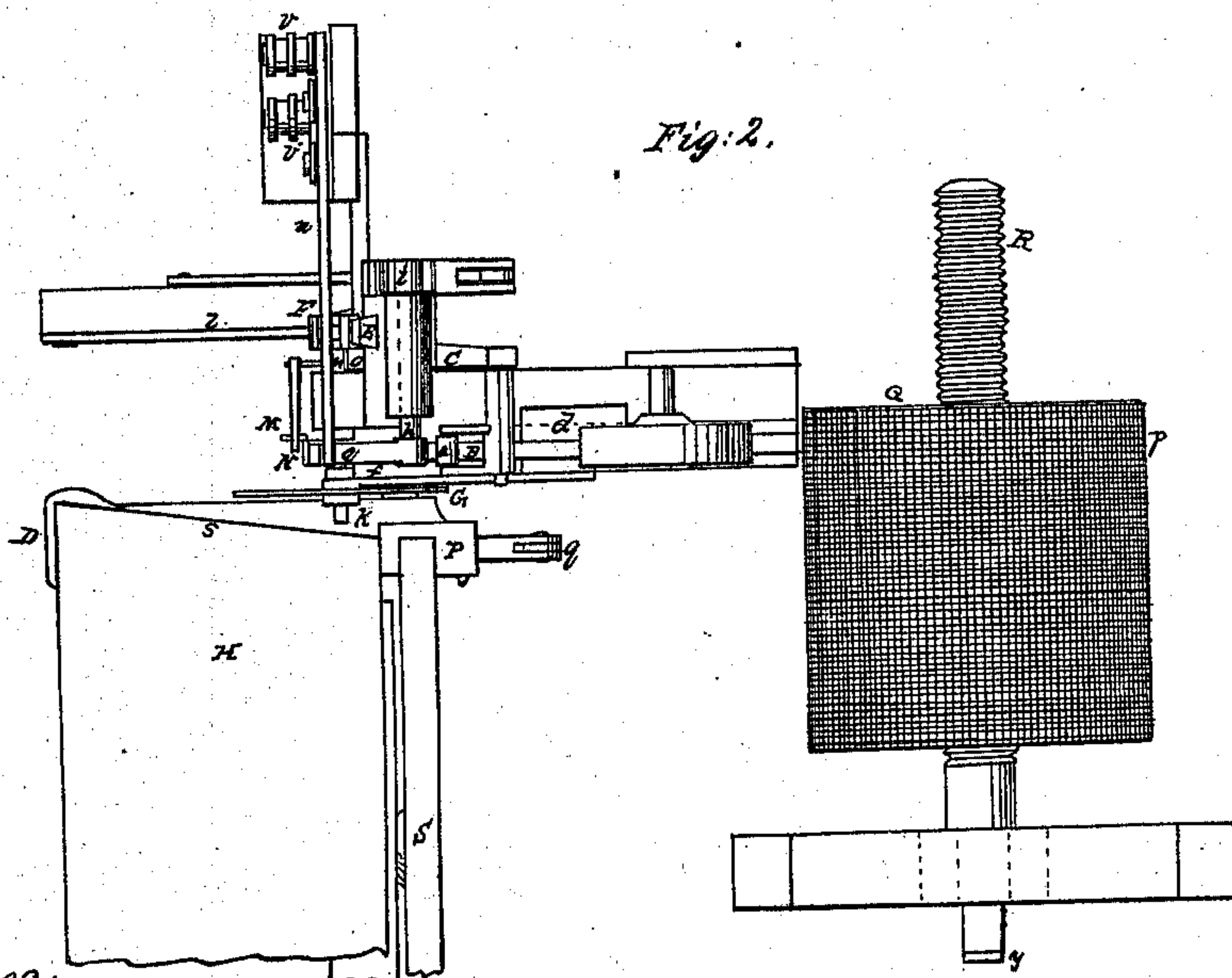
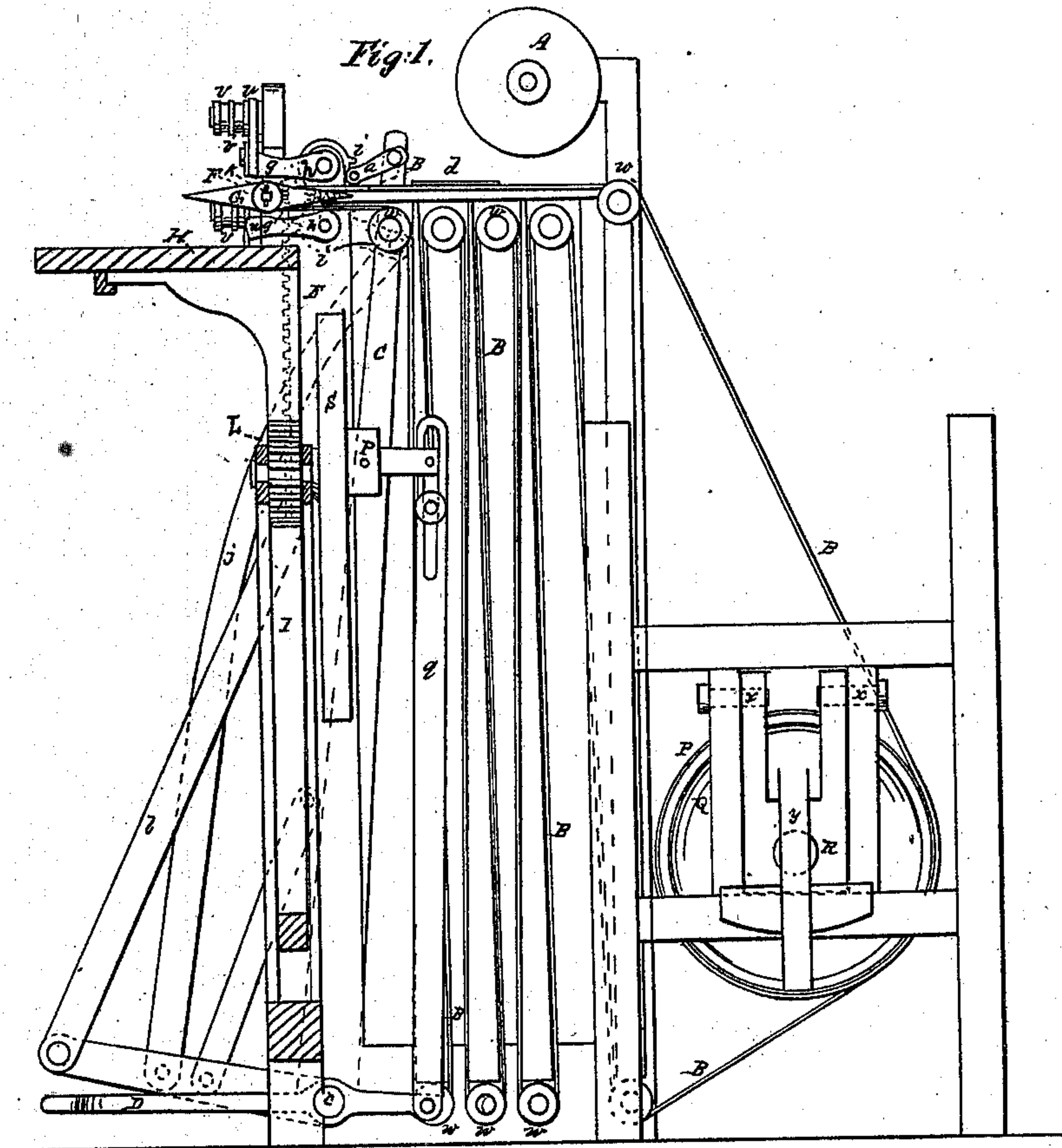


*J. McAdams. Sheet 1 of 2 Sheets*  
*Paging Mach.*

*N<sup>o</sup> 87693.*

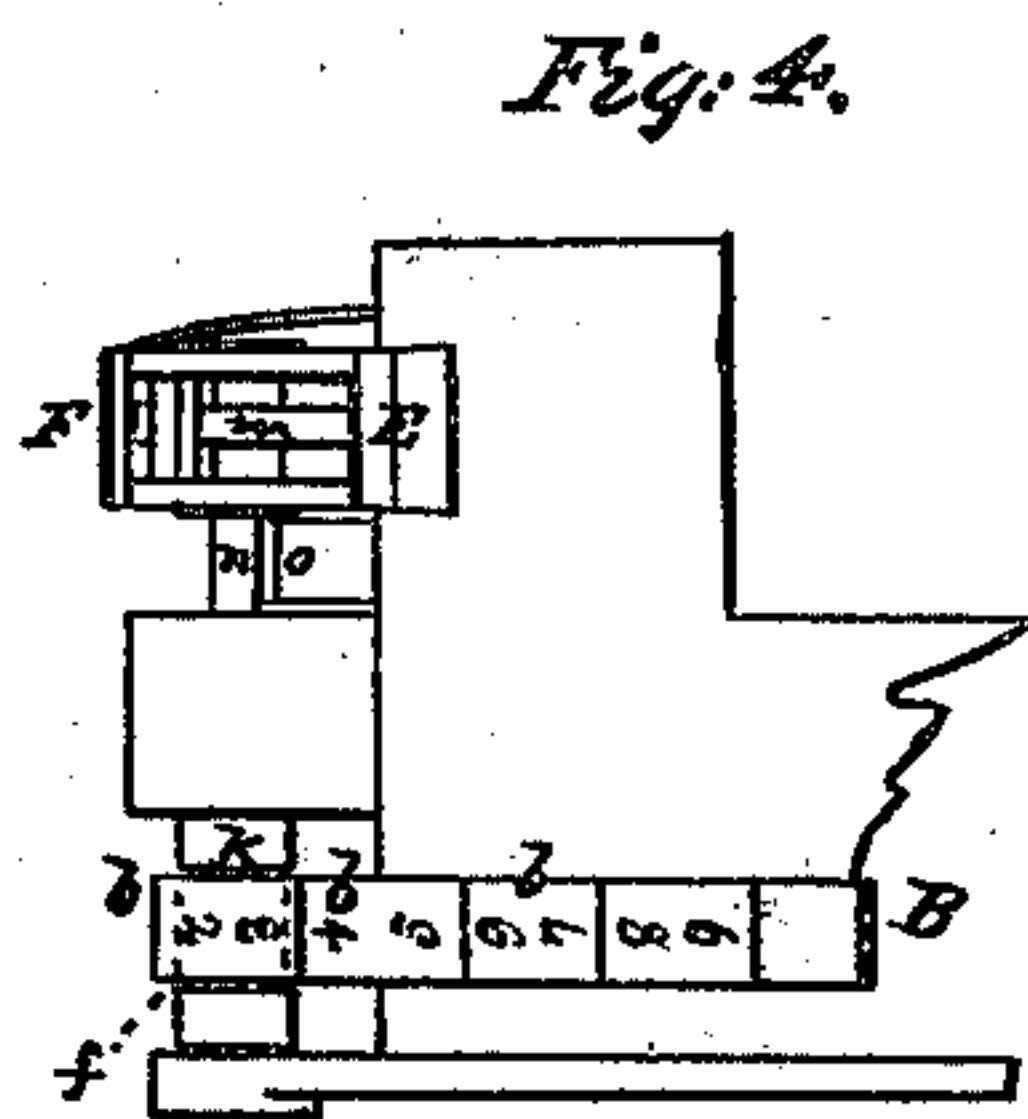
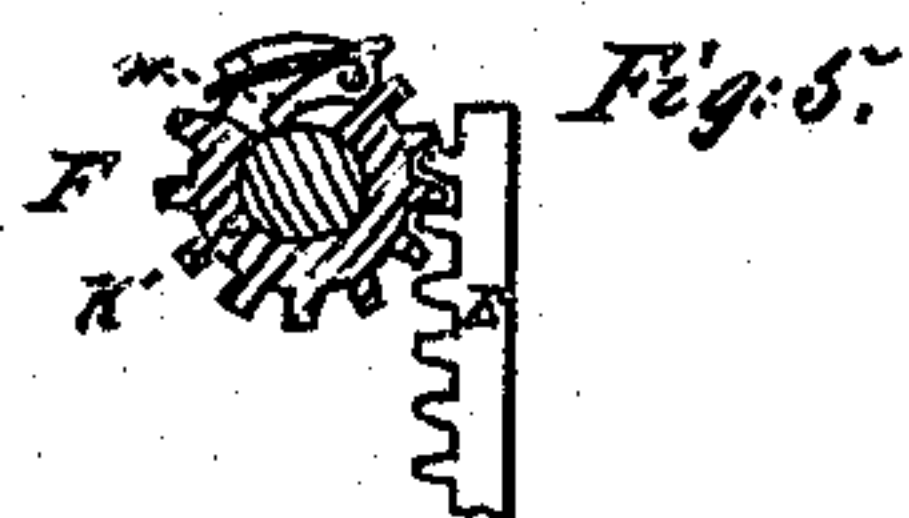
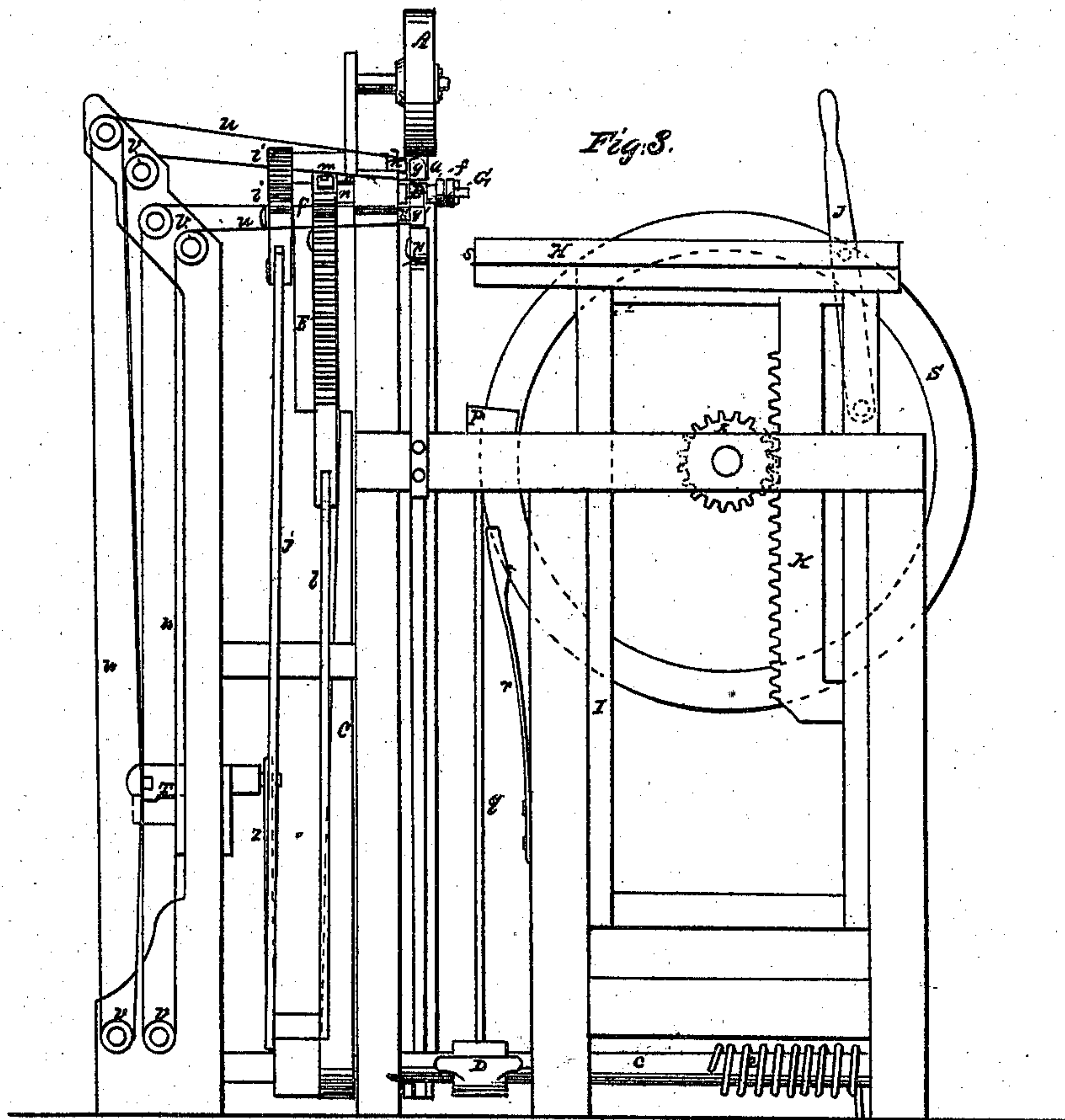
*Patented Mar. 9. 1869.*



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*J. Mc Adams. Sheet 2. of 2 Sheets.*  
*Paging Mach.*  
*N<sup>o</sup> 87693. Patented Mar. 9. 1869.*



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# UNITED STATES PATENT OFFICE.

JOHN McADAMS, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN MACHINES FOR PAGING BOOKS.

Specification forming part of Letters Patent No. **87,693**, dated March 9, 1869.

*To all whom it may concern:*

Be it known that I, JOHN McADAMS, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Paging-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 represents a partly-sectional side elevation of a book-paging machine constructed in accordance with my improvement; Fig. 2, a plan thereof; Fig. 3, a front view of the same; Fig. 4, a plan, on an enlarged scale, of a portion of the type-feeding mechanism, and Fig. 5 a sectional elevation of the same in part.

Similar letters of reference indicate corresponding parts.

Machines have before been made in which numbers or name-types have been connected to form a chain, said types being inked and brought around to print successively either numbers for book-paging or for numbering or marking other articles—as, for instance, in the machine for numbering the pages of account-books, secured to me by Letters Patent of the United States bearing date the 12th day of August, 1851, and reissued January 26, 1858, and in which the numbers of two pages are simultaneously printed on the two opposite corners of the same side of a sheet, also the numbers of two pages on each side of a sheet, while the sheet is passing once through the machine, two type-chains or continuous lines of type parallel with each other being used.

My present improvement in such or other like connection consists in a peculiarly-operating leaf-turner arranged to act mechanically, or automatically, as it were, to facilitate the paging of a series of leaves in succession; also, in a combination of impression-levers and endless tapes or belt applied to form a constantly surface changing tympan to the levers; likewise, in a vertically and horizontally adjustable table for the work, with its forward edge arranged to occupy a diagonal position to give a closer support to the leaves relatively to the impression devices.

The invention also consists in the employment of a skeleton cylinder loosely mounted on a drum or wheel and adjustable endwise, for operation in connection with the type-chain to feed or supply or remove it from the machine,

or to facilitate change of type-chains and washing or cleansing of them; also, a combination of leaf-turner, leaf-sustaining finger, and leaf-detainer.

Referring to the accompanying drawings, A represents an ink-wheel that may be rotated and inked by a hand-roller as often as necessary—say three or four times a day, or less or more frequently, according to the amount and steadiness of the work. The ink is distributed or taken up from this wheel and conveyed to the types *b* of the chain of types B by a roller, *a*, carried by a suitable frame that is pivoted to or otherwise connected with a beam or lever, C, hung on and worked by the treadle-shaft *c* in such manner as that said roller, having been supplied with ink from the wheel A, is, upon pressing down the treadle D, moved over the working table or plate *d* and then over two or more of the types of the chain of types in front of said plate, so as to thoroughly ink the same, after which, on the foot being removed from pressure on the treadle, a spring, *e*, connected with the treadle-shaft causes the lever C to throw or work back the roller *a* and to bring it in contact with the wheel A, whereby it is again supplied with ink, and slightly turns or moves the wheel A each time it thus strikes the latter, thereby varying the inking-surface and producing more uniformity in the inking.

The type-chain B is or may be made with types projecting from the surface of the links and the numbers thereon arranged, so that the types *b* will be back to back—or, in other words, be reversely disposed, as represented in Fig. 4—in order that they may occupy a position that will enable them to produce an impression in consecutive order against the opposite corners of the leaves of a book, said leaves lying one above and the other below a flattened portion or turning-plate, *f*, round which the type-chain passes, and by which it is fed in an intermittent manner, link by link, the leaves being pressed upon or against the types or consecutive pairs of them by impression-levers *g g'*, one above and the other below the leaf, and operating to print two numbers simultaneously. These levers *g g'* are hung fast on shafts *h h'*, that are geared together by pinions or segments *i i'*, to which a partial rotation is given by a pitman, *j*, connecting an arm from the one of them with a lever keyed on the treadle-shaft *c*, to move toward each other said impression-



levers when it is required to produce the impression, and away from each other, or to open them, as it were, when it is necessary to introduce the sheets or leaves or place them in position for receiving an impression.

The flattened portion or turning-plate *f*, that serves, as it is rotated, intermittently each half-revolution, say, to move the type-chain link by link, is connected with or forms part of a shaft, *k*, that derives its motion from a rack, *E*, which is operated by or through a lever on the treadle-shaft *c* by a rod, *l*, said rack gearing into or with a pinion, *F*, that is connected with the shaft *k* by a pawl and ratchet, *m*, (seen more clearly in Fig. 5,) so that said pinion only operates the shaft *k* a half-revolution in one direction of its travel—say during the down-stroke of the rack—to draw forward the type intermittently as required, and to give the requisite motion to a leaf-turner (more minutely described hereinafter) arranged on the end of said shaft. To aid in completing these intermittent half-revolutions of the shaft *k* in the one direction only, so as to produce a regularity of action and to hold such shaft when turned, the same is formed with a flattened portion, *n*, for a spring, *o*, to press or bear against. The book to be paged is laid, with, if bound, its back turned over or back, on a table, *H*, which is set on a vertically-sliding frame, *I*, in such manner as that it may also be horizontally adjusted—say by means of a lever, *J*—nearer to or farther from the impression devices, so as to adjust the position of the book, in order that the impression may come in the right place. The front edge, *s*, of this table *H* is made sloping, inclining in a forward direction away from the front of the machine, in order that there may be a fuller or better support for the leaves of the book in proximity to the impression, to prevent them sagging without subjecting the table *H* to such advanced position generally as to throw it in the way of the printing mechanism or working portions of the machine relating thereto.

The frame *I*, that carries the table *H*, is fitted in a stationary frame, so as to be capable of vertically sliding therein, and has connected with it a rack, *K*, that has gearing into or with it a pinion, *L*, on the shaft of which is a wheel, *S*, operated by any suitable friction-clamp, *p*, connected in an adjustable manner by a rod, *q*, with the treadle *D*, said clamp *m* being worked up and down by the action of the treadle, only serving to turn the wheel *S* in one direction, a spring, *r*, restraining it from back travel, and such movement of the wheel operating, through the pinion *L* and rack *K*, to gradually lower the table *H* as the paging progresses, thereby keeping the book at all times at a proper level or attitude for printing.

As before observed, to page the book, its leaves are dropped in succession on the upper set of type and turned below or beneath the under set (or below the flattened portion or plate *f* of the shaft *k* or types bearing against the same) by the leaf-turner *G*, and from thence

below a guard or detainer, as hereinafter described, so that when the impression-levers *g* *g'* are brought together the printing or paging will be effected. To prevent the under leaf or sheet, that is pressed upward by the lever *g'*, from sagging or falling down before it has received its impression, I employ a sustaining-finger, *M*, which is carried by said lever and extends out therefrom, and whereby the sheet that falls upon it is partially sustained and properly held up until printed.

The leaf-turner *G* on the end of the shaft *k* consists of two arms radiating from opposite sides of the shaft, and which, making half a revolution each time the impression-levers *g* *g'* separate after making an impression, carries by its one arm the lower leaf or sheet down out of the way below, say, a curved detainer, *N*, and by its other arm moves the upper one of the two leaves down below the type, and receives on or over it the next sheet or leaf, as dropped by the attendant. In this way are the leaves adjusted and turned to receive their impressions from the reversely arranged or numbered type in due form on their opposite sides as they lie to receive the impression first above and next below the type-chain on opposite sides of the plate *f*. If necessary, this leaf-turner *G* may be notched to insure its movement of the leaves or sheets as described.

Around the pressing surfaces or portions of the impression-levers *g* *g'* is passed an endless tape, *u*, of any desired length, and carried repeatedly or consecutively around grooved pulleys *v*, to give to it an extended run or to include within a small space or compass a considerable length of tape, the one portion of which passes around the impression-lever *g* and another around the impression-lever *g'*. The tape *u*, thus or otherwise equivalently arranged, acts as a tympan, it being of sufficient thickness to give it the necessary elasticity; and, in order that a fresh surface may be presented each impression, said tape is moved gradually or at intervals to remove the offset of each previous impression and prevent blurring. This may be done by any suitably-constructed friction-clamp, *T*, worked up and down by a rod, *Z*, connected with a lever on the treadle-shaft *c* and operating only to draw upon the tape in one direction, whereby a continuous travel of the tape is kept up.

The type-chain *B*, which may be of any desired length, according to the number of pages required to be impressed, and which passes round the plate *f* of the shaft *k*, may be continued up and down in a zigzag direction around any number of pulleys *w*; or such arrangement may, or at least to a considerable extent, if desired, be dispensed with and the type-chain be supplied to the machine round the plate *f* direct by or from a skeleton cylinder, *P*, of wire-gauze. This cylinder is slipped loosely on or over a drum or plain second cylinder, *Q*, that may be hung by an arm or bracket, as at *x* *x*, to a fixed frame at its one end, in order that by pressing on a lever, *y*, it may be tilted



or raised at its opposite end, which is left free to facilitate the getting on and off of the type-chain and of the skeleton cylinder P, carrying the same. Said drum Q also has connected with or fitting through a female thread therein a screw, R, having a fixed relationship, and carried, say, by the swinging arm or bracket which supports the drum, so that the chain of types can be wound upon or unwound from the skeleton cylinder that rests on the drum by turning the latter, the screw R causing the drum each revolution to give an end movement to the type-chain cylinder equal to the width of the chain, so that the latter will be wound or unwound helically there on or from. In this way may a proper feed of the type-chain be made to the machine; or, supposing the machine to be supplied with a run or length of chain apart from that on the cylinder P, as shown in the drawings, then on cutting or disconnecting the type-chain in use on the machine at a point adjacent to the skeleton cylinder P and attaching one end of such cut chain to said cylinder and the other end to the free end of a duplicate chain of types wound on the cylinder P, the chain that has been in use on the machine may, by turning the drum Q, be wound on the cylinder P, and at the same time the new chain of types be unwound therefrom into place on the machine and its ends united. The skeleton cylinder P being arranged loose or removable on the drum Q, (and revolving, it may be, by frictional contact therewith,) the old or used chain of types on the cylinder P may, by simply drawing off said cylinder from the drum, be readily washed and cleaned on all

sides by immersion of it and the cylinder in any suitable alkaline solution, thereby fitting it for use again in the machine on returning the cylinder to its place on the drum.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The revolving leaf-turner G, in combination with the chain of types, for operation in connection with the impression-levers or their equivalents, essentially as and for the purposes herein set forth.

2. The intermittently-revolving flattened portion *f* of the shaft *k*, carrying the type-chain, and operating, in combination with the levers *g g'*, to print the even and odd numbers simultaneously, as specified.

3. The table H, adjustable to or from the impression devices, also made capable of being lowered in a regular or graduated manner, as described, and having its forward edge, *s*, arranged to occupy an inclined or diagonal position relatively to its horizontal adjustment or action, as and for the purpose herein set forth.

4. The skeleton cylinder P, mounted as described, or otherwise equivalently carried, and adjustable or moved endwise by screw or its equivalent, for operation in connection with the chain of types, as herein set forth.

5. The combination, with the leaf-turner G, of the leaf-sustaining finger M and sheet or leaf detainer N, for operation together essentially as described.

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Witnesses:

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