G. L. COWAN.

PAPER SLITTER.

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1,162,040.

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Fig. 1.

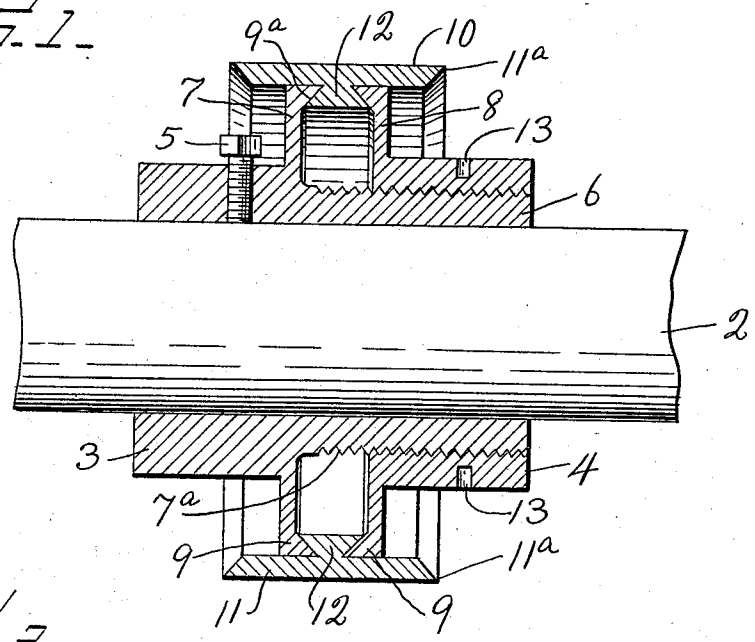


Fig. 2.

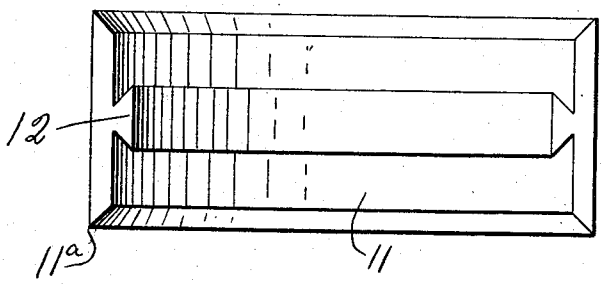
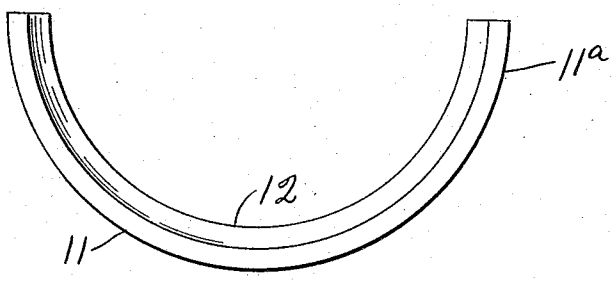


Fig. 3.



Witnesses

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PAPER-SLITTER.

1,162,040. Specification of Letters Patent. Patented Nov. 30, 1915.

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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 Paper-Slitters, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in paper cutting machinery and particularly to improvements in paper slitters or trimmers.

In devices of this character when the paper cutting blades of the slitter or trimmer get dull it is necessary to entirely remove the hub supporting the blades from the shaft upon which the hub is mounted and this necessitates the removal of the boxes in which the shaft is journaled. If the blade of a rear slitter gets dull or of a middle slitter, all or most of the cutters or slitters on that shaft must be removed in order to remove the slitter whose blade is dull. It has been proposed to provide slitters having double cutting edges, the slitter being reversible when one edge becomes dull but then it is necessary to raise the shaft, remove the hub of the slitter by sliding it longitudinally upon the shaft, reversing the hub, replacing it upon the shaft and again replacing the shaft in position in order to sharpen the bottom slitters, therefore it is necessary to remove them, put on a new set while the dull ones are ground and this means the necessity of tipping the guard member back and displacing it from its running position, taking off the blade, lifting out the shaft from the bearings so as to slip the dull slitters off the shaft and the sharp ones on, and replacing everything as it was before. This necessity of change may occur at the very time when time is limited and which either means that the work must be done at too great a speed afterward or that the operator gets away behind with his work.

The main object of my invention is to overcome these difficulties by providing a cutter or slitter in which the cutting blade may be readily removed and reapplied without the necessity of removing the hub supporting the cutting blade from the shaft.

A further object of the invention is to provide a construction of this character in which the cutting blade may be readily reversed upon the hub or supporting means without the necessity of removing the hub from the shaft.

Still another object of the invention is to provide means for detachably clamping the cutting blade in place and in forming the blade in two or more curved sections which when placed together surround the shaft or hub and this construction permits the sections to be drawn off radially and thus permits the ready removal or replacement of the blade.

A further object of the invention is to provide means for clamping the blade sections in place and means for automatically adjusting the blade sections in the proper relation to the periphery of the hub.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings wherein:—

Figure 1 is a vertical longitudinal section through a paper slitter constructed in accordance with my invention; Fig. 2 is an inside face view of one of the sections of the blade or cutter; and Fig. 3 is a side elevation of the section shown in Fig. 2.

Referring to these drawings, 2 designates the shaft upon which the blade supporting means is mounted. Supported upon this shaft and held thereto in any suitable manner are the hub sections 3 and 4. One of these sections is adapted to be firmly supported upon the shaft by means of set screws 5 or in any suitable manner and this section has a longitudinally extending centrally disposed extension or sleeve 6 which closely surrounds the shaft 2 and which is exteriorly screw threaded as at 7ª. This hub section 3 has an outwardly extending flange 7. The section 4 has a portion which surrounds the sleeve 6, this portion being interiorly screw threaded so as to engage the screw threads of the sleeve whereby the section 4 of the hub may be adjusted toward or from the section 3 of the hub. This section 4 is also provided with the outwardly projecting clamping flange 8.

Each of the flanges 7 and 8 are formed adjacent its periphery with the confronting marginal flanges 9 each having a beveled inner face 9ª as shown clearly in the sectional view Fig. 1.

The blade of my improved cutter and slitter is formed in a plurality of sections. Two sections are shown, one being designated 10

and the other 11. Each of these sections are alike and as illustrated are semi-circular in form and are adapted when in position upon the hub to abut so closely against each other that no joint will be apparent between the two sections. The outer marginal edges of the blades are beveled as usual or otherwise formed to provide cutting edges designated 11^a and each section of the blade is formed upon its inner face with a dove tailed flange 12, the side faces of which are disposed at such an angle that the beveled inner face 9^a of the flanges 9 will fit snugly into the beveled faces of the dove tailed flange 12 when the hub section 4 is shifted into operative position and the flanges 7 and 8 are brought into locking engagement with the dove tailed flange 12 of the cutting blade.

In order to provide for a rotation of the hub section 4 upon the screw threads of the sleeve 6, I form the hub section 4 with recesses 13 whereby a spanner wrench may be engaged with the hub section to rotate it.

The operation of adjusting the blades in place upon the hub will be obvious from what has gone before. When it is desired to remove a dull blade the spanner wrench is applied to the section 4 of the hub and the section is reversely rotated upon the screw threads of the section 3. As soon as the section 4 has been displaced from its operative position sufficiently to permit the withdrawal of the dove tailed flange 12 from between the clamping jaws of the flanges 7 the blade sections may be removed and new blade sections may be immediately replaced, whereupon the section 4 is again screwed up until the clamping jaws 9 engage the dove tailed flange 12 and it will be seen that this manner of locking the blades in place is extremely simple, so simple as to be almost "fool proof." No matter how the blades are placed between the locking jaws, the dove tailed flange on the lever catches the flanges on the bevel of the hub sections and the blades are drawn to the dead center with its jaws a perfect match and further it will be seen that the blade sections are held in this position and do not require to be adjusted afterward.

The cutters or blades are made all of one size, thus it will not make any difference what blade is used. If one cutter gets dull and has to be replaced, instead of having to take out the shaft and remove all the slitters to replace one, it is only necessary to loosen the hub section 4 whereupon the blades may be removed and replaced in a minute or less. It will further be seen that when the blades wear down so as to be useless, the hub sections do not have to be thrown away, thus saving a considerable item of expense. Further it will be seen that the blades are readily reversible between the clamping flanges 7 and 8 and that by releasing these clamping flanges in the manner heretofore described, the blades may be readily lifted out and turned around.

While I have illustrated certain specific details which I have found to be particularly effective in practice, I do not wish to be limited to these details as it is obvious that many changes in the details might be made without departing from the spirit of the invention. Thus I do not wish to be limited to a set screw for fastening the hub section 3 in place as any other means for clamping it upon the shaft may be used. Further it will be obvious that the blades might be additionally fastened in place by bolts or screws if necessary and of course it is obvious that I may use any suitable material for forming the hubs and locking the flanges and blade sections. Furthermore I do not wish to be limited to screw threading the sleeve 6 and the interior of the hub section 4 as other means might be used for adjusting the hub sections toward or from each other and locking them in their adjusted positions.

Having described my invention, what I claim is:

1. In a paper slitter, a cylindrical cutting blade formed in a plurality of sections, each section having a circumferentially extending flange on its inner face less in width than the width of the blade, and oppositely disposed clamping members movable into and out of engagement with said flange to thereby support or release said sections.

2. In a paper slitter, a cylindrical cutting blade formed in a plurality of segmental sections, each section being formed upon its inner face with a circumferentially extending dove tailed flange, and oppositely disposed clamping members having clamping jaws formed to engage the dove tailed flange, said clamping members being relatively adjustable into and out of engagement with the flange.

3. In a paper slitter, a cylindrical cutting blade having a dove tailed flange upon its inner face less in width than the blade, and clamping members movable into or out of interlocking engagement with said flange.

4. In a paper slitter, oppositely disposed relatively movable clamping members each having an annular flange, the flanges confronting, the outer margins of the flanges being formed with oppositely inclined beveled faces, and a cylindrical blade disposed between and held by said clamping members in operative position, said blade having a circumferentially extending dove tailed flange upon its inner face, the base of said flange being less in width than the width of the blade and adapted to have wedging engagement with the margins of the clamping members.

5. In a paper slitter, coacting interen-

gaged hub sections each having an outwardly extending clamping flange, a cylindrical blade adapted to be engaged by said flanges and interlocked therewith, said blade being formed in segmental sections, and means whereby said hub sections may be adjusted toward or from each other to clamp or release the blade.

6. In a paper slitter, a shaft, a cylindrical cutting blade formed in a plurality of segmental sections, and a relatively adjustable clamping means therefor mounted upon the shaft for axial movement therealong interlocking with and clamping the cutting blade upon the shaft and holding the cutting blade in spaced relation to the shaft.

7. In a paper slitter, a hub section having an outwardly projecting flange, and a longitudinally extending continuation or sleeve, a coacting hub section having an outwardly projecting flange and fitting over and slidable upon said continuation of the first hub section, and a cutting blade supported between said flanges and removable radially therefrom.

8. In a paper slitter, a hub section having an outwardly projecting annular flange and having an exteriorly screw threaded sleeve or continuation, an interiorly threaded screw section fitting on and engaging said sleeve and having an outwardly projecting flange, and an annular blade adapted to be engaged between said flanges.

9. In a paper slitter, a hub section having an outwardly projecting annular flange, an exteriorly screw threaded sleeve or continuation, a hub section fitting upon said sleeve and interiorly screw threaded for engagement therewith and having an outwardly projecting flange, said flanges being formed upon their inner faces with beveled gripping jaws, an annular cutting blade having on its inner face a medially disposed inwardly projecting flange having beveled faces, and means for holding the first named hub section upon a shaft.

10. The combination with a shaft, of a hub section fastened upon said shaft and having an outwardly extending flange, a hub section disposed concentric to the shaft and longitudinally adjustable toward and from the first named hub section and having an outwardly projecting flange, an annular blade formed in segmental sections, each of said sections having a longitudinally extending rib upon its inner face adapted to be engaged by the peripheral edges of the flanges, and means for adjusting the movable hub section toward the fixed hub section.

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

GEORGE L. COWAN.

Witnesses:
DANIEL G. FARWELL,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."