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2,965,025

PRINTING PLATE LOCKUP FOR WRAP AROUND PLATES

Filed April 2, 1959

3 Sheets-Sheet 1

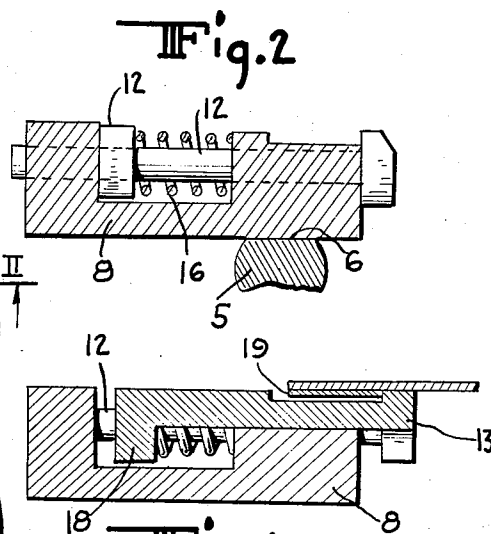
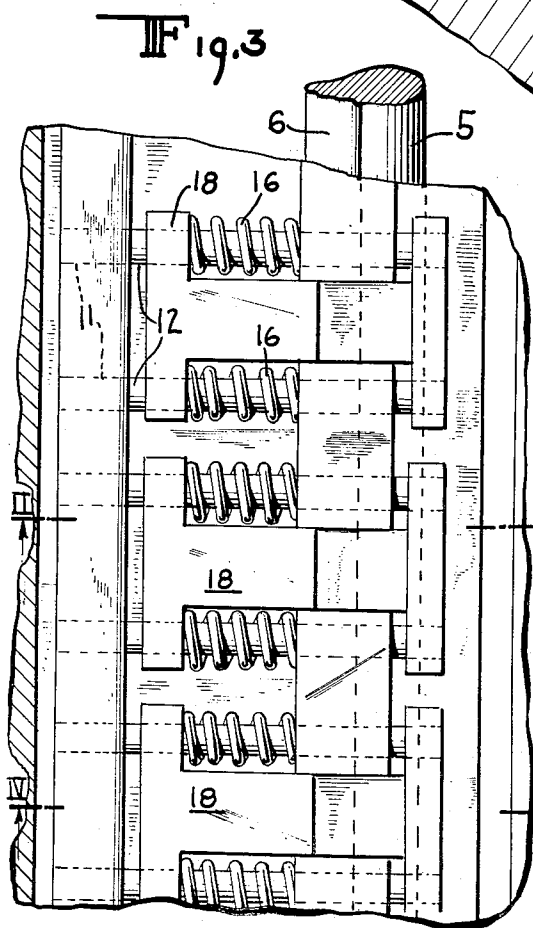
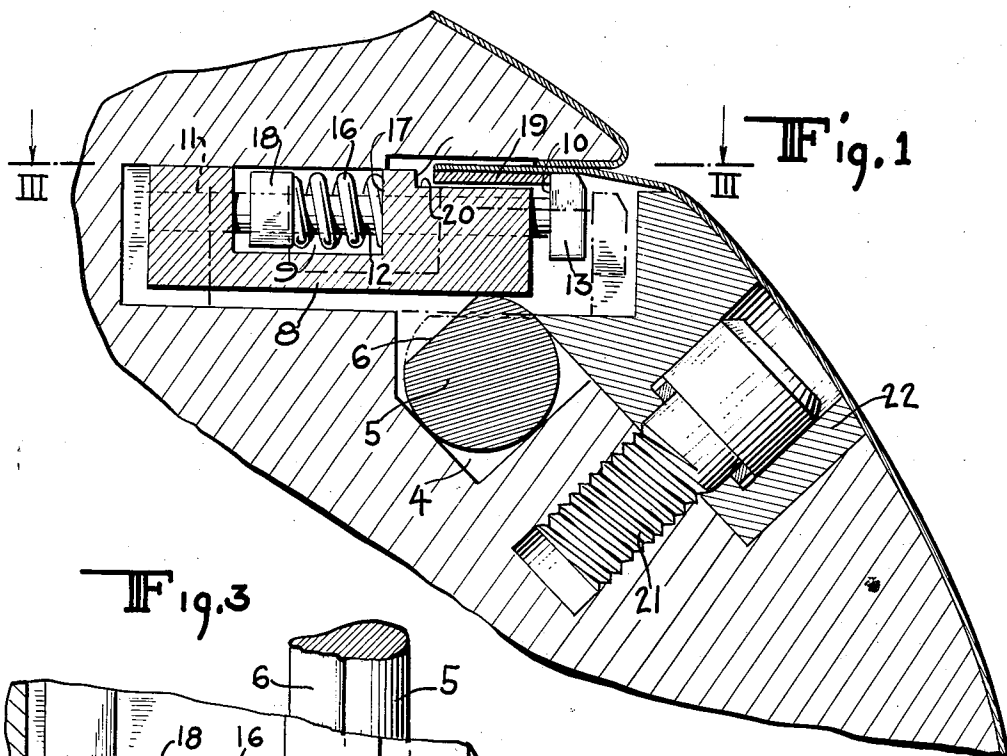


Fig. 4

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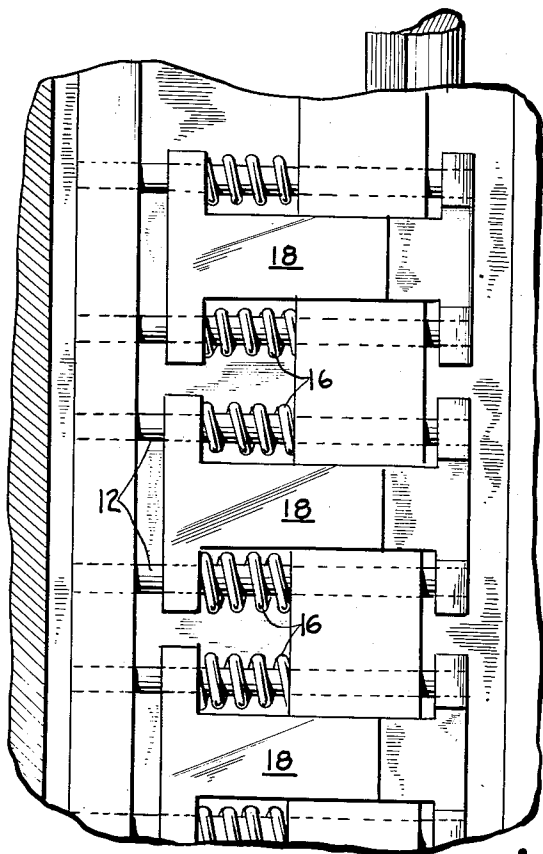


Fig. 5

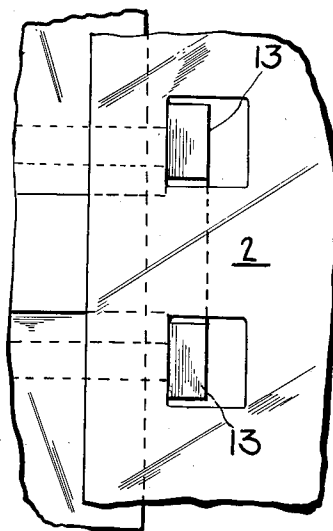


Fig. 6

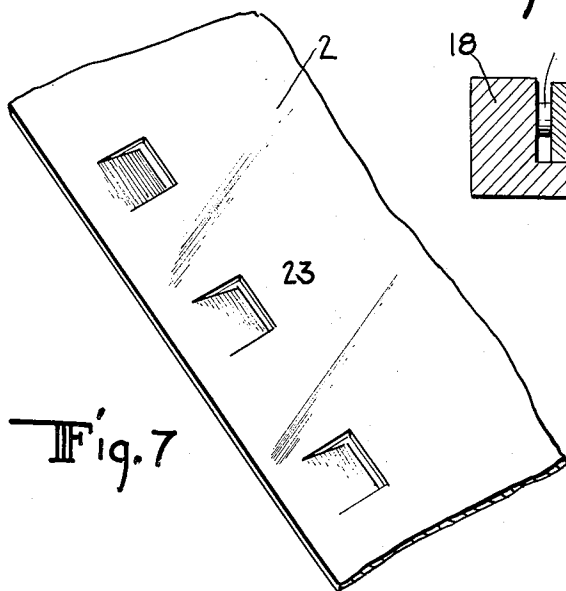


Fig. 7

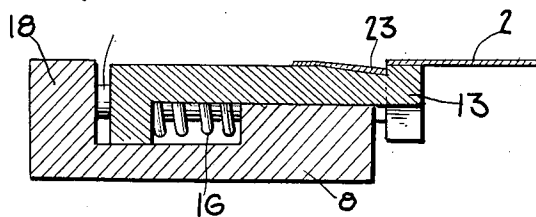


Fig. 8

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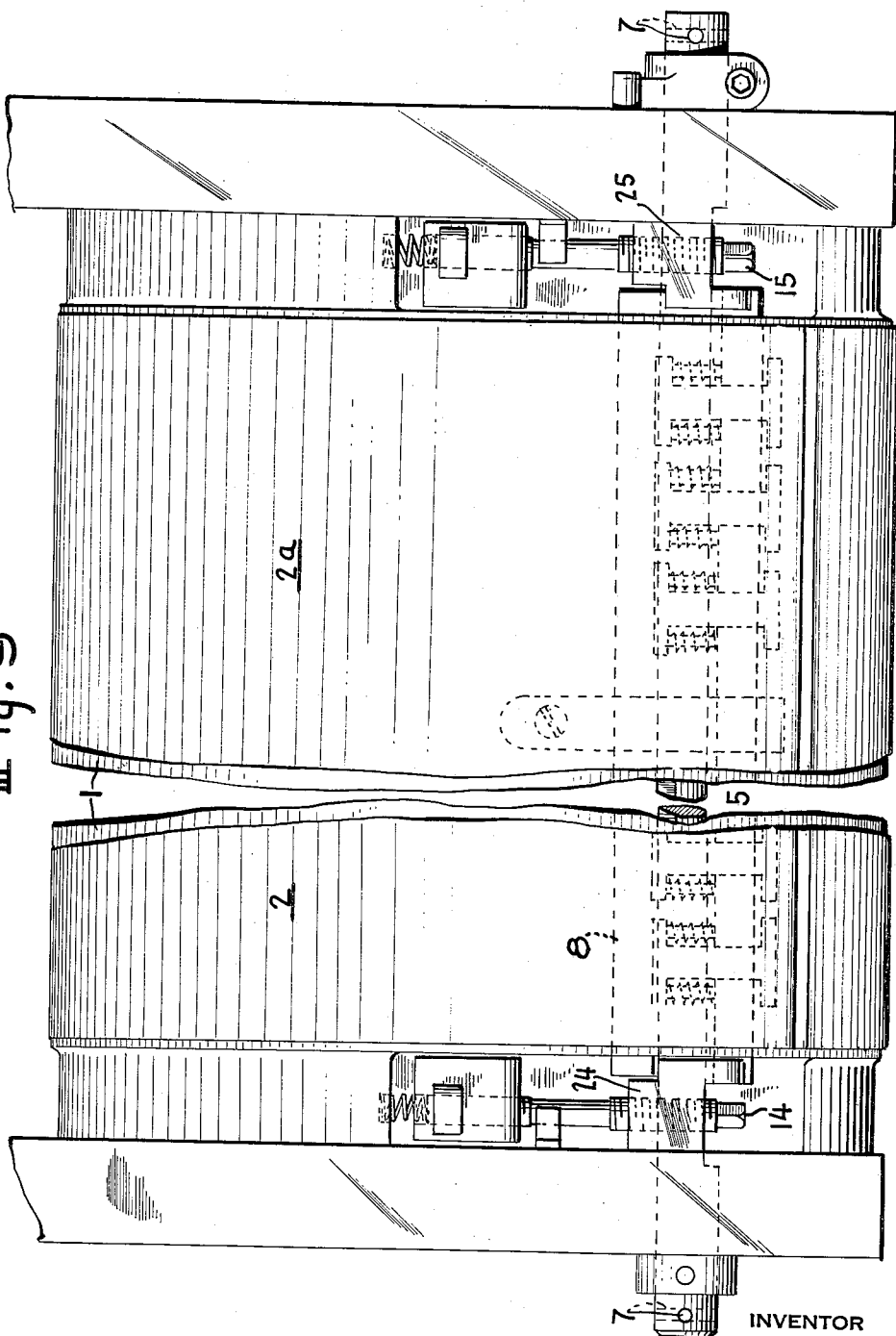
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Fig. 9



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PRINTING PLATE LOCKUP FOR WRAP AROUND PLATES

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11 Claims. (Cl. 101—415.1)

My invention relates to a printing plate lockup for wrap around plates and is suitable for use with printing plates of thin and flexible section in order to lock up such a plate or plates by means of a common locking device.

The object of my invention is to provide a plate locking device in which a plurality of plate engaging means is carried by a single element adapted to be moved horizontally and vertically with respect to the form cylinder in which it is mounted for bringing said plate engaging means into and out of contact with a plate or plates to secure same to the cylinder.

Another object of my invention is to provide a plate locking device by means of which a plurality of wrap around thin and flexible plates of varying lengths may be locked to a common cylinder.

A further object of my invention is to provide a structure of the character described in which possible beam deflection of a longitudinal element carrying plate engaging means is substantially neutralized in view of the distribution of tension uniformly across the width of a plate or plates.

A further object of my invention is to provide a plate locking device whereby the above and other objects may effectively be attained as will hereinafter appear.

Broadly, my invention comprises the combination with a cylinder having at least one channel therein along its peripheral surface, of a plate locking device comprising an element located in said channel, a plurality of spring loaded plate engaging elements located along the said first named element and means for moving said first named element to releasably lock a printing plate or plates to the cylinder.

A practical embodiment of my invention is shown in the accompanying drawings in which

Fig. 1 represents in detail sectional side elevation a plate locked to its cylinder.

Fig. 2 represents in detail the form shown in Fig. 1 which the plate engaging device is ready to receive a plate.

Fig. 3 represents in a top plan view a fragment of the element carrying a plurality of plate engaging spring loaded devices thereon.

Fig. 4 represents in detail a section taken on the line IV—IV of Fig. 3, looking in the direction of the arrows and illustrating the plate engaging devices in operative connection with a printing plate.

Fig. 5 represents in detail a modified form of plate engaging devices, having raised portions thereon.

Fig. 6 represents a fragment of a plate edge constructed to be held by the modification shown in Fig. 5, by receiving the raised portions in the cutouts.

Fig. 7 represents a further modification of a plate edge constructed to be operative with the form shown in Fig. 5.

Fig. 8 represents another modification of the plate edge with which the plate engaging devices for either or both Figs. 4 or 5 may be used, and

Fig. 9 represents in plan elevation a cylinder carrying a plate locking device and its several elements constructed according to my invention.

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Referring to the accompanying drawings, the usual plate or form cylinder is denoted by 1 and the flexible printing plates secured thereon by the numerals 2 and 2a.

The peripheral surface of the cylinder 1 is provided with a groove 3 which extends longitudinally of the cylinder from end to end, the lower or inner section of said groove being denoted by 4.

Inserted in this lower groove section 4 is a turnable shaft 5, having a flat 6 thereon for reasons described below. This shaft 5 is turnable by application of a suitable tool (not shown) such as a wrench, to its ends 7 accessible at the end of cylinder 1 as shown in Fig. 9.

In the upper or outer section of groove 3 is mounted a longitudinal plate locking bar or member 8, said bar 8 being provided with a channel 9 in its upper face and, also, with a shoulder 10 at one end thereof.

This lock bar 8 is horizontally bored with a series of parallel bores denoted collectively by 11 and each such bore is adapted to receive a stem 12, slidable in such bore, of a spring loaded plate engaging tensioning element 13. The bar 8 is horizontally movable to bring the plate tensioning elements into position to be interlocked with plate element 19, by the operation of screws 14, 15 located for that purpose in the end gutters of cylinder 1. Said screws 14, 15 operate through and actuate pieces 24 and 25 loosely mounted thereon to engage the ends of bar 8 to move same.

Each stem 12 of the spring loaded element 13 is surrounded by its spring 16 whereby the stem is urged inwardly thereby through the abutment of said spring 16 against an inner face 17 of channel 9 and, at its other end against a shoulder 18 on stem 12.

In the form shown in Fig. 1, the plate 2 is provided at its trailing end (by any well known or approved means, such as welding) with a cross piece 19 which normally fits in the cut out 20 terminating in the shoulder 10 on the element 13 as shown in Figs. 1 and 2.

In order to secure the plate locking device in the cylinder 1, a countersunk screw 21 is provided to hold the removable segment 22 to the cylinder 1, being screwed into the latter as is clearly shown in Fig. 1 thereby holding the locking device in its operative position in the cylinder and preventing it from being displaced therefrom.

The operation of my device is as follows:

The plate locking bar 8 with its plate tensioning elements 13 may be moved horizontally outwards, with respect to the cylinder circumference, by its screws 14, 15 until the elements 13 may be brought into position where they may be engaged with the bar 19 on the trailing end or ends of the plate or plates and then said bar 8 is moved inwards to bring the plate tension devices into position to lock the plate or plates to the cylinder.

When the parts have been assembled as shown in Fig. 2, the shaft 5 is turned by the application of a proper tool to its squared end 7 thereby causing the flat 6 to be tilted into contact with the bottom of bar 8 and push same upwardly. This movement of bar 8 causes plate engaging elements 13 to hook the transverse or cross piece 19 as well as cramp the tail edge of the plate against the leading edge of the plate, and the cylinder as shown in Fig. 1. Bar 8 may then be adjusted as desired by means of screws 14 and 15 located at the ends thereof.

If it is desired to release the plate from the cylinder, shaft 5 is turned in a direction to disengage its flat from bar 8 (as shown in dotted lines in Fig. 1) and release the hold of the bar and cause its plate engaging devices 13 to be disengaged from the plate 2, permitting same to be removed in the usual manner.

While the plate trailing edge may be provided with the transverse piece 19, it may also be perforated as shown in Fig. 6 to receive raised portions of elements 13 or it may be sheared (Fig. 7) and the sheared part 23

pushed out as lips for hooking over the plate engaging device 13.

It will be obvious from the foregoing that if there is a variation in plate lengths, all the plate engaging devices are spring loaded so that the springs will compensate for the differences in length and tend to equalize the tension on the several plates.

Also the effectiveness of my novel structure resides in its accommodation to any discrepancies which may arise as a result of the processing of the plate tail to take the plate engaging means whereby the plate or plates are tensioned to the cylinder.

Since it is evident that various changes may be made in the form, construction and arrangement of the several parts without departing from the spirit and scope of my invention, I do not intend to be limited to the specific embodiments herein shown and described except as set forth in the appended claims.

What I claim is:

1. In a rotary printing press, a cylinder, a channel therein for receiving the over-lapping leading and trailing edges of at least one wrap-around printing plate, a longitudinal plate locking element movably mounted in said channel, spring loaded plate engaging and tensioning elements carried by and slidably mounted on said plate locking element and adapted to engage and tension a trailing plate edge, and means for moving the longitudinal plate locking element with its plate engaging elements to permit free reception of the leading and trailing plate edges and to removably clamp the trailing plate edge over the leading plate edge and the latter against the cylinder thereby locking the plate to the cylinder.

2. A structure according to claim 1 in which the channel in the cylinder is adapted to receive the over-lapping leading and trailing edges of a plurality of plates.

3. A structure according to claim 1 in which the longitudinal plate locking element comprises a flat adjustable bar.

4. A structure according to claim 1 in which the means for moving the longitudinal plate locking element with its plate engaging and tensioning elements comprises a rockable element located beneath and in contact with the bottom of said longitudinal plate locking element for raising and lowering same with its plate engaging elements to locking and unlocking position.

5. A structure according to claim 1 in which second means for moving the longitudinal plate locking element is located adjacent the cylinder ends.

6. A structure according to claim 1 in which the channel in the cylinder is adapted to receive the leading and trailing edges of a plurality of plates of different lengths.

7. A structure according to claim 1 in which the spring

loaded plate engaging elements engage perforations in the trailing edge of the plate.

8. In a rotary printing press, a cylinder, a channel therein having upper and lower sections of different configuration, said upper section being adapted to receive the leading and trailing edges of at least one wrap-around printing plate, a longitudinal element movably mounted in said upper channel section, spring loaded plate engaging and tensioning elements slidably mounted in said longitudinal element and adapted to engage a trailing plate edge, a rockable element disposed beneath said longitudinal element in said lower channel section and in contact with said longitudinal element for moving the same vertically whereby a trailing plate edge is clamped over its leading edge and the latter against the cylinder for removably locking the plate to the cylinder.

9. A structure according to claim 8 in which the rockable element comprises a bar having a flat surface throughout its length, the parts being so constructed and arranged that the bottom of the longitudinal element rests on said flat surface when the plate is in an unlocked position with respect to the cylinder.

10. A structure according to claim 1 in which the spring loaded plate engaging and tensioning elements are adapted to overcome discrepancies in the surfaces of the plate trailing edge which surfaces normally coact with the plate engaging and tensioning elements.

11. In a rotary printing press, a cylinder, a channel therein for receiving the over-lapping leading and trailing edges of at least one wrap-around printing plate, a longitudinal plate locking element movably mounted in said channel for horizontal and vertical movements, a plurality of spring loaded plate engaging and tensioning elements carried by and slidable on said plate locking element and adapted to engage and tension a trailing plate edge, and means for moving the longitudinal element with its plate engaging and tensioning elements to permit the free reception of the leading and trailing plate edges in said channel and to clamp the trailing plate edge over the leading plate edge with uniform tension and the latter against the cylinder thereby locking the plate to the cylinder, the spring loaded plate engaging and tensioning elements serving to apply substantially uniform tensioning across the plate.

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