No. 832,082. PATENTED OCT. 2, 1906.

J. R. REYNOLDS.

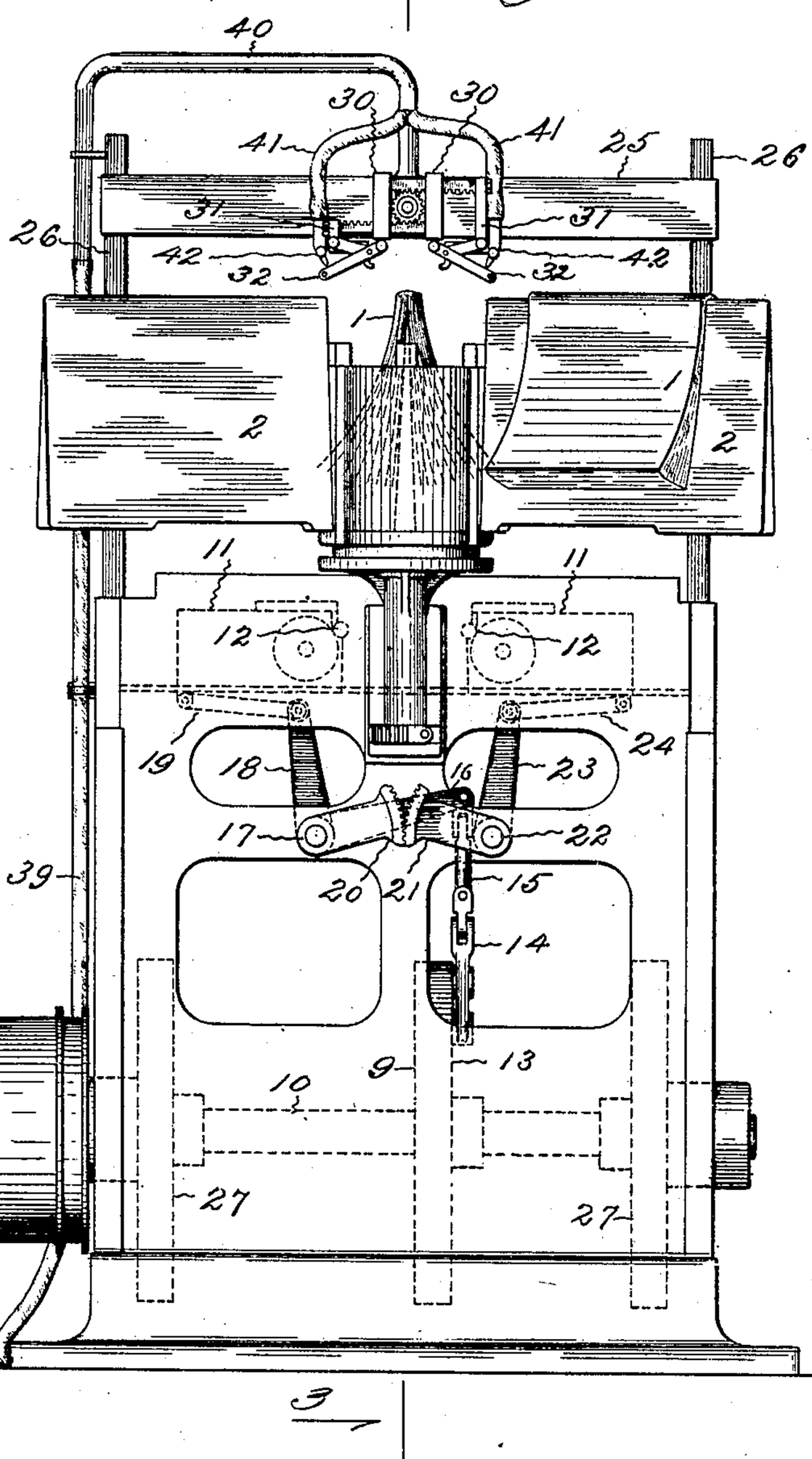
MACHINE FOR CASING IN BOOKS.

APPLICATION FILED APR. 14, 1906.

3 SHEETS—SHEET 1.

3

Fig. 1.



3

Witnesses.
C. F. V. Storey
Ethel M. Lowe.

Inventor.
John R. Reynolds
per
Harry B. Williams
Attorney.

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3 SHEETS—SHEET 2.

Fig. 2.

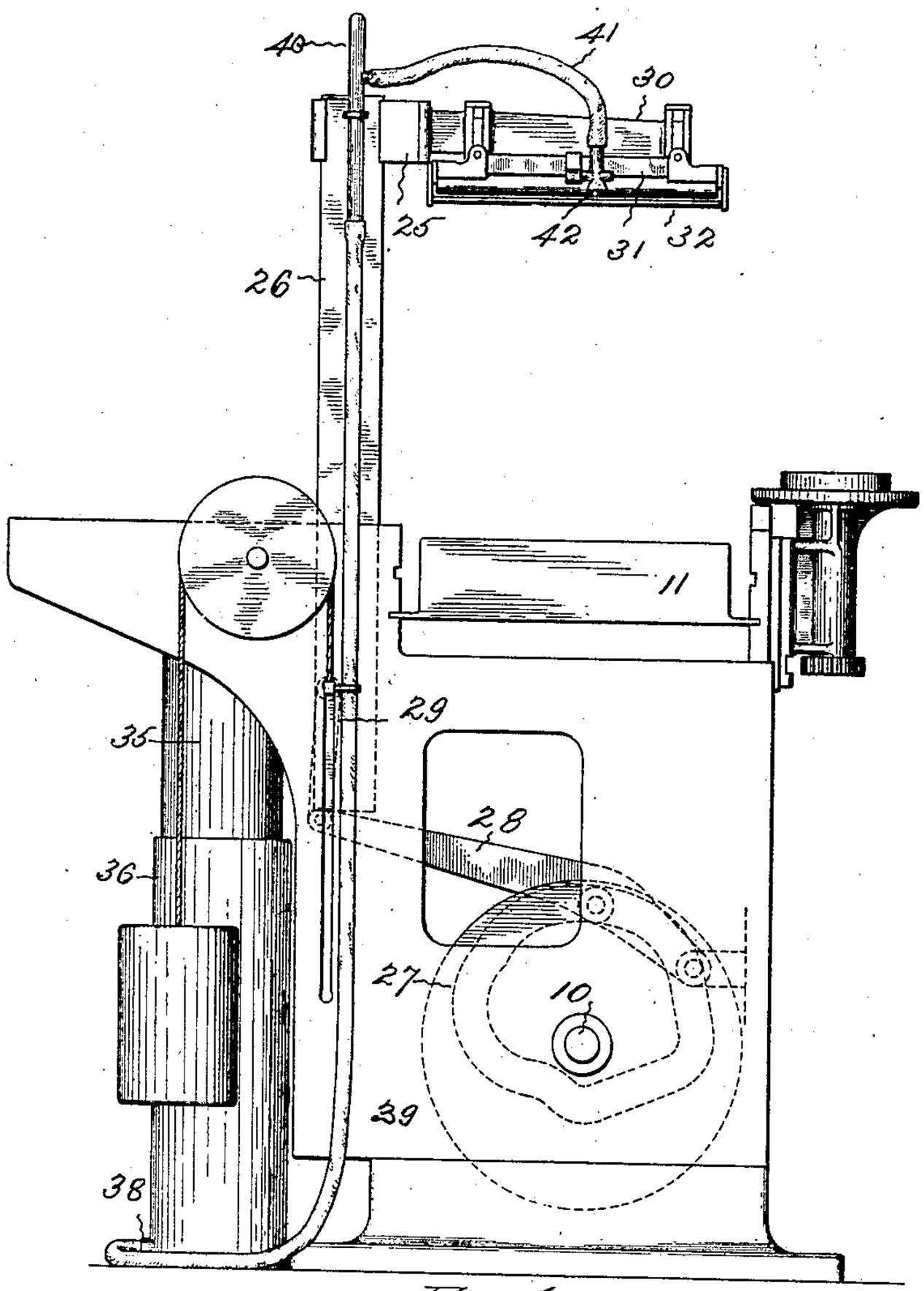
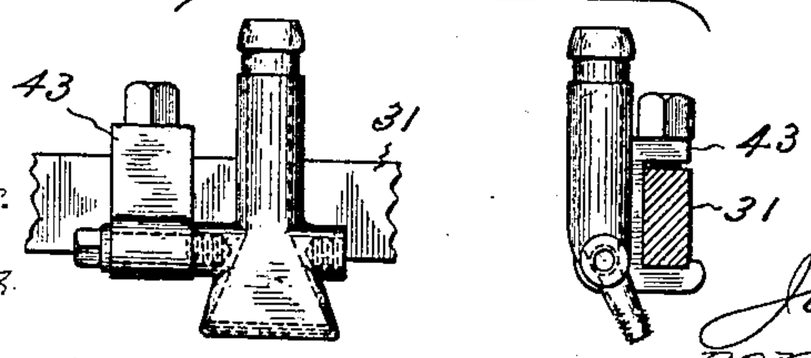


Fig. 4.



Witnesses:
C. F. L. Storm
Ethel M. Lowe.

Inventor:
John R. Reynolds
per Harry P. Williams
Attorney.

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3 SHEETS—SHEET 3.

Fig. 3.

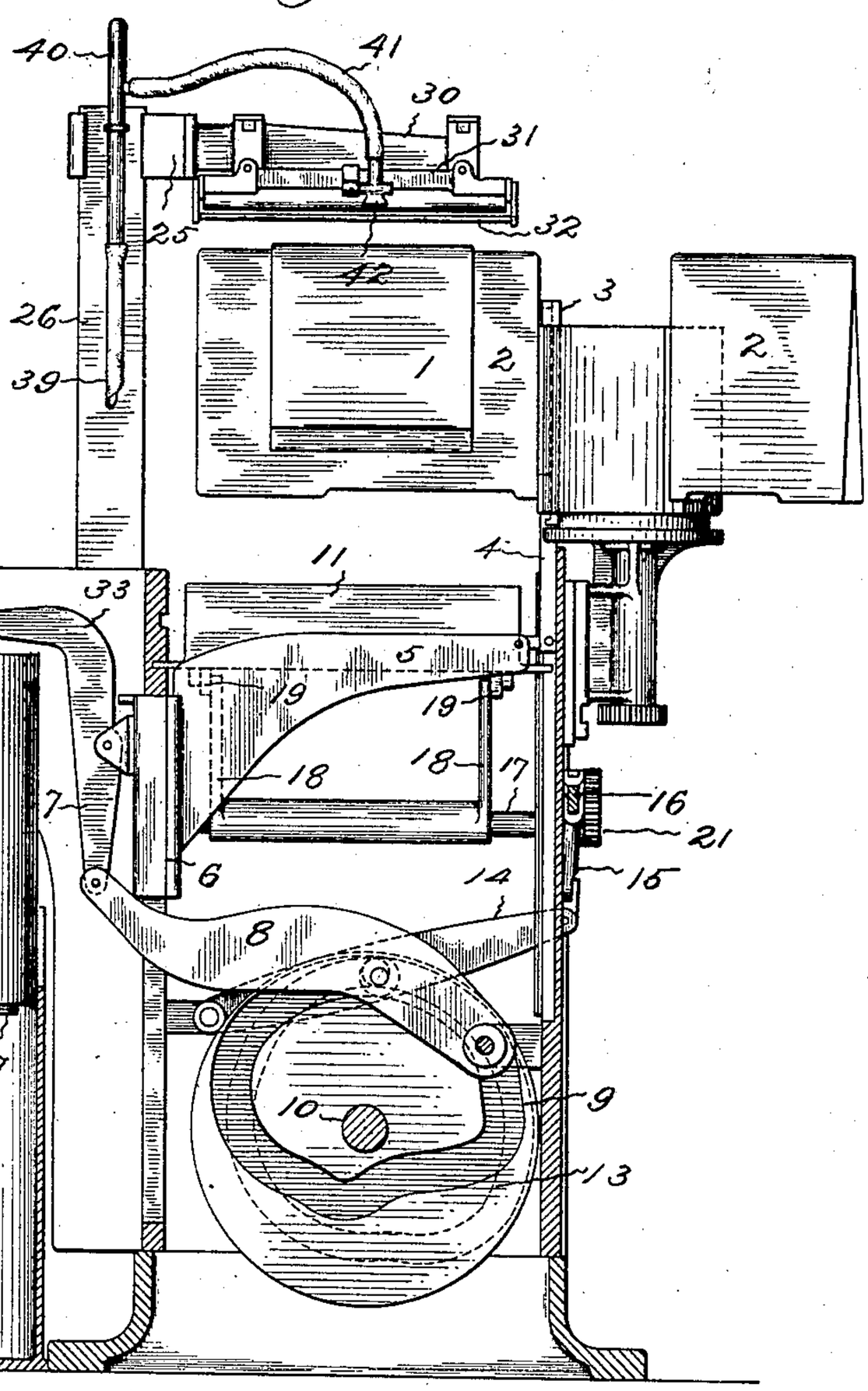
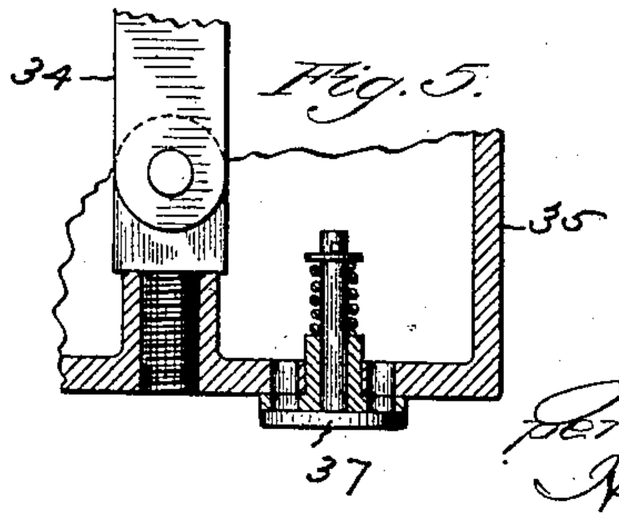


Fig. 5.



Witnesses.
C. F. C. Storrs
Ethel M. Lowe

Inventor:
John R. Reynolds
per Harry P. Williams
Attorney.

UNITED STATES PATENT OFFICE.

JOHN R. REYNOLDS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE SMYTH MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

MACHINE FOR CASING-IN BOOKS.

No. 832,082. Specification of Letters Patent. Patented Oct. 2, 1906.

Application filed April 14, 1906. Serial No. 311,666.

To all whom it may concern:

Be it known that I, JOHN R. REYNOLDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Machine for Casing-In Books, of which the following is a specification.

This invention relates to those machines which are designed to apply paste or a similar adhesive compound to the end sheets or outside leaves of unbound books and pamphlets and then put such books into cases or covers and press the leaves of the cases against the pasted leaves of the book in such manner as to cause the permanent attachment of the cases to the books. A machine of this nature is shown in United States Patent No. 690,959, granted January 14, 1902, to the Smyth Manufacturing Company on the application of Arthur I. Jacobs. In that machine a plate bearing the unbound book is lowered and then raised between pasting-rolls which are drawn apart to permit the book to descend and closed against the outside of the leaves in such manner as to coat them with paste as the book is lifted into a case. A vertically-movable head with folders operates, in conjunction with the plate and paste-rolls, to press the book down upon the plate and fold the leaves of the case against the book and then squeeze in the joints of the case and apply pressure in such manner that the leaves of the case are caused to permanently adhere to the pasted leaves of the book. A book-feed for such a machine is shown in United States Patent No. 716,959, granted December 30, 1902, to the Smyth Manufacturing Company on the application of Frederick D. Taylor. In the organization shown in that patent there are a number of book-supporting plates arranged on a rotatory support, and the plates, with the hooks, are in succession revolved to a plane over the paste-rolls and then lowered and raised between the paste-rolls for the purpose of applying the paste to the outside leaves.

The present invention is particularly designed for use in connection with machines embodying the inventions of those patents; but it is applicable to other casing-in machines.

The tendency of the outer leaves of the unbound books carried by the feed-plates in these machines when lowered quickly, particularly if the leaves are thin or if they are made of reinforced papers, which is usually composed of thin outside and thicker inside sheets, such as marble papers, which have a natural outward curl, is to fly out and so spread that they will not pass down between the paste-rolls, but will be caught by the paste-boxes and folded and crumpled, leaving inner sheets to receive the paste, which of course ruins the book.

The object of this invention is to provide means for holding the leaves closed in such manner that the natural outward curl will be overcome and the atmospheric pressure to which they are subjected when dropped down will not cause them to fly out, which means holds the leaves without interfering in any way with the actions of the paste-applying devices, so that the paste may be applied properly and uniformly to the leaves.

In the accompanying drawings the present invention is illustrated as applied to a machine embodying the inventions of the above-mentioned patents; but only so much of the mechanisms of these prior organizations are shown as is necessary to a complete understanding of the invention.

Figure 1 of the views shows a front elevation of a portion of one of these casing-in machines provided with means which will keep the leaves together when the books are dropped between the paste-applying devices. Fig. 2 shows a side elevation of a part of the machine. Fig. 3 shows a side elevation, with parts in section, on the plane indicated by 3 3 on Fig. 1. Fig. 4 shows enlarged views of the nozzles which are used to direct the blasts which are employed to keep the leaves closed. Fig. 5 shows a detail of the pump-piston which is used to create the blasts.

In the machine illustrated, the unbound books 1 are opened and placed upon the saddle-plates 2. Each saddle-plate when over the center of the machine has its support 3 temporarily engaged with a slide 4, that is movable up and down the front frame and that is connected with an arm 5, which projects from a head 6, that is movable up and down the back frame. This head is connected by a link 7 with a lever 8, that is pivoted to the front frame, and is oscillated by a cam 9 on the cam-shaft 10, Fig. 3.

Supported by the front and back frames each side of the vertical path of the unbound book in this machine is a box 11, which contains the paste or other adhesive material. These boxes have paste-applying rolls 12 and are arranged to move back and forth horizontally. For this purpose on the shaft 10 is a cam 13, arranged to at the proper time oscillate the lever 14, which is connected by a link 15 with a rocker-arm 16, that extends from a rock-shaft 17, attached to which are two rocker-arms 18, that are connected by links 19 with the under side of one of the paste-boxes. The rock-shaft 17 also has a toothed segment 20, which meshes with a toothed segment 21 on a rock-shaft 22, attached to which are two rock-shafts 23, that are connected by links 24 with the under side of the other paste-box. The head 25 is fastened at its ends to the upper ends of two vertical slides 26, that are arranged to move up and down in the side frames of the machine. For this purpose a cam 27 is arranged on the cam-shaft near each side, so as to oscillate levers 28, that are pivoted to the front frame, and at the back are connected by links 29 with the slides. The head supports a pair of forwardly-extending supporting-bars 30, and carried by these are the folding bars 31, which operate to swing the folders 32. All of these mechanisms are fully shown and described in the patents previously referred to, and therefore are not described in detail herein. By these mechanisms the paste-boxes are separated, the saddle-plate, with one of the unbound books, is lowered between the separated paste-boxes, and the paste-boxes are closed together so the paste-rolls bear against the outer leaves of the book. Then the plate is raised and lifts the book between the paste-boxes, so that the outer leaves of the book will be coated with paste. As the book is lifted a case is placed over it and the head is brought down, so as to fold the leaves of the case against the pasted leaves of the book. This latter action could, if desired, as has been suggested in prior patents, be accomplished by hand.

As the unbound book is lowered the air tends to open out the leaves, as illustrated in Fig. 1. If the outer leaves of the book consists of reinforced paper or of marble paper, which is usually formed of thin inner and thick outer sheets pasted together, they have a tendency to curl out in such manner that the resistance of the atmosphere will be considerable and will cause them to fly open to such an extent that they will not be able to pass down between the separated paste-boxes. In the machine illustrated for overcoming this difficulty the link 7, which connects the saddle-head with the saddle-operating lever 8, is provided with an arm 33. This arm is connected by a link 34 with a hollow plunger-piston 35, that is arranged to move up and down in a pump-cylinder 36. In the bottom of the piston is a pump-valve 37. The outlet 38 of the pump-cylinder is connected by a tube 39 with a pipe 40, which extends over the head. Two tubes 41 extend from the end of the pipe 40 to a pair of nozzles 42, that are attached to the folder-bars, which are carried by the head. These nozzles, as shown in Fig. 4, are preferably flattened, so as to direct the blasts of air which are blown through them by the pump when the book is dropped downwardly in thin wide currents against the outer leaves of the book, so as to hold the leaves closely together. These nozzles are pivotally attached to a fork 43, that is adjustably attached to the bars which support them, so that they may be moved in or out, and also may be tipped in order that the blasts may be directed against the leaves of the book in the most effective manner.

The cam and lever, which operate to lower the saddle, at the same time draw down the pump-piston and cause blasts of air to be directed against the leaves of the book coincidently with its descent. These mechanisms are operated simultaneously, so that the blasts must be directed against the leaves of the book at the time it is necessary to hold them together—that is, when they are passing down between the paste-boxes. The nozzles, as will be seen, are carried by the head, which moves downwardly at the same time that the saddle is lowered, so that the nozzles will be near the leaves in order that the force of the blasts may have the most effect. These mechanisms are so combined as to operate in conjunction, and the leaves of the book are held closed without any interference with the paste-applying means, so that the adhesive can be applied uniformly over the entire surfaces of the waste leaves.

The invention claimed is—

1. The combination in a machine for casing-in books, of a plurality of means for applying adhesive to the outer leaves of an unbound book, mechanism for moving the adhesive-applying means toward and from the book, a book-support, mechanism for moving the book-support down between and up from the adhesive-applying means, and means for directing air-currents against the leaves of the book when the support is moving downwardly, substantially as specified.

2. The combination in a machine for casing-in books of a plurality of means for applying adhesive to the outer leaves of an unbound book, mechanism for moving the adhesive-applying means toward and from the book, a book-support, mechanism for moving the book-support down between and up from the adhesive-applying means, and means for producing and directing air-currents against the leaves of the book when the support is moving downwardly, said means

for producing air-currents being connected with and operated by the mechanism for moving the book-support, substantially as specified.

3. The combination in a machine for casing-in books of a plurality of means for applying adhesive to the outer leaves of an unbound book, mechanism for moving the adhesive-applying means toward and from the book, a book-support, mechanism for moving the support down between and up from the adhesive-applying means, a folding-head for applying the cases to the book, mechanisms for moving the head up and down in conjunction with the book-support, nozzles carried by the head for directing air-currents against the leaves of the book, and means connected with the nozzles for producing the air-currents, substantially as specified.

4. The combination in a machine for casing-in books, of a plurality of means for applying adhesive to the outer leaves of an unbound book, mechanism for moving the adhesive-applying means toward and from the book, a book-support, mechanism for moving the support down between and up from the adhesive-applying means, a folding-head for applying a case to the book, mechanisms for moving the head up and down in conjunction with the book-support, nozzles carried by the head for directing air-currents against the leaves of the book, and means connected with the nozzles and operated by the mechanism for raising and lowering the book-support for producing the air-currents, substantially as specified.

5. In a machine for casing-in books, the combination of horizontally-movable adhesive-applying means, mechanism for moving the adhesive-applying means, a vertically-movable book-support, mechanism for moving the book-support, a vertically-movable folding-head, mechanism for moving the head, nozzles movable with the head, and a pump connected with the nozzles and connected with and operated by the mechanism for moving the book-support, substantially as specified.

6. In a machine for casing-in books, the combination of horizontally-movable paste-boxes, paste-applying rolls carried by the boxes, mechanism for moving the paste-boxes toward and from the book, a vertically-movable book-support, mechanism for raising and lowering the book-support, a vertically-movable head, case-folders carried by the head, mechanism for elevating and depressing the head, nozzles mounted on the head, and a pump connected with the nozzles and operated by the mechanism for raising and lowering the book-support, substantially as specified.

7. In a machine for casing-in books, the combination of a plurality of means for applying adhesive, a book-support movable down between and up from the adhesive-applying means, an air-pump connected with and operating in conjunction with the book-support, and nozzles connected with the air-pump and arranged to direct air-currents against the sides of the book-support, substantially as specified.

8. The combination in a machine for casing-in books, of a plurality of means for applying adhesive to the outer leaves of an unbound book, mechanism for moving the adhesive-applying means toward and from each other, a book-support, mechanism for moving the book-support between the adhesive-applying means and then from between said means, and means for directing air-currents against the leaves of the book, substantially as specified.

JOHN R. REYNOLDS.

Witnesses:
HARRY R. WILLIAMS,
ETHEL M. LOWE.