

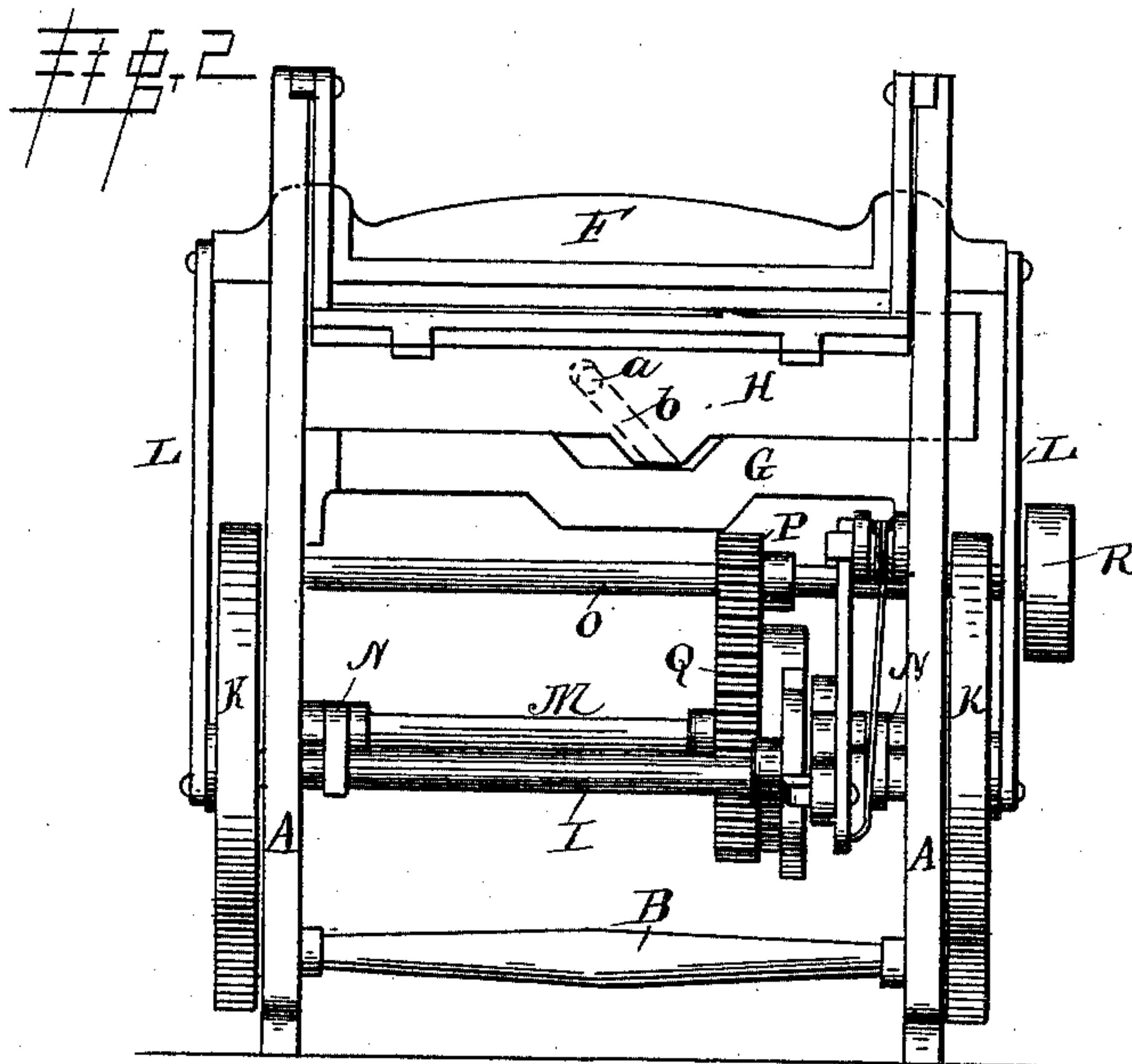
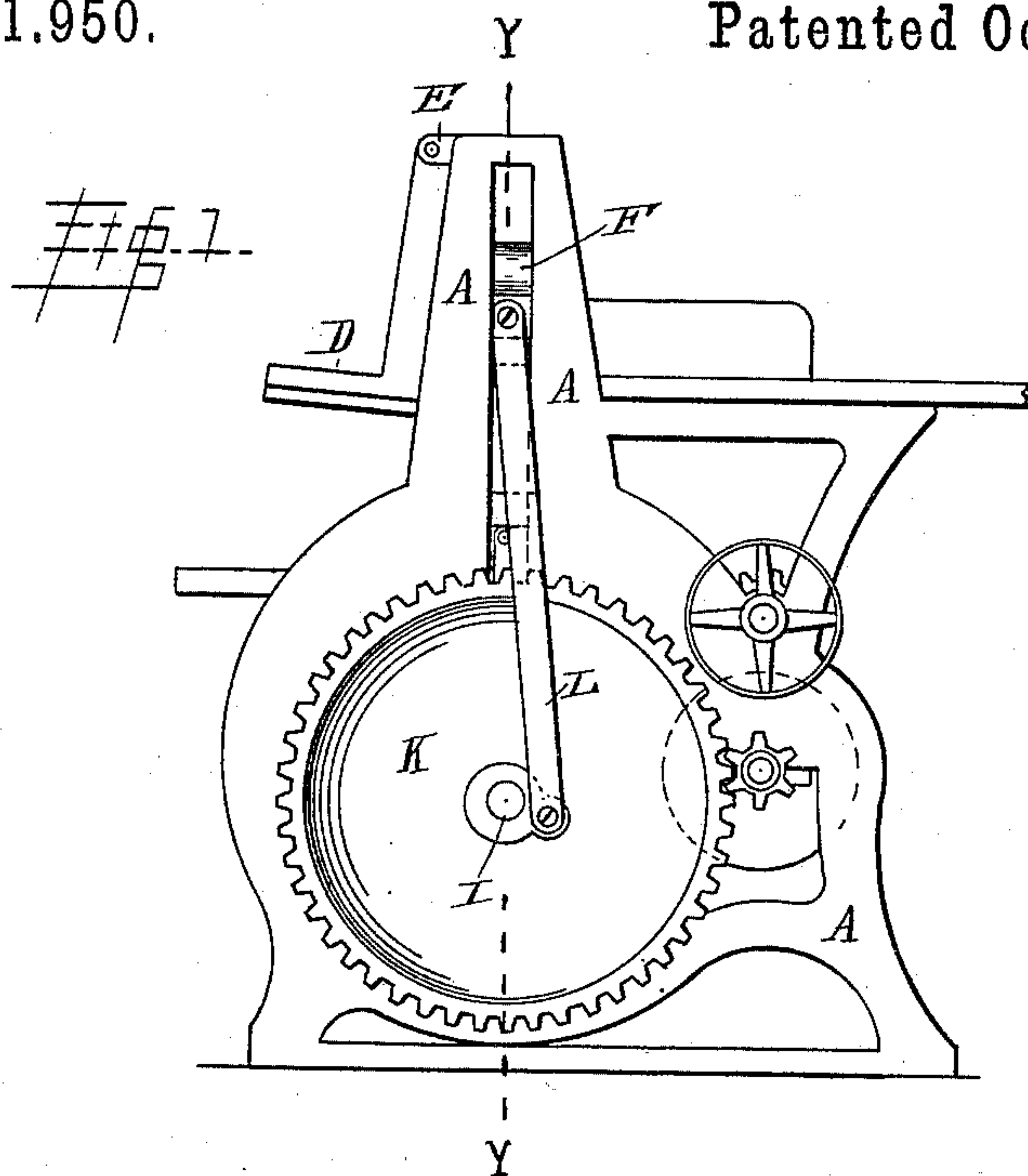
(No Model.)

2 Sheets—Sheet 1.

C. CRANSTON.  
PAPER CUTTING MACHINE.

No. 461,950.

Patented Oct. 27, 1891.



WITNESSES:

M. E. Bomen.  
Frederick Smith

INVENTOR  
Charles Cranston  
by Phillips Abbott  
his attorney

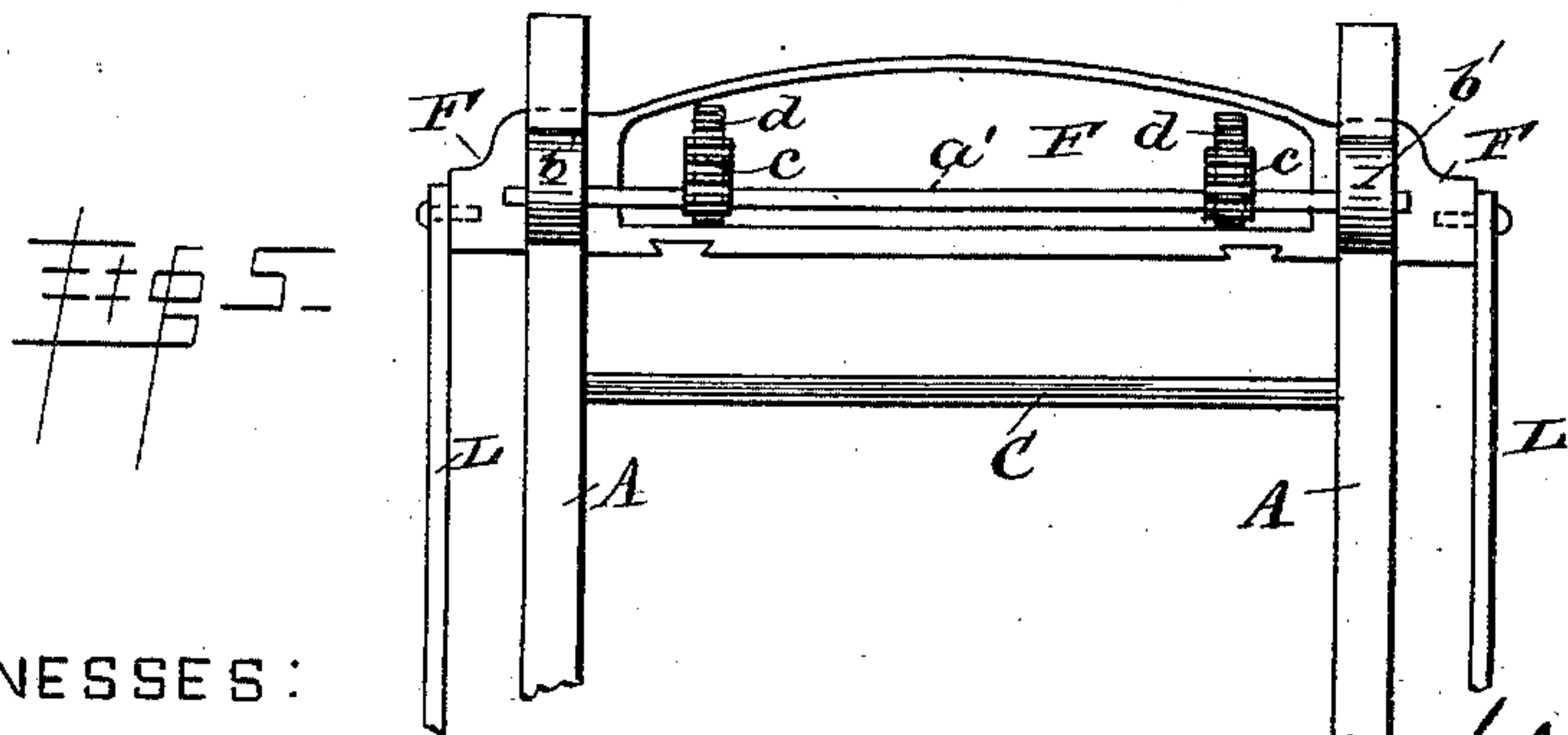
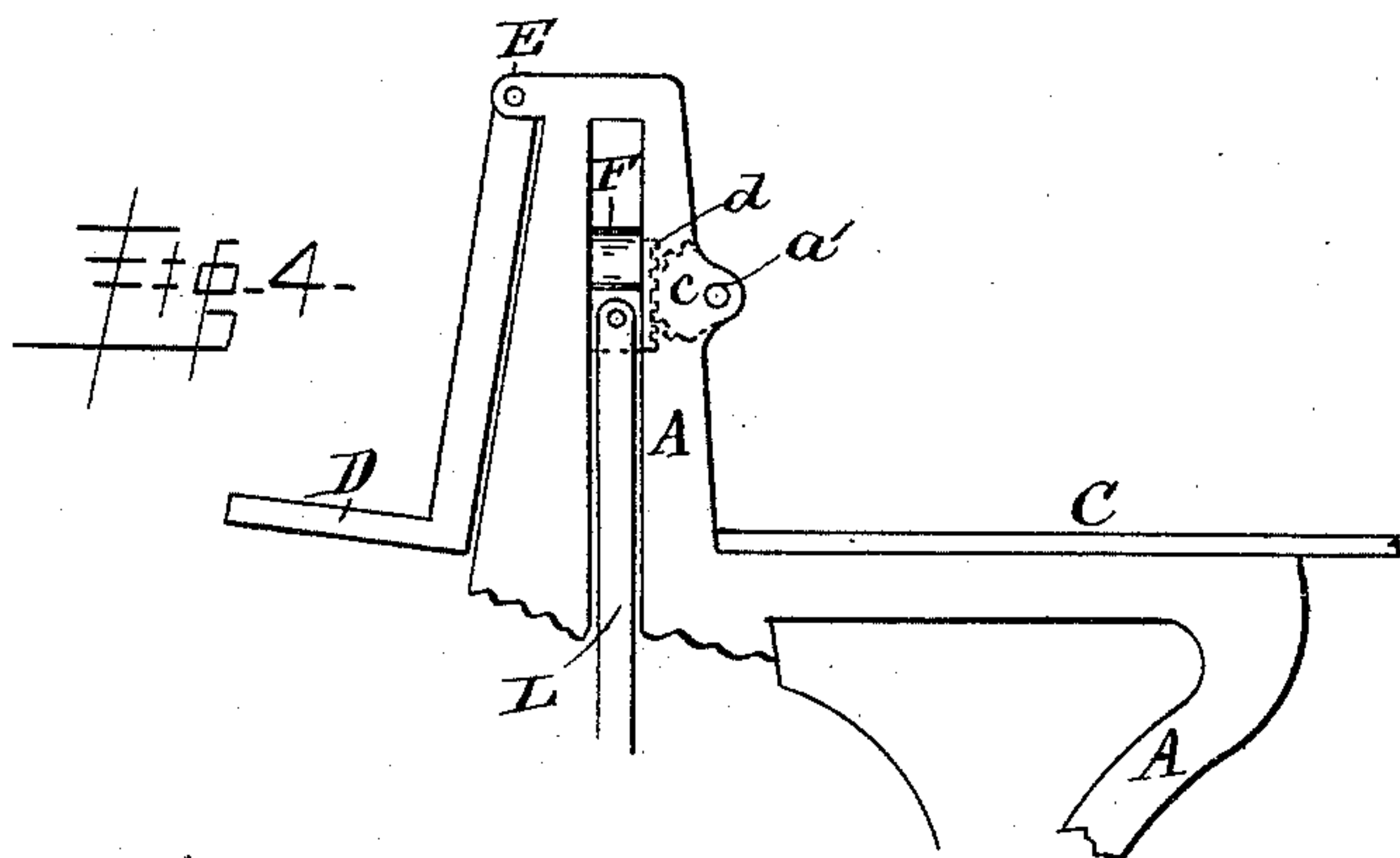
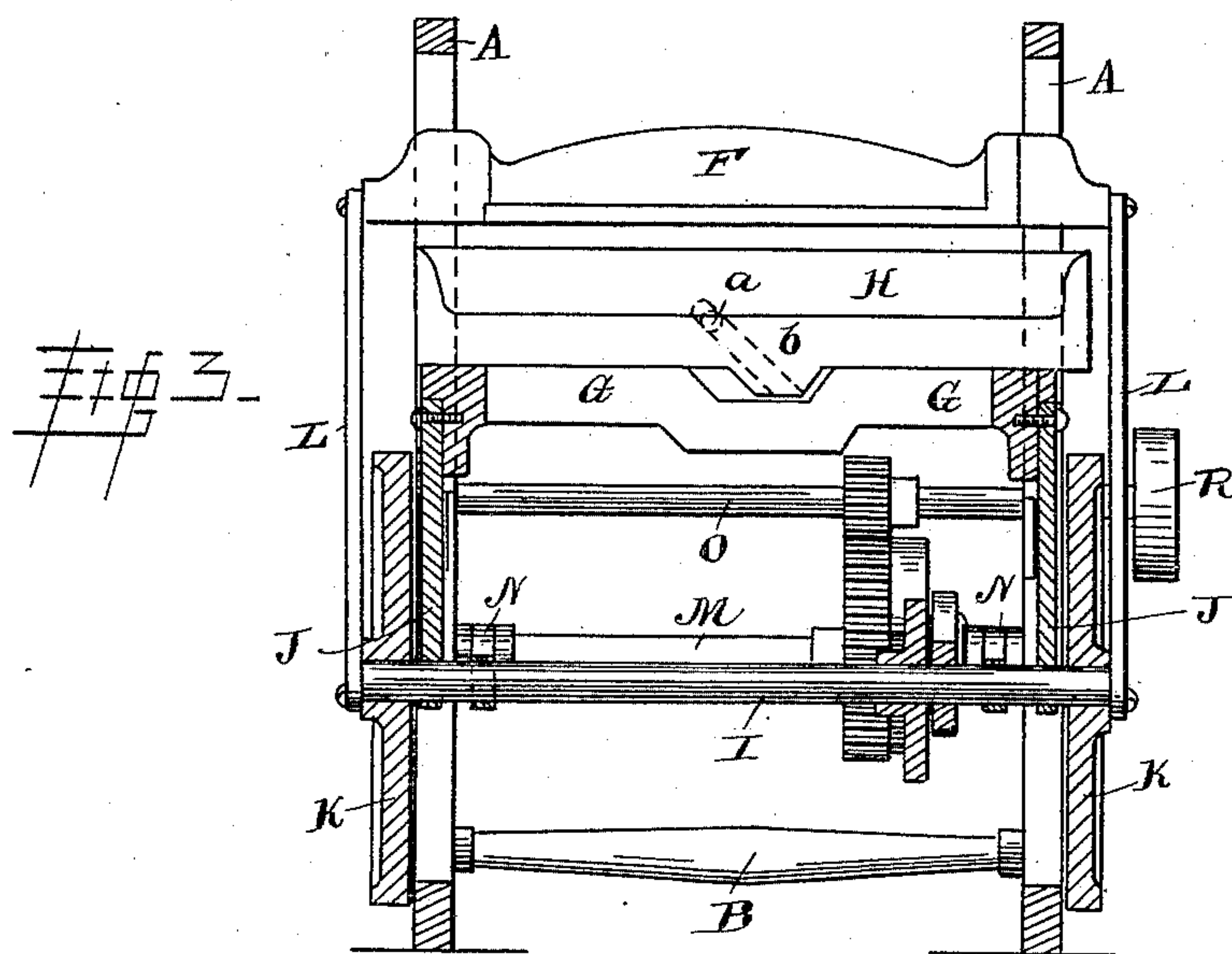
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# UNITED STATES PATENT OFFICE.

CHARLES CRANSTON, OF BROOKLYN, NEW YORK.

## PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 461,950, dated October 27, 1891.

Application filed November 12, 1889. Serial No. 330,066. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES CRANSTON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Paper-Cutting Machines, of which the following is a specification.

My invention consists in an improvement on self-clamping paper-cutting machines of the general construction of the machine patented to George R. Clarke, assignor to Preston Van Horn and myself, dated November 28, 1876, No. 184,699, to which patent I refer for a description of the construction and operation of such machines. I wish it to be understood, however, that I do not limit myself to machines constructed in all respects as set forth in said Letters Patent, because there may be very extensive alterations made in the details of construction and still the parts of the machine be such that my invention may be employed thereon. It is generally applicable to all forms of paper-cutting machines in which a clamping-bar and knife move toward each other. The machines described in the said Clarke patent have been very extensively made by my firm, and have been a very useful machine for the purpose; but of late years, having received orders for very large machines, a defect has developed itself which did not appear in the smaller ones—that is to say, if the paper to be cut happens to be narrow crosswise of the machine, and it be put under the clamp at or near either end, then upon its descent it comes in contact with the paper and is supported by it at that end only, and, the bar being quite long, there is a severe strain engendered, which gives an angling or canted position to the clamp-bar, whereby all or many of the parts involved in the movement are also subjected to severe strain, which has been known to break out the cogs on the gear-wheels and pinions and otherwise injure the machine. To overcome this defect it is necessary to prevent this angling or canted position of the clamp-bar, and this is the object of my present invention, which accomplishes the end perfectly. It is as follows:

In the drawings the same reference-letters indicate the same parts in all the figures.

Figure 1 illustrates a side elevation of the

machine. Fig. 2 illustrates a back view thereof. Fig. 3 illustrates a vertical longitudinal section of the same on the plane of the dotted line *y y*, Fig. 1. Fig. 4 illustrates a side view of the parts of the machine which are immediately adjacent to my improvement. Fig. 5 illustrates a back view of the parts shown in Fig. 4.

I will now, referring particularly to Figs. 1, 2, and 3, give a brief description of the machine, that its general construction may be understood without reference to the said Clarke patent. The frame of this machine consists of side pieces A and stretchers or cross-pieces B. C designates the table or feed-board over which the paper to be cut is fed, and D is a gravitating delivery-board, which is hung from standards E, extending from the side pieces A, and automatically adjusts itself to the knife and receives the cut paper, however narrow it may be. F designates a clamp or clamping-bar working in housings or guides provided in the standards E, so that it may ascend and descend. G is a knife-bar carrier working in housings or guides in the side pieces A, so that it may ascend and descend in the same way. H is a knife-bar, which is carried by the knife-bar carrier, and which, as it ascends and descends, derives a longitudinal movement from a stationary pin *a*, working in an oblique slot *b*, and hence operates on the paper with an upward shearing action. I is a rotary shaft supported in bearings at the ends of hangers J, suspended from bearings which are connected to the ends of the knife-bar carrier G. On the ends of this shaft I are large spur-wheels K. Rods L connect the ends of the clamp F with the spur-wheels K at some distance from their center, or with cranks or eccentrics provided at the ends of the shaft I. M is a secondary or clutch-pulley shaft, which at the ends is provided with pinions gearing with the spur-wheels K. Rods N connect this shaft with the shaft I and preclude the latter from swinging to and fro. O is the driving-shaft. It may be operated by any suitable means—for instance, by a belt on a pulley R—and it is provided with a pinion P, which gears with a clutch spur-wheel Q on the clutch-pulley shaft M. For the other details of construction I refer to the said Clarke patent.



Now, referring more particularly to Figs. 4 and 5, I will describe the devices by which I prevent the clamp-bar from assuming the objectionable angling or canted position.  $a'$  is a strong stiff shaft supported in journals or bearings  $b'$  at the sides of the frame of the machine.  $c c$  are two segment-pinions keyed fast to the shaft  $a'$ , and  $d d$  are two racks fixed to or cast on the side of the clamp-bar. The teeth in the pinions mesh into the rack-bars.

From the foregoing description it will be seen that the operation of the parts will be as follows: Upon the descent of the clamp-bar the shaft  $a'$  will be slightly rotated by reason of the engagement of the segment-pinions  $c c$  with the cogs in the racks  $d d$ , and when the bar comes in contact with the paper at or near either end it will be impossible for the unsupported end to descend farther than the one which is in contact with the paper, thus giving it the angling position which engenders the strain, because to do this it would have either to strip the teeth from the pinion or from the rack at that end or to twist off or partly twist the shaft  $a'$ , and all these parts are made so strong that either of these occurrences will be impossible. It will be also observed that the shaft and pinions are not connected with the power in any manner and that they do not actuate the clamp. In fact the shaft may be called an "idler-shaft." It

serves no purpose except that of a support for the clamp, and when in the claim hereof I refer to an "idler-shaft" I mean one disconnected from the driving mechanism.

It will be obvious that full-circle pinions may be used instead of the segment-pinions, and that they and the racks and shaft may be put upon either side of the clamp-bar. I prefer the segment-pinions because then there are no considerably projecting parts, which might be in the way, and I also prefer these parts to be on the side away from the operator for the same reason.

I claim—

In a cutting-machine, in combination, the following elements, to wit: a clamp-bar having racks at or near each end, a knife coupled thereto, means, substantially as described, for simultaneously operating the clamp-bar and the knife toward and from each other, an idler-shaft journaled in the frame and independent of the operating mechanism, and pinions mounted on said shaft and engaging the racks on the clamp-bar, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 11th day of November, A. D. 1889.

CHARLES CRANSTON.

Witnesses:

PHILLIPS ABBOTT,  
A. M. PIERCE.