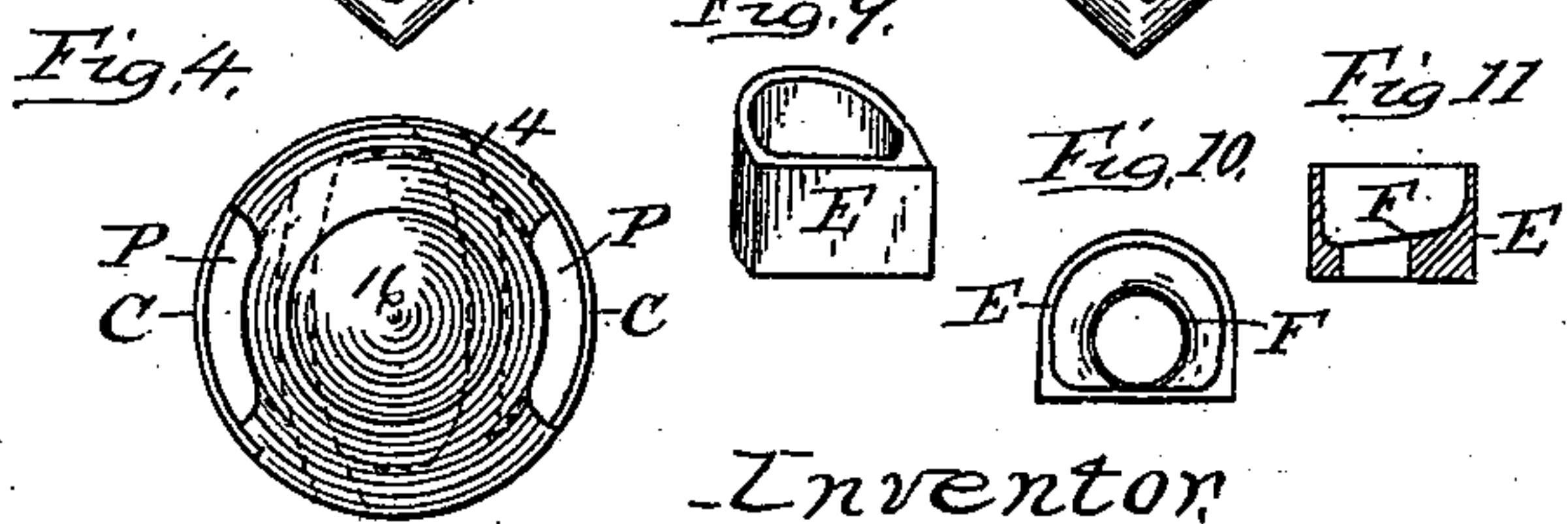
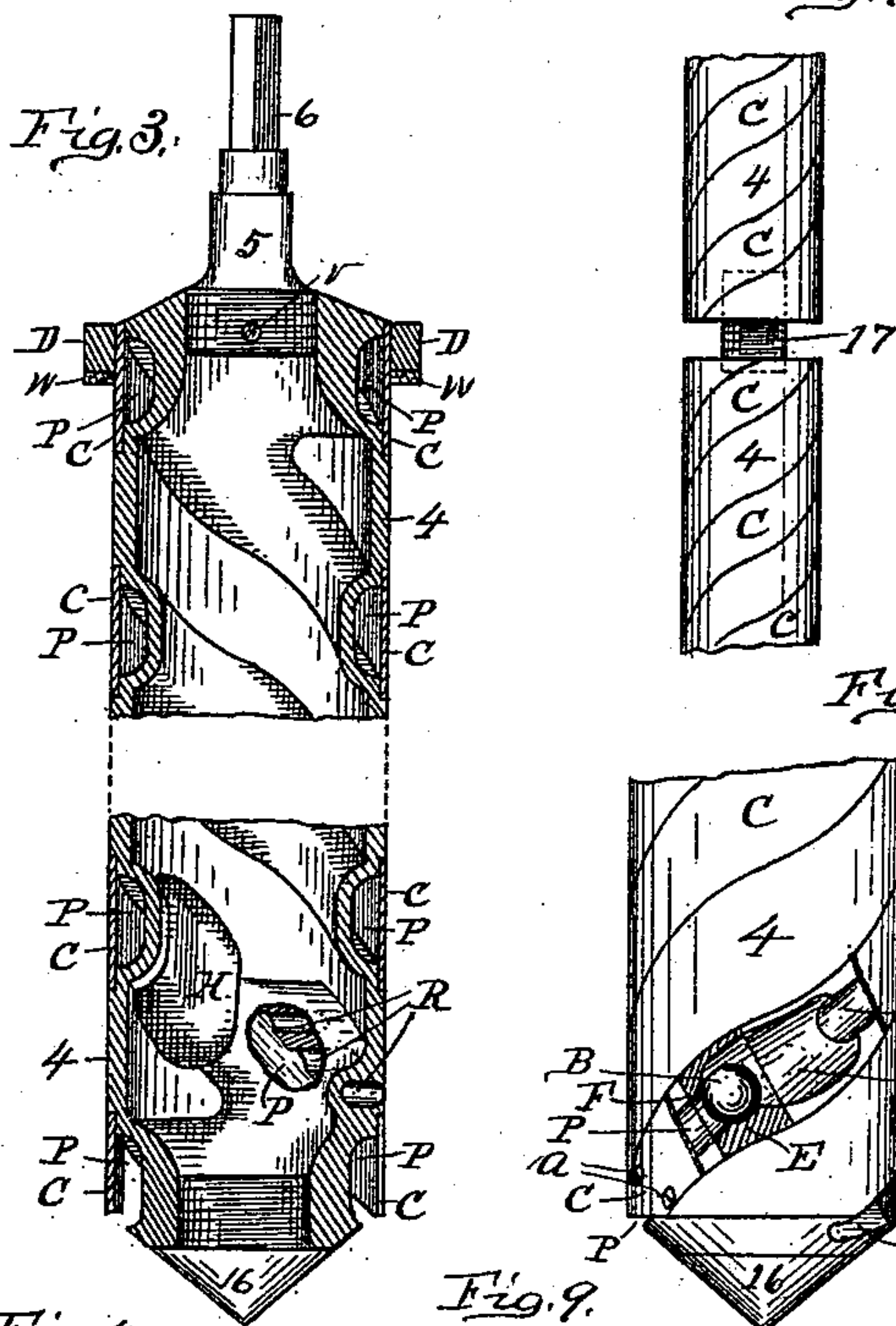
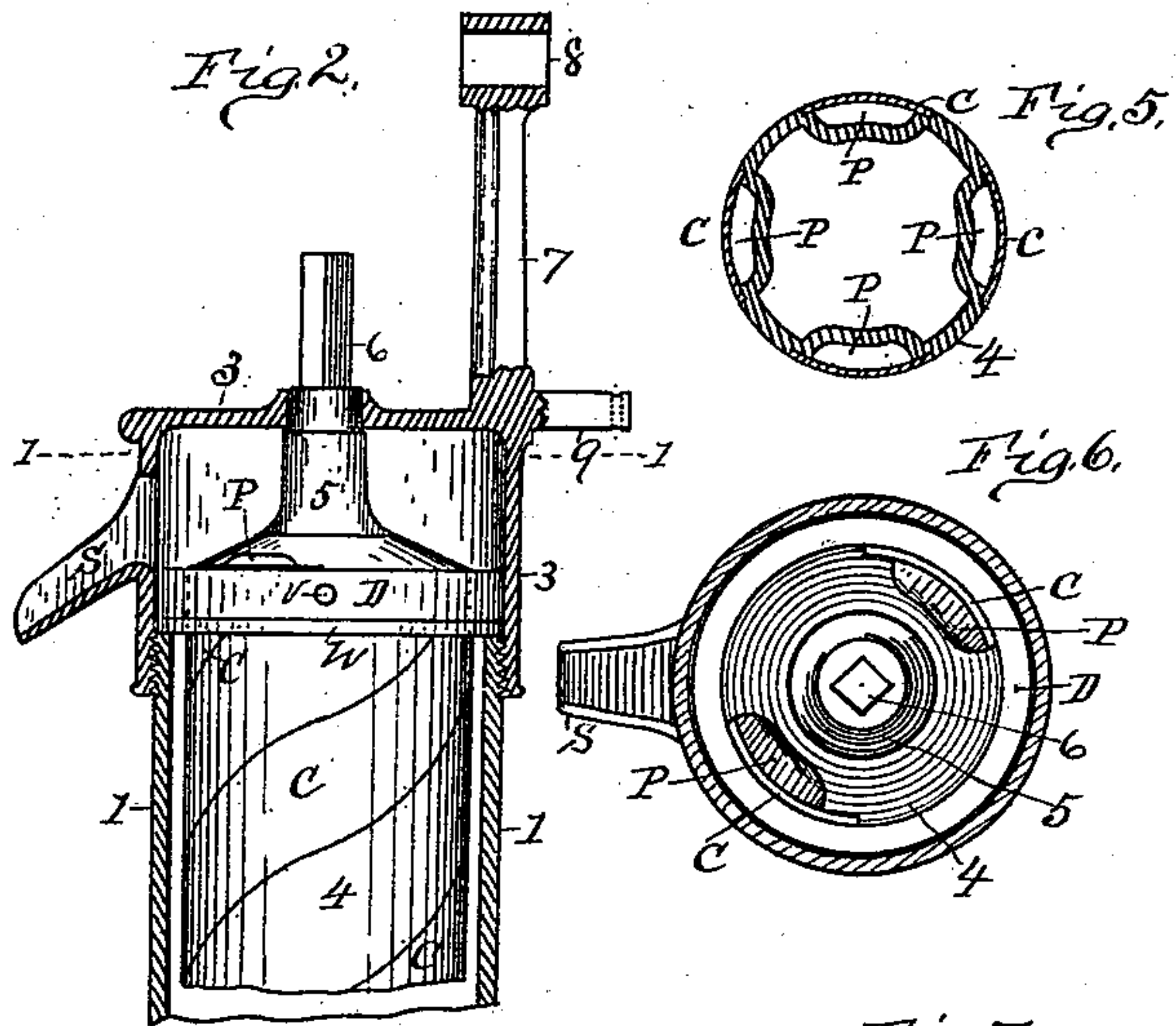
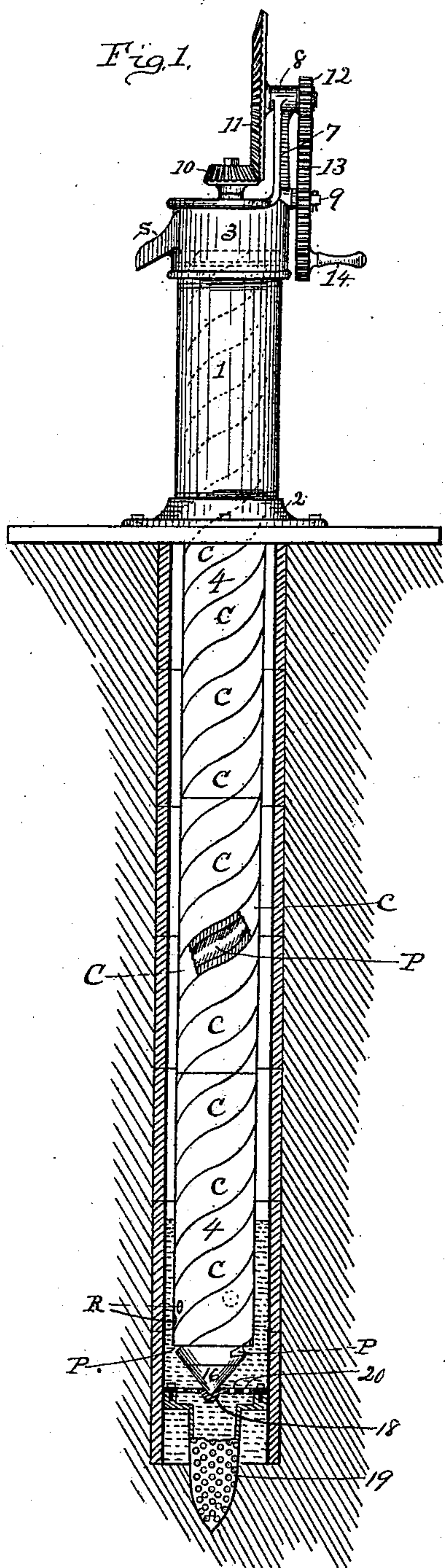


(No Model.)

P. DEAN.
PUMP.

No. 534,428.

Patented Feb. 19, 1895.



Witnesses,
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UNITED STATES PATENT OFFICE.

PHINEAS DEAN, OF HARPER, KANSAS.

PUMP.

SPECIFICATION forming part of Letters Patent No. 534,428, dated February 19, 1895.

Application filed February 1, 1893. Serial No. 460,551. (No model.)

To all whom it may concern:

Be it known that I, PHINEAS DEAN, a citizen of the United States of America, residing at Harper, in the county of Harper and State of Kansas, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings, and to the letters and figures of reference thereon, forming a part of this specification, in which—

Figure 1, is a side elevation of the pump, and a sectional elevation of a well into which the pump is placed; Fig. 2, a detailed section of the upper portion of the pump stock and head, and a side view of a corresponding portion of the rotatable stem of the pump; Fig. 3, a longitudinal sectional view of the upper and lower end portions of the pump stem, and a side view of the point and actuating shank of the stem; Fig. 4, a bottom end view of said stem; Fig. 5, a cross-sectional view of the pump stem represented as provided with four water passages; Fig. 6, a top end view of the pump stem, and a cross-section of the pump head on line 1—1, of Fig. 2; Fig. 7, a detailed side view of sections of the pump stem and of a screw coupler for connecting the sections; Fig. 8, a detailed side view of the lower end portion of the pump stem having a portion of one water passage covering bands broken away to show the valve seat and chamber of said passage, and Figs. 9, 10, and 11, are detailed views of one valve seat of the pump stem.

This invention relates to certain improvements in rotary pumps, and consists essentially in a rotatable stem constructed with spiral water passages which is submerged, in a well, at its lower end portion, and adapted to be rapidly rotated and take water into the lower portion of the spiral passages, and by reason of the rotary action, force the water up the inclines of the spiral passages and discharge it at the upper end of the said passages, which improvements are fully set forth and explained in the following specification and pointed out in the claims.

Referring to the drawings 1 represents the pump stock, which is cylindrical in form and screw-threaded and turned into, or otherwise suitably stepped into a base 2.

3 represents the pump stock head, and is

screw-threaded to correspond with screw-threads of the upper end of stock 1, and is turned upon said stock to the position shown, and is provided in one side with a spout S, in its crown with a central opening at one side from its center with an upright arm 7 bearing at its end a horizontal shaft bearing 8, and with a stud 9 extending at one side in vertical line with bearing 8.

4 represents the pump stem, which is, at its exterior, cylindrical in form, and is preferably made of cast metal, and provided with spiral water passages P formed in its walls within the cylindrical plane thereof, as shown, which passages are made with covering bands c, placed in seats as represented. The said covering bands are held seated by means of a suitable cement, and may also be held at the ends thereof by means of screws, as shown at a a Fig. 8. The said stem, when cast, is hollow, as represented, and each end thereof is made so the opening therein will be circular and is at such openings screw-threaded, and at the bottom end has turned therein a supporting, or pivot, point 16, and at the top end it has turned therein a shank 5. About the upper end of stem 4 is placed a collar D, shown as being fixed into position by means of a cross-pin v, and placed about under said collar is a packing washer w.

In the lower end portion of each water passage P is an enlarged chamber, or section of the passage, P' and arranged in each such chamber is a valve seat E, set in a recess made for that purpose; and each said seat is provided with a ball valve B (see Fig. 8) so arranged that by an up flow of water the ball is unseated and permits the water to pass, but closes against the down passage of water. The passages P open both at the bottom and top ends of the stem 4 and by reason of their spiral form and open lower end will, when stepped in water and rotated, cause the water to enter into the said passages and by rapidly rotating the stem such action will cause the water to flow up the spiral inclines of the passages and be discharged at the top end of the stem. As a means of assisting in supplying the passages P with water, when in service, I have provided a series of ports R (see Figs. 1 and 3), which lead from the side of stem 4 to within the passages P, below the valve

seats, which, when the stem is rotated will take in water and lead it to the passages P and not while in said ports be subjected to the rotary action in such manner as to prevent such lead, by reason of the laterally curved form of said ports as indicated by dotted lines in Fig. 4.

In service the stem 4 is placed in a well, as represented in Fig. 1, and rests with its pivotal point 16 stepped in a socket of a support 18 placed in the well, in such manner that the lower end of the stem is submerged. The upper end portion of the stem is placed within the stock, 1, with the washer packing *v* seated upon the stock 1 and with the collar D bearing lightly upon washer *v*. The stock head is then placed in position on stock 1 which brings the stem shank 5 extending through the crown opening of said head, as shown in Fig. 2.

As a means of operating the stem 4 I have provided a bevel pinion 10, which is provided with a square opening through its hub and sleeved upon the square shank 6 of shank 5. In bearing 8 I have placed a short shaft bearing, at one end, a bevel wheel 11, arranged in mesh with pinion 10, and at its opposite end a spur pinion 12, and on stud 9 I have placed a spur wheel 13 which meshes with pinion 12, and is provided with a hand crank handle 14, and by grasping the handle 14 and turning wheel 13 the proper rotary movement is, through the agency of gears 12—11 and 10, given the pump stem 4 causing it to take in water at its lower end, and by the centrifugal action, causes the water to flow up the passages P and be discharged within the pump head 3, from whence it flows out through spout S, and during the action of pumping water is prevented from flowing down about the stem into stock 1 by the collar D and packing washer W.

I have represented in the principal drawings the stem 4 as provided with two water passages, and in Fig. 5, as provided with four such passages; but the number of said passages is not material, as any suitable number of them may be used and the pattern of the stem may be altered and not affect the principle of this invention; also in Fig. 1, I have represented, by cross-lines, the stem 4 as made up of sections, and in Fig. 7, I have shown

the meeting end of two sections, in the act of coupling them together by means of a screw shank coupler 17 which is provided with a male thread and turned, jointly, into female threads of the stem sections, bringing the said sections together so their water passages will register.

The purpose of the valves in the water passages P is, to prevent the back flow of water in said passages when the rotary action of the stem 4 ceases, and thus, after a pump has been brought into service, at each stop, or cessation, of action the water is retained in the passages, so that when again started into action the water is immediately in readiness to be discharged, and therefore does not have to be drawn from the bottom at each such commencement.

The pivotal support 18, shown in Fig. 1, upon which stem 4 is stepped, is shown as a plate having perforations 20, which is fixed upon a hollow screen point 19, so that the water from the well bottom first must pass through said screen and plate perforations before reaching the stem 4; but the form of said support is not essential and may be varied to suit circumstances.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is as follows:

1. In the herein described pump, the rotatable stem provided with the spiral water passages, with the valves placed in said passages, and with the side ports leading to said passages from the stem side, substantially as and for the purpose specified.

2. In the pump described, the combination with a pivotal support, of the stem 4 provided with the spiral water passages, and with the point 16 and shank 5—6; the stock 1 and base thereof; the head 3 of said stock provided with the spout the crown opening and the supported bearing 8 and stud 9; the collar and packing washer placed about the pump stem within the stock head, and of the gears 10—11—12 and 13, for operating said stem, in the manner substantially as and for the purpose set forth.

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Witnesses:

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