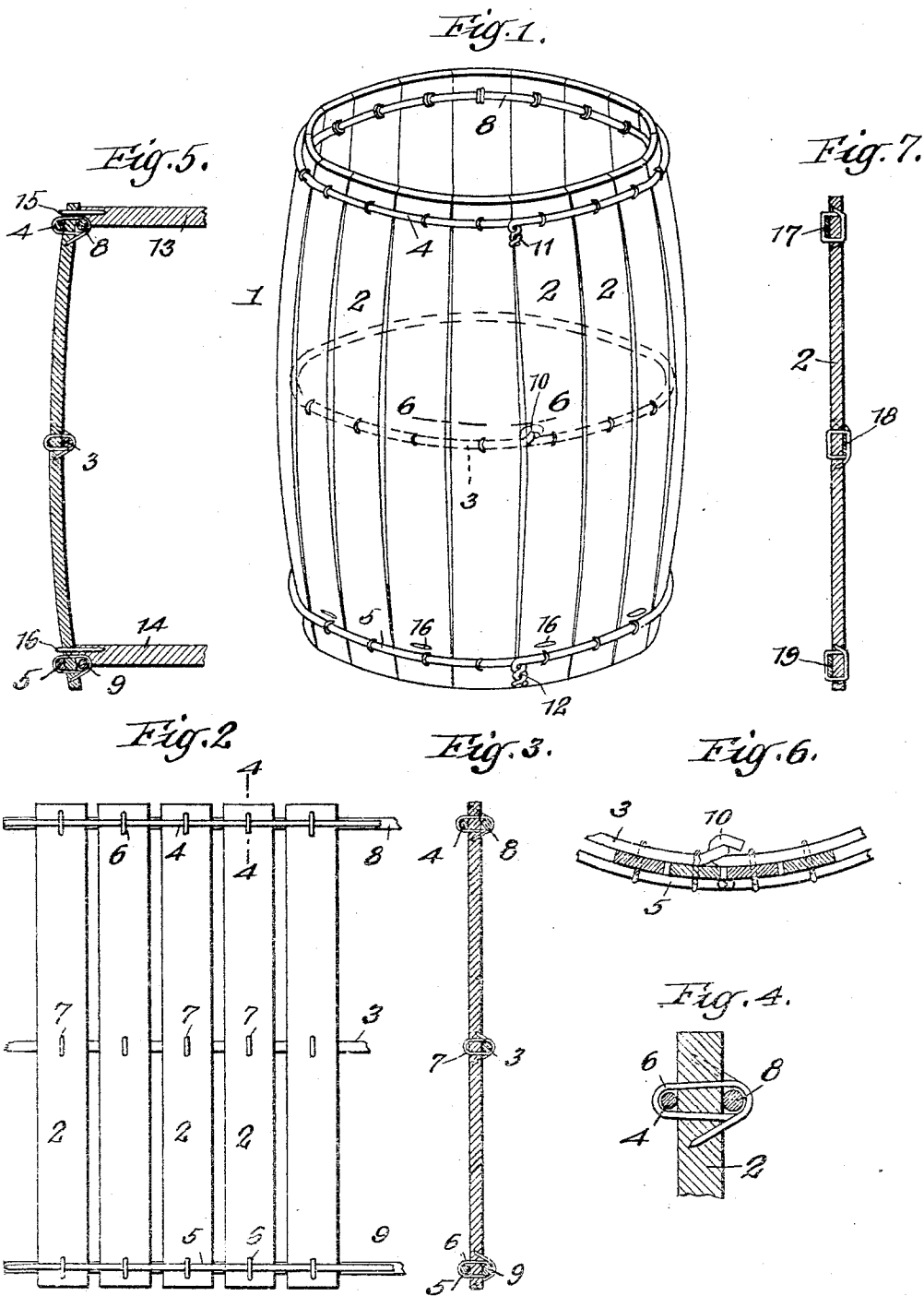


F. A. PRAHL.
 KNOCKDOWN BILGE BARREL AND METHOD OF CONSTRUCTING SAME.
 APPLICATION FILED JUNE 16, 1909.

961,159.

Patented June 14, 1910.

2 SHEETS—SHEET 1.



WITNESSES:
 H. Crocker
 Ida C. Gilmore

INVENTOR
 Frederick A. Prahl
 BY Nicholas M. Goodlett Jr.
 his ATTORNEY

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Fig. 8.

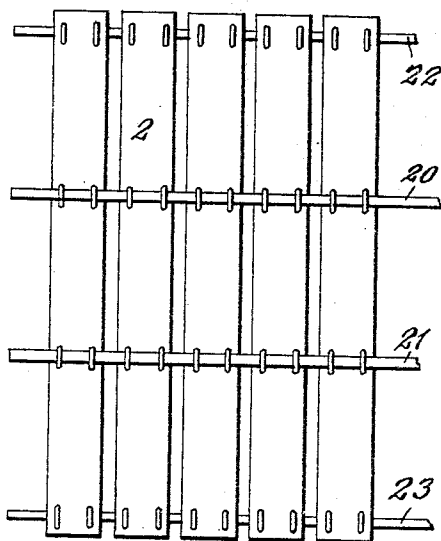


Fig. 9.

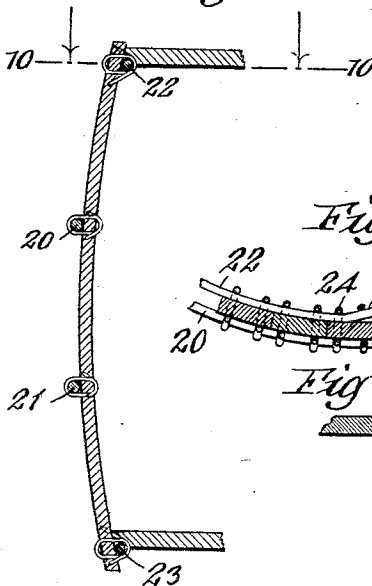


Fig. 10.



Fig. 14.

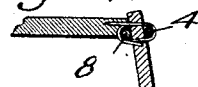


Fig. 11.

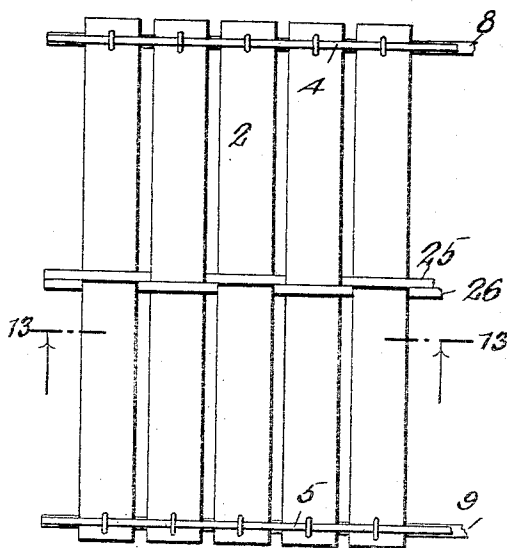


Fig. 12.

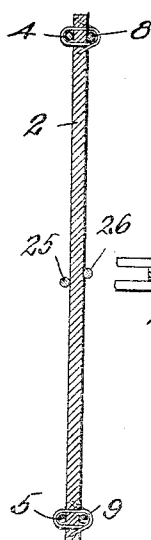


Fig. 13.



WITNESSES:

Strocker
Ida G. Gilmore

INVENTOR
Frederick A. Prahl
 BY
Nicholas M. Goodlett Jr.
 his ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERICK A. PRAHL, OF NEW YORK, N. Y., ASSIGNOR TO BABCOCK BOX COMPANY,
A CORPORATION OF NEW YORK.

KNOCKDOWN BILGE-BARREL AND METHOD OF CONSTRUCTING SAME.

961,159.

Specification of Letters Patent. Patented June 14, 1910.

Application filed June 16, 1909. Serial No. 502,561.

To all whom it may concern:

Be it known that I, FREDERICK A. PRAHL, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Knockdown Bilge-Barrels and Method of Constructing Same, of which the following is a specification.

10 This invention relates to knock-down bilge barrels and to an improved method in constructing the same.

The invention seeks to provide a bilge barrel that may be constructed with increased facility and despatch and at small cost and which shall have increased strength and durability, as compared with earlier structures of the same class.

20 The invention consists of the structural features and also in the method of constructing the barrel body, as hereinafter set forth.

In accordance with this invention a fabric is formed of flexible staves secured to transverse wires which cross the staves at or near the middle and also at or near the ends. The middle or intermediate wire or wires, which may be immovably fixed to the staves, act as a fulcrum when the staves are bent to form the bilge. The end wires are loosely secured to the staves so as to have a lateral movement thereon and act as constricting wires against the resistance of the fulcrum wire when the bilge is imparted to the staves. This method of forming the bilge in the body of the barrel by means of fulcrum and constricting wires, which constitute part of a previously constructed fabric, is believed to be a marked departure from the methods heretofore employed in constructing knock-down bilge barrels, and is herein broadly claimed.

In the accompanying drawings forming part of this specification, and in which like reference numerals designate corresponding parts in the several figures,—Figure 1 is a perspective view of a barrel made in accordance with the invention. Fig. 2 is a plan view showing part of the fabric from which the barrel body of Fig. 1 is made up. Fig. 3 is a vertical section taken through the

fabric of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 2. Fig. 5 is a vertical section through the barrel body of Fig. 1 showing the position of the heads. Fig. 6 is a transverse section on the line 6—6 of Fig. 1. Fig. 7 is a view similar to Fig. 3 and showing a modification. Fig. 8 is a plan view showing part of a modified form of fabric. Fig. 9 is a view similar to Fig. 5, the fabric being made up as shown in Fig. 8. Fig. 10 is a transverse section on the line 10—10 of Fig. 9. Fig. 11 is a plan view showing part of another modified form of fabric. Fig. 12 is a vertical section through the fabric of Fig. 11. Fig. 13 is a transverse section on the line 13—13 of Fig. 11. Fig. 14 is a view similar to Fig. 9, the barrel body being made up of the fabric of Fig. 11.

The important advantages of a knock-down bilge barrel have been heretofore well recognized. Its chief advantage, as compared with a completed set-up bilge barrel, lies in the great saving it secures in the cost of transportation of the barrels from factory to user, and in the saving of storage expense before the barrels are ready for use. For example, in a given space more than ten times as many knock-down barrels may be packed as complete set-up barrels. Because of their advantages many efforts have heretofore been made to provide knock-down bilge-barrels, but these efforts have not attained any substantial degree of success because of the defects and limitations of the structures heretofore proposed. One important objection to the structures heretofore proposed was that the body fabric was not made complete in itself, and when it reached the user additional devices had to be applied to form or retain the bilge when the barrel was set up. When the staves were flat and flexible, wooden hoops were driven to place around the ends of the tubular body so as to force the ends of the staves inward and thus form the bilge. In other cases a spreader hoop, of larger diameter than the tubular barrel body, was driven inside the body and lodged at the middle thereof so as to bow the staves outward at the middle and so form the bilge. In this case it was usual

to apply another strengthening hoop around the outside of the barrel at the middle. If the fabric of the knock-down barrel was made up of staves already bowed, then hoops were applied in setting up the barrel to retain its form. In all such cases the work of setting up the barrel falls upon the user and calls for extra labor, expense and trouble on his part. Again, in these knock-down bilge-barrels, if it were sought to produce a barrel with the least expensive material, there was little opportunity to reduce the cost of the hoops. These were made of wood and, because of the great strain put upon them when they were finally applied in setting up the barrel, it was necessary that they be of a high grade of material and therefore expensive.

In accordance with the present invention it is feasible to construct a knock-down bilge barrel whose body is made of a previously constructed fabric, including flat flexible staves, which is substantially complete in itself and capable of forming and retaining the barrel body with its bilge and without requiring, when the barrel is set up, the addition of any extraneous adjuncts such as spreader hoops or binding or strengthening hoops, etc. Thus the invention overcomes the great disadvantage inherent in the structures heretofore proposed, and it accomplishes this result by means which are both effective and cost-reducing.

The details of the invention will now be described with reference to the drawings, reference being first made to the features shown in Figs. 1 to 6 inclusive. The body of the barrel 1 is made up from a previously constructed fabric shown in Fig. 2. In making up this fabric the staves 2 are secured together by a fulcrum wire 3 extending across the staves near the middle and by two constricting wires 4 and 5 extending across the staves near their ends. The constricting wires 4 and 5 are loosely secured to the staves so as to be capable of a transverse movement thereon. This loose connection by means of staples 6 is shown in Fig. 4. Each wire preferably extends across all the staves on the same side and is secured in place by the staples 6. The wire 3 preferably extends across all the staves on the side opposite to the wires 4 and 5 and preferably is immovably secured in place by staples 7, and so as to keep the staves properly spaced. The staves are flexible and may be made of wood having a thickness of 3/16 of an inch. In constructing the fabric it is preferable to leave the ends of the wires projecting beyond the ends of the fabric so that these wire ends may be utilized in securing the meeting edges of the fabric in tubular form. 8 and 9 are wires located on the opposite side of the

staves from the wires 4 and 5. They register, respectively, with these wires 4 and 5 and are secured in place by the same staples as those which hold the wires 4 and 5.

After the fabric has been completed it is bent into tubular form with the wire 3 on the inside and the wires 4 and 5 on the outside. The meeting edges of the fabric are secured together at the middle, the projecting wire ends of the wire 3 being preferably hooked together for this purpose, as shown at 10 in Fig. 6. The ends of the staves are then bent inward radially against the resistance of the fulcrum wire 3 and are securely held in this position by the constricting wires 4 and 5 whose projecting ends are preferably twisted together as shown at 11 and 12 in Fig. 1. The term "constricting wires" as herein used means wires which not only have the purpose and function of holding the ends of the fabric in tubular form, but also have the purpose and function of keeping the ends of the staves bent inward and the ends of the tubular barrel-body contracted and so maintain the bilge in the barrel. In this operation the wires 4 and 5 work through or are drawn through their staples to take up the slack therein, which necessarily results from drawing the staves together. In the same way the wires 8 and 9 work through or are drawn through their staples and their ends either fastened together or otherwise secured. These wires 8 and 9 act to strengthen and stiffen the barrel body and assist in the tubular formation of the body fabric and serve as supports for the heads. 13 and 14 are the upper and lower heads, respectively, the upper head 13 rests against the outer side of wire 8 and is secured in place by staples 15. The lower head 14 rests against the inner side of the bottom wire 9 and is secured in place by staples 16. It is to be understood that although the wires 8 and 9 perform an important office, yet, they may be omitted without departing from the scope of the invention.

The details in the arrangement of the fulcrum and constricting wires may be variously modified. Some of these modifications are shown in the drawings. In Fig. 7, flat metal strips 17, 18 and 19 take the place of the wires 3, 4 and 5, respectively, such metal strips being, of course, the equivalent of wires and the term "wires" is herein used in this sense. Again, the number and relative location of the fulcrum and constricting wires may vary. In Figs. 8, 9 and 10 two separated fulcrum wires 20 and 21 are employed. In these figures these fulcrum wires are shown on the outside of the barrel body and the constricting wires 22 and 23 are shown on the inside of the barrel body. In this case it is preferable that the wires be

secured to each stave by two staples, as shown, and the wires 22 and 23 may have their projecting ends hooked together, as shown at 24 in Fig. 10 with reference to wire 22 or they may be otherwise connected. The wires 20 and 21 may have their ends connected by twisting them together, hooking them together, or otherwise.

In Figs. 11, 12, 13 and 14 the fulcrum wire consists of two strands 25, 26, woven in and out among the staves. In other respects the fabric is similar to that shown in Figs. 2 and 3, having the same constricting wires 4 and 5 and the wires 8 and 9. The bottom head in Fig. 14 is shown as being provided with a groove in its edge to receive the wire 9 and is held in place by staples 27 which span the wires 5 and 9.

Although the invention is shown in the drawings as applied to a ventilated barrel, it will be understood that it is not limited to such form of bilge barrel. Furthermore, the face of the staves may have any desired contour and the staves may be made of any suitable material.

The fulcrum wires and inner wires are preferably somewhat thicker than the other wires, as shown. In constricting the ends of the tubular barrel body the ends of the staves may be bent inward by drawing in the constricting wires, or the staves may be bent inward by any other suitable means and held in this position by the constricting wires.

What is claimed and what is desired to be secured by Letters Patent is:—

1. The method of constructing the body of a bilge barrel which consists in forming a body fabric by securing one or more transverse fulcrum wires to a series of flat flexible staves near their middle and also transverse constricting wires near the ends of the staves, bending said fabric into a tube, securing the ends of the fulcrum wire or wires, simultaneously bending the ends of all the staves inward at each end of the fabric against the resistance of the fulcrum wire or wires, and securing the ends of the constricting wires in place so as to hold the staves in this constricted position.

2. The method of constructing the body of a bilge barrel which consists in forming a body fabric by securing one or more transverse fulcrum wires to a series of flat flexible staves near their middle and also loosely securing transverse constricting wires near the ends of the staves, bending said fabric into a tube, securing the ends of the fulcrum wire or wires, simultaneously bending the ends of all the staves inward at each end of the fabric against the resistance of the fulcrum wire or wires and taking up the slack in the constricting wires, and securing the ends of the

constricting wires in place so as to hold the staves in this constricted position.

3. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat flexible staves having one or more transverse fulcrum wires secured to the staves near their middle, and having transverse constricting wires secured to the staves and spaced apart from the fulcrum wire or wires, said constricting wires being free to move transversely across the staves to take up slack in said wires.

4. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat flexible staves having one or more transverse fulcrum wires secured to the staves near their middle, and having transverse constricting wires stapled to the staves and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

5. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat flexible staves having one or more transverse fulcrum wires stapled to the staves near their middle, and having transverse constricting wires stapled to the staves and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

6. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat flexible staves having one or more transverse fulcrum wires secured to the staves near their middle, and having transverse constricting wires secured to the staves on the opposite side from the fulcrum wire or wires and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

7. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near the middle, and having transverse constricting wires secured to the staves and spaced apart from the fulcrum wire or wires, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

8. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near the middle, and having transverse constricting wires secured to the staves and spaced apart from the fulcrum wire or wires, a bottom wire secured to the staves on the inside, and a bottom head

resting against the inner side of said wire, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

9. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near the middle, and having transverse constricting wires secured to the staves and spaced apart from the fulcrum wire or wires, oppositely projecting wire ends being secured together to hold the barrel body in shape, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

10. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near the middle, and having transverse constricting wires secured to the staves on the outside and spaced apart from the fulcrum wire or wires, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

11. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near the middle, and having transverse constricting wires secured to the staves on the outside and spaced apart from the fulcrum wire or wires, oppositely projecting wire ends being secured together to hold the barrel body in shape, a bottom wire secured to the staves on the inside, and a bottom head resting against the inner side of said wire, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

12. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires extending across all the staves on one side thereof and secured to the staves near their middle, and having transverse constricting wires secured to the staves on the opposite side from the fulcrum wire or wires and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

13. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near their middle, and having transverse constricting wires extending

across all the staves on one side thereof and secured to the staves on the opposite side from the fulcrum wire or wires and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

14. A fabric for knock-down bilge barrels comprising a body fabric consisting of series of flat, flexible staves having one or more transverse fulcrum wires extending across all the staves on one side thereof and secured to the staves near their middle, and having transverse constricting wires extending across all the staves on one side thereof and secured to the staves on the opposite side from the fulcrum wire or wires and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

15. A fabric for knock-down bilge barrels comprising a body fabric consisting of a series of flat flexible staves having one or more transverse fulcrum wires extending across all the staves on one side thereof and secured to the staves near their middle, and having transverse constricting wires extending across all the staves on one side thereof and secured to the staves and spaced apart from the fulcrum wire, said constricting wires being free to move transversely across the staves to take up slack in said wires.

16. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires extending across all the staves on one side thereof and secured to the staves near the middle, and having transverse constricting wires secured to the staves and spaced apart from the fulcrum wire or wires, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

17. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires secured to the staves near the middle, and having transverse constricting wires extending across all the staves on one side thereof and secured to the staves and spaced apart from the fulcrum wire or wires, said fulcrum and constricting wires acting to maintain the bilge in the barrel, and also to permanently maintain the integrity of the fabric.

18. A knock-down bilge barrel comprising a flexible body fabric consisting of a series of flat, flexible staves having one or more transverse fulcrum wires extending across all the staves on one side thereof and secured to the staves near the middle, and hav-

ing transverse constricting wires extending
across all the staves on one side thereof and
secured to the staves and spaced apart from
the fulcrum wire or wires, said fulcrum and
5 constricting wires acting to maintain the
bilge in the barrel, and also to permanently
maintain the integrity of the fabric.

10 19. A knock-down bilge barrel comprising
a flexible body fabric consisting of a series
of flat, flexible staves having a transverse
fulcrum wire extending across all the staves
on the inside thereof and secured to the
staves near the middle, and having trans-
verse constricting wires extending across all

the staves on the outside thereof and secured 15
to the staves and spaced apart from the ful-
crum wire or wires, said fulcrum and con-
stricting wires acting to maintain the bilge
in the barrel, and also to permanently main-
tain the integrity of the fabric. 20

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

FREDERICK A. PRAHL.

Witnesses:

BEATRICE MIRVIS,
IDA G. GILMORE.