Jan. 30, 1968 L. R. BEYER 3,366,118

SHEET LIFTER

Filed Aug. 29, 1966 2 Sheets-Sheet 1

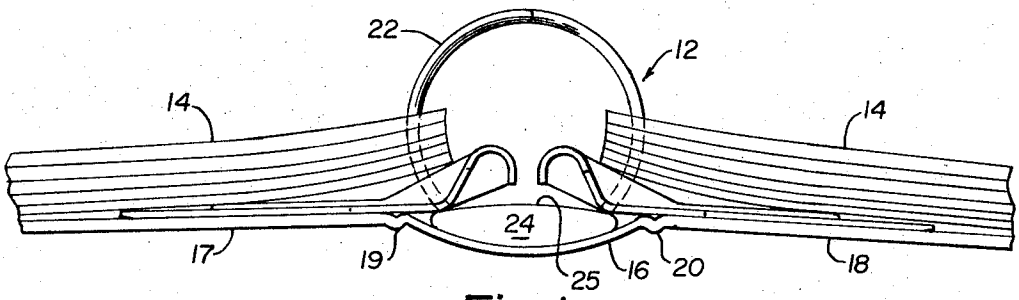


Fig. 1

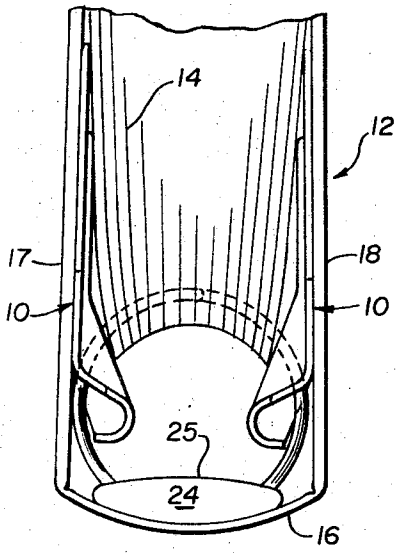


Fig. 2

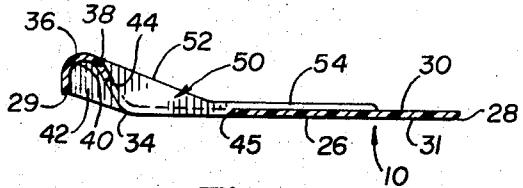


Fig. 4

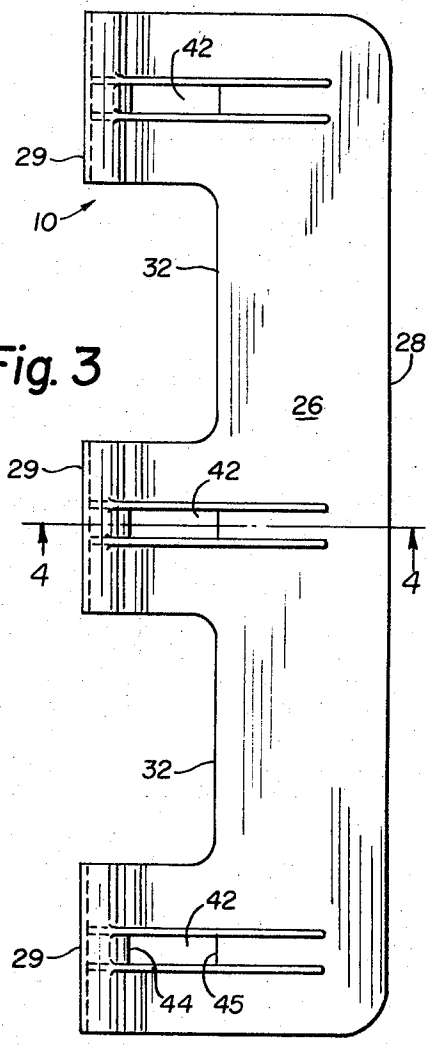


Fig. 3

INVENTOR.
LEWIS R. BEYER

BY

Watts & Fisher

ATTORNEYS

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SHEET LIFTER

Filed Aug. 29, 1966 2 Sheets-Sheet 2

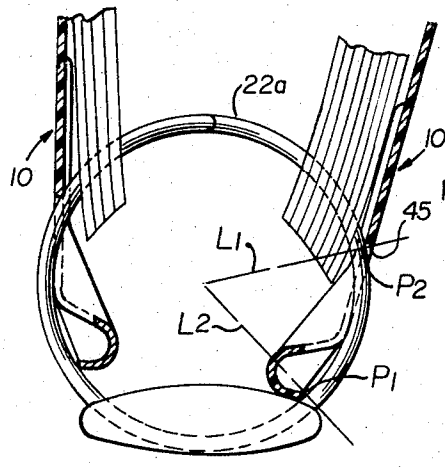


Fig. 5

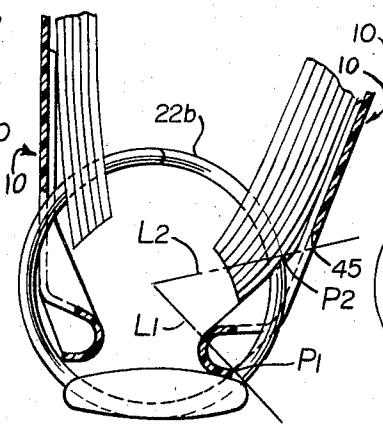


Fig. 6

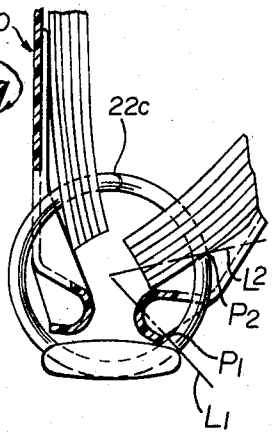


Fig. 7

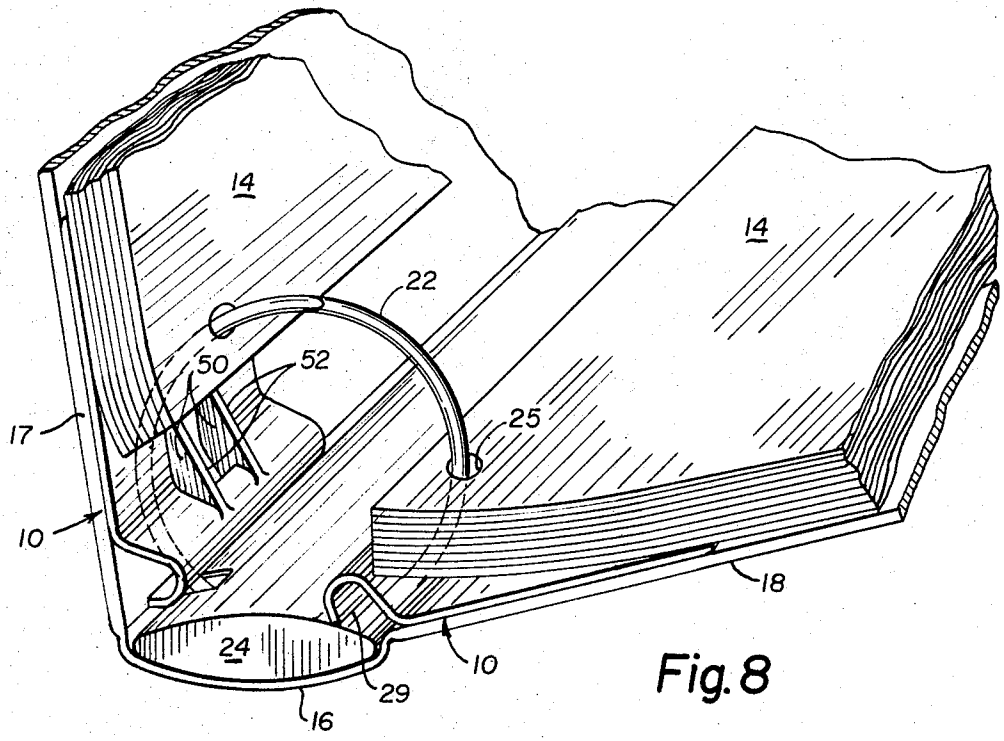


Fig. 8

INVENTOR.
LEWIS R. BEYER
BY Watts & Fisher
ATTORNEYS

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3,366,118

SHEET LIFTER

Lewis R. Beyer, 1853 Hunington Circle, Brunswick, Ohio 44212

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4 Claims. (Cl. 129—4)

ABSTRACT OF THE DISCLOSURE

A sheet lifter for use with a loose-leaf binder, having apertures for rings along a back edge, a gradually inclined surface extending transversely of the lifter adjacent the back edge and with an abutment at the back edge lower than the top of the inclined surface.

Disclosure

This invention relates to the loose-leaf binder art, and more particularly to sheet lifters or followers, which are used to facilitate the closing of loose-leaf binders.

In loose-leaf binders, a sheet lifter is secured to the rings of the binder adjacent each cover. The sheets held by the binder rings are positioned between the two sheet lifters. The function of the sheet lifters is to help move the sheets along the rings when the covers of an open binder are closed. This prevents the sheets from being caught at the base of rings, between the rings and the covers, which tears the apertures and makes it difficult to close the covers.

Many sheet followers or lifters do not perform the intended function correctly and consistently. This is especially true where the lifter is designed so that it can be used with a plurality of different diameter rings, which in standard sizes include 1½, 2 and 2½ inch diameters. The difficulties experienced with known sheet lifters are accentuated when the binder rings become tarnished, increasing the frictional resistance against sliding of the sheets and lifter to an upper position on the rings when the binder covers are closed.

Typically, sheet lifters are constructed of a flat blade or body portion with a plurality of apertures along a back edge. These apertures receive the rings of the binder. The back edge of the lifter often includes an offset portion above the blade to provide an abutment surface which acts against the inside surface of the binder ring. In addition, the apertures are usually elongated, extending from adjacent the back edge a short distance across the blade toward the opposite or front edge, and in front of the offset portion. The elongated aperture provides a substantial distance between the offset abutment surface and the far end of the aperture. These two portions are intended to provide pressure points, respectively, against the inside and outside of the associated ring, when the lifters are pivoted upward as the covers are closed. These two pressure points must span a substantial curvature of the ring to assure that the lifter will move about the ring and carry the sheets upward in response to the closing of the binder covers. If the lifter is to be used with different diameter rings, the aperture length must be sufficient to work with the binder ring of largest diameter contemplated.

Several problems have been experienced in using the typical sheet lifter or follower. One problem is that the elongated apertures or slots permit the inside ends of the lifters to overlap, in the area within the rings. As a result, the lifters often interlock or jam centrally of the rings and interfere with the closing of the covers.

A more important but less obvious problem with the known sheet lifters is that they are often not able to effectively use the length of the elongated apertures to span the necessary ring curvature, and therefore fail to function as intended. The reason for this is that the holes of the

sheets adjacent the lifters, rather than the far ends of the lifter apertures, actually establish the pressure points on the outside of the rings. Thus, the position of these holes defines the effective distance from the abutting surface of the sheet lifter on the inside of the ring. In the initial open position, the holes in the sheets are relatively close to the back edge of the sheet lifter, at the base of the rings. The sheets block the lifter from pivoting to the degree necessary to bring the upper or outer edge of the aperture into contact with the outer surface of the ring to span a large part of the ring circumference. As a result, the lifter pivots very little. Moreover, the effective distance spanned between the inside pressure point on the back edge of the lifter and the outside pressure point at the holes of the paper is too small to cause the lifter and sheets to move about the ring. The sheets are then pinched between the rings and covers if the covers are forced closed. This, of course, tears the sheets above the holes as the cover is forced toward the ring. Only after the sheets are torn do the apertures of the sheet lifter or the now elongated holes of the paper span a large enough curvature to travel along the ring. This problem is intensified when the binder rings become tarnished because of the significant increase in friction between the rings and sheets, which further retards movement of the sheets about the ring to a proper position.

The present invention overcomes the disadvantages of the prior sheet lifting devices by an arrangement that moves the sheets about the binder rings and outward along the apertures of the sheet lifter in response to the initial pivoting of the lifter as the binder covers are closed. That is, the sheet lifter of the present invention initially slides the sheets to a position farther along each ring and moves the sheets outward along the lifter. As a result, the holes of the sheets are farther from the back edge of the lifter. Thus, the pressure points on the rings become separated to an extent that they span a curvature sufficient to allow the lifter and sheets to travel along the ring in response to further closing of the covers. The exact distance that the sheets are moved relative to the lifter before the lifter moves along the rings depends upon the curvature of the rings and the coefficient of friction between the rings, the sheets and the lifter, as will be explained in more detail subsequently.

Briefly, the sheet lifter of this invention is formed of an elongated body having a back edge adapted to be located adjacent the rings of a ring binder and front edge that is spaced from the rings and adapted to lie adjacent a cover of the ring binder. The lifter has an elongated flat portion along the front edge and a plurality of apertures along the back edge. The apertures are elongated tranversely of the elongated body of the lifter. An inclined surface extends from the elongated flat portion of the lifter and rearward along a major portion of the apertures. This surface contacts the lower edges of sheets in the binder as the sheet lifter is pivoted about the binder rings when the binder covers are closed. The lower edges of the sheets slide transversely across the sheet lifter along this surface and move about the rings. This continues until the distance from (a) the location where the lifter contacts the inside surface of a ring to (*b*) the location of the associated holes in the sheets encircling the ring adjacent the lifter, spans a curvature of the ring sufficient to cause the lifter to slide up the ring in response to further closing of the covers of the binder. With this construction, a single sheet lifter functions in the intended manner with binder rings having a large variation in diameter, including the standard rings of 1½, 2 and 2½ inch diameter. In addition, the lifters function well even with severely tarnished rings.

An offset back edge is provided in the lifter of the present invention and a downwardly opening channel positions an abutment surface in proper location to co-

operate with the inner surface of the ring to establish the inside pressure point. A rib is provided within this channel to prevent the adjacent lifters within the ring from interlocking with each other. As a result, the lifters cannot become interengaged so as to obstruct closing of the binder covers.

The back edge of the sheet lifter includes recessed portions between adjacent apertures. These recessed portions extend toward the front end of the lifter to a location at least as far forward as the elongated apertures extend. These recesses accommodate additional rings of the binder. As a result, a sheet lifter with three apertures placed to accommodate the standard three ring spacing can also be used with a five ring or seven ring binder. The need for a large number of apertures along the back edge of the lifter is eliminated. Such apertures detract from the overall appearance. Also, a large number of unused holes indicates that the lifter was not designed for the particular binder, although it may be used with it. On the other hand, with three apertures, all of which are used, and recesses to accommodate the additional rings, a lifter is provided which is less obviously adapted for various binders and which is more attractive in appearance.

In addition to the above features, the front edge of the sheet lifter is preferably bevelled in an upward and outward direction, so that a bevelled surface contacts and rides flat against the inside surface of the binder covers. This significantly reduces any tendency of the binder edge from scraping the inside of the covers and reduces the resistance of such contact so that covers may more easily be closed.

Accordingly, an object of the present invention is to provide a new and improved sheet lifter to effectively move the sheets in a ring binder about the rings during closing of the binder covers.

This and other objects, as well as the various features and advantages of this invention will become better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a fragmentary end view of a loose leaf binder, showing the position of the sheets and sheet lifter of the present invention when the binder is opened;

FIGURE 2 is a fragmentary end view of a loose leaf binder showing the positions of the sheets and sheet lifters of the present invention when the binder is closed;

FIGURE 3 is a top plan view of the sheet lifter of the present invention;

FIGURE 4 is a transverse sectional view of the sheet lifter of FIGURE 3, taken along the line 4—4 and looking in the direction of the arrows;

FIGURES 5, 6 and 7 are diagrammatic fragmentary end views of three different standard sizes of binder rings, diagrammatically illustrating the manner in which the sheet lifters of the present invention function; and

FIGURE 8 is a fragmentary perspective view of a binder, showing one cover in closed position and one cover in opened position, indicating the location of the sheet lifters and associated sheets in each position.

Referring now to the drawings, in particular to FIGURES 1 to 4, a preferred embodiment of the sheet lifter of this invention is indicated generally by the reference numeral **10**. A loose leaf binder is shown at **12** in FIGURES 1 and 2. The two sheet lifters **10** shown in FIGURES 1 and 2 are identical and are provided to lift the sheets of paper **14** that lie against both covers of the binder.

The binder **12** is conventional and includes a backing or spine **16** to which two cover leaves **17, 18** are hinged, as at **19, 20**. The binder **12** further includes two or more binder rings **22** (only one of which is shown), each of which comprises two arcuate segments with uppermost portions that mate when the rings are in closed position. The lowermost portions of the rings are connected to a spring mechanism (not shown) to provide the conventional snap-action ring operation. The spring mechanism is housed by a longitudinal cover plate **24** securely attached to the inside surface of the binder backing **16**. The cover plate **24** has an outer surface **25** through which the binder rings **22** project. The paper sheets **14** include holes **25** (FIGURE 8) through which the binder rings extend.

As shown in FIGURE 1, when the loose leaf binder is open, the sheet lifters **10** extend outward along the inside surface of the covers **17, 18**, beneath the sheets of paper **14**. As shown in FIGURE 2, when the loose leaf binder **12** is closed, the sheet lifters extend upward from the backing **16**, still along the covers **17, 18**, with the paper sheets **14** moved to the upper portion of the rings **22**. In FIGURE 2 the sheet lifters **10** have moved about the ring **22** and are spaced above the upper surface **25** of the cover plate **24**.

The construction of the sheet lifter **10** is best shown in FIGURES 3 and 4. The lifter **10** is an elongated, unitary member, preferably molded of plastic, such as polypropylene, or the like. The lifter **10** includes a flat, blade-like, body portion **26**, and has a front edge **28**, a back edge **29**, a top surface **30**, and a bottom surface **31**. The thickness of the front edge **28** is tapered upwardly and outward, as best shown in FIGURE 4. The back edge **29** extends parallel to the front edge **28**. Spaced recesses are formed by inset edges **32** along the back of the lifter. The recesses extend inward toward the front edge. The back edge **29**, except for the recesses formed by edges **32**, includes a double bend formed by curved portions **34, 36**, as best shown in FIGURE 4. The curved portion **34** results in an upwardly extending back portion **38** that extends at an obtuse angle from the flat body portion **26**. The curved portion **36** establishes a downwardly opening channel **40** between the back edge **29** and the upwardly extending surface **38**. This double bend locates the back edge **29** beneath the curved portion **36** and above the curved portion **34**, so that it is somewhat above the plane of the flat body portion **26**. A plurality of webs **42** extend within and across the downwardly opening channel **40** between the back edge **29** and the curved portion **34**.

Three elongated apertures **42** are provided in front of the back edge **29**, extending transversely of the body **26**, on each side of the recessed edges **32**. The apertures are spaced to receive the three rings of a standard three-ring binder. They will also receive three rings of a standard five ring or seven ring binder, as well. Each aperture **42** extends partially along the flat body portion **26** and partially along the curved portion **34** and upwardly extending surface **38**. A rear edge **44** of each aperture **42** terminates beneath the uppermost portion of the curved part **36**, which represents the highest portion of the sheet lifter. By way of example, in the embodiment shown, the sheet lifter is 3 inches wide and $10\frac{9}{16}$ inches long. The apertures **42** are 1 inch long as projected in the plane of the body portion **26** and a front edge **45** of each aperture is located $1\frac{11}{16}$ inches from the front edge **28** of the sheet lifter **10**. The upper curved portion **36** terminates $\frac{7}{16}$ of an inch above the lower surface **31** of the flat body portion **26** and the back edge **29** is $\frac{5}{32}$ of an inch above the lower surface **31**.

Narrow tracks **50** extend upward from the top surface **30** of the sheet lifter **10** along opposite sides of each elongated aperture **42**. Each track **50** has an upper inclined surface **52** that extends between the flat body portion **26** and the curved portion **36**, being highest adjacent the curved portion **36**. The inclined portion is at least as high as the back surface **29** above the body **26** and preferably is as high as the top of the curved portion **36** at the back of the lifter. In the preferred embodiment shown, the lower forward end of each inclined surface **52** is located slightly to the rear of the front edge **45** of the adjacent elongated aperture **42**. A continuation **54** of each track **50** extends from the end of the inclined

surface **52** outward toward the front edge **28** of the lifter body, and projects a slight distance above the top surface **30**. The continuations **54** are optional and serve only as stiffening elements.

In operation, the purpose of the sheet lifters is to lift the inner edges of the sheets of paper **14** from a position adjacent the bottom of the rings **22** to a position adjacent the upper central portion of the rings when the covers **17**, **18** are closed. Known sheet lifters of proper specific dimensions (i.e., specific aperture length and specific height between the flat body portion and an offset back edge, for use with one specific diameter of binder rings) will travel along the binder rings **22** and raise the sheets when the rings are not tarnished. However, an important feature of this invention is the provision of a sheet lifter that works regardless of the condition of the rings and that can be used with the several standard size loose-leaf ring binders so that separate lifters need not be stocked for each notebook size. Thus, the lifters of the present invention are constructed so that a minimum size lifter for a binder ring of 2½ or 3 inches in diameter can be used with rings of 2 inch and 1½ inch diameter. This is illustrated in FIGURES 5, 6 and 7, showing rings **22***a*, *b*, *c* of 2½ inch, 2 inch and 1½ inch diameters, respectively.

When the sheet lifters **10** are pivoted from a flat open position as shown in FIGURE 1 to an inclined position as illustrated by the right-hand sheet lifter in each of FIGURES 5, 6 and 7, two pressure points are established with respect to the binder ring **22**. A first pressure point **P1** is established at the back edge **29** of the sheet lifter, where it contacts the inside surface of the ring **22**. This back edge provides an abutment about which the sheet lifter pivots as the front edge **28** is moved upward by contact with the cover of the binder. The second pressure point **P2** is initially established by the location of the holes **25** of the sheets **14** lifted by the sheet lifter **10**. As can perhaps best be appreciated from FIGURE 8, when the cover of the binder is lifted only slightly, the distance is short between the pressure point **P1** along the back edge of the sheet lifter and the pressure point **P2** at the holes of the paper. That is, the lower edges of the sheets **14** are relatively close to the back edge of the sheet lifter. If the holes of the sheet remain in this close position, the sheets will not be lifted around the binder ring **22**. Rather, they will be caught in the bight between the cover and the binder ring and pinched so as to prevent closing of the cover.

Before the sheets **14** and the sheet lifter **10** will move about the ring **22**, the distance between the two pressure points **P1**, **P2** must span a sufficient curvature of the ring. If too little curvature is spanned, there will be no movement about the ring. This is demonstrated in the familiar use of the washer found on the rod of conventional air-cylinder storm door closers. This washer slides on the rod and is used to hold the door open when it is positioned askew against the end of the cylinder. It works because when the washer is tilted at a slight angle to the piston rod there is no relative sliding. Rather, the washer grips the piston rod (which may be considered of infinite curvature) and prevents relative movement. Yet, if a similar washer is placed on a thin ring of small diameter, the washer slides. This is because the distance across the aperture (i.e., the distance between the two opposite pressure points) spans sufficient curvature so that the washer merely follows the ring rather than binding against the two opposite surfaces.

FIGURES 5, 6 and 7 indicate by the dotted radial lines **L1**, **L2** the amount of curvature necessary to be spanned on rings of 2½ inch, 2 inch, and 1½ inch diameter, for a stack of sheets and follower to travel along the rings. In each case, the angle between the two lines **L1**, **L2** is identical, but the chord length between the intersections of the lines with the rings varies. It is not necessary to span as great a chord length in connection with a 1½ inch ring as with a 2½ inch ring to span the same proportion of the curvature. It should be understood that the actual angle between lines **L1**, **L2** will depend upon the friction between the rings, sheets and binder, and FIGURES 5, 6 and 7 represent instances where these factors are the same.

The general principle has been recognized that the length of the elongated slot **42** must be sufficient to span the distance between the lines **L1** and **L2** on the largest ring with which it is to be used. It is for this reason that sheet lifters have elongated apertures rather than circular apertures. The important point that has been ignored heretofore is that the outer or front edge **45** of the elongated aperture, if located to contact the outside surface of a 2½ inch ring where the line **L2** intersects, will be far beyond the location of the intersection of line **L2** with a 2 inch or 1½ inch diameter ring. Compare FIGURES 5, 6 and 7. These figures demonstrate that the front edge **45** of the aperture does not function to carry the sheet lifters about the ring in smaller diameter ring binders if it is located to accommodate the 2½ inch ring. This demonstrates why the conventional sheet lifters tear the paper sheets above the perforated holes. If the sheets are not moved out along the rings as the sheet lifter continues to pivot, then sheets will be caught and pinched between the elongated aperture of the lifter and the ring. The outer ring surface tears its way through the paper sheet until the sheet lifter has been pivoted to where the torn apertures or the front edge **45** of the aperture contacts the ring surface at the intersection of line **L2**. Then the lifter rides about the ring.

The manner in which the tracks **50** of the present sheet lifter function to overcome the disadvantages of known lifters can be best understood from FIGURES 5 to 7 and 8. As illustrated in FIGURE 8, the cover on the right-hand side has just started to be closed. The lower edges of the sheets **14** are relatively close to the back edge **29** of the sheet lifter **10**. The left-hand cover is shown in a closed position. The sheet lifter **10** on the left side has moved upward about the ring **22** and the lower edges of the sheets of paper **14** have been moved a substantial distance away from the back edge **29** of the sheet lifter. This final position is also diagrammatically shown in each of FIGURES 5, 6 and 7 on the left-hand side of each. The sheet lifter **10** on the right-hand side of each of FIGURES 5, 6 and 7 shows the sheet lifter and sheets of paper in an intermediate position between the right-hand position of FIGURE 8 and a fully closed position of the cover. In each of FIGURES 5 to 7 the sheet lifter **10** on the right side is shown at a position where it has moved the sheets **14** to the location where the pressure points **P1** and **P2** span the required length of the rings to cause the sheet lifters to thereafter move about the rings and follow the sheets upward. With the small diameter ring of FIGURE 7 the sheets are already sufficiently high that the sheet lifter normally moves very little about the ring and mostly pivots to a more vertical position.

FIGURE 6 in particular illustrates that once the sheets **14** have been moved from the back edge of the sheet lifter **10** a distance such that the holes of the sheets are located along the line **L2**, the sheet lifter and sheets will then move upward about the ring, notwithstanding the fact that the upper or outer edge **45** of the elongated aperture **42** has not contacted the outer edge of the ring **22***b*. This illustrates that it is the holes of the paper sheets that act against the outside edge of the rings **22** and establish the pressure point **P2** when the elongated aperture **45** is not specifically tailored to the precise diameter of the ring, but rather is oversize.

The inner edges of the sheets **14** are moved from the location adjacent the inner edge of the sheet lifter as shown on the right-hand side of the FIGURE 8, to a spaced position as shown in FIGURES 5, 6 and 7, by the inclined surfaces **52** of the narrow tracks **50**. This occurs as the sheet lifters **10** are initially pivoted. As surfaces **52**

slide the sheets 14 outward, by a camming action, the distance between the two pressure points P1, P2 formed by the back edge 29 and the holes of the sheets 14 gradually increases and the sheets are pushed along the rings. Once this increased distance encompasses the angle between the lines L1 and L2, the lifter itself begins to move about the ring, as illustrated on the left-hand side of FIGURES 5 and 6 and the left-hand side of FIGURE 8.

The reason for this functioning is that it is initially easier for the sheets to slide up the incline 52 than for the lifter to move up the ring. However, once the distance between the pressure points increases to encompass a sufficient arc along the ring, it becomes easier for the lifter to move about the ring than it is for the inclined surface 52 to push the paper farther upward. Both the curvature of the ring and the friction between the ring, lifter and paper affect the distance between the points P1 and P2 at which the lifter moves about the ring. Thus, as mentioned, the relationships shown in FIGURES 5, 6 and 7 assume common conditions. In a nutshell, the sheets are moved outwardly along the sheet lifter and along the rings in response to the camming action of the incline, until they encompass enough ring curvature between the pressure point P1 and the location of the holes in the paper so that lifter and paper will travel upward about the ring.

Another important feature to the proper functioning of the sheet lifter 10 is the webs 42 in the channel 40. Due to the length of the elongated apertures 42, the back or inner edges 29 can interfere with each other when the sheet lifters are used with the smaller diameter ring binders. In many instances, the inner or back edges tend to overlap or overlie each other. In the past, offset portions formed at the rear of the lifters would interlock and jam, preventing the sheet lifters from pivoting. With the present construction, the webs 42 prevent the downwardly opening channels 40 from interlocking with the top curved surface 36 of the opposite sheet lifter. They also provide rigidity to the back edge 29.

The upwardly and outwardly bevelled front edge surface provides an additional advantage in the construction shown. This bevel is constructed to provide a relatively flat edge angled to ride against the inside surface of the adjacent cover as the cover closes. This minimizes any tendency of the front edge 28 to catch on the adjacent cover as it slides relative to the cover during the closing action of the notebook.

The location of the inner edges 32 of the recesses aligned with the front edges of the apertures 42, and extending parallel to the front edge 28, is of functional significance when the lifter is used with binders having more than three rings and having the largest diameter rings for which the lifter is designed. With such rings, the inner edges 32 will ride along the outer surface of any binder rings that lie between the three rings that are in the apertures 42. This provides pressure points on the outer surface of the additional rings and aids in causing the sheet lifter 10 to ride upward about the rings.

While a preferred embodiment of this invention has been described with particularity, it will be readily appreciated that various modifications and alterations can be made therein without departing from the spirit and scope of the invention, as set forth in the appended claims. For example, while narrow tracks 50 have been provided and are advantageous from the standpoint of reducing the friction between the inclined surfaces 52 and the paper, the tracks need not be narrow. In fact, the body of the sheet lifter itself may be formed essentially of two planar members, one corresponding to the flat body portion 26 and the other extending therefrom at an obtuse angle corresponding with the upper inclined surface 52 of the tracks 50. The apertures 42 can be formed directly in this inclined surface. Moreover, while it is advantageous to locate the inclined surfaces 52 adjacent the apertures 42 so that they act on the sheets on opposite sides of each ring, where the forces are applied, a single track 50 at each ring is sufficient, and if desired the camming surface can be spaced from the apertures. It must also be recognized, that while the preferred inclined surface is straight, a surface slightly concave or slightly convex will also function in a similar manner to accomplish substantially the same result. The straight surface is preferred because a convex surface occupies more space between the rings, when the notebook is closed, and a concave surface does not move the sheets as effectively as the distance increases from the back edge of the sheet lifter.

What is claimed is:

1. A sheet lifter for use with a loose-leaf ring binder having front and back covers, a back member, rings extending from the back member, and sheets bound in the binder by the rings, which pass through spaced holes in the sheets, said lifter including an elongated body having a back edge, a front edge and a top surface that is located to face sheets in a binder when in use, apertures in the body adjacent the back edge, gradually inclined surface areas, i.e., surface areas greater in length across the lifter body than in height above the top surface of the body, adjacent the apertures and extending in a direction transversely of the body, said apertures being wide enough to accommodate rings of a binder and extending across the elongated body a distance sufficient to permit (a) substantial transverse movement of the body relative to rings that pass through the apertures, (b) substantial pivoting of the lifter relative to rings of a binder about an axis that is remote from the apertures and substantially eccentric of binder rings which pass through the apertures and (c) an accompanying substantial change in angular relationship of the inclined surface relative to ring perimeters, and an abutment on the lifter body behind, i.e., displaced toward the back edge from, the inclined surface, lower than the highest portion of the inclined surface and located to engage the back member of a binder at a location adjacent a base portion of rings passing through said apertures when the lifter is pivoted during use by movement of an adjacent binder cover from an open to a closed position and to thereafter engage an inner surface of said rings in response to further closing movement of the binder cover, said abutment forming a pivot axis about which the lifter pivots relative to the binder.

2. A sheet lifter as set forth in claim 1 wherein the apertures are elongated transversely of the sheet lifter body.

3. A sheet lifter as set forth in claim 1 wherein the back edge is formed in a portion of the body offset from the elongated flat portion and which forms a downwardly opening channel along the back edge above the elongated flat portion and behind at least one aperture.

4. A sheet lifter as set forth in claim 3 including a rib having a downwardly and forwardly inclined bottom edge extending across and within the said channel to prevent the interlocking of adjacent lifters when located in a binder with the binder covers in an open position.

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JEROME SCHNALL, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,366,118 January 30, 1968

Lewis R. Beyer

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 8, after line 61, insert

5. A sheet lifter as set forth in claim 1 wherein the said inclined surface areas are in the form of narrow, straight, body portions that extend alongside the apertures transversely of the lifter body.

in the heading to the printed specification, line 6, for "4 Claims" read -- 5 Claims --.

Signed and sealed this 22nd day of April 1969.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents