Aug. 2, 1938. Z. A. PETTY 2,125,807

BAR

Filed March 19, 1938

Fig. 1.

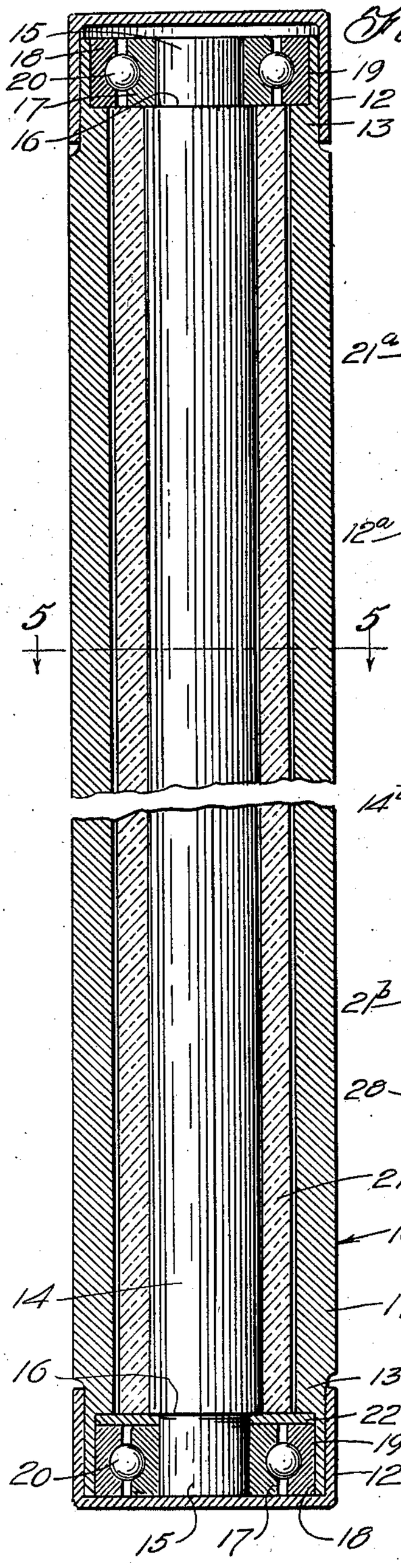


Fig. 2.

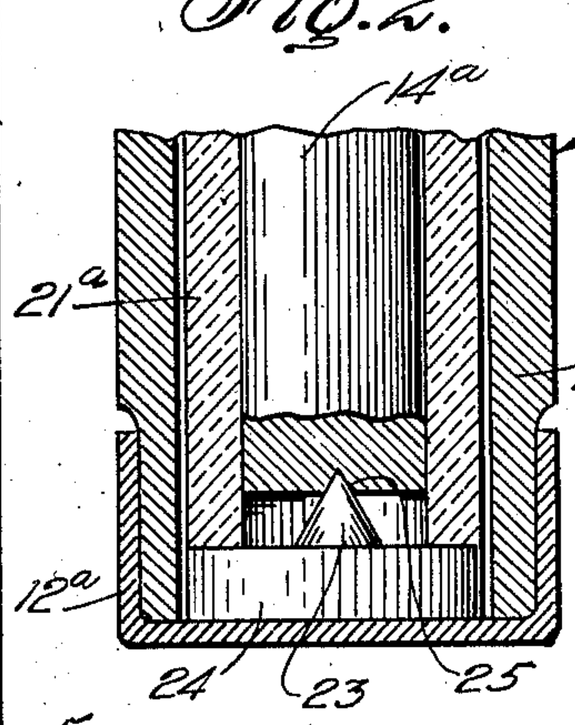


Fig. 4.

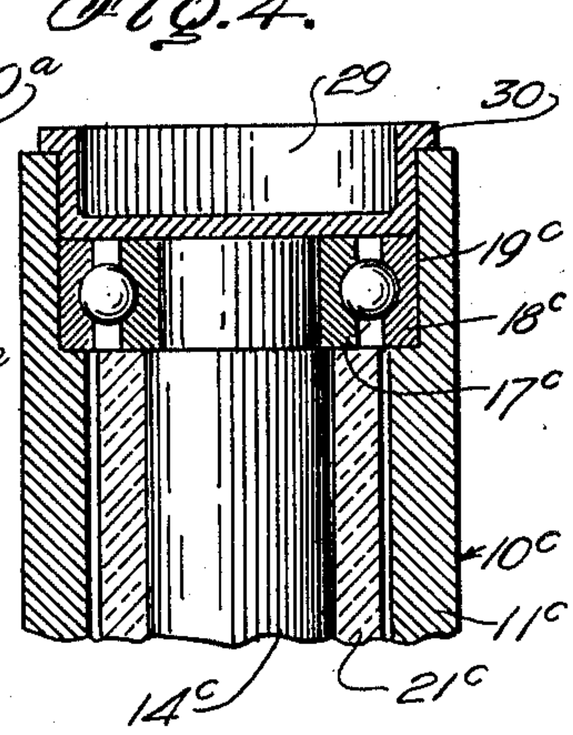


Fig. 3.

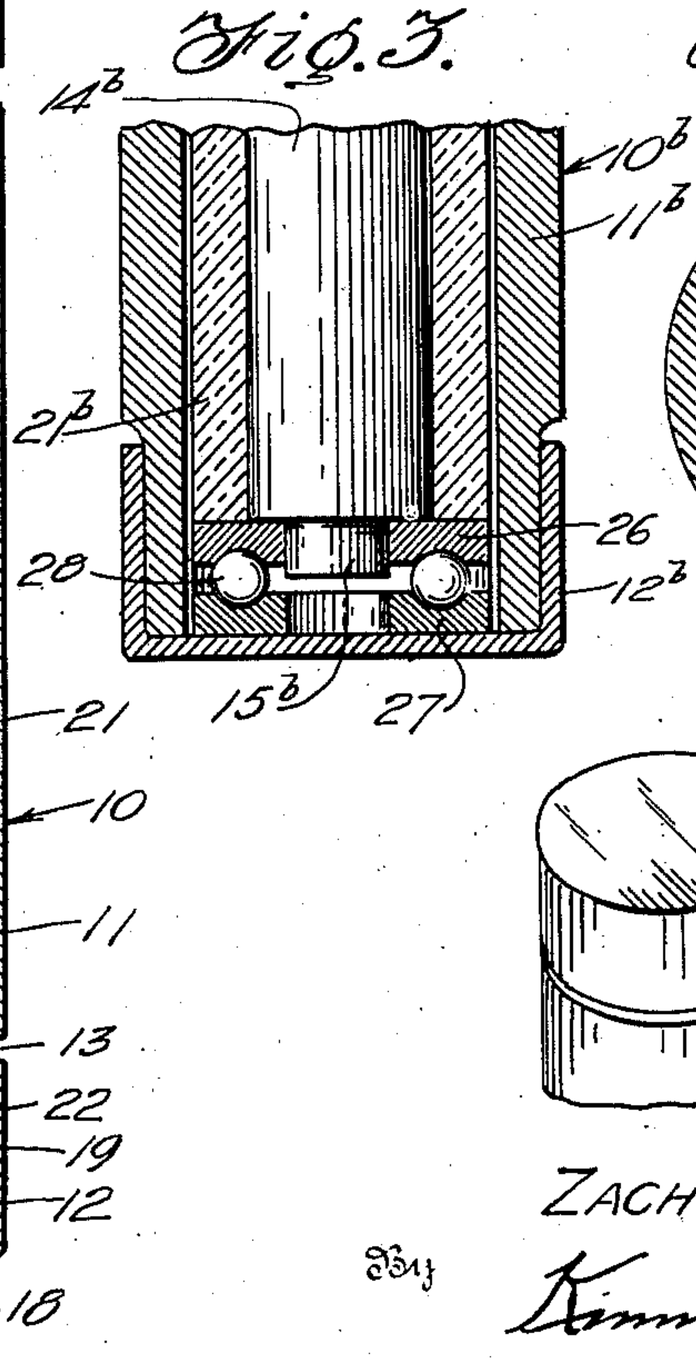
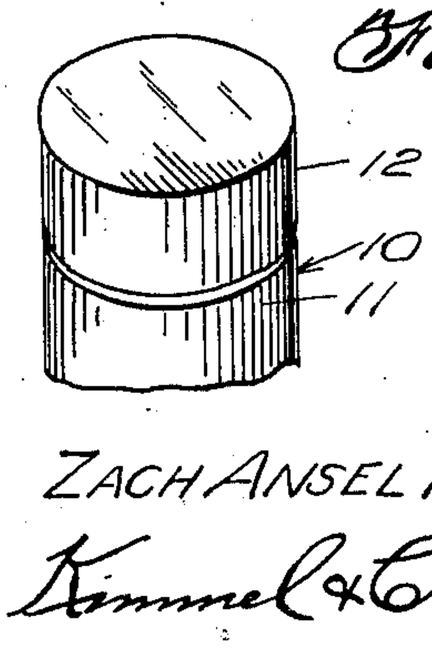


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE

2,125,807

BAR

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Application March 19, 1938, Serial No. 197,006

10 Claims. (Cl. 189—9)

This invention relates to bars for use in openings, doors, enclosures or the like and more particularly to a bar so constructed as to resist the action of a tool thereon for the cutting of the bar.

An object of this invention is to provide an improved bar adapted for use as a prison bar in doors, windows or the like which is so constructed that it will resist the action of a saw or other cutting tool which may cut through the outer shell.

Another object of this invention is to provide a bar of this type which may have the ends thereof firmly secured against movement, such as being embedded in a frame or opening, and which is provided on the interior thereof with a rotary tool resisting means which will resist the action of a cutting tool such as a saw, file or the like.

A further object of this invention is to provide a bar of this type which includes an outer metal shell and an inner glass shell which is rotatable on the interior of the outer shell so that in the event the outer shell is cut through the tool used in cutting will effect rotation of the inner shell which due to its tool resisting characteristics will prevent the tool from cutting therethrough.

Another object of this invention is to provide a tool-proof bar of this type which may be used for cells in prisons or like barred compartments.

A further object of this invention is to provide a bar of this type which embodies an outer metal shell or bar, an inner rotatable bar and a tubular glass member which is rotatable relative to the outer shell and also relative to the core or inner bar.

Still another object of this invention is to provide in a bar of this type means whereby the filings which may drop into the interior of the outer shell and any broken chips or the like will not hold the inner shell or the inner core from rotation so as to thereby resist the action of the cutting tool.

A further object of this invention is to provide a bar of this kind which is relatively simple in construction and which is entirely sealed against the action of weather so that the bar will resist the cutting action of a tool irrespective of the length of time that the bar is secured in the window or other closure.

A further object of this invention is to provide in a bar of this type means for mounting an inner rotatable element on anti-friction bearings which are sealed against the action of weather so that the inner parts of the device will be freely rotatable in the event the outer shell portion is cut through by a tool.

To the above objects and others which may hereinafter appear the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing wherein is shown embodiments of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a longitudinal section partly broken away of a tool-proof bar constructed according to an embodiment of this invention,

Figure 2 is a fragmentary longitudinal section of a modified form of this bar,

Figure 3 is a view similar to Figure 2 showing another modification of this invention,

Figure 4 is a fragmentary sectional view of a further modification of this invention,

Figure 5 is a sectional view taken on the line 5—5 of Figure 1, and

Figure 6 is a fragmentary perspective view of one end portion of a bar constructed according to this invention.

Referring to the drawing, the numeral 10 designates generally a bar constructed according to this invention which comprises an outer shell 11 of tubular form which is provided at each end thereof with a reduced portion 13. A cap 12 is engaged over the reduced end portion 13 of the outer shell or tubular member 11 and this cap 12 is preferably tightly engaged with the reduced portion 13. The cap 12 may be mounted on an end of the outer shell or casing 11 by pressing or the like so that when the cap 12 is in position the adjacent end of the hollow bar member 11 is firmly sealed to prevent the entrance of moisture, dirt or the like. The opposite end portions of the bar 10 are adapted to be embedded in a window structure, a door frame or other enclosure and the cap 12 is preferably concealed in the window structure, or other enclosure so that this cap 12 cannot be engaged by a tool or the like.

A shaft or elongated solid bar 14 is disposed inside the outer tubular bar 11 and this shaft or bar 14 is provided with reduced opposite end portions 15 providing a shoulder 16 adjacent the ends of the inner member 14. An inner race member 17 is disposed about the reduced cylindrical portion 15 of the inner bar 14 and an outer race member 18 is positioned in a seat 19 provided in the adjacent end of the outer tubular member 11. Balls 20 or the like are interposed between

the two race members 17 and 18 and provide an anti-friction bearing for the end of the inner bar member 14. This bar member 14 is constructed of relatively highly tempered metal being preferably hardened to a degree whereby the surface of this member will resist the action of a tool such as a saw or the like.

A second tubular member 21 is disposed within the outer tubular member 11 and loosely engages about the inner bar or core member 14. The second tubular member 21 is preferably constructed of glass or the like and this tubular member 21 is rotatable relative to the core member 14 and is also rotatable relative to the outer shell or tubular member 11. The lower end of the inner tubular member 21 rests on a cushioning member 22 in the form of a felt ring or like gasket which engages on the upper sides of the two race members 17 and 18. This cushioning member 22 also acts as a seal to the lower end of the tubular member 21 so that any filings or chips dropping down inside the outer tubular member 11 will not contact with the anti-friction bearing comprising the race members 17, 18 and the balls 20. In addition the sealing member 22 acts as a cushioning element for the glass tube 21. The upper end of the bar 10 is similar to the lower end with the exception that the sealing member 22 may if desired be eliminated.

In Figure 2 there is disclosed a modified form of this bar structure wherein a bar 10^a is provided having caps 12^a at the opposite ends thereof similar to the caps 12 on the bar 10 in Figure 1. In this form the inner bar or core member 14^a has the opposite ends thereof engaged with a cone-shaped bearing member 23 which is carried by an annular plate 24 engaging within the outer shell or tubular member 11^a. The ends of the inner member 14^a are provided with a cone-shaped seat 25 in which the end of the bearing member 23 engages. A glass tubular member 21^a is disposed inside the outer bearing member 11^a and is interposed between the core member 14^a and the outer tubular member 11^a. This inner tubular member 21^a rotatably engages at the opposite ends thereof on the adjacent surface of the disc or bearing member 24.

In Figure 3 there is disclosed another form of this invention wherein the bar 10^b is provided with caps 12^b similar to the structure shown in Figure 1 but in this form the inner bar member 14^b is provided with reduced end portions 15^b which engage in a thrust plate 26 forming part of an anti-friction bearing structure. A second thrust plate 27 is disposed inside of the outer tubular member 11^b and balls 28 are interposed between the two race members or thrust plates 26 and 27. An inner tubular member 21^b is interposed in the space between the inner bar 14^b and the outer shell or tubular member 11^b and engages on the upper face of the thrust plate 26. In this form a sealing member similar to that disclosed at 22 in Figure 1 may be interposed between the adjacent end of the glass tubular member 21 and the inner face of the thrust plate 26.

In Figure 4 there is disclosed a further modification of this invention wherein the bar member 10^c has the opposite ends thereof bored out as at 19^c and an anti-friction bearing structure including race members 17^c and 18^c are engaged in the seat or bored out portion 19^c. A core or inner bar member 14^c engages the inner race member 17^c and a tubular glass member 21^c is interposed between the core 14^c and the outer shell or bar 11^c. In this form the cap 12 is eliminated and in place thereof a cup-shaped sealing member 29 is provided which is pressed into the bore 19^c and is provided with a flanged outer end portion 30 which engages the adjacent end of the tubular member 11^c. In this form it will be understood that the opposite end of the bar 10^c is constructed on the inside thereof similar to the construction disclosed in Figure 1, that is, the usual sealing member 22 is interposed between the anti-friction bearing and the adjacent end of the glass tube 21^c.

In the use of this bar, the bar 10 is initially assembled prior to its being mounted in a window structure, door or other enclosure and the ends of the bar 10 are preferably embedded deep enough in the window structure so that the caps 12 will be concealed and thus so disposed that they are not in a position where a tool may be engaged therewith in order to tamper with the construction on the inside of the bar. Assuming that the bar is in a window structure such as a jail or the like, and that a saw is used to cut through the outer bar or casing 11, the cuttings will, after the shell 11 has been cut through, drop down inside the outer member 11, but due to the sealing or cushioning member 22 these cuttings will be prevented from contact with the anti-friction bearings at the lower end of the bar 10. The glass tubular member 21 will now be engaged with the saw and reciprocation of the saw will cause the glass tubular member 21 to rotate inside the outer bar or tubular member 11. Due to the rotation of this glass tube 21 the tool, such as a file or saw, will have little or no effect in its cutting operation on the surface of the tubular member 21. However, in the event the glass tube 21 is broken or in some manner cut through, it will then be necessary that the tool engage the inner core 14 before the entire bar 10 is severed. This core 14 as hereinbefore stated is so constructed that it will resist the action of a cutting tool being so tempered or hardened that the tool will have little effect on the surface thereof. In addition to this, the core member 14 is freely rotatable on the inside of the outer tubular member 11 and reciprocation of a tool back and forth will only effect rotation of the core member 14 so that the core member 14 will not easily be cut through.

This bar has been constructed for the purpose of providing a tool-proof bar which may be used for a window or other opening in jails, banks, warehouses or the like where it is desired to provide a barred opening which cannot be cut through by ordinary tools such as may be smuggled into a jail or the like. The anti-friction bearings are preferably enclosed in a weather resistant grease or other lubricant which will not cake or harden so that the anti-friction bearings will freely operate at all times. It will of course be understood that the outer shell 11 may be constructed of highly tempered metal so that this outer shell in itself will resist the action of a cutting tool. However, it has been found in actual practice that the hardening of the bars may be off-set by certain tools or cutting operations, but the bar herein disclosed is so constructed that even though the outer stationary bar portion thereof be cut through the inner parts of the bar will resist the cutting action of ordinary tools, such as saws, files or the like.

What I claim is:

1. A bar for the purpose set forth comprising an outer elongated tubular member, an inner solid bar disposed in said outer member, anti-friction bearings at each end of said bar within

said outer member, a sealing means interposed between said anti-friction bearing adjacent one end of said inner bar, and an inner tubular member interposed between said inner bar and said outer member and rotatable relative to said inner and said outer member.

2. A bar for the purpose set forth comprising an outer elongated tubular member, an inner solid bar disposed within said outer member, anti-friction bearings at each end of said bar within said outer member, a combined sealing and cushioning member interposed between an anti-friction bearing adjacent one end of said inner bar and an anti-friction bearing, and a glass tube interposed between said inner bar and said outer tubular member and engaging at one end against said sealing member, said glass tube being rotatable relative to said outer member and to said inner bar.

3. A bar for the purpose set forth comprising an outer elongated tubular member, an inner solid bar loosely disposed within said outer member, means rotatably supporting said inner bar for rotation within said outer member, a cap at each end of said outer member, and a glass tube interposed between said inner bar and said outer member and rotatable relative to said inner bar and said outer member.

4. A bar for the purpose set forth comprising an outer elongated tubular member provided with reduced opposite end portions, a cap tightly engaging over said reduced end portions, the outer diameter of said cap being substantially equal to the outer diameter of said outer tubular member, a bearing seat at each end of said outer tubular member, an anti-friction bearing on each seat, a solid bar engaging said bearings and rotatable within said outer member, and a glass tube interposed between said bar and said outer member and independently rotatable relative thereto.

5. A bar for the purpose set forth comprising an outer elongated tubular member, said outer member having reduced opposite end portions, a cap pressed onto the reduced end portions of said outer member for sealing the ends of said outer member, a thrust bearing at each end of said outer member, a solid bar within said outer member engaging said thrust bearing, said bar including reduced end portions engaging within an inner race of said thrust bearings, and an inner tubular member disposed about said bar within said outer member and engaging said thrust bearings at the ends thereof, said inner tubular member being independently rotatable relative to said bar and said outer tubular member.

6. A bar for the purpose set forth comprising an outer elongated tubular member, reduced end portions carried by said member, a cap tightly pressed onto said reduced end portions, a solid bar disposed within said outer member, an annular plate at each end of said bar, a cone-shaped bearing member carried by said plate engaging said bar to rotatably support said bar in said outer member, and an inner tubular member loosely engaging about said bar and independently rotatable with respect thereto and with respect to said outer member.

7. A bar for the purpose set forth comprising an outer elongated tubular member, an inner elongated member, means at substantially the ends of said inner member rotatably supporting said inner member in said outer member, closure means at each end of said outer member, and an intermediate tubular member between said inner and outer member and rotatable independently of said inner member, the opposite ends of said intermediate member being open.

8. A bar for the purpose set forth comprising an outer elongated tubular member, an inner member disposed in said outer member, bearings at each end of said outer member rotatably supporting said inner member, a sealing means adjacent one end of said inner member for sealing said bearing, and an inner tubular member interposed between said inner member and said outer member and rotatably engaging said sealing means.

9. A bar for the purpose set forth comprising an outer elongated tubular member, an inner member loosely disposed within said outer member, means supporting said inner member for rotation within said outer member, a closure at each end of said outer member, and an intermediate tubular member interposed between said inner member and said outer member and rotatable relative to said members.

10. A bar for the purpose set forth comprising an outer elongated tubular member, an inner member loosely disposed within said outer member, means supporting said inner member for rotation within said outer member, a closure at each end of said outer member, and a frangible tubular member interposed between said inner member and said outer member and rotatable relative thereto.

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