

Oct. 27, 1959

R. W. MILLER ET AL
JOURNAL BOX PACKING

2,910,331

Filed Feb. 8, 1955

5 Sheets-Sheet 1

Fig-1

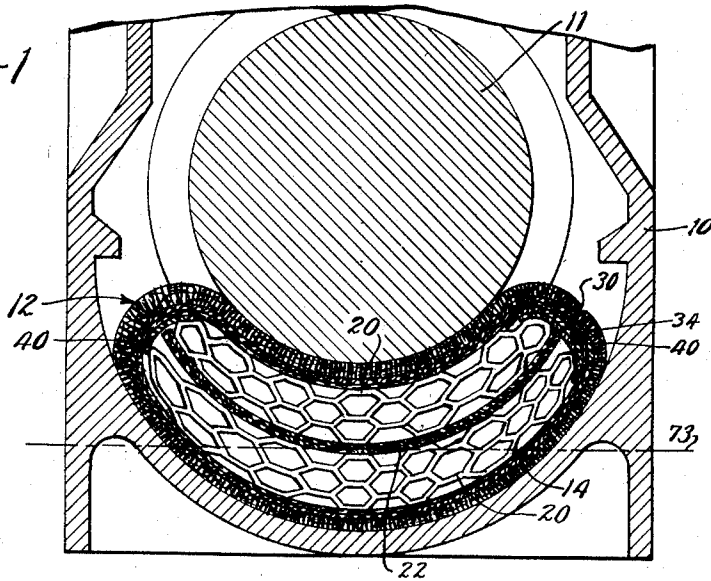
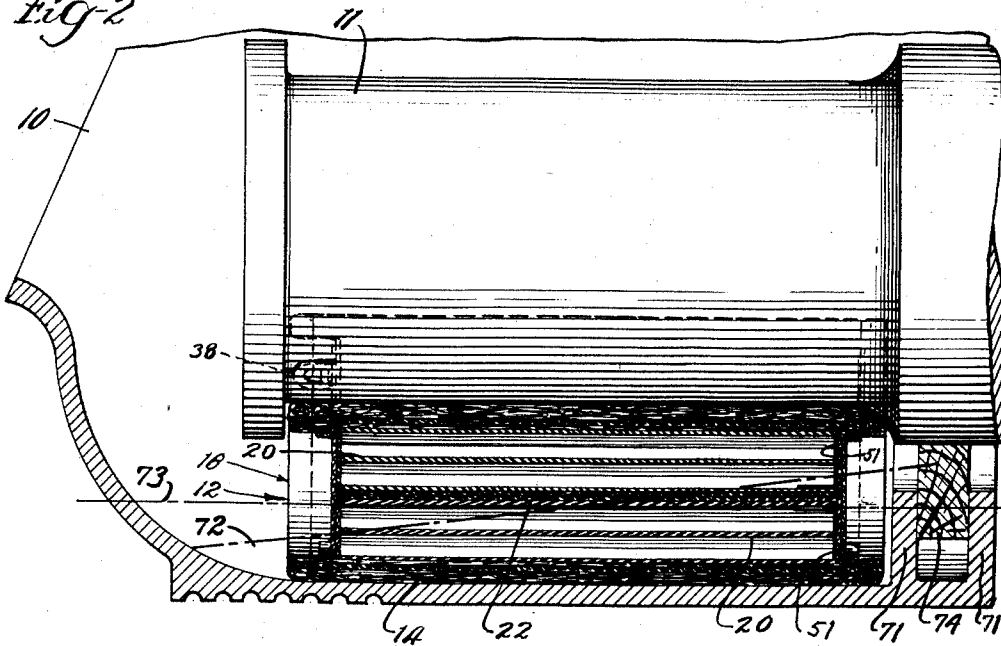


Fig-2



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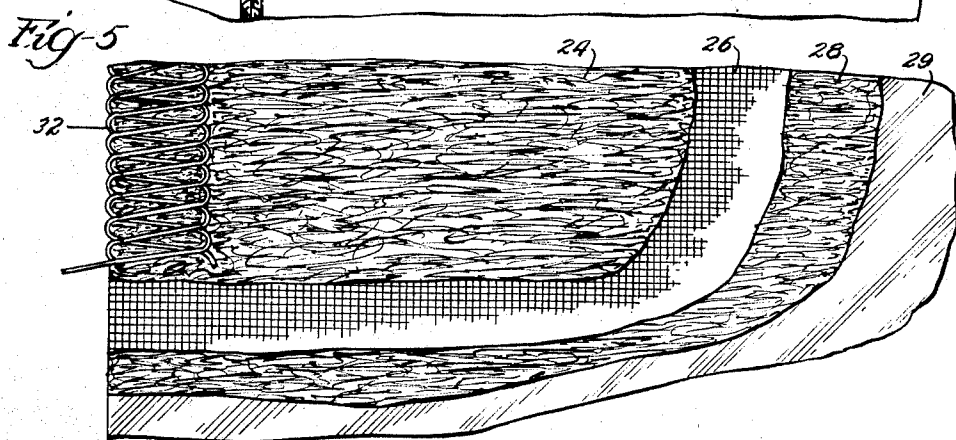
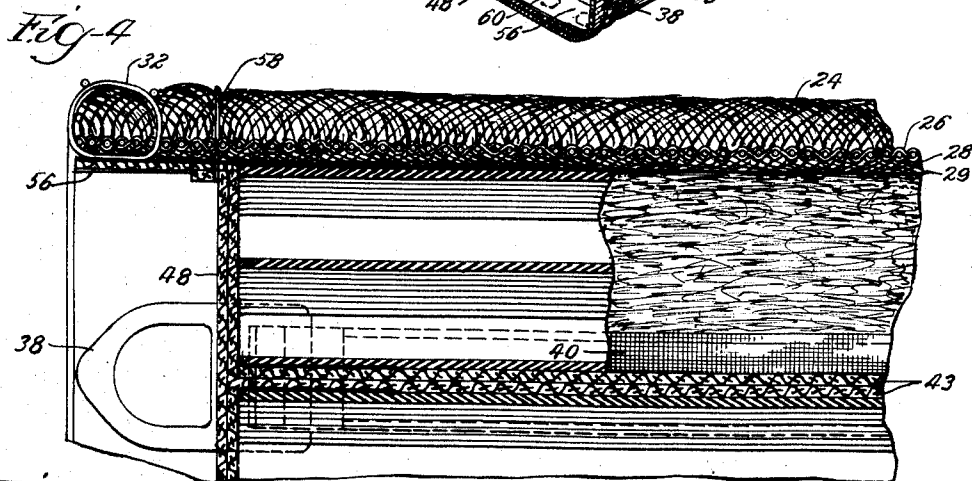
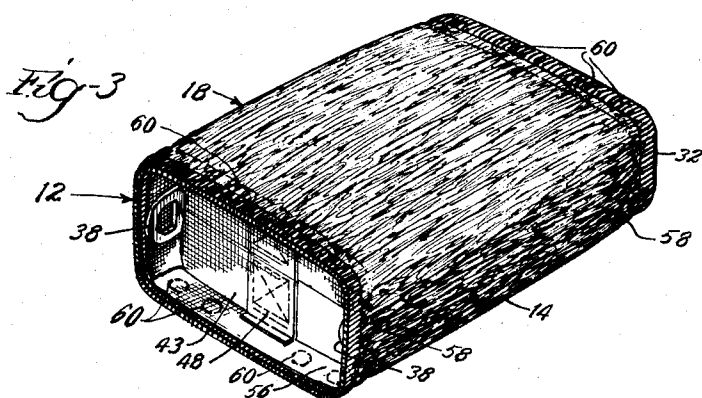
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5 Sheets-Sheet 2



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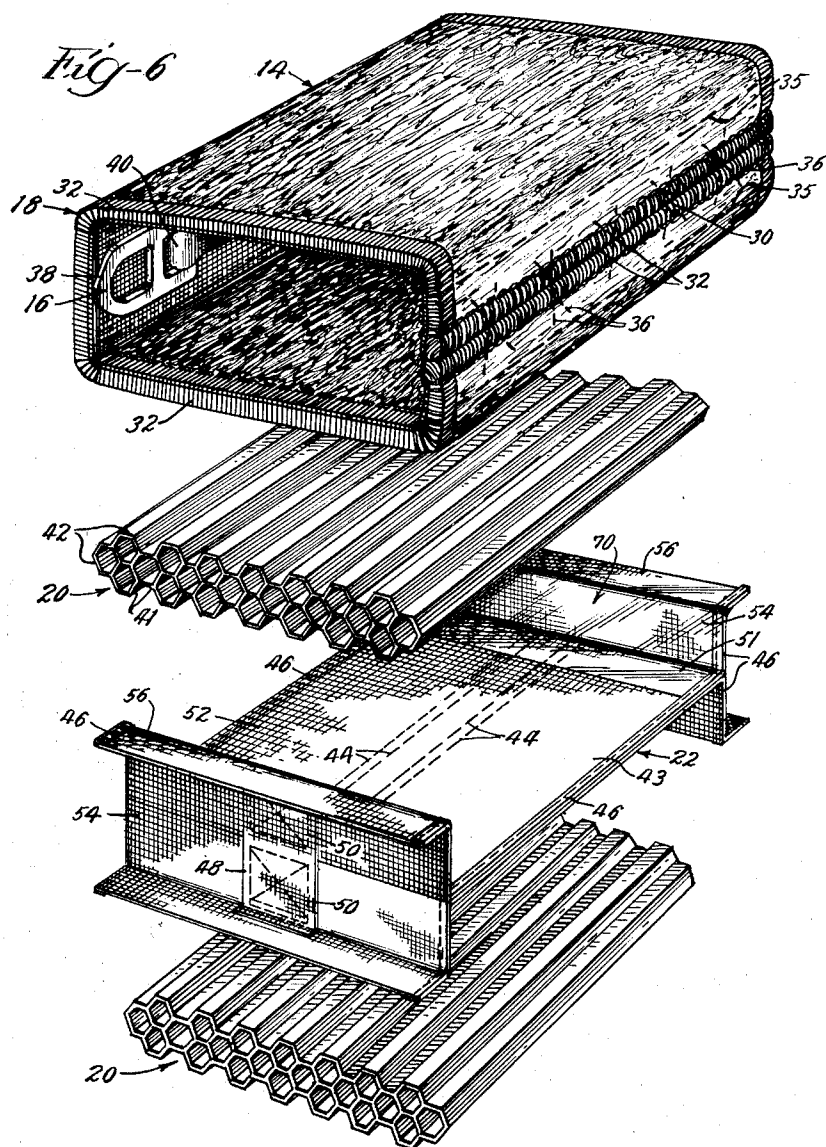
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5 Sheets-Sheet 3



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Fig-7

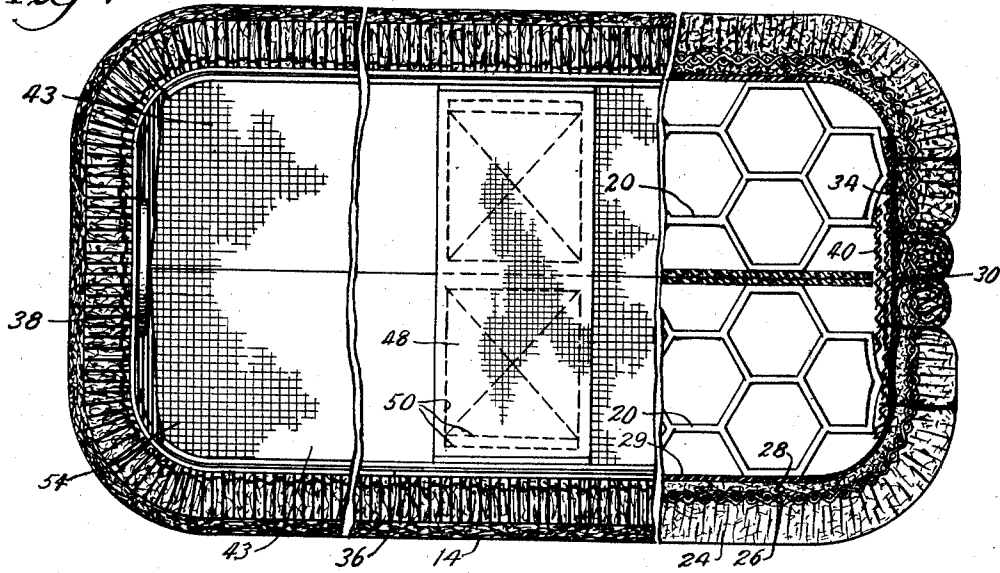
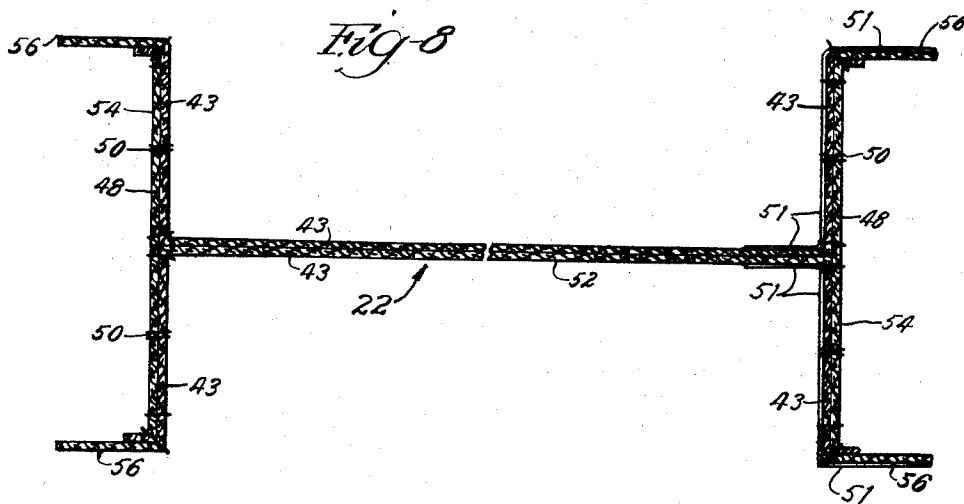


Fig-8



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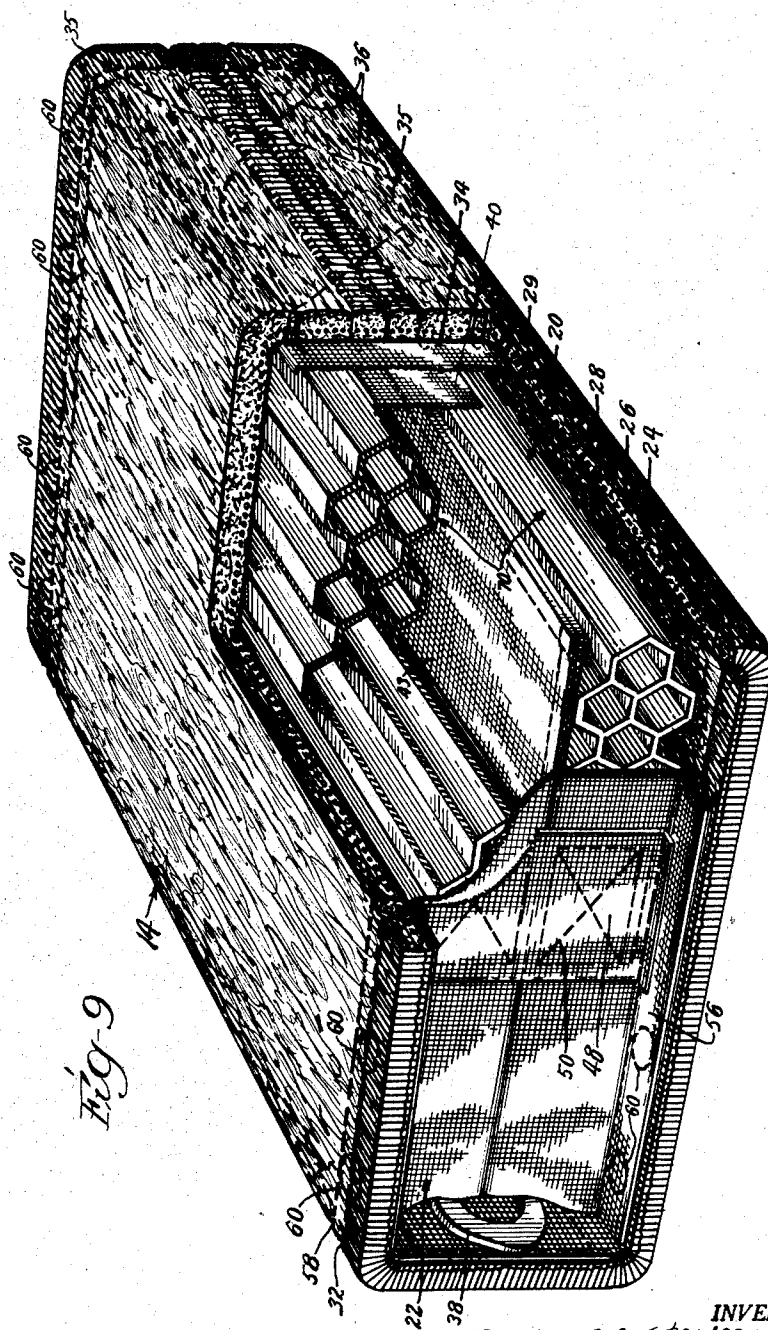


Fig. 9

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2,910,331

JOURNAL BOX PACKING

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Application February 8, 1955, Serial No. 486,766

8 Claims. (Cl. 308—243)

The present invention relates to a journal box packing for railway cars and the like, and more particularly, to a journal box packing employing a resilient core encircled by a lubricating waste blanket.

In the past, journal boxes have been conventionally packed with interlaced waste threads of wool or cotton, or both. While this type of packing is satisfactory in many respects, the human element necessarily present in the packing and servicing of journal boxes has resulted in a wide variety of differences in packing to the detriment of journal lubrication. Moreover, since the waste threads of conventional packings are secured in the packing mass only by the interlacing, there is an ever present danger that "waste grab" will occur, which inevitably will lead to a hot box and a burned-off journal.

More recently there has been developed a packing package of uniform size and other characteristics which is readily installed in the journal boxes in proper relation to the journal and the oil cellar. Such packages have comprised, for instance, a laminated waste blanket encircling an elliptical or crescent shaped resilient core. While such packages have improved considerably over prior practices, they still have certain deficiencies which should be eliminated to provide a wholly satisfactory substitute for conventional waste packing. One of these deficiencies is that the package tends to roll in the journal box under the action of the rotating axle and this action has the effect of moving the package toward one side of the journal box with consequent detriment to lubrication.

The principal object of this invention is to overcome the deficiencies of existing packing packages and to retain the uniformity of packing and lubrication with freedom from waste grab provided thereby.

A further object of the invention is to provide a reversible or two-sided journal box packing of rectangular or book-shaped configuration including a laminated waste blanket encircling a resilient distending core.

Still another object of the invention is to provide an improved journal box packing core and improved means for securing the core to the encircling waste blanket.

A further object of the invention is to provide a packing package having a configuration and structural arrangement singularly adapted to prevent objectionable rolling of the packing in the journal box.

According to a preferred form of the present invention, we provide a journal box packing comprising a substantially flat package having a substantially rectangular cross-section. The package includes a flat resilient core comprising a pair of relatively flat, superposed resilient pads extending lengthwise of the packing, an envelope comprising a laminated waste blanket encircling the core, and an H-shaped strap securing the superposed pads to the blanket. The web of the strap extends lengthwise of and between the pads and the legs of the strap about the ends of the respective pads and are secured to the edges of the blanket. The strap and the envelope thus provide a pair of restricted pockets in which the relatively flat pads are disposed and this arrangement firmly holds the

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pads in assembled position, thereby preventing movement of the blanket and the pads with respect to each other, and providing a structural arrangement which effectively prevents rolling.

Other objects, uses and advantages will become apparent upon a consideration of the following description of a preferred embodiment of the present invention.

In the drawings:

Figure 1 is a transverse cross-sectional view through familiar parts of a railway car journal and journal box, showing same equipped with the packing of the present invention;

Figure 2 is a longitudinal cross-sectional view through the journal, journal box and packing package illustrated in Figure 1;

Figure 3 is a perspective view of the packing package shown in Figures 1 and 2;

Figure 4 is a somewhat diagrammatic longitudinal cross-sectional view of one end of the packing, with parts broken away;

Figure 5 is a plan view of the waste blanket forming part of the package;

Figure 6 is an exploded perspective view of the various elements comprising the package, particularly illustrating the far side of the package as shown in Figure 3;

Figure 7 is an elevational view of one of the ends of the package, with parts broken away for clarity of illustration;

Figure 8 is a sectional view through the H-shaped strap for securing the illustrated synthetic rubber core of the package to the encircling envelope; and

Figure 9 is a perspective view similar to Figure 6 but showing the parts in assembled relation and with portions broken away to expose other parts of the lubricator.

Referring now more particularly to Figures 1 and 2 of the drawings, reference numeral 10 indicates a conventional journal box on a conventional axle journal 11 with a packing according to the present invention, generally indicated by reference numeral 12, in place between the lower portion of the journal and the bottom of the journal box in what is commonly referred to as the oil cellar of the journal box.

The package forming the illustrated form of packing comprises generally (see Figure 6) a laminated waste blanket or envelope 14, handle means 16, the envelope and handle means forming a sub-assembly 18, a pair of relatively flat resilient pads 20 and an H-shaped strap 22 especially adapted to securely fasten the pads 20 within and to the envelope. These elements are more specifically described hereinafter.

The waste blanket

The waste blanket or envelope of the present invention comprises generally a layer or layers of carded waste interlaced through a carrier of fabric or sheet material, said carrier including capillary material to raise lubricating oil to the layer of waste adjacent the journal when the package of the present invention is positioned as described above.

The blank from which the envelope or blanket 14 is formed may be of the type described and illustrated in the applications of Robert J. Harkenrider, Serial No. 367,321, filed July 10, 1953, now Patent No. 2,762,667, and Serial No. 419,029, filed March 26, 1954, now Patent No. 2,801,138, and assigned to the assignee of the present application, the disclosures of which are hereby incorporated by reference in the interests of brevity. Briefly, such a blank comprises (see Figures 4 and 5) a relatively thick layer of waste 24 interlaced with a woven carrier cloth 26 of a suitable type, such as open weave cotton-like laundry bag cloth, and a relatively thin layer of waste 28. As described in the aforesaid applications,

the three layers are thoroughly fastened together by passing them through a hooking machine of the type, for instance, illustrated in Patent No. 2,672,673, granted March 23, 1954. As the layer or layers of waste and fabric go through the machine, they pass over a hooking plate, where they are subjected to the action of a multitude of hooked needles which reciprocate up and down. As the layers of waste and fabric go through the action of the hooked needles, many of the waste threads are caught by the hooks and pulled downwardly in loops through the remainder of the upper layer of waste, through the fabric, and the lower layer of waste, and formed into loops below the fabric. In some instances the waste threads will be caught near the top of the upper layer—in others, deeper into the layer—but the overall effect is to hook individual threads of waste through the mass of waste and the fabric and not only fasten those particular threads but associated threads into a blanket in which, generally speaking, all the threads are made fast against being pulled out in service.

During this hooking operation the weave of the carrier is tightened or shrunk by the interlacing of the threads which are thereby brought into intimate contact with the threads of the cloth in such a way as to promote ready transfer of oil from the cloth to the waste threads. The thinner layer 28 may be formed entirely by hooking threads through the fabric 26, or it can be in part formed by feeding a thin layer of carded waste under the carrier cloth before reaching the hooking machine or in a supplementary or preliminary hooking machine.

While the interlacing of the threads as described in the aforementioned applications insures that each and every thread of the waste is made fast, the inner or lower side of the thinner layer is preferably treated and coated with an adhesive 29 to fasten at the under side of the blanket all threads that go through to the under side of the blanket. Additionally, the adhesive forms a pan or basin directly under the journal for a reservoir of lubricating oil that will not drain away while the car is still for a considerable period. It may also be mentioned that the adhesive stabilizes the blanket in that it prevents undue stretching or bunching of the material comprising the blanket under the action of the rotating journal; thus the relatively stiff layer of adhesive provides a strengthening and reinforcing effect which materially lengthens the useful life of the packing.

The adhesive may be made of any appropriate material, many of which are known as rubber base cements. They may be used in powder form, sheet form, or liquid. Many of the so called synthetic rubbers are appropriate, for example, Hycar latex No. 1552, type OR-25, made from petroleum by B.F. Goodrich Chemical Company, Akron, Ohio, and thickened with a 12% ammonium casein solution. Several suitable types are specified in the aforementioned applications, and other suitable synthetic rubbers are described in Materials Handbook by Brady, 1944, McGraw-Hill, page 523.

The sub-assembly 18 is formed by forming a loop out of a rectangular blank made as described above, with the adhesive facing inwardly, and bringing the end portions together as at 30, as shown more particularly in Figures 6, 7 and 9. The edges and ends of the blank are bound as indicated at 32, which may be done by putting the blank through an edging or edge-stitching machine, and the ends are held together by a fabric backing 34, preferably having good capillary characteristics, stitched as at 35 securely to both ends; it is also desirable to stitch the ends to each other as indicated at 36, said latter stitching also passing through the backing 34. The sub-assembly 18 is completed by securing a pair of handles at 16 at one end of the envelope, one of said handles being secured to each side thereof. The handles generally comprise a metallic end piece or buckle 38 carried by a fabric holder or strap 40 which is stitched to the sides of the envelope where indicated in Figures 3 and 6. Pref-

erably, the strap 40 adjacent the joined end portions of the blanket is stitched to the inwardly facing side of the backing 34, and the stitching preferably passes through both the backing and the blanket to further reinforce the envelope joint. The holders or straps 40 may extend the full length of the package, or be relatively short in length, as desired.

The resilient core

The resilient core of the present invention comprises a pair of generally flat, rectangular resilient pads 20, each of which is composed mainly of a stack of like parallel tubes 42 wherein each tube has a wall portion in common with other tubes 42 and integral with them at adjoining corners 41. The pads may be conveniently made by extruding them in one piece, whereby the cellular structure is entirely integral and the distribution of the material makes it possible to have an extremely light, springy element with a strong resistance to deforming under pressure and a high recovery upon release, even after being compressed for a long time under adverse temperature conditions.

Pads corresponding to those shown in Figures 2 and 5 can be made in a great variety of forms. Almost any polygonal form can be extruded, whether regular, irregular, right-angular, or otherwise. Of the many polygonal and generally polygonal forms which lend themselves to the application of the invention, the equilateral hexagon shown in Figures 6 and 9 is chosen because it lends itself so readily to making such pads, and it has a structure particularly adapted for this purpose. The springiness of these pads is very well suited to the needs of holding the applicator 12 against the journal in spite of all the vibration, presence of oil, cold, and other conditions that obtain in the journal box.

The pads illustrated in Figure 6 are preferably of synthetic rubber and may be produced according to the teachings of the application of Robert J. Harkenrider, Serial No. 418,442, filed March 24, 1954; said application also discloses suitable materials for making the pads. The disclosure of said application is incorporated herein by reference in the interests of brevity.

While the pads illustrated in Figure 6 are a preferred form of core, similarly shaped pads of sponge rubber, natural hair or fiber glass would also be satisfactory.

As aforesaid, the extruded pads may be, and preferably are, made in one piece. However, they could be extruded in sections which are later bonded together. For instance, the pads 20 could be formed by extruding a number of narrower strips of the tubular material and later trimming and bonding the strips together to form the pads 20, or the pads could be formed from a larger extruded strip suitably trimmed to size.

The pads 20 are positioned one on either side of the strap 22 and the whole inserted and secured to the sub-assembly 18, as hereinafter described, to complete the package 12 and form the resilient core of the package.

The securing strap

The strap 22 is illustrated more particularly in Figures 6 and 8 and comprises a pair of strips or fabric members 43 of a suitable fabric placed side by side and stitched together down the centers thereof as at 44 (see Figure 6), the sides thereof being hemmed as at 46. The ends of the strips 43 are bent away from each other to a position in which they are in substantial alignment and fabric means comprising a strip of strong, non-stretchable cloth tape or its equivalent 48 is secured to the angled ends of the strips 43, the tapes 48 being stitched to both strips 43 as shown at 50. Preferably the area of the strap 22 adjacent its rear end (that is, for instance, the right hand side of Figure 2) is rubberized with, for instance, "Hycar" latex, on the inner or outer surface thereof, or both, somewhat as indicated at 51 in Figure 8. Said latex is a product of the aforementioned B. F. Goodrich Rubber Company,

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It will be appreciated that the strap 22 assumes a substantially H-shaped configuration in which the portions of the strips 43 that are connected together form the web 52 on the H and the normally disposed ends form the legs 54 thereof.

The reason for rubberizing the rear end of the securing strap 22 is that when the car is on an inside curve (with respect to the journal shown in Figures 1 and 2), lubricant within the package 12 will be retained therein and restrained from flowing out of the journal box over the lips 71 at the rear of the journal box. The dotted line 72 in Figure 2 shows the level which the lubricant might take when rounding an inside curve, with consequent loss of oil, were it not for the restraining action of the coating or impregnation 51. The front of the securing strap is not rubberized as free flow of lubricant between the oil cellar and the interior of the package 12 is desirable, as is evident by the fact that the normal lubricant level should be somewhat as indicated at 73, and when filling the oil cellar, the oil level within the package should follow rapidly the level in the cellar itself.

It may be noted that the conventional fiberboard or wood dust guard 74 is not an effective seal against lubricant loss on curves.

To complete the assembly of the package 12, the pads 20 are positioned on either side of the web 52 and then these components of the invention are inserted within the sub-assembly 18. The outer ends 56 of the legs 54 are bent normally of the main portion of said legs to bring them into engagement with the edges of the envelope 14 (see Figure 4) and the envelope and said ends 56 are stitched together as at 58 (see Figure 4). Preferably, the tapes 48 are sufficiently long enough to be included in the stitching 58, as indicated in Figure 4, and it is desirable to stitch the outwardly extending portions of ends 56 to the envelope as indicated at 60 in Figures 3 and 9.

When the package embodying this invention is to be put to use, it is compressed and worked down under the journal into the position shown in Figures 1 and 2. Once in that position, the pads 20 comprising the resilient core hold the package in place and prevent it from working out of the correct position. Due to the flatness and general rectangular shape of the package, and the securing of the resilient pad fastening strap 22, the tendency of the package to roll out from under the journal and to one side of the journal box is eliminated.

It will be observed that the package is substantially symmetrical, and that when it is desirable to present a new surface against the journal, the package may be removed, turned over, and re-inserted. Thus the used surface of the blanket will be facing downwardly in the journal box and the hitherto unused waste surface of the blanket will be in its uppermost position in contact with the journal. The package is therefore a two-sided or reversible one with a corresponding increase in useful life.

It will also be observed that the ends of the waste blanket 14 are joined together at the side of the package and that since this portion of the package never comes into contact with the journal, it is not necessary to take particular pains to insure that this portion of the package presents a substantially continuous lubricating surface. The backing 34 raises the oil from the lower end of the blanket (when the package is in operating position) to the upper end thereof and this, together with the action of the carrier 26 on the other side of the package, provides more than adequate lubricating oil for application to the journal.

The handle means 16 makes it relatively easy to remove the package from the journal. The buckle or metallic end piece 38 is formed with an opening adapted to receive a hook similar to that ordinarily found on the box packer's tool, and by which the package may be withdrawn from the journal box.

As we have indicated hereinbefore, one of the salient

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features of our packing is the elimination of the tendency of the packing to roll out from under the journal. Our journal box packing provides this result for several important reasons.

In the first place, prior packings and/or the cores therefor have been, in many instances, generally elliptical in cross-sectional configuration, with the portion of the packing including the minor axis of the elliptical cross-sectional configuration in contact with the journal. That is, the minor axis of the ellipse is substantially vertically disposed when the packing is in position between the journal and the bottom of the journal box oil cellar. Referring to Figure 1, it will be appreciated that if a packing having an elliptical cross-sectional configuration were in position under the journal, rather than the illustrated packing 12, a large portion of the packing would be disposed immediately under the journal and smaller portions thereof would extend to either side thereof, with the result that the distending action of the packing would be greater at the center than at the sides, with consequent increase of compressive forces acting within the center.

It has been found that the application of a relatively small amount of sidewise force tending to urge the packing out from under the journal, such as that provided by the action of the rotating journal on the upper surface of the packing, is sufficient to move the elliptical packing to one side of the journal, due to the fact that these greater pressures at the center of the packing greatly accentuate the tendency of the rotating journal to urge the packing in the direction of rotation. This condition is further accentuated by the fact that in elliptical packings, or packings employing elliptical cores, the upper surface of the elliptical body may easily be moved sidewise with respect to the lower surface thereof. The overall result is the aforementioned tendency of prior packings to roll out from under the journal.

We have found that this tendency to shift and roll is substantially reduced by providing a relatively flat packing, or one having a generally rectangular cross-sectional configuration, as distinguished from elliptical, as the compressive forces present within the center of the packing are not excessive as compared to the forces within the packing at the sides thereof. Thus, as shown in Figure 1, the distending action of the packing and therefore the compressive forces acting within the packing are evenly distributed on the journal, and will remain so even if the packing tends to shift to one side of the journal.

We have also found that the tendency of the upper surface of the packing to move sidewise of the lower surface, under the action of the journal, is eliminated by forming the core out of a pair of flat pads, and securely attaching each pad to the sides of the envelope adjacent each. Figure 9 makes it clear that the pads 20 in the restricted pockets 70 formed by the H-shaped strap 22 and the body of the envelope are effectively restrained from sidewise movement with respect to each other or to the envelope by the secure attachment of the strap to the edges of the envelope. It will also be observed that the tapes 48 act as bonds between the upper and lower surfaces of the envelope, as well as between the two strips 43 forming the H-shaped strap 22, and further restrain sidewise movement of the upper surface of the packing with respect to the lower surface thereof.

The foregoing description and the drawings are given merely to explain and illustrate our invention, and the invention is not to be limited thereto, except insofar as the appended claims are so limited since those skilled in the art who have our disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

We claim:

1. A journal box packing comprising an envelope, a resilient core encircled by said envelope, said core com-

prising a pair of superposed resilient pads extending lengthwise of the packing, and an H-shaped strap securing said pads within said envelope, with the web of said strap extending lengthwise of and between said pads and the legs of the strap being secured to the edges of said envelope.

2. A journal box packing comprising an envelope, a resilient core encircled by said envelope, said core comprising a pair of relatively flat, superposed resilient pads extending lengthwise of the packing, and an H-shaped strap securing said pads within said envelope, with the web of said strap extending lengthwise of and between said pads and the legs of the strap abutting the ends of the respective pads and being secured to the edges of said envelope.

3. A journal box packing comprising an envelope, a resilient core encircled by said envelope, said core comprising a pair of superposed resilient pads extending lengthwise of the packing, and an H-shaped strap securing said pads within said envelope, with the web of said strap extending lengthwise of and between said pads and the legs of said strap extending over the ends of the respective pads and being secured to said envelope, said strap including connecting means extending the length of said legs.

4. A journal box packing including a resilient core and an envelope encircling the core, and improved means for securing the core within the envelope comprising a pair of superposed fabric members stitched together along the centers thereof, with the ends being foldable away from each other to a position normally of the members, said ends adapted to be secured to said envelope, and fabric means connecting the adjacent ends of said members.

5. A journal box packing including a resilient core and an envelope encircling the core, and improved means for securing the core within the envelope comprising a pair of superposed fabric members stitched together along the centers thereof, with the ends being foldable away from each other to a position normally of the members, said ends adapted to be secured to said envelope, and

fabric means connecting the adjacent ends of said members, said fabric means extending between the upper and lower edges of said envelope, and being secured thereto.

6. The packing set forth in claim 1 wherein said legs of said strap at one end of the packing are covered with lubricant resisting material on at least one surface thereof.

7. A journal lubricator including an envelope of capillary material, a resilient core encircled by said envelope and a mounting harness securing said core within said envelope and comprising end straps overlying the ends of the core and secured to said envelope along its upper and lower end edges, and a lengthwise continuous web extending lengthwise through the core intermediately thereof and secured to said straps to interconnect said straps.

8. In a journal lubricator that includes a flexible envelope of capillary material encircling a resilient core that extends lengthwise therein, the improvement wherein said core comprises superposed resilient pads and a mounting harness secures said pads within said envelope and comprises end straps overlying the ends of the core and secured to said envelope along its upper and lower end edges, and a lengthwise continuous separator web between said pads and extending lengthwise through the core and secured to said straps to interconnect said straps.

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