Nov. 25, 1969 L. J. MORRIS 3,479,676

BINDING OF SHEETS OF PAPER, CARD OR OTHER SHEET MATERIAL

Filed Jan. 30, 1968 2 Sheets-Sheet 1

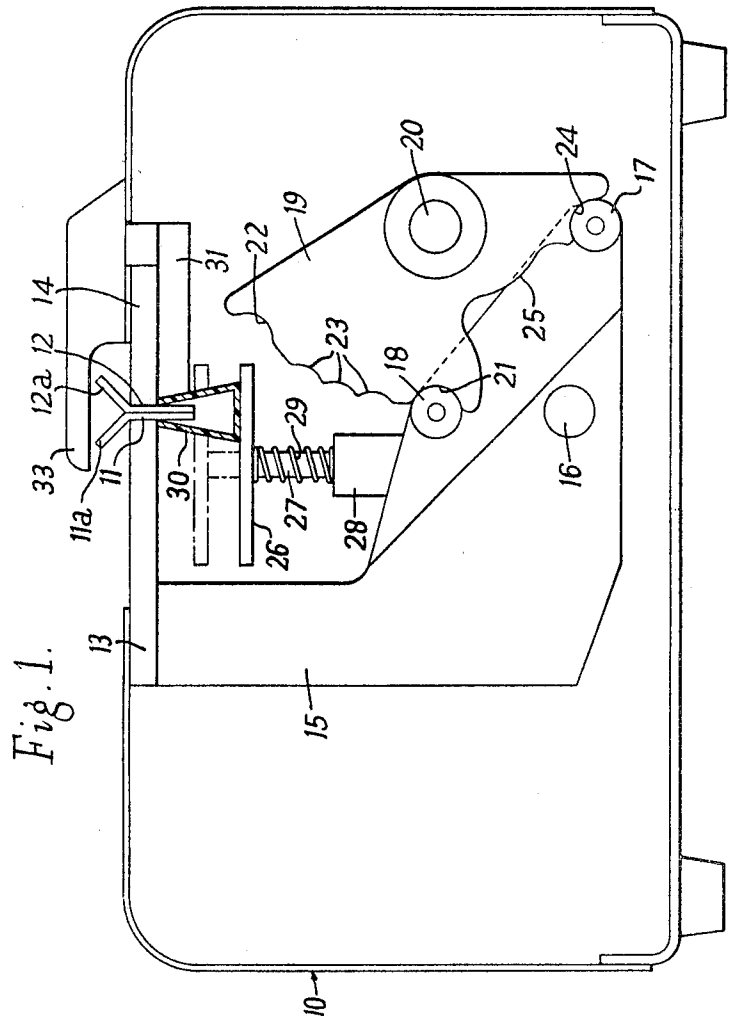


Fig. 1.

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Filed Jan. 30, 1968 2 Sheets-Sheet 2

Fig. 2.

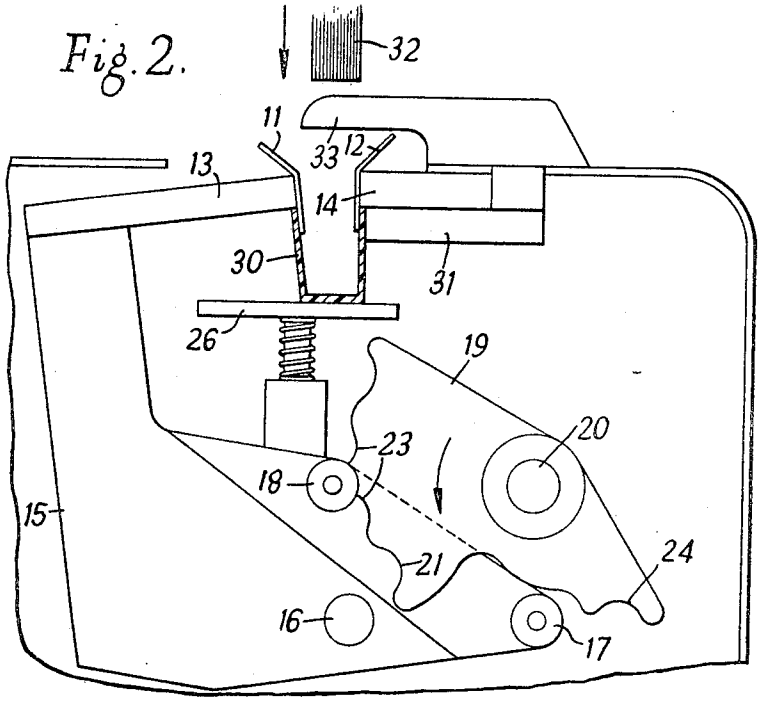
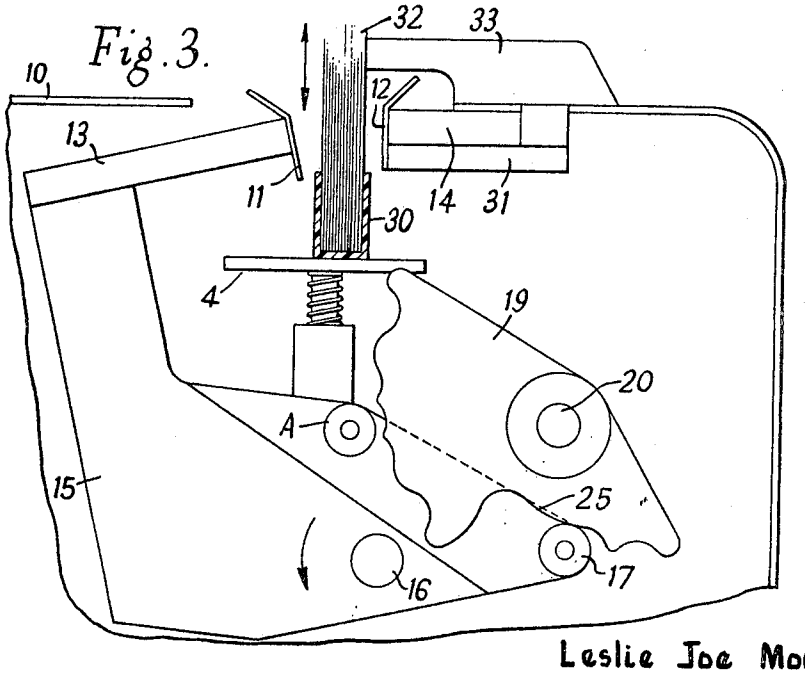


Fig. 3.



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BINDING OF SHEETS OF PAPER, CARD OR OTHER SHEET MATERIAL

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U.S. Cl. 11—1 10 Claims

ABSTRACT OF THE DISCLOSURE

The specification describes an apparatus enabling the side flanges of a resilient channel member to be prised apart to enable a stack of loose leaves to be inserted. The machine has two blades, one of which is fixed and the other of which is mounted on a pivoted support for swinging movement towards and away from the fixed blade. The channel member is disposed with the two blades between the side flanges of the channel and is resiliently supported by a spring platform. The movable blade is operated to open the channel, the marginal portion of the stack of leaves is then inserted between the blades into the channel and is pressed downward to depress the platform and disengage the channel member from the blades so that the member closes round the marginal portion of the leaves.

This invention relates to the binding of sheets of paper, card or other sheet material.

It is known to use for binding or securing such a pack an elongated channel shaped member which receives and grips one edge of the pack. The channel member may be made from a resilient material and in its undeformed state the edges of its flanges are more or less in contact with each other. In the normal way of using such a member a corner of a pack of sheets is introduced into the space between the flanges at one end of the member so as to separate them, whereupon the member is slid along one edge of the pack.

This operation can be difficult and time consuming especially if the thickness of the pack approaches the maximum that can be accommodated by a particular channel member.

According to this invention there is provided a device for securing together a pack of superposed sheets of sheet material by an elongated channel shaped member which is made from a resilient material and which receives and grips one edge of the pack, the side flanges of said member in the undeformed state being inclined towards each other and having their edges close together, which device comprises a pair of elongated blades arranged face to face over which blades the member may be slid so that the blades are disposed between the flanges of the member, and means for separating the blades, whereby the flanges of the member are separated to enable said edge of the pack to be disposed between the flanges.

According to a preferred feature of the invention, the construction and arrangement of the device is such that after the edge of the pack has been fully received in the opened member, pressure exerted on the pack in a direction towards the member causes the flanges of the member to disengage from the blades. In such arrangements, there may be provided means for limiting the distance by which the blades project between the flanges, and a spring-loaded platform for supporting the member in engagement with the blades and urging the member over the blades to the maximum extent permitted by the limiting means and for permitting said disengagement of the flanges from the blades.

In one preferred construction, one of the blades is fixed and the means for separating the blades is cam-controlled, comprising a cam and a follower whereof one is mounted on a fixed part of the device and the other is connected to move with the other of said blades.

One embodiment of the invention will now be described by way of example with reference to the accompanying diagrammatic drawings, in which—

FIGURES 1, 2 and 3 are side views showing the mechanism in successive positions of operation.

Referring to FIGURE 1, the device comprises a fixed frame **10** having a wide slot at the top thereof, and having two elongated blades **11**, **12** disposed face to face in the slot. These blades are seen in and viewed in the drawings. The two blades are mounted on respective plate members **13**, **14** and extend above and below the plate members, the parts **11***a*, **12***a* of the blades above the plate members being divergent from each other. Plate member **14** is fixed to the frame **10**, but member **13** is secured to an arm **15** which is pivotally mounted at **16** on the frame **10**, so that the arm can be rotated to move blade **11** towards and away from blade **12**.

Arm **15** carries two rollers **17**, **18** which constitute cam followers co-operating with respective cam edges of a cam plate **19** which is rotatably mounted on a pivot **20** carried by the frame **10**. The cam edge engaged by roller **18** has two arcuate end rest indentations **21**, **22** and between these two indentations a series of indentations **23** which are disposed at successively increasing radial distances from pivot **20**. The cam edge engaged by roller **17** has an arcuate indentation **24** and a portion **25** curving towards pivot **20**.

Below plate members **13**, **14**, a platform **26** is disposed and has a stem **27** which is slidably mounted in a hollow support pillar **28** fixed to the frame **10** and which is encircled by a compression spring **29** urging the platform towards the plate members. The limiting position of the platform in this direction is indicated in chain lines.

The resilient channel-shaped binding member is shown at **30** and is inserted endwise (the platform **26** having first been depressed) so that the two blades are disposed between the flanges of the member **30**. A stop **31** is mounted on the casing and its position is adjustable in a direction lengthwise of the blade **12**. The member is inserted until its end abuts the stop, so that the position of the member is determined. When the platform **26** is released, it presses the member **30** upwards until the edges of the flanges abut the plate members **12** and **13**, limiting the extent to which the blades can project between the flanges. The cam plate **19** is next rotated in the direction of the arrow as shown in FIGURE 2 to separate the blades, and hence the flanges of member **30**, to an extent sufficient to allow the pack **32** of sheets to be bound to be inserted between the flanges. The indentations **23** permit the cam plate to be maintained in various positions providing successively increasing spacings between the blades. The roller **18** is held in engagement with the cam plate solely by the resilience of member **30**. A further adjustable stop **33** is mounted on the frame **10** and serves for endwise location of the pack **32** of sheets. The pack is inserted between the blades **11**, **12** as indicated in FIGURE 2, entry being facilitated by the divergent blade portions **11***a*, **12***a*. After the edge of the pack **32** has been fully enclosed in the channel member **30**, downward pressure on the pack causes the channel member to move downward with platform **26** and to be pushed off the blades **11**, **12**, whereupon the flanges of the member **30** grip the pack. The position is now as shown in FIGURE 3, and it can be seen that since blade **11** is no longer held by a flange of member **30**, the arm **15** rotates about its pivot **16** to bring roller **17** into contact with cam edge **25** and to provide a wider separation between the blades, thus permitting easy withdrawal of the bound pack. Rotation of the cam plate **19** in the reverse direction

brings the device into the position shown in FIGURE 1 ready for the next binding operation.

For permitting the adjustment of the positions of the stops **31**, **33**, the stops may have slots extending parallel to the blades and fixing screws extending through the slots into the frame **10**.

It will be appreciated that the length of the blades is determined by the maximum dimension of pack which it is required to bind.

The above device enables a much greater number of packs to be bound in a given time than is possible by simply prising the flanges of the member apart manually, and will handle a wide range of sizes and lengths of channel members.

I claim:

1. A device for securing or binding together a pack of superposed sheets of sheet material by an elongated channel-shaped binder member which is made from a resilient material and which receives and grips one edge of the pack, the side flanges of said member in the undeformed state being inclined towards each other and having their edges close together, which device comprises a pair of elongated blades having planar face portions arranged face to face over which blades the member may be slid so that the blades are disposed between the flanges of the member; means for supporting and separating the blades thereby to separate the flanges of the member to enable said edge of the pack to be disposed between the flanges; means for limiting the distance by which the blades project between the flanges; and a platform including means to resiliently position the platform for supporting the member in engagement with the blades and urging the member over the blades to the maximum extent permitted by the limiting means, and for permitting pressure exerted on the pack of sheet material in a direction towards the member, after the edge of the pack has been fully received in the opened member, to depress the platform to cause the flanges of the member to disengage from the blades.

2. A device as defined in claim **1**, further comprising first stop means for limiting movement of the member lengthwise of the blades in one direction.

3. A device as defined in claim **1** further comprising second stop means for limiting movement of the pack lengthwise of the blades in one direction.

4. A device as claimed in claim **1** including means for supporting one of the blades in a fixed manner relative to the other.

5. A device as defined in claim **1** wherein each blade is provided with a planar portion angularly offset from the aforesaid planar face portion, said blades being supported relative to each other with the angular offset portions being oppositely disposed to provide converging guide portions to facilitate insertion of the pack of sheet material into the binder member.

6. A device as claimed in claim **1** wherein the means for separating the blades include cam-controlled means disposed in operative association with the means supporting said blades.

7. A device as claimed in claim **6** including means for supporting one of the blades in a fixed manner relative to the other and wherein the cam-controlled means comprises a cam and a follower whereof one is mounted on a fixed part of the device and the other is connected to move with the other of said blades.

8. A device as claimed in claim **7**, wherein the cam has a cam surface formed with a series of depressions along its length in which the follower can rest and manitain the blades apart, the spacings between the blades represented by successive depressions being different from each other.

9. A device as claimed in claim **7**, wherein said other of the blades is pivotally mounted on a fixed part of the device for its movement towards and away from said one of the blades.

10. A device as defined in claim **7** including means to resiliently maintain the cam follower in engagement with the cam surface solely by the engagement of said other of the blades with the resilient channel-shaped member.

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