

March 3, 1964

W. A. BOUVIER
BOOK BINDING MACHINE

3,122,761

Filed Nov. 20, 1961

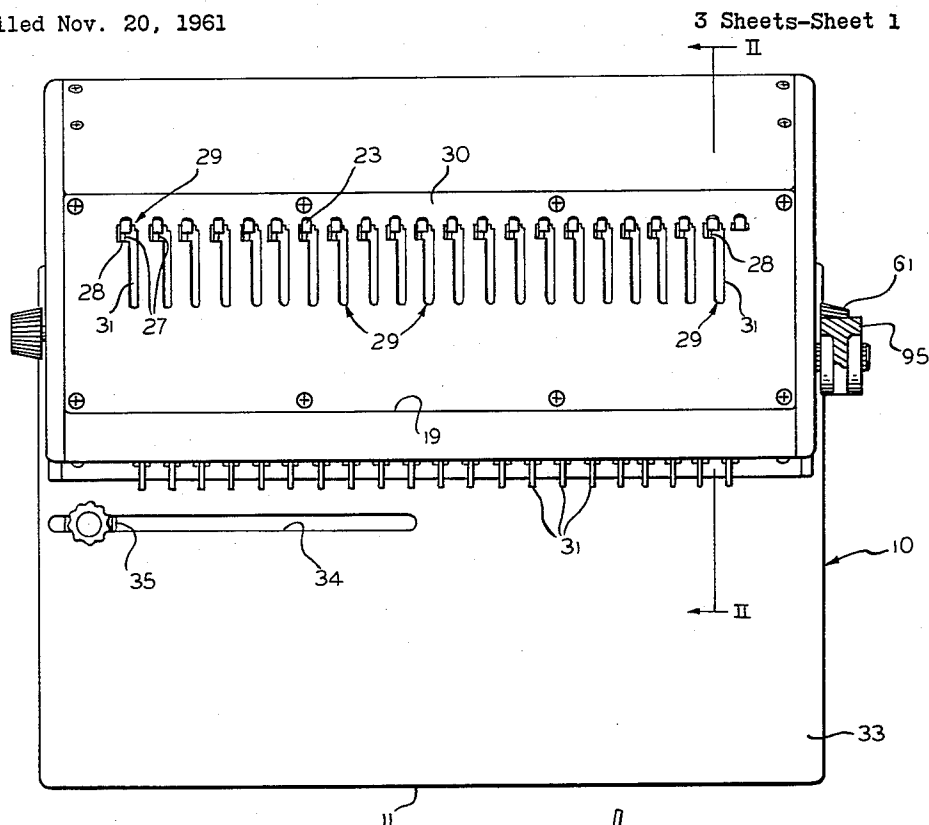


FIG. 1

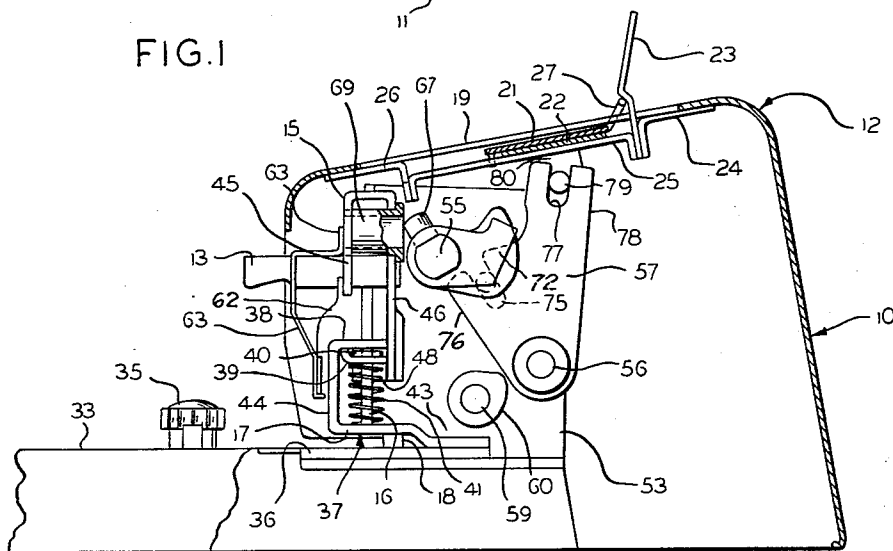


FIG. 2

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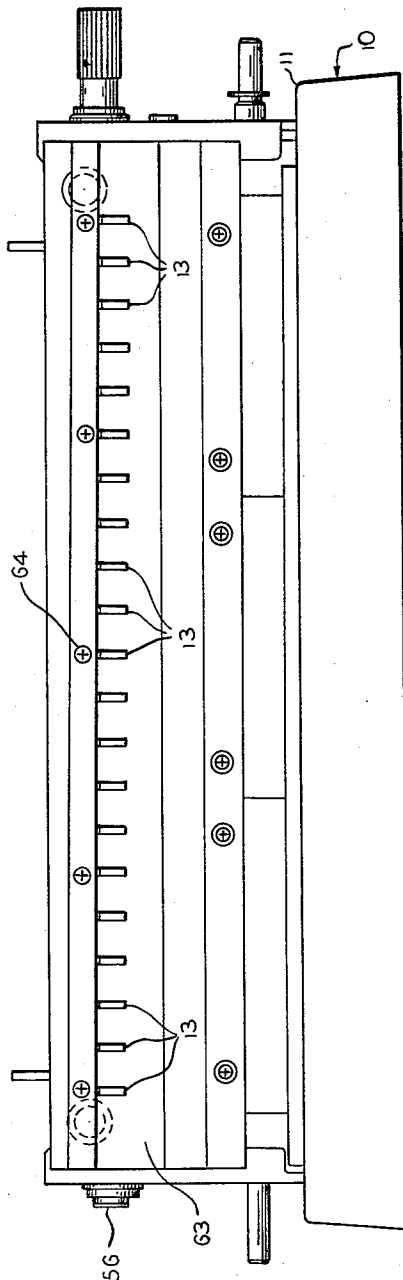
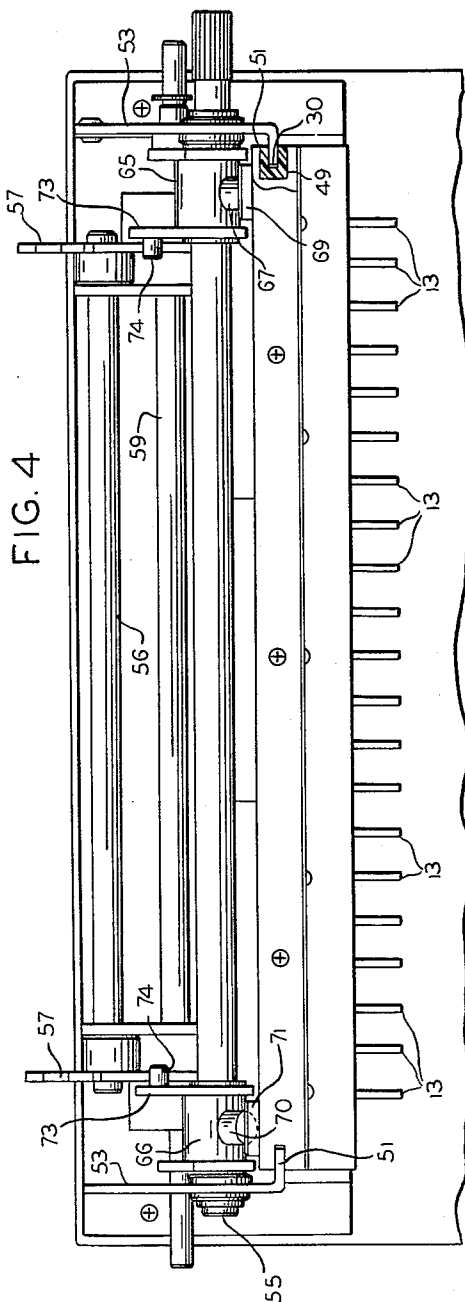
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3 Sheets-Sheet 2



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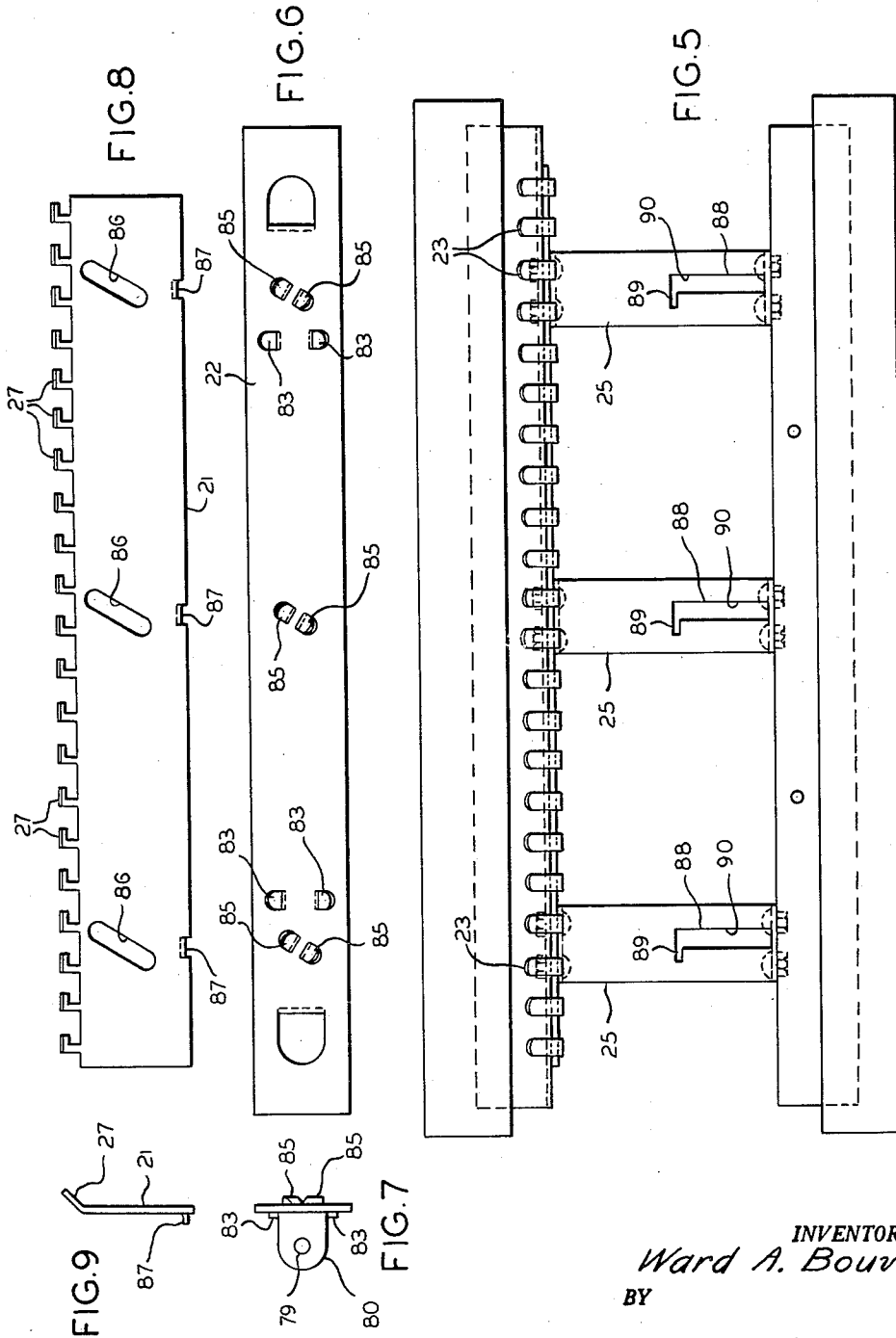
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3 Sheets-Sheet 3



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1

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BOOK BINDING MACHINE

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10 Claims. (Cl. 11—1)

This invention relates to improvements in book binding machines and more particularly relates to a machine for binding stacks of sheets with ring-like plastic binding elements by punching the stack of sheets and uncurling the rings of the plastic binding elements, and holding the rings in an uncurled condition, to accommodate the sheets to be impaled on the resilient rings of the plastic binding elements.

A principal object of the invention is to provide an improved form of book binding machine for punching a stack of sheets for binding, uncurling the rings of a plastic binding element, and retaining the rings in their uncurled condition to accommodate the stack of sheets to be impaled thereon, all arranged with a view toward utmost simplicity and efficiency in construction and operation.

Still another object of the invention is to provide a simplified form of combined punching and binding machine in which the drive connection for uncurling the rings of the binding element is self-locking and holds the rings in position to accommodate a stack of sheets to be impaled thereon until positively released, to release the binding element to accommodate curling of the rings and binding of the stack of sheets thereon.

A still further object of the invention is to provide a simplified and improved form of binding machine, self-locking, when the binding fingers are in their uncurled condition, and staying in a locked position until positively released, to accommodate curling of the binding fingers.

Still another object of the invention is to provide an improved form of drive mechanism for operating the pressure bar of a combined punching and binding machine, so arranged as to release the binding fingers to curl about a stack of sheets impaled thereon during the punching operation, and to return the punches during the binding operation.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

FIGURE 1 is a top plan view of a book binding machine constructed in accordance with the principles of the present invention, with the operating handle therefor broken away and shown in section;

FIGURE 2 is a fragmentary sectional view of the machine shown in FIGURE 1 taken substantially along line II—II of FIGURE 1;

FIGURE 3 is a front end view of the machine shown in FIGURE 1 with certain parts removed;

FIGURE 4 is a top plan view of the punch assembly with the cover therefor removed, and showing the actuators for the gang punches and binding element;

FIGURE 5 is a detail top plan view showing the support and guide means for the slide rail and uncurling slide for the binding fingers, and showing the comb retaining the binding element in position to accommodate uncurling of the fingers thereof;

FIGURE 6 is a detail view of the slide member for actuating the uncurling slide;

FIGURE 7 is an end view of the slide member shown in FIGURE 6;

FIGURE 8 is a detail plan view of the uncurling slide member for the binding rings; and

2

FIGURE 9 is an end view of the uncurling slide member shown in FIGURE 8.

In the embodiment of the invention illustrated in the drawings, I have shown a book binding machine 10 in FIGURES 1 and 2, including a base or main frame 11 having a detachable casing 12 enclosing the rear end portion of the punching mechanism and actuating mechanism therefor and enclosing and forming a support and guide for the binding mechanism.

The casing 12 opens to the front of the machine to afford access to set bars 13, slidably guided in a pressure bar 15, to select the punching pattern of a gang of punches 16. The open front of the casing 12 also accommodates a stack of sheets (not shown) to be inserted beneath a stripper plate 17, into engagement with a back gauge 16, gauging the spacing of the punched holes from the inner edge of the stack of sheets.

The casing 12 also has a rectangular opening 19 in the top thereof (FIGURES 1 and 2) extending substantially the width thereof and covering ring uncurling slide member 21 extending along and relatively movable with respect to a slide bar member 22 forming an actuator for said uncurling slide. The slide member 21 is first moved laterally of the casing 12 along a comb 23, to engage the binding rings of a plastic binding element (not shown), mounted on said comb 23, and is then moved away from the comb 23, to uncurl the rings of the binding element and retain said rings in position to accommodate the impaling of a stack of sheets thereon.

The comb 23 extends beneath the top of the casing 12 into the rectangular opening 19, and is mounted at its lower end between the downwardly extending right angled portions of a support 24, mounted on the underside of the casing 12 and extending within the opening 19, and parallel spaced supports and guides 25 extending forwardly of the support 24 to the forward end portion of the rectangular opening 19. The supports and guides are secured at their forward end portions to angle brackets 26 mounted on the underside of the casing 12 and extending within the open portion 19 of said casing.

The uncurling slide 21 has a plurality of uncurling hooks or fingers 27 extending angularly rearwardly and upwardly therefrom through widened laterally extending portions 28 of slots 29 extending through a cover plate 30 closing the rectangular opening 19. The fingers of the holding comb 23 also extend through the widened portions 28 of the slots 29. The slots 29 have longitudinally extending portions 31 in registry with the space between the fingers of the comb 23, and extending forwardly therefrom. The widened portions 28 of the slots 29 thus accommodate movement of the uncurling fingers 27 along the teeth of the comb 23 into the spaces between said teeth to engage the rings of a binding element (not shown) extending in the spaces between the teeth of the comb 23, and to then move along the longitudinally extending portions 31 of said slots in a forward direction away from the comb 23, to uncurl the rings of the binding element and accommodate a stack of sheets to be impaled thereon. The slots 29 besides forming openings for the uncurling hooks 27 also cooperate with the slide bar 22 to cam the uncurling slide 21 laterally upon movement of said slide bar in a longitudinally forward direction, as will hereinafter more clearly appear as this specification proceeds.

The binding elements (not shown) may be of a type well known to those skilled in the art having a backbone and curled fingers extending therefrom, such as are shown and described in the patent to Douvry No. 1,970,285, so not herein shown or described in detail. The method of uncurling the rings of the binding element by moving the uncurling hooks or fingers 27 into the curled rings

3

or fingers of the binding element, and then by moving the uncurling hooks away, from the comb 23 to uncurl the rings of the binding element, while the backbone of the binding element is retained in position by the comb, is also a conventional method, so need not herein be shown or described further.

The main frame or base 11 also has a front table or platform 33 in front of the gang punches 16, upon which a stack of sheets may be placed, to effect a punching operation thereof. The table 33 has a slot 34 extending transversely thereacross for a portion of the width of the table, and parallel to the gang punches 16. The slot 34 has a stopper gauge 35 mounted therein for adjustable movement therealong, to gauge the position of the punched holes with respect to the sides of the stack of sheets to be punched.

The table 33 has die plates 36 recessed therein and flush with the top thereof, having die sets 37 extending upwardly therefrom. The die plates 36 and die sets 37 may be placed in end-to-end relation to extend for the width of the casing 12 in a conventional manner, so not herein shown or described further.

Each die set 37 includes the die plate 36, an associated stripper plate 17 extending thereabove and along the top of the back gauge 18. It also includes a gang of punches 16 guided in said stripper plate and a guide 38 spaced above said stripper plate, a stripper member 39 for the punches 16, a pin 40 extending through each punch 16 and limiting upward travel of the punch, and also engaged by the stripper member 39 upon upward movement thereof, to effect the positive stripping of the punches from the sheets being punched. Each die set also includes a spring 41 encircling each punch and interposed between the upper side of the stripper plate 17 and the underside of the stripper member 39 and biasing the stripper member 39 into engagement with the pins 40.

The stripper plate 17 has a downwardly stepped rear end portion 43 engaging the die plate 36 and supporting said stripper plate 17 on said die plate 36 in vertically spaced relation with respect thereto. The stripper plate 17 also has an upright forward end portion 44 having a guide 38 turned inwardly therefrom.

The punches 16 are rectangular in form and extend through rectangular openings (not shown) in the guide 38 and through corresponding aligned rectangular openings in the stripper plate 17 and guide plate 36.

The back gauge 18 is adjustably mounted in the space between the die plate 36 and the stripper plate 17 and may be adjustably moved with respect to the punches 16 by any conventional adjusting mechanism, which is no part of the present invention so need not be shown or described further.

The pressure bar 15 is shown as being of an inverted U-shaped formation having a short front leg 45 and a longer rear leg 46 extending downwardly beneath the guide 38 along the rear end portion thereof and having inturned end portions 48 extending under the stripper member 39 for positively moving said stripper member upwardly upon upward movement of the pressure bar 15, to strip the punches 16 from the stack of sheets being punched.

The pressure bar 15 also has bearing slides 49 mounted in opposite ends thereof, between the legs 45 and 46 thereof (FIGURE 4). The bearing slides 49 may be made from Teflon or nylon or any other suitable bearing material, and each has an outwardly opening vertical slot 50 extending therealong having slidable bearing engagement with a vertically extending inturned end portion 51 of a side frame member 53.

The side frame members 53 extend upwardly of the table top 33 beneath the casing 12 and form bearing support members for a rock shaft 55 for operating the pressure bar 15, a rock shaft 56 for actuators 57 for the slide bar 22, and a shaft 59 for stop cams 60, limiting movement of the uncurling side 21 along the slots 31, and ad-

4

justably moved by a knob 61 on the outside of the casing 12.

The pressure bar 15 is provided with a plurality of aligned apertures (not shown) extending through the legs 45 and 46 of said pressure bar and slidably receiving the set bars 13, to support said set bars for movement into or out of registry with associated punches 16, to render said punches effective or ineffective to effect a punching operation.

The set pins or bars 13 are shown as being located along a line, which in FIGURE 3 is inclined upwardly from the right to the left hand side of the machine when looking toward the front of the machine. This progressively spaces the set bars upwardly from the right to the left hand side of the machine to provide successive operation of the punches 16 from the right to the left hand side of the machine and to thereby reduce the effort required to effect a punching operation, over what would be required if all of the punches were simultaneously actuated to be punched through a stack of sheets.

The front of the pressure bar is covered by a cover 63, secured to the pressure bar as by machine screws 64, and apertured to accommodate the set bars 13 to slidably extend therethrough. The set bars 13 have downwardly opening slots (not shown) engageable with leaf springs 62 to retain said set bars in their effective or ineffective positions, to effect a punching operation. The cover 63 extends along the set bars 13 for a portion of the length thereof and then downwardly therefrom, and angularly inwardly along the front of the vertically extending forward end portion 44 of the guide 37, and is relatively movable with respect to said forward end portion, upon operation of the pressure bar 15.

The pressure bar 15 is actuated to first depress the end thereof, which is the right hand end when looking toward the front of the punch in FIGURE 3, and to then depress the left hand end thereof to angularly move the pressure bar to effect pressure on the first punches to be engaged by the respective set bars 13 and then to successively engage and depress the next succeeding punches for the entire length of the gang punch.

As shown in FIGURES 2 and 4, the rock shaft 55 has hubs 65 and 66 mounted thereon adjacent opposite ends thereof, the hub 65 being adjacent the end of the shaft 55 which is the right hand end thereof when looking at the shaft in FIGURE 4, and the hub 66 being adjacent the left hand end of said shaft. The hub 65 has an actuator pin 67 projecting radially therefrom engageable within a flanged bushing 69 mounted in the legs 45 and 46 of the pressure bar 15. The pin 67 cams the bushing 69 to depress the pressure bar 15 upon turning of the rock shaft 67 in a direction, which in FIGURE 2 is shown as being a counterclockwise direction. A stop lever 72 is mounted on the hub 65 to limit depressible movement of the pressure bar 15. The hub 66 has a similar actuator pin 70 projecting radially therefrom and angularly offset with respect to the actuator pin 67, to come into engagement with a bushing 71 like the bushing 69, after the actuator pin 67 has come into engagement with its associated bushing 69.

Turning of the shaft 55 in a counterclockwise direction will thus first depress the right hand end portion of the pressure bar 15 and then engage the actuator pin 70 with the left hand end portion of said pressure bar and move the right and left hand end portions of said pressure bar downwardly together, to effect the successive operation of the punches 16 from the right to the left hand side of the machine.

Referring now in particular to the means for actuating the ring opening slide 21, by operation of the rock shaft 55, the hubs 65 and 66 have actuator levers 73 on the inner sides thereof, projecting from the shaft 55 in direction away from the pressure bar 15. Each actuator lever 73 has an actuating pin 74 projecting inwardly therefrom towards the center of the machine and engaging within

a slot 75 in the associated actuator lever 57. The actuator levers 57 are in the general form of bellcranks and each has a radially extending slot 75 extending along an arm 76 thereof and has a radially extending slot 77 extending along an arm 78 thereof, spaced angularly from the arm 76.

The slot 77 has slidable engagement with a button or pin 79, projecting laterally outwardly of an ear 80 depending from the slide bar 22. The ears 80 are pressed downwardly of the slide bar 22 adjacent opposite ends thereof. Rocking movement of the actuator levers 57 will thus move the slide bar 22 along the supports and guides 25 toward and from the comb 23.

The slide bar 22 has aligned nibs 83 pressed downwardly therefrom. Two aligned nibs 83 are provided adjacent each end of the slide bar 22, to slidably engage the inner sides of the outer support and guide rails 25, and to thereby guide said slide bar for rectilinear movement along said support and guide rails.

The slide bar 22 also has three sets of aligned upright nibs 85 extending diagonally across said slide bar. The nibs 85 have camming engagement with diagonal slots 86, extending through the ring uncurling slide 21 in the same angular relation with respect to the front face of said slide as the nibs 85.

The ring uncurling slide 21 has three guide nibs 87, shown as being pressed downwardly from the front edge thereof and in alignment with the slots 86. The guide nibs 87 have slidable engagement with L-shaped slots 88 extending along the support and guide rails 25. The slots 88 generally conform to the slots 29 and have right angled portions 89 extending transversely of the support and guide members 25 and terminating into longitudinal portions 90 extending along the support and guide members 25 to the forward ends thereof.

It being understood that the ring uncurling slide 21 is retained to the slide bar 22, and that the nibs 87 are retained to the slots 88 by the cover 30, and that the uncurling fingers or hooks 27 are guided for movement along the slots 28 in said cover, upon turning movement of the shaft 55 in a clockwise direction by operation of a hand lever 95, the slide bar 22 will be moved forwardly along the supports and guides 25.

At the initiation of an uncurling operation, the nibs 87 of the ring uncurling slide 21 will, however, be moved into engagement with the right angled portions 89 of the slots 88. This will retain the ring uncurling slide from movement away from the comb 23, and the nibs 85 in the slots 86 will cam the ring uncurling slide 21 to move along the comb 23 and move the hooks 27 into position to engage the rings of a binder on the comb 23. As soon as the nibs 87 come into registry with the slots 88, the ring uncurling slide 21 will move bodily with the slide bar 22, until the actuator levers 57 come into engagement with the stop cams 60, it being understood that said stop cams may be adjustably moved to control the length of stroke of the ring uncurling slide 21 in accordance with the diameter of binding element being uncurled.

As movement of the slide bar 22 and uncurling slide 21 stop, the reaction between the diagonal slots 81 and the nibs 85 will force the nibs 83 into wedging engagement with the longitudinally extending portions of the guide slots 88. This wedging action will positively lock the ring uncurling slide 21 in position to hold the uncurled rings of the binding element in position to have a stack of sheets impaled thereon. The ring uncurling slide 21 will then remain in this position until the actuator levers 57 are moved in a reverse direction by operation of the operating handle 95 for the rock shaft 55.

Upon reversal of the direction of turning movement of the rock shaft 55, to return the ring uncurling slide 21, the guide nibs 83 will move rearwardly along the slots 90 until they reach the end portions of said slots. Continued movement of the slide rail 22 will then cam

the ring uncurling slide 22 into position to register the uncurling fingers 27 with the teeth of the comb 23. The bound book may then be removed from the comb 23.

It may be seen from the foregoing that an extremely simple binding machine has been provided, so arranged that the punches may be successively actuated to punch a stack of sheets by movement of an operating handle for the machine in one direction, and the rings of the binding element may be uncurled by movement of the operating handle for the actuator shaft in an opposite direction, and when the binding rings are once uncurled, they will be held in their uncurled condition to accommodate a stack of sheets to be impaled thereon, by the self locking of the ring uncurling slide 21, attained by the wedging action between the camming slots and nibs on the slide bar and ring uncurling slide, and will be held in this locked position until positively released.

It may further be seen that successive actuation of the punches is attained in a far simpler and more inexpensive manner than has heretofore been considered to be possible and that the self-locking drive connection between the actuator for the punches and the ring uncurling slide is attained by a simple camming or wedging drive connection, avoiding the necessity of providing brakes and other devices to hold the uncurling fingers in their open position.

While I have herein shown and described one form in which my invention may be embodied, it should be understood that various modifications and variations in the invention may be attained without departing from the spirit and scope of the novel concepts thereof, as defined by the claims appended hereto.

I claim as my invention:

1. A book binding machine comprising;
 - a. a frame
 - b. a comb on said frame engageable with the back of a flexible ring type binding element,
 - c. an uncurling slide,
 - d. a plurality of spreading fingers on said uncurling slide registrable with the teeth of said comb,
 - e. means guiding said uncurling slide for movement transversely of said frame along the teeth of said comb and longitudinally of said frame away from said comb comprising
 - f. a slide bar guided for movement along said frame toward and from said comb
 - g. and a camming drive connection between said slide bar and said uncurling slide reacting against said means guiding said slide for movement transversely and longitudinally of said comb to effect transverse movement of said uncurling slide and fingers into the spaces between the teeth of said comb and longitudinal movement of said uncurling slide and fingers away from said comb and wedging said uncurling slide in fixed relation with respect to said comb.
2. A book binding machine comprising;
 - a. a frame
 - b. a stationary comb and on said frame engageable with the back of a flexible ring type binding element,
 - c. a guide extending along said frame, a ring uncurling slide slidably movable along said guide along the teeth of said comb and longitudinally away from the teeth of said comb,
 - d. a plurality of ring engaging uncurling fingers extending from said ring uncurling slide and registrable with the teeth of said comb,
 - e. a slide bar guided for movement along said slide toward and away from said comb,
 - f. a camming drive connection from said slide bar to said ring uncurling slide, and a guiding connection between said ring uncurling slide and said guide, to effect movement of said slide, laterally along the teeth of said comb and longitudinally away from the teeth of said comb, upon rectilinear movement of said slide bar along said guide.

3. A book binding machine comprising
 - a. a frame
 - b. a stationary comb on said frame engageable with the back of a flexible ring type binding element,
 - c. a slide bar movable toward and from said comb,
 - d. a support and guide means for said slide bar retaining said slide bar for rectilinear movement along said frame,
 - e. a ring uncurling slide movably mounted on said slide bar and having
 - f. a plurality of ring uncurling fingers extending therefrom registrable with the teeth of said comb,
 - g. a guiding connection between said ring uncurling slide and said support and guide retaining said slide from longitudinal movement along said frame and accommodating said slide to move longitudinally of said frame,
 - h. and a camming drive connection between said slide bar and ring uncurling slide cooperating with said guiding connection between said slide and said support and guide, to effect movement of said ring uncurling slide along the teeth of said comb and away from said comb, by movement of said slide bar along said frame away from said comb.
4. A book binding machine comprising
 - a. a frame,
 - b. a stationary comb on said frame engageable with the back of a flexible ring type binding element,
 - c. a slide bar movable toward and from said comb,
 - d. a support and guide means for said slide bar retaining said slide bar for rectilinear movement along said frame,
 - e. a ring uncurling slide movably mounted on said slide bar and having
 - f. a plurality of ring uncurling fingers extending therefrom registrable with the teeth of said comb,
 - g. a guiding connection between said ring uncurling slide and said support and guide, retaining said slide from longitudinal movement along said frame and accommodating said slide to move longitudinally of said frame
 - h. and a camming drive connection between said slide bar and ring uncurling slide cooperating with said guiding connection between said slide and said support and guide, to effect movement of said ring uncurling slide along the teeth of said comb and away from said comb, by movement of said slide bar along said frame away from said comb,
 - i. comprising a registering diagonally extending projection and slotted drive connection, wedging said slide bar into locking engagement with said support and guide at the termination of an uncurling operation, to lock the binding rings in position to have a stack of sheets impaled thereon.
5. A book binding machine comprising a frame,
 - a. a stationary upright comb on said frame engageable with the back of a flexible ring type binding element,
 - b. a support and guide extending in advance of said comb,
 - c. a slide bar guided for rectilinear movement along said support and guide,
 - d. a ring uncurling slide on said slide bar,
 - e. a plurality of spreading fingers extending from said ring uncurling slide registrable with the teeth of said comb,
 - f. a guiding connection between said ring uncurling slide and said support and guide, guiding said ring uncurling slide for lateral movement along said comb, and for longitudinal movement away from said comb,
 - g. means for moving said slide bar along said support and guide,
 - h. and a self-locking camming drive connection between said slide bar and said slide, cooperating with said guiding connection between said slide and said support and guide and camming said slide laterally along the teeth of said comb and then moving said slide longitudinally away from the teeth of said comb,

- support and guide and camming said slide laterally along the teeth of said comb and then moving said slide longitudinally away from the teeth of said comb.
6. A book binding machine comprising a frame,
 - a. a stationary upright comb on said frame engageable with the back of a flexible ring type binding element,
 - b. a support and guide extending in advance of said comb,
 - c. a slide bar guided for rectilinear movement along said support and guide,
 - d. a ring uncurling slide on said slide bar,
 - e. a plurality of spreading fingers extending from said ring uncurling slide registrable with the teeth of said comb,
 - f. a guiding connection between said ring uncurling slide and said support and guide, guiding said ring uncurling slide for lateral movement along said comb, and for longitudinal movement away from said comb,
 - g. means for moving said slide bar along said support and guide,
 - h. and a self-locking camming drive connection between said slide bar and said slide, cooperating with said guiding connection between said slide and said support and guide and camming said slide laterally along the teeth of said comb and then moving said slide longitudinally away from the teeth of said comb.
 - i. said camming drive connection comprising diagonal slots in one slide
 - j. diagonal projections in the other slide extending parallel of and engageable with said slots.
7. A book binding machine comprising a frame,
 - a. a stationary upright comb on said frame engageable with the back of a flexible ring type binding element,
 - b. a support and guide extending in advance of said comb,
 - c. a slide bar guided for rectilinear movement along said support and guide,
 - d. a ring uncurling slide on said slide bar,
 - e. a plurality of spreading fingers extending from said ring uncurling slide registrable with the teeth of said comb,
 - f. a guiding connection between said ring uncurling slide and said support and guide, guiding said ring uncurling slide for lateral movement along said comb, and for longitudinal movement away from said comb,
 - g. means for moving said slide bar along said support and guide,
 - h. and self-locking camming drive connection between said slide bar and said slide, cooperating with said guiding connection between said slide and said support and guide and camming said slide laterally along the teeth of said comb and then moving said slide longitudinally away from the teeth of said comb, said camming drive connection comprising
 - i. a plurality of parallel diagonal slots in one slide extending along the slide in the direction of travel thereof,
 - j. a plurality of pairs of diagonal projections in the other slide parallel with and registrable with said slots,
 - k. and guide means on said uncurling slide having guiding engagement with said support and guide and retaining said uncurling slide from movement with said slide bar for a portion of the length of travel of said slide bar and effecting movement of said slide along said teeth by the diagonal projection and slotted connection between said slides, and accommodating movement of said slide bar bodily away from said comb.
8. A book binding machine comprising
 - a. a frame,

- b. a stationary upright comb on said frame engageable with the back of a flexible ring type binding element,
- c. a support and guide extending in advance of said comb having at least one guide slot therein having a portion extending laterally in the direction of said comb, and a portion extending longitudinally away from said comb, 5
- d. a slide bar member guided for movement along said support and guide,
- e. an uncurling slide member on said slide bar member and having 10
- f. a plurality of ring uncurling fingers extending therefrom registrable with the teeth of said comb,
- g. a guiding connection between said slide bar member and said support and guide, guiding said slide bar member for rectilinear movement toward and from said comb, 15
- h. means moving said slide bar member rectilinearly along said support and guide,
- i. and a self-locking camming drive connection between said slide bar member and said uncurling slide member comprising 20
- j. a plurality of parallel spaced diagonal slots in one member,
- k. a plurality of parallel spaced diagonally arranged ears in the other member registrable with said slots, and a guide nib projecting from said slide member into said slot in said support and guide member, and retaining said slide from longitudinal movement with said slide bar member to effect movement of said slide member along the teeth of the comb by said camming drive connection, and accommodating said slide member to be moved away from said comb, as said slide bar member moves away from said comb. 25
- 9. In a book binding machine, 35
- a. a frame
- b. a housing on said frame having
- c. a flat top face having an opening therein extending substantially the width of said housing and longitudinally along said housing, 40
- d. a stationary upright comb extending along the upper margin of said opening and projecting upwardly of said face,
- e. a support and guide beneath said opening having at least one L-shaped guide slot therein having a rear end portion extending parallel to said comb, and a longitudinal portion extending longitudinally away from said comb, 45
- f. a slide bar member slidably supported on said support and guide member and guided thereby for rectilinear movement therealong, 50
- g. a slide member actuated by said slide bar member and mounted thereon,
- h. uncurling fingers extending from said slide member into juxtaposition with the teeth of said comb, 55
- i. a drive connection from said slide bar member to said slide member comprising diagonally extending slots in one member and diagonally extending projections in the other member having slidable engagement with said slots 60

- j. and a guiding connection between said slide member and said L-shaped guide slot, retaining said slide member from longitudinal movement away from said comb upon initial movement of said slide bar member away from said comb, and cooperating with said projection and slotted drive connection to effect camming movement of said slide member along the teeth of said comb.
- 10. In a book binding machine,
- a. a frame
- b. a housing on said frame having
- c. a flat top face having an opening therein extending substantially the width of said housing and longitudinally along said housing,
- d. a stationary upright comb extending along the upper margin of said opening and projecting upwardly of said face,
- e. a support and guide beneath said opening having at least one L-shaped guide slot therein having a rear end portion extending parallel to said comb, and a longitudinal portion extending longitudinally away from said comb,
- f. a slide bar member slidably supported on said support and guide member and guided thereby for rectilinear movement therealong,
- g. a slide member actuated by said slide bar member and mounted thereon,
- h. uncurling fingers extending from said slide member into juxtaposition with the teeth of said comb,
- i. a drive connection from said slide bar member to said slide member comprising diagonally extending slots in one member and diagonally extending projections in the other member having slidable engagement with said slots
- j. a guiding connection between said slide member and said L-shaped guide slot, retaining said slide member from longitudinal movement away from said comb upon initial movement of said slide bar member away from said comb, and cooperating with said projection and slotted drive connection to effect camming movement of said slide member along the teeth of said comb,
- k. a cover for said opening having generally L-shaped slots therein conforming to the slots in said support and guide and having said uncurling fingers extending therethrough, said cover being slidably engaged by said slide member and retaining said slide member to said slide bar member.

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