

May 28, 1940,

M. P. KERNAHAN

2,202,558

PAPER OIL CONTAINER

Filed Nov. 25, 1938

3 Sheets-Sheet 1

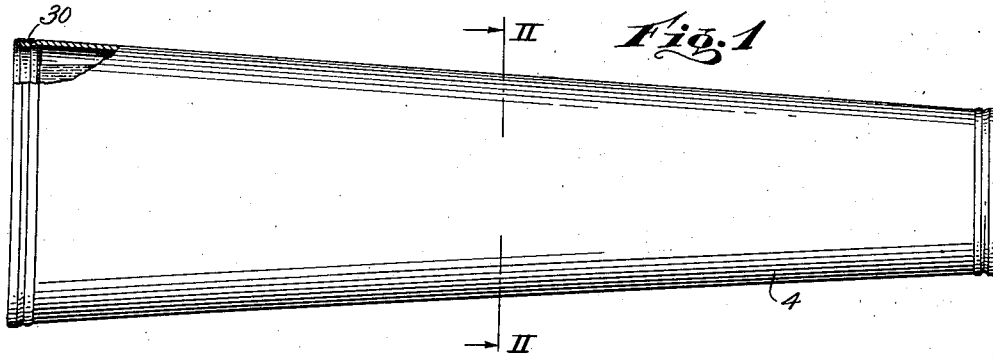


Fig. 2

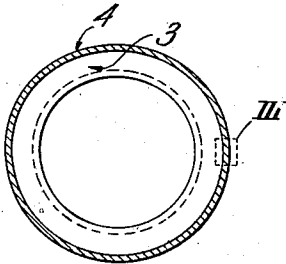


Fig. 3

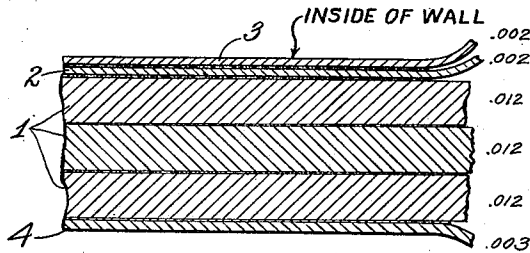
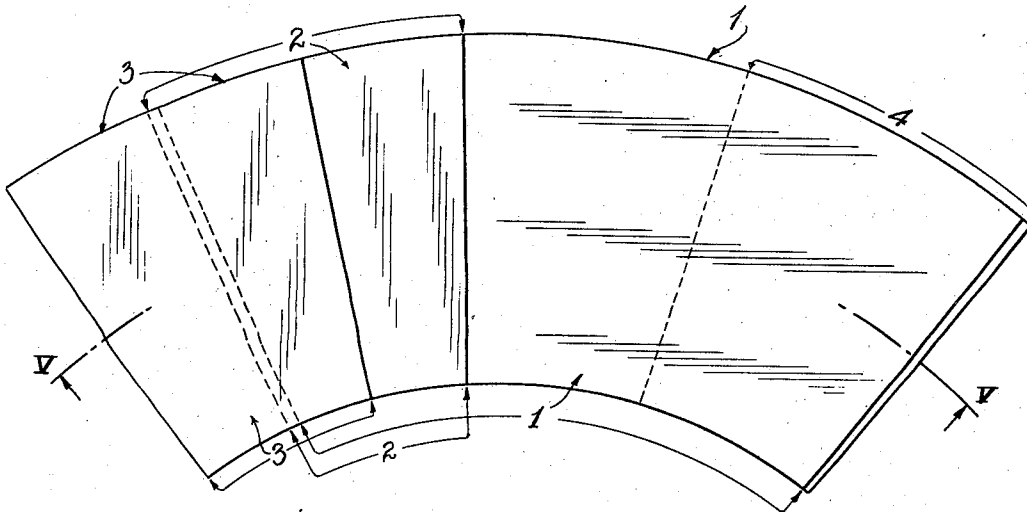


Fig. 4



INVENTOR
Martin P. Kernahan
BY
Jeffrey Kimball Eggleston
ATTORNEY

May 28, 1940.

M. P. KERNAHAN

2,202,558

PAPER OIL CONTAINER

Filed Nov. 25, 1938

3 Sheets-Sheet 3

Fig. 9.

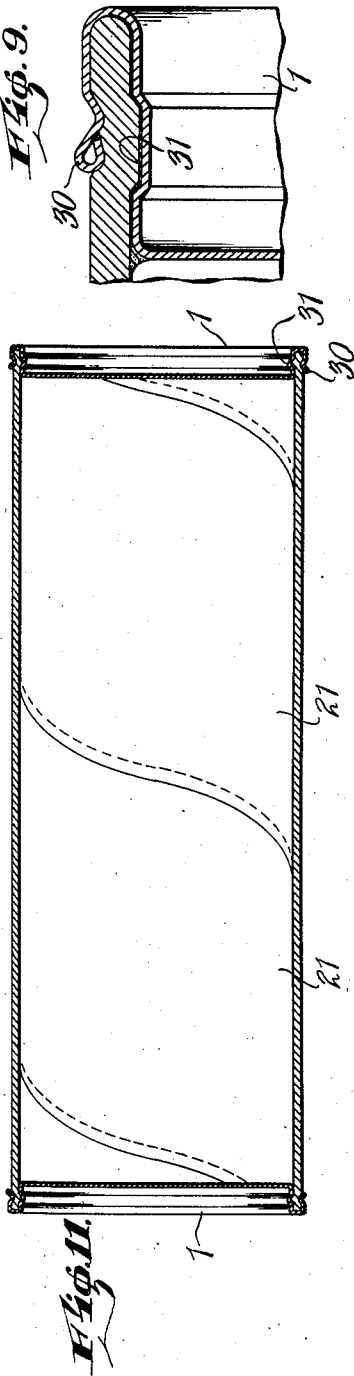
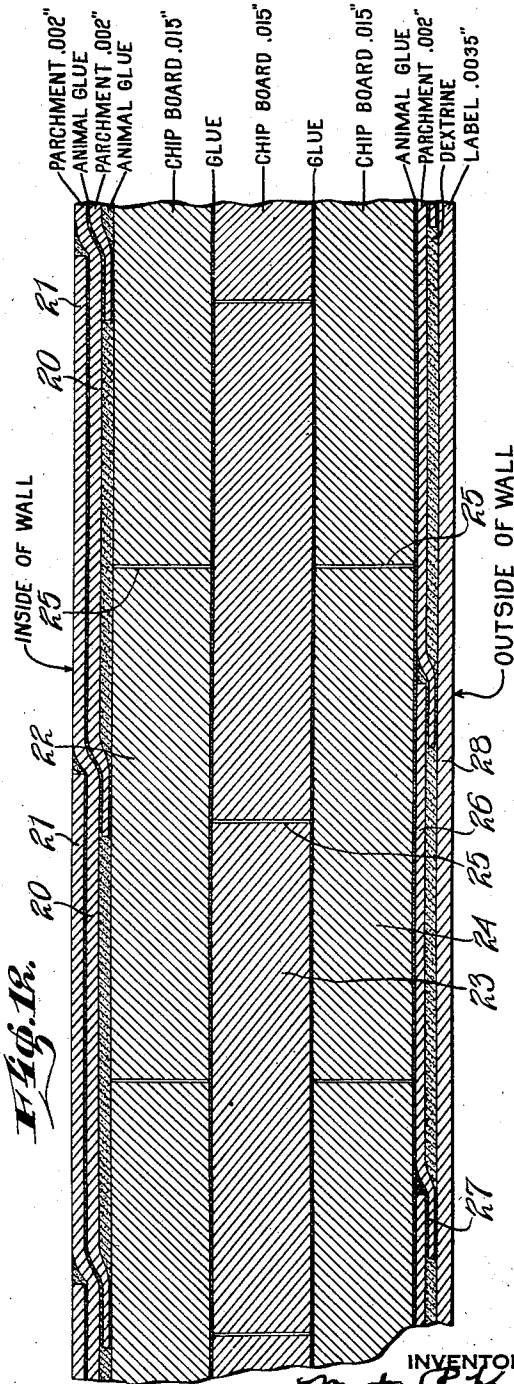


Fig. 12.



INVENTOR

Martin P. Kernahan
BY
Jeffery, Kimball & Egerton
ATTORNEYS

UNITED STATES PATENT OFFICE

2,202,558

PAPER OIL CONTAINER

Martin P. Kernahan, Phillipsburg, N. J., assignor
to The Canister Company, Phillipsburg, N. J.,
a corporation of New Jersey

Application November 25, 1938, Serial No. 242,240

14 Claims. (Cl. 229—3.5)

The invention is a single-service paper container for retailing lubricating oil and like oily products. The object is to provide a paper container, not only of low production cost, proof against oil leakage, but one which is also proof against the slow permeation of its oily contents to the exterior of the container which in the lapse of time causes grease spots to appear on the label or external paper surface. Paper containers for lubricating oil have the advantage over metal receptacles that they are less liable to fraudulent re-use and that they can be more readily disposed of when empty, as by burning them, and that they are relatively inexpensive. But in order to bring their cost equal to or under the cost of metal containers they require to be made of standard cheap paper stock without special coatings or treatments, and within such limitations it has been found difficult to organize an assemblage of paper layers in such a way as to prevent, not merely leakage, but also the tendency to develop grease-spotting while resting on the dealers' shelves. Such spotting renders them unacceptable to the trade and, so far as I am aware, a spot-proof paper oil container capable of production within practicable cost limits has not heretofore been made available.

The invention extends, in its preferred form, to a particular shape for paper oil containers, which specially suits them for use in servicing automobile engines, as described below.

Such preferred shape is taken for exemplification of the principles of the invention in the accompanying drawings, wherein Fig. 1 is a side elevation of the container with parts broken away; Fig. 2 a cross-section thereof on line II—II; Fig. 3 a greatly magnified section of the wall structure at III in Fig. 2 substantially true to scale; Fig. 4 a plan of the composite blank from which the conical shape is rolled; Fig. 5 a longitudinal section of the latter on line V—V (the paper thicknesses being greatly exaggerated for illustration purposes); Figs. 6, 7 and 8 represent successive stages in rolling the blank of Fig. 4, also in exaggerated thickness; Fig. 9 is a detail section of the preferred style of crimp of the metal end closures; Fig. 10 represents the container in use; Fig. 11 represents the invention incorporated in a cylindrical spiral-wound container; and Fig. 12 is a longitudinal section of the wall of Fig. 11, shown in greatly exaggerated thickness in order to illustrate the relationship.

The container shown in Figs. 1-10 is frusto-conical in form, and in the usual quart size, is about twelve inches long, with a metal end closure at its large end which is about $3\frac{3}{8}$ inches in diameter and an end closure at its small end which is not over two inches in diameter. Both of these end-closures are tightly crimped onto

the ends of the paper body, one of which is applied after the oil has been introduced, and the container is intended to be opened by punching or making a hole in the small end closure whereupon it can be thrust into the filling hole of an automotive engine, as indicated in Fig. 10, and left there to empty and drain its contents into the engine while the attendant attends to other duties. This is an improvement in single service oil containers in that it avoids pouring spouts and transfers the oil to the crank-case with the least drip on fenders or surrounding objects. No wiping rag is needed and the friction of the paper body on the edge of the filling hole is sufficient to hold the containers upright. Being of paper it can be wedged into the hole where a glass or metal container of the same shape would not stick.

The structure of the wall of the new container which prevents oil-spotting will be best understood from its method of fabrication, which in the frusto-conical form is as follows: A section or blank 1 of ordinary chip-stock paper, of a thickness of about .012 or .015 inch, is cut or stamped out in arcuate form about as indicated in Figs. 4 and 5 and is skived at one end as indicated at 1^a in the latter figure. To this end of the chip-stock blank, on the side opposite the skive, there is glued a second and shorter arcuate section blank 2 slightly overlapping the skived end. This blank 2 is glued over its entire surface in contact with the chip-stock section and is constituted of thin paper about .002 inch thick, (or from .001 to .008 inch) of the kind known and sold as "grease-proof." The glue is hide or fish glue or any other suitable oil-insoluble adhesive, and is well distributed over the interface between the two blanks for a reason presently to appear.

A third arcuate section 3 is then glued on top of the section 2 and over section 1, overlapping both of them, and with the same kind of glue well distributed over its whole interface with section 2. It is also of thin paper, preferably "grease-proof," and also about .002 inch thick.

These three superposed sections can be united in any desired sequence and together constitute a composite container blank which is completed by gluing to its opposite face at its free end an arcuate label 4 to form the outside surface of the body. This label is cut from ordinary water-proof paper stock which is cheaply obtained, and is glued in place with preferably a slight overlap beyond the end edge of the chip-stock. This overlap is marked 4^a in Figs. 5 to 8.

The container body is formed from this composite blank, by tightly rolling it on a conical mandrel of the proper dimensions, starting with the thin paper end, and with a uniform and thorough application of adhesive between the convo-

and 24, with an aggregate thickness of at least .045 inch as indicated, which is many times that of the glue-encased parchment convolutions; they are glued to the parchment convolutions and to each other and wound with their edges flush or abutting, as shown at 25, in which relation they form a continuously smooth supporting surface, or backing, for the oil-barrier part devoid of ledges or interruptions likely to induce cracks in the time-hardened adhesive.

The remainder of the wall structure includes merely the protection against external moisture corresponding to the waterproof label in the form first described and in this case consists of a spiral winding of parchment paper ribbon 26 wound with about a 1/4 inch overlap, as indicated at 27, and glued directly to the chip-board stock. The label 28 is waterproof and straight wound for appearance sake and, glued to the parchment 26 by dextrine glue, completes the covering.

The thicknesses of the several layers are identified in the drawings to show the general relationship and the glue layers are also indicated in their approximate relative proportions, of course appearing much thicker than actual on account of the exaggerated scale. In all cases, the final moisture-proof layer or label-layer covers the whole of the exposed chip-stock, thus to prevent its softening by access of moisture. The chip-stock layers serve no function whatever, in stopping oil permeation, according to this invention. This is bibulous paper and any oil or water reaching it would immediately render it soft and unfit to support the oil barrier properly and in the manner described. The thickness of the chip-stock, however, is relied on to guard against oil-spotting by its inability to bend so sharply as to create fissures in the glue-encased parchment layer which has been referred to as the oil barrier. The complete wall, it may be noted, is constituted solely of low cost materials which can be assembled in the quickest possible way, that is, on a spiral winder. The immediate product, as will be understood, is a long tube which is cut up, also automatically, to form the cylindrical container body which is then supplied with its straight wound label. The inner liner layer (21) is free of any glue on its inner surface, and the container is therefore suitable for edible products.

While the metal end closures can be applied to the paper body in various ways, it is preferred for the wall structure of this invention to form the crimp-flange with a peripheral thickening represented by a peripheral, rolled-over bead marked 30 in Fig. 9. This is best rolled over inwardly and more or less folded back on itself and, when crimped into the paper structure tends to crowd the latter into a circular groove or valley formed in the opposite crimp wall, as indicated at 31, forming in effect a double line crimp, one against each shoulder of the valley 31. It is customary to seal the joint between the paper and metal with some suitable cement or sealing medium applied to the edge before affixing the end closure as extra insurance against leakage and the valley is also useful in this connection in that it facilitates circumferential distribution of the cement under the pressure of the crimping process making the seal more reliable. The invention includes this form of end closure and crimp independently of the structure of the paper wall.

I claim:

1. A paper oil container having applied end closures and a tubular paper body composed of

an oil barrier part, including a relatively thin layer of parchmented or grease-proof paper completely encased in adhesive on both of its sides, a surrounding backing for said oil barrier secured thereto, said backing including plural glued-together layers of chip-stock paper forming a continuously smooth support for said thin oil barrier, and a protective covering for the whole of said backing including one or more windings of moisture-proof paper.

2. A paper oil container having applied metal end closures and a tubular paper body composed of an oil barrier part including a relatively thin layer of grease-proof paper completely covered with adhesive on both of its sides, a layer of paper secured by means of said adhesive on the inner side of said grease-proof layer, a backing for said barrier including plural layers of chip-stock paper secured to said grease-proof layer by the adhesive on the outer side thereof, and forming a continuously smooth supporting surface for said grease-proof layer, and a protective covering for said backing including one or more windings of moisture-proof paper completely enclosing the backing.

3. A paper oil container having applied metal end closures and a tubular paper body composed of an oil barrier part comprised of a thin layer of grease-proof paper completely and uniformly encased in adhesive on both of its sides, a thin layer of grease-proof paper secured to said layer by the adhesive on the inner side thereof constituting a liner for the container, a backing for said barrier including plural layers of chip-stock paper secured to said barrier layer by the adhesive on its opposite side, said ship-stock layers being also glued to each other, and a protective covering for said chip-stock layers including one or more windings of moisture-proof paper glued thereto.

4. A paper oil container composed of a tubular body having applied metallic end closures and constituted of two adjacent layers of parchmented or grease-proof paper united by an intervening continuous layer of glue, one of said layers being exposed to the oil contents and the other being completely covered with the adhesive, the two layers together having a thickness approximating .005 inch, and a surrounding support for said layers composed of plural layers of chip-stock paper continuously glued thereto and to each other and aggregating a thickness at least ten times the thickness of said completely covered grease-proof layer, and a protective moisture-proof layer completely covering said chip-board stock.

5. A paper container for retailing lubricating oil having a frusto-conical paper body with applied metal end closures, the smaller end closure being adapted for being opened and being of a diameter not greater than about two inches, said paper body comprising a barrier part including a relatively thin layer of grease-proof paper completely and uniformly covered with adhesive on both of its sides, and a surrounding backing for said barrier including plural layers of chip-board stock paper ribbon glued to each other and covered with a protective covering of moisture-proof paper, said container being by its shape and size adapted to be thrust into the oil-filling hole of an automotive engine to be supported frictionally thereby while its contents are being transferred.

6. A single-service paper oil container composed of a frusto-conical paper body having ap-

plied metallic end closures, the smaller of said end closures being less than approximately two inches in diameter whereby it is adapted to be thrust into an engine oil-filling hole, said body comprising successively united layers including two adjacent layers of relatively thin grease-proof paper continuously glued to each other, one of said layers being exposed to the contained oil and the other being covered with adhesive on both its sides and glued thereby to a backing, said backing comprising plural glued-together layers of chip-stock paper surrounding said grease-proof layers, and one or more moisture-resisting layers glued to and around and completely covering said chip-stock layers.

7. A paper oil container comprising a frusto-conical paper body with applied metal ends, said body composed of an inner arcuately rolled liner section with its ends overlapping and glued together, an arcuately rolled oil barrier section of grease-proof paper with its ends overlapping and glued together and continuously glued to the liner section over the full extent of its interface therewith, a backing section arcuately rolled onto said barrier section and continuously glued to it over the full extent of its interface therewith, said backing section forming a continuously smooth supporting surface for said barrier, devoid of ledges, and an arcuate moisture-proof label glued to and completely covering the backing.

8. A paper oil container composed of a cylindrical body formed of convolutions of spirally wound ribbon of thin grease-proofed paper each convolution overlapping the preceding convolution as wound by more than 50% and their interfaces being continuously and completely glued to each other, a plurality of layers of chip-stock paper ribbon wound and glued together in broken joint relation next to the overlapping portions of said grease-proofed paper and continuously glued to said overlapping portions whereby said overlapping portions are completely covered with glue on both sides, said chip-stock layers constituting a relatively thick support for the glue-encased grease-proofed paper and a moisture-resisting layer or layers of paper glued around said chip-stock layers.

9. A paper oil container having a cylindrical body composed of a single ribbon of grease-proofed paper wound to overlap itself by at least 50% of its width and having the interfaces of its successive convolutions continuously glued together, a succession of layers of chip-stock ribbon wound upon said grease-proofed paper, the first being continuously glued thereto and the others being glued to each other in flush broken-jointed relation and together forming a relatively thick backing for said grease-proofed convolutions, and one or more moisture-resisting layers of paper ribbon wound around and glued to said chip-stock.

10. A paper oil container having applied end closures and a tubular body composed of an oil barrier part, including a relatively thin layer of grease-proof material completely encased in an adhesive on both of its sides, a surrounding backing for said oil barrier secured thereto, said backing including plural glued-together layers of chip-stock paper forming a continuous support for said thin oil barrier, and a protective

covering for the whole of said backing including one or more windings of moisture-proof paper.

11. In a container for oil and grease, a laminated side wall consisting of a plurality of plies of chip-stock paper, and an oil barrier part, including two adjacent layers of relatively thin oil resistant material, spirally wound in broken-joint relation and united to each other by adhesive, one of which is wholly enveloped in the adhesive on both its sides and the other of which is exposed to the contained oil, and films of adhesive coextensive in area with said plies uniting each ply to an adjacent ply or plies.

12. In a container for oil and grease, a laminated side wall consisting of a plurality of plies of chip-stock paper and an oil barrier part, including an inner-liner of two layers formed from a single ribbon of parchmented or grease proof paper spirally wound in overlapping relationship and united to each other by adhesive, the underlapped layer of which is wholly enveloped in adhesive on both of its sides and the overlapped layer of which is exposed on its outer side to the contained oil, and films of adhesive coextensive in area with said plies securing the oil barrier to the first ply and uniting each succeeding ply to an adjacent ply or plies.

13. A paper oil container having applied metal end closures and a tubular body composed of an oil barrier part and a surrounding backing for said oil barrier secured thereto, said backing including plural glued-together layers of fibrous material, each of said layers being spirally wound with the adjacent edges in abutting relationship, the oil barrier comprising two adjacent layers of parchmented or grease-proof paper spirally wound in overlapping relationship, the overlapping layer being slightly greater in area than the underlapping layer, the two layers forming a body consisting of sections having their edges superimposed at the lapping joints, the underlapped layer being completely and uniformly encased in adhesive on both of its sides and the encasement including the superimposed edges forming a non-permeable seal at the lapping joints, and a protective covering for said backing including one or more windings of moisture-proof paper glued thereto.

14. A paper oil container having applied metal end closures and a tubular paper body composed of an oil barrier part comprising two adjacent layers formed from a single ribbon of parchmented or grease-proof paper spirally wound in overlapping relationship, the overlapping layer being slightly greater in area than the underlapping layer and the two layers forming a body consisting of laminations having their edges superimposed at the junction of the laps, the underlapped layer being completely and uniformly encased in adhesive on both of its sides and the encasement including the superimposed edges forming a non-permeable seal at the lapping joints, a surrounding backing for said oil barrier secured thereto, said backing including plural glued-together layers of chip-stock paper forming a continuously smooth support for said oil barrier, and a protective covering for said backing including one or more windings of moisture-proof paper glued thereto.

MARTIN P. KERNAHAN.

May 28, 1940.

P. S. KEYSER

2,202,559

COMB CLEANER

Filed May 4, 1939

Fig. 1.

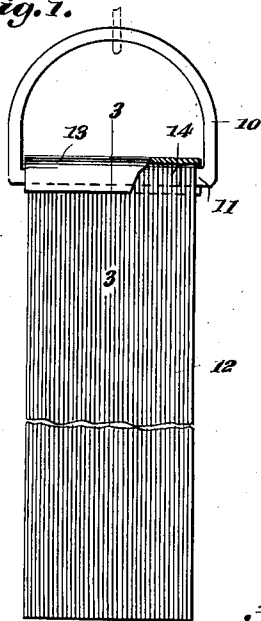


Fig. 4.

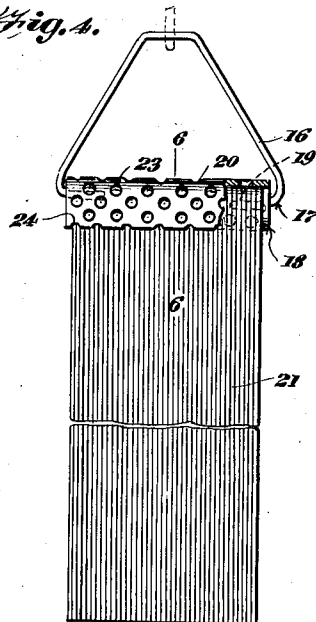


Fig. 3.

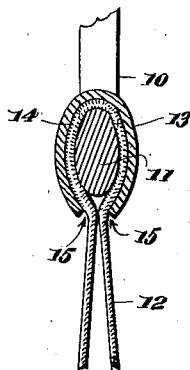


Fig. 5.

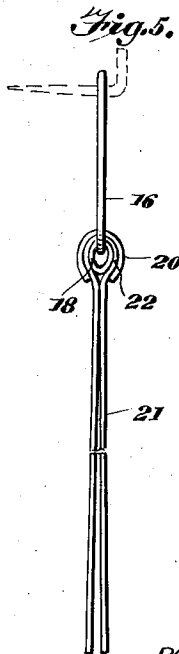


Fig. 6.

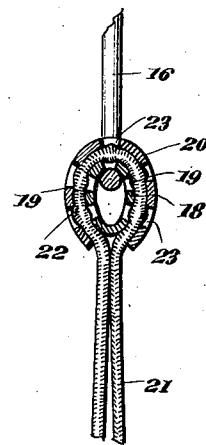
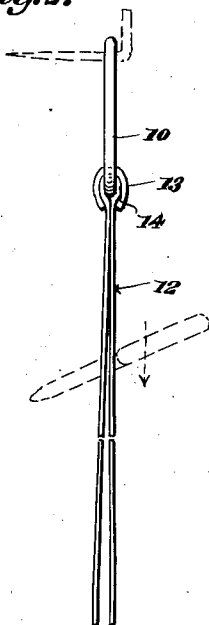
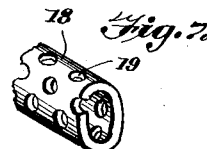


Fig. 2.



INVENTOR
PATTY SHEPHERD KEYSER

BY

Iving A. McArthur
ATTORNEY

