Jan. 18, 1966 H. HENSGEN 3,229,323

HINGE ADJUSTING SHIM

Filed Oct. 16, 1963 2 Sheets-Sheet 1

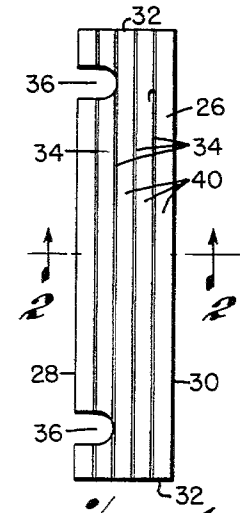


Fig. 1

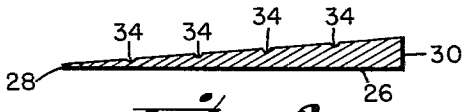


Fig. 2

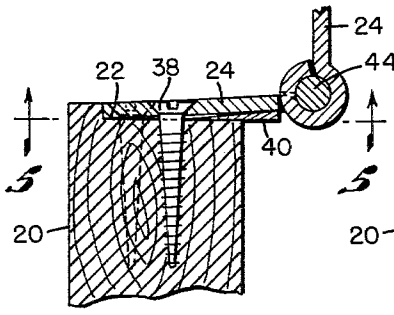


Fig. 3

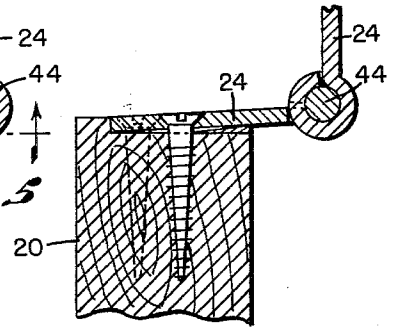


Fig. 4

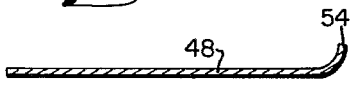


Fig. 7

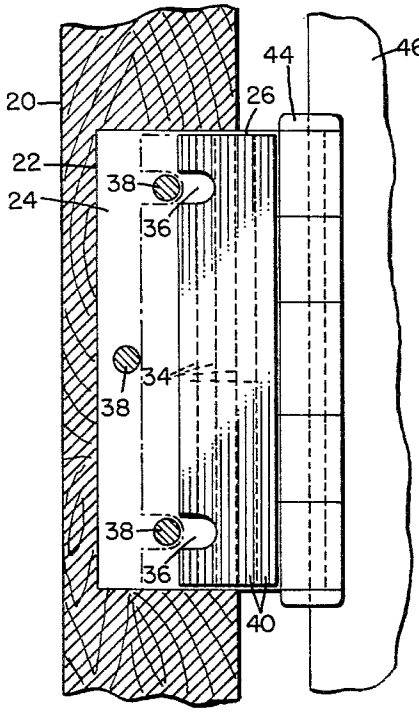


Fig. 5

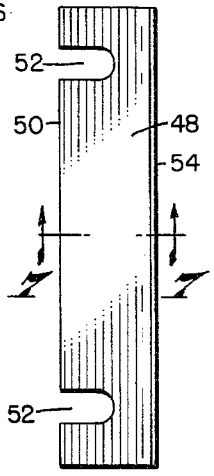


Fig. 6

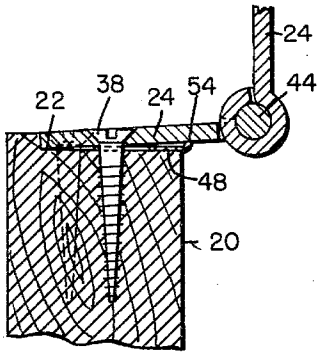


Fig. 8

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Jan. 18, 1966 H. HENSGEN 3,229,323

HINGE ADJUSTING SHIM

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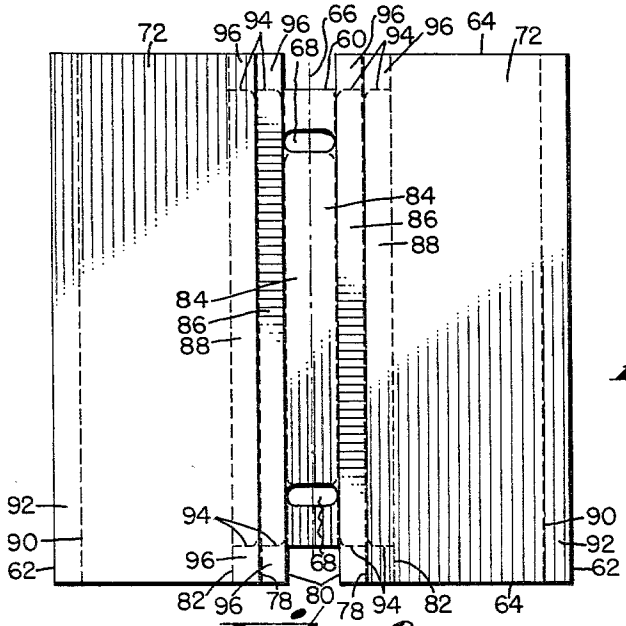


Fig. 9

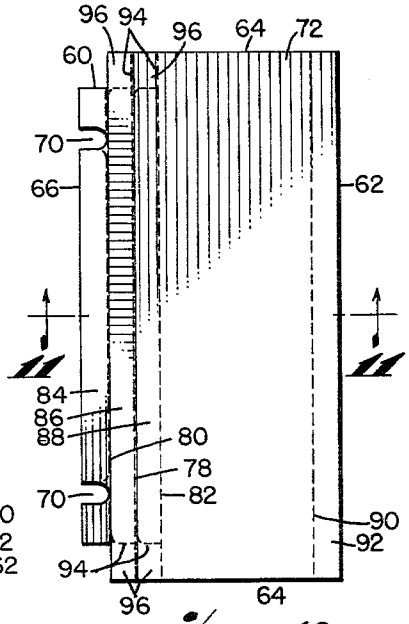


Fig. 10

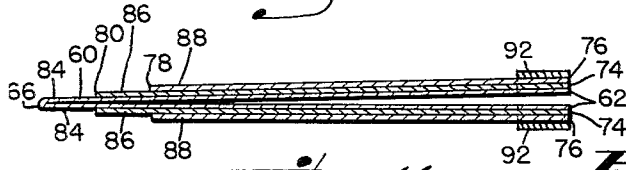


Fig. 11



Fig. 12 Fig. 13

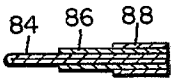


Fig. 14

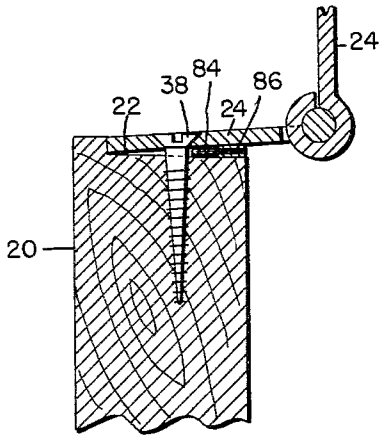


Fig. 15

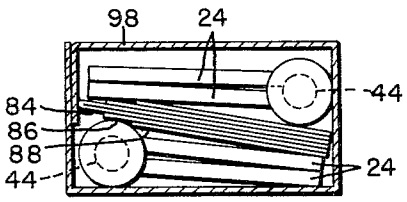


Fig. 16

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3,229,323

HINGE ADJUSTING SHIM

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11 Claims. (Cl. 16—128)

This invention relates to a hinge adjusting shim, the function of which is to facilitate and expedite the proper hanging of a door upon a frame or similar support.

An object of the invention is to provide a simple and inexpensive shim construction facilitating and expediting the proper hanging of a door.

Another object is to provide a shim for the purpose stated, which may be used also as part of a merchandising package containing two or more hinges, and which in the performance of such function, protects the finish of the packaged hinges against defacement in handling.

A further object of the invention is to provide a hinge adjusting shim which is convenient to use and apply, thereby effecting savings of time and labor on the part of the installer.

Another object is to provide a device for the purposes stated, which upon installation presents a neat and workmanlike appearance.

The foregoing and other objects are attained by the means described herein and illustrated upon the accompanying drawings, in which:

FIG. 1 is a plan view of a hinge shim embodying the invention, said shim being in cast or molded form.

FIG. 2 is an enlarged cross-section taken on line 2—2 of FIG. 1.

FIG. 3 is a fragmentary cross-section of a door and an applied hinge, with a shim of the invention applied thereto.

FIG. 4 is a view similar to FIG. 3, showing an unused portion of the shim detached.

FIG. 5 is a cross-section taken on line 5—5 of FIG. 3.

FIG. 6 is a plan view of a modified form of the hinge shim.

FIG. 7 is an enlarged cross-section taken on line 7—7 of FIG. 6.

FIG. 8 is a fragmental cross-section showing a hinge shimmed upon a door, utilizing the shim of FIGS. 6 and 7.

FIG. 9 is a plan view of a second modification, showing a shim construction in unfolded condition.

FIG. 10 is a plan view of the FIG. 9 shim folded to use condition.

FIG. 11 is an enlarged cross-section taken on line 11—11 of FIG. 10.

FIGS. 12, 13 and 14 are cross-sectional views showing the FIG. 10 shim in sections detached from the whole shim of FIG. 10.

FIG. 15 is a cross-section of a door and an applied hing, shimmed by a section of shim such as FIG. 13 illustrates.

FIG. 16 is a transverse cross-section of a pair of boxed hinges, with the shim of FIG. 10 utilized in the package as a protective spacer for the hinges.

In the usual application of a hinge to a door or other structure, it is common practice to remove, by routing or otherwise, some of the material of the door or other structure 20 in order to provide a seat 22 which will support the hinge butt or leaf 24 flush with the surrounding surface. If the depth of the seat is excessive, or if irregularities occur in the door or the frame to which it is hung, the mechanic often finds it necessary to insert pieces of cardboard or other shim material between the seat and the hinge butt in order to properly fit the door to the frame. Such adjustments are usually of a makeshift nature, and result quite often in an insecure or unsightly mounting. In addition, the practice is wasteful of time and labor, since the shimming must be done by trial and error method.

In accordance with the present invention, a wedge-shaped shim as depicted by FIGS. 1 to 5 is formed by casting, molding, or otherwise shaping a tapered rigid body 26 for insertion beneath a hinge butt. The shim may be substantially rectangular, having a thin side edge 28 and a thick side edge 30, bounded by opposite ends 32. The shim may be scored or grooved at several locations in parallelism with edges 28 and 30, to provide lines of breakage or severance 34. Notches 36 may be provided along edge 28 to accommodate the screws 38 which secure the hinge butt to member 20.

Should the mechanic find that the hinge requires shimming, he inserts the thin edge of the shim between the hinge butt and member 20, and advances the shim the necessary distance to achieve the adjustment required. If as in FIG. 3, the desired hinge adjustment is obtained without fully inserting the shim beneath the hinge butt, one or more of the sections 40 defined by the grooves 34 may fail to reach a position upon seat 22, whereupon such remaining shim section or sections may be broken off along a groove 34 and discarded. As a result, the neat and workmanlike installation of FIG. 4 is achieved, with the shim practically concealed.

The shim of FIGS. 1 to 5 may be fabricated of plastic, metal, fiber-board, or any other suitable material having the necessary density and durability; and depending upon the materials used, the shim may be formed by casting, molding, pressing, extruding or otherwise shaping the material thereof.

Throughout the drawings, the hing butts and the hinge pins are identified by the reference characters 24 and 44, respectively. In FIG. 5, the reference character 46 may indicate a door frame or other support upon which the door is to be hung. As will be understood, adjusting shims may sometimes be required between the frame or support 46 and the hinge butt secured thereon.

In the modification, FIG. 6 to 8, the shim 48 may be a rigid metal stamping or the equivalent thereof, of uniform thickness throughout, having a leading edge 50 provided with notches 52 for accommodating the mounting screws 38. The opposite parallel side edge may be up-turned to provide a lip 54, which lip is adapted to rest upon hinge butt 24, FIG. 8, and thereby impart the necessary tilt to the butt for obtaining the required adjustment. Lip 54 will be seen to perform the same function as the thickened rear edge 30 of the wedge-shaped shim of FIG. 2. While shim 48 embodies no means of reducing its width, as by removing detachable sections, it may be caused to establish the degree of tilt of the hinge butt relative to seat 22, by shifting of the shim bodily toward and from pin 44.

The form of shim illustrated by FIGS. 9 to 15, may be constructed of paper, paper-board, or similar inexpensive sheet material, laminated and stepped as in FIG. 11 to progressively increase the thickness of the shim in the direction of one edge, thereby to provide a tapered or wedge-shaped shim unit.

A base sheet 60, which when laid flat as in FIG. 9, is substantially rectangular and has the shape depicted by FIG. 9. That is, the base sheet 60 has opposite parallel side edges 62, 62, and opposite parallel end edges 64, 64. Said sheet is adapted to be folded along a fold line 66, which becomes the entry edge of the finished shim.

Transversely of the fold line 66, sheet 60 is provided with elongate apertures or cut-outs 68, which in the folded condition of the sheet form open-ended slots 70 (FIG. 10), spaced apart to accommodate the screws 38 which secure the hinge butt to seat 22. Fold line 66 divides the

base sheet into two identical leaves 72, 72, which in the use condition of the shim (FIG. 10) overlie one another.

Upon each leaf 72 is superposed and secured a rectangular cover sheet 74, which extends from the apertures 68 outwardly to the side edge 62 of each leaf, thereby to increase the leaf thickness from the apertures outwardly. The base material or median intervening between sheets 74, 74 is of single thickness, or the thickness of the base sheet. Sheet 74 may be referred to as an intermediate or filler sheet.

A third sheet 76, of which there are two, covers and is glued to an intermediate sheet 74 of each leaf, thereby further increasing the thickness of the leaves. Sheet 76 is narrower than sheet 74, and its forward edge 78 is spaced from the forward edge 80 of the underlying sheet 74, so that steps are provided at 80 and 78 on the leaves. The third sheet 76 otherwise coincides with sheet 74 along all remaining edges.

At the steps 80 and 78 the leaves are perforated in parallelism with fold line 66, and an additional line of perforations 82 may also be applied in spaced parallelism with step 78. These lines of perforations define shim sections 84, 86, 88, any or all of which may be torn from the main body of each leaf as suggested by FIGS. 12, 13 and 14. A shim in two sections 84 and 86, such as FIG. 13 illustrates, is shown in FIG. 15 for shimming out the hinge butt 24. If the tilt of the hinge butt in FIG. 15 were to require less inclination, section 86 would be detached and only section 84 would be utilized for shimming, with section 84 disposed in place of section 86. On the other hand, if the tilt inclination of the butt needed to be increased, the thicker shim structure of FIG. 14 would be inserted between the butt and the seat, in place of shim 84–86.

Along the side edges 62 of the leaves (FIGS. 9 and 10), the leaves might be perforated for tearing along parallel lines 90, 90, for the purpose of making available to the mechanic the two extra shim sections 92, 92, should shims be needed in addition to those of FIGS. 12, 13 and 14 for the shimming of hinges or for other purposes.

Attention is now directed to the transverse short lines of perforations at 94, 94 which intersect the lines of perforations 80, 78, and 82 near opposite ends of leaves 72. The short lines of transverse perforations at the top of FIG. 9 are spaced from those at the lower end of the drawing view, a distance equal to the length of the median shim section 84, which is dimensioned to span the seat 22 lengthwise of hinge butt 24. The small rectangular tabs 96 defined by the intersecting lines of perforations may be torn out of the leaves, or bent back along lines 82 or 78 after severance along the short lines 94, to provide guides or bumpers limiting the extent to which the shims may be projected into seat 22 beneath the hinge butt.

Further explaining the foregoing, if the shim structure of FIG. 10 as shown were to be inserted beneath the hinge butt of FIG. 15, only the shim section 84 could enter because the guide tabs or bumpers 96 of section 86 would strike the door at opposite ends of seat 22, to limit the insertion. However, if the tabs 96 of section 86 were first torn out, or bent back along line 78, interference with insertion of the device would be relieved to the extent of permitting insertion onto the seat of both shim sections 84 and 86. In like manner, removal or displacement of all the tabs 96 would permit insertion of sections 84, 86, and 88 between the seat and the hinge butt, with the end portions of line 82 serving as bumpers or abutments limiting the insertion. After disposing one or more of the sections 84, 86, or 88 beneath the hinge butt, and tightening down the screws 38, the mechanic may tear off that much of the whole shim as extends beyond the seat in the direction of the hinge pin. The severance mentioned occurs along any one of the perforation lines 80, 78, or 82.

In common practices, hinges are packaged for transport and sale using a cardboard box 98 dimensioned to contain a pair of the hinges, and tissue or other paper is usually applied about one or both hinges to protect their finish against chafing damage. In accordance with the present invention, one or two of the whole shims like that of FIG. 10 may be interposed between the hinges at the time of packaging, thereby eliminating the expense and labor of wrapping the hinges while at the same time furnishing the shims which may be needed by the mechanic. The shim unit preferably is dimensioned to completely overlie a folded hinge, and to fit within the standard or conventional box 98.

It is to be understood that various modifications and changes may be made in the structural details of the devices disclosed, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. A hinge shim for insertion between a door hinge butt and a supporting seat for the butt, said shim comprising an elongate frangible body member having opposite ends spaced apart a distance substantially corresponding to the length of the hinge butt, a longitudinal entry edge for insertion between the hinge butt and a supporting seat, the body member being progressively increased in thickness from the said entry edge toward the said back edge, and including means for weakening the body member along a plurality of straight lines located at different distances from and in substantial parallelism with the said longitudinal entry edge, to facilitate severance of the body member along a selected one of said lines for removal of excess shim area, the said entry edge of the body member having notches therein extending toward the back edge, for accommodating screws which pass through and secure the hinge butt upon the supporting seat, and at least some of said means for weakening the body member being located a greater distance from said entry edge than the degree to which said notches extend toward the back edge.

2. A hinge shim for insertion between a hinge butt and a supporting seat for the butt, said shim comprising a laminar body of sheet material, comprising a substantially rectangular base sheet foldable upon itself along a transverse fold line to provide a pair of leaves and a longitudinal entry edge, said leaves each having a pair of spaced substantially parallel ends and a back edge, the back edges being in spaced substantial parallelism with the said entry edge, a plurality of cover sheets secured flatwise upon each leaf, each of said cover sheets having a leading edge differently spaced from the fold line of the base sheet to define stepped shim sections of differing thicknesses increasing in the direction of the back edge of the base sheet, the cover sheets and the base sheet being weakened for severance along the leading edges of the cover sheets, from one end of each leaf to the opposite end thereof.

3. A hinge shim as set forth in claim 2, wherein the base sheet is provided with a pair of apertures each spaced from a leaf end and each bisected by the fold line of the base sheet, to provide open-ended notches in the entry edge produced by folding the base sheet upon itself along the said fold line.

4. A hinge shim for insertion between a hinge butt and a supporting seat for the butt, said shim comprising a laminar body of sheet material, comprising a substantially rectangular base sheet foldable upon itself along a transverse fold line to provide a pair of leaves and a longitudinal entry edge, said leaves each having a pair of spaced substantially parallel ends and a back edge, the back edges being in spaced substantial parallelism with the said entry edge, a cover sheet disposed flatwise upon each leaf, said cover sheets having spaced longitudinal leading edges at opposite sides of the base sheet fold line and defining a median shim section between said leading edges, said median shim section being substantially coextensive with the length of the hinge butt, and said

cover sheet being of greater length than the length of the hinge butt, and means weakening the base sheet along the leading edge of the cover sheet to facilitate severance of the median shim section from the remainder of the body.

5. A hinge shim as set forth in claim 4, wherein the base sheet is provided with a pair of apertures each spaced from a leaf end and each bisected by the fold line thereof, to provide open-ended notches in the entry edge produced by folding the base sheet upon itself along the fold line.

6. A hinge shim for insertion between a hinge butt and a supporting seat for the butt, said shim comprising a laminar body of sheet material, comprising a substantially rectangular base sheet foldable upon itself along a transverse fold line to provide a pair of leaves and a longitudinal entry edge, said leaves each having a pair of spaced substantially parallel ends and a back edge, the back edges being in spaced substantial parallelism with the entry edge, a cover sheet disposed flatwise upon each leaf, said cover sheet having spaced longitudinal leading edges at opposite sides of the base sheet fold line and defining a median shim section between said leading edges, said median shim section being substantially coextensive with the length of the hinge butt, a second cover sheet disposed flat upon each of the cover sheets first mentioned, said second cover sheets having spaced longitudinal leading edges at opposite sides of the base sheet fold line at a greater distance from the fold line than are the leading edges of said first-mentioned cover sheets, all of said cover sheets being greater in length than the median shim section, means weakening the base sheet and the first pair of cover sheets along the leading edges of the first and second pairs of cover sheets, to facilitate severance of the body along a selected leading edge, and other means weakening the base sheet and both pairs of cover sheets along lines of severance transversely of the leading edges thereof, the last-mentioned lines of severance being in alignment with the end edges of the median shim section.

7. A hinge shim as set forth in claim 6, wherein the base sheet is provided with a pair of apertures each spaced from an end of the median shim section and each bisected by the fold line, to provide open-ended notches in the entry edge produced by folding the base sheet upon itself along the said fold line.

8. A hinge shim for insertion between a hinge butt and a supporting seat for the butt, said shim comprising a laminar body of sheet material, comprising a substantially rectangular base sheet foldable upon itself along a transverse fold line to provide a pair of leaves and a longitudinal entry edge, said leaves each having a pair of spaced substantially parallel ends and a back edge, the back edges being in spaced substantial parallelism with the entry edge, a cover sheet disposed flatwise upon each leaf, said cover sheets having spaced longitudinal leading edges at opposite sides of the base sheet fold line and defining a median shim section between said leading edges, said median shim section being substantially coextensive with the length of the hinge butt, a second cover sheet disposed flatwise upon each of the cover sheets first mentioned, said second cover sheets having spaced longitudinal edges at opposite sides of the base sheet fold line at a greater distance from the fold line than are the leading edges of said first-mentioned cover sheets, all of said cover sheets being greater in length than the median shim section, means weakening the base sheet and the first pair of cover sheets along the leading edges of the first and second pairs of cover sheets, and also along a line upon the second cover sheets spaced from the leading edges of the latter, to facilitate severance of the body along a selected weakening line, and other means weakening the base sheet and both pairs of cover sheets along lines of severance transversely of and across the first-mentioned lines of severance, said transverse lines of severance being in substantial alignment with the end edges of the median shim section, and said means weakening the base sheet and both pairs of cover sheets along the said transverse lines of severance facilitating the formation of abutments for limiting the insertion of the shim between a hinge butt and a supporting seat.

9. A hinge shim as set forth in claim 8, wherein an additional weakening line extends in parallelism with the back edge of each leaf, to define an extra detachable shim, and the base sheet is provided with a pair of apertures each spaced from a leaf end and each bisected by the fold line thereof, to provide open-ended notches in the entry edge produced by folding the base sheet upon itself along the said fold line.

10. A door hinge shim for use with a door frame member having a seat in one face thereof which extends from an edge of the said member and with a door hinge butt adapted to be located within said seat comprising a body member having opposite ends spaced apart a distance corresponding substantially to the length of said hinge butt, an entry edge on the body member for insertion along the above mentioned edge of said door frame member between said seat and hinge butt, said body member having a portion spaced substantially parallel with said entry edge having a thickness greater than said edge, said entry edge being notched to enable said entry edge to be inserted past means for securing said hinge butt to said door frame member when said shim is inserted between said hinge butt and seat, said body member having means on a surface thereof extending in the direction between said body member ends in at least that region of the body member remote from said notches to facilitate severance of said body member along lines substantially parallel with said entry edge.

11. A hinge shim for insertion between a hinge butt and a supporting seat for the butt, said shim comprising a laminar body of sheet material, comprising a substantially rectangular base sheet comprising a leaf having a longitudinal entry edge, said leaf further having a pair of spaced substantially parallel ends and a back edge, the back edge being in spaced substantial parallelism with the said entry edge, a plurality of cover sheets secured flatwise upon said leaf, each of said cover sheets having a leading edge differently spaced from the entry edge of the base sheet to define stepped shim sections of differing thicknesses increasing in the direction of the back edge of the base sheet, the cover sheets and the base sheet being weakened for severance along the leading edges of the cover sheets, from one end of each leaf to the opposite end thereof.

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