Oct. 25, 1927.

C. S. LENSTON

1,646,918

SCORING CUTTER

Filed Nov. 8, 1926

2 Sheets-Sheet 1

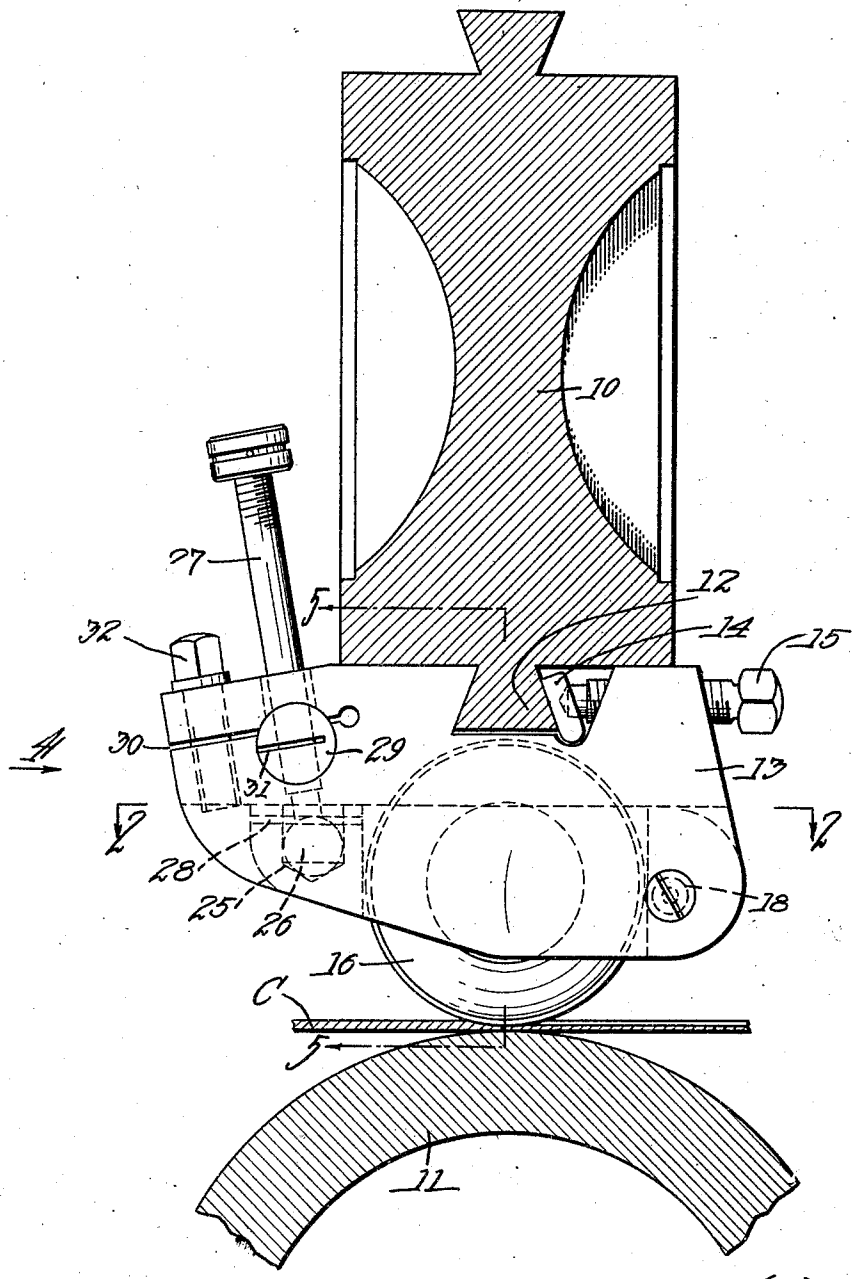

Fig. 1.

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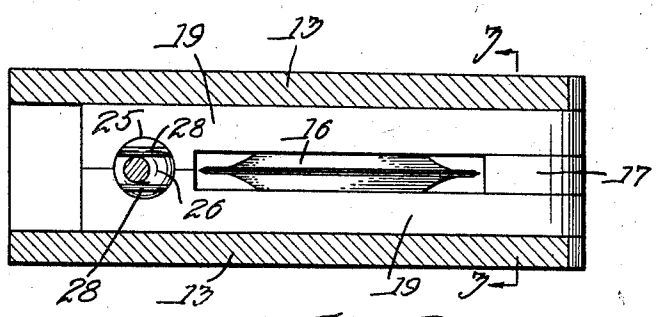

Fig. 2.

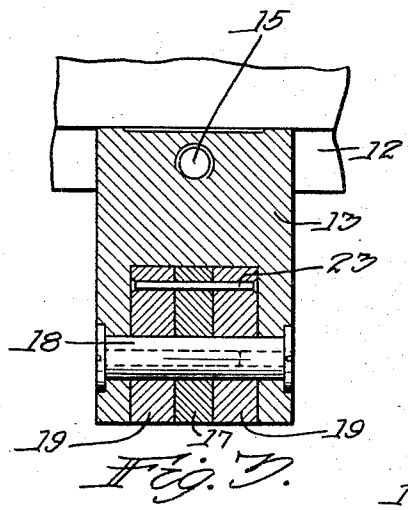

Fig. 3.

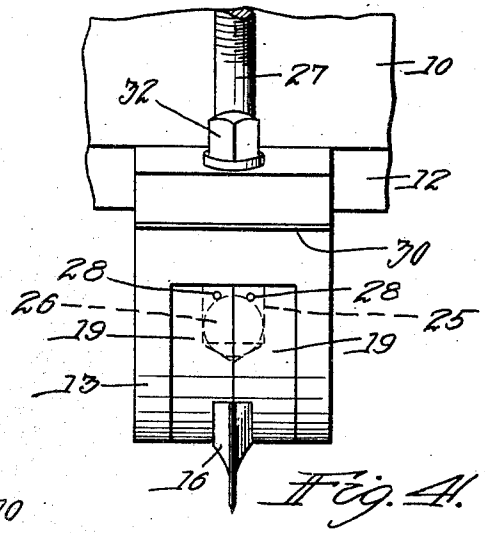

Fig. 4.

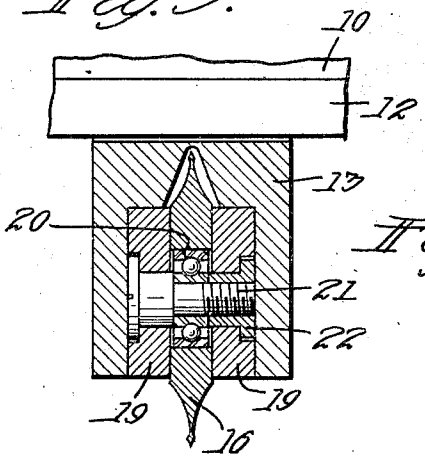

Fig. 5.

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UNITED STATES PATENT OFFICE.

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SCORING CUTTER.

Application filed November 8, 1926. Serial No. 146,946.

This invention relates to a rotary cutter for use in connection with a roll for scoring card-board or other material of a similar kind or for slitting or indenting it as may be desired.

The principal objects of the invention are to provide a mounting for the cutter in which the cutter will be bodily pivoted on an axis at such a height that the rise and fall of the cutter will not bring it materially out of registration with its normal position at the top of the scoring roll; to provide a mounting for the cutter in which side play is practically impossible, due to the construction itself; and to provide an improved way of adjusting the cutter up and down about the pivot and securing it in its adjusted positions.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a sectional view of the cutter bar and scoring roll in which the supporting means carried by the cutter bar is shown in side elevation;

Fig. 2 is a sectional view of the same on the line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2;

Fig. 4 is an end view showing the left hand end in Fig. 1; and

Fig. 5 is a central sectional view on the line 5—5 of Fig. 1.

The cutter bar 10 and scoring roll 11 are of the usual construction well understood in this art. The cutter bar is provided with a dove-tailed projection 12 extending longitudinally and the body of the cutter supporting body 13 is secured on this dove-tail extension at any place along the cutter bar by means of a gib 14 and holding screw 15. This fixes this body in position and it will be understood that as many of these are placed along the cutter bar transversely as may be desired to produce the required number of grooves, slits or rows of indentations in the card-board C which constitutes the work.

Ordinarily the cutter 16 has been mounted on this body 13 about a pivot near the upper right hand corner, as shown in Fig. 1. The result of this was that when the cutter was raised or lowered its point of contact with the scoring roll 11 was shifted quite materially either to the right or left, thus resulting in a tendency to tilt the card-board out of the horizontal and make imperfect work. One of the principal objects of this invention is to avoid this difficulty and provide for causing the edge of the cutter always to engage the surface of the roll, or the card-board thereon, at practically the same high point, irrespective of wide variations in elevation.

For this purpose I provide a pivot stud 18 with its screw and check screw at the lower right hand corner of the body 13 and mount upon it a blade holder 19 and filling piece 17. The position of the axis of this pivot stud 18 is a matter of importance. It is located half way between the level of the center of the cutter 16 when in its highest and lowest positions as adjusted in the body 13. In this way the arc which the center of the cutter makes is bisected by a line drawn horizontally through the center of the pivot stud 18. Therefore the position of the center of the cutter 16 does not change greatly as it goes up and down. Its maximum shift is reduced by one half on account of this location.

It will be understood that there is a recess in the body 13 for receiving the cutter and the two parts of the holder 19. This is shown especially in Fig. 5 where the means for holding the cutter 16 in position is illustrated. The cutter is provided with ball bearings 20, the inner race of which is carried by a screw threaded stud 21. This stud has the square end of its head and the end of the screw fitting exactly in between the walls of the recess in the body 13 or at least just short enough thereof so as to enable it to be put into place. The screw threaded end of the stud 21 is provided with a nut 22 which also has a square end which can be screwed out just enough against the surface of the recess in the body 13 to form a reasonably tight sliding fit. Then the parts are introduced and the blade holder cannot shift back and forth in the machined recess in which it is located.

The blade holder also is in two parts separated from each other by the filling piece 17 and pivoted together by a pin 23 as shown in Fig. 3 and held in the recess in the body 13, being secured by the stud 18 and its screw and check screw.

For the purpose of holding the blade holder at just the right elevation, it is provided with a recess 25 in which fits the spherical end 26 of an adjusting screw 27. A pair of pins 28 are located across the recess at the top to hold this screw in position and prevent its becoming loosened and insure that it will hold up that end of the blade holder. The screw 27 passes through a cylindrical stud 29 located in a transverse cylindrical opening in the body 13. There is a slit 30 extending across this opening from the rear of it to the edge of the body. This stud 29 is also provided with a slit 31 which extends almost all the way across it parallel with the slot 30. There is a binding screw 32 for an obvious purpose.

Supposing the binding screw 32 to be loosened, the screw 27 is turned to any desired position to adjust the cutter 16 up or down. Now when the right position is secured, the screw 32 is screwed down which tightens up the slit 30 and tightens the stud 29 in position, at the same time compressing that stud a little with reference to its slit 31 to tighten it on the screw 27. It will be obvious therefore that adjustment is secured by one screw and the fastening of the cutter in its adjusted position is secured by the other. This constitutes a very simple arrangement for securing the adjustment of the cutter and it is located with respect to the pivot 18 so that the adjustment itself is greater than the motion of the cutter. In other words, it is slightly magnified so that the operator can work more finely. It will be understood of course that the spherical head 26 can turn between the pins 28 which are provided in across its neck.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a scoring device or the like, the combination with a cutter bar and a scoring roll at a distance below it, of a body adjustable along the under side of the cutter bar and having a recess in its bottom, a blade holder mounted within the recess in said body, a circular cutter mounted on the blade holder to turn on a transverse axis, the blade holder being pivoted on an axis behind the cutter midway between the center of the cutter in its highest and lowest positions, and means for adjusting the front end of a blade holder up and down about said axis, whereby in all adjusted positions the cutter will engage the scoring roll substantially at its top.

2. In a scoring device, the combination with a cutter bar, of a body mounted on the bottom thereof and having a recess extending upwardly from the bottom of said body, of a blade holder mounted for vertical adjustment within said recess, a stud passing through the blade holder and having means upon it for centering a circular cutter and having a nut on the other end adapted to be turned to a position in which the head of the bolt and the head of the nut will engage the sides of said recess to locate the cutter in the body and prevent chattering and side play.

3. In a scoring device, the combination with a cutter bar and a body adjustably mounted therealong on the bottom, of a blade holder pivoted to said body and located in a recess in the bottom thereof and having a circular blade mounted thereon to rotate freely, said blade holder having an upwardly opening recess at the end opposite the pivot, a headed screw extending into said recess and rotatable therein, means for holding the head of the screw in the recess but allowing it to turn therein, and means for clamping said screw in adjusted positions.

4. In a scoring device, the combination with a cutter bar and a body adjustably mounted therealong on the bottom, of a blade holder pivoted to said body and located in a recess in the bottom thereof and having a circular blade mounted thereon to rotate freely, said blade holder having an upwardly opening recess at the end opposite the pivot, a screw having a head extending into said recess and rotatable therein, a transversely slit stud located transversely in said body and having a perforation for receiving said screw freely therethrough, the body having a slit parallel with the slit in the stud extending through the opening in which the stud is located, and means for tightening up the slit in the body to clamp the body against the stud and the stud against the screw.

5. In a scoring device, the combination with a body, of a blade holder pivoted to said body and having a circular blade mounted thereon to rotate freely, said blade holder having an upwardly opening recess at the end opposite the pivot, a screw having a head extending into said recess and rotatable therein, the body having a slit, and means for tightening up the slit in the body to clamp the screw.

6. In a scoring device, the combination of a supporting body having a recess extending upwardly from the bottom, of a blade

holder pivoted at the rear within said recess, a stud passing through the blade holder and having means upon it for centering a circular cutter and having a nut on the other end adapted to be turned to a position in which the head of the bolt and the head of the nut will engage the sides of said recess to prevent chattering and side play, and means extending down from above into said recess for adjusting said body about said pivot.

In testimony whereof I have hereunto affixed my signature.

CHARLES S. LENSTON.