

Oct. 1, 1929.

C. W. HARROLD

1,730,006

SLITTING ATTACHMENT

Original Filed May 20, 1922

2 Sheets-Sheet 1

Fig. 1.

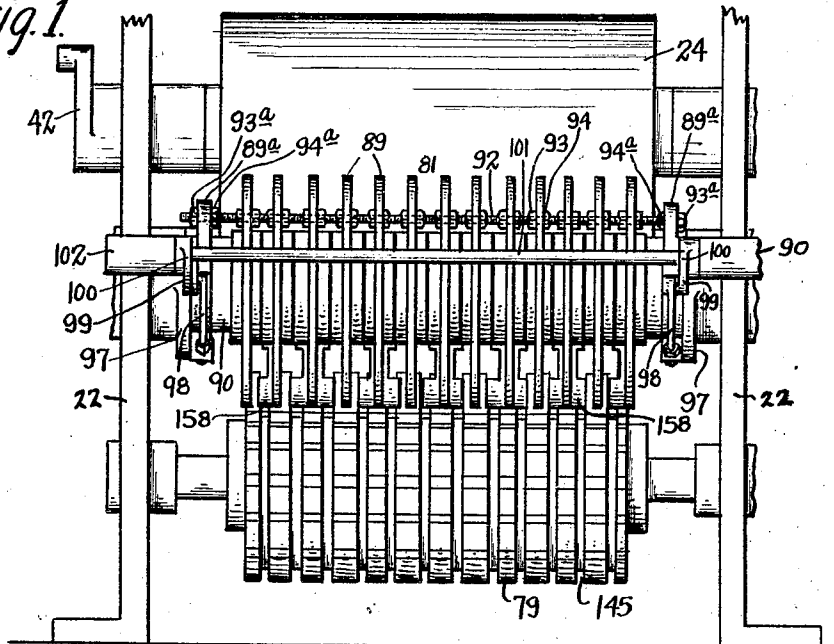
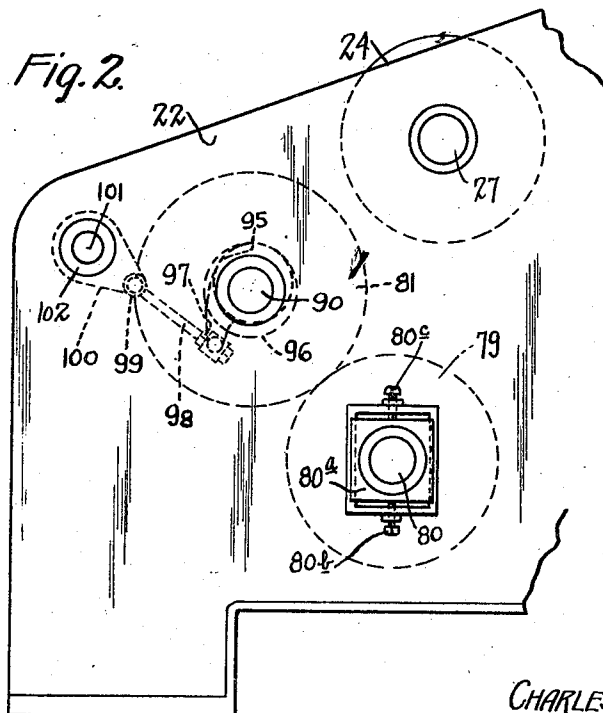


Fig. 2.



INVENTOR
CHARLES W. HARROLD
BY *Philip C. Koch*
ATTORNEY

Oct. 1, 1929.

C. W. HARROLD

1,730,006

SLITTING ATTACHMENT

Original Filed May 20, 1922

2 Sheets-Sheet 2

Fig. 3.

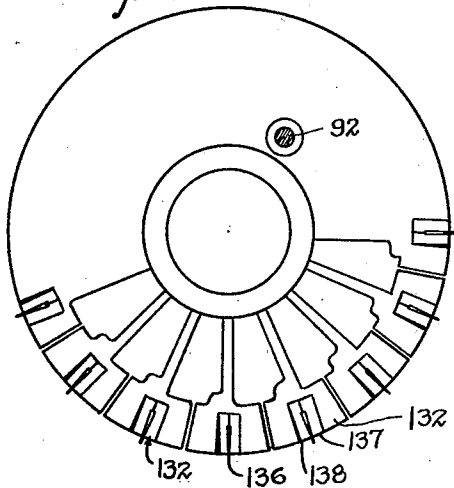


Fig. 4.

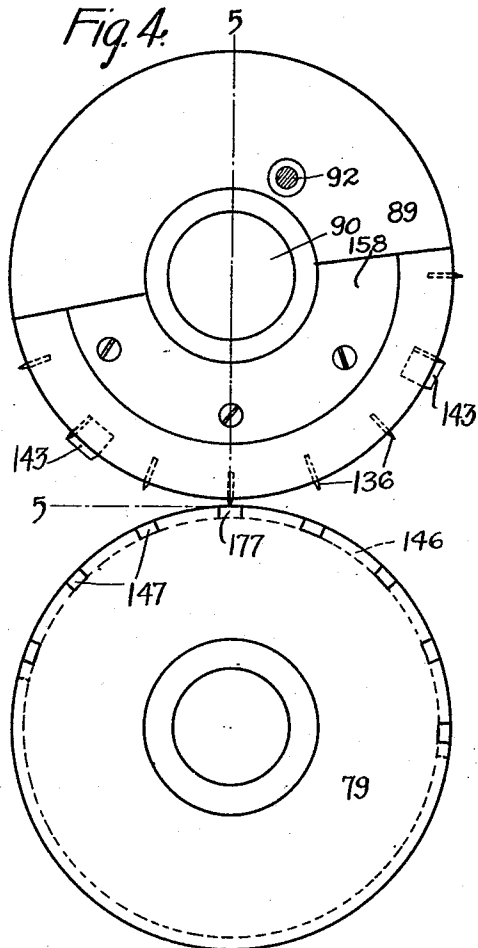


Fig. 5.

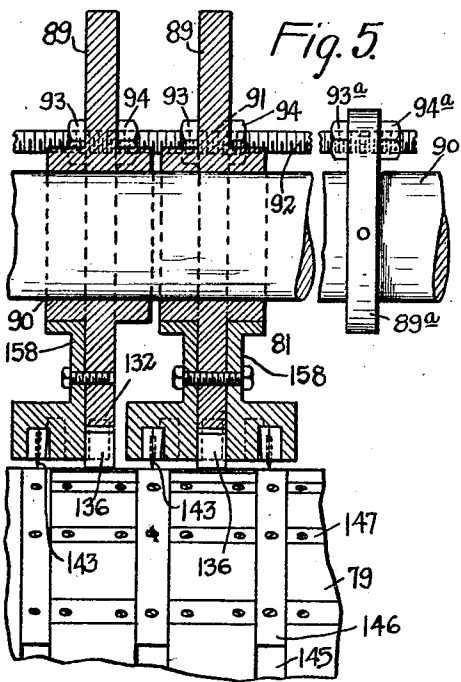


Fig. 6.

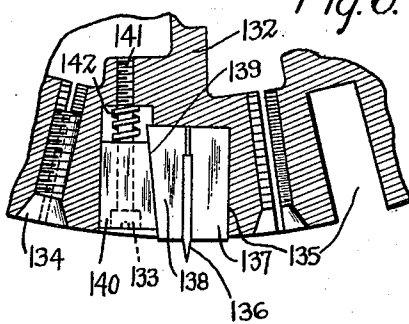
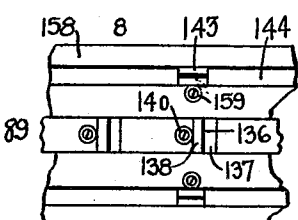


Fig. 7.



INVENTOR
CHARLES W. HARROLD
BY *Philip C. Beck*
ATTORNEY

UNITED STATES PATENT OFFICE

CHARLES W. HARROLD, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO HARRIS-SEYBOLD-POTTER COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF
DELAWARE

SLITTING ATTACHMENT

Original application filed May 20, 1922, Serial No. 562,391, Patent No. 1,498,653. Divided and this
application filed April 26, 1924. Serial No. 709,126.

My improvement relates more particularly to attachments for printing-presses in which there is embodied a pair of coating cylinders for cutting, slitting, or otherwise perforating the successive sheets of stock after same have been printed in the printing couple proper.

My present application for patent is a division of my United States Letters Patent No. 1,498,653, issued June 24, 1924.

The objects of my invention are, among other things, to provide a simplified press of this type in which the timing of the throw-off of the cutting cylinders is delayed until the last full sheet will be completely slit or cut before the slitting or cutting cylinders separate; further to provide means for individual as well as collective adjustments of the cutting disks on the main shaft of the male cutting cylinder whereby the individual blades may be readily set to obtain accurate cutting or slitting; further to provide novel means for mounting such individual blades allowing for shifting or easy removal of same combined with means for procuring minute relative adjustments for the several blades as well as separate blade adjustments in their individual carriers.

My improved attachment also embodies other features of novelty and improvement in combination with slitting, cutting or perforating devices, whereby the operating mechanisms are simplified and made more effective and otherwise better adapted for use, all of which will be hereinafter set forth and then particularly pointed out in the appended claims.

The drawings show my invention in its preferred embodiment in a rotary press with the slitting cylinder attachment arranged with blades adapted to slit or cut a sheet or strip of cardboard or similar stock with eight rows across the sheet requiring seven knives or blades in each row. Such layout for the cutting blades, however, may be widely varied to meet requirements. My improvements, however, are not to be restricted to any particular type of printing-press, since the invention may be embodied in various types with the same advantages and results.

Of the drawings, Fig. 1 is an end view looking from the left in Fig. 2 illustrating more particularly the slitting cylinders and the throw-off device for the male slitting cylinder;

Fig. 2 is a diagrammatic view in side elevation, of a rotary printing-press embodying my improvements and particularly illustrating the layout of the slitting cylinders;

Fig. 3 is a detail side view of one of the disks which compose the male slitting cylinder, the clamps for holding the blades being omitted;

Fig. 4 is a detail side view illustrating male and female slitting cylinders,

Fig. 5 is a fragmentary sectional side view, looking from the left in Fig. 4 the female cylinder being broken off, the section being taken on line 5—5 on Fig. 4;

Fig. 6 is an enlarged sectional detail view of a portion of a disk for the male slitting cylinder, illustrating the means to retain the blades therein;

Fig. 7 is a fragmentary face view illustrating a portion of the female slitting cylinder and the associated bed-plates for the blades carried by the disks on the male slitting cylinder.

Similar numerals refer to similar parts throughout the several figures.

Referring more particularly to Fig. 1, the frame 22 supports the bearings for the cylinder 24 mounted on the shaft 27. The shaft 27 carrying the cylinder 24 is mounted at both ends in the eccentric bearings actuated by the arms 42 (only one being shown in Fig. 1). The successive printed sheets are carried to the female cutting cylinder 79 mounted on the shaft 80 journaled in the bearings 80^a vertically slidable in frame 22 by the adjusting screws 80^b and 80^c, which cylinder 79 coacts with the male cutting-cylinder 81 to form a slitting or cutting couple; the cylinder 79 may be vertically adjusted by shifting the bearings 80^a. The cutting cylinders 79 and 81 are rotated by any suitable means connected with the press.

Referring to Figs. 1 and 5, the male cutting cylinder 81 is preferably composed of a series of disks 89 slidably mounted on the

shaft 90 of the cylinder 81, and preferably secured thereto by set screws which are not shown. Each disk 89 has formed therein a clearance hole 91 to receive a transverse screw-threaded rod 92 on which screw-nuts 93 and 94 are carried on either side of the several disks 89 as shown in Figures 1 and 5. Means are preferably employed to collectively adjust the several disks 89 on the shaft 90, which means may be widely varied in construction. In the present embodiment, two bearing disks 89^a are pinned fast to the shaft 90 at either end as shown in Fig. 1, each disk 89^a having a clearance hole through which the ends of the rod 92 project, such rod carrying the nuts 93^a and 94^a on either side of the disks 89^a as shown. When it is desired to collectively adjust the disks 89 as a unit, the two sets of nuts 93^a and 94^a are manipulated to shift the rod 92 transversely in either direction, while a group adjustment of several disks 89 is attained by loosening the nuts 93 and 94 of the remaining disks and then tightening same after the first set of disks has been shifted as a group. Each disk 89 may be separately adjusted relatively to its adjacent disks by the sets of nuts 93 and 94 on either side of the disk to be shifted.

Separate means are provided to throw off the cylinder 81 from the cylinder 79. Accordingly the shaft 90 for the male cutting cylinder 81 is mounted at both ends in eccentric bearings 95 (Figs. 1 and 2), which in turn are mounted in journals 96 carried by the frame 22. The bearings 95 carry the projecting arms 97 (Fig. 2) to which are pivotally secured the toggle levers 98 pinned at 99 to the toggle arms 100 mounted on the throw-off shaft 101 journaled in the brackets 102 secured to the frame 22 as shown in Fig. 2.

Means are provided for mounting the individual sets of knife blades or cutters on the cutting cylinders 79 and 81 which are shown in detail in Figs. 3 to 7 inclusive, whereby the individual blades may not only be easily removed, but also be secured on the cylinder 81 by means admitting of minute relative adjustments; referring to Figs. 5 and 6 the disks 89 on the male cutting cylinder carry the split housings 132, the successive housings 132 being adjusted relatively to one another by the screws 134 (Fig. 6). Each housing 132 has the cut-out 135 formed in its outer surface to contain and hold the transverse cutter blades 136 maintained between the clamp blocks 137 and 138. The block 138 has a bevel surface 139 on which the wedge block 140 slides inwardly to bind the blades 136 between the blocks 137 and 138. The block 140 has a hole bored therein through which the screw-bolt 141 extends to engage with the housing 132. The spring 142 is coiled around the bolt 141 and tends to force the wedge block 140 outwardly. The inward movement of this block 140 by screw-

ing in the bolt 141 against the spring 142 binds the blades 136 in position. The longitudinal cutter blades 143 are carried in a suitable groove 144 formed in the periphery of plates 158 on the disks 89, and are adjusted relatively to one another in the grooves 144 by the screws 159 (Fig. 7). The female cutting cylinder 79 has formed in its outer surface circular parallel run-ways 145 in which are adjustably secured the grooved bed-plates 146 to coact with the longitudinal cutting blades 143; in like manner the grooved bed plates 147 are also adjustably secured to the cylinder 79 to receive the transverse cutting blades 136, all as shown in Fig. 7. The collective arrangement of the two sets of cutting blades 136 and 143 in relation to the female cutting cylinder 79 is shown in Figs. 3 and 4.

I claim as my invention:—

1. In a slitting attachment, a cutting cylinder comprising a shaft, a series of blade-carrying disks co-axially and slidably mounted thereon, a transversely shiftable rod separate from the shaft for collectively adjusting said disks in either direction on said shaft, and means on said rod for separately adjusting each disk relatively to the others.

2. In a slitting attachment, a cutting cylinder comprising a shaft, a series of blade-carrying disks co-axially and slidably mounted thereon, a single transversely shiftable means for collectively adjusting said disks in either direction on the shaft, and separate means for adjusting the individual disks in relation to one another.

3. In a slitting attachment, a cutting cylinder comprising a shaft, a series of blade-carrying disks axially and slidably mounted thereon, means comprising a screw-threaded transverse rod coacting with each disk for collectively adjusting said disks in the shaft, and separate means for adjusting the individual disks in relation to one another.

4. In a slitting attachment, a cutting cylinder comprising a series of spaced apart disks, split-housings secured on the peripheries of said disks to carry the blades and means for moving adjacent housings peripherally on said disks.

5. In a slitting attachment, a cutting cylinder comprising a series of spaced-apart disks, split-housings secured on the peripheries of said disks to carry the blades, and adjusting screws coacting with adjoining housings of adjacent disks to peripherally adjust said blades on said disks.

6. In a slitting attachment, a cutting cylinder comprising a series of spaced-apart disks, an aperture in the outer periphery of one of said disks, clamp blocks in said aperture to hold a cutting blade, and a wedge block to press said clamp blocks against said blade.

7. In a slitting attachment, a cutting cylinder comprising a series of spaced-apart disks,

an aperture in the periphery of one of said disks, clamp blocks arranged in said aperture to hold the cutting blade, a wedge-block inserted in said aperture to bear on one of said clamp blocks, and means for forcing said wedge block inwardly in said aperture.

8. In a slitting attachment, a cutting cylinder comprising a series of spaced-apart disks, an aperture in the periphery of one of said disks, clamp blocks arranged in said aperture to hold the cutting blade, a wedge block inserted in said aperture to bear on one of said clamp blocks, and means comprising a screw-bolt passing through the wedge block and engaging said disk for forcing said wedge block inwardly in said aperture.

9. In a slitting attachment, a cutting cylinder, a plurality of separable blade carriers each having separable blades and mounted on said cylinder, means for separately adjusting each carrier relatively to the others along the periphery of the cylinder, and means for transversely and longitudinally adjusting each blade in its carrier.

CHARLES W. HARROLD.