

Feb. 5, 1957

C. H. BARR ET AL
BLOOD PACKAGING UNIT

2,780,225

Filed March 3, 1953

3 Sheets-Sheet 1

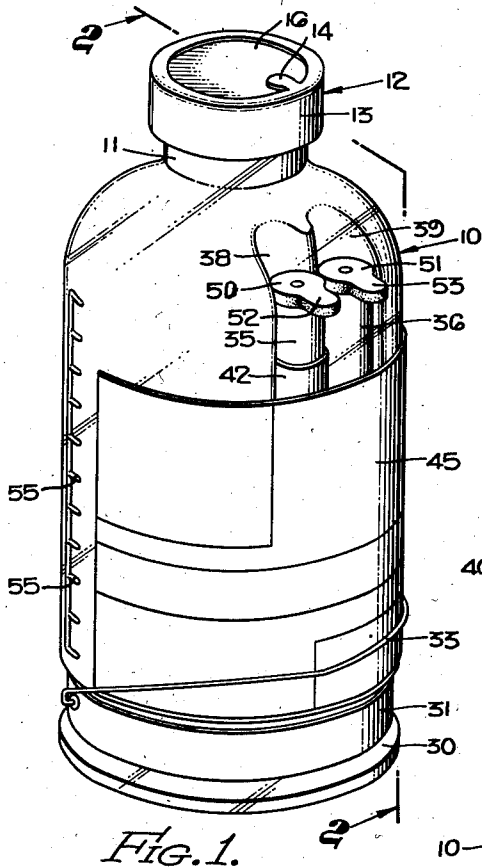


Fig. 1.

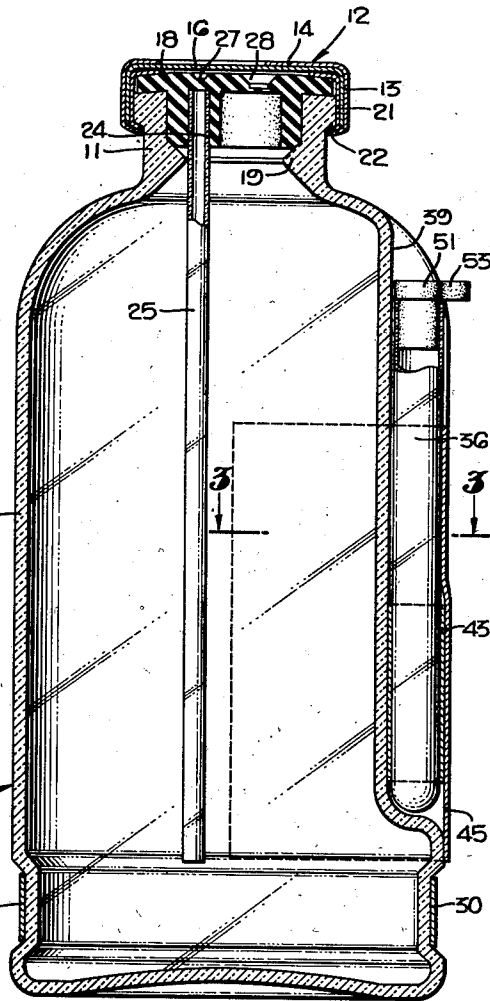


Fig. 2.

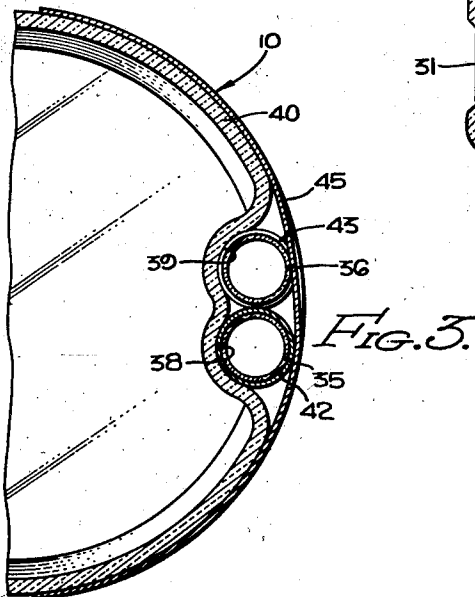


Fig. 3.

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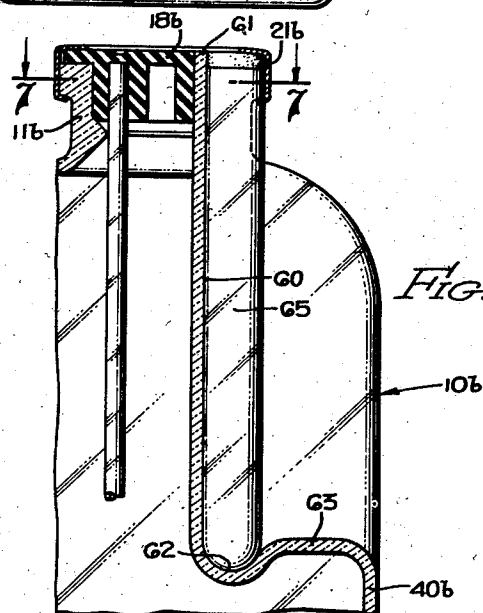
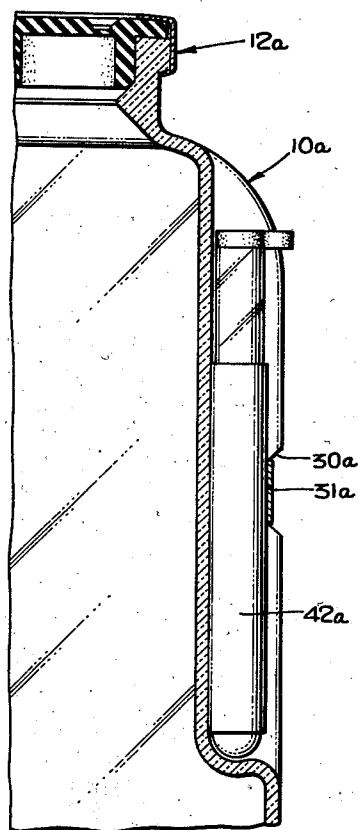
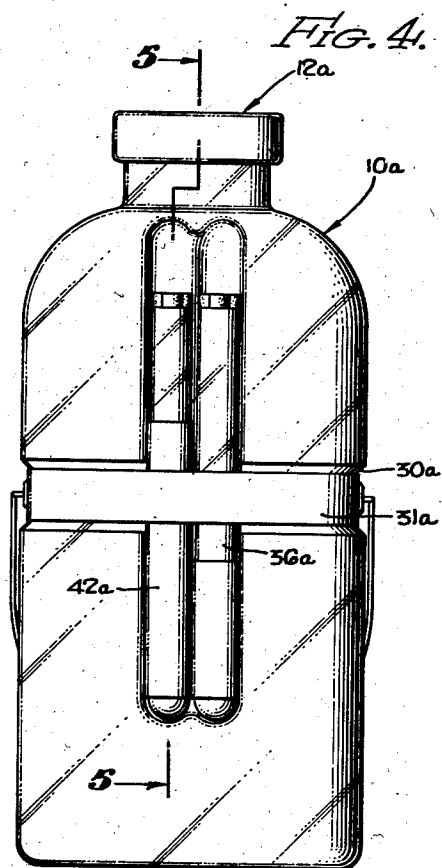


FIG. 5.

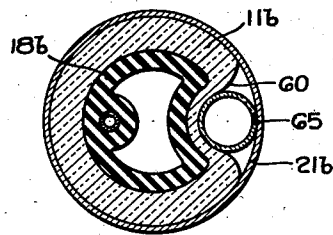


FIG. 7.

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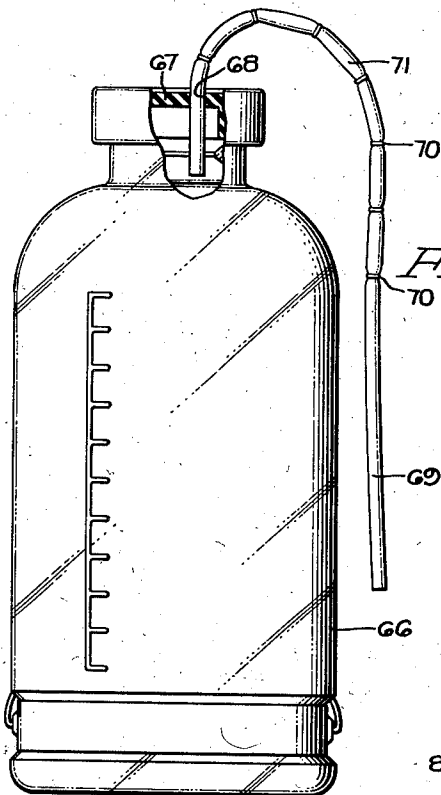


FIG. 8.

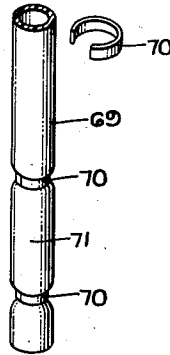


FIG. 9.

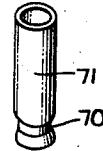


FIG. 10.

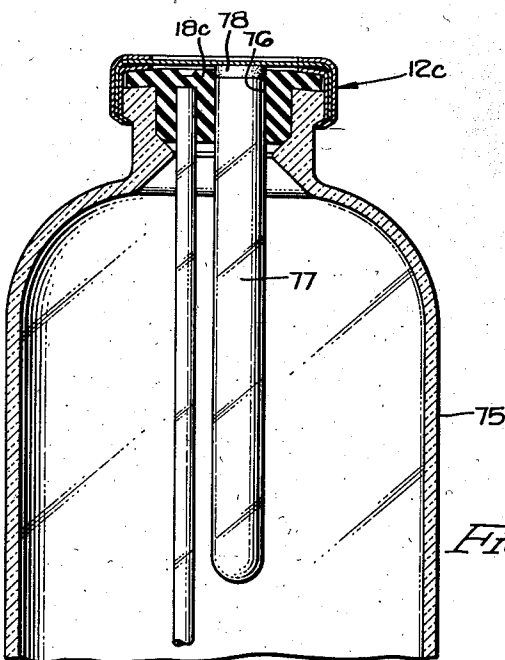


FIG. 11.

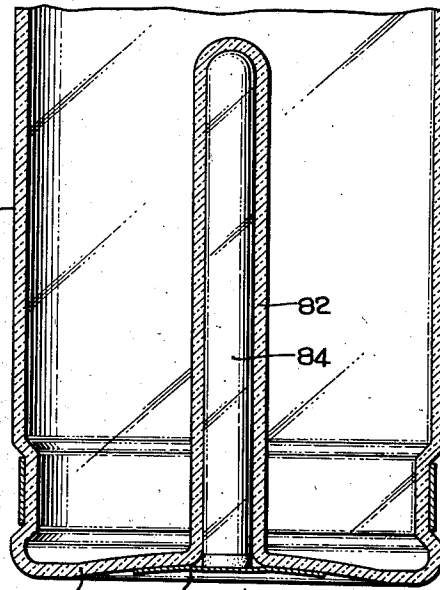


FIG. 12.

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BLOOD PACKAGING UNIT

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Application March 3, 1953, Serial No. 339,998

9 Claims. (Cl. 128—272)

This invention relates to the packaging art and has particular reference to a blood packaging unit.

In collecting whole human blood for subsequent transfusional use, it is necessary also to collect samples of the donor's blood for later testing and grouping. Heretofore it has been the practice to collect the whole blood in conventional bottles and to collect the samples in so-called pilot or test tubes, the contents of which are then available for testing purposes without opening the bottle containing the blood to be used. The only means for identification of the corresponding samples and the actual blood to be used has consisted of appropriate numbers or other indicia placed both on the pilot tubes and on the collection bottles. Such a system has proved generally unsatisfactory due primarily to the chances for error in reading and comparing the numbers. A mistake in matching the samples and the contents of the collection bottles could result in serious illness or even death to the patient receiving blood of the wrong type. Such a system is also disadvantageous from the standpoint of loss or breakage of the pilot tubes. One of the principal objects of this invention is, therefore, to provide a blood packaging unit which is not subject to the disadvantages of the units or systems heretofore used.

Another object of this invention is to provide a pilot tube or tubes and a blood collecting bottle combined as a unit, the pilot tube or tubes being operably connected to the bottles, thus eliminating the chances of error and preventing loss and/or breakage.

Another object of this invention is to provide a blood collecting bottle having means for releasably attaching thereto one or more pilot tubes in such a manner as to firmly hold the pilot tube or tubes in contact with the bottle and to protect the same against breakage.

Other objects and advantages of this invention it is believed will be readily apparent from the following detailed description of a preferred embodiment thereof when read in connection with the accompanying drawings.

In the drawings:

Figure 1 is a perspective view illustrating a preferred embodiment of the invention.

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1.

Figure 3 is a fragmentary sectional view taken substantially on the line 3—3 of Figure 2.

Figure 4 is a side elevation illustrating a modified form of the invention.

Figure 5 is a fragmentary sectional view taken substantially on the line 5—5 of Figure 4.

Figure 6 is a fragmentary vertical sectional view illustrating a further modified form of the invention.

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 6.

Figure 8 is a side elevation illustrating another modified form of the invention.

Figure 9 is a perspective partly exploded view illustrating the combination blood delivery and sample tube of the device of Figure 8.

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Figure 10 is a perspective view illustrating a severed segment of the combination blood delivery and sample tube.

Figure 11 is a fragmentary vertical sectional view of a further modified form of the invention.

Figure 12 is a fragmentary vertical sectional view of yet another modified form of the invention.

Referring now to the drawings the preferred embodiment of the invention illustrated in Figure 1 includes a blood collecting bottle, generally indicated 10, of general cylindrical shape having a reduced neck portion 11 and a closure assembly generally indicated 12. The closure assembly comprises an outer seal member 13 of readily severable material and is provided with a tab portion 14 adapted to be used in removing the seal member. Under the seal member is a removable dust cap element 16. A rubber stopper 18 is provided and abuts against a constriction 19 formed in the interior wall of the neck 11. A ferrule element 21 engages the outer peripheral surface of the stopper 18 and a shoulder 22 on the neck member, thereby locking the stopper to the bottle. The stopper 18 is provided with a bore 24 in which is frictionally maintained the upper end of a glass air inlet tube 25. Suitable depressions 27 and 28 are provided in the upper wall of the stopper to reduce the stopper wall thickness and thus to facilitate opening of the stopper in preparing the bottle for use.

The bottle 10 is provided with a circumferential groove 30 adjacent the lower end thereof in which groove a metallic band 31 is secured. Pivotaly adapted to the band 31 is a bail 33 for the purpose of supporting the bottle in position for use.

Means are provided for releasably securing a pair of pilot tubes 35 and 36 to the bottle 10 and as shown in Figures 1-3, these means may include a pair of elongated vertical wells or grooves 38 and 39 formed integrally with the bottle side wall 40. The pilot tubes 35 and 36 are encased in closely fitting cylinders 42 and 43 respectively, the cylinders preferably being of paste board or relatively heavy paper. As shown best in Figure 2, the grooves 38 and 39 are formed on a radius equal to that of the cylinders 42 and 43 and the grooves are spaced so that the cylinders are in mutual contact.

A gummed label 45 extends over a portion of the bottle side wall 40 and encompasses the wells 38 and 39. As shown in the drawings the cylinder 42 extends above the label 45, whereas the cylinder 43 is substantially shorter than the cylinder 42 and terminates considerably below the upper edge of the label. It will thus be understood that the label 45 adhesively contacts over its entire vertical length the cylinder 42, the cylinder thus insulating the pilot tube 35 from contact with the gummed label. Only a portion of the gummed label contacts the cylinder 43, the upper remaining portion of the label adhesively contacting the pilot tube 36. From this description it will be understood that the pilot tube 35 may be removed by sliding the same upwardly with respect to the bottle and cylinder 42, whereas the pilot tube 36 cannot be removed without first tearing or otherwise removing the label from contact with the tube 36. The pilot tubes are preferably provided with rubber stopper elements 50 and 51 having outwardly extending tab portions 52 and 53 respectively, to facilitate withdrawal of the tubes.

If desired, a strip of pressure-sensitive adhesive tape (not shown) may be located under the label 45, adhering to the bottle 10, the cylinder 43 and pilot tube 36.

The bottle side wall 40 is preferably provided with a suitable graduation including gauge marks 55, numbered in any convenient manner (not shown).

In use, blood from the donor is drawn into the collection bottle 10 and into the pilot tubes 35 and 36. The

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filled unit is then sent to the laboratory for grouping purposes, and at this point the tube 35 is removed for testing by sliding it upwardly with respect to the bottle and cylinder 42. Suitable notations are then made upon the gummed label 45 and the bottle 10 and its accompanying pilot tube 36 are stored for subsequent use. When it is desired to use the contents of the bottle 10, the bottle and its affixed pilot tube 36 are delivered to the designated hospital or clinic, whereupon the pilot tube 36 is removed by breaking or destroying the label, and the contents of the tube is cross-matched with the blood of the patient to whom the blood in the bottle 10 is to be given. It will be readily apparent to those skilled in the art that by virtue of the novel bottle and pilot tubes assembly described, the chances of mis-identification or mixing of the pilot tubes and collection bottles are virtually eliminated. The described unit additionally eliminates loss of the pilot tubes and reduces the possibility of breakage during shipment.

While the grooves 38 and 39 have been illustrated as being mutually adjacent, it will be understood to those skilled in the art that, if desired, the grooves may be diametrically or otherwise disposed about the wall of the bottle. In some cases only a single pilot tube is necessary and in such event, only a single groove is provided.

A modified form of the invention is illustrated in Figures 4 and 5. The collection bottle 10a is substantially identical to the bottle 10 described above with the exception that the circumferential groove 30a is located at a point substantially midway between the upper and lower ends of the bottle, and the bail-supporting band 31a encompasses the cylinder 42a and the pilot tube 36a. It will be understood that a gummed label (not shown) and if desired, a strip of pressure-sensitive adhesive tape (not shown) are applied to the bottle 10a in the same manner as the label 45 and the previously described adhesive tape.

In the modification shown in Figures 4 and 5 the closure assembly 12a is substantially identical to the closure 12 previously described.

In the further modification form of the invention illustrated in Figure 6 the bottle 10b is provided with an elongated vertical groove 60 extending downwardly from the upper lip 61 of the neck 11b, the groove terminating in a socket depression 62, integral with a horizontal ledge portion 63, which in turn is integral with the bottle side wall 40b. As shown, the lower end of the pilot tube 65 is seated in the socket 62, the upper end of the tube being flush with the lip 61 and maintained in place by means of the ferrule 21b. As shown best in Figure 7, the stopper 18b is shaped to conform to the inner wall of the neck 11b.

A further modified form of the invention is illustrated in Figures 8, 9 and 10. Here a conventional blood collecting bottle 66 is provided with a stopper member 67 having an aperture 68. Extending through the aperture in tight fit relationship therewith is a combination blood delivery and sample tube 69 of flexible or rubber-like material. The tube 69 is utilized as a filling tube in removing blood from the donor and upon filling the bottle the still-filled tube 69 is clamped off at spaced intervals by means of the split clamp rings 70. For testing purposes, sections of the blood-filled tube are cut off to provide individual samples contained in tube portions 71 as shown in Figure 10.

Another modification of the invention is illustrated in Figure 11. Here the blood collecting bottle 75 is provided with a closure assembly 12c generally similar to that shown in Figures 1 and 2, with the exception that the stopper 18c is provided with an enlarged aperture 76. A pilot tube 77 extends downwardly into the interior of the bottle 75 and is sufficiently oversized with respect to the aperture 76 to be firmly held in place by the stopper. The tube is provided with a rubber stopper 78.

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In use of the device shown in Figure 11, test samples of blood may be removed from the pilot tube 77 by removing its stopper 78 and withdrawing the sample, yet the stopper 18c need not be affected, thus assuring the maintenance of sterility of the blood in the bottle 75.

The further modified form of the invention illustrated in Figure 12 comprises a blood collection bottle 80 provided with a closure member (not shown) and having blown into the bottom 81 thereof a central well 82. Inserted in the well and maintained therein by means of a strip of pressure-sensitive adhesive tape 83 is a pilot tube 84. It will be understood that the tube 84 is filled with a sample of the same blood as that contained in the bottle 80, and that the tube is readily removed, when desired, for testing and grouping purposes as described above.

While specific embodiments of this invention have been shown and described, it is to be understood that the invention is to be limited only by the scope of the appended claims.

We claim:

1. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with an elongated generally vertical groove, a cylinder member seated in said groove, means securing said cylinder member to said container, and a second container slideably received in said cylinder member.

2. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with an elongated generally vertical groove, a cylinder member seated in said groove, adhesive strip means securing said cylinder member to said container, and a second container slideably received in said cylinder member.

3. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with an elongated generally vertical groove, a cylinder member seated in said groove, a tubular container received in said cylinder member, and adhesive strip means securing said cylinder member and said tubular container to the first said container.

4. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with an elongated generally vertical groove; a cylinder member seated in said groove; a tubular container received in said cylinder member, said tubular container having a portion protruding from said cylinder member; and adhesive strip means contacting the first said container, said cylinder member and the protruding portion of said tubular container to secure said cylinder member and said tubular container to said first container.

5. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with a pair of elongated generally vertical grooves; a cylinder member seated in each of said grooves; a tubular container received in one of said cylinder members, said tubular container having a portion protruding from said cylinder member; a second tubular container received in the other of said cylinder members; and adhesive strip means contacting the first said container, said cylinder members and the protruding portion of said tubular container to secure said cylinder members and said first tubular container to said first container, said second tubular container being free to be slideably removed from the other of said cylinder members.

6. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with a pair of elongated generally vertical grooves; a cylinder member seated in each of said grooves, said cylinder members being in mutual contact and one being shorter than the other; a tubular container received in said cylinder member, said shorter tubular container having a portion protruding from said cylinder member; a second tubular container received in the longer of said cylinder members; and adhesive strip means contacting

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the first said container, said cylinder members and the protruding portion of said tubular container to secure said cylinder members and said first tubular container to said first container, said second tubular container being free to be slideably removed from the longer of said cylinder members.

7. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with a pair of elongated generally vertical grooves; a cylinder member seated in each of said grooves; a tubular container received in a first of said cylinder members, a second tubular container seated in the second of said cylinder members; and adhesive strip means contacting the first said container, said cylinder members and said second tubular container to secure said cylinder members and said second tubular container to said first container, said first tubular container being free to be slideably removed from the second of said cylinder members.

8. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with a pair of elongated generally vertical grooves; a cylinder member seated in each of said grooves, said cylinder members being in mutual contact and one being shorter than the other; a tubular container received in said shorter cylinder member, said tubular container having a portion protruding from said cylinder member; a second tubular container received in the longer of said cylinder members; and means securing the first said container, said cylinder members and the protruding por-

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tion of said tubular container to said first container, said second tubular container being free to be slidably removed from the longer of said cylinder members.

9. In a blood collection unit, the combination of: a container having a generally cylindrical side wall provided with a pair of elongated generally vertical grooves; a cylinder member seated in each of said grooves; a tubular container received in a first of said cylinder members, a second tubular container seated in the second of said cylinder members; and means securing the first said container, said cylinder members and said second tubular container to said first container, said first tubular container being free to be slidably removed from the second of said cylinder members.

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