Sept. 11, 1956 R. J. HARKENRIDER 2,762,667

JOURNAL BOX PACKING

Filed July 10, 1953 5 Sheets-Sheet 1

Fig-1

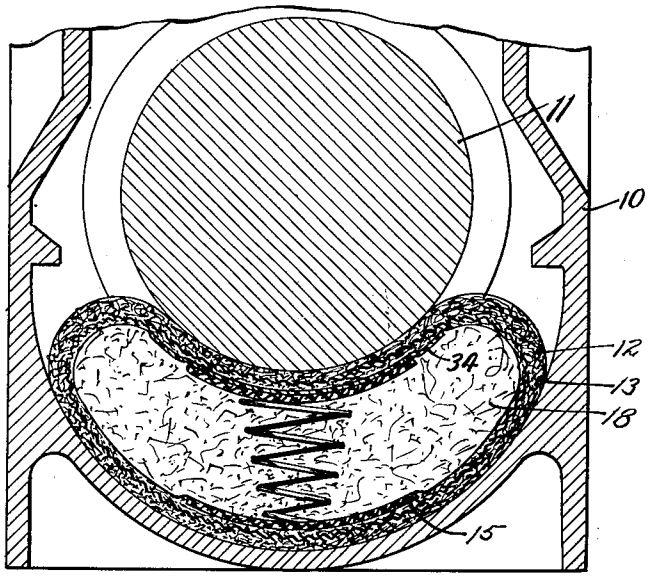
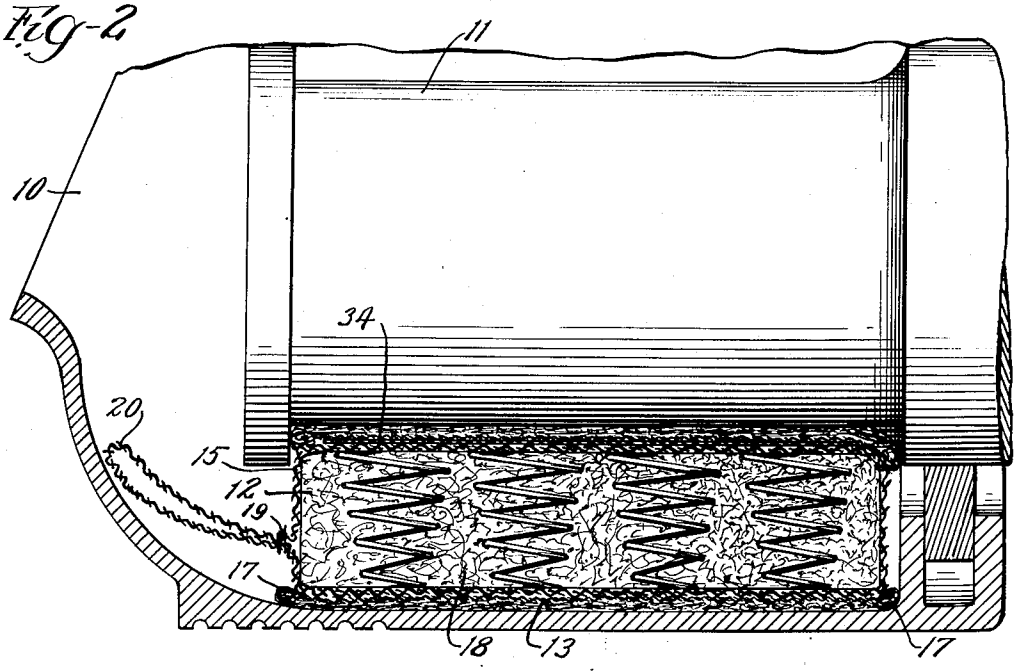


Fig-2



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JOURNAL BOX PACKING

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Fig-3

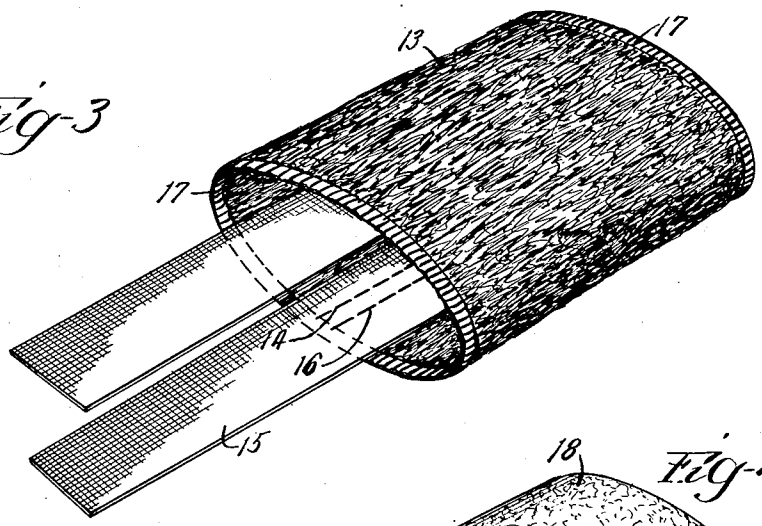


Fig-4

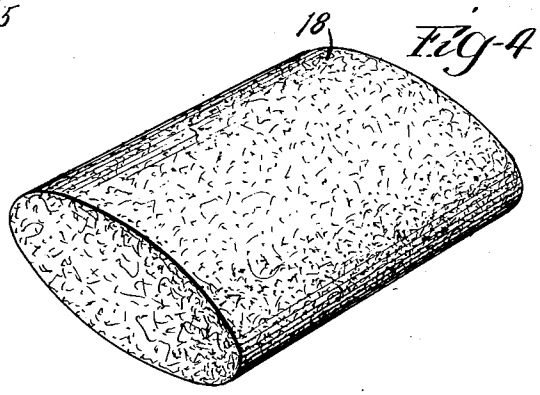
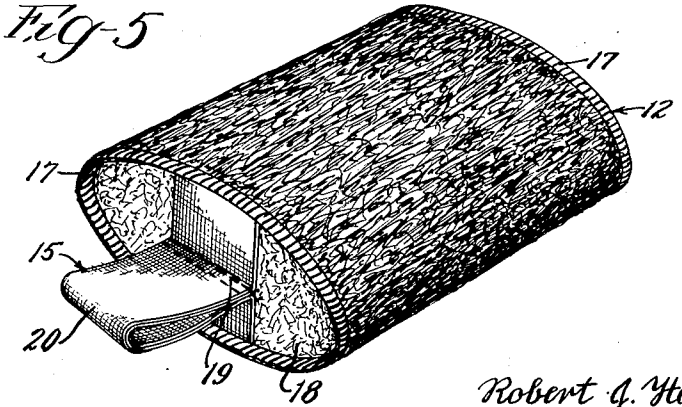


Fig-5



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JOURNAL BOX PACKING

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Fig-6

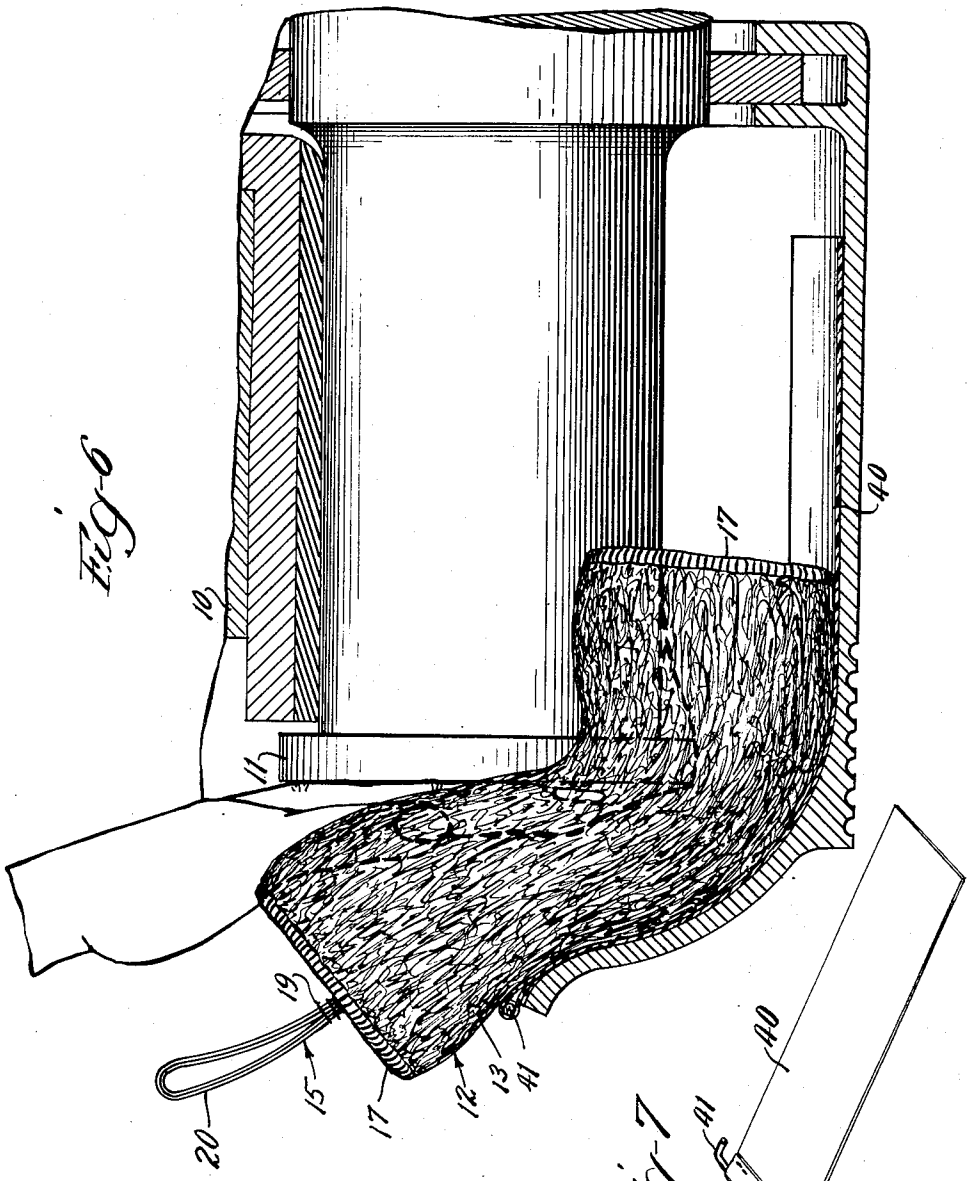


Fig-7

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JOURNAL BOX PACKING

Filed July 10, 1953 5 Sheets-Sheet 4

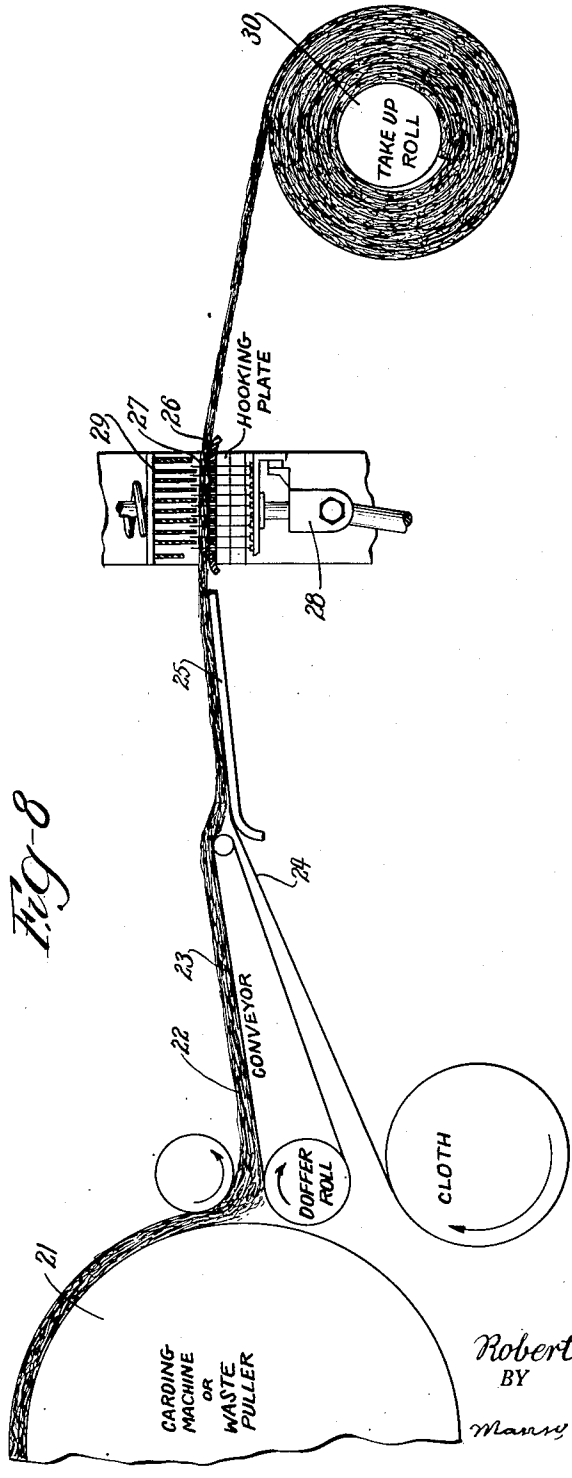


Fig-8

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JOURNAL BOX PACKING

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Fig-9

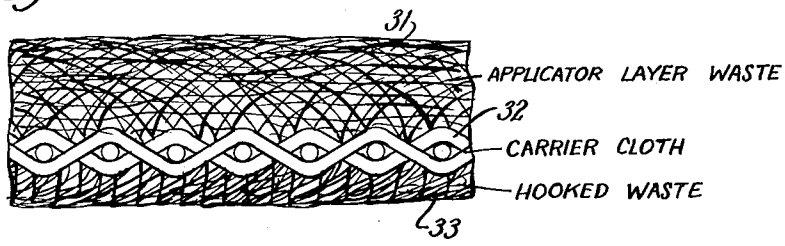


Fig-10

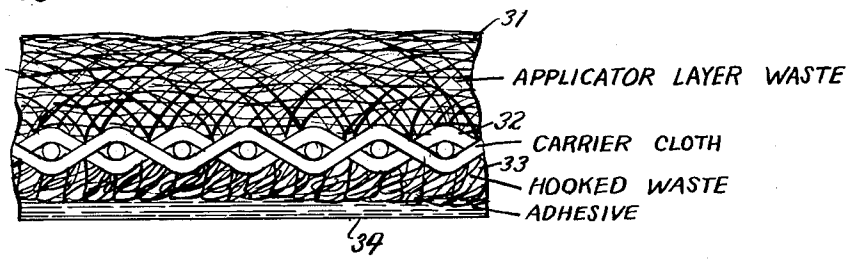


Fig-11

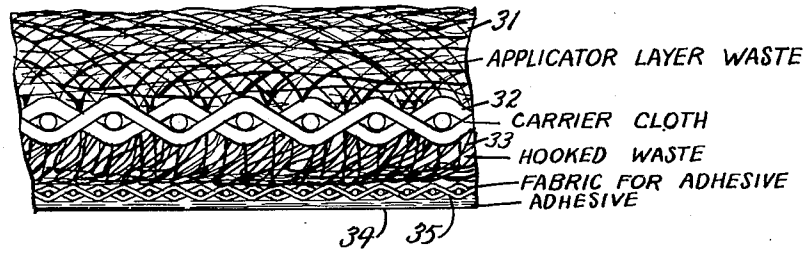
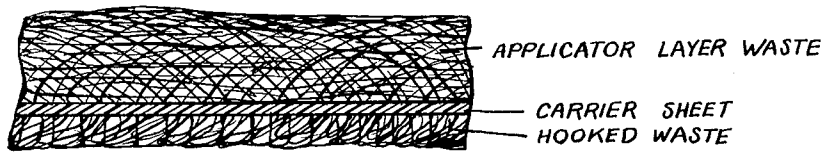


Fig-12



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United States Patent Office 2,762,667 Patented Sept. 11, 1956

2,762,667

JOURNAL BOX PACKING

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Application July 10, 1953, Serial No. 367,321

9 Claims. (Cl. 308—243)

Conventional journal box packing is waste threads of wool or cotton specified by A. A. R. Mechanical Division Manual A–905, and the standard practice of applying it to a journal box is specified by the same manual L–34.

The material and its application to journal boxes has been in common use for many years, and the human element has always worked a wide variety of differences in packing to the detriment of journal lubrication.

Throughout the years, "waste grab" has been blamed for hot boxes, and hot boxes have been blamed for burned off journals.

The excessive number of hot boxes is largely due to lack of—or hurried and improper—servicing of journal boxes, to inexperienced men assigned to oil and reset packing, and sometimes to too much packing. (Ry. Age, May 4, 1953, p. 57.)

The principal object of this invention is to overcome the past difficulties and obtain substantial uniformity of packing and lubrication.

Generally speaking, this is accomplished by providing packing in packages of uniform size and other characteristics and that are readily installed in the journal boxes in proper relation to the journal and the oil cellar.

Each package includes a loop of fabric or sheet as a carrier, a layer of waste or yarn on the outside or both sides of the loop having threads interlaced with or through it, and made fast to it, and a resilient core in the loop distending it and furnishing the appropriate pressure for applying the waste to the journal.

In this packing, the applicator is preferably a substantially uniform layer of carded waste fastened to a carrier including capillary elevators for oil. Within the carrier is a resilient core having a high compression factor to distend the carrier and give appropriate pressure to the applicator against the journal.

The best way to get a uniform layer of waste for an applicator is to card it and interlace it with a fabric or other sheet as it is delivered from the carding machine or waste puller, although other machines will feed waste or yarn in a usable layer.

Interlacing well done will fasten most of the waste threads against being pulled out by the journal, but fastening with an adhesive on the inside of the carrier adds an important and desirable safety factor, and also adds an oil barrier to form a reserve pool of oil.

Press cloth or laundry bag cloth makes a good carrier for journal box waste. The main fabric may be supplemented by a thin sheet including or receiving an adhesive to make the interlaced threads fast and to make an oil barrier to retain oil in the concave side of the carrier beneath the journal for ready lubrication after the car has had a considerable period at rest.

A variety of woven or sheeted materials will serve for the carrier in whole or in part, and many fibers laced or interlaced through or with the carrier and made fast with adhesive will serve, but a loop of laundry bag cloth having a layer of journal box waste outside and inside with the threads well interlaced and made fast with adhesive on the inside of the loop is to be preferred.

In the drawings:

Fig. 1 is a cross section through a journal box and an axle journal equipped with a packing embodying the invention;

Fig. 2 is a longitudinal section through the journal box and the packing along the axis of the axle, with the journal shown in elevation;

Fig. 3 is a perspective view of a blank of laminated waste blanket formed into a loop and made fast to a strap preparatory to receiving a resilient core;

Fig. 4 is a perspective view of a resilient core to be inserted in Fig. 3;

Fig. 5 is a perspective view of the package packing ready for use;

Fig. 6 is a section through a journal box with the journal in place and showing a package packing embodying the invention in the process of being inserted into the journal box beneath the axle journal;

Fig. 7 is a perspective view of a tool to assist in inserting the packing;

Fig. 8 is a sketch of apparatus for making a laminated waste blanket;

Figs. 9, 10, 11, and 12, are sectional views through different forms or compositions of laminated waste blanket suitable for use in making the package of the invention.

But these diagrammatic drawings and the corresponding description are for the purpose of illustrative disclosure only, and are not intended to impose unnecessary limitations on the claims.

In Figs. 1 and 2, **10** indicates generally a conventional journal box on a conventional axle journal **11** with a package of packing generally indicated by **12** in place between the lower portion of the axle journal and the bottom of the journal box in what is commonly referred to as the oil cellar of the journal box.

In one way of making the package of packing embodying this invention, a rectangular blank of laminated waste blanket is formed into a loop as indicated at **13** (Fig. 3) with its end portions brought together at **14** and secured to one side of a loop of canvas or the like **15** by stitching or cementing, or both, at **16**. The edges of the blank are bound as indicated at **17**, which may be done by putting them through an edging machine.

This sub-assembly is prepared to receive the resilient core by which the blanket material is distended and held in its place between the axle journal and the journal box.

In Fig. 4, a resilient core **18** of elliptical form is illustrated, which is very satisfactory for making a reversible packing package that may be used, first, with the side shown uppermost in Fig. 3 against the axle journal, and later reversed to bring the other side against the axle journal.

After inserting the resilient core, the end portions of the strap **15** are folded as shown in Fig. 5 and fastened together at **19** by stitching, or the like, which closes the strap on the resilient core and forms a handle **20** for the package.

In Fig. 8, **21** indicates a carding machine or waste puller delivering a layer **22** of carded waste to a belt conveyor **23** from which it is laid onto a sheet of fabric **24**, and the two pass over a feed plate **25** and across the hooking plate **26**.

As they pass over the hooking plate, they are subject to the action of a multitude of hooked needles **27** reciprocating up and down by mechanism indicated generally at **28** in association with spaced bars **29**, which control the waste layer in relation to the hooked needles so as to permit the waste to open as the needles pass upwardly, and then put appropriate pressure on the waste as the

needles go down, and hook waste threads through the mass and through the fabric **24**, substantially as disclosed in the application of Ernest C. Shaw, Serial No. 210,346, filed February 10, 1951, which matured into Patent No. 2,672,673 on March 23, 1954.

The carding machine or waste puller delivers a layer of waste of substantially uniform thickness and with the waste threads extending generally lengthwise to the layer, although the natural wave of the threads makes them depart from strict parallelism to the direction in which the sheet is delivered. For convenience of terminology, "carded waste," as used in the specification and the appended claims, shall be understood to mean waste in which the threads have been oriented to near-parallelism regardless of the method or machine employed to achieve this result.

As the layer of waste and the fabric go through the action of the hooked needles **27**, many of the waste threads are caught by the hooks and pulled downwardly in loops through the remainder of the layer of waste and the fabric and formed into loops below the fabric. In some instances, the waste threads will be caught near the top of the layer—in others, deeper into the layer. But the overall effect is to hook individual threads of waste through the mass 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.

The number of needles, the spacing of the needles, and the number of passes through the blanket per unit of length, determine how thoroughly the threads of the waste are interlaced through the blanket from side to side.

In many instances, the loops pulled through the fabric are interlaced below so as to actually knit the whole together.

From the hooking plate **26**, the laminated waste blanket passes onto a suitable take-up or storage roll **30**.

In Fig. 9, **31** indicates a relatively thick layer of waste interlaced with a woven carrier cloth **32** and a relatively thin layer of waste **33** marked "hooked waste." The three layers are thoroughly fastened together by the interlacing of waste threads. The thinner layer **33** can be formed entirely by hooking threads through from the thicker layer **31**; and it can be in part formed by feeding a thin layer of carded waste under the carrier cloth **32** before reaching the hooking machine, or in a supplementary or a preliminary hooking machine.

The specifications for new waste for journal box packing issued by the Association of American Railroads requires the waste to be double-machined and thoroughly delinted to remove "fly and short ends." Those things, together with the specifications for quality and minimum length, insure that a laminated blanket such as shown in Fig. 9 is composed in the main of waste as specified so interlaced in the several laminations that each and every thread of that waste is made fast and the entire blanket is free from the objectionable lint and short ends. The use of such a laminated blanket in a packing as described insures that, no matter what the weather conditions, there is only a remote chance of the journal being able to pull a portion of a thread from the applicator and take it under the journal bearing. This distinguishes the packing of the present invention from the prior packing that has been in common use for many years.

However, according to this invention, the inner or lower side of the thinner layer of waste is preferably treated with an adhesive **34** as shown in Fig. 10 to fasten at the under side of the blanket all threads that go to the under side of the blanket.

In addition, that adhesive forms a sort of pan or basin, as indicated in Fig. 1, for a reservoir of lubricating oil that will not drain away while a car is still for a considerable period. The underside of the blanket may be so treated throughout its length, or, only at the portions thereof that are positioned adjacent the journal, as shown in Fig. 1.

That 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, a synthetic rubber made from petroleum by B. F. Goodrich Company and on the market under the name "Hycar" is preferable. (Materials Handbook by Brady, 1944, McGraw-Hill, p. 523.)

In Fig. 11, the blanket is similar to that shown in Fig. 10, except that there is an additional fabric **35** accompanying the other layers, and the adhesive **34** is applied to that fabric and the interlaced threads.

This insures that the adhesive will not penetrate so far into the blanket as to interfere with the proper capillary action. As shown in Fig. 10, the layer of adhesive is confined to the lower side, and in practice that can be done.

It is particularly desirable to make sure that, however unfortunately the adhesive may be applied in the course of manufacture, it will not reach the carrier cloth and interfere with its capillary action. This result is made more certain by the use of additional fabric **35**, as shown in Fig. 11.

Fig. 12 shows a laminated blanket similar to those in Figs. 9, 10, and 11, but the carrier sheet is not indicated as a woven fabric. While woven fabric with good capillary properties is desirable, there are many conditions in which a sheet of unwoven material, such as many now available on the market, may be used for the carrier. Sheets of vinyl resins are examples.

Preferably, the applicator surface of the waste package has the threads running generally parallel to the axis of the journal with which it is to be used somewhat after the fashion indicated in Figs. 3 and 5. With the threads in that arrangement, when the journal is reversed in direction of rotation there is a slight turning that presents a new surface to the journal and retards or eliminates glazing.

The use of the laminated blanket, such as described, keeps the waste in place and makes it possible to use a smaller quantity of waste than required when the journal box is packed as recommended by the Association of American Railroads.

About 14½ ounces of laminated waste blanket is sufficient for a package to be used in a 6″ x 11″ journal box, whereas the ordinary way of packing such a box takes about two pounds of waste.

The shape of the core indicated in Fig. 4 is suitable for packages intended to be reversed after a period of use. In packages intended to be used always in one position, the core may be shaped somewhat after the fashion illustrated in Fig. 1.

The function of the core is to distend the laminated blanket and constantly press the applicator surface against the lower surface of the journal without any chance of sag.

The core can be made of a variety of materials, and in many different constructions. A resilient material consisting of fiber glass yarn or natural hair held together by a polyester resin, or other elastic material that will resist the action of lubricating oil, will serve the purpose.

Many types of springs can be used. Those indicated in Figs. 1 and 2 are an example that may be used with a variety of materials in making up the core.

When a package embodying this invention is to be put to use, it is compressed and worked down under the journal somewhat as illustrated in Fig. 6, the fingers pressing the mid portion of the package under the collar on the journal.

The operation is made easier by the use of a simple tool consisting of a strip of smooth, flexible material **40** having a handle **41** to catch on the sides of the journal

box. The tool is made of some light fabric coated with polytetrafluoroethylene on the market under the name Teflon, or one of the vinyl resins.

When the position of the journal takes up almost all the lateral, it will be helpful to use one of the tools below and another above the package.

In the appended claims the word "integrate" is used in the sense that the blanket and core are secured together in some manner to constitute a unit package.

This application is a continuation-in-part of my application Ser. No. 345,552, filed March 30, 1953.

I claim:

1. The method of making a journal box packing out of a laminated waste blanket blank, a resilient core, and a strip of canvas, including the steps of forming the blank into a loop, forming the strip of canvas into a loop and inserting same inside the looped blanket blank with the ends of the looped strip extending outwardly of one edge of the looped blank, securing the ends of the blank to one side of the looped canvas strip, inserting the core between the ends of the strip of canvas and against the end of the loop formed by the strip, and securing the outwardly extending ends of the sides of the loop formed by the strip together closely adjacent the outwardly facing end of the core.

2. In a lubricator for a railroad car journal box of the type in which the floor of the box serves as an oil reservoir and oil is lifted by the lubricator to the undersurface of a car axle journal that extends into the box, said lubricator comprising a resilient core adapted to be compressed and inserted between the axle journal and the floor of the box with a blanket integrated with said core and interposed between the core and the journal and resiliently urged against the journal by said core and with at least a part of the blanket extending into the oil reservoir, said blanket including relatively heavy and light layers of carded waste on the outer and inner sides respectively of a flexible carrier, with copious threads of the waste interlaced through the carrier and made fast in the inner layer by an oil impervious adhesive, said adhesive forming a pan-like barrier for retaining an oil supply in the blanket just beneath said journal.

3. A lubricator as set forth in claim 2 in which the flexible carrier includes high capillary action material.

4. A lubricator as set forth in claim 2 in which said flexible carrier is a woven fabric of high capillary action material.

5. A lubricator as set forth in claim 2 in which the resilient core is of symmetrical, oblong, cross-sectional shape with the blanket extending completely around the core, whereby the lubricator is reversible within the journal box.

6. A lubricator as set forth in claim 2 in which the carded waste on the outer layer of the blanket comprises threads extending generally parallel to the axis of the journal.

7. A lubricator as set forth in claim 2 in which the adhesive used is of the rubber base type.

8. A lubricator as set forth in claim 2 in which said flexible carrier includes high capillary action material and in which the adhesive is confined to a narrow stratum of said inner layer remote from the carrier, whereby the capillary action of the carrier is not impaired.

9. A lubricator as set forth in claim 8 in which a fabric is interposed between said inner layer and the adhesive.

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