

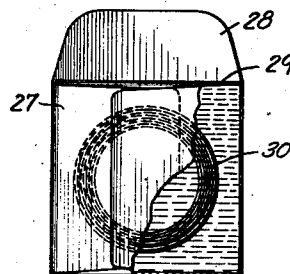
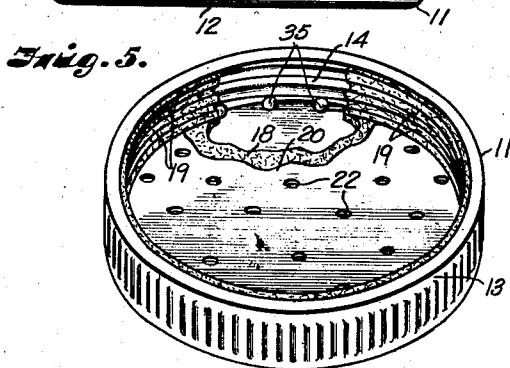
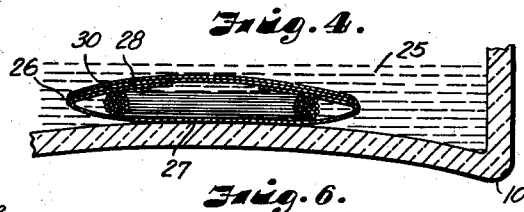
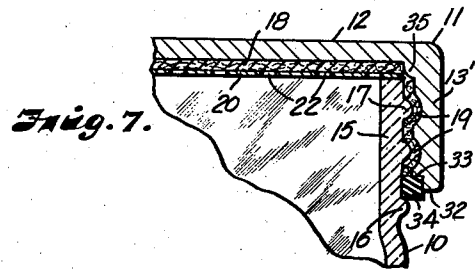
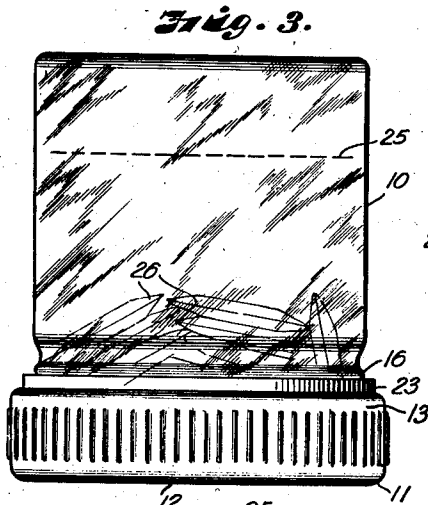
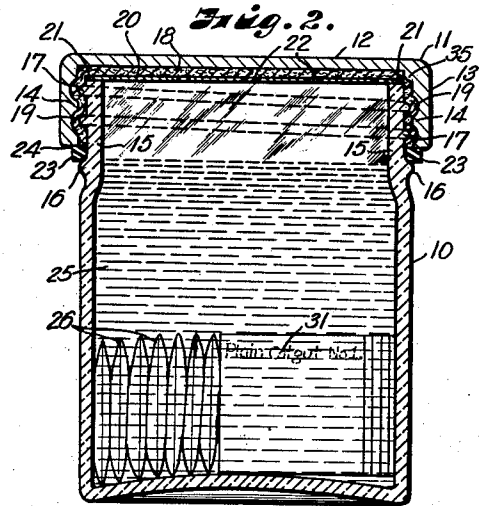
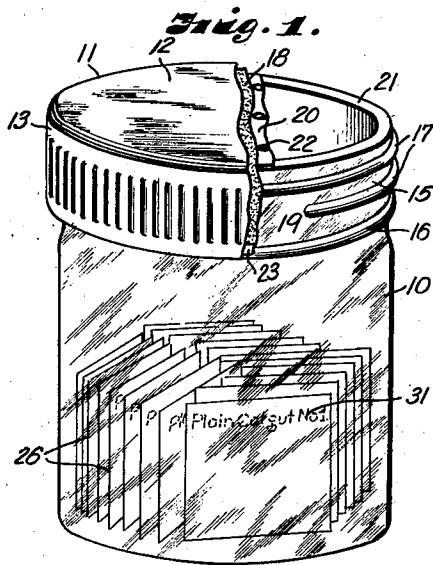
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1,997,443

LIGATURE PACKAGE

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LIGATURE PACKAGE

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20 Claims. (Cl. 206—63.3)

My invention relates to packages for sterile surgical materials, and particularly to packages for sterile surgical cord. By a sterile surgical cord is meant a cord or thread made of catgut or similar material that has been treated so as to make the same sterile, or any equivalent thereof that can be used as a ligature or suture and for similar purposes.

It is a purpose of my invention to provide a package for a surgical cord of the above mentioned character, which will keep the same in a safe condition and which is economical. The provision of expensive packaging for the individual lengths of cord is eliminated by my new and improved package, and the package itself is so constructed and arranged that the contents thereof and all of the portions thereof with which the hands or the instrumentalities used for removing the cords from the package may touch can be kept in an antiseptic condition so as to avoid any possibility of infection due to contact with portions of the container forming part of the package.

It is a particular purpose of my invention to provide containers or packets for the individual lengths of catgut or similar surgical cord that are so constructed that, if said container or packet or length of catgut or other similar surgical cord contained therein is immersed in a germicidal liquid, the liquid will enter the container or packet so as to partially fill the same to such an extent that the liquid will be constantly in contact with the cord in the packet and the capillary attraction of the liquid between the closure member for the packet and the body portion of the packet will seal the same against escape of the liquid therefrom so that the liquid will be maintained in the packet for long periods of time, the wall portions of the packet or containers being made of liquid-tight material, which is preferably fibrous sheet material of the character known as glassine paper, or a similar composition.

It is a further purpose of my invention to provide a receptacle for the individual packets or containers of the surgical cord, such as catgut, which receptacle is adapted to contain a germicidal liquid adapted to cover the packets, the packets being of such a character that the same will not be buoyant in the liquid and will thus be completely immersed in the liquid if the liquid level necessary for such immersion is maintained in the receptacle, said receptacle being made with transparent wall portions so that the packets within the same are visible and any

indicia thereon can be read through the wall portion of the receptacle.

It is an important purpose of my invention to provide a receptacle of the above mentioned character, which is provided with a detachable closure member extending over the open end or mouth portion of the receptacle and has, preferably, screw-threaded engagement therewith, and to provide such a receptacle with means for distributing or conveying the germicidal liquid over the opposing surfaces of the body portion of the receptacle and the closure member upon inversion or shaking of the receptacle so as to disinfect these surfaces prior to any use of the receptacle so that after opening the receptacle, a person using some of the material, constituting the contents of the receptacle, would not accidentally come in contact with any surface at or adjacent the mouth or rim portion of the body portion that would be liable to cause infection. Preferably a lining is provided in the cap member, which is of an absorbent material, such as any felt-like material or any fibrous cellulose material, such as a liner made of a masticated wood pulp, or similar absorbent material made of wood fiber or similar material. Said liner preferably extends across the inner face of the cap member and down along the flange thereof that embraces the open end portion of the receptacle, and may be formed with threads thereon corresponding to the threads on the cap portion and on the body portion of the receptacle so as to interfit therewith. Preferably the lining is mounted in fixed position in the cap member, and in order to prevent any damage to the lining by the top edge portion at the rim of the jar or similar receptacle, an inner disk-like lining of harder paper-like material may overlie the rim portion of the jar and the central portion of the cover or cap. This inner lining for protecting the felt-like material or absorbent material, is preferably perforated so as to provide for the easy access of the liquid to the absorbent material in back of the same, and said inner harder liner is preferably itself somewhat absorbent so as to assure the conveyance of the liquid to said rim portion of the jar or receptacle.

One of the important advantages of the invention is that the ligatures, or sutures, or surgical cord members, are kept within glassine paper, or similar, envelopes under the constant influence of an efficient germicide, both inside and outside the envelopes, and due to this provision there is no necessity of sterilizing the same after removal from the receptacle, as is the case with the sealed

glass tubes now used for this purpose. These now have to be sterilized on the exterior thereof in order to provide an entire sterile condition, but the attempts at sterilization are usually not successful because sterilization by means of heat does damage to the catgut or similar cord, and the placing of the same in strong antiseptic or germicidal solutions causes the tubes to float and makes it difficult to have them completely immersed in the solution.

It is a further purpose of my invention to avoid the danger of infection that may be caused due to bits of broken glass that result from the breaking of the glass tubes for the purpose of removing the surgical cord contained therein. In order to reduce the danger of this it is customary to treat the tube for the purpose of sterilizing the exterior thereof and break the same a considerable period of time prior to the use of the cord, then wetting the suture and stretching the catgut or similar cord to put it in proper pliable condition for use and to remove all particles of broken glass therefrom. This necessary treatment of the catgut or similar cord after removal from the liquid in which it has been kept in the glass tube increases the chances of infection, and my invention avoids the necessity of carrying out any of these subsequent treatments of the cord, as it is kept in a condition ideal for its proper preservation until actually ready for use, and any small fibers of the paperlike material from which the packets containing the cords are made that might adhere to the cords having been constantly in contact with the germicidal liquid will do no more harm than a similarly treated cotton fiber would under similar circumstances.

It is a further purpose of my invention to provide a jar or receptacle in which the material is kept, which will admit no air and prevent evaporation of the germicidal fluid and which is re-disinfected all the time by the use of the liquid when the jars are vigorously shaken or inverted for a few moments. The germicidal liquid is preferably a solution of an antiseptic material in alcohol or acetone, and in case of any loss of the solvent due to slight evaporation and removal thereof with some of the packets of the material, the same can be restored by merely adding a sufficient amount of the solvent to the liquid in the jar or receptacle.

By the use of a flat packet for the coil or length of catgut or similar surgical cord, made of a paper-like sheet material, danger of infection of the patient from particles of glass is not only avoided, but cutting of gloves or towels is avoided, and also of fingers of the person handling the cord, which reduces the danger of infection such as often occurs from cut fingers under gloves. Furthermore due to the fact that these packets are of a flat character any danger of the same rolling from the table, as frequently occurs with the glass tubes, is avoided.

Other objects and advantages of my invention will appear as the description of the drawing proceeds. I desire to have it understood, however, that I do not intend to limit myself to the particular details shown or described, except as refined by the claims.

In the drawing:

Fig. 1 is a perspective view partly broken away, of my improved ligature package.

Fig. 2 is a vertical sectional view thereof.

Fig. 3 is a view thereof, showing the same inverted for disinfecting certain exposed surfaces of the jar and cover.

Fig. 4 is an enlarged fragmentary sectional view, showing a portion of the receptacle and one of the surgical cord packets therein.

Fig. 5 is an inside perspective view of the cap and closure member.

Fig. 6 is a view partly in plan and partly in section of one of the packets showing the flap in open position, and

Fig. 7 is a fragmentary sectional view of a modified form of cap member.

Referring in detail to the drawing, my invention comprises a receptacle having a body portion 10, which is preferably made in the form of a transparent glass jar, and which is provided with a detachable cover member 11, said cover member being made of any desired material, but being preferably made of metal or phenolic condensation product, such as the substance commercially known as bakelite, or any similar material. Said cap member is provided with a substantially flat end wall 12 and a flange portion 13, which is preferably formed on the exterior thereof so as to be ribbed or corrugated or roughened in order to provide suitable means for gripping the same to make it easy to rotate the same.

The interior of the flange 13 is preferably provided with a screw thread 14 and the body portion 10 is provided with a slightly reduced cylindrical wall portion 15 adjacent the mouth or open end thereof, and is provided with a bead or shoulder at 16, and said cylindrical wall portion 15 is provided with a screw thread 17 similar to the thread 14 on the cap member, the threads 17 and 14 being complementary so that the thread on the cap member will screw onto the thread on the body portion of the receptacle. However, these threads are made so as to interfit very loosely so that an insert of absorbent material 18 may be provided between the same, which may be made of either felt or a felt-like material, or of a pulpy paper-like material of a porous character made by masticating wood pulp. The pulpy material of an absorbent character can be molded into such a form that it has a thread thereon that fits in the thread 14 on one side thereof and into the threads 17 on the other side thereof. The felt can be similarly shaped or will shape itself in a similar manner when the cap member is screwed onto the body portion 10. In either case the felt or wood pulp fiber absorbent lining 18 is made to conform to the inner surface of the cap 11, lining substantially the entire inner face thereof.

The spiral corrugation or indentation 19 provides the internal and external thread on the insert, which fits in the cap member and is adapted to screw onto the thread provided on the body portion of the receptacle. Preferably a disk-like insert 20 of fibrous paper-like material, which is somewhat absorbent also, but which is much harder and will stand much more wear than the absorbent ply 18, is inserted in the cap member 11 between the absorbent material and the top edge 21 of the body portion to thus take the wear caused by the frictional engagement of the top edge 21 of the body portion 10 with the cap member and prevent damage to the absorbent material in the cap.

The insert 20 is provided with a plurality of perforations 22 for a purpose to be described below. The absorbent ply extends down substantially to the bottom edge of the flange portion 13 of the cap member, and a rubber gasket or sealing member 23 is provided adjacent the shoulder 16 so that the bottom peripheral edge

24 of the flange portion 13 will engage said gasket to compress the same between the bead 16 and the edge of said flange portion so as to provide a liquid-tight seal between the cap and the body portion. In order to prevent turning of the absorbent lining 18 relative to the closure cap 11, the projections 35 may be provided on the inner face of the cap which will embed themselves in the material of said lining to interlock the cap 11 and lining 18.

The body portion 10 is adapted to contain a germicidal liquid 25, which preferably comprises any suitable antiseptic material in solution in a solvent, such as alcohol or acetone or a combination of the two. When the package is prepared the level of the liquid is near the top of the body portion 10, but obviously the level will recede as the jar or receptacle is opened in the use of the same, due to evaporation and also due to small portions of the liquid being removed with the packets of surgical cord, which will be described more in detail below.

The germicidal liquid, even though the container may not be as full of the liquid as shown in Fig. 2, for example, or even if only a very small quantity of said liquid may be in the container, will contact with the absorbent material 18 in the cap member 11 when the receptacle is inverted, as shown in Fig. 3. While the liquid can be brought in contact with this absorbent material by such inversion, it will also be obvious that it can be brought into contact therewith by shaking the receptacle vigorously, whereupon the liquid will engage with the absorbent material through the openings or perforations 22 in the member 20 and will pass along in the same in a similar manner to that in which liquid passes throughout the extent of a wick, due to capillary action of the liquid, and will thus cause the absorbent material to be thoroughly soaked with the disinfectant liquid throughout the extent thereof, thus bringing the disinfectant liquid into intimate contact with the inner face of the cap member and with the outer face of the threaded end portion of the body portion 10 of said receptacle. The liquid will also ooze out over the top rim or edge 21 of the body portion 10 due to the action of the absorbent material, and also to some extent to the action of the insert 20, which is also sufficiently absorbent to spread the liquid over this rim portion 21.

It will be seen from the above that the receptacle is thus so made that it can be very readily disinfected on the inner face of the cover, the rim or top edge of the body portion, and the thread and neck portion on which the thread is provided. This serves to prevent infection of instruments, gloves, envelopes or packets of the surgical material, or anything which may touch or swipe against the rim or upper portion of the jar or receptacle adjacent the rim and makes it unnecessary to wipe off the jar and cover with alcohol before opening the jar or receptacle.

Within the receptacle and serving to complete the package is a multiplicity of small packets 26, which contain the surgical material, which is shown in the invention as being a sterile surgical cord of catgut or similar material. Referring to Fig. 6 it will be seen that the packet is an envelope-like member comprising a body portion 27, which is made in any desired manner so as to close the same everywhere except adjacent the flap 28 in a liquid-tight condition, said envelope or container being made of a transparent fibrous sheet paper-like material, known as

glassine paper, or any similar flexible sheet-like transparent material that is not attacked by the solution in which the packets are kept.

The flap 28 is adapted to be tucked inside the envelope in the slit 29, and a coil 30 of the sterilized surgical cord, such as catgut, is contained therein. Preferably some form of indicia 31 is provided on these containers or envelopes that is visible through the transparent wall of the receptacle 10 so as to identify the name, size, and other desirable data regarding the length of surgical cord contained therein. The catgut or other surgical sterilized thread or ligature is cleaned, treated and sterilized in any well known manner that is found to be safe and satisfactory, before or after insertion in the envelope. It is thus in sterile condition in the envelope. The flap of the envelope is tucked into the interior of the envelope through the slit 29 after insertion of the cord and these packets are arranged or stacked in the body portion 10 of the container to fill the same to a point spaced a short distance from the top thereof, the same being not tightly packed in the receptacle, but rather loosely so as to provide for the passage of liquid between the same and into the same. The antiseptic liquid 25 is then filled into the receptacle to the desired level above the top of the packets therein, and this germicidal liquid will enter between the flap 28 and the body portion 27 via the slit 29 until the interior of the envelope or packet is filled to about 75% of its capacity. When the same has been filled to this extent the liquid will not further enter the same because the capillary attraction of the liquid at the point where the flap 28 lies opposite the body portion 27 will cause the flap 28 to adhere to said adjoining body portion and seal the same against further ingress or egress of liquid.

It will thus be seen that the packets or containers in the form of envelopes in the receptacle 10 not only have the outer walls thereof contacted by the liquid 25, but also the inner walls thereof, as well as the ligature or surgical cord in the packet. It will also be observed that due to this characteristic of the nature of the material, there will be no tendency of these packets to float in the liquid, but the same will remain near the bottom thereof in a stacked condition, and if the receptacle is inverted, as shown in Fig. 3, the packets will drop down adjacent the cover or cap 11, and if any of the same have become exposed to the air while the receptacle was in an upright position, the same would now be completely immersed in the liquid and entirely disinfected from any means of infection that might have come in contact therewith from the air while the jar or receptacle was open.

In Fig. 7 a slight modification of the invention is shown, in which the flange portion 13 is cut away on the inner face thereof adjacent the body portion of the receptacle to provide a reduced rim portion 32 thereon and providing an annular shoulder at 33, thus providing an annular seat for a compressible gasket, such as a rubber gasket 34, which extends slightly beyond the bottom portion of the rim 32 so as to be adapted to contact with the bead or shoulder at 16 to seal the cap member to the body portion by compression of said sealing member 34.

It will be noted that the packet 26 will be sterilized on the interior and exterior thereof by the liquid, and that even if the packet is removed from the receptacle the contents thereof will remain in a sterile condition for a long

period of time because the liquid will not escape therefrom and the surgical cord or similar member 30 will be immersed in such germicidal liquid during the entire period, as the liquid will not escape therefrom due to the provision of the flap 28, which acts as an automatic seal for the package. Also the cord-like member 30 is kept in a much better condition for use by being kept in a liquid that acts not only as a germicide, but as a preservative keeping the same in a pliable condition, whereby the same will retain its original strength as long as it is immersed in such liquid.

What I claim is:

1. A package for sterile surgical material comprising a receptacle, a closure therefor, a germicidal liquid in said receptacle, a packet open to flow of said liquid into the same immersed in said liquid and a quantity of said surgical material in said packet in contact with said liquid.
2. A package for sterile surgical cord comprising a receptacle, a closure therefor, a germicidal liquid in said receptacle, an envelope open to flow of said liquid into the same immersed in said liquid and a length of said surgical cord in said envelope in contact with said liquid.
3. A package for sterile surgical cord comprising a receptacle, a closure therefor, a germicidal liquid in said receptacle, an envelope open to flow of said liquid into the same immersed in said liquid and a coil of said surgical cord in said envelope in contact with said liquid.
4. A package of the character described, comprising a liquid receptacle having a transparent wall portion, a closure therefor, a germicidal liquid in said receptacle, individual non-buoyant containers each open to flow of liquid into the same in said receptacle, a length of sterile surgical cord in each of said containers and indicia on each of said containers visible through said transparent wall portion.
5. A package of sterile surgical material comprising a receptacle, a removable and replaceable closure therefor, a germicidal liquid in said receptacle, packets of said surgical material immersed in said liquid and means on the inner face of said closure extending into contact with the engaging portions of said receptacle and closure for feeding said liquid into contact with the engaging portions of said receptacle and closure upon inversion or shaking of said receptacle.
6. A package of sterile surgical material comprising a receptacle, a removable closure therefor, a germicidal liquid in said receptacle, packets of said surgical material immersed in said liquid and open to flow of said liquid into the same and an absorbent lining in said closure for feeding said liquid into contact with the engaging portions of said receptacle and closure upon inversion or shaking of said receptacle, said lining being carried by said closure.
7. A package of sterile surgical material comprising a receptacle, a removable sealing closure therefor, a germicidal liquid in said receptacle, packets of said surgical material immersed in said liquid, means on said closure for feeding said liquid into contact with the engaging portions of said receptacle and closure upon inversion or shaking of said receptacle, and means adjacent said liquid feeding means providing a liquid-tight seal between said closure and said receptacle.
8. A package of sterile surgical material comprising a receptacle, a removable closure therefor, a germicidal liquid in said receptacle, pack-

ets of said surgical material immersed in said liquid and open to flow of said liquid into the same and means carried by said closure and removable as a unit therewith for distributing said liquid over the surface of said receptacle at the end thereof receiving said closure upon inversion or shaking of said receptacle.

9. A container for sterile surgical material comprising a body portion, an imperforate closure cap therefor, a germicidal liquid in said body portion and means carried by said closure and mounted between said cap and said body portion for spreading said liquid into engagement with the adjacent surfaces of said cap and body portion, said means extending along the inner side of said closure inwardly beyond the engaging portions of said body portion and closure.

10. A container for sterile surgical material comprising a body portion, an imperforate cap detachably engaging said body portion and a lining of absorbent material carried by said cap extending between said cap and body portion and inwardly of the rim of said body portion to be exposed to the interior of said receptacle when said cap is in receptacle closing position.

11. A container for sterile surgical material comprising a body portion having threads thereon, a screw cap detachably engaging said body portion, a lining of absorbent material mounted in said cap and extending into engagement with the threads on said cap and body portion, and a perforated ply of fibrous sheet material interposed between the mouth of said body portion and said absorbent material.

12. In a device of the character described, a packet of sterile surgical cord comprising an envelope of liquid-proof fibrous sheet material having a flap thereon tucked into said envelope, a coil of said cord in said envelope and germicidal liquid in said envelope, said envelope being sealed against discharge of said liquid by the capillary attraction of said liquid at the contacting faces of said flap and the body of said envelope.

13. A container for sterile surgical material comprising a body portion, a cap detachably engaging said body portion, a lining of absorbent material extending between said cap and body portion and exposed to the interior of said receptacle when said cap is in receptacle closing position, and means to prevent the turning of said lining in said cap.

14. A container for sterile surgical material comprising a body portion, screw threads thereon, a cap having screw threads thereon, a lining of absorbent material having screw threaded engagement with said cap and adapted to engage the threads on said body portion extending between said cap and body portion, and exposed to the interior of said receptacle when said cap is in receptacle closing position, and means for preventing said lining from turning in said cap.

15. A package of the character described, comprising a liquid receptacle having a transparent wall portion, a closure therefor, a germicidal liquid in said receptacle, lengths of sterile surgical cord and individual non-buoyant containers of sheet material for said lengths of cord open to flow of said liquid into said container into contact with the length of cord therein.

16. A container for surgical material, comprising a body portion and a one-piece closure cap for said body portion having a lining of absorbent material mounted in said cap and ex-

tending between said cap and body portion and along the under face of said cap to be exposed to the interior of said receptacle when said cap is in position thereon.

5 17. A container for surgical material comprising a body portion, a closure cap for said body portion having a lining of absorbent material mounted on the inner face of said cap and extending between said cap and body portion and exposed to the interior of said receptacle when said cap is in position thereon, and a gasket sealing the joint between said body portion and said cap outwardly of said lining.

15 18. A package of the character described comprising a receptacle, a closure therefor, a germicidal liquid in said receptacle, lengths of surgical cord in said receptacle, and flexible means for separating said lengths of cord but permitting said liquid to contact said lengths of cord.

19. A package of the character described comprising a receptacle, a closure therefor, a germicidal liquid in said receptacle, lengths of surgical cord in said receptacle, and members of fibrous sheet material for confining and separating said lengths of cord, but permitting said liquid to contact said lengths of cord.

20. A package of the character described comprising a receptacle, a closure therefor, a germicidal liquid in said receptacle, lengths of surgical cord in said receptacle, and means for confining each length of cord to completely separate it from all the other lengths of cord in said receptacle, each length of cord being mounted so as to be removable as a unit from said receptacle, and said confining means permitting said liquid to contact said lengths of cord.

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