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J. R. WOOD

2,684,117

SLITTER FOR PRINTING PRESSES

Filed Sept. 8, 1951

2 Sheets-Sheet 1

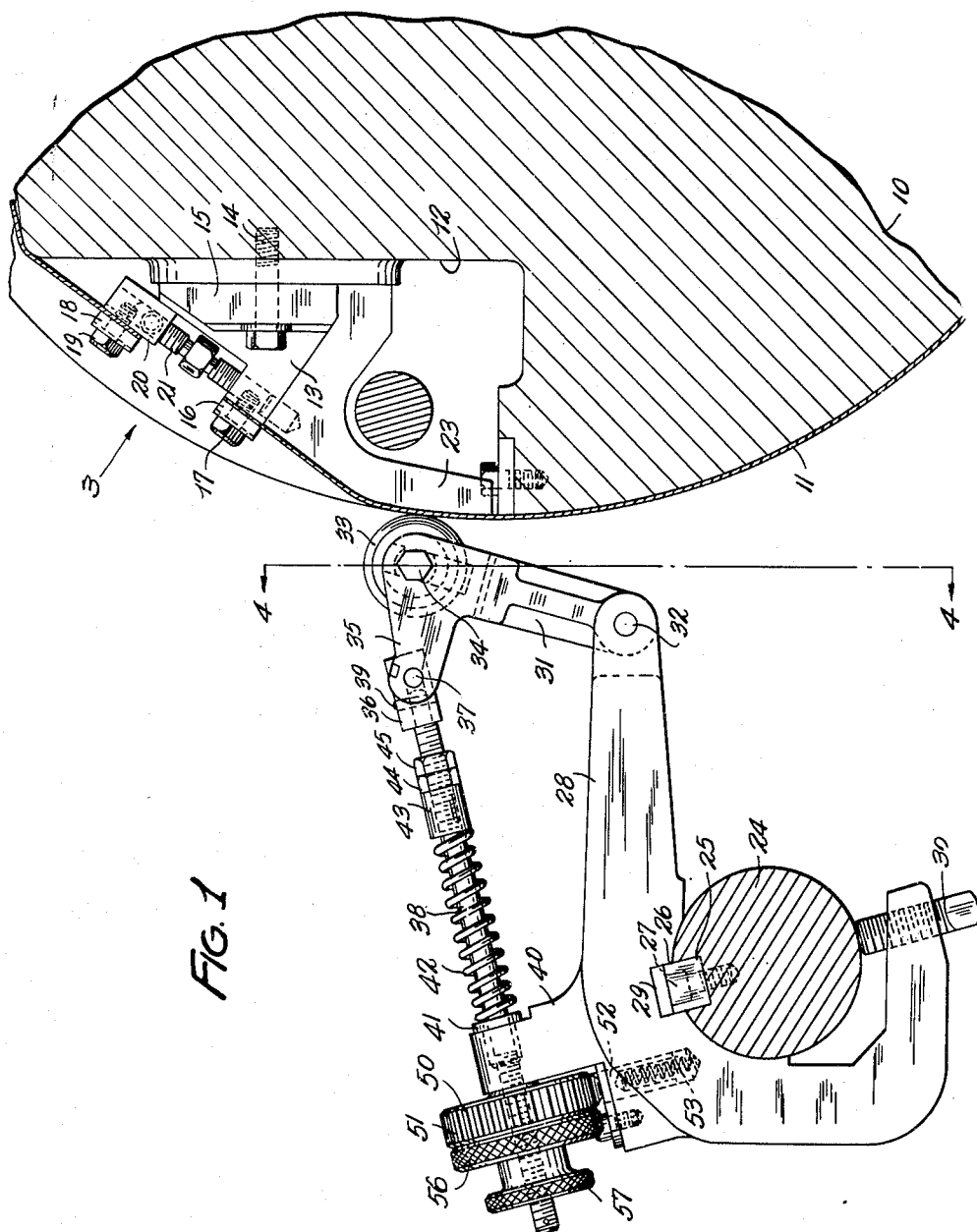


FIG. 1

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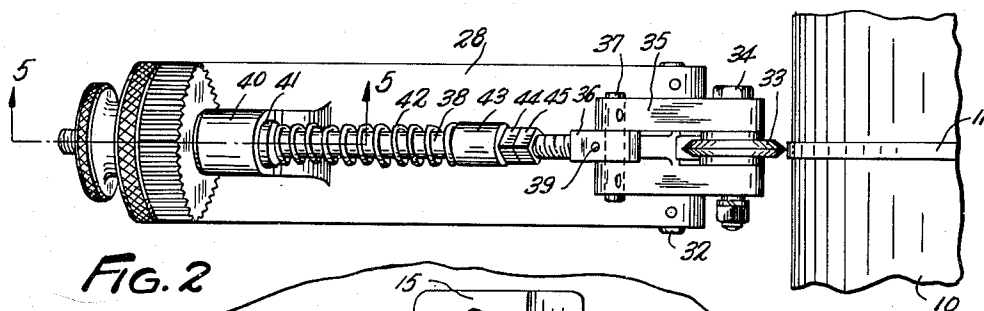


FIG. 2

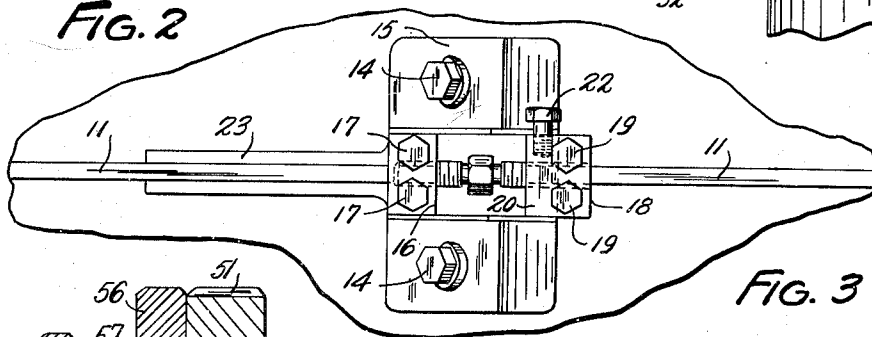


FIG. 3

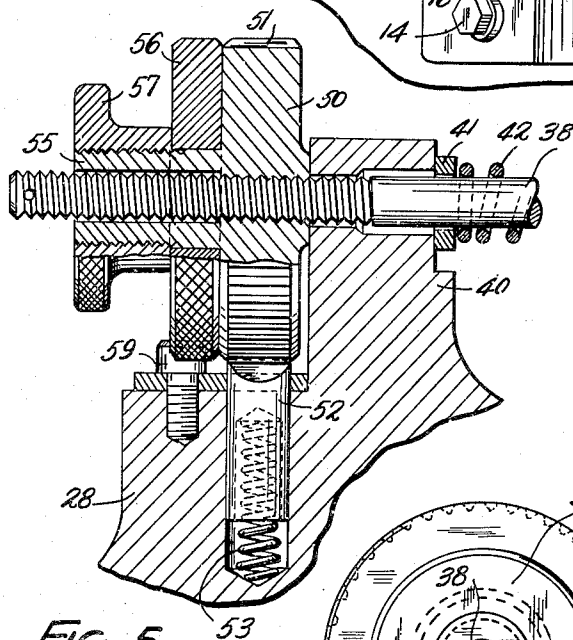


FIG. 5

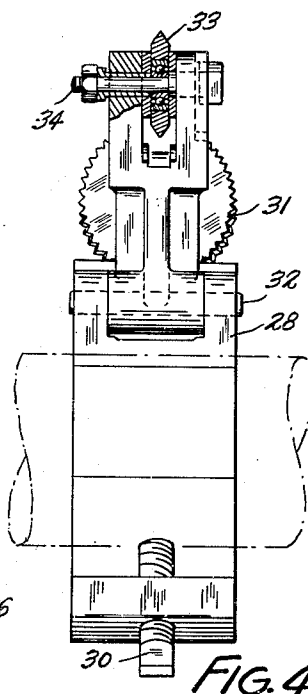


FIG. 4

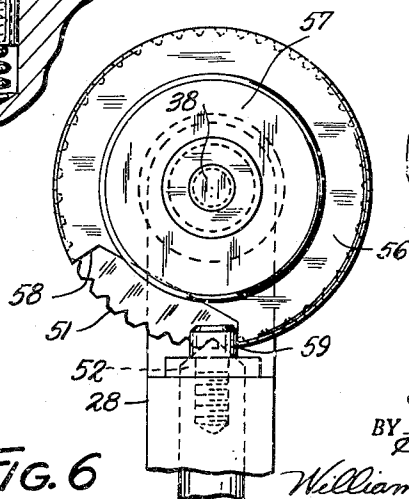


FIG. 6

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SLITTER FOR PRINTING PRESSES

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7 Claims. (Cl. 164-60)

1

This invention relates to improvements in slitters for printing presses, that is to say devices for slitting a sheet or a web into two or more parts as it travels through a printing press. In order to protect the surface of the cylinder with which the slitting wheel cooperates it is desirable to place a narrow band of thin metal around the cylinder against which the cutting wheel may bear. In the use of the device the rotating cutter gradually cuts a groove in the band, and in order to make a clean cut in the paper sheet or web despite the slight clearance thus formed the cutter must be advanced slightly toward the band from time to time. If however this adjustment should be carried to the extent that the slitting wheel should cut entirely through the band it would injure the surface of the cylinder. The present invention is directed to the provision of an adjusting means which may be set at the time the band is placed in position so as to permit the necessary series of adjustments and to prevent adjustment being carried too far.

One of the objects of the invention therefore is the provision of an improved adjusting means for advancing a slitter a small increment at a time, having provision for preventing further movement after the predetermined extent of adjustment has been attained.

Another object is the provision of means for readily setting the adjusting means and adjusting limiting means when a new band is mounted on the cylinder.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which

Fig. 1 is a general side view, partly in section, of the slitter, its mounting and its adjusting means.

Fig. 2 is a plan view of the same.

Fig. 3 is a detail plan view of a band mounting means which may be employed in connection with the invention, the view looking substantially in the direction of arrow 3 of Fig. 1.

Fig. 4 is an elevational view partly in section on the line 4-4 of Fig. 1.

Fig. 5 is a detail view partly in section on the line 5-5 of Fig. 2, showing the adjusting means on a larger scale, and

Fig. 6 is an end view of the adjusting means, showing the gauge wheel for limiting the adjusting movement.

In Fig. 1 of the drawing a printing press cylinder, such as an impression cylinder, is indicated

2

at 10. A thin band 11 of steel or other metal surrounds the cylinder. In a gap 12 of the cylinder there is mounted by means of studs 14 a casting 15 having an inclined projection 13 to which one end of the band 11 is secured by means of a clamping plate 16 and machine screws 17. The other end of the band is fastened by means of a clamping plate 18 and machine screws 19 to a slide 20. A band tightening element 21 with reversely threaded ends and a hexagonal center has its ends threaded into the projection 16 and the slide 20, so that as the element is turned in the proper direction by the application of a wrench to the hexagonal portion thereof the band 11 is caused to grip the cylinder 10 firmly. A setscrew 22 threaded laterally into the slide 20 may be screwed down against the element 21 for locking it in adjusted position. The casting may be provided with a horn 23 for guiding the band into the gap without sharp turns.

24 is a transverse brace rod mounted in the frame of the printing press. A keyway 25 is machined therein. A key 26 is mounted in the keyway and held against movement by a screw 27 threaded into the brace rod. A bracket 28 shaped to closely embrace a portion of the rod is mounted on the rod, is held from rotational movement thereon by the key 26 which fits into a transverse slot 29 formed in the bracket, and is held from movement longitudinally of the rod by a setscrew 30. The bracket is thus rigidly supported.

The forward end of bracket 28 is bifurcated to receive an upwardly extending arm 31, these two parts being connected by a pivot 32. At its upper end arm 31 is bifurcated to receive an annular slitter 33 which is mounted by means of a ball bearing on a pivot 34 secured in the bifurcations of the arm, the parts being so disposed that the slitter is positioned opposite the center line of band 11.

On the upper arm 31 there is a bifurcated rearward extension 35 which receives and is pivotally connected to a small block 36, the pivot being shown at 37. This block is bored to receive the reduced forward end of an adjusting rod 38, a pin 39 being driven through registering holes in the block and rod to connect the parts together. Rod 38 extends loosely through a hole in an upwardly extending projection 40 on bracket 28. In front of this projection a washer 41 surrounding the rod bears against the projection and forms an abutment for a coil spring 42 which also surrounds the rod and bears at its front end against a loose collar 43 backed by a nut 44 on the threaded forward portion of the rod, which nut may be

threaded down to the desired extent to compress the spring and which may be held in adjusted position by a lock nut 45.

An adjusting nut 50 of relatively large diameter is threaded upon the threaded rear end of the rod 32 and has a central boss which bears against the rear face of projection 40. As it is turned clockwise as viewed in the drawings it draws the rod rearwardly against the force of spring 42 and holds the slit 33 retracted. When turned a small increment counterclockwise it permits the spring 42 to advance the rod accordingly. The periphery of the nut 50 is toothed as indicated at 51, and these teeth are engaged by a wedge shaped detent 52 which is yieldably forced upward by a spring 53 in the pocket of the bracket in which the detent is slidably mounted. The movement of the nut counterclockwise by the operator a distance of one tooth permits the rod to advance a small increment only, as is necessary at intervals because of the grooving of the band 11 by the action of the slit.

Since the band is quite thin it is desirable that the forward adjustment of the slit be limited to avoid cutting completely through the band and into the cylinder. For this purpose I provide means for limiting the number of teeth of the nut which may be advanced rotatably into engagement with the detent 52. This means will now be described. The nut 51 is provided with an integral rearwardly extending hub 55. Loosely mounted on this hub there is a gauge wheel 56 which has a considerable surface area adapted to engage the rear surface of nut 50, and these surfaces are adapted to be brought into and held in good frictional contact by means of a collar 57 that is threaded onto the extremity of hub 55. When the collar 57 is tightened on the hub, parts 57 and 55 move with the nut as it is turned for adjusting the rod 32. To limit this turning movement gauge wheel 56 may be provided with a cutout 58 in its periphery, the ends of which constitute stops for engagement with the head of a stud 59 screwed into a threaded hole in bracket 23. The peripheries of gauge wheel 56 and collar 57 are preferably knurled for easy operation.

When a new band 11 is to be installed, collar 57 is loosened and nut 50 is turned clockwise to retract the arm 34. The band is then put in position and tightened. The nut 50 may now be turned counterclockwise to advance the slit until it touches the band, in other words until it is positioned to properly sever a sheet of paper. Then the gauge wheel 56 is turned on the hub 55 until the cutout 58 stands in the position of Fig. 6, after which the collar 57 is turned down to hold the gauge wheel 56 tightly against the nut 50. The device is then ready for operation. After a given amount of use the slit begins to form a groove in the band and the cut formed in the paper becomes somewhat ragged. When the operator notes this effect he turns counterclockwise the nut 50 to which the gauge wheel is clamped to advance the nut one tooth. This is repeated from time to time as necessary to maintain a clean cut until the left end of the cutout 58 as viewed in Fig. 6 engages the head of stud 59, which prevents further adjustment of the slit and advises the operator of the fact that the installation of a new band is necessary.

Having thus described my invention, I claim:

1. Paper slitting means for use in connection with a cylinder of a printing press, comprising a band removably fixed on said cylinder, a fixed

rigid bracket, a slit to slit paper passed between said band and said slit, means for adjustably positioning said slit toward or away from said cylinder comprising a rod slidably supported by said bracket, a nut threadably mounted on the rod on the side of said bracket remote from said cylinder, means for biasing said rod towards said cylinder, a gauge wheel concentric with said nut and attached thereto, means for limiting the amount of rotation of said gauge wheel to an angle such that the rod may be advanced a distance less than the thickness of said band, said gauge wheel being angularly adjustable with respect to said nut, and means for locking said nut and wheel together in a selected angular relation.

2. A slitting means as defined in claim 1, wherein said means for limiting the amount of rotation of said gauge wheel comprises a cutout in its periphery, and a stud mounted in said bracket extending into said cutout limiting the movement of said gauge wheel through a distance dependent upon the spacing of the ends of said cutout.

3. A slitting means as defined in claim 1, wherein the means removably attaching said gauge wheel to said nut comprises an extended hub of the nut upon which said gauge wheel is loosely mounted, said hub being exteriorly threaded, and a collar threaded on said hub for securing said gauge wheel to the nut in a selected angular relation.

4. Paper slitting means for use in connection with a cylinder of a printing press, comprising a band removably fixed on said cylinder, a fixed rigid bracket, an arm pivoted thereto, a slit mounted in said arm to slit paper passed between said band and said slit, a threaded rod pivoted to said arm and extending loosely through a hole in said bracket, spring means interposed between said bracket and said arm tending to advance said slit toward said cylinder, an adjusting nut threaded on said rod and bearing on the side of said bracket remote from said cylinder, a gauge wheel concentric with and attached to said nut, cooperating stop means carried by said bracket and gauge wheel for limiting the amount of rotation of said wheel and nut to a given angle of predetermined size, which angle limits movement of said slit to an amount less than the thickness of said band, and means for accomplishing a relative adjustment of said stop means around the axis of said rod to vary the position of the angle through which adjustment of the wheel and nut is possible.

5. Paper slitting means for use in connection with a cylinder of a printing press, comprising a band removably fixed on said cylinder, a fixed rigid bracket, an arm pivoted thereto, a slit mounted in said arm to slit paper passed between said band and said slit, a threaded rod pivoted to said arm and extending loosely through a hole in said bracket, spring means interposed between said bracket and said arm tending to advance said slit toward said cylinder, an adjusting nut threaded on said rod and bearing on the side of said bracket remote from said cylinder, said nut having a rearwardly extending hub, a gauge wheel loosely mounted on said hub, the extremity of the hub being exteriorly threaded, a clamping collar threaded on said hub for clamping the gauge wheel against the adjusting nut, spaced stops on said wheel and a projection on said bracket adapted for engagement with said stops to limit the extent of movement of the

5

wheel to an angle such that said spring may advance said rod a distance less than the thickness of said band.

6. Paper slitting means as defined in claim 5, wherein the periphery of said nut is provided with teeth, and a spring detent for engagement with said teeth to hold the nut in selected angular positions as the rod is adjusted forward step by step by said nut and said spring means.

7. Paper slitting means as defined in claim 6, wherein said gauge wheel is provided with a cutout in its periphery, the ends of which constitute said spaced stops adapted to engage said projection on the bracket.

6

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