

J. L. HARLEY.

CANCELING MACHINE FOR BONDS.

No. 178,767.

Patented June 13, 1876.

Fig. 2.

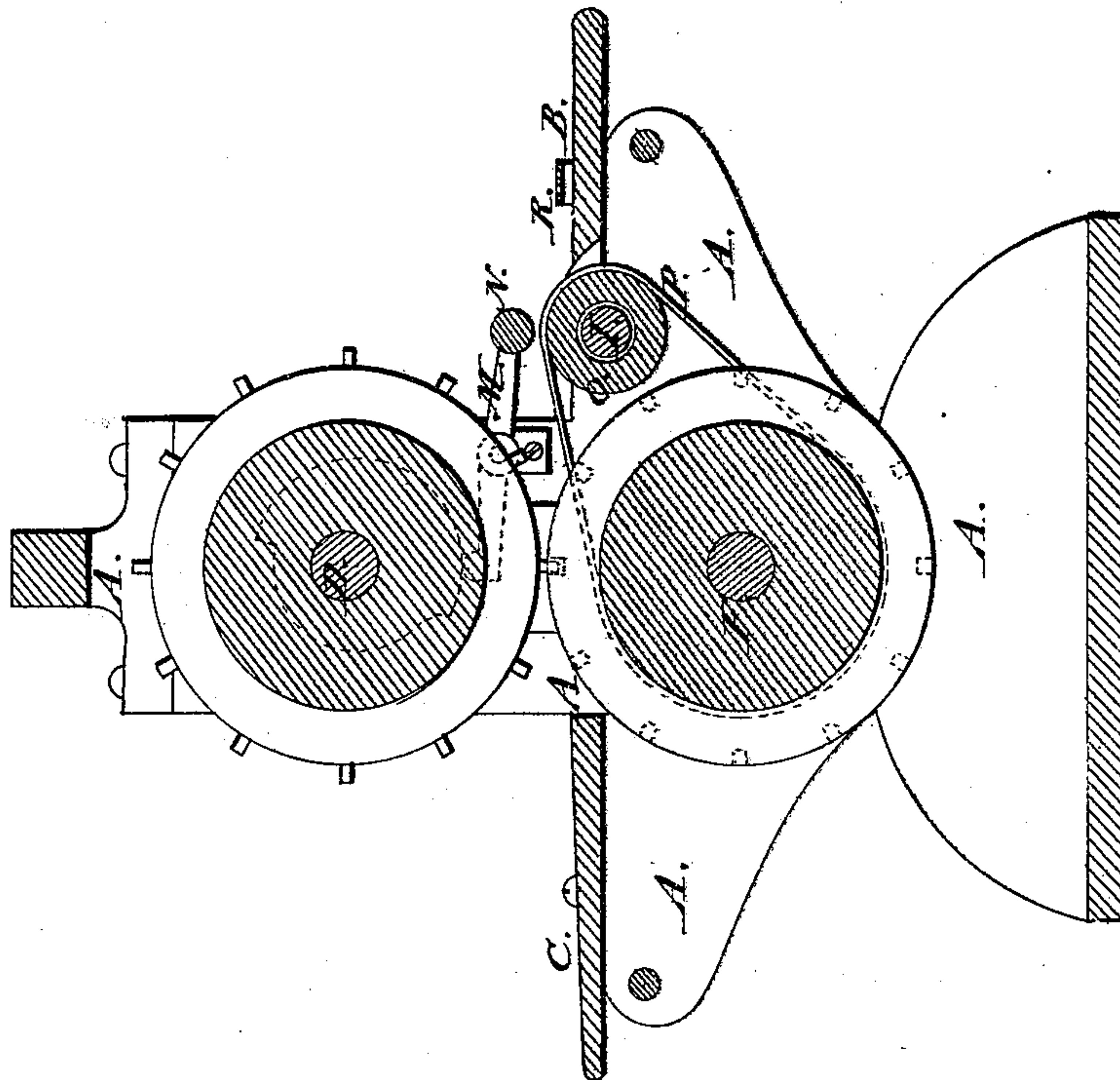
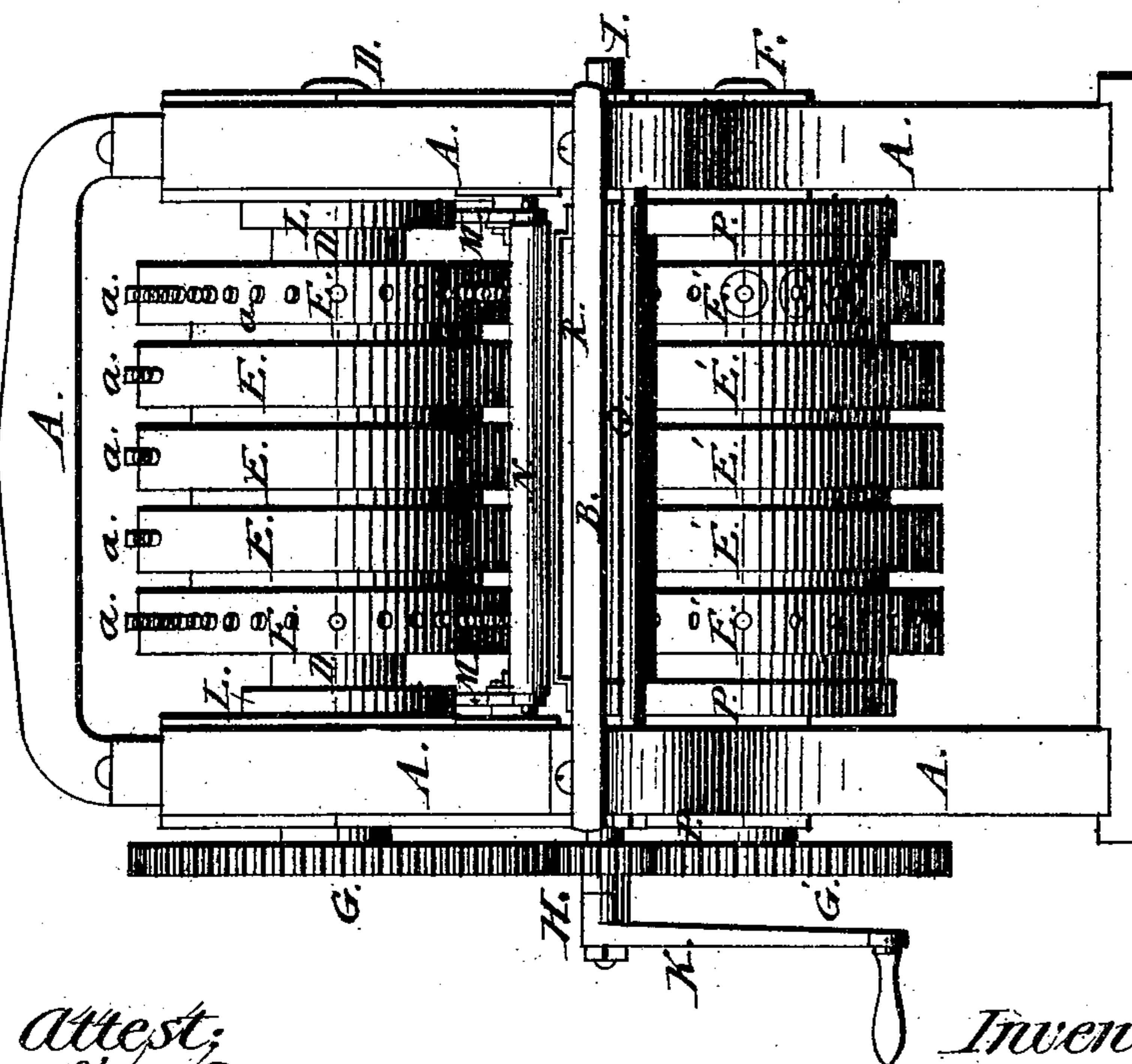


Fig. 1.



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Fig. 3.

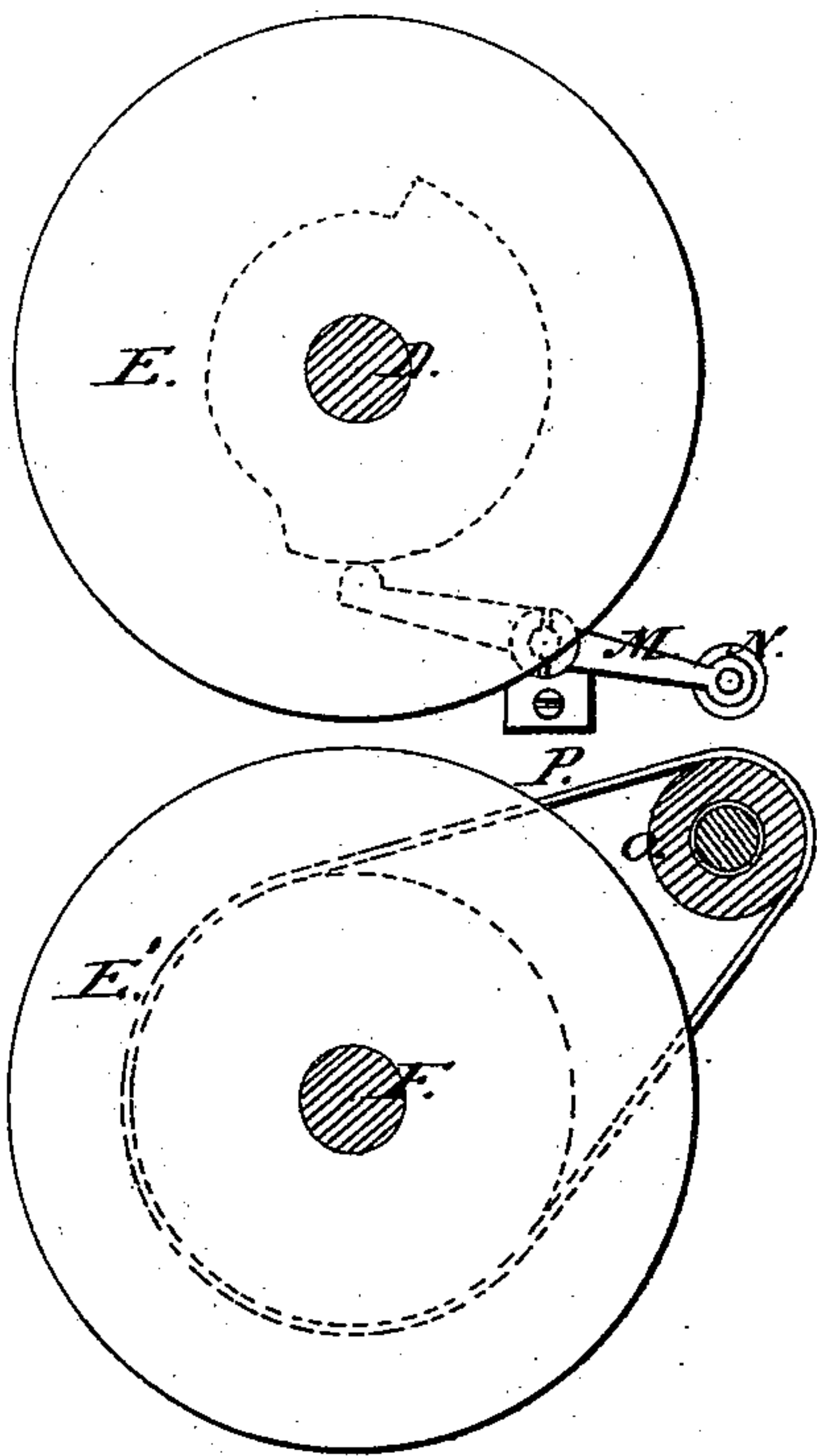


Fig. 4.

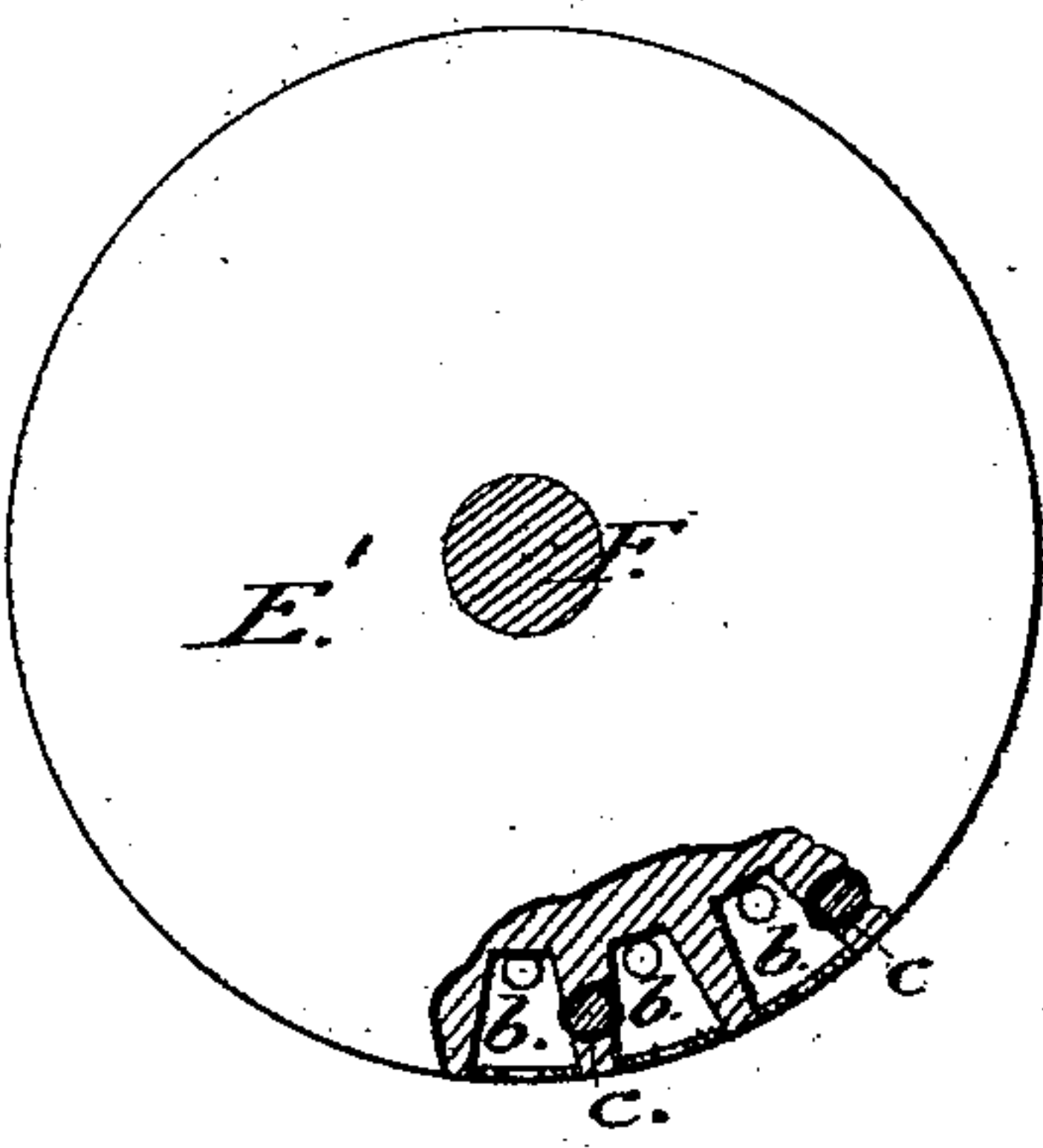


Fig. 5.

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# UNITED STATES PATENT OFFICE.

JOSEPH L. HARLEY, OF WASHINGTON, DISTRICT OF COLUMBIA.

## IMPROVEMENT IN CANCELING-MACHINES FOR BONDS.

Specification forming part of Letters Patent No. **178,767**, dated June 13, 1876; application filed January 18, 1876.

*To all whom it may concern :*

Be it known that I, JOSEPH L. HARLEY, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Canceling-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

My invention relates to certain novel improvements in machines for canceling United States coupon bonds, or other evidences of value, where some portion of the face is to be left uncanceled, in order that it may be readily distinguished, and yet be so mutilated, together with all its coupons, as to destroy its pecuniary value; and to these ends my invention consists of a machine provided with rotating male and female die rollers, having male and female dies so arranged on their peripheries that punctures will be made in a sheet passing between them, with special reference to the points to be punctured and those to be left perfect; and also in the peculiar construction and operation of the feed-rollers and the female dies, as will be hereinafter more fully set forth.

Previous to my invention it has been customary, in the cancellation of the bonds, &c., of the United States, to employ an ordinary hand-punch similar to a "wad-cutter," which was driven through the paper and onto a bed of solder, or other suitable metal, by a blow from a hand-mallet. This is tedious and noisy in the extreme, and has only been resorted to on account of there being no practical machine known which would accomplish the ends desired with precision and regularity. One of the great defects in all attempts at securing such a machine has been the character and imperfectness of the feed. That sort of feed which was supposed to be absolutely necessary was an intermittent feed, and was only accomplished by the temporary suspension of the movement of the machine. This, it is obvious to any mechanic, subjects a machine requiring the power of a punching-machine to such sudden and powerful concussion as to render it inoperative in a very short time.

All the difficulties heretofore experienced have been successfully overcome by my invention, and the punching or canceling of such evidences of value as coupon bonds rendered simple and rapid, with an accuracy not heretofore attained, and with little or no noise.

To enable those skilled to more fully appreciate the construction and operation of my invention, I will proceed to describe the same, referring by letters to the accompanying drawings, in which—

Figure 1 is a front view of a machine embodying my invention. Fig. 2 is a vertical section at the line *xx* of Fig. 1; Fig. 3, a detail view, on an enlarged scale, of the die-rollers and feed-rollers; Fig. 4, a detail view of the female die-roll, showing the manner of securing the dies in place, &c., and Fig. 5 is a plan view of an ordinary coupon bond, as having been canceled by my improved machine.

Similar letters indicate like parts in the several figures.

A represents the frame of the machine, in which are arranged, in the most approved manner, the bearings for various rolls and driving-shafts, and on which is secured front and rear feed and delivery tables B C. D is the shaft of the male die, drum, or roll, which is preferably made up of a series of narrow rolls, E, equidistant apart, the outside ones provided with male dies *a* at proper distances apart around its whole extent, while the intermediate ones are provided with similar dies only to such an extent as will secure the passage of the sheet unmutilated at or during a given distance.

F is the shaft of the lower or female die, drum, or roll, constructed with similar rolls E' to the upper one, and provided with female dies corresponding to the position of the male dies on the upper drum. These female dies are made by facing the narrow rolls with a rim or tire of steel, punched in an obvious manner, as shown on the extreme left roll, or, preferably, by securing thimble-dies *b* (see Fig. 4) within the face or periphery of the roll, as illustrated on the extreme right roll. These dies *b* are made slightly tapering, and seated



in correspondingly-shaped recesses, and are secured in place in couplets by means of a transversely-inserted pin, *c*, which "feathers" into the side of the dies. These dies are also provided on their sides with a channel, which is continued through the side of the roll, for the escape of the clippings. On one end of each shaft *D* and *F*, and outside of the frame *A*, are secured driving-gears *G G'*, which mesh with an intermediate pinion, *H*, on the main driving-shaft *I*, which is provided with a crank, *K*, or suitable band-pulley. Inside of the frame, and at each end of the drum-shaft *D*, there is a cam, *L*, (represented more clearly in dotted lines at Figs. 2 and 3,) against or in contact with which the free end of two arms, *M*, are held by the weight of a feed-roll, *N*, having its bearings in the other end. These arms are pivoted at or near their centers, by suitable brackets, to the frame *A*, so that the roll *N* is made to lift and fall by the action of the cams *L* at the proper times. *O* is a hollow feed-roll arranged upon and around the main driving-shaft *I*, so that it is made to travel in an opposite direction to said shaft, (in order to properly feed the sheet,) by means of bands *P* passing over said feed-roll and over the ends of the lower die-drum. *Q* is one of any suitable number of bolts for bracing the two sides of the frame *A* together. *R* is a register plate and guard arranged on the feed-table *B*, which serves as a guide to register the sheets before they are taken by the feed-rollers, and which, by its height from said bed, determines the number of sheets which may be fed at once. This plate may also be provided with fingers projecting toward the bite of the feed-rolls, which shall serve to hold the edges of the sheets down and prevent the tendency to turn up, which might induce to disarrangement of the sheets and a consequent imperfect feed.

At the rear of the delivery-table *C* there may be secured a receiving-box for gathering the canceled bonds in the order in which they may have been punched.

The clippings may also be directed into any suitable receptacle underneath the machine.

The male and female dies may both be so secured that they may be taken out or left in, and thus they may be readily rearranged for different kinds of work.

Having described the construction of my improved machine, I will now describe its operation with special reference to the cancellation of a United States coupon bond, such as is briefly represented at Fig. 5 of the drawing.

In this kind of a bond it is necessary that the stub should be canceled without defacing the duplicate numbers, which are arranged at any two points, and, at the same time, secure the certain cancellation of every coupon, one row of which may happen to be in line with the numbers on the stub which are to be avoided, and hence the difficulty

of punching by machines as heretofore constructed. The bond must also be perfectly registered before it begins to be fed; otherwise it would be imperfectly cancelled.

With this premise I will proceed. A bond or any given number of bonds are placed upon the feed table *B* and pushed under the register-plate *R*, (which will only admit the passage of a given thickness or number of sheets,) and registered by the edge of said plate—that is, the dividing-line between the stub or bond proper and the coupons is made to coincide with the edge of the plate *R*. This is done while the upper feed roll *N* is in an elevated position, which permits of any adjustment of the sheets before the die-drums have been rotated, so as to bring the dies around, which are to act first, when, simultaneously, the free ends of the arms *M* of the roll *N* pass the "step" on the cam *L*, and instantly allow the roll to drop, causing a bite between it and the lower feed-roll *O*. The sheets are then carried forward to the dies, which, after the first one enters, serves as a sufficient feed, when, by the action of the cam, the roll *N* is again lifted, so that ample time is then allowed for the adjustment of the next sheet or number of sheets. The sheets, as they are punched, are carried to the rear of the machine onto the delivery-table *C*, and dropped into a receiving-box, while the clippings drop underneath, into a suitable receptacle.

The bearings of the shafts of the two die drums or carriers being made adjustable in any suitable manner, they may be adjusted with reference to the character of work to be performed. The dies, being removable from their drums or carriers, may, when worn, be replaced by new ones, or may be moved and arranged with special reference to the design of the matter to be canceled, and to the movements of the upper feed-roll *N*, as governed by the cams *L*, so that a register having been obtained, the roll *N* will drop and feed and the dies punch as if in a manner endowed with intelligence and will, so that little or no judgment or skill is necessary to be exercised by the operator, and the movement of the machine is not intermittent, but continuous and almost noiseless.

Having described the construction and operation of my improved machine, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for canceling bonds, &c., a series of die-holders, *E E'*, each provided with removable punches and dies, respectively, as described, in order that the sheet passing between the same may be punched in any given design, as illustrated at Fig. 5, substantially as and for the purposes set forth.

2. In combination with the male or female die carrier or drum and the feed-roll, having



a fixed location, the automatically-operating feed-roll N or its equivalent, constructed and operating in substantially the manner hereinbefore set forth.

3. The hollow feed-roller O, arranged on the main shaft I and connected, by suitable mechanism, to the shaft of the lower rotary drum, whereby the roller O is driven in a reverse direction to that of the shaft I, substantially as and for the purposes set forth.

4. The female dies *b*, arranged in couplets and secured in position by means of transverse feathering-pins *c*, substantially as and for the purpose set forth.

Witness my hand and seal this 18th day of January, 1876.

JOS. L. HARLEY. [L. S.]

Witnesses:

JNO. J. BONNER,

ARTHUR L. MCINTIRE.