

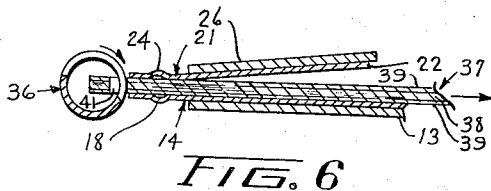
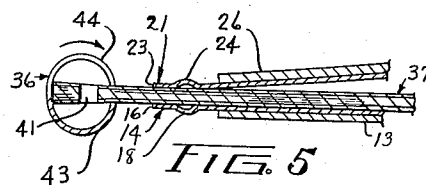
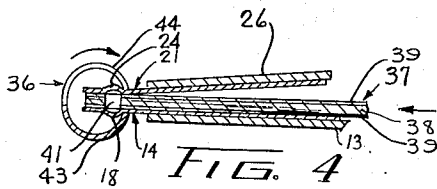
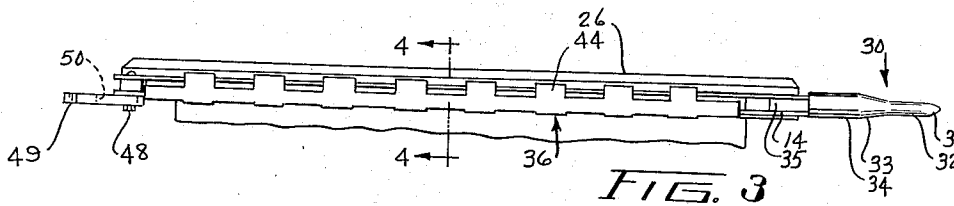
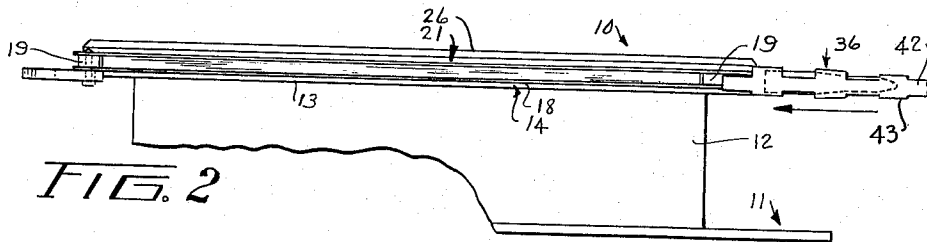
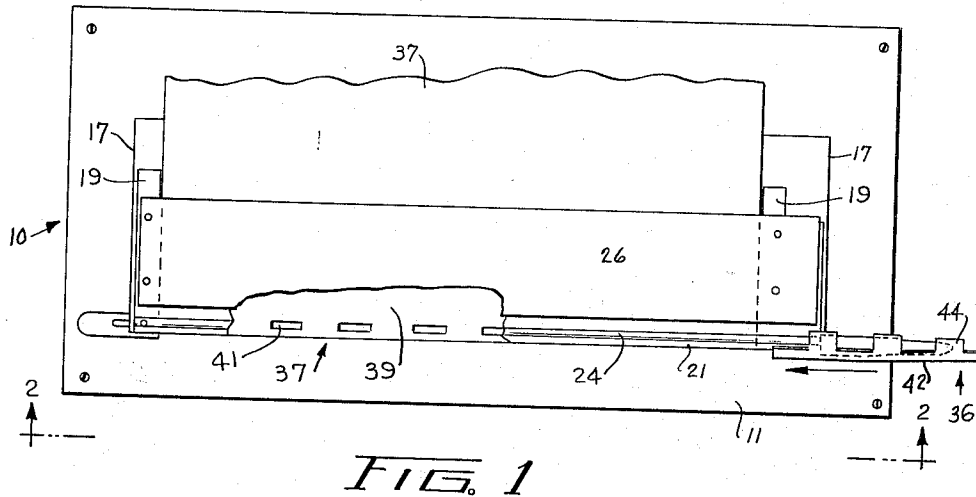
Dec. 29, 1953

A. FREUNDLICH
APPARATUS FOR ASSEMBLING TUBULAR
BINDERS WITH LOOSE-LEAF BOOKS

2,663,883

Filed Sept. 29, 1952

3 Sheets-Sheet 1



INVENTOR.
ALBERT FREUNDLICH
BY

J. B. Felsch
ATTORNEY

Dec. 29, 1953

A. FREUNDLICH
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3 Sheets-Sheet 2

FIG. 8

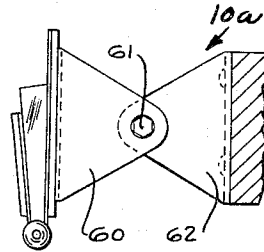


FIG. 7

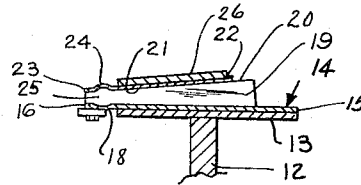


FIG. 9

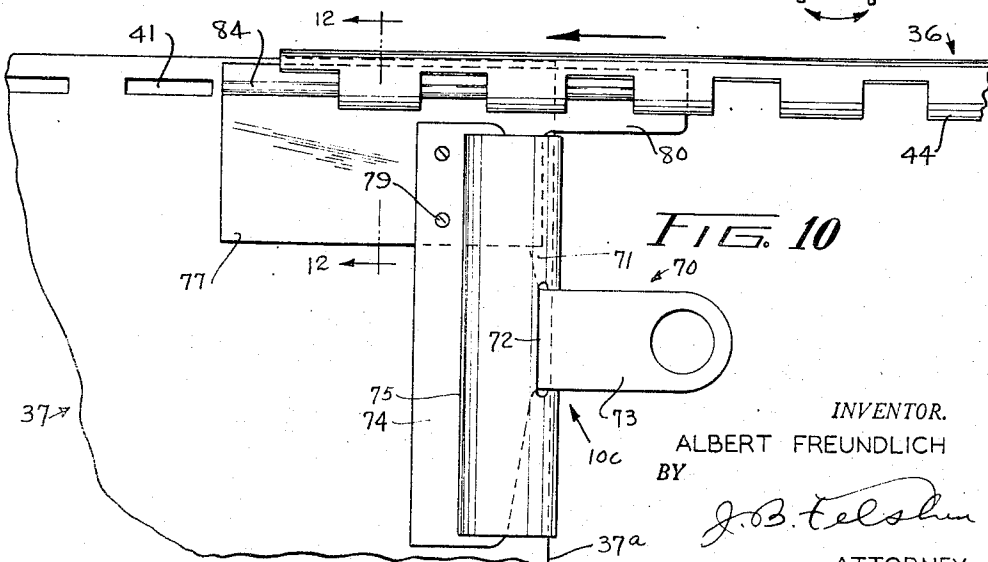
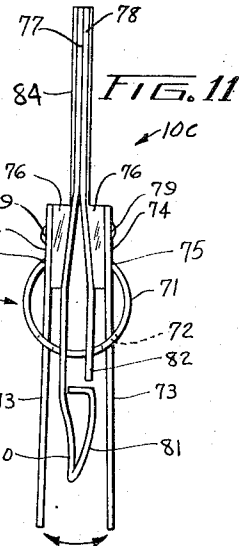
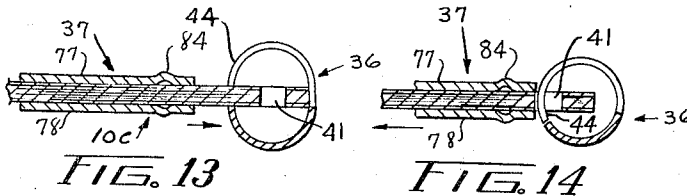
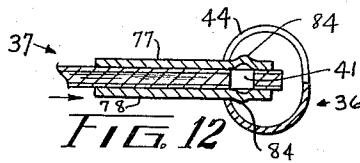
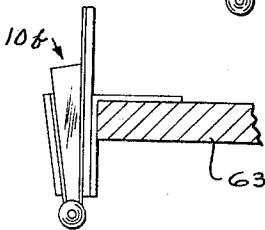


FIG. 10

INVENTOR.
ALBERT FREUNDLICH
BY

J. B. Felsheim
ATTORNEY

Dec. 29, 1953

A. FREUNDLICH
APPARATUS FOR ASSEMBLING TUBULAR
BINDERS WITH LOOSE-LEAF BOOKS

2,663,883

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3 Sheets-Sheet 3.

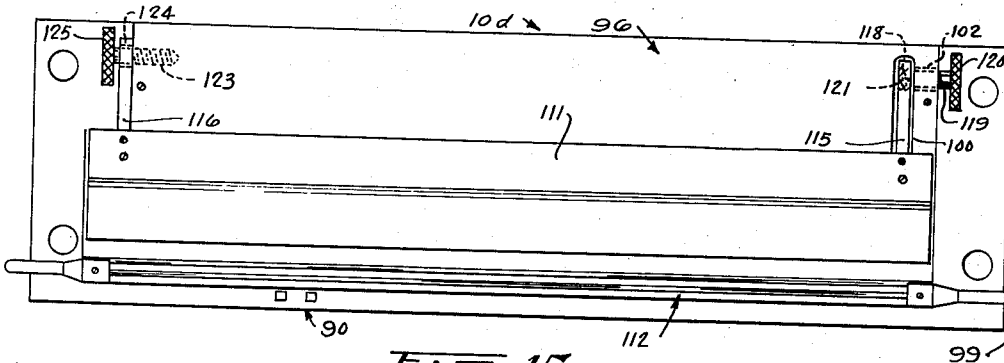


FIG. 15

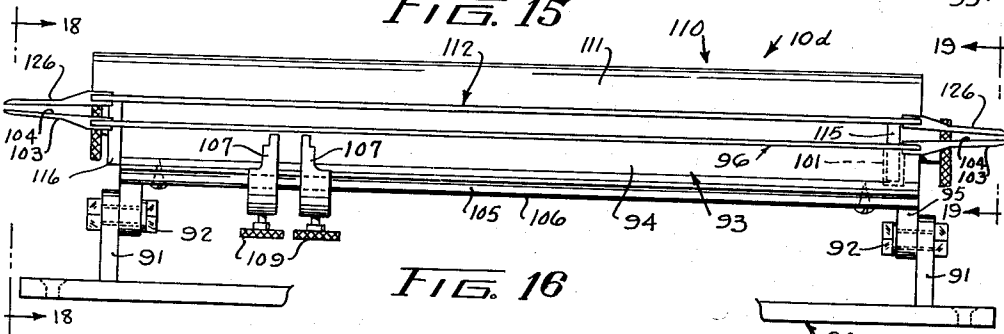


FIG. 16

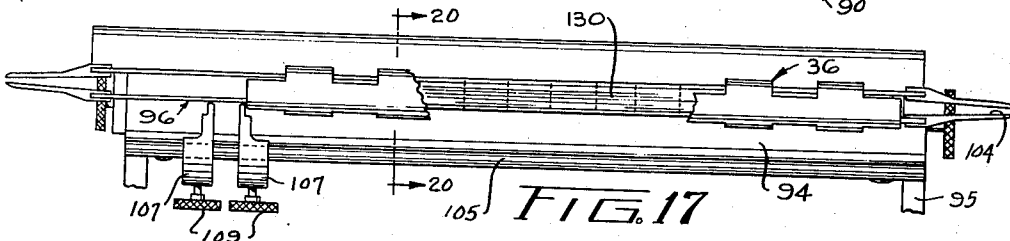


FIG. 17

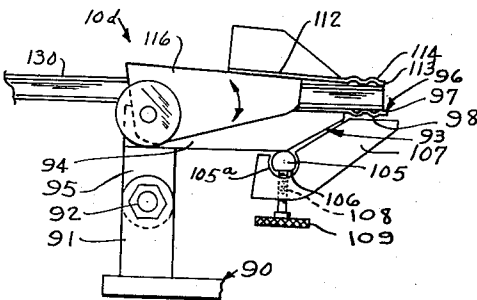


FIG. 18

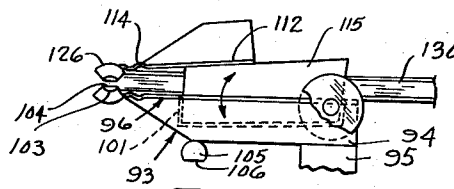


FIG. 19

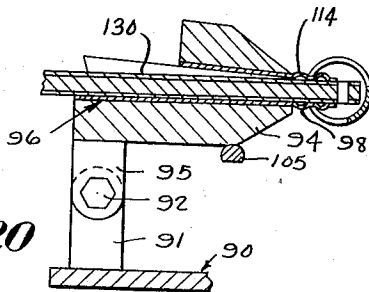


FIG. 20

INVENTOR.
ALBERT FREUNDLICH

BY

J. B. Felskin
ATTORNEY

UNITED STATES PATENT OFFICE

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APPARATUS FOR ASSEMBLING TUBULAR
BINDERS WITH LOOSE-LEAF BOOKS

Albert Freundlich, New York, N. Y.

Application September 29, 1952, Serial No. 312,015

11 Claims. (Cl. 11-1)

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This invention relates to apparatus for assembling tubular binders with loose leaf books.

Devices for assembling loose leaf books or leaves with tubular binders formed with resilient fingers, have been known, but such devices as heretofore constructed are fairly complicated and required skillful manipulation.

It is, therefore, an object of this invention to provide a device of the character described, which shall be extremely simple in construction, very easy to manipulate, and which shall be sure and positive.

A further object of this invention is to provide a device of the character described including means to open up the fingers of a tubular binder by slidably moving the tubular binder on the device which opens it up, then inserting the slotted end of a book into the binder which has its fingers spread open and pushing the binder off the device so that the fingers snap onto the book adjacent the slots or in the slots.

Yet another object of this invention is to provide a device of the character described, comprising a member having top and bottom spaced plates between which the slotted end of a book may be inserted, a tapered member at one end of the device so that a tubular binder may be slidably mounted at the rear ends of the plates to open up the fingers of the binder, and means to align the tube with respect to said device so as to locate the fingers with respect to the slots in the book inserted between the plates, the construction being such that the book may be pushed through the space between the plates to push the binder off the plates so that the fingers snap onto the book inwardly of the slots and whereby the book with the binder snapped thereon may then be moved in an opposite direction so that one or both of the plates will push the fingers into the slots to permit the fingers to snap through the slots.

Still another object of this invention is to provide a device of the character described, which may be adjustable for angle and in which the distance between the two plates may be adjusted to accommodate the loose leaf books of various thicknesses.

Yet another object of this invention is to provide a device of the character described, comprising a clamp pressing a pair of plates adapted to be clamped against opposite sides of a book adjacent the slotted end thereof and further including means to spread apart the fingers of a tubular binder slidably moved onto said plates for aligning the fingers with the slots of the book and

whereby said book and clamp may be separated and the fingers snapped into the slots of the book aligned therewith.

Still another object of this invention is to provide a device of the character described which shall be adjustable to exact thickness of the book to be bound so that the binding element is stretched only as much as is necessary up to the thickness of the book. With other assembling methods or apparatus, the binding elements are opened up much more than is necessary at the expense of the elasticity of the binding element.

Still another object of this invention is to provide a device of the character described comprising a pair of guide plates between which the loose leaf book to be bound is inserted. These plates act as guides to hold the sheets down and to smoothen the sheets if they are wavy.

Still another object of this invention is to provide a device of the character described, provided with two leads at opposite ends and two stoppers so that the binding elements may be mounted on the device from either end or from both ends for dual binding.

Yet another object of this invention is to provide a device of the character described, which can be placed in horizontal, vertical or any other position desired, and which lends itself to automatic feed of the binding elements and also to the automatic feed of the books to be bound.

Yet another object of this invention is to provide a device of the character described, which is so constructed that as the book comes out it may drop into a receptacle or onto a conveyor for shipping or packing, the construction being such, furthermore, that the sheets can be jogged against the binder and against the sides of the guides for assembling the book.

Yet another object of this invention is to provide a device of the character described, which lends itself to fast operation since the binding is done as you take the book out of the device.

Yet a further object of this invention is to provide a device of the character described, having split lead blades or pins, one part being on the upper plate and the other part on the lower plate, so that as the plates are adjusted the split parts of the blade or pin are also adjusted to accommodate all sizes of books.

Still a further object of this invention is to provide in a device of the character described, a pair of parallel ridges on the top and bottom plates to accommodate binders of different sizes which are used for different size books.

Yet another object of this invention is to

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provide a device of the character described, which is so constructed that a tubular binder may be slipped thereon with the fingers of the binder either at the top or at the bottom so as to make it unnecessary for the operator to be careful to bring the fingers to the top or bottom before mounting the binder on the device. The device embodying the invention, furthermore, can be used with rings as well as with binders.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the following claims.

In the accompanying drawings in which is shown various illustrative embodiments of this invention:

Fig. 1 is a top plan view of the device embodying the invention and showing a tube partially pushed onto the spreading portion of the device;

Fig. 2 is a rear end view of the device shown in Fig. 1;

Fig. 3 is a view similar to Fig. 2 but showing the binder tube fully mounted on said device;

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 4 but showing the book pushed through between the plates so that the binder snaps thereon;

Fig. 6 is a view similar to Fig. 5 and showing the book pulled in an opposite direction and causing the fingers of the binder to snap into the slots of the loose leaf book;

Fig. 7 is a transverse sectional view of the device shown in Fig. 1;

Fig. 8 is a side elevational view of the device embodying the invention and illustrating a modified construction of the device;

Fig. 9 is a view similar to Fig. 8 and illustrating another modification;

Fig. 10 is a top plan view of the device embodying the invention and illustrating yet another modification and showing a binder tube partially mounted on said device and book;

Fig. 11 is an end elevational view of the device shown in Fig. 10;

Fig. 12 is a cross sectional view taken on the line 12—12 of Fig. 10;

Fig. 13 is a view similar to Fig. 12 but showing the book pushed through the device of Fig. 10 so that the binder snaps thereon;

Fig. 14 is a view similar to Fig. 13 but showing the fingers of the binders passing through the slots in the loose leaf book;

Fig. 15 is a top plan view of a device embodying the invention and illustrating another modified construction;

Fig. 16 is a rear elevational view of the device shown in Fig. 15;

Fig. 17 is a view similar to Fig. 16 but showing a binding element and a loose leaf book on the device;

Fig. 18 is one end view of the device in a plane 18—18 of Fig. 16;

Fig. 19 is an opposite end view of the device taken on plane 19—19 of Fig. 16; and

Fig. 20 is a cross sectional view taken on line 20—20 of Fig. 17.

Referring now in detail to the drawings, 16 designates an apparatus embodying the invention. The same comprises a flat base 11 to which there is attached an upstanding stanchion 12.

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Fixed to the top of stanchion 12 is a horizontal supporting plate 13. Attached to the supporting plate 13 is a flat metal bottom guide plate 14 of substantially rectangular shape. Said plate 14 has a front edge 15 and a rear edge 16 and end edges 17. Adjacent the rear edge 16 is a downwardly curved elongated rib 18, for the purpose hereinafter appearing. Mounted on the plate 14 inwardly of the ends thereof are a pair of transverse or cross bars 19. The cross bars 19 have upwardly and forwardly inclined forward edges 20. Supported on cross bars 19 is a top metal guide plate 21 having a front edge 22 and a rear edge 23. The rear edge 23 is substantially aligned above the rear edge 16 of plate 14. Said plate 21 is formed adjacent the rear edge 23 with upwardly curved longitudinal rib 24 opposed to the rib 18.

It will be noted that between the plates 14 and 21 and between the bars 19 is an elongated space or through channel 25 which becomes smaller in height from front to rear. Attached to the top of plate 21 is a reinforcing plate 26.

It will be noted that the plates 14 and 21 extend outwardly beyond one of the bars 19 as shown at the right side of Fig. 1.

Fixed between extending portions of the plates 14 and 21 is a lead pin 30 which projects beyond said plates. Pin 30 comprises a tapered tip 31 from which extends cylindrical portion 32. Extending from the cylindrical portion 32 is another tapered portion 33, and extending therefrom is a cylindrical portion 34. Extending from cylindrical portion 34 is a flat portion 35 received between the plates 14 and 21 and fixed thereto in any suitable manner. The pin 30 is located adjacent the rear edges of the plates 14 and 21.

The purpose of this apparatus is to assemble a tubular binder 36 with loose leaf book 37. The loose leaf book 37 may comprise loose leaves 38 and covers 39. Said loose leaves and covers are formed with longitudinally spaced slots 41. The tube 36 may be made of resilient synthetic plastic material and comprises generally a backbone portion 42 from one or both sides of which extend spaced resilient fingers 44. The tube 36 may be slipped onto the pin 30. As the tube is pushed to the left, the tapered portion 33 expands the fingers so that the free ends of the fingers will contact the top of plate 21 forwardly of the rib 24 as shown in Fig. 4 of the drawing. The opposite edge 45 of the backbone 43 engages the underside of the plate 21 also forwardly of its rib 18.

As the tube 36 is pushed onto the pin, it will engage the plates and the ribs 18 and 20 will guide the tube. The tube is pushed until it is fully on the plates. Attached to the opposite end of the lower plate 21 as by a screw 48, is an adjustable stop member 49. Stop member 49 may be formed with a longitudinal slot 50 through which the screw passes so that the position of the stop member may be adjusted longitudinally. When the left end of the tube 36 strikes the right end of the stop member 49, the tube 36 is positioned. The tube must be positioned relative to the apparatus so that the fingers 44 thereon will be aligned with the slots 41 in the backbone 37.

After the tube is fully fitted onto the plates as shown in Fig. 4, the book 37 is inserted into the channel or passage 25 with the left end of the book (looking at Fig. 1) contact the bar 19. The book is then pushed in the direction of the arrow shown in Fig. 4 to the position shown in Fig. 5. The book 37 contacts the inside of

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the tube 36 and pushes the tube off the plates 14, 21. The backbone and the fingers snap off the ribs 18 and 24. In such position, however, the fingers 44 will engage the top cover of the book inwardly of the slots 41.

The book may then be moved to the right or in the direction of the arrow shown in Fig. 6, and as that is done, the free ends of the fingers 44 as well as the free edge of the backbone 43 will contact the rear edges of the plates 14 and 21 and the fingers will be pushed back relative to the book until the fingers are aligned with the slots 41, at which time the fingers will snap into and through the slots and the binder will be closed. The entire book may then be removed rearwardly from the channel 21 by pushing the book through the channel. It can drop onto a conveyor or into a receptacle.

In Fig. 8 there is shown apparatus 10a embodying the invention similar to the apparatus 10 except that instead of the channel forming members being mounted on a fixed base, they are attached to plates 60, pivotally mounted as at 61 on a supporting plate 62. Plates 60 are adjustable to any suitable angle so that the operator may work with the channel in any desired angular position.

In Fig. 9 the channel forming apparatus 10b is attached to the front edge of a table 63 so that the book is manipulated downwardly instead of in a horizontal direction as in Fig. 1.

In Figs. 10 to 14 there is shown an apparatus 10c embodying the invention and illustrating another modified construction. Apparatus 10c comprises a spring clamp 70. The spring clamp comprises a part tubular spring member 71 made of spring steel and formed with slots 72 through which extend handles 73 on plates 74 contacting the longitudinal edges 75 of member 71. Attached to the inner sides of plates 74 are plates 76 increasing in thickness toward their outer ends. Attached to the insides of the plates 76 and adjacent one end thereof are a pair of metal plates 77 and 78 adapted to be pressed together normally. The plates 77, 78 are riveted to the plates 76 and 74 by means of rivets 79. The plates 77, 78 extend beyond one end of the spring clamp. Extending from the plate 77 is an extension 80 having a bent back portion 81 forming an angle therewith. Extending from plate 78 is an extension 82 which terminates short of the bent back portion 81. Adjacent their outer edges plates 77, 78 are formed with opposed outwardly curved ribs 84. Upon pressing the handles 73 together the plates 77 and 78 separate. The clamp may thus be opened up to receive the loose leaf book 37 formed with slots 41.

The edge of the book which has the slots is adjacent the ends of the plates 77, 78 which have the ribs 84. One side edge 37a of the loose leaf book contacts the bottom of the part tubular member 71. The tubular binder 36 may then be slipped onto the tapered lead end 39, 41 and as that is done, the free fingers 44 are spread open and slide over the plates 77 inwardly of its ribs 84. The edge of the backbone engages the opposite plate 78 likewise inwardly of its rib 84. Thus tube 36 may be slipped onto the book 37 so that the fingers 34 are aligned with all the slots 41. The book 37 may then be pushed through from the position of Fig. 12 to the position of Fig. 13 causing the tube 36 to slip off the clamp 10c. The fingers 44 may then be pushed back into the slots 41 manually.

In Figs. 15 to 20 there is shown a device 10d

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embodying the invention and illustrating yet another modified construction.

The device 10d comprises a base 90 provided with a pair of upstanding apertured ears 91. Pivotally mounted on the apertured ears 91 by means of bolts 92 is a lower member 93. Said member 93 comprises a transverse member 94 to the underside of which are attached a pair of downwardly extending apertured ears 95. Apertured ears 95 are pivotally connected to the apertured ears 91 through said bolts 92.

Mounted on top of member 94 is a lower guide plate 96 extending rearwardly beyond member 94. Plate 96 has a rear edge 97. It is formed adjacent the rear edge 97 with a pair of downwardly extending, longitudinal parallel ribs 98. Plate 96 is formed adjacent one end edge 99 thereof with a transverse slot 100. Member 94 is formed with a slot or groove 101 which registers with the slot 100. Member 94 is formed with a smooth longitudinal opening 102 communicating with the slot 101.

Attached to the ends of plate 96 adjacent the rear edge thereof, and extending outwardly beyond said plate are split lead pins or blade portions 103. Said pin portions 103 have flat upper surfaces 104, are half round, and taper outwardly toward their outer ends. Attached to the underside of member 94 is an elongated rod 105 having a flat under surface 106. Slidably mounted on rod 105 are a pair of similar symmetrically disposed stop members 107 each formed with a vertical screw threaded through opening 108. Screwed through each of said openings 108 is a thumb screw 109. Each stop member 107 is formed at its upper side with a three-quarter round notch 110 receiving the rod 105. Each stop member may be fixed to rod 105 by tightening its thumb screw 109. Thus each stop member 107 may be slidably moved on the rod 105 and fixed in any desired longitudinally adjusted position. Members 107 extend rearwardly and upwardly to a point beneath the rear edge 97 of the bottom plate 96, for the purpose hereinafter appearing. It will be noted that both side members 107 are independently adjustable.

Pivotally mounted on the lower guide member 94, in the manner hereinafter described, is the upper guide member 110. Member 110 comprises a longitudinal member 111 to the lower side of which is attached a top or upper guide plate 112. Plate 112 has a rear edge 113 which is coextensive with the rear edge 97 of plate 96. The plate 112 is formed near its rear edge 113 with a pair of upwardly extending longitudinally extending ridges 114 disposed above and opposed to ridges 98 of the plate 96. Attached to the underside of plate 112 are a pair of vertically spaced parallel transverse bars 115 and 116.

Bar 115 projects down through the slot 100 and into the slot or groove 101. Bar 115 extends forwardly of plate 112. It is formed with a through screw threaded opening 118 which registers with the through opening 102 in member 94. Extending through the opening 102 is a shank 119 of a thumb screw having a thumb head 120 at its outer end. The inner end of the shank 119 is threaded as at 121. It will be noted that by screwing the thumb screw 119, 120 in one direction, the plate 115 will be tightened against one side of groove 101. Upon loosening said screw, the upper guide member 110 may be rotated about the axis of shank 119.

Bar 116 contacts an opposite outer edge of member 94. Said member 94 is formed with

screw threaded opening 123 coaxial with opening 102. Bar 116 is formed with a smooth opening 124 registering with the screw threaded opening 123. Extending through the smooth opening 124 and screwed into threaded opening 123 is a thumb screw 125. When thumb screw 125 and 119, 120 are loosened the whole upper guide member may be rotated about the axis of said thumb screws. When said thumb screws are tightened, the upper guide member is fixed in place in desired angular position relative to the lower guide plate.

Attached to the outer ends and adjacent the rear edge of the upper plate 114 are a pair of lead pins or blades 126 complementary to the lead pins 103. Thus pins 103 together with pins 126 form lead pins for pushing onto the device a tubular binder 36.

It will now be understood that by properly adjusting the thumb screws the space between the upper and bottom guide members may be adjusted to accommodate loose leaf books 130 of different sizes. The tubular binder may be fitted onto the guide plate from either end and will contact the stop members 107. The fingers of the tubular binder may be either at the top or bottom. Two sets of longitudinal ribs 98, 114 are provided to accommodate binders of different sizes. Thus the device is adjustable to the exact thickness of a loose leaf book.

The binding element is stretched only as much as is necessary up to the thickness of the book. With previous devices the binding element is stretched much more than necessary at the expense of the elasticity of the binder element. If the book has wavy sheets the two guide plates between which the book is passed serves to hold the sheets down and smooths the sheets. With the present construction there are two leads and two stops so as to provide for dual binding. The device can be adjusted to horizontal, vertical or any other angular position to accommodate the operator by controlling the bolts 92. The device lends itself to easy automatic feed of the binding elements. Thus any suitable automatic feed means may be provided for slipping the binder elements onto the device. Also, the device lends itself to automatic feed of the books because it is so simple to feed the books. The books simply go in between the plates from one side and out through the other. As the book comes out, it may drop into any receptacle or conveyor for shipping or packing. The sheets in fact may be jogged against the backbone of the binding element and against the stop members for assembling the book. Rings as well as binding elements may be assembled with books with the device embodying my invention.

It will be understood that if the holes or slots in the loose sleeves are punched in the right place, the fingers can snap right into these holes or slots so as to make it unnecessary to put back the book in order to get the fingers to snap into said holes or slots.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to protect by Letters Patent:

1. Apparatus of the character described, comprising a pair of opposed spaced guide plates forming a channel therebetween into which a loose leaf book with slots may be introduced, said plates having longitudinal opposed ribs, and means at one end of the plates to spread open the fingers of a tubular binder slipped onto said plates, so that the fingers are aligned with the slots in the loose leaf book whereby the book may be pushed against the inside of the backbone of the tubular binder and through the channel to push the tubular binder off said plates.

2. In combination, a channel forming member comprising top and bottom plates having aligned rear edges, said plates being formed with opposed longitudinal opposite extending ribs adjacent their rear edges, tapered lead means adjacent one end of said member and adjacent the rear edges of said plates, to spread open a tubular binder slipped longitudinally on said tapered means and onto said plates, whereby the binder may be pushed onto the plates so as to align the fingers thereof with the slots of loose leaf book introduced into said channel.

3. The combination of claim 2, and means to limit the movement of the tube on said plates.

4. The combination of claim 2, and means to support said plates for adjustment one relative to the other.

5. The combination of claim 2, said plates being disposed at an angle to one another to form a tapered channel.

6. The combination of claim 5, a fixed support, and means to mount said plates for angular adjustment relative to said fixed support.

7. A device for assembling loose leaf books with binding elements comprising a pair of parallel guide members forming a space between them into which the book may be inserted, means to attach said elements in various angular positions relative one to another, and lead means on at least one end of the guide members onto which a binding element may be slipped.

8. A device for assembling loose leaf books with binding elements comprising a pair of parallel guide members forming a space between them into which the book may be inserted, means to attach said elements in various angular positions relative one to another, and lead means on at least one end of the guide members onto which a binding element may be slipped, and a stop member mounted for longitudinal movement relative to one of the guide members, and means for fixing the stop member in longitudinally adjusted position.

9. A base, a lower guide member attached to the base for rotary movement, means for attaching said lower guide member to the base in adjusted angular position, a top guide element mounted on the bottom guide element for angular movement, means for fixing the upper guide element to the lower guide element in angular adjusted position, said guide element forming a slot or channel therebetween through which a loose leaf book may be passed and complementary lead means on said guide elements onto which a tubular binding element for a loose leaf book may be slipped, said lead means having means for opening up the binder as it is slipped in.

10. A base, a lower guide member attached to the base for rotary movement, means for attaching said lower guide member to the base

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in adjusted angular position, a top guide element mounted on the bottom guide element for angular movement, means for fixing the upper guide element to the lower guide element in angular adjusted position, said guide elements forming a slot or channel therebetween through which a loose leaf book may be passed and complementary lead means on said guide elements onto which a tubular binding element for a loose leaf book may be slipped, said lead means having means for opening up the binder as it is slipped in, and a stop member longitudinally mounted on the lower guide element to act as a stop for the binding element.

11. A base, a lower guide member attached to the base for rotary movement, means for attaching said lower guide member to the base in adjusted angular position, a top guide element mounted on the bottom guide element for angular movement, means for fixing the upper

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guide element to the lower guide element in angular adjusted position, said guide elements forming a slot or channel therebetween through which a loose leaf book may be passed and complementary lead means on said guide elements onto which a tubular binding element for a loose leaf book may be slipped, said lead means having means for opening up the binder as it is slipped in, a stop member longitudinally mounted on the lower guide element to act as a stop for the binding element, and longitudinal ribs on said top and bottom guide elements to engage portions of the binding element.

ALBERT FREUNDLICH.

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