Aug. 15, 1950 P. L. TOLLISON ET AL 2,518,960

WEB SERVERING MECHANISM

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Fig. 1.

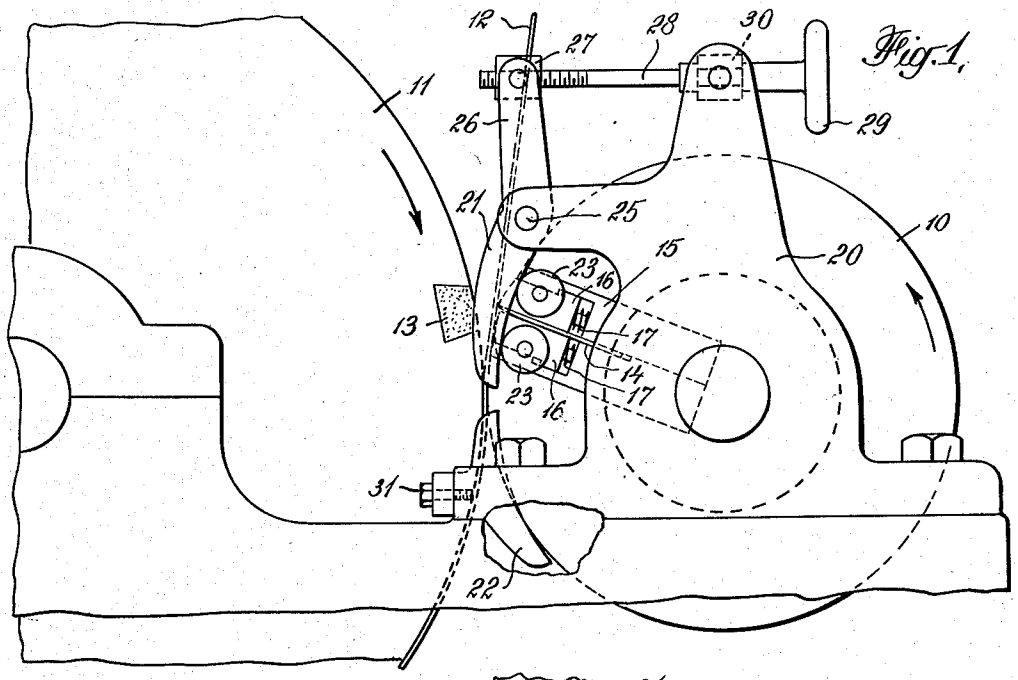
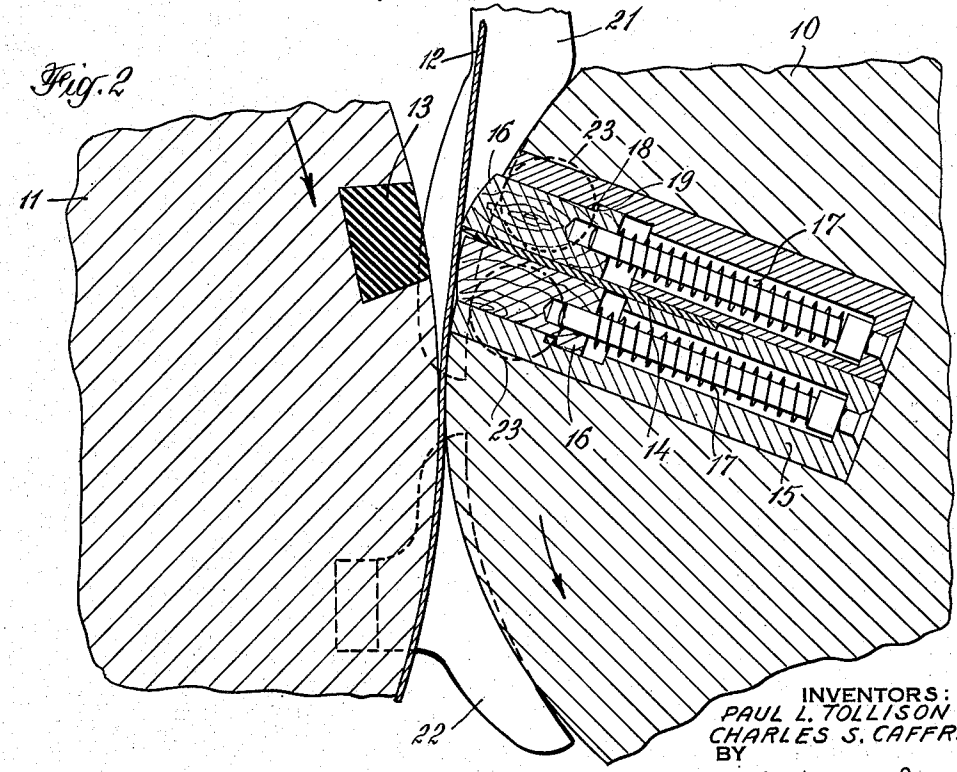


Fig. 2



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Fig. 4.

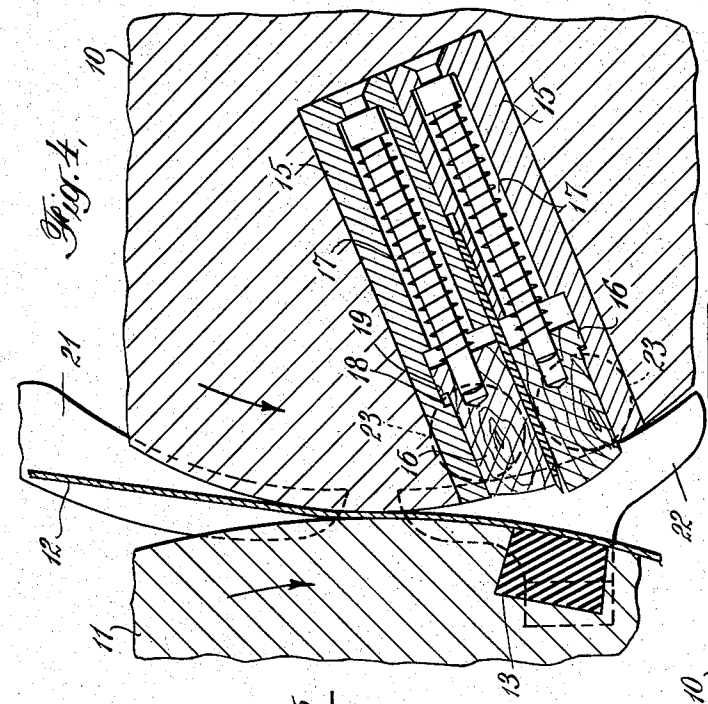


Fig. 3.

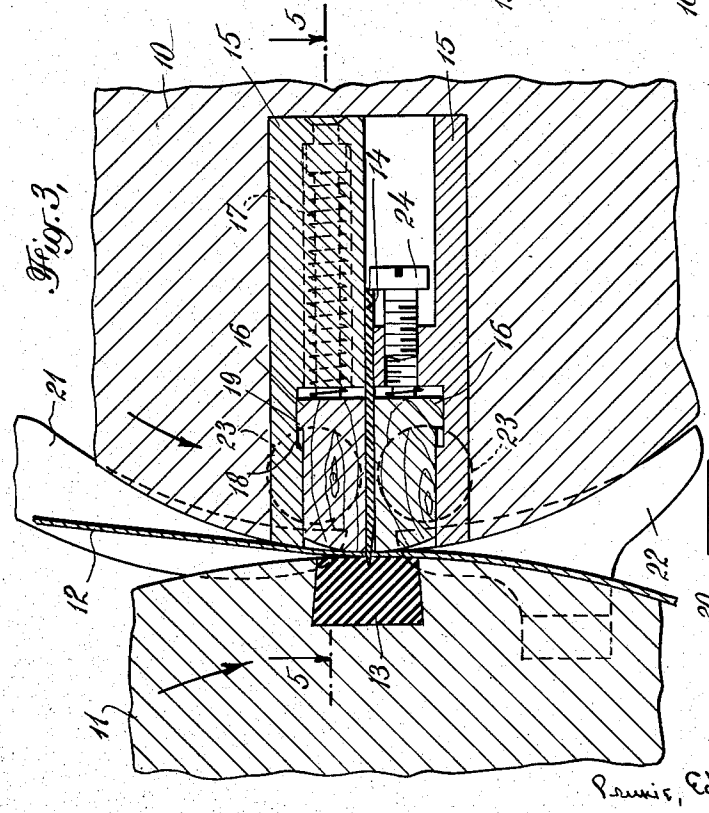
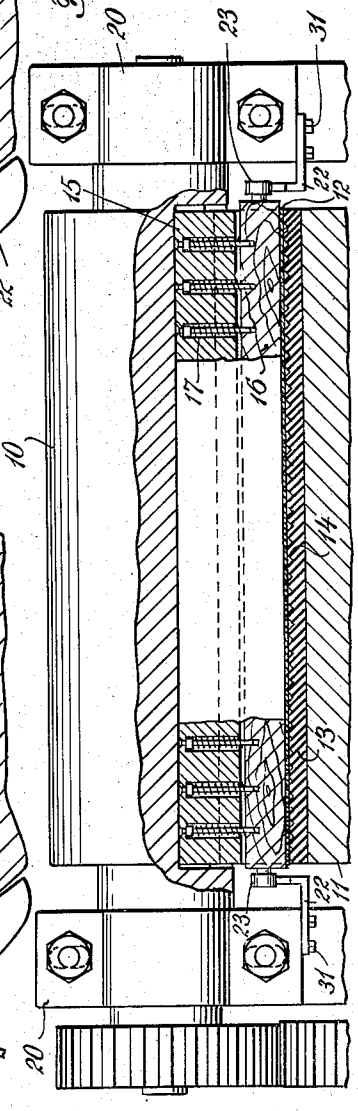


Fig. 5.



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WEB SEVERING MECHANISM

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Application March 9, 1946, Serial No. 653,402

7 Claims. (Cl. 164—66)

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This invention relates to printing presses and particularly to the folding and severing mechanism associated therewith, especially in newspaper plants.

For many years it has been accepted as inevitable that a press room be extremely noisy during operation of the presses. It is now recognized that a high noise level is productive of unnecessary fatigue and possible impairment of hearing in those who must work under it. It is therefore a principal object of this invention to reduce press room noise level.

We have found that one of the principal sources of noise in a high speed press installation of the type usually found in newspaper plants is the normal operation of the knife box cheek woods. This noise derives from two phases of the cheek wood operation. The first source of noise is from the cheek wood striking the unsevered web of paper as rotation of the cutting cylinder causes the knife box to approach the folding cylinder. The second source of noise is from the impact of the cheek wood with its stop during its outward travel along the knife blade after the severance of the paper. The particular object of this invention therefore is to regulate the operation of the cheek wood to eliminate noise from both these sources discussed without impairing the effectiveness of the cheek wood for its original purpose.

A preferred embodiment of our invention is described in the appended drawings in which;

Fig. 1 is a side elevation of a cutting couple of a printing press constructed according to our invention;

Fig. 2 is a cross section through a portion of the cutting couple illustrated in Fig. 1 taken just prior to the severance of the web;

Fig. 3 is a section similar to Fig. 2 taken at the moment of severance of the web;

Fig. 4 is a section similar to Fig. 2 taken just after the severance of the web; and

Fig. 5 is a partial top plan view of Fig. 1 with a portion in the section taken on the line 5—5 of Fig. 3, reduced in scale.

In Fig. 1, we have illustrated the cutting couple of a printing press comprising the cutting cylinder 10 cooperating with the folding cylinder 11 to draw a web of paper 12 between the cutting rubbers 13 and the knife 14. This knife 14 is carried in the knife box 15 and has on either side of it and parallel to its blade, the cheek woods 16 which are pressed outwards of the knife box by the rod-guided springs 17.

The internal construction of the knife box 15

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is more clearly shown in Figs. 2 and 3 in which it can be seen that the outward travel of the cheek woods 16 is limited by cooperation between the shoulder stops 18 on the inside of the knife box 15 and the shoulder stops 19 on that surface of each cheek wood opposite the surface in contact with knife 14. The amount of protrusion of the serrated cutting edge of knife 14 is adjusted by the screw 24.

In the operation of cheek woods unprovided with a control device, the cheek woods 16 are fully pressed outward by springs 17 keeping stops 18 and 19 in firm contact at all times during the rotation of cylinder 10 except when contact with web 12 forces them inward against the springs 17. Thus the extended cheek woods 16 "slap" into web 12 causing a considerable noise and, after severance of web 12 has released them and further rotation brings them free of cylinder 11, springs 17 thrust cheek woods 16 sharply outward again, "slapping" the shoulder stops 18 and 19 together and causing even greater noise.

Referring now to Figs. 1 and 5, it will be seen that the supporting frame 20 of cutting cylinder 10 carries two cam surfaces, approach cam 21 and departure cam 22 at each end of cylinder 10, arranged to cooperate with rollers 23 carried by the cheek woods 16. The operation of cams 21 and 22 is clearly illustrated in Figs. 2, 3 and 4. In contrast to the cycle of operations described for uncontrolled action of cheek woods, the cooperation of rollers 23 with approach cam 21 retracts the cheek woods 16 sufficiently early to prevent their "slapping" contact with web 12, but not so early as to render the trailing cheek wood ineffectual as a protection against premature severance of the web. It is of particular importance that, at the moment of severance, web 12 be tightly held by cheek woods as shown in Fig. 3. The profile of cams 21 and 22 is such that, at the moment of severance, rollers 23 are no longer in contact with them and cheek woods 16 are pressed outward by the springs 17 firmly gripping web 12 against the cutting rubbers 13. As rotation of the cylinder 10 continues, freeing the cheek woods from contact with cylinder 11 and web 12, the rollers 23 come in contact with the departure cam 22. The profile of cam 22 is such that the springs 17 can no longer "slap" together shoulders 18 and 19, but rather an "easing" together is effected.

We have found that regulation of cheek wood operation by use of cam surfaces is particularly effective in reducing excessive noise level in press rooms. However, in order to attain fully the ad-

vantages of the invention as a silencer without sacrificing the effectiveness of the cheek woods, it is necessary to provide means for adjusting the approach cam surfaces 21. The principal variable factor in making this adjustment is the thickness of the web 12. As we have already explained, it is essential that at the moment of severance, the pressure exerted between cutting rubbers 14 and cheek woods 16 on web 12 must not be hindered. At the same time it is desirable that contact between rollers 23 and approach cams 21 be continued as long as possible to avoid noisy operation of the cams and rollers themselves.

Returning to Fig. 1, it will be seen that the approach cam 21 is pivoted about pin 25 on frame 20 and carries an extension arm 26. On the outer end of arm 26 is pivoted a nut 27. The nut 27 is threaded internally and runs on the threaded portion of rod 28, which carries hand wheel 29. The rod and hand wheel 29 are journalled in the pivoted bearing block 30 carried on frame 20. It is apparent that, by turning hand wheel 29, cam 21 can be moved inward and outward in relation to cylinder 10, thus delaying or advancing the moment when rollers 23 are no longer in contact with the cam surface. The departure cam 22 is fixed to frame 20 by the bolts 31 and does not require adjustment.

While we have described in detail a specific embodiment of our invention, we do not wish to be limited by the constructional details disclosed but rather by the scope of the appended claims.

We claim:

1. In the cutting couple of a printing press, a knife box, a knife therein, cheek woods on each side of said knife, spring means pressing said cheek woods outward from said box parallel to said knife and perpendicular to its cutting edge, cam followers on said cheek woods, and cams cooperating with said followers to regulate the travel of said cheek woods.

2. In the cutting couple of a printing press, a cutting cylinder, a knife box therein, a knife in said box, cheek woods on each side of said knife, spring means pressing said cheek woods outward from said box parallel to said knife and perpendicular to its cutting edge, cam followers on said cheek woods, and cams at each end of said cylinder cooperating with said followers to regulate the travel of said cheek woods.

3. In the cutting couple of a printing press, a frame, a cutting cylinder supported on said frame, a knife box in said cylinder, a knife in said box, cheek woods on each side of said knife, spring means pressing said cheek woods outward from said box parallel to said knife and perpendicular to its cutting edge, cam followers on said cheek woods, and a pair of cam surfaces at each end of said cylinder carried by said frame cooperating with said followers to regulate the travel of said cheek woods.

4. The combination of claim 3 in which each pair of cam surfaces comprise an approach cam and a departure cam, said approach cam being shaped and positioned to engage a corresponding cam follower as the knife approaches the cutting position thereby moving the cheek wood away from the cutting edge of the knife and to disengage that cam follower prior to the cutting action of the knife, and said departure cam being shaped and positioned to engage said cam follower after completion of the cutting action thereby retarding the motion of the cheek wood toward the cutting edge of the knife.

5. The combination of claim 1, in which the knife box rotates in a path about the axis of one cylinder of the cutting couple and the cams extend into said path adjacent the point of severance of the cutting couple and are spaced apart at said point of severance, whereby the cam followers move out of contact with the cams when the cheek woods are moved inward of the knife box at the point of severance.

6. The combination of claim 2, in which the knife box rotates in a path about the axis of the cutting cylinder and the cams extend into said path adjacent the point of severance of the cutting couple and are spaced apart at said point of severance, whereby the cam followers move out of contact with the cams when the cheek woods are moved inward of the knife box at the point of severance.

7. The combination of claim 3, in which the knife box rotates in a path about the axis of the cutting cylinder and the cam surfaces extend into said path adjacent the point of severance of the cutting couple and are spaced apart at said point of severance, whereby the cam followers move out of contact with the cam surfaces when the cheek woods are moved inward of the knife box at the point of severance.

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No references cited.