No. 672,529. Patented Apr. 23, 1901.

D. E. HUNTER.

FEEDING MECHANISM FOR CARDS, &c.

(Application filed July 5, 1900.)

(No Model.) 2 Sheets—Sheet 1.

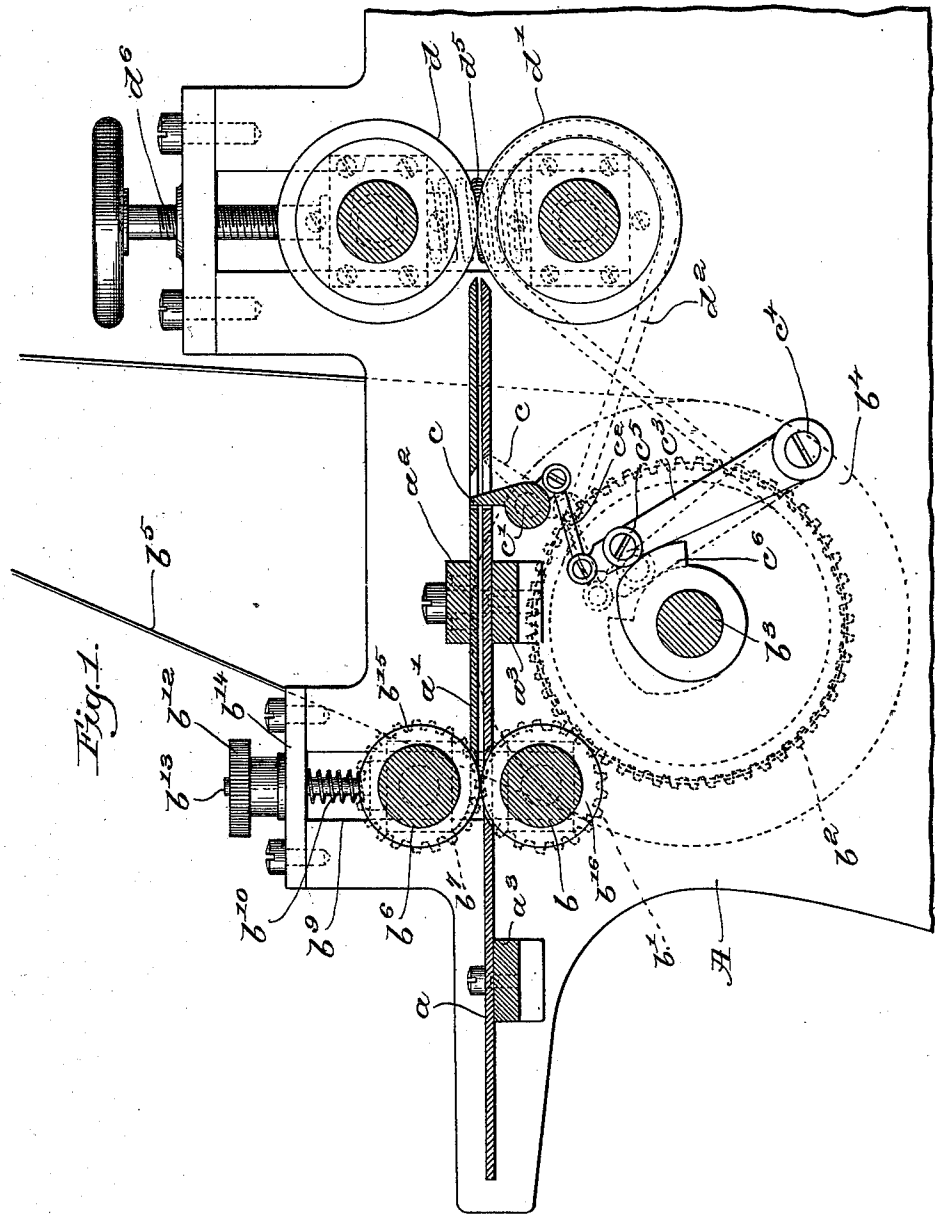


Fig. 1.

Witnesses.
Thomas F. Drummond.
Howard Hanscom

Inventor:
David E. Hunter,
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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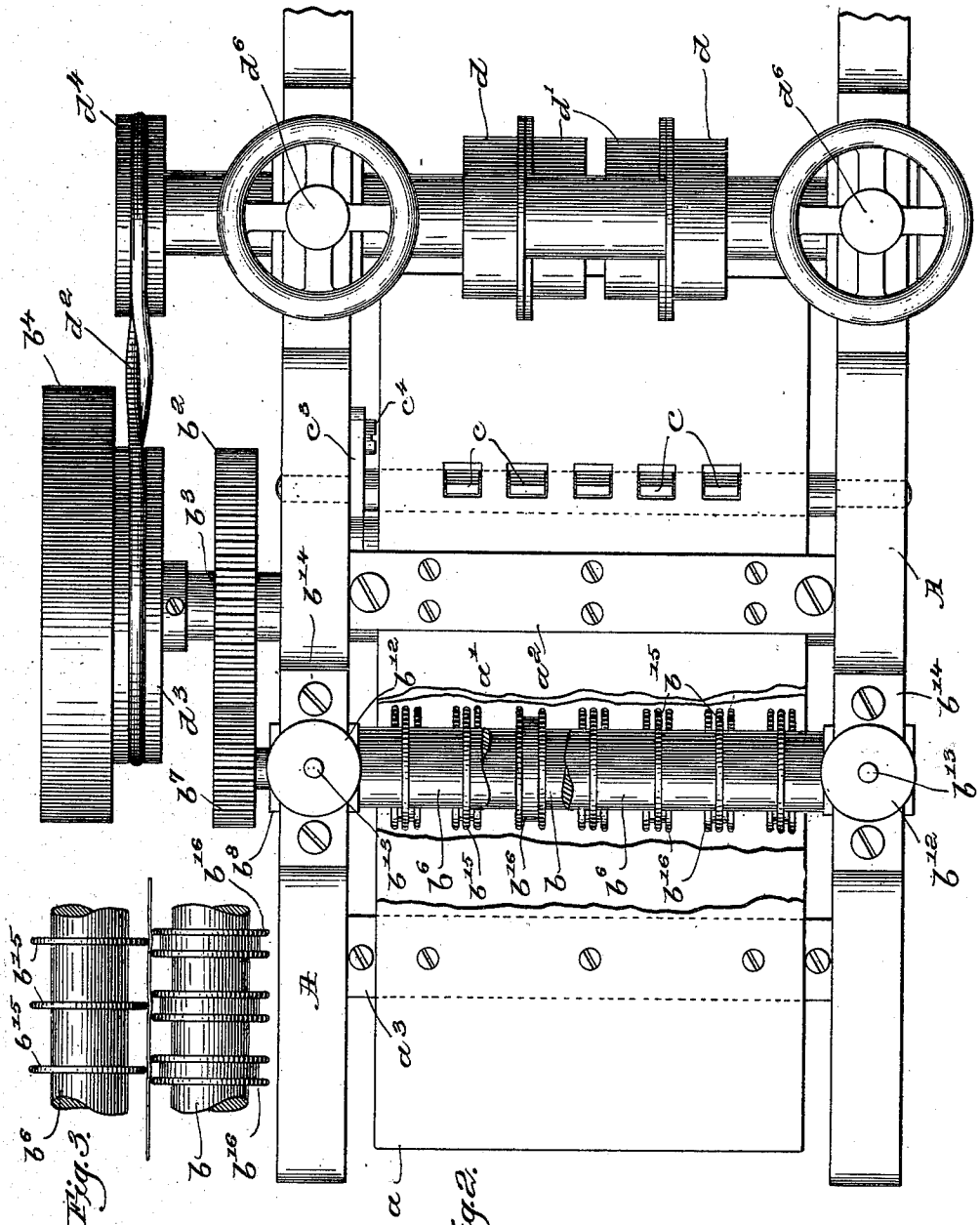


Fig. 2.

Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

DAVID E. HUNTER, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO LIBRARY BUREAU, OF BOSTON, MASSACHUSETTS.

FEEDING MECHANISM FOR CARDS, &c.

SPECIFICATION forming part of Letters Patent No. 672,529, dated April 23, 1901.

Application filed July 5, 1900. Serial No. 22,539. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. HUNTER, a citizen of the United States, and residing in Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Feeding Mechanism for Cards, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a tension-feed or yielding feeding device for feeding paper, cards, or other sheet material, and especially adapted for use in ruling-machines, printing-machines, and other places where it is desirable that the card or paper should stop momentarily to be operated upon without the necessity of stopping the movement of the feeding mechanism and other operating parts.

Modern requirements demand that cards and similar material shall be manipulated with extreme rapidity, such that intermittently-operating machinery is no longer capable of meeting the requirements as to speed and economy, and accordingly it is desirable that the moving parts in the machine shall continue to operate continuously, provision being made merely for stopping the work long enough to be operated upon when necessary, particularly for such operations as punching, cutting, &c., where two independent parts are required to coöperate on the card, sheet, &c.

My invention in general terms consists in providing coöperating parts which tend slightly to deflect or bend the card or paper, thereby securiug sufficient frictional pull or pressure upon the card to move the same normally forward and yet permit the same, without injury, to cease feeding at any desired moment without stopping the feeding mechanism.

In the particular embodiment of my invention herein shown I provide coöperating rolls, this being the preferred construction for use with various kinds of machinery—such as, for instance, that shown in my copending application, Serial No. 22,536—these rolls having rings or ribs spaced along them out of step, the rings being preferably arranged in pairs on the lower roll and singly on the upper roll, the rings of the upper roll being between and very slightly lower than the contiguous upper portions of the pairs of rings below.

In the accompanying drawings, in which I have illustrated one form of my invention, Figure 1 is a central vertical longitudinal section thereof, showing sufficient parts to enable my invention to be clearly understood. Fig. 2 is a top plan view thereof, and Fig. 3 is a detail of the friction feed-rolls viewed in front elevation.

It will be understood that the frame A and general arrangement of parts therein and the general kind of machine in which my invention may be used may be varied indefinitely and will be made to correspond to the character of the work with which the feed is used. The cards or sheet material are laid on any suitable receiving-table a and are received by any suitable guide a', said table and guide being herein shown as held in position by cross-braces a^2 a^3.

The feed-rolls are herein shown as both arranged to rotate, the lower roll b having its pinion b' in mesh with a gear b^2, mounted on a shaft b^3, driven by a pulley b^4 and belt b^5, and the upper feed-roll b^6 has its pinion b^7 in mesh with the pinion b', so that the two feed-rolls rotate properly in opposite directions, and while I prefer this construction it will be understood that for certain purposes only one of the feeding-rolls need rotate and also that for certain purposes other forms of feeding members may be employed rather than the special rotary form herein shown.

One of the coöperating feeding parts, herein shown as the upper roll b^6, is yieldingly mounted, having its journal-boxes b^8 arranged to slide vertically in guides b^9, formed in the frame of the machine, being normally held down by a spring b^{10} and adjustable accurately up or down by a thumb-nut b^{12} in threaded engagement with a stem b^{13}, projecting from the journal-box b^8 through a cap-plate b^{14} of the machine. The upper roll is provided with rings or corrugations or rib-like projections b^{15}, spaced apart at intervals as required by the kind of work being fed, and the lower roll has a similar device b^{16}, arranged in pairs at each side of the ring b^{15}, so that when the card or paper passes between said rings it is very slightly bent or deflected, as shown in

Fig. 3, or at least such is the tendency, thereby insuring a sufficiently strong grip on the card to pull or force the same under normal conditions, but yet permit the card or paper to stop its forward movement when necessary.

The idea of my invention is to provide a frictional engagement such that while it is capable of feeding the paper under normal conditions it is not such that in case the paper should be stopped it will continue to force the paper forward, and thereby crumple and spoil the sheet being fed, but simply slide on the paper, leaving the latter stationary as long as the obstruction continues to stop the paper, but instantly moving the paper forward upon the removal of the obstruction.

In the present instance of my invention I have indicated a stopping device in the form of a gate c, capable of extending across the runway of the paper, as indicated in full lines in Fig. 1, but adapted to be turned down into its dotted-line position, being pivoted for this purpose at c' and connected by a link c^2 to a lever c^3, mounted on the frame at c^4 and having a roll c^5, engaged by a cam c^6 on the shaft b^3. As the paper is stopped by the gate c it will remain stationary a sufficient length of time to be operated upon by any punching or other mechanism, whereupon the gate will assume its dotted-line position and the sheet will be fed forward to suitable operating mechanism, herein shown in the form of opposite disk cutters $d\,d'$, operated by a band d^2, passing over band-wheels $d^3\,d^4$. The cutters are normally held apart by spring d^5 and are adjusted by screws d^6.

From the above description it will be understood that the friction or yielding feed mechanism which I have set forth is capable of instantaneous action without any possible injury to the material operated upon. The rolls may be adjusted with extreme nicety, so that when the paper is stopped by the gate c the rolls, continuing to rotate, will not abrade or even mark the surface of the paper, but will simply slip over the same with the slightest frictional engagement tending to move the sheet forward, said extremely slight tendency of the individual ribs or rings being sufficient, however, in the aggregate number of rings to feed the paper positively forward instantly upon the rotating of the gate. If the cardboard is thick, the ribs will not be adjusted close enough together to appreciably deflect the cardboard, whereas in the case of thin cardboard or paper the rings will necessarily be adjusted closely together. Any degree of frictional engagement may be obtained by the adjustment of the roll, and the rings thereon may be spaced apart as closely as required, according to the work to be done. Also, as already stated, while I prefer the form of rings or ribs shown and described, I do not limit myself thereto, and while it is preferable that rolls should be used and that they should both rotate, the essential is merely that there should be a forward feeding movement at one or both sides of the paper sufficient to give a feeding tendency to the latter capable of moving it continuously forward, excepting when positively stopped by the gate or equivalent part distinct from the feeding mechanism; nor do I limit myself to any of the specific details of construction or arrangement of parts and operation thereof, inasmuch as the range of equivalents is intended to be broad, as defined in the following claims.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A device for feeding cards or sheets comprising a pair of rolls provided with coöperating ribs arranged out of alinement with each other and adapted to receive the card or sheet between them and hold the same with a yielding frictional grip, and means for rotating one or both of said rolls, combined with a gate and mechanism to move the same into or out of the path of the cards or sheets being fed by said frictional rolls, said cards or sheets when stopped by said gate being permitted by said feed-rolls to remain stationary, the rolls meanwhile continuing the feeding tendency, and the cards being thereby instantly fed forward upon the removal of the gate from engagement with the cards or sheets.

2. A machine comprising a guideway for cards or sheets, mechanism to operate on said cards or sheets, continuously-operating feeding mechanism and means for intermittently stopping the cards or sheets being fed, said feeding mechanism containing means for engaging said cards with a yielding frictional pressure whereby the cards may be stopped when required by said stopping means without danger of injury from the continued operation of said feeding mechanism.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID E. HUNTER.

Witnesses:
GEO. H. MAXWELL,
GEO. W. GREGORY.