March 20, 1928. 1,663,294

J. A. DAVIDSON

PERFORATING AND SCORING ATTACHMENT FOR PRINTING PRESSES

Filed March 12, 1927

Fig. 1.

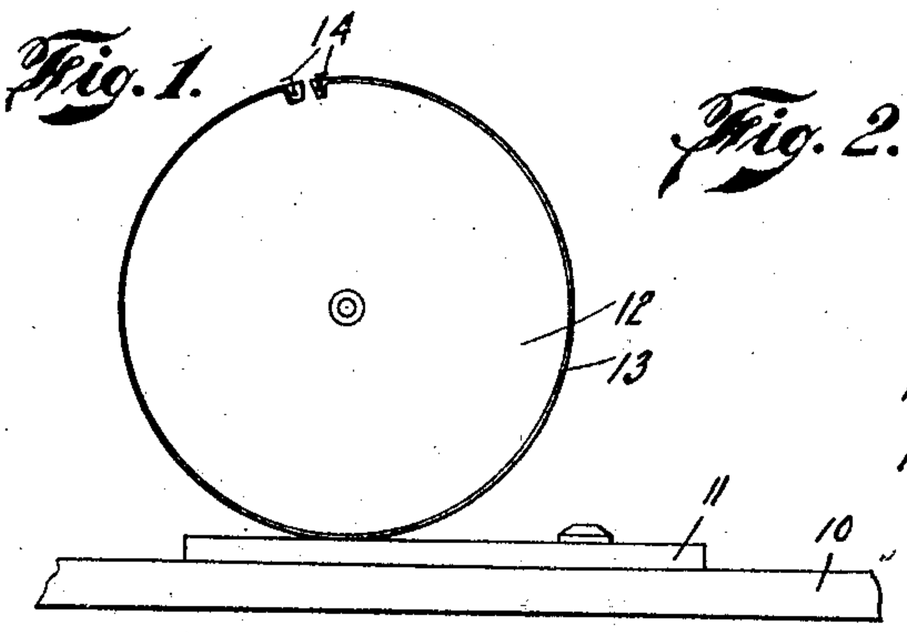



Fig. 2.

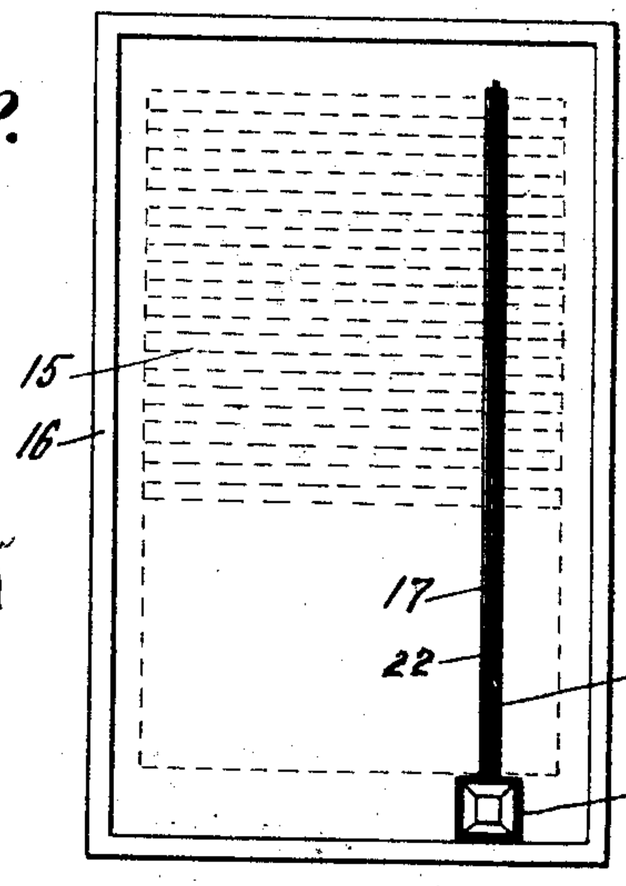



Fig. 7.

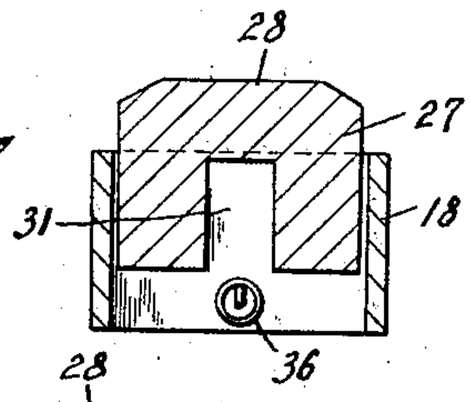



Fig. 3.

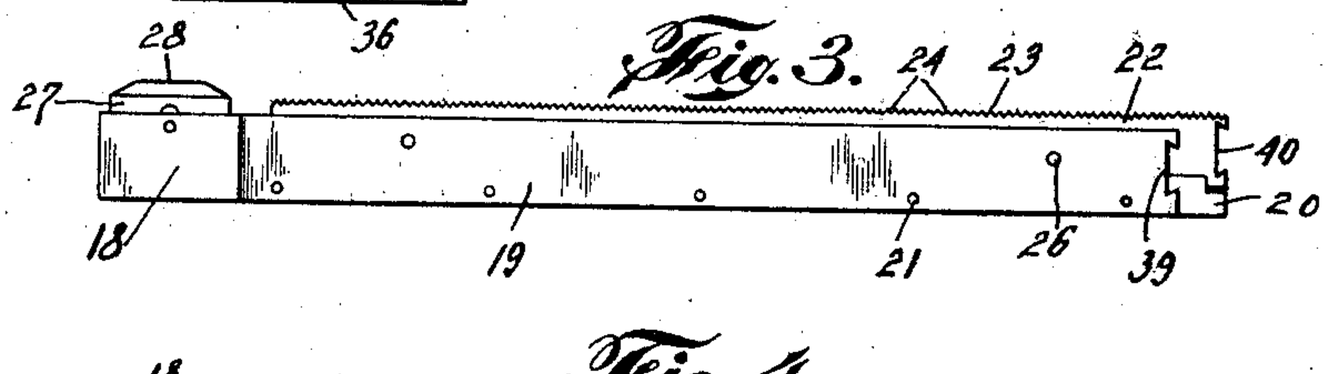



Fig. 4.

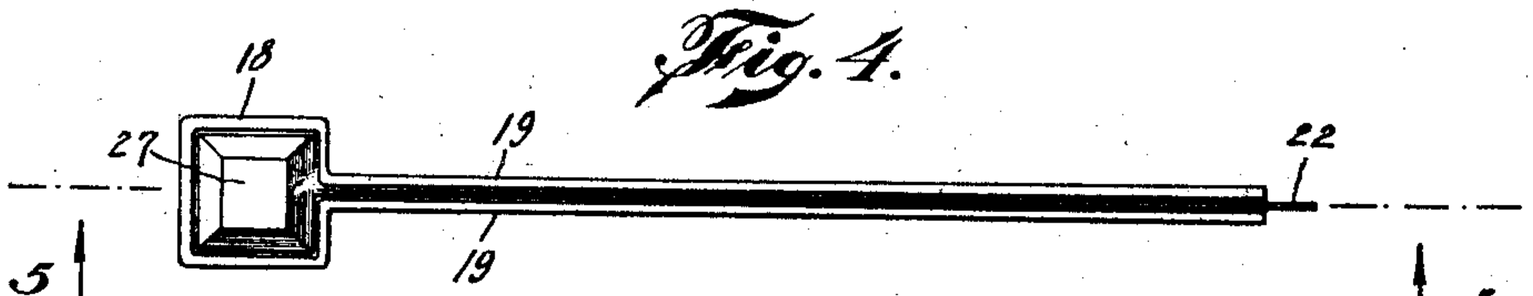



Fig. 5.

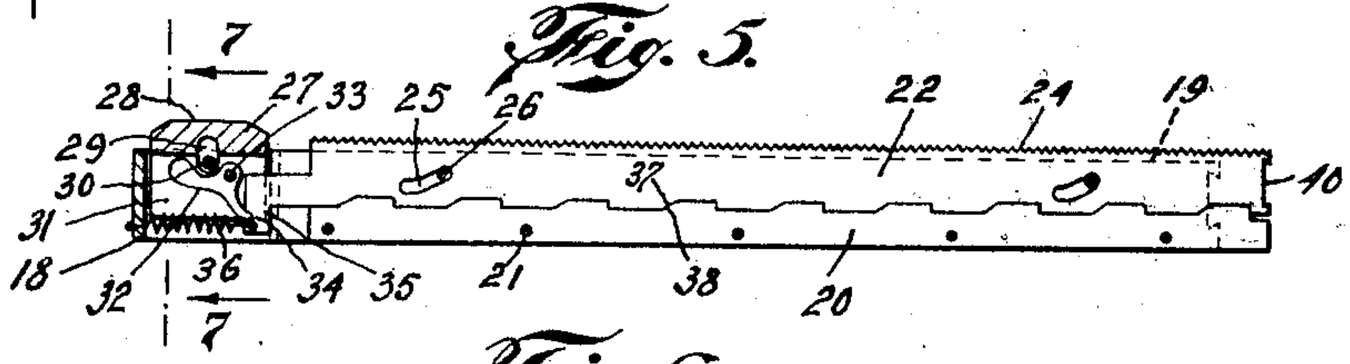



Fig. 6.

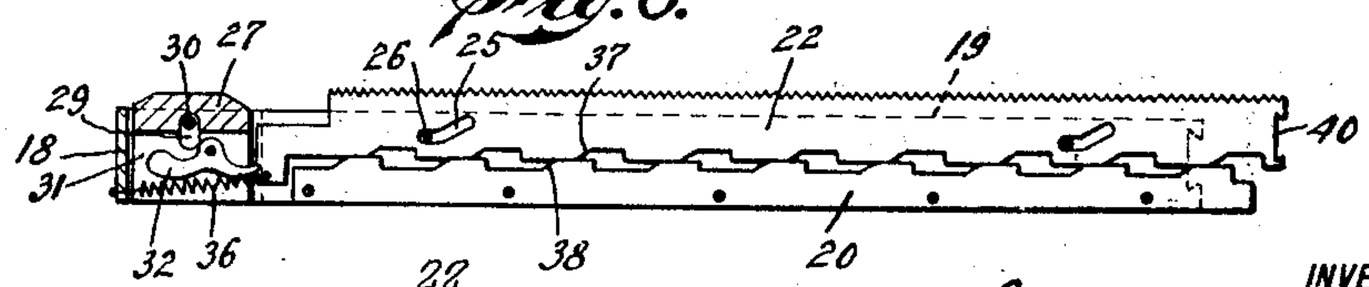
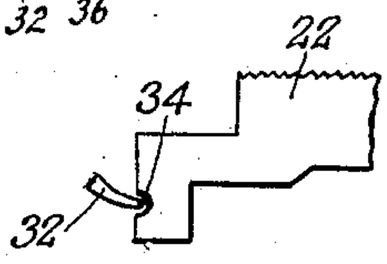



Fig. 8.

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# UNITED STATES PATENT OFFICE.

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## PERFORATING AND SCORING ATTACHMENT FOR PRINTING PRESSES.

Application filed March 12, 1927. Serial No. 174,872.

The present invention relates to an attachment for printing presses, and more particularly to a mechanism adapted to score or perforate the work or paper along certain lines. The invention pertains more specifically to a scoring or perforating means, which is adapted to be set into and fastened to the chase so as to constitute part of the form on the press.

One of the objects of the invention is to provide a scoring or perforating attachment for printing presses, having either a flat or cylindrical platen, which is so constructed that scoring or perforating is effected by the relative movement between the platen and printing surface.

Another object of the invention is to provide a scoring or printing attachment of the type mentioned which is simple in construction, efficient in operation, durable in use and capable of manufacture on a commercial scale, or in other words one which is not so difficult to make as to be beyond the reasonable cost of such a contrivance.

A further object of the invention is to so design the attachment that it may be mounted upon printing presses without necessitating any changes whatever in the construction of the latter.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation showing diagrammatically the bed, form and cylinder of a printing press, and also showing the position of the improved scoring or perforating attachment in relation to the elements mentioned; Fig. 2 is a top plan view of the form and scoring or perforating attachment; Fig. 3 is a side elevation of the improved attachment, on a larger scale; Fig. 4 is a top plan view of the device shown in Fig. 3; Fig. 5 is a section taken on line 5—5 of Fig. 4; Fig. 6 is a similar section, showing certain elements in other positions; Fig. 7 is a section taken on line 7—7 of Fig. 5; and Fig. 8 is a side elevation, on a larger scale, of a portion of the scoring or perforating blade and its actuating means.

In the drawings, a rolling-contact printing press has been shown for purposes of illustration. It will be obvious, however, from the following description of the attachment, that the latter is applicable to other presses just as well. It is applicable more particularly to all presses in which there is a relative bodily movement between the form or printing member and the opposing pressure member or platen, irrespective of the fact whether the said pressure member be cylindrical or flat.

Referring now to the drawings, the numeral 10 indicates the bed of a printing press, on which is mounted a form 11, cooperating with a cylinder 12. The cylinder supports the material to be printed during the act of impression, the said material being indicated by the numeral 13, it being held in position upon the cylinder by work supporting members 14 of any suitable construction. The cylinder is given a rotating motion and the form a reciprocating motion during the act of impression. The type 15 and the like is held in a chase 16, in which is also mounted the scoring or perforating attachment 17.

The attachment comprises an open housing 18, with which are either made integral or to which are attached two parallel spaced plates 19. Between these plates is inserted a spacing strip 20, held in position by rivets 21 or otherwise. The height of each plate 19 exceeds considerably that of the spacing strip 20, the said strip being disposed along the lower edges of the said plates. Above the spacing strip is disposed, between the plates 19, a blade 22, extending substantially throughout the length of the plates 19 and being provided with a serrated cutting edge 23. The configuration of the teeth 24 on the cutting edge may be of any suitable type, according to the requirements. The blade is provided with slots 25, through which extend pins 26, carried by the plates 19, the ar-

rangement being such that the blade is adapted to move up and down between the plates 19, for a purpose hereinafter to be described. In the housing 18 is reciprocably mounted a plunger 27, the upper face 28 of which projects normally above the said housing. This plunger is provided with a slot 29, through which extends a pin 30 on the housing 18. The last-mentioned slot and pin limit the movement of the plunger 27 in both directions. In the plunger is formed a recess 31, within which is disposed a bell-crank lever 32, fulcrumed to the said plunger at 33. One end of this bellcrank lever engages the plunger 27, while its other end is seated in a notch 34 in an extension 35 of the blade 22, the said extension projecting into the recess 31 in said plunger. In the said recess is furthermore arranged a spring coil 36. One end of this coil is fastened to the housing 18, while its other end is attached to the extension 35 of the blade 22. This spring has a tendency to keep the elements in the positions shown in Figs. 3 and 5 of the drawings, in which the plunger 27 is in its elevated and the blade 22 in its lowered position. The back of the blade 22 is provided with inclined surfaces 37, co-operating with similar surfaces 38 on the spacing strip 20. When the blade 22 is in its lower position (Fig. 5), it rests upon the spacing strip 20. When the blade is being raised, the inclined surfaces 37 thereof move on the inclined surfaces 38 of the spacing strip 20 until the lower longitudinal edge of the blade rests upon the upper longitudinal edge of the spacing strip. Thereafter the blade is given a longitudinal movement in relation to the spacing strip, so that its lower longitudinal edge will rest upon the spacing strip during the scoring or perforating operation.

In use, the attachment is mounted within the chase 16 in a manner that its blade 22 extends in parallel relation to the axis of the cylinder 12 of the printing press. The height of the attachment is such that, with the exception of the plunger 27, it is disposed wholly within the chase and thus does not interfere with the proper operation of the press. The upper surface of the plunger 27 projects, however, above the chase, so that, as the form reciprocates in relation to the cylinder 12, the said plunger is depressed by the cylinder, whereby the blade is projected, by the intermediary of the bellcrank lever 32, above the plates 19 into contact with the work, thereby perforating the latter, the elements being then in the positions shown in Fig. 6 of the drawings. As soon as the cylinder is disengaged from the plunger 27, the spring 36 returns the elements to their positions shown in Figs. 3 and 5 of the drawings, whereby the device is ready for the next operation. The blade 22 may have a plain cutting edge, for scoring work.

In order to adapt the attachment to cylinders of varying sizes, its plates 19 and blade 22 may each be made of a plurality of sections, which may be joined together according to the requirements. For this purpose each of the plates may be provided at its outer end with a dove-tailed groove 39, for engagement with the dove-tail of the next plate section. Similarly, the outer end of the blade 22 may be provided with a dove-tailed groove 40 for engagement with the dove-tail of the next blade section.

It is obvious that the device may be used without change in connection with bed-and-platen machines. In the latter case the plunger 27 is actuated by the flat platen of the press in the same manner as it is actuated by the cylinder above referred to.

What I claim is:

1. In a printing press, the combination with a form and a platen having a bodily movement in relation to one another, of a blade disposed in said form and adapted to move in and out of the same, means co-operating with said blade located in the path of and actuated by said platen for causing said blade to project out of said form into engagement with the work carried by said platen, and means for returning said blade to its normal position on disengagement of said platen from said actuating means.

2. An attachment for printing presses, comprising an open housing, two parallel spaced plates on said housing, a blade movable between said plates, a plunger reciprocably mounted in said housing having one of its ends normally disposed outside of said housing, a connection between said plunger and said blade for causing the cutting edge of said blade to project beyond its normal position when said plunger is forced into said housing, and a spring for returning said blade and plunger to their normal positions when said plunger is released.

3. An attachment for printing presses according to claim 2, comprising spacing means between said plates, and inclined co-acting surfaces on said spacing means and said blade for guiding the movement of the latter between said plates.

4. An attachment for printing presses, comprising an open housing, two parallel spaced plates on said housing, a blade movable between said plates, a plunger reciprocable in said housing having one of its ends normally disposed outside of said housing, said plunger being provided with a recess, a bell-crank lever in said recess fulcrumed to said plunger, said blade having an extension projecting into said recess and being provided with a notch, one end of said bell-crank lever abutting against one face of said plunger and the other end of said bell-crank lever being seated in said notch, whereby upon forcing said plunger into said

housing the cutting edge of said blade is caused to project beyond its normal position, and a spring for returning said blade and plunger to their normal positions when said plunger is released.

5. An attachment for printing presses according to claim 4, comprising spacing means between said plates, and inclined co-acting surfaces on said spacing means and said blade for guiding the movement of the latter between said plates.

Signed at New York, in the county of New York, and State of New York, this 28th day of December, A. D. 1926.

JOHN A. DAVIDSON.