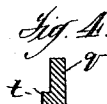
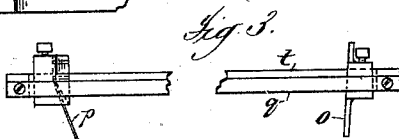
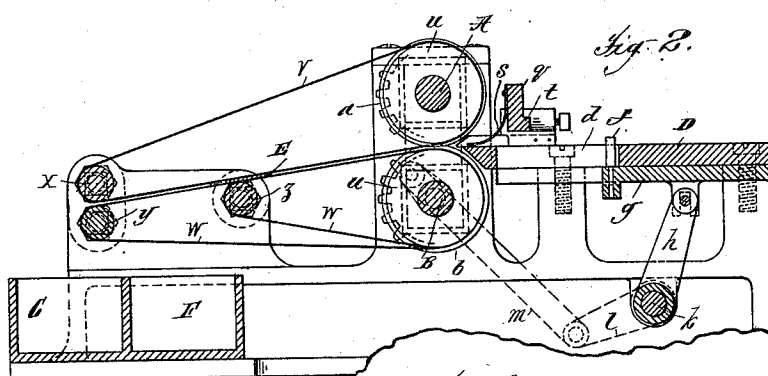
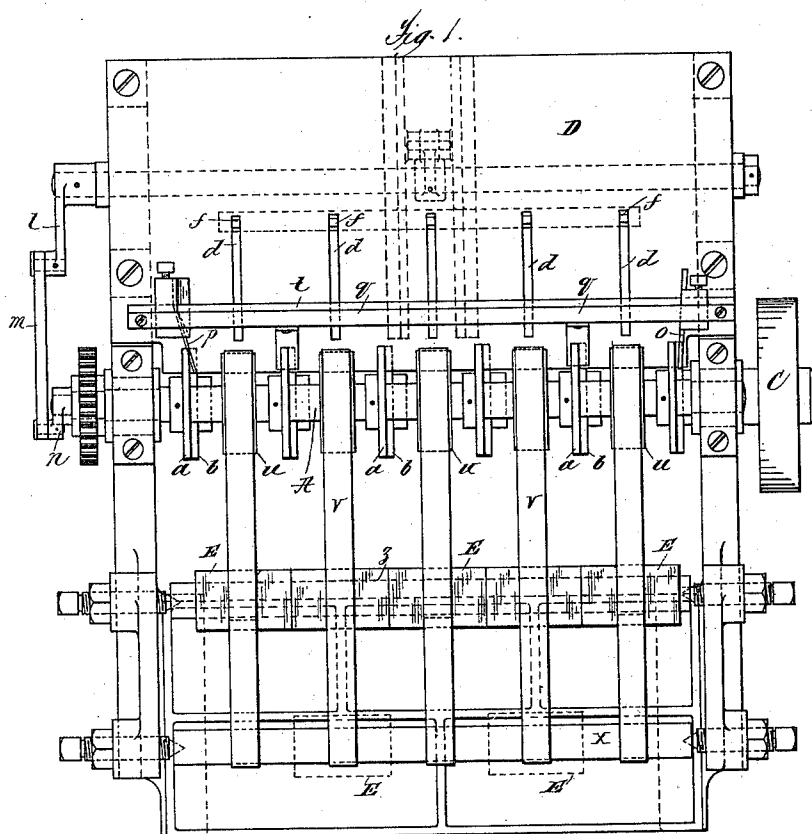


(No Model.)

H. S. MUNSON.
ROTARY CUTTER.

No. 585,341.

Patented June 29, 1897.



WITNESSES:

George H. Bots.
J. M. Borst

INVENTOR

Harvey S. Munson

BY

Philip Phelps & Hoey

ATTORNEYS

UNITED STATES PATENT OFFICE.

HARVEY S. MUNSON, OF NEW HAVEN, CONNECTICUT.

ROTARY CUTTER.

SPECIFICATION forming part of Letters Patent No. 585,341, dated June 29, 1897.

Application filed March 28, 1889. Serial No. 305,066. (No model.)

To all whom it may concern:

Be it known that I, HARVEY S. MUNSON, a citizen of the United States, residing at New Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Rotary Cutters, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

In a companion application for Letters Patent, filed March 28, 1889, Serial No. 305,065, I have shown and described a scoring and tubing mechanism designed to operate upon sheets of cardboard or thick paper to produce tubes which when severed into proper lengths form the tubular sheaths or casings for what are known as "slide-boxes," and particularly such boxes as are used for cigarettes and other similar purposes. The tubes thus produced are made from sheets of paper of sufficient length to form the tubular sheaths for a number of boxes, and after the tubes are made in the manner described in my said companion application it is of course necessary to sever them into suitable lengths to form the individual box-sheaths.

The present invention relates to a cutting and delivering mechanism which is designed particularly to operate upon the tubes formed as described in my said companion application and while they are in a flat condition to sever them into the proper lengths for use as box-sheaths. The mechanism shown in the present application may, however, be usefully employed in any case where it is desired to sever a sheet of cardboard or thick paper into a number of short lengths and deliver the same in separate piles.

A full understanding of the invention can best be given by an illustration and a detailed description of a mechanism embodying the same. Such description will therefore be given, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a mechanism embodying the invention. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a detail view of the feed-gage and guides of the machine, and Fig. 4 is a cross-section of the same.

Referring to said figures, it is to be understood that *ab* represent pairs of cutting-disks mounted upon shafts A B, journaled in a suit-

able framework in such position that the disks work past each other with a shearing action in the manner common in rotary cutters. The shafts A B are geared together and receive motion in any suitable manner—as, for example, from a belt-pulley C, mounted upon one of the shafts. The pairs of disks *ab* are located at such distances from each other upon the shafts that a tube of the character hereinbefore described or a sheet of cardboard or other material being passed between the shafts A B and subjected to the action of the disks will be severed into sections of the required length.

Located in the rear of the cutting-disks is a feed-table D, from which the tubes or other sheets of material are presented to the disks. The table B is provided with a number of slots *d*, through which project fingers *f*, which extend above the top of the table and are carried by a reciprocating plate *g*, located beneath the table and moving horizontally in suitable guides.

The function of the fingers *f* is to present the tubes to the cutting-disks, and for this purpose the head-plate which carries the fingers is connected to a rock-arm *h*, which extends from a shaft *k*, mounted beneath the table and having an arm *l*, which is connected by a rod *m* to a crank *n*, secured upon the shaft B in such manner that at each revolution of the shaft the fingers *f* are caused to move to and from the cutting-disks.

For the purpose of presenting the tubes to the cutter in proper position lengthwise there are provided side guides *o p*, which act upon the ends of the tubes. These guides are adjustable upon a bar *q*, which extends transversely of the machine above the table D, and are inclined so that as the tube is advanced by the fingers *f* it will be moved longitudinally in one direction or the other to be brought to the proper position. One of the guides (*p*, as shown in the present case) is made of spring metal, so as to yield slightly to accommodate tubes which vary in length within certain limits.

The pairs of cutting-disks at the ends of the shafts A B operate to trim off the ends of the tube to reduce it to the proper length, while the intermediate pairs of disks operate to sever the tube into sections of the proper length. The bar *q*, which supports the side

guides, is also provided with two or more spring-fingers *s*, which extend downward in front of the bar and rest upon the table *D*, so as to bear upon the upper surface of the tube as it is advanced by the fingers *f*. These spring-fingers *s* operate in case the tube is placed upon the table so that one end will be moved forward slightly in advance of the other, to detain the end thus advanced and cause the tube to be advanced evenly at both ends and presented squarely to the cutting-disks.

To aid the operator in feeding the tubes accurately and rapidly to the machine, the bar *q* is provided with a ledge *t*, upon which the operator can place the edge of the tube with one end abutting against the guide *o*. The operator having placed the tube in this position will hold it there while the preceding tube is being advanced to the cutters by the fingers *s*, and as soon as the fingers have been retracted the operator will simply release the tube, the edge of which is resting upon the ledge *t*, allowing it to fall upon the table in front of the fingers, and by reason of the position in which the tube is held upon the ledge it will fall naturally onto the table into substantially the proper position to be advanced squarely to the cutters.

Located upon the shafts *A B* between the pairs of cutting-disks are a series of pulleys *u*, around which pass upper and lower conveying-tapes *v w*, by which the sections of the tube after they are severed from each other are taken as they pass from the cutters and conveyed away from the machine to be deposited in suitable receptacles.

In order to separate the sections and deposit them in separate receptacles, the tapes *v w* are arranged as follows: All of the tapes *v*, which are the upper tapes of the series, pass around pulleys *u* upon the shaft *A* and return around a roll or a series of pulleys *x*, located at a suitable distance from the cutters. The tapes *w*, which cooperate with the tapes *v*, pass around the pulleys *u* upon the shaft *B* and pass forward with the tapes *v*. Alternate tapes of the series *w* return around a roll or pulleys *y*, located directly or substantially beneath the roll or pulleys *x*. The remaining tapes *w*, which alternate with those passing around the roll *y*, pass forward with the corresponding tapes *v*, but return around a roll or pulleys *z*, located nearer the cutters than the roll *y*. By this means, as will readily be seen, the several sections *E* into which the tube is severed are advanced side by side between the tapes *v w* until they arrive at the roll *z*, as indicated in Figs. 1 and 2. As soon, however, as they pass the roll *z* the alternate sections *E*, being no longer supported by the under tapes *w*, fall and enter receptacles *F*, provided to receive them, where they are retained in separate lots and can be readily counted. The remaining or alternate sections *E* do not fall, but pass forward between the tapes *v w*, as indicated by dotted lines in Fig.

1, until they emerge from between the rolls *x y*, where they pass from the control of the tapes and are deposited in receptacles *G*, provided to receive them.

What I claim is—

1. The combination with the rotary cutting-disks *a b*, of the reciprocating feeding-fingers, the side guides *o, p*, one of said guides being yielding and adjustable longitudinally of the axes of the cutting-disks, and the spring presser-fingers *s*, substantially as described.

2. The combination with the rotary cutting-disks, the reciprocating feeding-fingers and the side guides, of the bar *q* having a ledge *t* for supporting the material previous to its being deposited in front of the fingers, substantially as described.

3. The combination with the rotary cutting-disks *a b*, of the pulleys *u* alternating with the disks and the alternating long and short conveying-tapes *v w* for conveying the sections away from the cutters, substantially as described.

4. The combination with the rotary cutters, of the alternating long and short conveying-tapes for conveying the sections away from the cutters and delivering them in different positions, substantially as described.

5. The combination with the rotary cutters, the feeding-fingers for advancing the material to the cutters, and the side guides, of the alternating long and short conveying-tapes *v, w* for conveying the sections away from the cutters, substantially as described.

6. The combination with the rotary cutters, the feeding-fingers for advancing the material to the cutters, the side guides, and the spring presser-fingers *s*, of the alternating long and short conveying-tapes *v, w* for conveying the sections away from the cutters, substantially as described.

7. The combination with the rotary cutting-disks, of the feeding-fingers for advancing the material to the cutters, side guides *o, p*, one of said guides being yielding and both of said guides being inwardly inclined, and tapes for conveying the sections away from the disks, substantially as described.

8. The combination with the rotary cutting-disks *a, b*, of the pulleys *u* and pulleys *x z*, and alternating long and short conveying-tapes *v, w*, for conveying the sections away from the cutters, substantially as described.

9. The combination with the rotary cutting-disks *a, b*, of the reciprocating feeding-fingers *f*, the side guides *o, p* one of said guides being yielding, the spring presser-fingers *s*, and alternating long and short conveying-tapes *v, w*, for conveying the sections away from the cutters substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HARVEY S. MUNSON.

Witnesses:

J. J. KENNEDY,
GEO. H. BOTTS.