

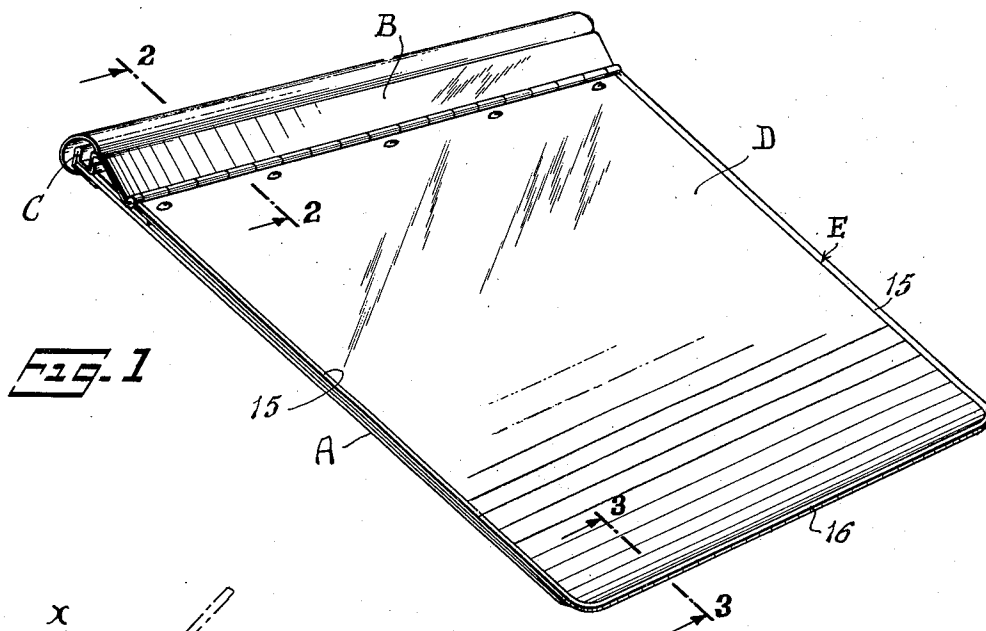
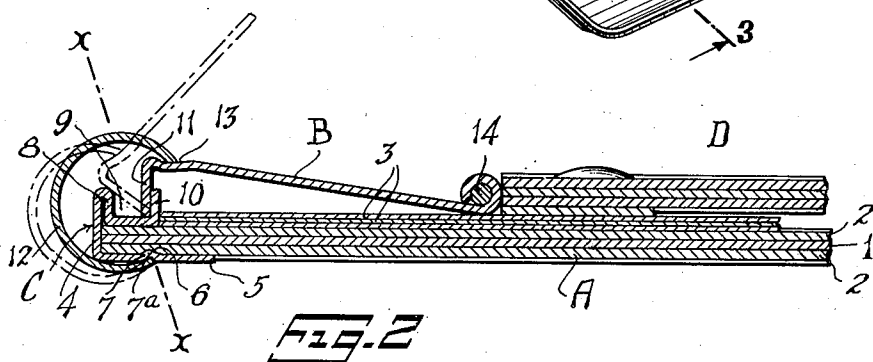
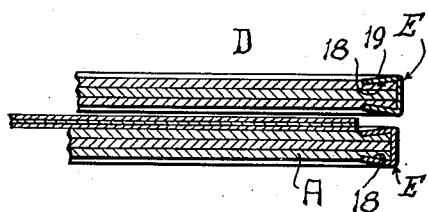
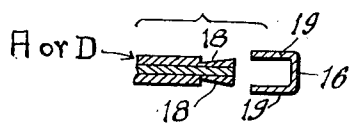
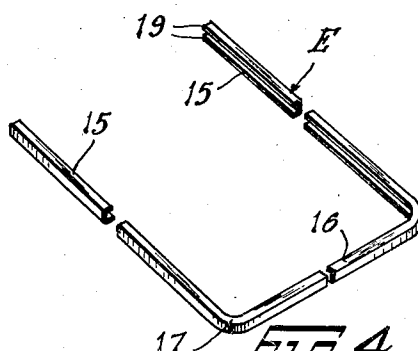
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EDGE BINDING FOR SHEET HOLDER COVERS

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EDGE BINDING FOR SHEET HOLDER
COVERS

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2 Claims. (Cl. 281—37)

This invention relates particularly to sheet holders, loose leaf binders and the like of the type that comprises two flat, rigid cover plates and means connecting them whereby sheets or loose leaves may be bound or held between the covers; but the invention is susceptible to use in the binding or reenforcement of the edges of book covers generally or similar rigid sheets or plates.

It is well known that the edges of the covers of temporary holders for sheets, loose leaf binders, hooks and the like are subjected repeatedly to severe blows and abrasion; and such blows or abrasion deface the covers and soon render them unfit for use unless the material of which the covers are formed has high impact and abrasion resistance. Attempts have been made to reenforce or bind the edges of covers with materials that are more resistant to impact and abrasion than the material of the covers themselves, but such reenforcements or binding generally have been unsatisfactory because they are too closely or are deficient in function, or are easily accidentally displaced or torn off the covers.

One object of my invention is to provide a novel and improved edge binding secured on either or both covers in a novel and improved manner, whereby the binding shall effectively protect the edges of the cover against injury from blows or abrasion and shall be strong and durable and firmly held against accidental displacement or deformation.

One embodiment of my invention contemplates a hardened, as contrasted with a malleable, steel binding which will dent, bend or deform only slightly or not at all under blows, and which will resist abrasion, so as to be long-lived even when subjected to severe use and rough handling. Binding of this character, however, is difficult to produce and to apply to covers or the like, especially because the steel should be thin to ensure neatness and minimum weight, and at the same time must be capable of being bent without cracking or fracturing to conform to the cover edges and in securing the binding to the edges.

In accordance with my invention an edge binding can be produced and applied to a cover rapidly and inexpensively and is highly resistant to blows and abrasion and to bending strains tending to pull the binding from the cover.

Other objects, advantages and results of the invention will be brought out by the following description in conjunction with the accompanying drawing in which

Figure 1 is a perspective view of a sheet holder embodying the invention.

Figure 2 is an enlarged vertical sectional view on the line 2—2 of Figure 1.

Figure 3 is a similar view on the line 3—3 of Figure 1.

Figure 4 is a detached perspective view of an edge binding element embodying the invention with portions broken away, and

Figure 5 is a composite sectional view of a portion of the cover and a portion of the edge binding before application of the latter to the cover.

For the purpose of illustrating the principles of the invention I have shown it in conjunction with a generally known type of sheet holder. This sheet holder comprises in general a bottom cover plate A that is rigid and formed of suitable material, preferably a laminated structure including a core 1 of fiber or cardboard pressed between two layers 2 of suitable hard and smooth material such as "Bakelite." A clamp jaw B is hingedly connected to the top side of the cover plate A so as to removably clamp and hold sheets of paper or the like 3 between itself and the cover plate.

The hinged connection between the cover plate A and the clamp jaw B is shown as comprising a hinge element C which is channel shaped and constitutes a sheet of metal having its base 4 abutting one edge of the cover plate A and a flange 5 that is approximately perpendicular to the base 4 and in contact with the underside of the cover plate A. As shown, said side of the cover plate has a groove 6 parallel to the base 4 of the hinge strip, and the flange 5 has a corresponding rib 7 seated in said groove. The hinge element also has a second flange which is partially returned upon the base 4 to form one wall 8 of an upwardly facing groove 9, the other wall of which is formed by an upturned edge 10 of the flange. This second flange overlies and contacts with the top side of the cover plate.

The clamp jaw B is formed of a rigid strip preferably metal and has a depending flange 11 at one edge seated in the groove 9 so that the jaw may hingedly swing toward and from the plate A. A spring 12 holds the clamp jaw in said hinged relation to the hinge element and normally actuates the jaw toward the plate.

As shown, this spring 12 is channel-shaped in the form of a longitudinally split tube and one edge of the spring is seated in the groove 7a in the side of the flange 5 opposite the rib 7, while the other edge of the spring abuts the top side of the clamp jaw A and is disposed in a groove 13 in said jaw. The grooves 13 and 7a thus form seats for the edges of the channel-shaped spring 55 to prevent displacement of the spring in one

direction, while the embracing relation of the spring to the edge of the cover plate, the hinge element and the clamp jaw prevents displacement of the spring in the other direction. The spring 12 may be applied by simply sliding it endwise longitudinally along the hinge element with the edges of the spring sliding in the above-mentioned seats, and the spring hook may be removed by sliding it in the reverse direction.

With this construction the plate A and clamp jaw B normally are pressed together by the spring 12 so as to firmly hold sheets and the like between the plate and jaw, and the plate and jaw may be hingedly swung apart about the hinged connection of the clamp jaw with the hinge element C for insertion and removal of the sheets. The wall 8 of the hinge strip serves as a stop to be abutted by the flange 9 of the clamp jaw as the clamp jaw swings away from the plate A, so as to limit such swinging movement as shown by dot and dash lines in Figure 2, and preferably the relative sizes and location of the parts is such that when the clamp jaw is fully open, both of the seats 7a and 13 will be in a common plane X—X and at the same side of the groove 9 opposite that at which said sheets are located when the clamp jaw is in its closed or sheet clamping position.

With this construction it will be observed that the spring 12 will firmly clamp the hinge element C on the plate A, the rib 7 in the groove 6 of the flange 5 forming an interlock between the hinge element and the cover. If desired, the groove 7 might be supplemented by protuberances formed as by prick punching. Structures of this nature avoid the necessity for separate fastening elements and enable easy and simple connection of the hinge parts to a cover plate.

The top cover plate D may be of the same general construction as the plate A and has one edge hingedly connected at 14 to the free edge of the clamp jaw B so that said cover plate may swing about the hinge 14 relative to the cover plate A to expose and cover the sheets that are held in the clamp.

As shown, the cover plates A and D are rectangular in plan and the three edges of each cover plate that are free from the hinge have applied thereto a binding element E which is approximately U-shaped and has each of its arms 15 secured to one of the longitudinal edges of the corresponding cover while its base 16 is secured to the transverse edge between said longitudinal edges, the angles between the arms 15 and the base 16 corresponding to the angles between the corresponding edges of the cover, and the junctures of the arms with the base preferably being curved as indicated at 17. Each arm and base of the binding element is channel shaped in cross section and embraces the corresponding edges of the cover.

In making the binding element and applying it to a cover, a flat strip of malleable metal, preferably steel, is formed into channel-shape, heated and quenched to harden it and reheated and gradually cooled to temper it, the length of the element being substantially equal to the aggregate of the three sides of the cover to be bound. Grooves are formed in at least one side and preferably both sides of the cover along the edges to be bound, and the binding element is slipped into embracing relation to said edges. Conveniently, the two arms 15 may be slid longitudinally along

the corresponding edges of the cover until the base 16 is brought into abutting and embracing relation to the other edge. Thereupon the flanges 19 of the arms and base of the binding element are pressed into the corresponding grooves 18 as shown in Figure 3. The flanges 19 thus firmly interlock with the grooves 18 to securely fasten the binding element on the cover, and the binding element being hard, e. g. tempered steel, will reinforce the edges of the cover and protect them against injury from blows and abrasion. The binding element will effectually resist bending and denting under blows and tension so as to reduce to the minimum the possibility of the binding element being deformed in such a manner as to be displaced or pulled from the cover.

In making the edge binder element, the steel channel strip is heated to about the critical temperature of the metal, for example about 1400 to 1600° F. The red hot strip is immediately quenched by moving it through a small stream of liquid, the temperature of the quenched portion of the strip being thereby reduced to about room temperature. The channel strip is then reheated to a temperature of about 750° and is then permitted to air cool to room temperature. During this cooling operation the channel strip is severed into pieces by suitable severing mechanism. After the tempered and resilient strip has been severed into sections, one for each binding element E, the strip is bent into U-form to provide the base 16 and arms 15 illustrated in Figure 4. This bending may be accomplished in any suitable die press.

After the binding element has been so formed, the arms 15 and base 16 are fitted over the edges of the cover to be bound as hereinbefore described, and the flanges of the arms and base are pressed and bent into the grooves 18 of the cover by suitable mechanism such as pressing rollers whose peripheries are so shaped and related as to press the flanges 19 of the binding element into the grooves 18. The pressing rollers may be driven in any suitable manner and the edge portion of the cover to which the binding element is supplied will be fed longitudinally between the rollers in any suitable manner, for example by manual manipulation.

While I have shown and described my method as involving certain preferred specific steps and the sheet holder cover as embodying certain preferred details of structure, it should be understood that the steps of the method and the structure of the cover may be modified and changed by those skilled in the art without departing from the spirit or scope of the invention.

Having thus described my invention, what I claim is:

1. An edge-bound cover comprising a sheet of suitable stiff material and a quench-hardened tempered resilient and substantially undentable sheet metal channel in embracing relation to the edge of said sheet and having its flanges bent into, tight frictional contact with opposite sides of the sheet.

2. The edge-bound cover set forth in claim 1 wherein said cover sheet has grooves in its side along said edge and said flanges are tightly seated in the respective said grooves.

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