Oct. 8, 1957 H. C. ALEXANDER 2,809,031

CARBON PAPER CORRELATING DEVICE

Filed May 13, 1954 2 Sheets-Sheet 1

Fig. 1

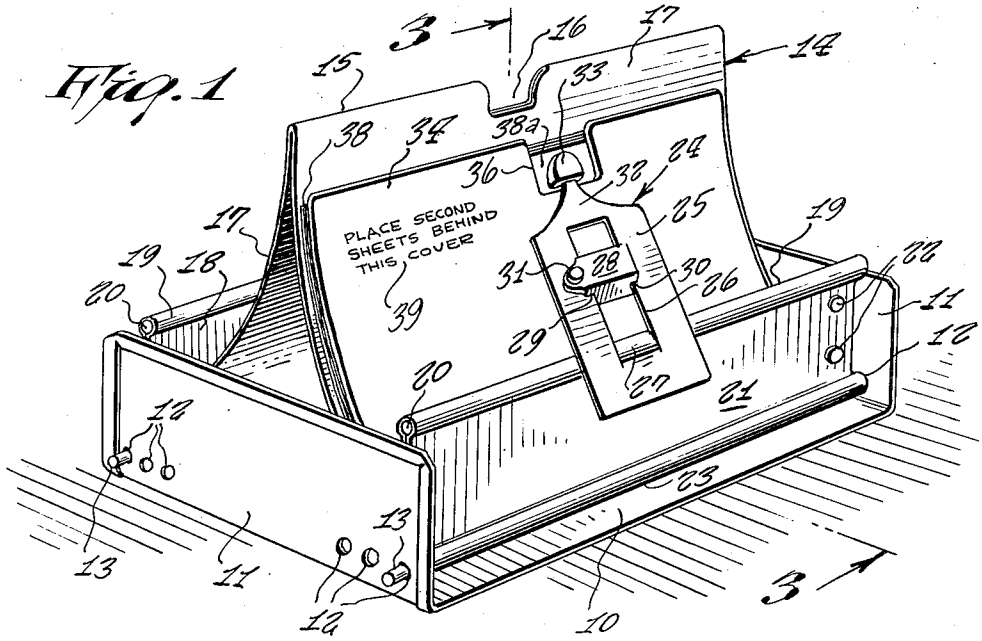
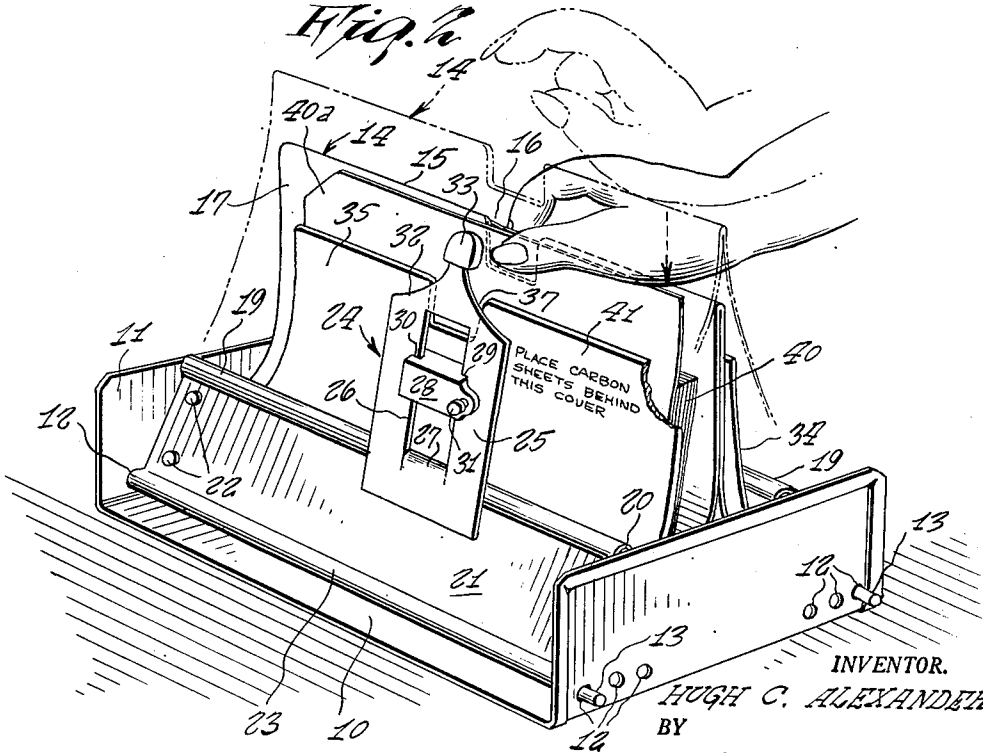


Fig. 2



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Fig. 3

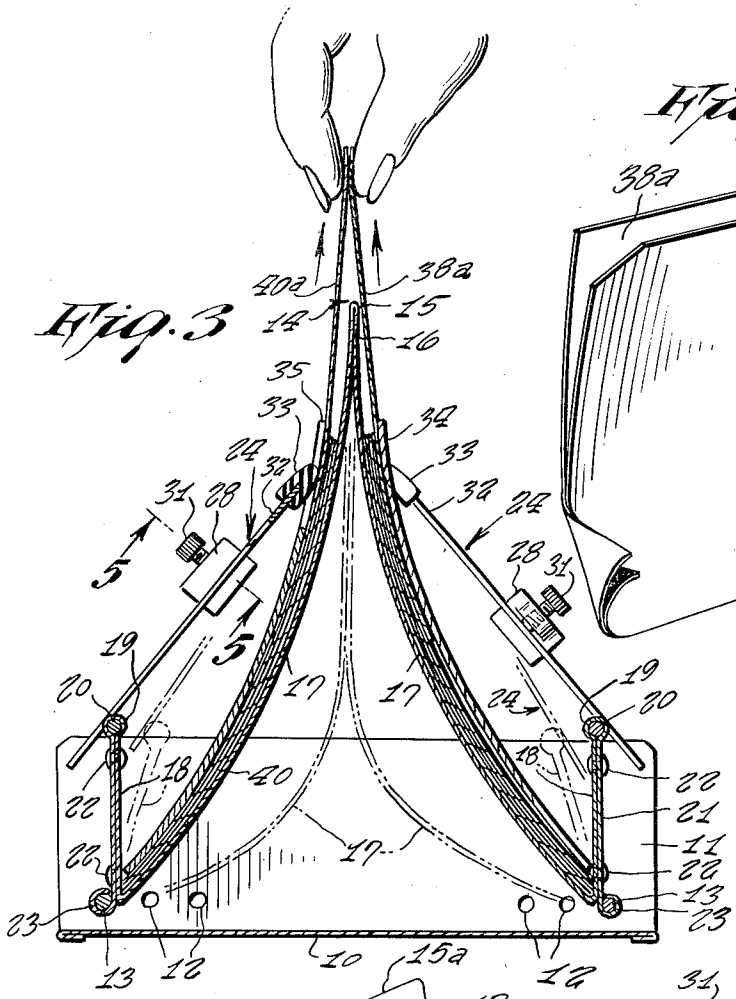


Fig. 4

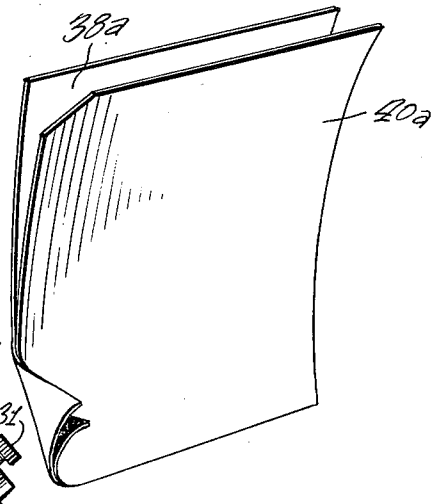


Fig. 5

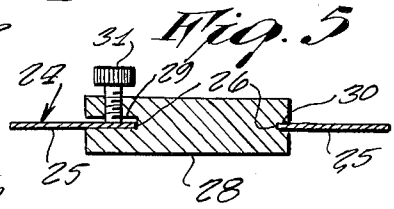
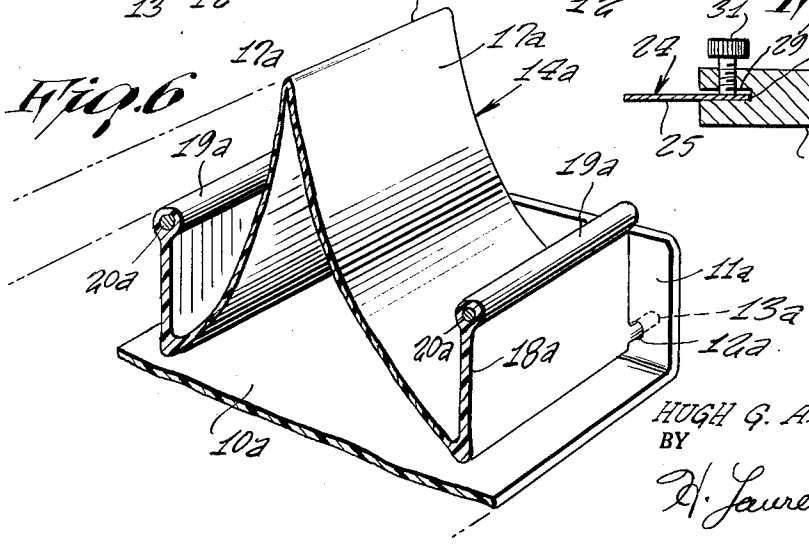


Fig. 6



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CARBON PAPER CORRELATING DEVICE

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Application May 13, 1954, Serial No. 429,631

13 Claims. (Cl. 270—58)

This invention relates to devices for correlating carbon with second and subsequent sheets of paper.

It is an object of the present invention to provide a device which upon a simple downward movement of one of the parts thereof will feed carbon paper and second and subsequent sheets of paper into proper correlation with each other whereupon the carbon and paper may then be withdrawn for immediate insertion in a typewriter or the like.

It is another object of the present invention to provide a device of the above type wherein the carbon paper and second and subsequent sheets are symmetrically stacked on opposite sides of a flexing member, wherein upon a downward movement of said flexing member the stacks of carbon and paper are flexed to raise the outermost sheets relative to the remainder of the stack and whereby a pair of oppositely disposed feed arms continue the movement of the outermost sheets relative to the stacks by further flexing until they may be easily and readily extracted.

It is still another object of the present invention to provide a device of the above type wherein the outermost sheets of carbon paper and second and subsequent sheets are moved upwardly first by flexing the respective stacks and while these outermost sheets move upwardly under the flexing action to a very slight degree, auxiliary feed means simultaneously operate to continue the upward movement of the outermost sheets to a correlated, easily extractable position.

It is another object of the present invention to provide a device for moving and/or correlating any stacks of paper placed therein.

Other objects of the present invention are to provide a device for correlating carbon paper with second and subsequent sheets bearing the above objects in mind which is of simple construction, inexpensive to manufacture, has a minimum number of parts, is easy to use and efficient in operation.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a rear perspective view of a device shown in the inoperative position;

Fig. 2 is a front perspective view thereof and showing the device in the operative position with the carbon paper and second and subsequent sheets in the correlated extractable position;

Fig. 3 is a vertical sectional view taken along the line 3—3 of Fig. 1 but showing the correlated carbon paper and second and subsequent sheets in the process of being removed, the device having returned to the inoperative position;

Fig. 4 is a perspective view showing the correlated carbon paper and second sheet as they are removed from the device;

Fig. 5 is a sectional view taken along the line 5—5 of Fig. 3; and

Fig. 6 is a fragmentary perspective view shown partly in section of a modified form of the present invention.

Referring now more in detail to the drawing, 10 represents a rectangular base member of steel or other suitable material integrally formed at opposite ends with the upstanding end walls 11, the end walls 11 near each end being provided with the laterally spaced sets of openings 12, substantially as illustrated.

A rod 13 is provided at each side of the device, the opposite ends thereof being received within and extending outwardly through a selected pair of the openings 12.

A tent-shaped member indicated generally at 14 of spring steel or other suitable resilient material is provided along its central upper edge 15 with a rectangular cut away portion 16 for a purpose which will hereinafter become clear, the lower longitudinal edges of the flexed sides 17 thereof being integrally formed with the vertically extending rectangular side walls 18. The upper longitudinal edges of the inner side walls 18 are integrally formed with the cylindrical portions 19 which are wrapped around the longitudinal rods 20 and continue downwardly in outer side walls 21 secured to the inner side walls 18 by means of rivets 22, the lower longitudinal edge of the outer side walls 21 being integrally formed with the cylindrical portions 23 which surround the rods 13 (Fig. 3). It will be noted that the angle between the side walls 18, 21 and the flexed side 17 is fixed so that when the upper longitudinal edge 15 is pressed downwardly (Fig. 2) with the palm of the hand that not only will the sides 17 assume the increased flex of Fig. 3 (shown in phantom) but also the rods 20 will move through the arc of a circle toward the side 17.

Cylindrical portions 19 intermediate their ends are cut away, not shown, to expose the rods 20 and to rotatably mount thereon the side members indicated generally at 24 and made up of the rectangular plates 25 of steel or other suitable material having the central rectangular cut out portions 26, substantially as illustrated. It will be noted that the lower end of the cut outs 26 are integrally formed with the tongues 27 which are bent around the rods 20 whereby to rotatably mount the side arms 24.

A weight 28 (Fig. 5) is provided on opposite longitudinal sides with the grooves 29 and 30 which slidably receive the opposite longitudinal edges of the cut outs 26, permitting the weights 28 to be mounted on the sides 24 in a plurality of adjustable positions intermediate the ends of the cut outs 26, a set screw 31 being screw threaded through the weight and bearing on the plate 25 whereby to lock the same in the desired position.

Each of the side members 24 is provided with a pointed upper end 32 on which is mounted a resilient shoe 33 of rubber or other suitable material for a purpose which will hereinafter become clear, the shoes 33 being, of course, laterally aligned. The position of the laterally aligned sides 24 on the rods 20 is such that the shoes 33 are displaced to one side of the cut out portion 16, also for a purpose which will hereinafter become clear (Fig. 2).

A pair of oppositely disposed, flexed covers 34 and 35 of plastic or other suitable material have their lower longitudinal edges disposed in the joints formed by the inner side walls 18 and the flexed sides 17 with their upper longitudinal edges resting on the sides 17. The cover 34 along its upper longitudinal edge is provided with a cutout 36 aligned laterally with one of the shoes 33 while the other cover 35 is provided with a similar cutout 37 aligned with the other shoe 33.

The device is loaded by placing a stack of second or subsequent sheets of paper 38 between the cover 34 and one side 17, the outer face of the cover 34 being provided with suitable descriptive material 39, for example "Place Second Sheet Behind this Cover." A stack of carbon paper 40 is placed intermediate the other side 17 and the

cover 35, the outer face of the cover 35 being provided with suitable descriptive material 41, for example "Place Carbon Sheets Behind this Cover."

In operation, the palm of the hand is brought downwardly along the upper edge 15 of the flexed member 14, as shown in Fig. 2, moving the flexed member 14 from the position shown in phantom to that shown in full lines. This movement flexes the member 14, as shown in phantom in Fig. 3, which action also flexes the stacks of paper 38 and carbon paper 40. This flexing moves all the sheets in each stack a slight distance relative to each other with the outermost sheets 38*a* and 40*a* being raised slightly with respect to the remainder of the stacks. It will be noted from Figs. 1 and 3 that during this action the shoes 33 will bear directly in frictional engagement therewith on the outermost sheets 38*a* and 40*a* through the cutouts 36 and 37 provided in covers 34 and 35 respectively. Thus, as the stacks 38, 40 are flexed, their upper edges are moved downwardly while the outermost sheets 38*a*, 40*a* remain stationary under the action of the shoes 33, assuming the shoes 33 are stationary. However, during this flexing movement, the shoes 33 actually move upwardly to further displace the outermost sheets relative to their stacks and to actually move them upwardly to and upon the cutout 16. This upward movement of the shoes 33 is due to the inward movement of the sides 18, 21 as the upper edge 15 of the flexed member 14 is forced downwardly, which moves the rods 20 closer to the side 17 and thus raises the upper ends of the sides 24 pivotally mounted on the rods 20. Thus, while the stacks 38, 40 are flexed due to downward pressure on the member 14, which flexing movement displaces the sheets slightly relative to each other in their respective stacks, the shoes 33 move upwardly to raise the outermost sheets in correlated position to each other on the opposite faces 17, where they may be grasped on each side of the cutout 16, to be removed in the manner shown in Fig. 3 and Fig. 4. After placing the first sheet of paper or letterhead on top of the correlated sheets 38*a*, 40*a*, the assembly may then be inserted in a typewriter or the like in the usual manner. It will be noted that the outermost sheets 38*a*, 40*a* are raised by the shoes 33 while they are already slightly in motion due to the flexing action of the member 14. Thus, the shoes 33 move the outermost sheets 38*a*, 40*a* by imparting an additional upward thrust, the original inertia of the outermost sheets relative to the stacks having been overcome previously by the flexing action. I have found that it is at this precise moment that the sheets may be more easily raised in the correlated position.

While the device moves the outermost sheets 38*a*, 40*a* into the correlated position for extraction under the combined action of the flexing member 14 and the shoes 33, it will be readily apparent to those skilled in the art that the flexing member 14 may be made of greater height, while the side members 24, holding the shoes 33, are fixedly or rotatably mounted on the rods 13, to move the outermost sheets relative to the stacks into the correlated position by a total flexing action or, alternately, the sheets may be moved into correlated position by providing a stationary central member 14 and moving the outermost sheets 38*a*, 40*a* upwardly into the extractable position by increased mechanical movement of side members 24, and side walls 18, 21 or other suitable means for a total raising action, without departing from the spirit and scope of the invention.

Referring now particularly to Fig. 6, there is shown a modified form of the present invention wherein a plastic base 10*a* is integrally formed at opposite ends with the upstanding end walls 11*a* having the laterally spaced sets of openings 12*a* at each end. In this case, a tent-like flexing member 14*a* is integrally formed at its lower longitudinal edges with the thickened vertices and side walls 18*a* integrally formed at their ends with pins 12*a* rotatably received within the openings 12*a*. The upper longitudinal edges of the side walls 18*a* are integrally formed with the hollow cylindrical portions 19*a* within which are mounted the rods 20*a* for the same purpose as the rods 20 of the first form. The flexing member 14*a* includes the upper longitudinal fold line 15*a* and the flexed sides 17*a* in a manner similar to the first form. In other respects the design and operation of the device of Fig. 6 is the same as that shown in Figs. 1 through 5, having the advantage that the device may be adapted for mass production entirely of plastic.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A device of the class described comprising a base, two vertically concaved sides of flexible material extending downwardly and outwardly from an upper longitudinal apex, said sides near the lower longitudinal edges thereof being rockably mounted on said base, whereby the inward curvature of said concaved sides may be increased by a downward pressure exerted on the longitudinal apex, said concaved sides being adapted to support on the outer faces thereof oppositely disposed stacks of thin paper that will flex inwardly to conform to the normal flexure of said concaved sides and whereby the outermost sheets will inherently move upwardly to a slight degree in relation to each preceding sheet by the flexing action produced on all the sheets when the stacks are increasingly flexed to conform to the increased curvature of said concaved sides, retaining means for supporting the lower longitudinal edges of the paper stacks and for insuring the described upward movement of the sheets, and cord-like raising means including lower ends rockably attached near the lower longitudinal edges of said concaved sides and upper ends adapted to bear on the two outermost sheets to continue the upward movement of these two sheets in relation to the remainder of the stacks to an extractable position when the increased arc in said concaved sides inherently shortens the cord distance between the lower longitudinal edges and the longitudinal apex of said concaved sides.

2. A device of the class described comprising a base, a resilient substantially tent-shaped member comprising two sides extending downwardly and outwardly from an upper longitudinal apex, said sides near the lower longitudinal edges thereof being rockably mounted on said base, whereby the sides may be longitudinally flexed inwardly by a downward pressure exerted at the apex thereof, said sides being adapted to support on the outer faces thereof two oppositely disposed stacks of thin paper that will flex inwardly to conform to the inward flexure to be imposed on the two sides, retaining means on said sides to support the lower longitudinal edges of the stacks of paper and to insure an upward movement of the outer sheets in relation to each preceding sheet to a slight degree by the flexing action produced on all the sheets when the stacks are flexed, and cord-like raising means including lower ends pivotally attached near the lower longitudinal edges of said sides and upper ends adapted to bear on the two outermost sheets to continue the upward movement of these two sheets in relation to the remainder of the stacks to an extractible position when an arc is produced in said sides to inherently shorten the cord distance between the lower longitudinal edges thereof and the upper longitudinal apex thereof.

3. A device according to claim 2, said retaining means for supporting the lower longitudinal edges of the carbon paper and paper stacks comprising upwardly extending walls near the lower longitudinal edges of said sides.

4. A device according to claim 3, said means for raising the outermost sheets of the carbon paper and paper stacks comprising oppositely disposed arms rotatably mounted near said walls, and friction members carried

at the upper ends of said arms and adapted to bear on the outermost sheets of the carbon paper and paper stacks.

5. A device according to claim 3, said means for raising the outermost sheets of the carbon paper and paper stacks relative to the remainder of the stacks comprising the angle between said walls and said faces being fixed, oppositely disposed arms rotatably mounted along the upper edges of said walls, and friction members carried at the upper ends of said arms and adapted to bear on the outermost sheets of the carbon and paper stacks.

6. A device according to claim 4, said tent-like member along its upper longitudinal edge having a cutout, said friction members being displaced longitudinally from said cutout.

7. A device according to claim 4, including a pair of flexible covers positioned on the outside faces of said sides and adapted to receive the stacks of carbon paper and paper thereunder, each of said covers along the upper longitudinal edge thereof having a downwardly extending cutout, said friction members bearing on the outermost sheets of the stacks through said cutouts.

8. A device according to claim 4, the lower longitudinal edges of said tent-like member being formed with hollow, cylindrical portions, elongated rods within said cylindrical portions, said base means comprising a base plate having upstanding end walls, each of said end walls near the opposite ends thereof having longitudinally aligned openings adapted to rotatably receive the opposite ends of said rods therethrough.

9. A device according to claim 8, said oppositely disposed arms being rotatably mounted at their lower ends on said rods below said walls.

10. A device according to claim 8, each of said end walls near the opposite ends thereof having a plurality of laterally spaced sets of longitudinally aligned openings whereby to vary the flexing range of said tent-like member.

11. A device according to claim 4, said tent-like member being formed of plastic, the lower longitudinal edges of said tent-like member being integrally formed with pin extensions, said walls being formed integrally therewith of increased thickness, said base means comprising a base plate of plastic integrally formed with upstanding end walls, each of said end walls near the opposite ends thereof having longitudinally aligned openings adapted to rotatably receive said pin extensions therethrough.

12. A corelating ejector file comprising a base, two sides of flexible material extending downwardly and outwardly from an upper longitudinal apex, said sides near their lower longitudinal edges being rockably mounted

on said base, whereby the curvature inwardly of said sides may be effected by a downward pressure exerted on the longitudinal apex, said sides being adapted to support on the outer faces thereof oppositely disposed stacks of thin paper that will flex inwardly to conform to the flexure imparted to said sides and whereby the outer sheets will inherently move upward to a slight degree in relation to each preceding sheet by the flexing action produced on all the sheets when the stacks are flexed to conform to the curvature of said sides, and a combined retaining and raising means adapted to support the lower longitudinal edges of the two stacks of thin paper and including upper ends adapted to bear on the outermost sheets of the two stacks to raise the same in relation to the remainder of the stacks to an extractible position when said sides are flexed by a downward pressure applied at the longitudinal apex.

13. An ejector file comprising a base, an inwardly curved support side of flexible material rotatably mounted near one longitudinal edge of said base whereby to allow an increased curvature in said support side when pressure is applied at the other longitudinal end of said support side, said support side being adapted to support a stack of thin paper which will inherently flex to conform to the normal flexure of the support side and will further flex inwardly and upwardly when the support side is further inwardly flexed, and cord-like raising means including a lower end rotatably mounted near the lower longitudinal edge of the support side and an upper end adapted to bear on the outermost sheet of the stack to continue the upward movement of the sheet in relation to the remainder of the stack to an extractible position when the arc of the curved support side increases and inherently shortens the cord-like distance between the lower and upper longitudinal edges of the support side.

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