

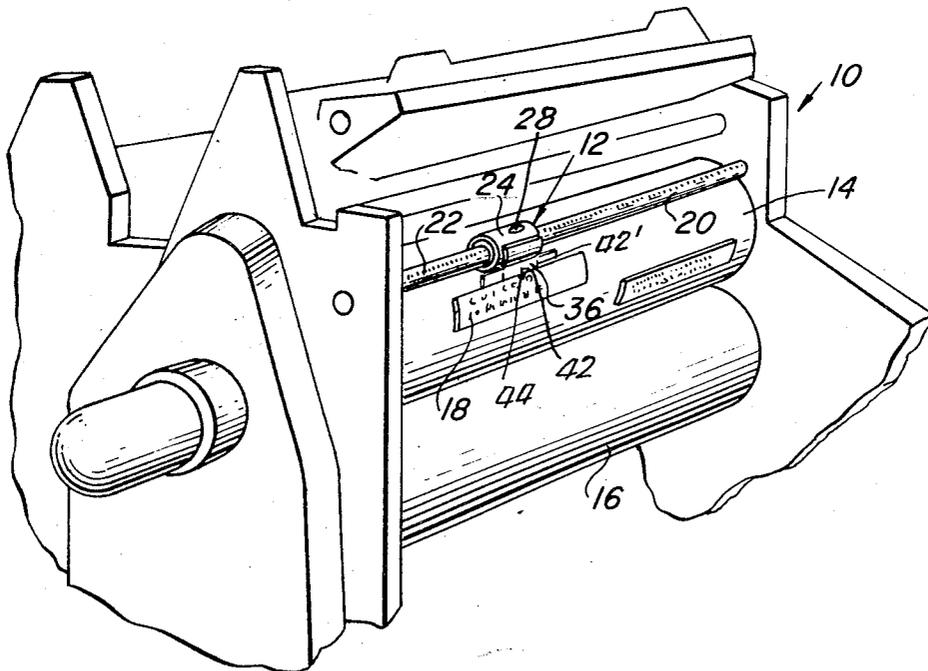
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 [21] Appl. No. **796,034**  
 [22] Filed **Feb. 3, 1969**  
 [45] Patented **July 27, 1971**  
 [73] Assignee **Royal Continental Box Company**

[56] **References Cited**  
**UNITED STATES PATENTS**  
 1,965,216 7/1934 Brown ..... 33/184.5  
 2,104,553 1/1938 Claybourn ..... 33/184.5

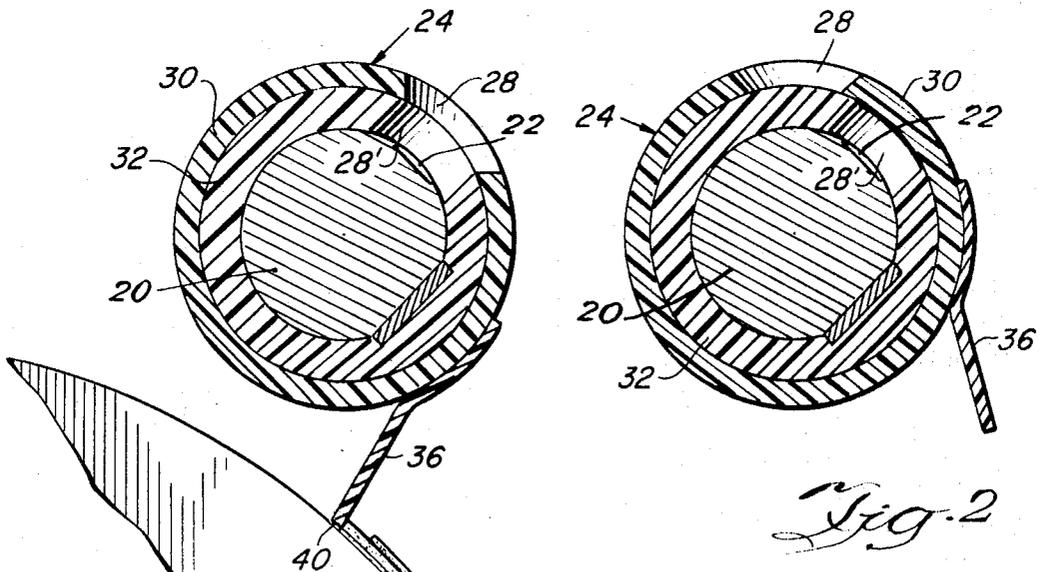
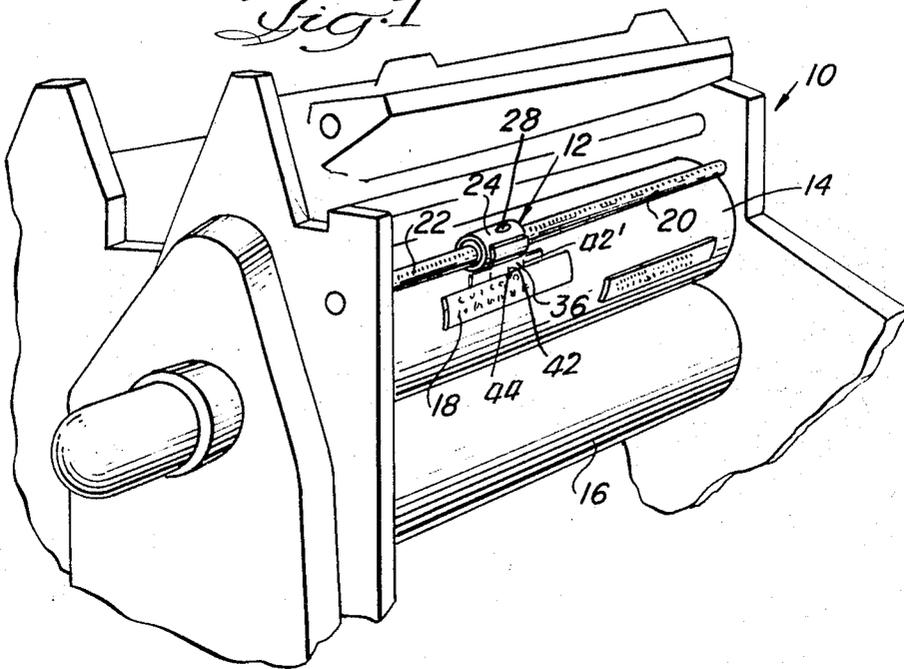
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[54] **DIE-LOCATING METHOD**  
**4 Claims, 6 Drawing Figs.**  
 [52] U.S. Cl. .... **33/184.5,**  
                   33/76 R, 101/216, 101/382 R, 101/DIG. 12  
 [51] Int. Cl. .... **B41b 1/00**  
 [50] Field of Search ..... 33/184.5,  
                   182, 76, 78; 101/248, DIG. 12, 216, 382

**ABSTRACT:** A printing locator and method for a printing system having a roll on which dies are to be placed individually, including a locating mechanism movable axially of the roll for selecting an axial position on the roll. The locating mechanism is movable into position where a guide member extension attached thereto engages the surface of the roll at a selected circumferential location on the roll. The guide member is provided with an indicator identifying the selected axial location so an individual die can be abutted up against the guide member in proper axial and circumferential position on the roll.

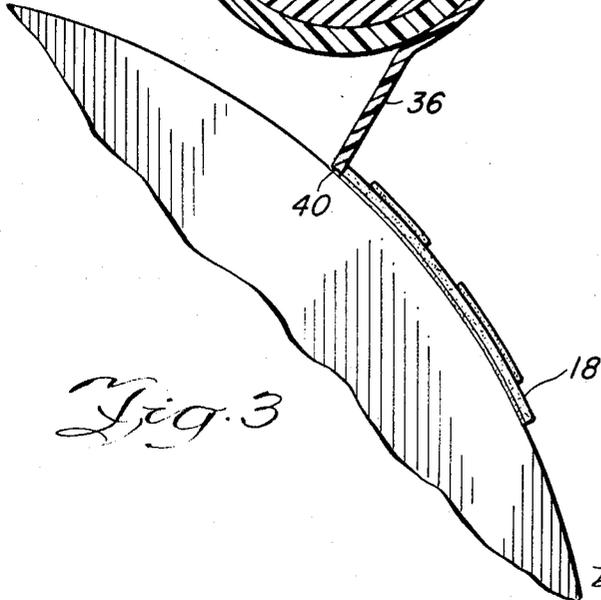


*Fig. 1*

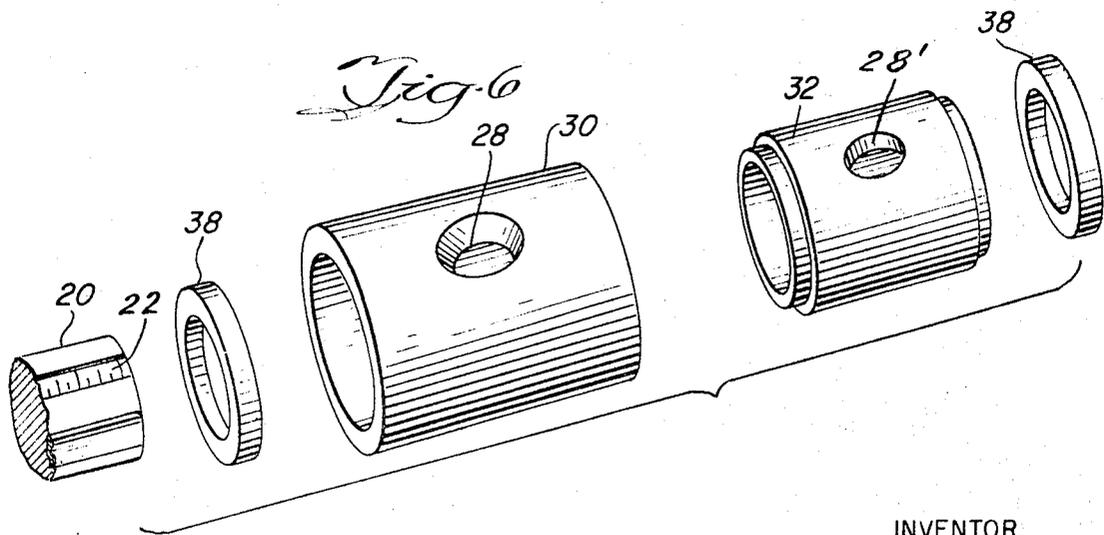
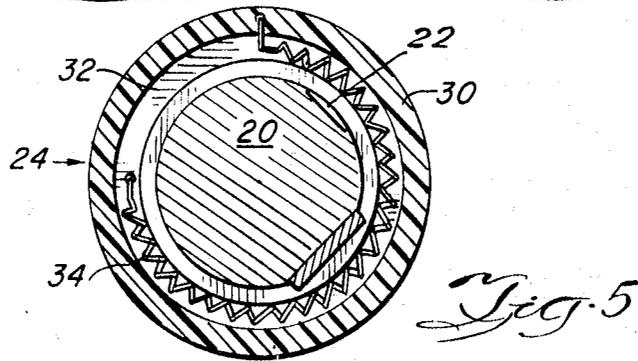
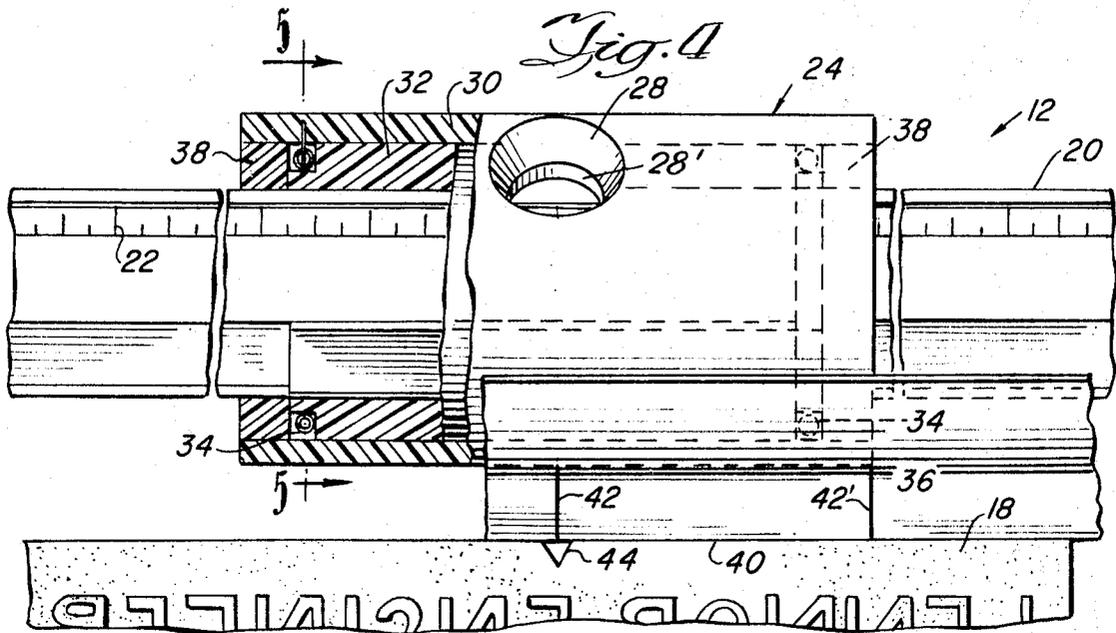


*Fig. 2*

*Fig. 3*



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## DIE-LOCATING METHOD

### BACKGROUND OF INVENTION

In my copending application Ser. No. 796,076 filed Feb. 3, 1969, now abandoned, there is disclosed and claimed a printing system and method for printing in which individual dies may be selectively and readily attached to a printing roll, for example, of a printed slotter apparatus of the type used in corrugated paperboard printing.

As explained in my copending application Ser. No. 796,076, existing rotary presses, such as those used in the corrugated paperboard printing industry require substantial setup tie, utilize "trail-and-err" die alignment procedures and generally produce fairly low-quality printing.

With the printing system of my copending application, there is provided a system in which the dies may be flexibly and quickly mounted on a printing roll and in which they may be accurately positioned on the roll without premounting all of the dies on a single backing sheet.

As disclosed therein, one method of accurately mounting the dies on the roll with flexibility is to provide the roll with built-in indicators, such as crosshatched grid lines so that the dies may be located relative to the grid lines and accurately and quickly positioned on the printing roll.

### SUMMARY OF INVENTION

In accordance with the present invention, there is provided a device to facilitate the positioning of a die on a printing roll without the need of scribing the roll or providing indicia on the surface thereof. This eliminates the extra expense involved in so working the surface of the roll.

The location of a die on a printing roll is specified both circumferentially and axially, thereby giving a point of intersection which defines the position of the die. By utilizing dies in which the characters are equally and uniformly spaced from all the edges of the die, the periphery of the die can be used to locate the die on the printing roll. For this purpose, the periphery of the die is provided with indicators or marks bisecting each of the die edges. Utilization of these marks can facilitate location of the die simply by aligning the marks with appropriate indicia on the press. When utilizing a scribed printing roll having checkered or crosshatched indicia thereon, it is necessary to align both the side the top and bottom die locator marks with the appropriate lines on the roll to properly position and orient the die.

Since, for example, the dies are magnetically adhered to the printing roll, once they are placed thereon, it is not easy to adjust their position. It is highly desirable, therefore, to quickly orient and properly position the die before its entire back surface comes in contact with the drum and adheres thereto.

The die locator of the present invention facilitate this proper orientation and location by utilizing only a single center scribe mark on the die to properly position and orient the die both axially and circumferentially on the printing roll. This quick and rapid positioning of the die is effected without modifying the surface of the roll and results in such accurate positioning of the dies that a production run can be commenced immediately upon the placement of the dies in their selected positions.

The die locator incorporates a support rod that extends across the width of the printing roll, which rod is provided with a plurality of axial position indicia. Slidably mounted on the support rod is a die locating mechanism. The die-locating mechanism may be provided with a window through which the indicia on the support rod can be read and is rotatably supported on the rod between a die-locating position and a retracted or idle position.

In order to properly position a die, the die-locating mechanism is provided with an extension which engages the surface of the roll when in the indicia reading position. This extension is provided with a scribe line aligned with a cross hair in the window, if such is provided, and, therefore, with the

indicia being read. If a window is not used, the scribe line is aligned with an edge of the locating mechanism which is juxtaposed over the selected indicia.

In order to properly position the die, the desired circumferential position is selected by rotating the roll until the edge of the extension when the die-locating mechanism is in its indicia-reading position contacts the roll at the selected circumferential location of the upper edge of the die. The upper edge may be used since the desired position of the characters is known, and since the characters on the die are equally spaced from the die edges.

After so positioning the roll, the die-locating mechanism is moved along the support rod until it is positioned in the appropriate axial locations as indicated by alignment, either of a crosshair in the view window or of one edge of the mechanism with the selected indicia on the support rod with the die-locating mechanism in its down position with the edge of its extension in contact with the roll. The upper edge of the die is abutted against the extension with the center mark in the edge of the die aligned with the scribe mark in the extension and with the upper edge of the die abutting the lower edge of the extension. The die is immediately dropped into place and is properly located.

Thus, it can be seen that there is provided in accordance with the present invention in combination with a printing system in which dies are mounted individually and directly on a printing roll, a device and method for quickly and rapidly and accurately positioning individual dies in their selected position directly on a printing roll.

Numerous other advantages and features of the present invention will become readily apparent from the following detailed description of the invention and the various embodiments thereof, from the claims, and from the accompanying drawings in which each and every detail is shown fully and completely disclosed as part of this specification, in which like reference numerals refer to like parts, and in which:

FIG. 1 is a perspective view of a typical printer slotter with the die locator in place;

FIG. 2 is an enlarged sectional view of the die locating mechanism in its idle position;

FIG. 3 is a sectional view, including a partial view of the printing roll, of the die-locating mechanism in its operative position;

FIG. 4 is a front view, partially in section, showing the die-locating mechanism when used to position a die;

FIG. 5 is a sectional view taken along lines 5-5 of FIG. 4; and

FIG. 6 is an exploded view of the components of the die-locating mechanism.

### DETAILED DESCRIPTION

Referring now to the drawings, there is shown in FIG. 1 a diagrammatic perspective view of a suitable printing press 10 including a die locator 12. The press 10 typically has a printing roll 14 and a backup roll 16 between which passes the corrugated paperboard material which is to be printed. In presses in which the die locator 12 of the present invention is particularly advantageous, the dies 18, as shown in FIG. 1 are mounted individually directly on the printing roll 14, rather than being premounted on a backing sheet which is then attached around the roll. Thus, it is imperative to find some means and method to quickly and rapidly and accurately position the dies 18 on the printing roll 14.

One embodiment of such a die locator 12 includes a transverse support rod 20 having indicia 22 thereon utilized to properly identify the position at which a die 18 is to be located axially along the printing roll 14. Slidably mounted on the support rod is a die-locating mechanism 24.

This mechanism 24 is designed to slide along the support rod 20 until a crosshair in a view window 28 therein is aligned with the selected position indicia 22 on the support rod 20. The view window 28 is formed in a cylindrical member 30

which is rotatably mounted on an intermediate member 32 keyed to the support rod 20 and slidably mounted thereon. A pair of springs 34 biases the outer view member 30 relative to the intermediate member 32 to an idle position (FIG. 2) wherein a die-locating extension and guide member 36 is normally kept away from the surface of printing roll 14 to avoid interference therewith. A pair of end rings 38 encase springs 34 and maintain accurate position of the outer rotatable member 30 with respect to the intermediate slidable member 32.

In positioning a die 18, the mechanism 24 is initially positioned either at the center or along one end of the printing roll 14 and the roll incrementally rotated until the lower edge 40 of the extension 36 is aligned with selected circumferential indicia (not shown). The axial position of a die 18 on the roll 14 is selected by sliding the die-positioning mechanism 24 along the support rod 20 until the crosshair 3 in the view window 28 is aligned with a selected one of the position indicia 22. In order to keep the view window clean, the outer member 30 is normally biased into its idle position wherein the aperture 28' in the slidable intermediate member 32 is covered by the outer member 30.

Alternatively, the axial position of a die 18 may be selected by sliding the die-positioning mechanism 27 along the support rod until one of its two ends 46 is aligned with a selected one of the position indicia 22. This alternative embodiment is particularly useful since it eliminates the necessity of keeping a view window free from ink and dirt.

When reading the position indicia 22 the outer member 30 is rotated forwardly until the two apertures 28, 28' are aligned. A scribe mark 42 on the die-locating extension 36 is aligned with the crosshair in the view window 28. If the alternative embodiment is used, the die locator extension 36 extends beyond either end of the positioning mechanism 24 and scribe marks 42' on the extension 36 are aligned with each end of the mechanism 24.

When the die-locating mechanism 24 is at its selected position, as indicated by juxtaposition of the crosshair with the appropriate indicia 22, or, alternatively, juxtaposition of the ends 46 with the indicia 22, the outer member 30 is fully rotated until the extension 36 contacts the roll 14. The selected die is abutted against the edge 40 of the extension 36, thereby automatically properly positioning the die circumferentially. A center mark or notch 44 provided in all dies is aligned with the scribe mark 42 on the extension 36 to properly align the die axially along the printing roll.

With the upper edge of the die 18 so positioned, the die is allowed to engage the surface of the printing roll 14 which typically is a magnetic printing roll that holds the entire rear surface of the die 18 in contact with the roll. The positioning mechanism 24 is then allowed to return to its idle position under control of the bias springs 34 and the die 18 is in position ready for printing.

It will be readily observed from the foregoing detailed description of the invention and of the illustrated embodiments thereof that numerous variations and modifications may be effected without departing from the true spirit and scope of the novel concepts and principles of this invention.

What I claim is:

1. A method for properly locating individual dies on a printing roll including the steps of selecting an axial location along the roll by reference to indicia representative thereof, selecting a circumferential position around the roll by reference to indicia representative thereof, moving a locating mechanism axially along the roll until aligned with a selected one of the axial representative indicia, rotating said locating mechanism to contact the roll with an edge of a guide member extension parallel to the axis of the roll, rotating the roll relative to the guide member until said guide member edge is superposed on a selected one of said circumferential representing indicia, and placing a die on the roll with one edge of the die abutted against said guide member edge to effect proper circumferential positioning and with a preselected mark on the die aligned with a point on said guide member representative of the selected one of said axial indicia to effect proper axial positioning of the die.

2. The method of claim 1 including the steps of sliding said locating mechanism along a carrying member disposed adjacent to the roll and having said axial indicia thereon until said mechanism is aligned with a selected one of the indicia on said member.

3. A method for properly locating the position of individual dies on a surface adapted to be used as a printing roll including the steps of selecting an axial location along said surface by reference to indicia representative thereof, selecting a circumferential position along said surface by reference to indicia representative thereof, moving a locating mechanism axially relative to said axial indicia until aligned with a selected one of said axial indicia, rotating said locating mechanism to contact the surface with an edge of a guide member extension, moving the surface relative to the guide member until said guide member edge is superposed on a selected one of said circumferential representing indicia, and placing a die on the surface with one edge of the die abutted against said guide member edge to effect proper positioning and with a preselected mark on the die aligned with a point on said guide member representative of the selected one of said axial indicia to effect proper axial positioning of the die.

4. A method for properly locating individual dies on a surface adapted to be used as a printing roll including the steps of selecting an axial location along said surface by reference to indicia representative thereof, selecting a circumferential position along said surface by reference to indicia representative thereof, moving a locating mechanism relative to one of said position representative indicia until aligned with a selected one of said position representative indicia, rotating said locating mechanism to contact the surface with an edge of a guide member extension, moving the surface relative to the guide member until said guide member edge is superposed on a selected one of said other position representing indicia, and placing a die on the roll with one edge of the die abutted against said guide member edge to effect proper positioning thereof with respect to either of said indicia and with a preselected mark on the die aligned with a point on said guide member representative of the selected one of the other of said indicia to effect proper positioning of the die.

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