Dec. 9, 1930. J. P. FEENEY 1,784,487

EJECTOR FOR CUTTING CYLINDERS

Filed May 29, 1930

Fig. 1.

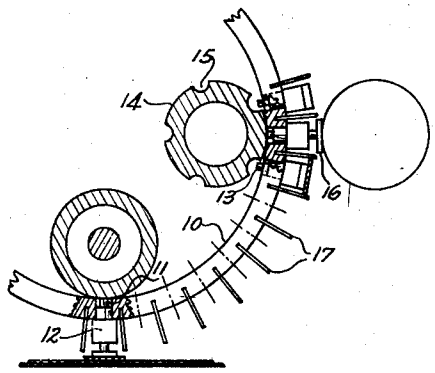


Fig. 2.

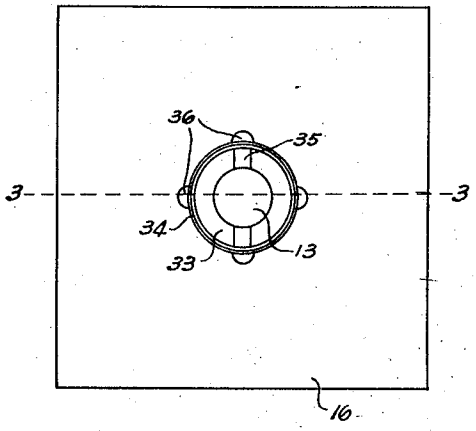
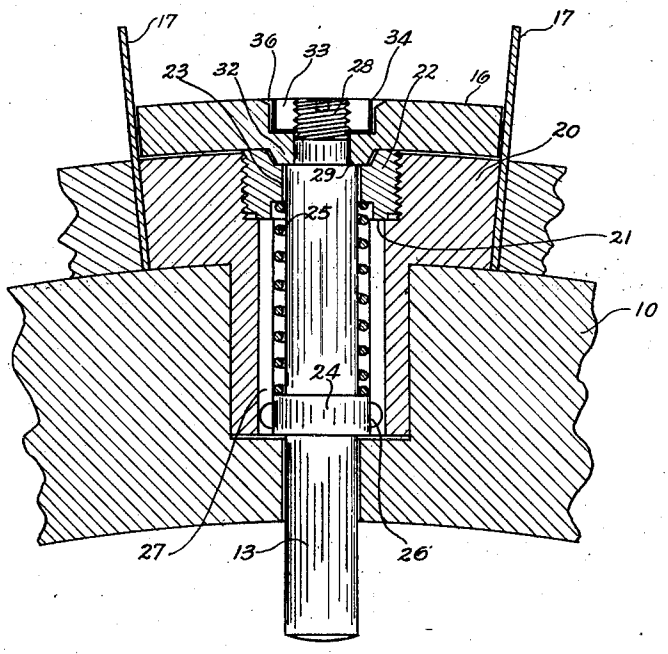


Fig. 3.



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EJECTOR FOR CUTTING CYLINDERS

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The present invention relates to cutting and inlaying cylinders of the type used in automatic machinery for the manufacture of inlaid linoleum and more particularly to ejectors employed in such cutting cylinders.

The primary object of the invention is the provision of a novel ejector of the type referred to which is substantially more rigid in construction, safer in operation, and having a greatly increased life as compared with the conventional form of ejector now in use.

Referring to the drawings:—

Figure 1 is a partial section through a cutting cylinder in which the ejectors embodying the present invention are mounted.

Figure 2 is a top view of the improved ejector.

Figure 3 is a section on the line 3—3 of Figure 2, showing in detail the construction of the improved ejector.

A cutting cylinder consists of a shell 10 (Fig. 1) which is pierced by numerous perforations 11 into which the ejector blocks 12 fit and through which the ejector spindles 13 pass to the interior of the cylinder. Within the cylinder is arranged a pattern forming roll 14, the surface of which is provided with a series of recesses 15, conforming to the pattern and into which the ejector spindles 13 enter to permit the pattern tesseræ to be retained by the cutting cylinder, whereas the spindles appearing upon the surface of the roll 14 are forced outward by the latter and throw out the material between the tesseræ which it is desired to retain for the given pattern. In these particulars the apparatus is of well known construction.

In the ejectors heretofore known each spindle 13 (Fig. 1) carries a head or plate 16 which conforms generally to the shape of the tesseræ cut by the knives 17. The plate is united with the spindle by means of a machine screw passing through a counter-sunk opening in the plate and threaded into a tapped hole in the spindle. This construction possesses several major defects which make the ejector hazardous in use and which shortens its life. Among these most serious are (*a*) the short, if any, bearing length between the stem of the spindle and plate whereby any eccentric load on the plate is transmitted directly to and carried by the securing screw, (*b*) the unavoidably small diameter and consequent weakness of the securing screw which causes the screw to fail frequently when in use, and (*c*) the absence of a positive interlock between spindle and plate to prevent loosening of the plate with resulting serious damage to the knives of the cutting cylinder.

The present invention provides an ejector which eliminates all of the above recited disadvantages as will be fully apparent from the following description in connection with the accompanying drawings.

The improved ejector (see Fig. 3) comprises a centrally bored block 20, usually of brass, which may be forced into one of the perforations 11 of the cylinder shell 10 in the usual manner. An internal shoulder 21 is formed within the bore of the block in any suitable manner as, for instance, by means of a bushing 22 threaded into the tapped outer end of the block. The bushing 22 is provided with a central opening 23 through which the spindle 13 passes. The spindle 13 is provided with a collar 24 working within the inner end of the opening in the block 20. Between the bushing 22 and the collar 24 is confined a light coil spring 25 which serves to retract the spindle after it has been pushed out by the pattern roll to extrude the material retained between the cutting knives. To guide the spindle in its reciprocating movement and to prevent its rotation, projecting lugs 26 are provided on the collar 24 and designed to slide in longitudinally extending guide slots 27.

The spindle 13 is threaded at its outer end 28 and is provided with a shoulder as indicated at 29. The ejector plate 16 is perforated and engages the stem of the spindle 13, abutting the shoulder 29. To provide increased bearing surface between the spindle and the plate, a boss 32 is formed on the plate adjacent the shoulder of the spindle as shown. The bushing 22 may be complementally counter-sunk to receive such boss. The plate 16 is also counter-bored to receive a round slotted nut 33 adapted to thread onto the spindle 13. Interposed be-

tween the plate 16 and the nut 33 is a cup washer 34 adapted to be swaged into the slots 35 in the nut 33 and the slots 36 in the plate 16, after the nut has been tightened on the spindle.

It will be observed that in the described construction, the plate 16 is securely retained between two flat surfaces of considerable area, namely, the shoulder 29 and the nut 33. This provides an extremely rigid union between the spindle and plate which positively prevents rocking of the plate when the latter is subjected to eccentric loads. Likewise the considerable bearing length between the plate and the stem of the spindle prevents any appreciable rocking of the plate even in the event that the locking nut should become slightly loosened. It also reinforces the spindle and reduces to a minimum the liability of fracture of the spindle at the point of its juncture with the plate. Furthermore, the construction provides a positive interlock of the spindle and plate thereby preventing relative movement between them.

Claims:

1. An ejector for linoleum cutting and inlaying mechanism comprising a block adapted to be secured in a cutting cylinder shell; a spindle slidable in said block, said spindle having a shouldered portion and an externally threaded stem portion adjacent its outer end; a perforated plate engaging the shouldered outer end of the spindle and provided with a nut-receiving recess; and an internally threaded nut interfitting said nut-receiving recess and engaging the threaded stem of said spindle.

2. An ejector for linoleum cutting and inlaying mechanism comprising a block adapted to be secured in a cutting cylinder shell; a spindle slidable in said block, said spindle having a shouldered portion and an externally threaded stem portion adjacent its outer end; a perforated plate engaging the shouldered outer end of the spindle and provided with a nut-receiving recess; an internally threaded nut interfitting said nut-receiving recess and engaging the threaded stem of said spindle; and means for preventing relative movement of said plate and said nut.

3. An ejector for linoleum cutting and inlaying mechanism comprising a block adapted to be secured in a cutting cylinder shell; a spindle slidable in said block, said spindle having a shouldered portion and an externally threaded stem portion adjacent its outer end; a perforated plate engaging the shouldered outer end of the spindle and abutting the shoulder, said plate being counter-bored to provide a nut-receiving recess; an internally threaded nut interfitting said nut-receiving recess and engaging said plate and the threaded stem of said spindle whereby the said plate is securely clamped between the nut and the shoulder of the spindle; and a cup washer adapted to positively interlock said plate and said nut.

4. An ejector for linoleum cutting and inlaying mechanism comprising a block adapted to be secured in a cutting cylinder shell; a spindle slidable in said block, said spindle having a shouldered portion and an externally threaded stem portion adjacent its outer end; a perforated plate engaging the shouldered outer end of the spindle and abutting the shoulder thereof, said plate having a boss portion adjacent the shouldered portion of the spindle and being counter-bored to provide a nut-receiving recess; an internally threaded nut interfitting said nut-receiving recess and engaging said plate and the threaded stem of said spindle whereby said plate is securely clamped between said nut and the shoulder of said spindle; and a cup washer adapted to positively interlock said plate and said nut against relative movement.

In testimony whereof, I affix my signature.

JOSEPH P. FEENEY.