G. L. COWAN.

SLITTING MECHANISM.

APPLICATION FILED APR. 18, 1914.

**1,134,590.**

Patented Apr. 6, 1915.

2 SHEETS—SHEET 1.

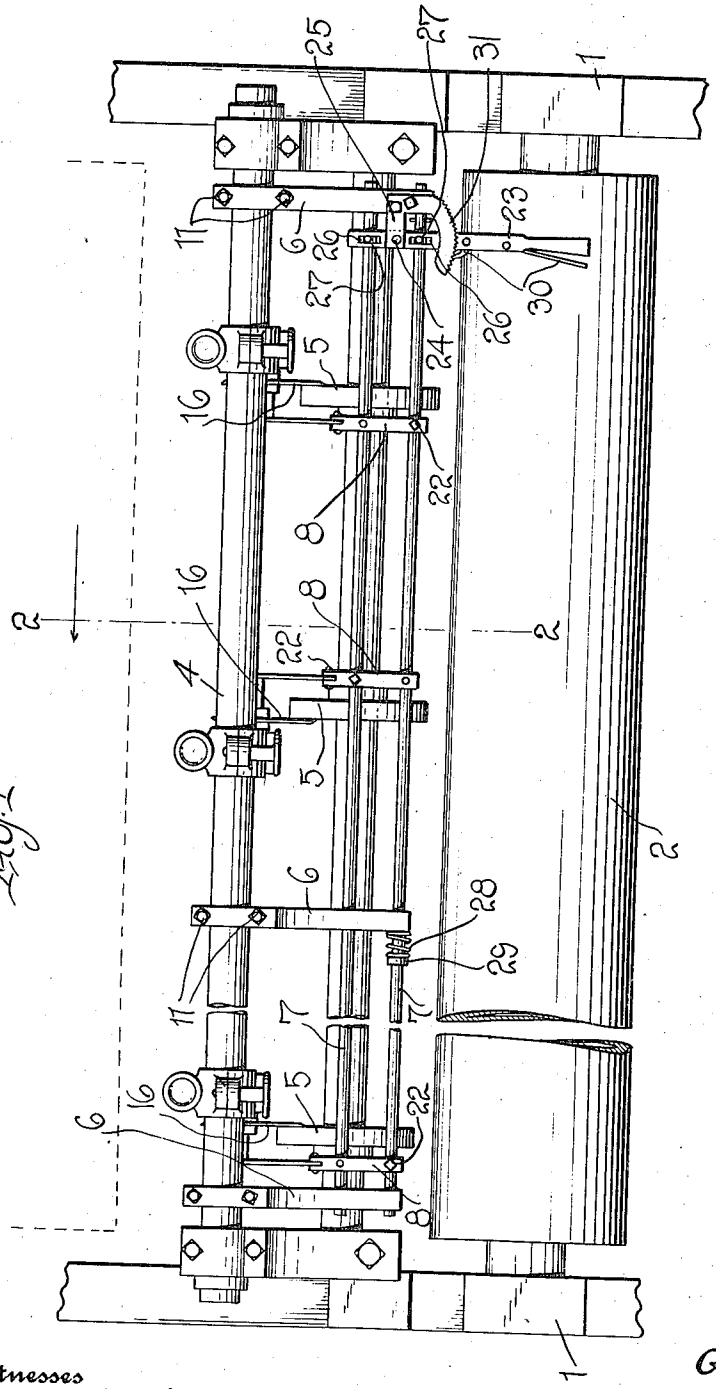



Fig. 1

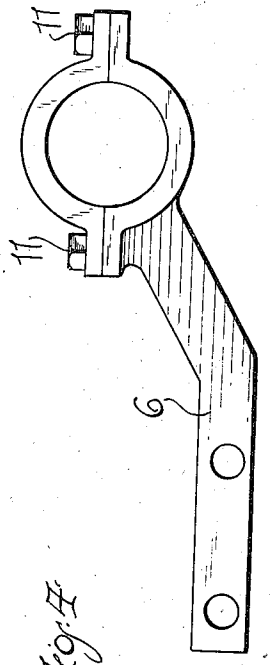



Fig. 4

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2

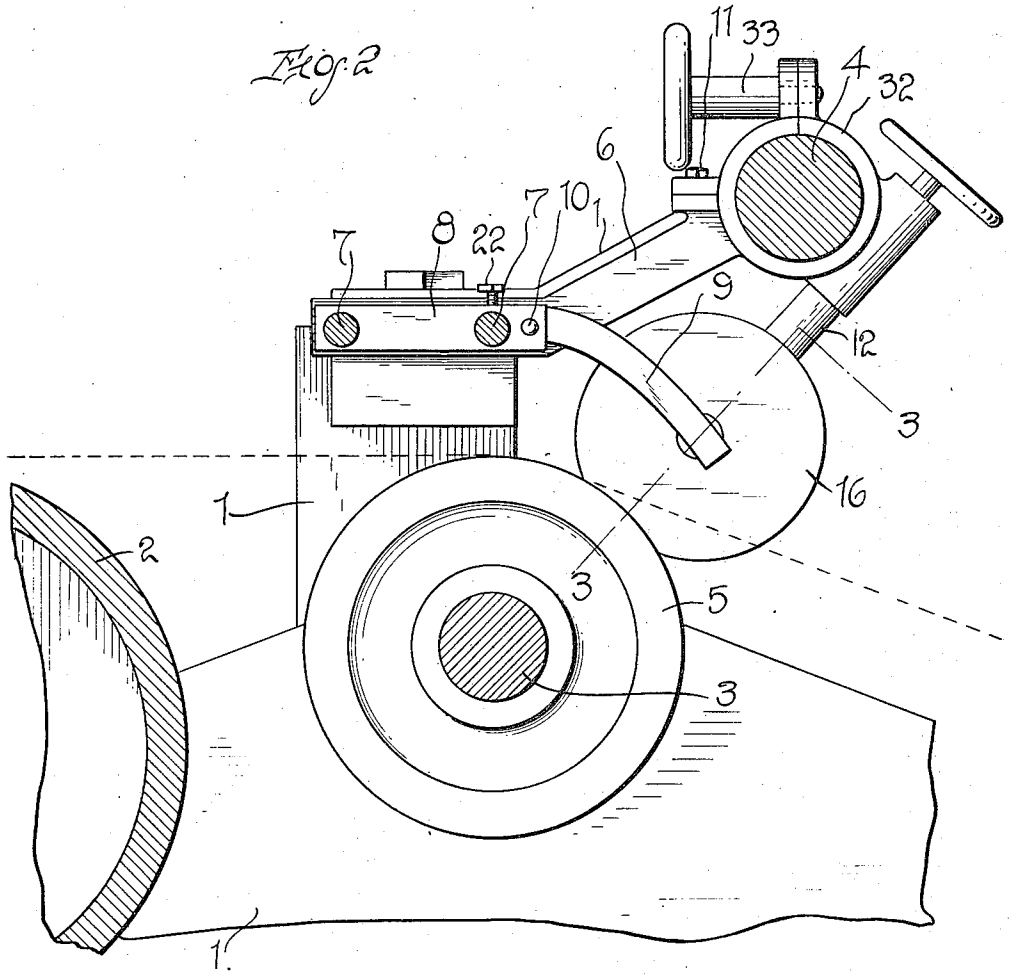
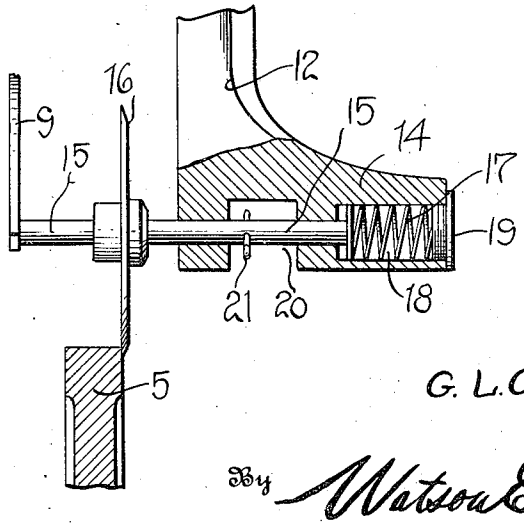



Fig. 3




Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE L. COWAN, OF EAST RYEGATE, VERMONT.

## SLITTING MECHANISM.

1,134,590. Specification of Letters Patent. Patented Apr. 6, 1915.

Application filed April 18, 1914. Serial No. 832,873.

*To all whom it may concern:*

Be it known that I, GEORGE L. COWAN, a citizen of the United States, residing at East Ryegate, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements in Slitting Mechanisms, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in slitting mechanisms and has relation more particularly to a device of this general character especially designed and adapted for use in connection with paper; and the object of the invention is to provide a device of this general character employing coacting rotary cutters and having novel and improved means whereby such coacting cutters may be separated with facility and convenience to facilitate the threading of material, such as paper, therebetween.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved slitting mechanism whereby certain important advantages are attained and the device is rendered simpler, less expensive and otherwise more convenient and advantageous for use, all as will be hereinafter more fully set forth.

The novel features of the invention will be carefully defined in the appended claims.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a view in top plan of a portion of a machine, showing a slitting mechanism constructed in accordance with my embodiment in applied position; Fig. 2 is an enlarged sectional view taken substantially on the line 2—2 of Fig. 1; Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 2; and Fig. 4 is an elevational view, detached, of a supporting member herein included.

As disclosed in the accompanying drawings, 1 denotes a frame of a cutting machine of a type generally employed in the paper manufacturing industry, and 2 one of the delivery rollers. Suitably supported by the frame 1 is the lower slitter holder shaft 3 and the top slitter holder shaft 4 of general construction and arrangement, the lower slitter holder shaft having suitably fixed thereto at predetermined intervals the slitters 5.

Projecting inwardly from the upper holder shaft 4 and at predetermined intervals are the hangers 6 extending across the lower shaft 3 and terminating a predetermined distance thereabove, the inner or free extremities of such hangers having slidably engaged therewith the spaced parallel rods 7 adapted to be reversely operated in unison in a manner to be hereinafter more particularly referred to. The rods 7 are also directed through the cross heads 8, from each of which forwardly extends a finger 9, such finger being herein disclosed as detachably engaged, as at 10, with its respective head 8, which permits a ready removal or replacement of such finger, if the necessities of practice should so require. The hangers 6 are adjustably engaged with the holder shaft 4 by the clamps 11 in order that the hangers may be disposed at any angle desired.

Adjustably connected with the upper holder shaft 4 and depending therefrom on the requisite inclination are the supports 12 terminating in predetermined proximity to the peripheries of the slitters 5, and each of such supports has its lower extremity affording a bearing 14 for the shaft 15 on which is mounted an upper slitter 16, the outer extremity of such shaft 15 being normally in contact with the lower extremity of a finger 9 under the influence of an expansible member 17, herein disclosed as a coil spring positioned within a pocket or cavity 18 produced in the bearing 14 and interposed between the inner extremity of the shaft 15 and a cap or plug 19 for closing the open end of the pocket or cavity 18, hereinbefore referred to, which is believed to be clearly shown in Fig. 3. By this arrangement, it is thought to be obvious that the shaft 15 is capable of a longitudinal movement whereby it will be readily perceived that the upper cutting slitter 16 may be moved away from the lower cutter or

slitter 5 in order to facilitate or expedite the initial threading of the paper between such cutters. In order to limit the inward movement of the shaft 15 relative to its bearing 14, I provide such bearing with a recess 20 intersecting the bore thereof and the portion of the shaft 15 intersecting the recess 20 has directed therethrough, as herein disclosed, a cotter pin 21 and operating in a manner which is believed to be clearly obvious to those skilled in the art to which my present invention appertains. I wish to state that I do not desire to be understood as limiting myself to the use of a cotter pin 21 as any other means may be employed which will operate with equal facility.

As is generally done in machines of this general character, the upper slitters or disks 16 are alternately disposed upon opposite sides of their coacting lower disks 5 and for this reason the cross heads 8 are secured to either of the rods 7, herein shown as through the medium of a set screw 22, as will permit such upper disks 16 to move away from the lower disks 5 when such rods are caused to be reversely moved as has been hereinbefore mentioned. As herein disclosed, the simultaneous and reverse longitudinal movement is imparted to the rods 7 through the medium of the lever 23 pivotally connected, as at 24, intermediate its length to a bracket 25 suitably secured and projecting inwardly from an end hanger 6, such lever 23 at opposite sides of its pivotal connection 24 being provided with an elongated longitudinally disposed slot 26 through which projects a lug or pin 27 carried by the rods 7 whereby it will be readily perceived that as the lever 23 is moved about its pivot 24, such rods 7 will be operated in unison and in reverse directions. I also find it of advantage to expedite the return movement of the rods 7, or into position occupied when the slitters or cutters 5 and 16 are in operative engagement, through the medium of the expansible member 28, herein disclosed as a coil spring surrounding one of the rods 7 and interposed between an intermediate hanger 6 and a collar 29 affixed to such rod 7. In order that the rods 7 may be locked in their relative adjustments, I provide the lever 23 with the latch 30 coacting with the rack 31, herein disclosed as carried by the bracket 25, as is believed to be clearly shown in Fig. 1.

While each of the supports 12 may be adjustably connected with the top holder shaft 4 in any manner which will operate with facility, I find it of advantage to employ the arrangement disclosed in the accompanying drawings, wherein the upper extremity of such support 12 is provided with a split collar 32 surrounding the shaft 4 and maintained in clamping engagement therewith through the medium of the binding screw 33.

From the foregoing description, it is thought to be obvious that a slitting mechanism constructed in accordance with my invention is of an extremely simple and comparatively inexpensive nature and is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and by reason of the effectiveness with which it performs its functions, and it will also be obvious that my invention is susceptible of some change and modification without material departure from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice.

I claim:

1. A device of the character described comprising a lower holder shaft, an upper holder shaft, slitters carried by the lower shaft, hangers operatively connected with the upper shaft, parallel rods slidably supported by the hangers, supports depending from the top shaft, cutters yieldably supported by the hangers, shafts carried by the hangers and capable of endwise movement, cutter disks carried by the shaft and adapted to coact with the cutters of the lower holder shafts, means operatively engaged with each of the parallel rods to engage the shafts of the supports for imparting endwise movement to such shafts in one direction when movement is imparted to the rods, and means for imparting movement to the rods.

2. A device of the character described comprising a lower holder shaft, an upper holder shaft, slitters carried by the lower shaft, hangers operatively connected with the upper shaft, parallel rods slidably supported by the hangers, supports depending from the top shaft, cutters yieldably supported by the hangers, shafts carried by the hangers and capable of endwise movement, cutter disks carried by the shaft and adapted to coact with the cutters of the lower holder shaft, means operatively engaged with each of the parallel rods to engage the shafts of the supports for imparting endwise movement to such shafts in one direction when movement is imparted to the rods, and means for imparting simultaneous and reverse movement to the rods.

3. A device of the character described comprising a lower holder shaft, an upper holder shaft, slitters carried by the lower shaft, hangers operatively connected with the upper shaft, parallel rods slidably supported by the hangers, supports depending from the top shaft, cutters yieldably supported by hangers, shafts carried by the hangers and capable of endwise movement, cutter disks carried by the shaft and adapted to coact with the cutters of the lower holder shaft,

means operatively engaged with each of the parallel rods to engage the shafts of the supports for imparting endwise movement to such shafts in one direction when movement is imparted to the rods, means for imparting movement to the rods, and automatic means for imparting movement to the shafts of the supports when the engaging means carried by the rods are moved away from the supports.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GEORGE L. COWAN.

Witnesses:

DANIEL G. FARWELL,

FLORENCE GLYNN.