

F. S. WOODWARD.
CABLE THREADING HEAD.
APPLICATION FILED MAY 24, 1905.

929,528.

Patented July 27, 1909.

Fig. 1.

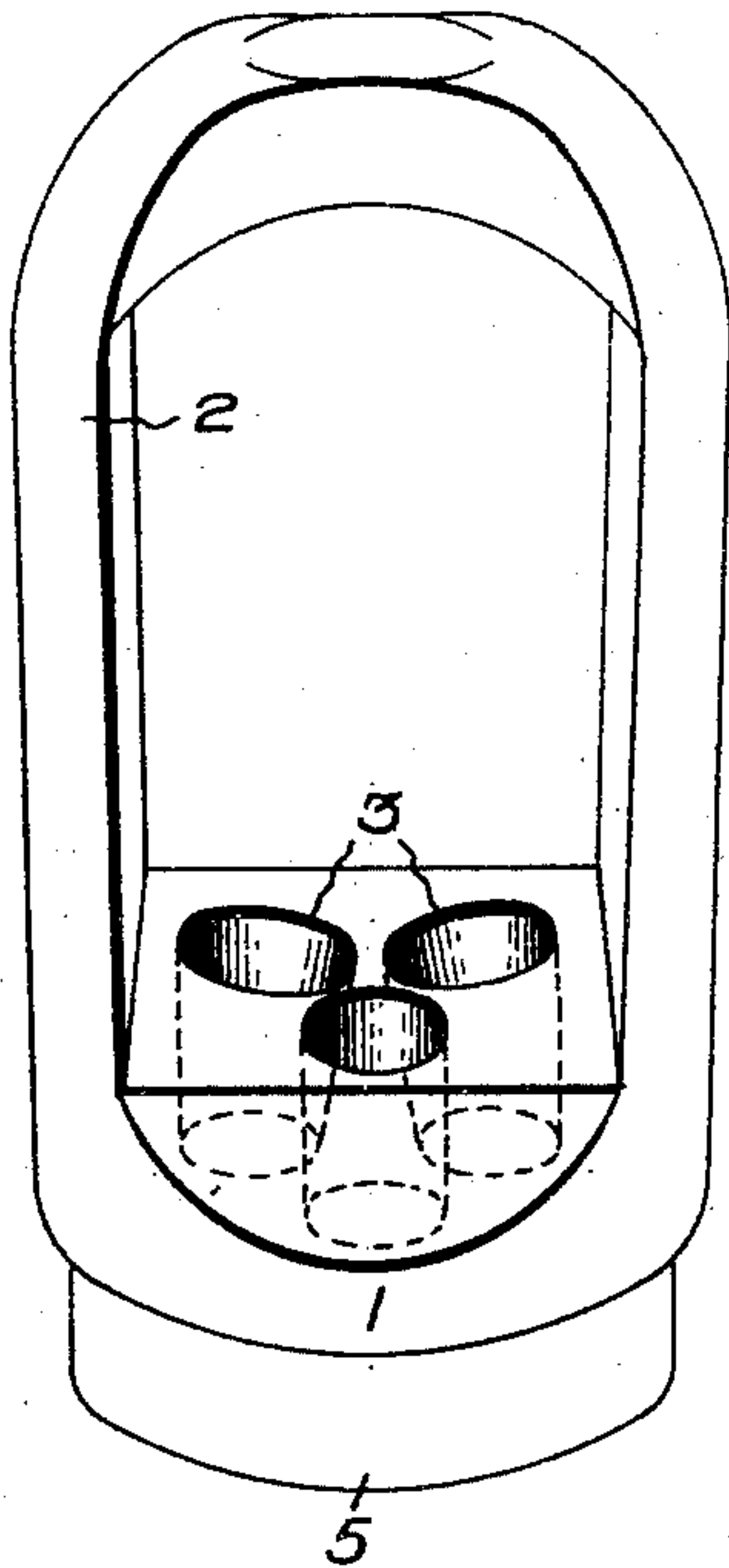


Fig. 2.

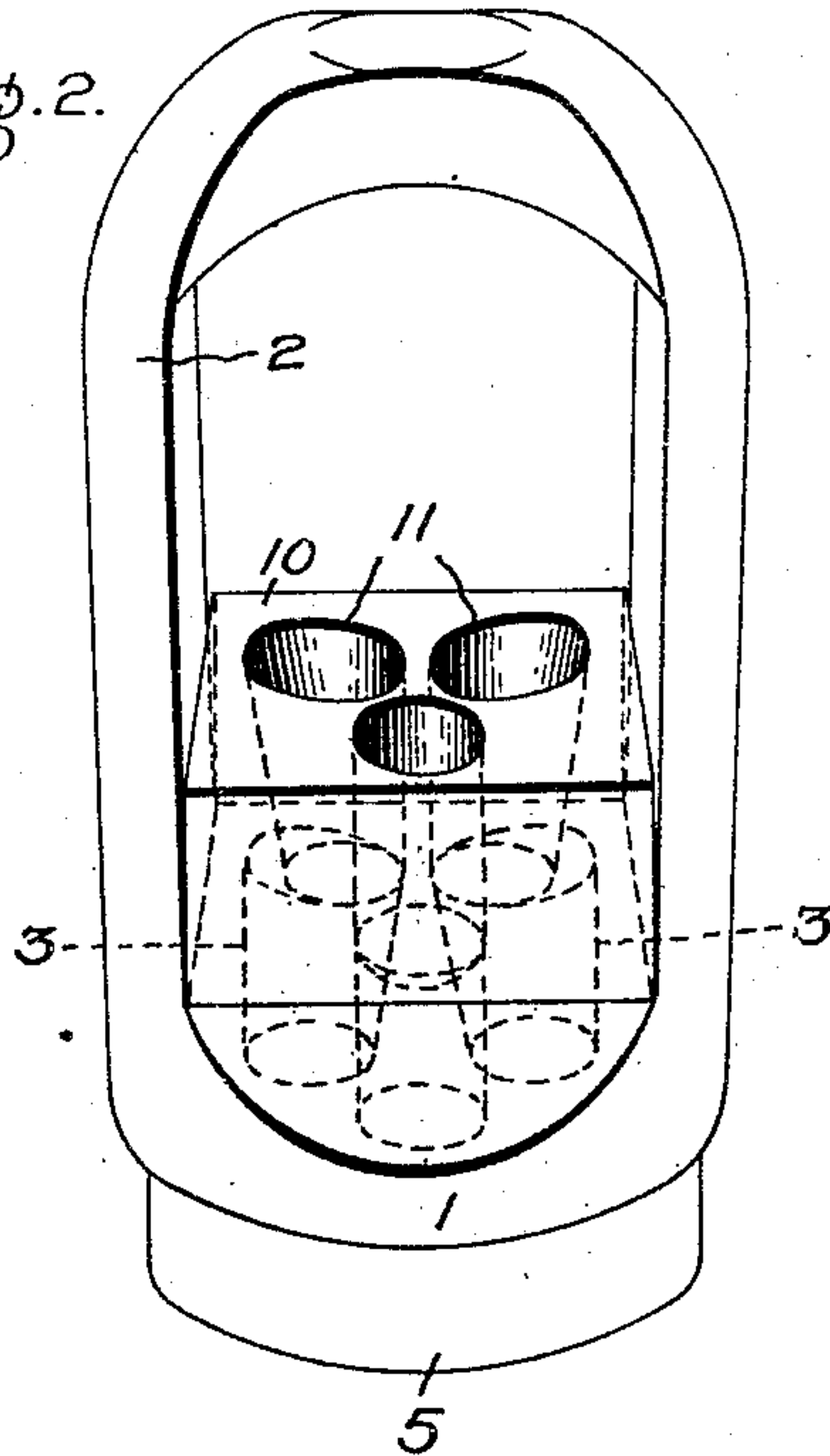


Fig. 4.

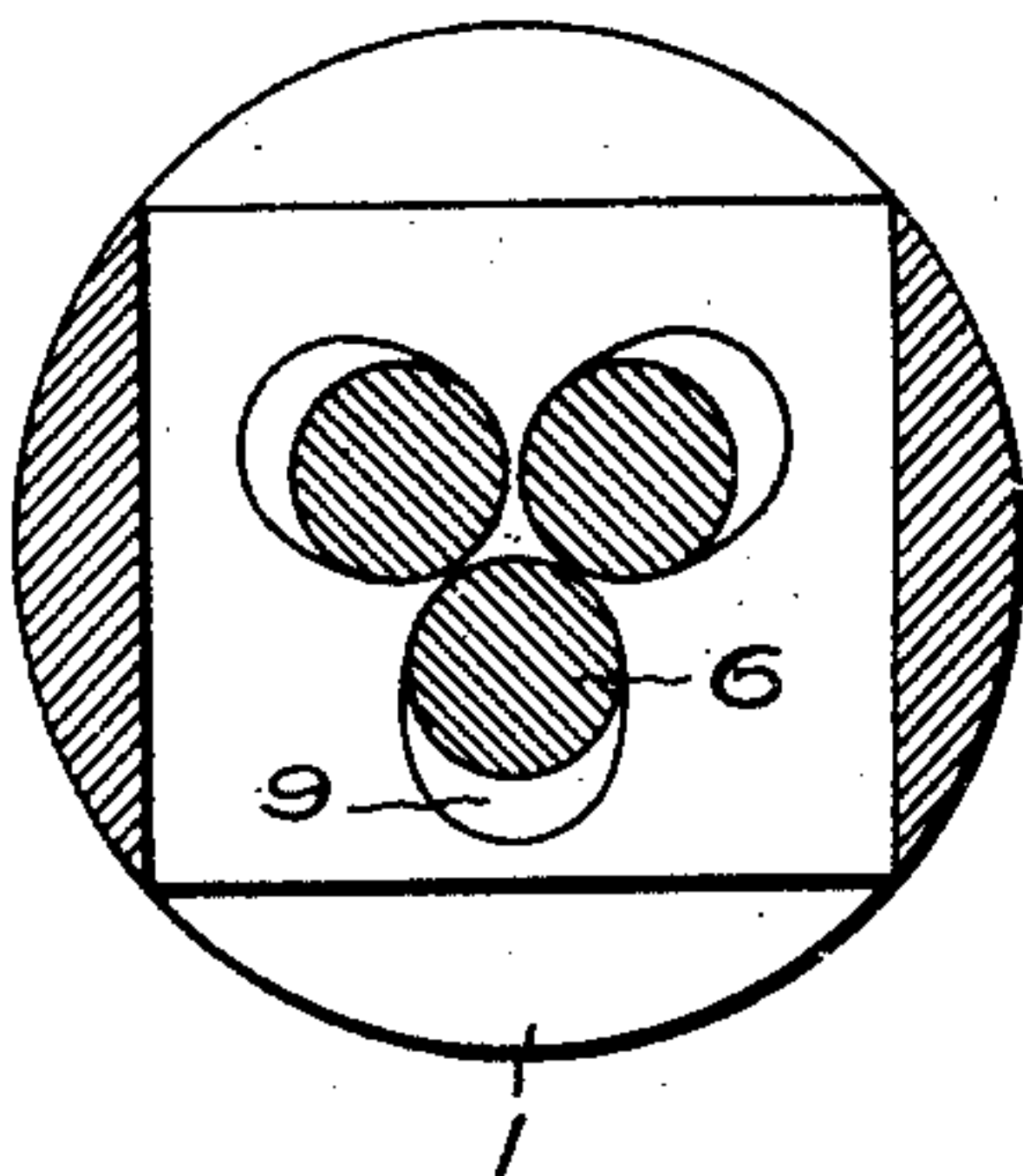


Fig. 3.

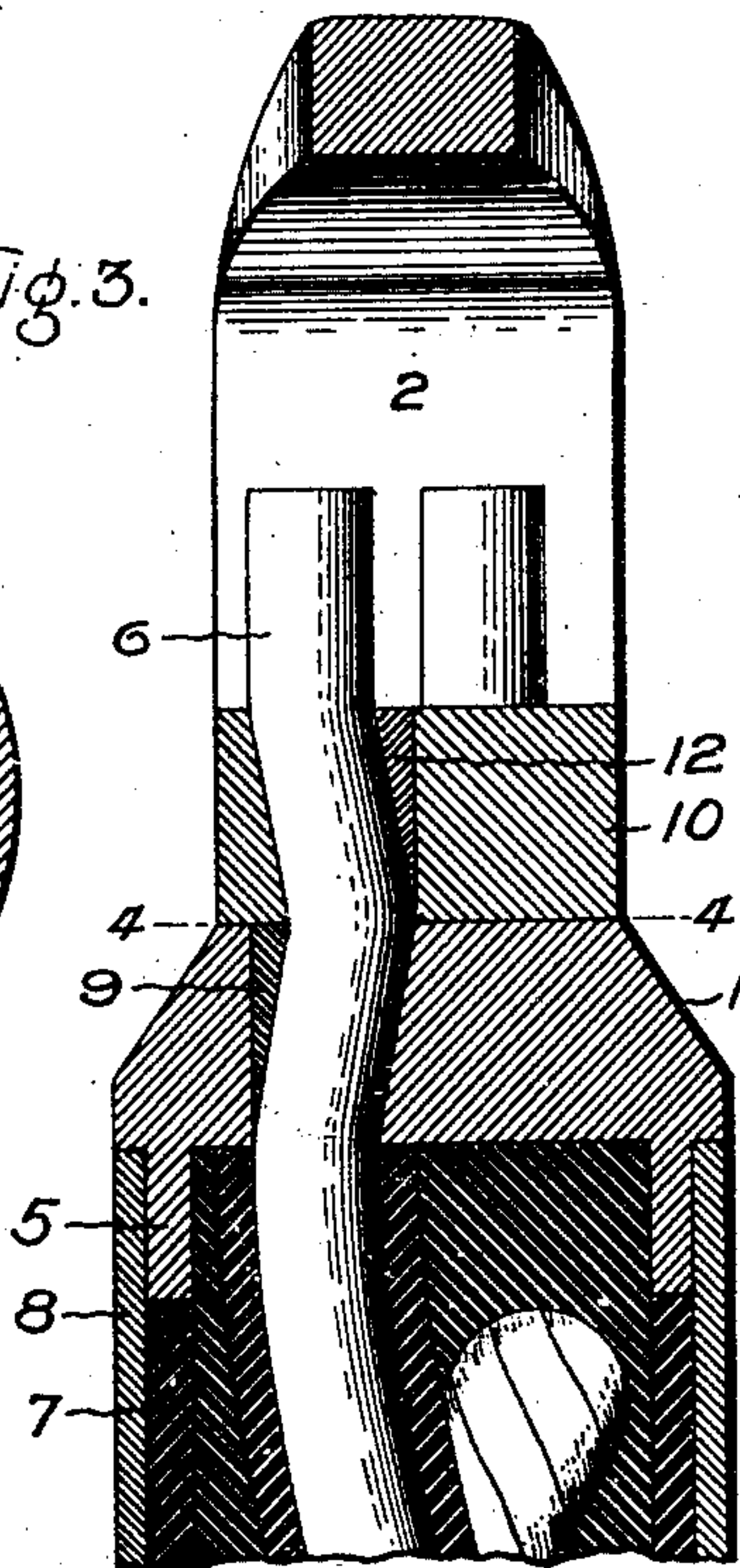
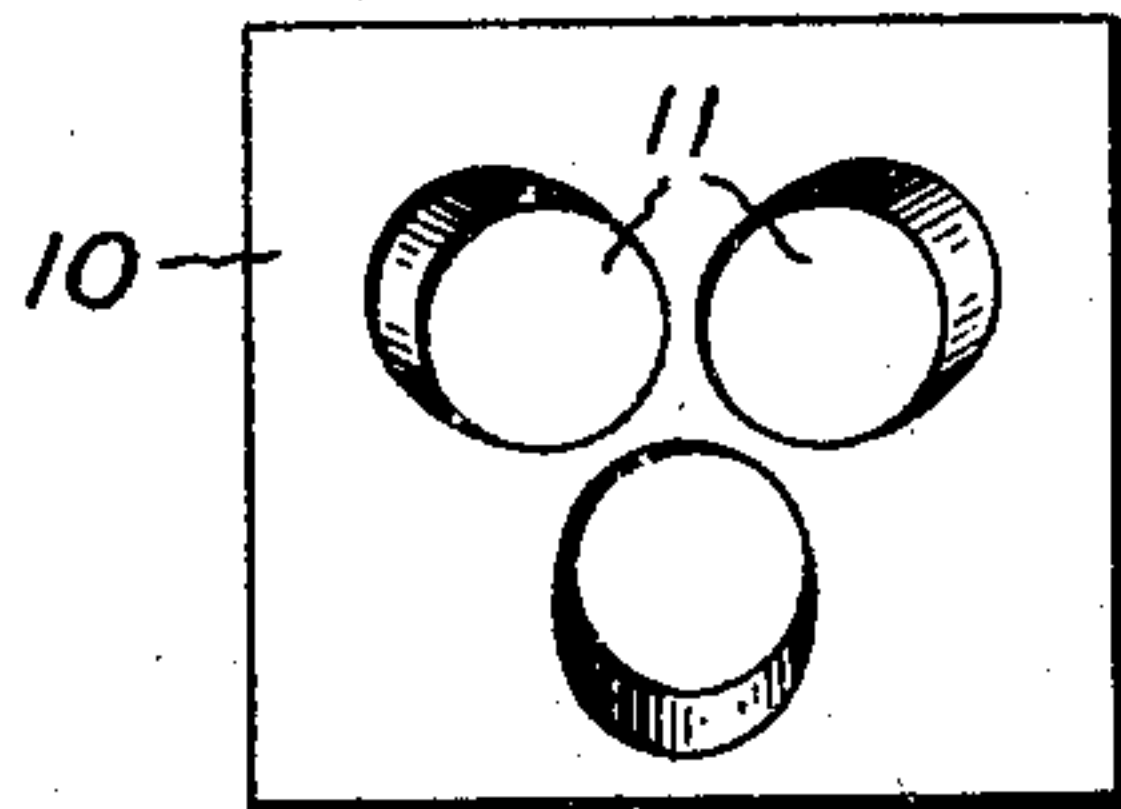


Fig. 5.



Witnesses:
Marcus L. Byng.
Helen O'ford

Inventor:
Frederick S. Woodward,
by Albert S. Davis
Att'y.

UNITED STATES PATENT OFFICE.

FREDERICK S. WOODWARD, OF BROOKLYN, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CABLE-THREADING HEAD.

No. 929,528.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed May 24, 1905. Serial No. 262,074.

To all whom it may concern:

Be it known that I, FREDERICK S. WOODWARD, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Cable-Threading Heads, of which the following is a specification.

This invention relates to a head or clip for attachment to the end of a cable to facilitate drawing the cable into a conduit.

The object of the invention is to provide a cable-threading head of simple construction, amply strong enough to withstand the strain to which it is subjected, which may be quickly attached to a conductor making a strong joint therewith and with which the entrance of moisture into the end of the cable while the latter is being drawn through the conduit is effectually prevented.

In my improved cable-threading head, I provide means for attaching the head to the conductor or conductors of the cable so that the pull is transmitted to them direct instead of through the lead sheath or other parts as has been done heretofore and in order to exclude moisture from the end of the cable I provide a depending flange on the head which coöperates with the lead sheath preferably by fitting tightly inside the same to seal the end of the cable.

The novel features of my invention will be definitely indicated in the claims appended hereto.

The details of construction and the method of using my improved cable-threading head will be better understood by reference to the following description taken in connection with the accompanying drawings in which—

Figure 1 is a perspective view of the head; Fig. 2 is a similar view with the locking block in position; Fig. 3 is a section of the head applied to a cable; Fig. 4 is a section on line 4 4 of Fig. 3; and Fig. 5 is a top view of the locking block.

Referring to the drawings, the head or clip consists of a heavy casting of iron or other suitable material having a base 1 to which the cable is attached and a looped portion 2 which receives the hooks on the end of the drawing-in rope. In the base are a number of openings as indicated at 3, equal to the number of conductors on the cable and so positioned that they center with the conductors of the cable. At the bottom these

openings are circular and of about the same size as the conductors, but they increase in size from the bottom up. Preferably the increase in the size of the openings is all on one side of an axis perpendicular to the base. In the head illustrated in the drawings the increase in the size of the openings 3 is all on the side toward the center of the base. On the bottom of the base 1 is a circular depending flange 5 of such size that the lead sheath of the cable fits tightly thereon.

When the head is to be attached to a cable the conductors 6 of the cable are bared of insulation for a short distance back from their ends and threaded through the openings 3 in the base 1. The insulation is preferably cut off square and therefore fits tightly against the bottom of the base without forming any air spaces between them. One layer 7 of the insulation, preferably the outer one, is cut away farther so as to form a circular groove in the end of the cable into which the flange 5 extends. The lead sheath 8 of the cable fits tightly around the flange 5 and solder may be introduced at the end of the sheath to fill all openings between it and the head in order to seal the end of the cable against the entrance of moisture. The conductors 6 are then bent toward each other so that they lie along the slanting sides of the openings 3. Wedges 9 are then inserted in the spaces between the straight sides of the openings 3 and the conductors 6. These wedges may be of solid metal and may be driven in by a hammer, but I prefer to make them by dropping molten solder into this space and allowing the solder to harden, for the reason that the solder fills the entire space between the conductors and the walls of the openings 3 and not only holds the conductors better but also prevents the entrance of moisture into the end of the cable.

In cases where the length of the conduit and the weight of the cable are such that a great tension is necessary to pull the cable through, I employ a locking block 10 to obtain a stronger hold on the conductors. This block is of rectangular form and fits in between the arms of the looped portion 2. Openings 11 extend through the block similar to the openings 3 in the base 1 except that at the bottom they are closer together so as to center with the conductors 6 where they emerge from the openings 3 in the base

1 and the increase in the size of the openings 11 is in the opposite direction laterally from that of openings 3, namely, away from the center of the block. In using the locking block the conductors are threaded through the openings 11 and the block is seated upon the top of the base 1. The conductors 6 are bent in the opposite direction above the base 1 so that in the openings 11 the conductors 6 also lie along the slanting sides of the openings, and wedges 12 are inserted in the openings similar to wedges 9 in the openings 3. A joint is thus made between the heads and the cable of double the strength of that obtained when the locking block is not used. The arrangement of the holes in the base and in the locking block is such that two angles are made in the conductors which with the solder wedges hold the conductors fast and make it practically impossible for the conductors to slip through and release the head from the cable.

It will thus be seen that with my improved cable-threading head the head is attached to the conductor or conductors of the cable so that the pull is transmitted to the conductors direct and not through the lead sheath and the insulation of the cable. Also that the end of the cable is effectually closed against the entrance of moisture so that the insulation of the conductors is not weakened at the end of the cable. Furthermore, there is very little waste as only a very short length of the insulation need be removed for attaching the head to the cable.

The head shown in the drawings is for a three conductor cable but heads for cables having a greater or less number of conductors can be similarly constructed by merely changing the number of openings in the base 1 and the block 10.

I do not wish to be understood as limited to the precise construction which I have illustrated and described herein as various modifications can be made therein such for instance as varying the construction and arrangement of the wedges; such modifications I consider within the scope of my invention and I aim to cover them in the claims appended hereto.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. A cable threading head for a multi-conductor cable having a plurality of tapered openings, and means for securing each indi-

vidual conductor in an opening at an angle with the cable.

2. A cable threading head comprising two cooperating parts, each having a plurality of perforations therein, one for each conductor of the cable, the corresponding openings in the parts being out of alinement.

3. A cable-threading head for multi-conductor cables having tapering openings therein equal to the number of conductors, and means for securing a conductor to each of said openings so that the engaged portions are bent at different angles with the cable.

4. A cable threading head for a multi-conductor cable having a plurality of tapered openings, and means for wedging the individual conductors in said openings and sealing the same.

5. A cable threading head for a multi-conductor cable having a plurality of tapered openings, one for each conductor, and means for securing a conductor in each of said openings and sealing the same.

6. A cable threading head for a multi-conductor cable having a plurality of tapered openings, one for each conductor, and means for wedging a conductor in each of said openings and sealing the same.

7. A cable-threading head for a multi-conductor cable having a number of tapering openings therein equal to the number of conductors, a flange at one end to cooperate with the sheath of the cable, and a portion at the other end formed to facilitate attaching to the drawing-in device.

8. A cable-threading head for a multi-conductor cable comprising two cooperating parts each having a number of tapering openings therein corresponding to the number of conductors, and a flange on one of said parts for engaging with the sheath of the cable.

9. A conduit-threading device consisting of a perforated grip head containing grip plates with perforations for the conductor out of alinement with the perforations in the head whereby a conductor end of bent or irregular shape may be locked in position.

In witness whereof I have hereunto set my hand this seventeenth day of May, 1905.

FREDERICK S. WOODWARD.

Witnesses:

H. M. SPERRY,

GEO. N. SNYDER.