatically by the movements of the member 34. It will be observed that, when the member 34 moves upwardly and downwardly, it lifts and drops the interior pipe 87, and I am thereby enabled through proper ports or valves in the inner and outer pipes 87 and 88 to control the direction of flow from or to a convenient air pumping apparatus.

I prefer to use a single air pump for both suction and pressure, and have indicated a rotary air pump 90 having an inlet 91 and outlet 92. Near the outlet 92 is a compression reservoir or chamber 93, and beyond that a safety valve 94, a similar safety valve 95 being provided near the inlet of the pump.

In the position in which the parts are shown there is no air flow through the member 34. This is the state of affairs when the member is at its lowest position before the cutting of the strip.

Referring to Fig. 3, it will be seen that a slight lifting of the member 34 will effect the cutting of a strip, and not later than this point of time the suction end of the air pump is connected by the following arrangement. Suction connections 96, 96, 96, 96, extend between the pump inlet 91 and a T 97 surrounding the exterior vertical pipe 88. As seen in Fig. 3, the exterior pipe is formed with a rectangular port at 99. Normally this is closed by the inner pipe 87. The latter, however, is provided with a narrow port 100, which in Fig. 3 is just below the port 99. It will be seen that a slight lifting of the member 34 and the pipe 87 will bring the ports 99 and 100 into registry, so that, at the time the strip is cut, there will be suction or air flow downwardly through the apertures in the top plate of the member 34. This effectively holds the light strip of fabric in place during the cutting and the subsequent elevation of the member 34.

This suction continues until just prior to the member 34 reaching its highest position, which is indicated in dotted lines in Fig. 3. At this time the port 100 passes above the port 99, thus shutting off the suction connections.

At the same time, the air compressing or forcing connections are put into action. These comprise pipes 101, 101, 101, between the air pump outlet and a T 102 surrounding the exterior pipe 88. The pipe 88 has a rectangular port at 103, which, however, is normally closed by the interior pipe 87. The latter, however, is provided with a narrow port 104, which, as shown in Fig. 3, is normally spaced considerably below the port 103.

The spacing, and therefore the timing, of the several ports is such that, as the rising port 100 shuts off the suction through the T 97, the port 104 comes into registry with the port 103 to open the compression connections between the air pump and the member 34. The result is that, just as the member 34, carrying the severed strip by suction to a position just beneath the book, reaches the limit of its upward movement, the air flow is reversed and the suction is succeeded by compression, which gives a puff of air applied approximately at the center of the strip so as to impel it forcibly upward from the member 34 to the adhesive covered back of the book.

The air pump 90 may be constantly driven by a belt 106 from a convenient pulley 107 on an operating shaft 108.

The operation of the described mechanism may be substantially as follows. The parts are shown in their position with the strip cutting and holding member 34 retracted or downward and the several air ports closed. While the parts are in this position the feed roll 39 is turned by the rotation of cam 52 to the proper extent to feed the fibrous material beneath the shearing edge 36 and above the member 34. The feed ceases when the proper width of strip has been fed. The cam 68 next comes into play to lift the member 34. As it commences to lift, the ports within the T 97 come into registry, and thereafter suction holds the strip upon the member 34. The lifting of the member 34 shears off the strip from the supply of material. While the member 34 continues to rise, the suction continues. As the member 34 arrives at its topmost position, the ports in T 97 close, and those in T 102 open. Thereupon a blast or puff of air passes through the piping and drives the strip against the glued back of the book. This action is so timed with respect to the travel of the book clamp that the strip is laid exactly in place against the back of the book without overlapping at either end. The cam 68 thereupon lowers the member 34 to its lowermost position, at which it pauses during the succeeding strip feeding operation.

It will be understood that the above operating mechanism, including the various shafts, are power-driven, and that the different portions of the machine are automatically controlled in proper time with each other and with respect to the travel of the book.

It will thus be seen that I have described a machine for binding or covering books comprising mechanism for applying a strip to the back of the books, which machine and

mechanism attain the objects and advantages hereinbefore referred to and embody the principles of the present invention. Since many matters of design, form, arrangement, detail and selection of devices for particular functions may be variously altered or modified or replaced by equivalents, I do not intend to limit the present invention to the particular features disclosed excepting to the extent specified in the appended claims.

What is claimed is:

1. A bookbinding or covering machine, including in combination, means for holding and guiding each of a succession of books to advance progressively substantially in its own plane with its adhesive-covered back edge protruding, a strip-holder adapted to receive and hold a strip of pervious material, means for shifting said strip-holder from its strip receiving position into position laterally registering with and closely adjacent the back edge of the book by a movement in the plane of the book, and automatic means for impelling the pervious strip from the strip-holder bodily toward the book back edge, said impelling means timed with respect to the book travel so as to cause the strip to move into contact with the glued back edge of the book and in longitudinal register therewith.

2. A bookbinding or covering machine, including in combination, means for holding and guiding each of a succession of books to advance progressively substantially in its own plane with its adhesive-covered back edge protruding, a strip-holder adapted to receive and hold a strip of pervious material, means for shifting said strip-holder from its strip receiving position into position laterally registering with and closely adjacent the back edge of the book by a movement in the plane of the book, guide means for guiding said strip-holder in such movements, a carriage carrying said guide means and strip-holder, and means for finely adjusting transversely of the book plane the position of the carriage and thereby adjusting the strip to the back edge of the book.

3. A bookbinding or covering machine, including in combination, means for holding and guiding each of a succession of books to advance progressively substantially in its own plane with its adhesive-covered back edge protruding, a combined strip shearing, holding and applying member adapted to receive and hold a strip of pervious material, means for shifting said member from its strip receiving position into position laterally registering with and closely adjacent the back edge of the book by a movement in the plane of the book, means for feeding pervious material to said member, a fixed shear blade coöperating with said member to sever a strip of material, guide means for guiding said member in such movements, a carriage carrying said guide means, shear blade and member, and means for finely adjusting transversely of the book plane the position of the carriage and thereby adjusting the strip to the back edge of the book.

4. A bookbinding or covering machine, including in combination, means for holding vertically and guiding each of a succession of books to advance progressively substantially in its own plane with its adhesive-covered back edge protruding downwardly, a pneumatic strip-holder adapted to receive and hold by suction a strip of pervious material, means for vertically lifting said strip-holder from its strip receiving position into position laterally registering with and closely beneath the back edge of the book, and automatic means for causing an air blast to impel the pervious strip from the strip-holder bodily upward into contact with the glued back edge of the book and in longitudinal register therewith.

5. A bookbinding or covering machine, including in combination, means for holding vertically and guiding each of a succession of books to advance progressively substantially in its own plane with its adhesive-covered back edge protruding downwardly, a pneumatic strip-holder adapted to receive and hold by suction a strip of pervious material, means for vertically lifting said strip-holder from its strip receiving position into position laterally registering with and closely beneath the back edge of the book, means for feeding pervious material to the strip-holder, a fixed shear blade adapted to coöperate with the edge of said strip-holder during its rising movement, to sever a strip of such material, and automatic means for subsequently causing an air blast to impel the pervious strip from the strip-holder bodily upward into contact with the glued back edge of the book and in longitudinal register therewith.

6. A bookbinding or covering machine, including in combination, means for holding vertically and guiding each of a succesison of books to advance progressively substantially in its own plane with its adhesive-covered back edge protruding downwardly, a pneumatic strip-holder adapted to receive and hold by suction a strip of pervious material, means for vertically lifting said strip-holder from its strip receiving position into position laterally registering with and closely beneath the back edge of the book, means for feeding pervious material to the strip-holder, a fixed shear blade adapted to coöperate with the edge of said strip-holder during its rising movement, to sever a strip of such material, means for subsequently causing an air blast to impel the pervious strip from the strip-holder bodily upward

into contact with the glued back edge of the book and in longitudinal register therewith, and automatic connections actuated by the lifting of the strip-holder for controlling and timing the air suction and blast.

7. A book binding or covering machine, including in combination, means for positioning an adhesive-supplied book, a pneumatic member adapted to receive, hold and apply a strip of suitable material to the book, and means for shifting said member between strip receiving and applying positions; said member having a plurality of series of air apertures and an adjustable device for selectively rendering such apertures inoperative or operative to adapt the member to strips of varying size.

8. A book binding or covering machine, including in combination, means for positioning an adhesive-supplied book, a pneumatic member adapted to receive, hold and apply a strip of suitable material to the book, and means for shifting said member between strip receiving and applying positions; said member having a plurality of series of air apertures and an adjustable device for selectively rendering such apertures inoperative or operative to adapt the member to strips of varying size, the same consisting of an apertured slide plate over the apertures of said member, the apertures having different arrangements in the two.

9. A book binding or covering machine, including in combination, means for positioning an adhesive-supplied book, a pneumatic member adapted to receive, hold and apply a strip of suitable material to the book, means for shifting said member between strip receiving and applying positions by a movement substantially in the plane of the book, a source of air suction and blast, and automatic connections whereby the member's movement brings about suction to hold the strip, followed by a blast to impel the strip to the book, said connections comprising telescoping tubes, one of which moves with the shifting member, and the two tubes having ports relatively arranged to open and close the suction and blast.

10. A book binding or covering machine, including in combination, means for positioning an adhesive-supplied book, a pneumatic member adapted to receive, hold and apply a strip of suitable material to the book, means for shifting said member between strip receiving and applying positions by a movement substantially in the plane of the book, a source of air suction and blast, and automatic connections whereby the member's movement first opens a port to cause suction for holding the strip, and subsequently as the member nears the book closes the suction and opens a port to cause a blast.

11. A book binding or covering machine, including in combination, means for advancing and positioning each of a series of adhesive-supplied books, a shiftable member adapted to cut a strip from sheet material, said member having air passages, a source of air suction and blast, and automatically acting connections whereby said member when moved toward the book first opens the suction to its air passages and cuts a strip, then carries the strip to the book, then reverses the air flow to impel the strip to the book.

In testimony whereof, I have signed my name to this specification.

ALFRED BREDENBERG.