

No. 744,111.

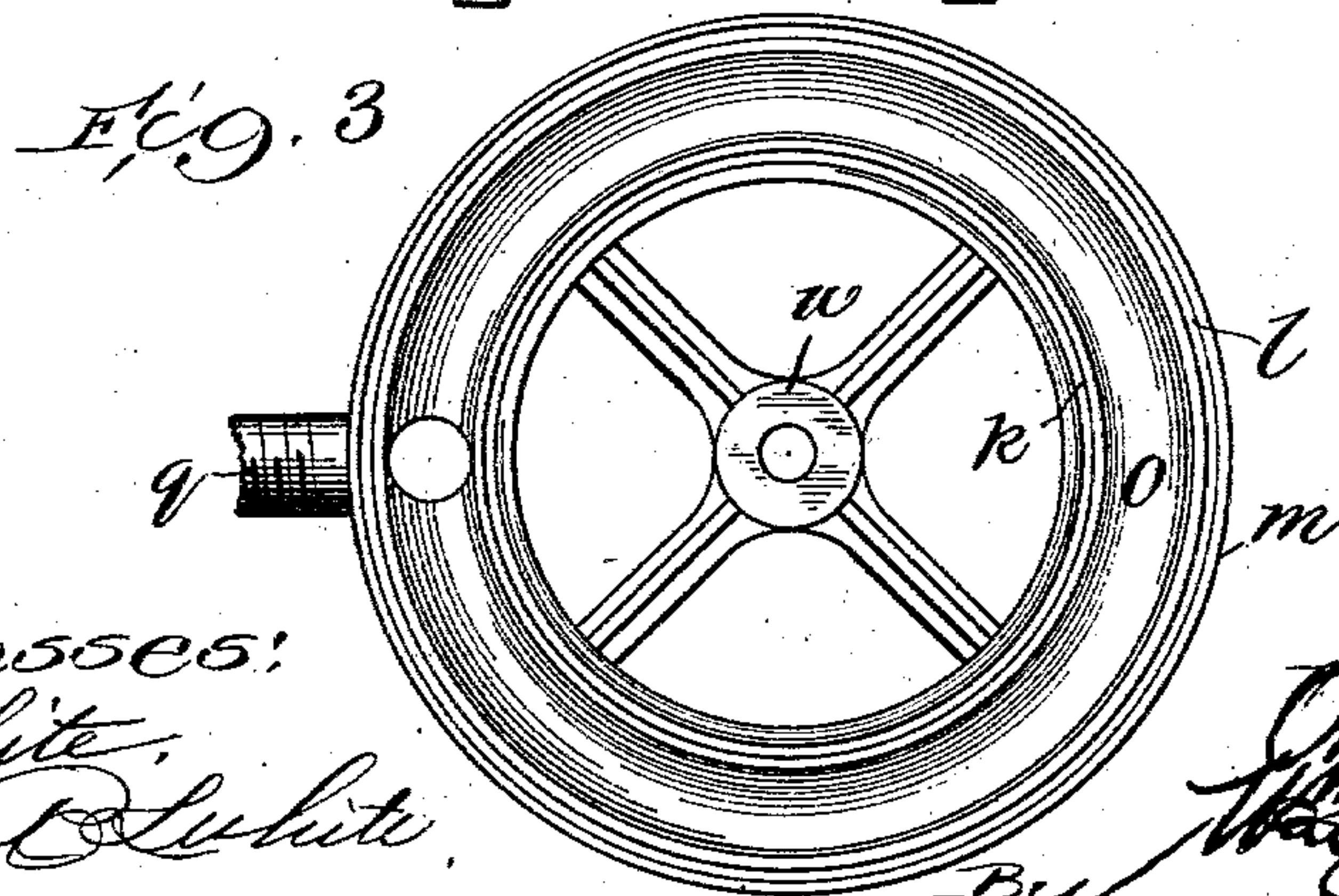
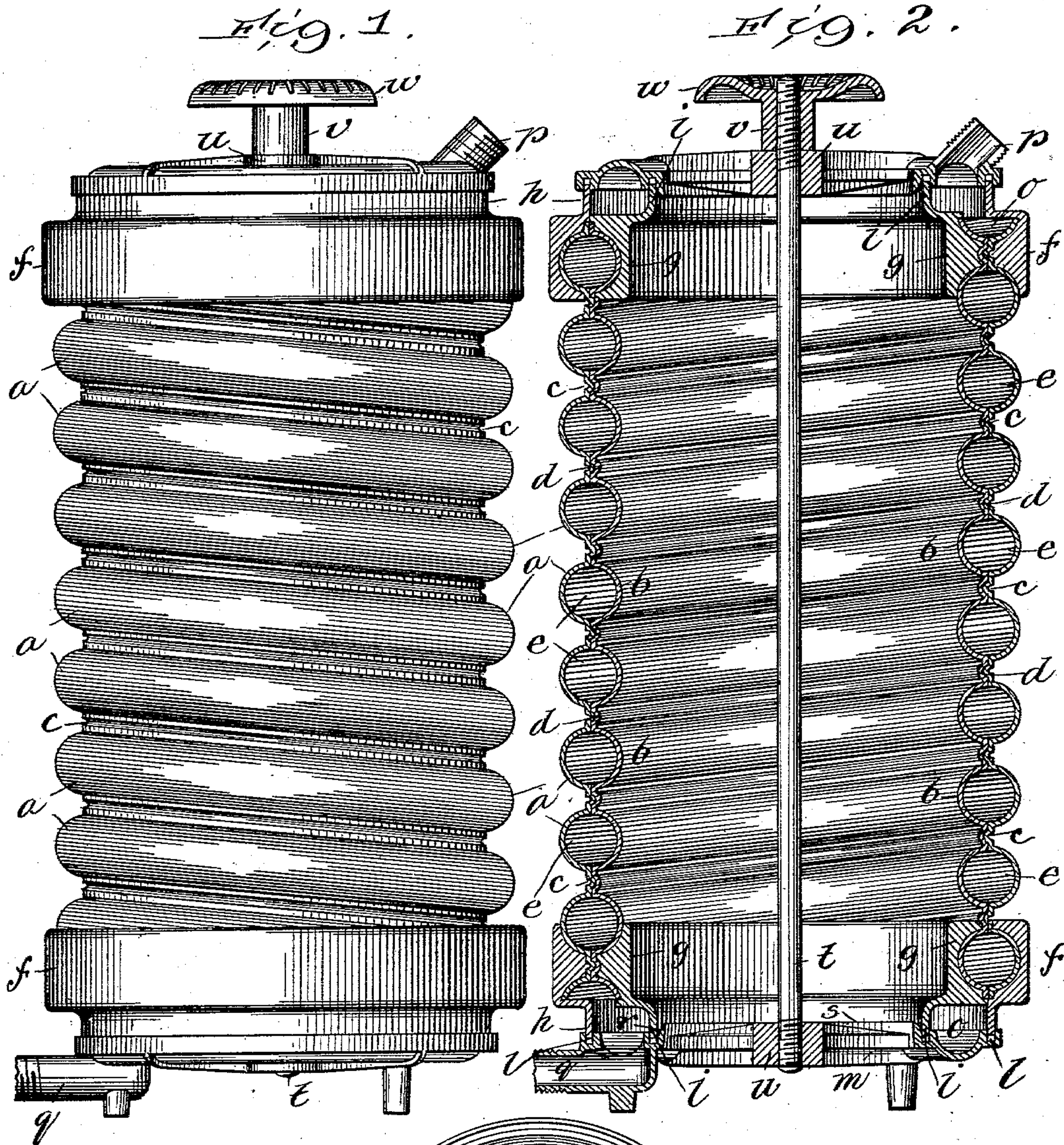
PATENTED NOV. 17, 1903.

O. RODERWALD.
LIQUID COOLER.

APPLICATION FILED JAN. 8, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
Ray White.
Harry White.

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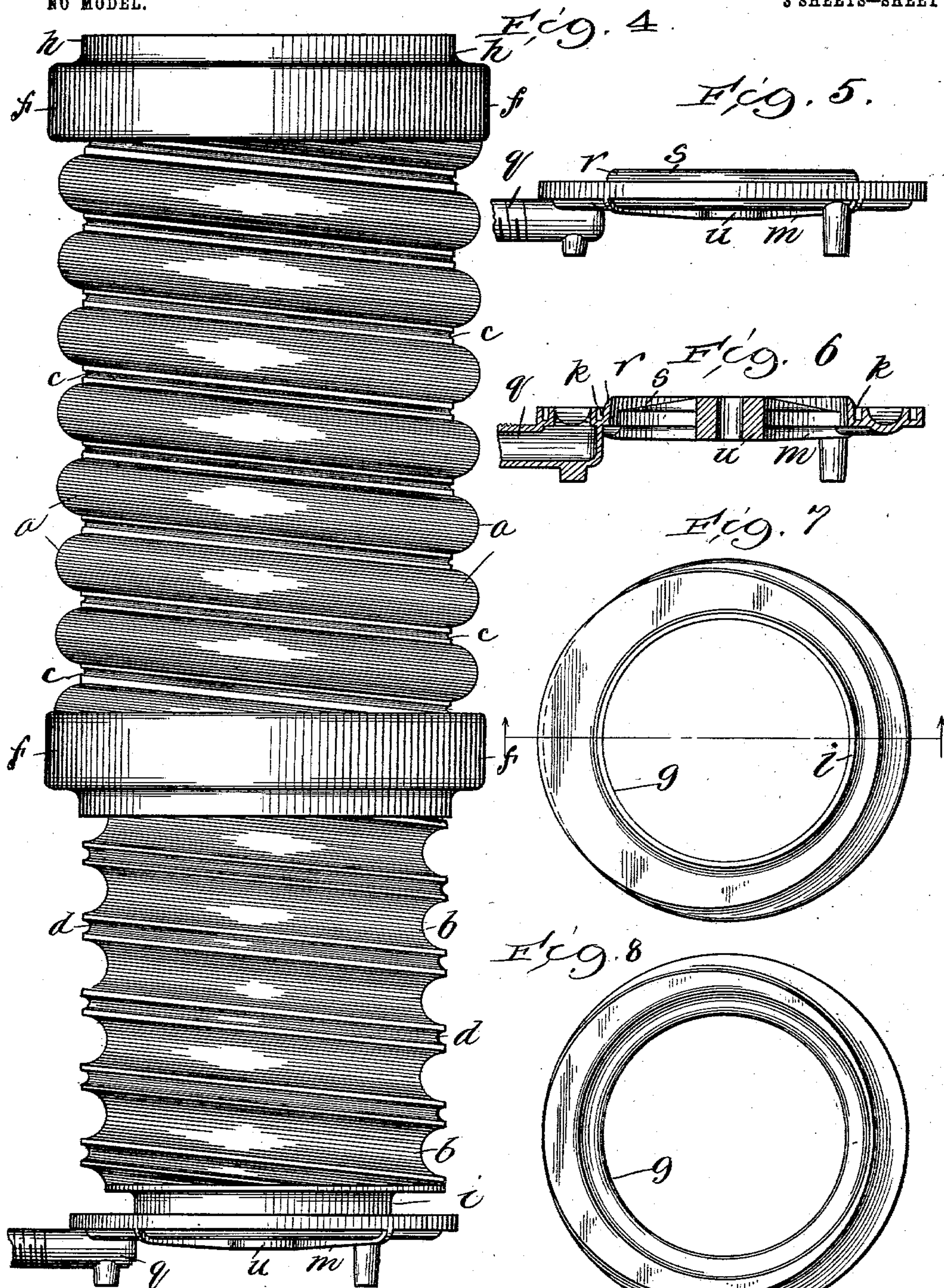
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 9

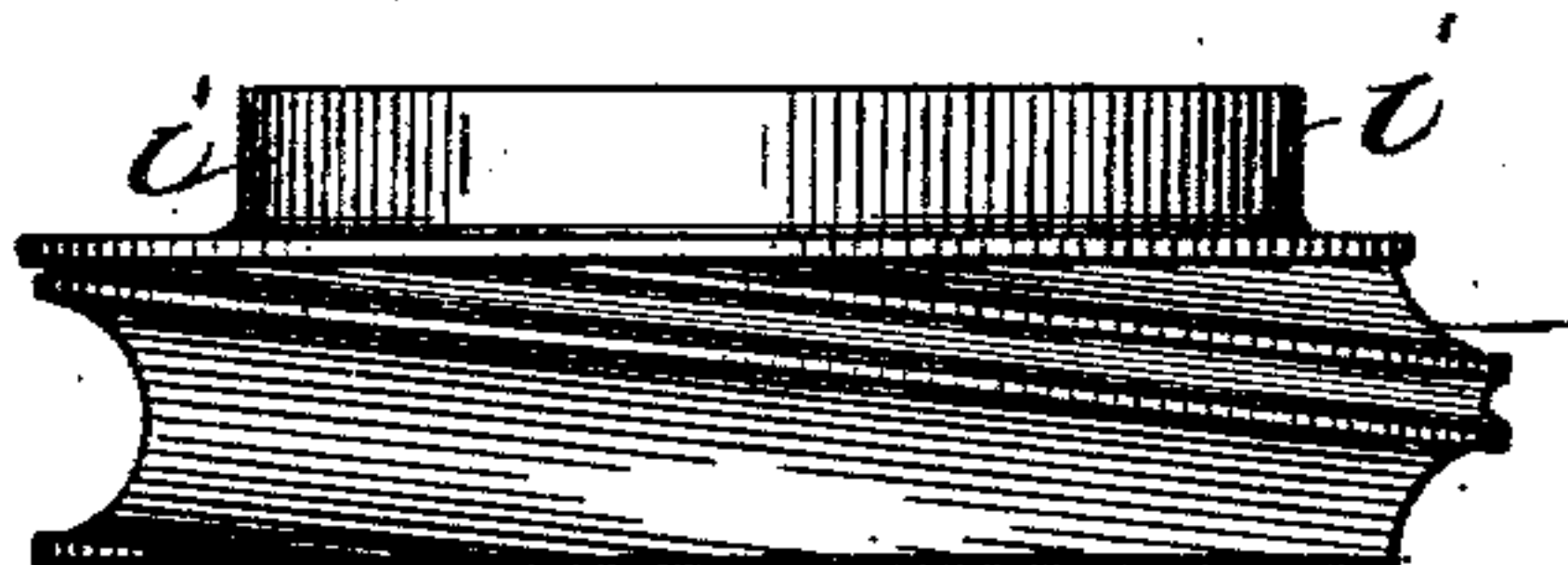


Fig. 10

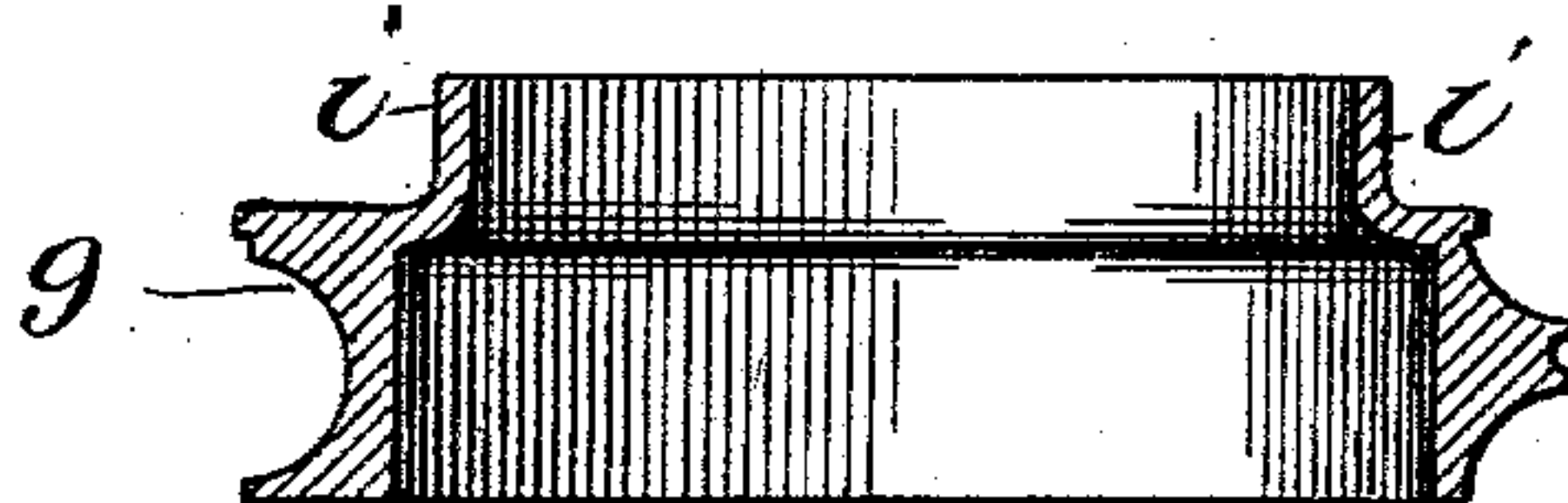


Fig. 11

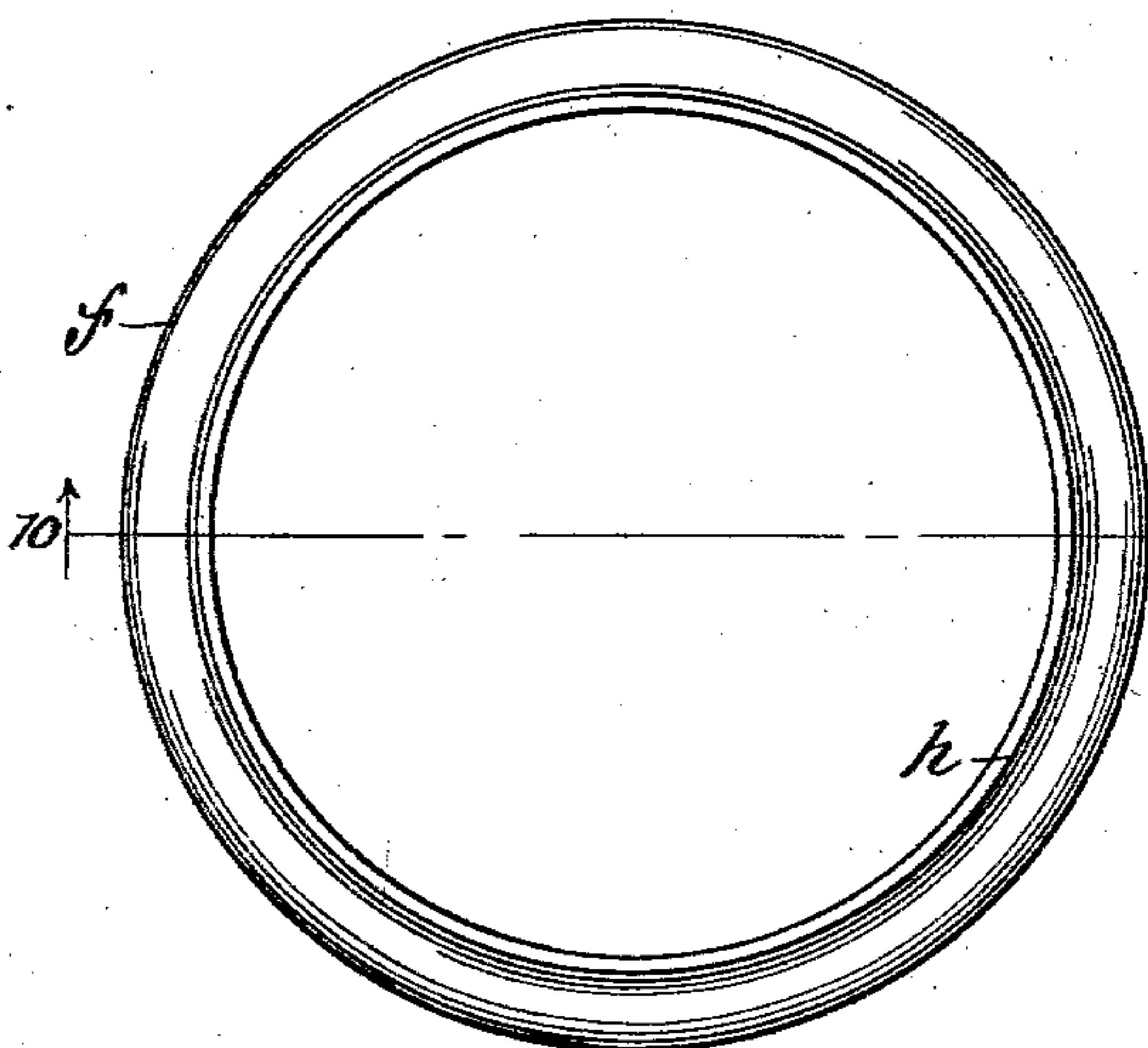


Fig. 12

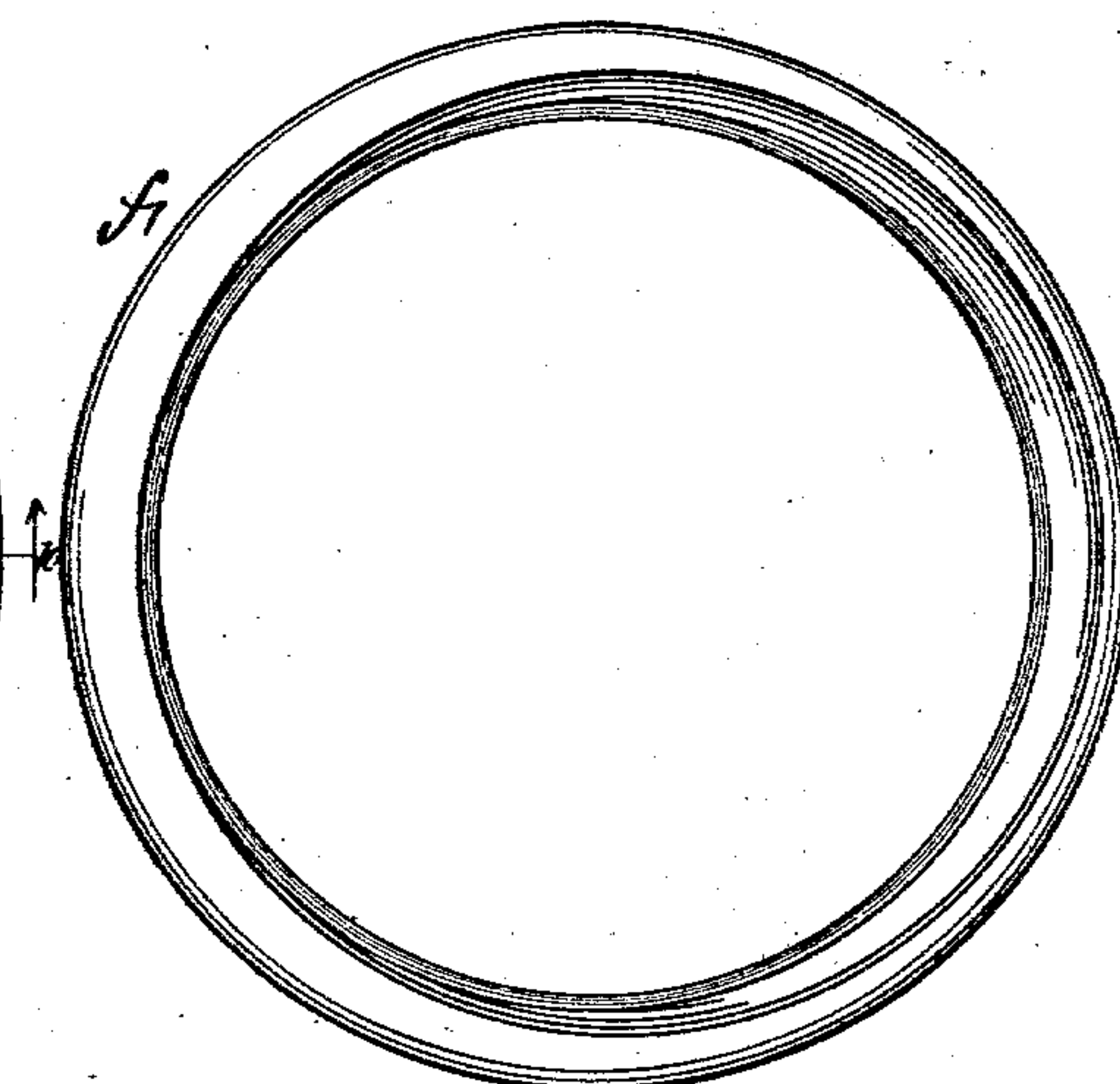


Fig. 13

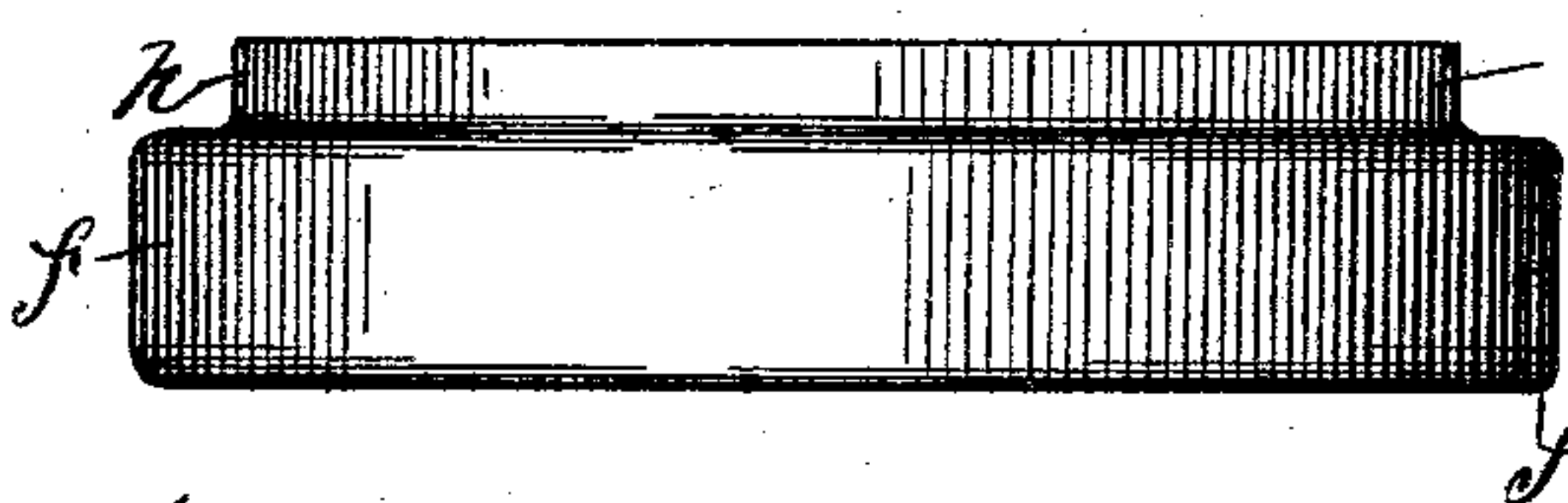
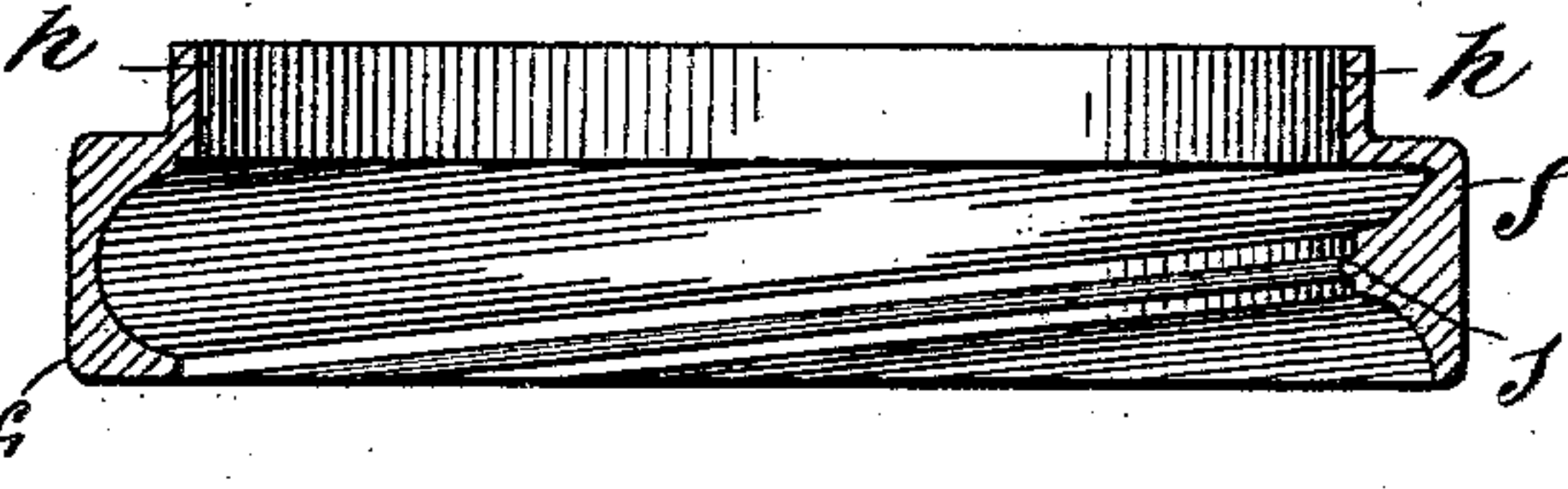


Fig. 14



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UNITED STATES PATENT OFFICE.

OTTO RODERWALD, OF CHICAGO, ILLINOIS.

LIQUID-COOLER.

SPECIFICATION forming part of Letters Patent No. 744,111, dated November 17, 1903.

Application filed January 8, 1903. Serial No. 138,256. (No model.)

To all whom it may concern:

Be it known that I, OTTO RODERWALD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Liquid-Coolers, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows my said improved liquid-cooler in elevation. Fig. 2 shows the same in central vertical section. Fig. 3 shows the head of the lower end of my said cooler in plan on its interior. Fig. 4 shows the two main parts of my said cooler partly separated. Fig. 5 shows Fig. 3 in elevation. Fig. 6 shows Fig. 5 in central vertical section. Fig. 7 shows an end element of the interior spiral cylinder in top or plan view. Fig. 8 shows the bottom view of Fig. 7. Fig. 9 shows Fig. 7 in side elevation. Fig. 10 shows Fig. 9 in central vertical section. Fig. 11 shows an end element or member of the external cylinder in top or plan view as seen from its top. Fig. 12 shows Fig. 11 as seen from the bottom. Fig. 13 shows Fig. 11 in side elevation. Fig. 14 shows a central vertical section of Fig. 13.

Like reference-letters denote like parts throughout.

The object of my invention is to improve the construction of that class of liquid-coolers which are separable for cleansing purposes. To attain said end, I construct my said new liquid-cooler in substantially the following manner, namely: To form the main body of my said cooler, I make two concentric spirally-grooved and spirally-threaded cylindrical shells *a* and *b*, which when united form a spiral worm *e*, of which the superimposed coils thereof are connected by a male and female thread *cd*. Each cylinder *a* and *b* forms one-half of each coil *e* and one part, as *c* and *d*, of the male and female threads *c* and *d*. The construction of said parts admits the insertion of one of said cylinders into the other by screwing them together, as shown in Fig. 4, where the said concentric cylinders are only partly connected, and in Figs. 1 and 2, where the parts are completely connected, or one within the other. Said parts *a* and *b* are each preferably made of a single piece of sheet metal

pressed and worked into its completed form; but owing to the great difficulty of connecting such spirally warped and twisted sheets with suitable or easily-constructible heads and to overcome said difficulty and expense I provide said shells *a* and *b* with independent and, preferably, cast ends *f* for each end of the outer cylinder and *g* for the ends of the inner cylinder, which are provided with cylindrical ends or necks *h* for the ends of the outer cylinder and with necks or ends *i* for the ends of the inner cylinder. The said external ends *f* are threaded internally with male threads *j* to fit into the female threads *d* of the internal cylinder *b* and on each side of said thread are cut out and made to fit tightly upon the surfaces of the coil on both sides of said male thread, as shown. The ends *g* of the inner shell *b* are formed and snugly fitted to the coils on the interior shell *b* and connected with the neck *i*, fitting into the annular grooves *k* of the lower head *m* and upper head *n*, and the necks *h* of the pieces *f* fit into the annular grooves *l* of the heads *m*, and between said annular grooves for said necks is the annular semicylindrical groove *o*, in each head *m* and *n*, to which are fitted the necks *h* and *i* in the manner substantially as shown to form a complete channel of the same area, at least, as that of the coil. The upper head *n* has an inlet or outlet *p* and the lower head an outlet *q*. The wall *s* on the interior of the annular groove *k* projects upward above the surrounding surface and has its outer face rounded, as shown, to receive and enter the neck *i* quickly and to thereby form a guide for facilitating the quick and ready assemblage of the several parts, which are often separated for the purpose of cleansing them, a point which is the main feature of this invention. The said cylinders *a* and *b* may be screwed apart, cleaned, reconnected, and reassembled to their heads, as shown. All said parts are held together fixedly by a single central rod *t*, threaded and held fixedly in the hub *u* of the head *m* and whereof the other threaded end passes loosely through a hole in the hub *u* of the head *n*, on which is a nut *v*, having a hand-wheel *w*, whereby said parts may be firmly compressed and held upon each other.

The ends *f* and *g* are cast and fitted to the

threads of their respective parts and the heads m and n in the form and manner substantially as shown to cheapen the construction of my said new device and to permit rapid
5 sundering, cleaning, and reassembling of the parts, requiring but very ordinary intelligence and experience for its successful use.

The armed hubs u of the annulars m and n admit ice and water into the interior of the in-
10 terior shell, which with contact of like material on the outer shell forms a rapid-cooling coil.

What I claim is—

1. The combination with concentric shells each forming a half part of a spiral coil, of
15 correspondingly-pitched male and female threads to connect said shells into a continuous spiral coil, substantially as specified.

2. The combination with concentric shells, each forming a half part of a spiral coil, of
20 independent and correspondingly-threaded parts secured to the ends of said shells, and

annular and annularly-grooved ends with inlets and outlets secured to the ends of said coils and means to severally connect said parts, substantially as specified. 25

3. The combination with concentric shells forming concentric half parts of a spiral coil, of spiral male and female threads on said shells, annular ends with exit and entrance to the ends of said coil, and means to connect
30 and means to hold said coil and ends together, substantially as specified.

4. The combination with concentric shells forming concentric half parts of a spiral coil, of male and female threads on said shells, and
35 ends provided with entrance and exit openings to and from said coil, substantially as specified.

OTTO RODERWALD.

Witnesses:

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