M. F. MEYER.

PROCESS FOR PRINTING UPON THE OPENING EDGES OF BOOKS.

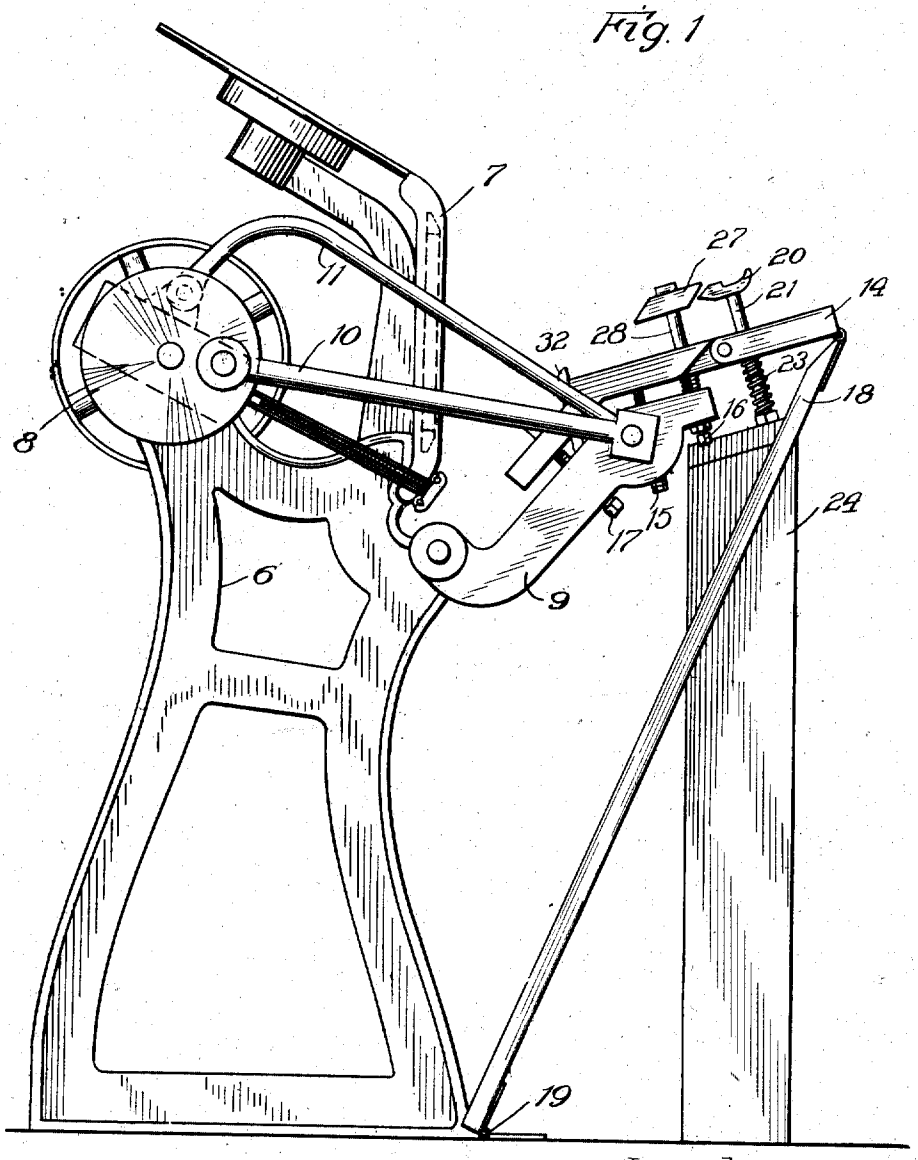
APPLICATION FILED MAR. 23, 1917.

1,249,448.

Patented Dec. 11, 1917.

3 SHEETS—SHEET 1.

Fig. 1



Inventor

Marcel Frederic Meyer

Witness
John E. Titus

By His
Victor Gibbon David Mason
Attys

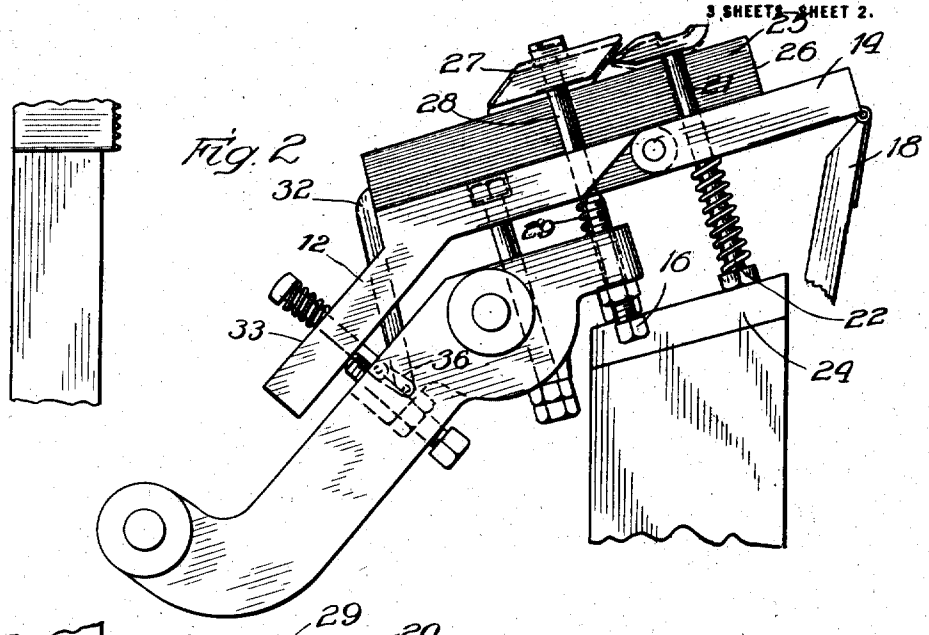
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3 SHEETS—SHEET 2.



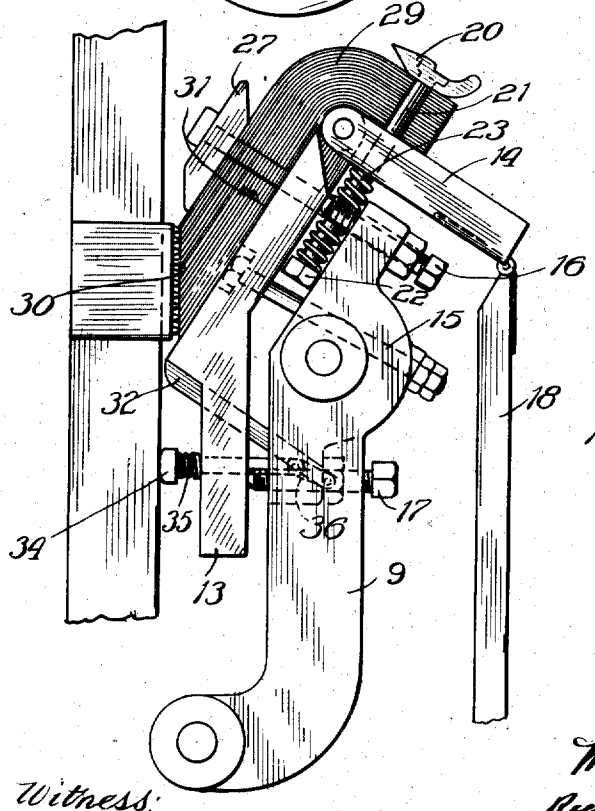
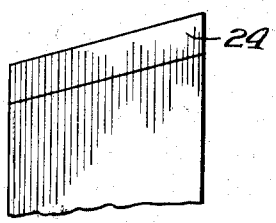


Fig. 3



Witness:
John E. Titus

Inventor
Marcel Frederic Meyer
Redrow Gibbons Davis & Macauley
by His Attys.

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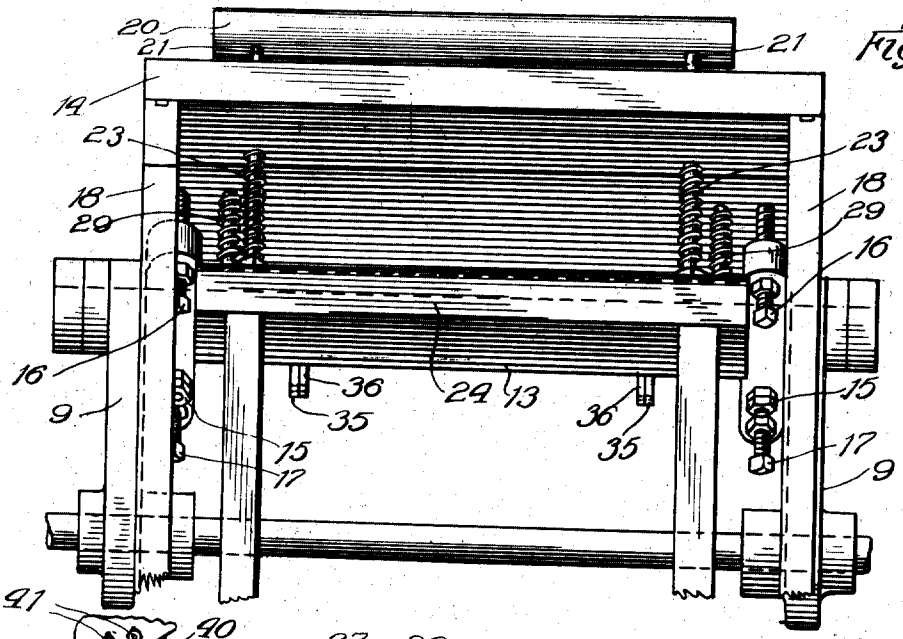


Fig. 4

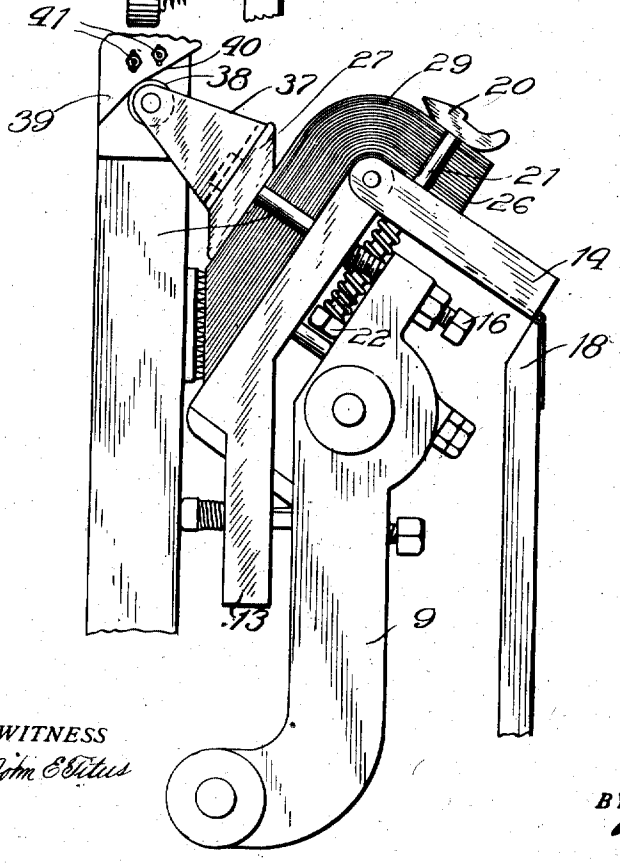


Fig. 5

WITNESS

John E. Titus

INVENTOR.

Marcel Frederick Meyer

BY

Robertson Davidson & Mason

ATTORNEYS

UNITED STATES PATENT OFFICE.

MARVEL FREDERICK MEYER, OF CHICAGO, ILLINOIS.

PROCESS FOR PRINTING UPON THE OPENING EDGES OF BOOKS.

1,249,448. Specification of Letters Patent. Patented Dec. 11, 1917.

Application filed March 23, 1917. Serial No. 156,834.

To all whom it may concern:

Be it known that I, MARVEL FREDERICK MEYER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes for Printing upon the Opening Edges of Books, of which the following is a specification.

My invention relates more particularly to directories, catalogues, and the like, on which it is convenient to provide an index upon the opening edge of the book for the purpose of readily locating subject-matter in the book, so that the user of the latter may readily turn to the desired matter, though it is also applicable to the printing of advertising or other matter thereon. Heretofore it has been found impracticable or impossible, though highly desirable, to satisfactorily print upon the opening edge of a book, or more accurately speaking, upon the edges of the leaves thereof, because said edges are uneven, and with the type pressure normal to the edge of the book the leaves yield more or less unevenly to the pressure directed in the plane thereof. Thus it has been found impossible to secure impressions which are sufficiently perfect to satisfy the aesthetic requirements of the art. In my improved process and in order to overcome this difficulty the edges of the leaves are arranged for printing in a plane forming an angle of less than forty-five degrees to the planes of the leaves, and the body of the leaves or book is supported so that the pressure is transmitted only through a relatively short body of paper to the solid support of the book. In the practice of my process which is applicable only to flexible books, or to books before the rigid binding or covers have been applied thereto, the book is so bent intermediate its front or opening edge and back that, the position of the back being maintained, the edges of the leaves are *en echelon* or in a plane at an acute angle of less than forty-five degrees to the plane of the leaves. The type is caused to approach and bear upon the edges of the leaves in a direction substantially perpendicular to the edge of the book, *i. e.*, at an acute angle to the support for the book, whereby the edges of the leaves are prevented from yielding to any objectionable extent and because of their position receive a sufficiently even pressure for the purpose of a sharp impression. Obviously, the leaves take the impression not only upon the surface of their edges normal to the planes of the leaves, but also upon the exposed edges of the faces of the leaves, and as has been found in practice the printing is also applied to a limited extent to the other faces of the leaves. A beneficial result of this method of operation is that the index or other printing is not only visible when the edge of the book is looked at in a direction normal thereto, but also when the book is more or less bent in either direction and the edges of the leaves thereby drawn out of normal position with respect to each other.

In the drawings I have shown and in the following specification described a preferred form of apparatus and method of carrying out my invention. It will be understood, however, that the specific disclosure is for the purpose of exemplification only, and that the scope of the invention is defined in the following claims in which I have endeavored to distinguish it from the prior art, so far as known to me, without, however, relinquishing or abandoning any portion or feature thereof.

Referring now to the drawings, Figure 1 is a side elevation of an old and well-known form of printing press to which my invention is applied; Fig. 2 a similar view of a detail thereof on an enlarged scale, parts being removed to better show the construction; Fig. 3 a view similar to Fig. 2 but with the parts in a different position; Fig. 4 an elevation at right angles to the plane of Fig. 2, as seen from the right of said figure; and Fig. 5 a view similar to Fig. 3 of a slightly modified form. Each part is identified by the same reference character wherever it is shown in the several views.

I have illustrated my invention in connection with a printing machine of an old and well-known type, it being sufficient for the present purpose to state with regard thereto that 6 is a stand, 7 a type support, and 8 mechanism for giving the swinging platen support 9 the necessary rocking motion toward and from the support by means of the connecting rods 10. The platen or support 12 for the book to be printed comprises an angular casting 13, rigidly but adjustably secured to the swinging member 9, and a plate 14 hinged to the upper edge thereof. The rigid platen or book support 13 is adjustably bolted to the swinging arm 9 by means of tension bolts 15 and thrust bolts

16, 17 in a manner which will be readily understood by those skilled in this art. The swinging plate 14 is connected by a link 18 to a stationary part as for example to the front of the frame at 19 in such manner that as the book support swings toward the type the hinged plate is carried from the position shown in Fig. 2 in the plane of the section 12 of the book support to a position at an angle thereto, as shown in Fig. 3. During this movement the book is clamped both to the swinging plate and to the rigid support or platen. To the swinging plate it is clamped with great pressure by a clamp 20 which is carried by bolts 21 extending through the swinging plate and provided on their lower ends with heads 22 between which and the swinging plate 14 are powerful pressure springs 23, which tend to draw the clamp toward said plate. When the platen is in the book-receiving position shown in Fig. 2, the clamp 20 is raised by the engagement of the heads of the bolts with a stationary abutment 24. As the platen starts to move toward the type, however, and is followed by the swinging plate, the abutment releases the bolts so that the clamp carried thereby is drawn by its spring toward the swinging plate, and the book 25 on the latter is firmly clamped near its rear edge and held with its back 26 in normal position perpendicular to the plane of the book. A somewhat similar clamp 27 is arranged upon the platen 12, being carried by bolts 28 extending through said platen, said bolts being provided with springs 29 intermediate said platen and their respective heads to normally draw the clamp toward the platen. The heads of the bolts 28 are likewise engaged by the abutment 24 when the swinging platen support is at the limit of its movement away from the type, so that the clamp 27 is, in this position of the apparatus, slightly raised with reference to the platen. As the platen moves away from the abutment, however, the bolts are released and the clamp engages the book upon which the printing is to be done. The springs controlling the clamp 27 are however so much weaker than those controlling the clamp 20, that as the swinging plate turns to an angular position with reference to the platen, the book is flexed as at 29, Fig. 3, and the leaves thereof slide slightly upon each other and with reference to the platen beneath the clamp 27, the edges of the leaves taking the echelon arrangement, as illustrated at 30, Fig. 3, at an angle of less than forty-five degrees to the surface 31 of the platen on which the book rests. The relative movement of the leaves by which they are brought into the above described position is completed just prior to the time when the edge of the book comes into contact with the type. And a reference to Fig. 3 will make it sufficiently plain how the type engage the edges of the leaves at such an angle thereto and to the surface of the platen that the composite surface to be printed is rigidly supported by the surface of the platen, and the upper faces as well as the normal edge surfaces of the leaves receive the impression. As the platen again moves backward it will be understood that the swinging plate straightens out and as the platen reaches its outward position the clamps are relieved and the book released.

In order to facilitate the ready adjustment of the book to be printed to printing position, I provide the front edge of the platen with one or more movable posts or guides 32. These guides extend through the apron or angular portion 33 of the platen in which they are guided for a movement in a plane at right angles to the plane of the platen, and they are adapted in the outer position of the platen, shown in Fig. 2, to project above the edge thereof to abut against the front edge of the book, and in the forward movement of the platen to printing position to be withdrawn to permit the platen to come close to the type support, as in Fig. 3. To impart this movement to the guides, I provide one or more sliding bolts 34 projecting through the apron of the platen and surrounded by springs 35 between the heads thereof and the apron, which bolts are connected to the respective guides by links 36. As the platen approaches printing position, the heads of bolts 34 engage the type support and are driven thereby to withdraw the guides 32 to the position shown in Fig. 3.

Referring now to the modification shown in Fig. 5, it will be noted that the parts of the device are substantially the same as those just described, except that means are provided to secure additional pressure by the clamps 27 on the platen as the latter comes into printing position. The leaves of the book having at this time completed their movement, and it being desirable that the edges thereof be as firm as possible, I provide this means for depressing the clamp 27, which consists in a bracket 37 rigidly mounted upon the clamp and carrying at this end a roller 38 which engages an adjustable abutment 39 upon the type support just prior to the engagement of the book by the type. I have shown the adjustable abutment as consisting in a plate, the edge 40 of which is arranged at a small angle in the path of movement of the roller, so that it exerts a wedging action on the latter to press the clamp against the book. The position of the plate 39 may be adjusted by bolts 41, 41 extending through slots in said plates. By means of this construction the book is tightly clamped adjacent its edges at the moment when the type is impressed thereon, but the pressure is somewhat relieved as the

platen carrying the book starts to move away. This permits more or less of a movement of the leaves relative to each other as the platen returns to its normal position, which movement serves the purpose of transferring some of the fresh ink from the upper side of each leaf to the underside of the superposed leaf so that the printing is extended to both sides of the leaf at its edge.

I claim:

1. A process of printing upon the edge of a book which consists in arranging the opening edges of the leaves in a plane at an acute angle to the plane of the leaves and printing upon the leaves while in this position.

2. A process for printing upon the opening edge of a flexible book, which, consists in bending the book intermediate its front and back edges to draw the free edges of the leaves into a plane at an acute angle to the planes of said leaves, and making an impression upon the edges of the leaves while in this position.

3. A process of printing upon the opening edge of a book, which consists in bending the book intermediate its front and rear edges to bring the free edges of the leaves into a plane at an acute angle to the planes of said leaves, supporting the leaves of said book in a plane parallel thereto, and printing upon the edges of said leaves at an acute angle to the plane of said support.

MARVEL FREDERICK MEYER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."