March 11, 1930. E. LICHTENSTEIN 1,750,531

CUTTING DEVICE FOR TRANSVERSELY CUTTING MOVING PAPER WEBS

Filed Sept. 26, 1925

Fig. 1.

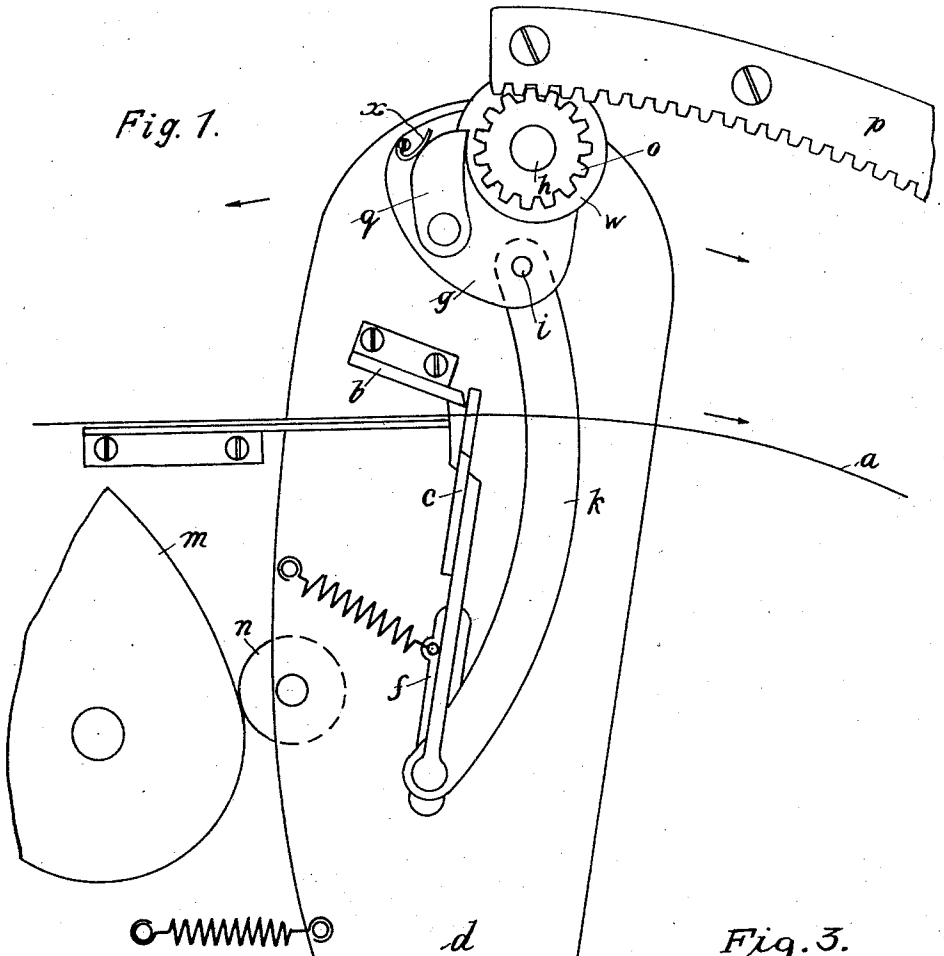


Fig. 2.

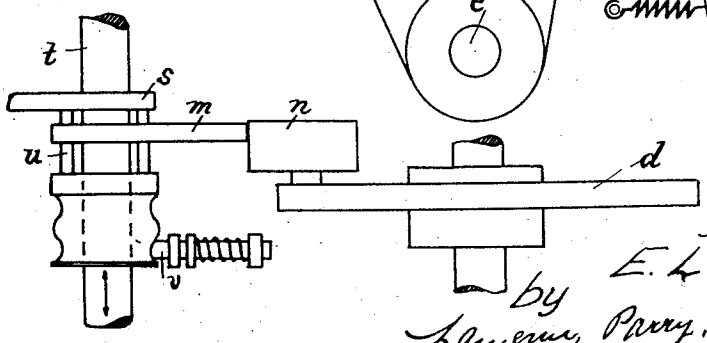
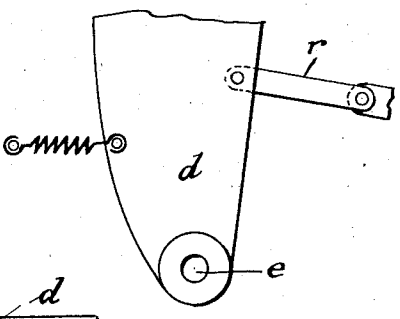


Fig. 3.



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Patented Mar. 11, 1930 1,750,531

UNITED STATES PATENT OFFICE

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CUTTING DEVICE FOR TRANSVERSELY CUTTING MOVING PAPER WEBS

Application filed September 26, 1925, Serial No. 58,910, and in Germany November 11, 1924.

This invention relates to cutting devices for transversely cutting moving paper webs in duplicators operating on the off-set principle.

The improved device is constructed upon the movable or traveling principle by means of which the cutting operation may be effected without interrupting the feed of the work or the feed of the paper and is characterized in that the cutters are mounted upon an oscillatory frame. This results in a whole series of further advantageous constructions.

In order that the invention may be more easily understood and readily carried into effect reference may now be had to the accompanying drawing in which a constructional form of the improved device is illustrated diagrammatically and in which

Fig. 1 is a side elevational view of the improved device and

Fig. 2 is a partial plan view of the device shown in Fig. 1.

Fig. 3 is a detail showing an alternative driving means for the cutter frame.

The web of paper *a* passes continuously from the off-set duplicator in the direction of the arrow in order to be cut into separate sheets or fields by the stationary cutter *b* and the upwardly and downwardly moving cutter *c*.

According to the invention both cutters *b* and *c* are carried by a frame *d* adapted to be oscillated about the foot pivot *e*.

In order to guide the movable cutter *c* on the frame a longitudinal slot *f* is provided therein.

The movable cutter is driven by a crank disc *g* rotatably mounted on the shaft *h* and driving the cutter *c* by means of the crank pin *i* through the medium of the connecting rod *k*.

The oscillatory frame *d* is swung to and fro by a constantly rotating cam *m* acting against a feeling roller *n* mounted on the oscillatory frame. A toothed wheel *o* mounted on the shaft *h* is thus caused to roll on a stationary toothed segment *p*.

In order that a cut is only effected during the forward movement and not during the return movement of the oscillatory frame the toothed wheel *o* is not rigidly secured to the crank disc *g* but is coupled thereto for movement in one direction. For this purpose the toothed wheel *o* is rigidly connected to a wheel *w* which may have one or a suitable number of teeth and a pawl *q* held in the operative position by a spring, *x*.

When the frame *d* swings to the right the wheel *o* rolls on the toothed segment and the wheel *w* drives the pawl *q*, the crank disc *g* and the connecting rod *k* and thus the cutter *c*. During the return stroke of the frame the wheel *o* remains in engagement with the toothed segment *p* and the wheel *w* moves inoperatively past the pawl *q*. The return stroke of the frame *d* may be produced positively or by spring power.

Instead of the cam drive *m*, *n* the oscillatory frame *d* may if desired be driven by the crank drive *r* shown in Fig. 3. The cutters are preferably capable of cutting two or more sizes of sheet, for which purpose, for example, a further cam *s* whose lift is different from that of the cam *m* may be arranged behind the cam *m* and by relative axial movement between the cams and the roller *n*, the desired cam may be brought into operation.

Furthermore in order to enable a cut to be effected at a point so that a text of determined length will be more or less spaced from the upper edge on a cut sheet the cams *m*, *s* may also be circumferentially adjusted at the beginning of the operation on their shaft *t*. To this end, the cams, for example, may be mounted on an axially movable and rotatable sleeve *u* which may be locked in its different adjustable positions by a locking device *v*.

What I claim is:—

1. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principle comprising an oscillatory frame, a shaft upon said frame, means for moving said frame with said moving web, fixed and movable cutters mounted in the frame, and means for operating said movable cutter comprising a toothed wheel mounted upon said shaft and a stationary rack co-operating with said wheel, said oper-

ating means acting in response to the movement of said frame.

2. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principle comprising an oscillatory frame, a shaft upon said frame, means for moving said frame with said moving web, fixed and movable cutters mounted in the frame, and means for operating said movable cutter comprising a toothed wheel mounted upon said shaft, a stationary rack co-operating with said wheel, means whereby said wheel drives said movable cutter when rolled in one direction upon the rack, said cutter operating means acting responsive to the movement of said frame.

3. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principle comprising an oscillatory frame, a shaft upon said frame, means for moving said frame with said moving web, fixed and movable cutters mounted in the frame, and means for operating said movable cutter comprising a toothed wheel mounted upon said shaft, a ratchet device connected to said wheel, a member mounted upon said shaft for imparting movement to said cutter, a pawl mounted upon said member and a stationary rack co-operating with said wheel whereby movement of said frame in one direction causes said cutter to cut, said operating means acting responsive to the movement of said frame.

4. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principles comprising a fixed cutter, an oscillatory frame carrying said fixed cutter, a movable cutter carried by said frame cooperating with said fixed cutter, a plurality of cams for driving said frame and means for selectively bringing one of said cams into and out of operative position for varying the length of sheet to be cut.

5. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principle comprising a fixed cutter, an oscillatory frame carrying said fixed cutter, a movable cutter, carried by said frame, a plurality of cams for driving said frame, a longitudinally adjustable sleeve mounted upon the cam shaft for carrying said cams and for bringing one of said cams into and out of operative position, and means for locking said sleeve in a selected position whereby various sizes of sheet may be cut.

6. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principle comprising a fixed cutter, an oscillatory frame carrying said fixed cutter, a movable cutter carried thereby, a plurality of cams for driving said frame, means for bringing one of said cams into and out of operative position at will and means for adjusting the cams circumferentially.

7. A cutting device for transversely cutting moving paper webs in duplicators operating upon the offset principle comprising a fixed cutter, an oscillatory frame carrying said fixed cutter, a movable cutter carried thereby, a plurality of cams for driving said frame, a longitudinally and circumferentially adjustable sleeve mounted upon the cam shaft for carrying said cams and a locking device for locking said sleeve to said shaft in a desired position.

In testimony whereof I have affixed my signature.

EDMUND LICHTENSTEIN.