

F. HAMPL.
CENTRIFUGAL DEVICE.
APPLICATION FILED MAR. 25, 1908.

928,750.

Patented July 20, 1909.

2 SHEETS—SHEET 1.

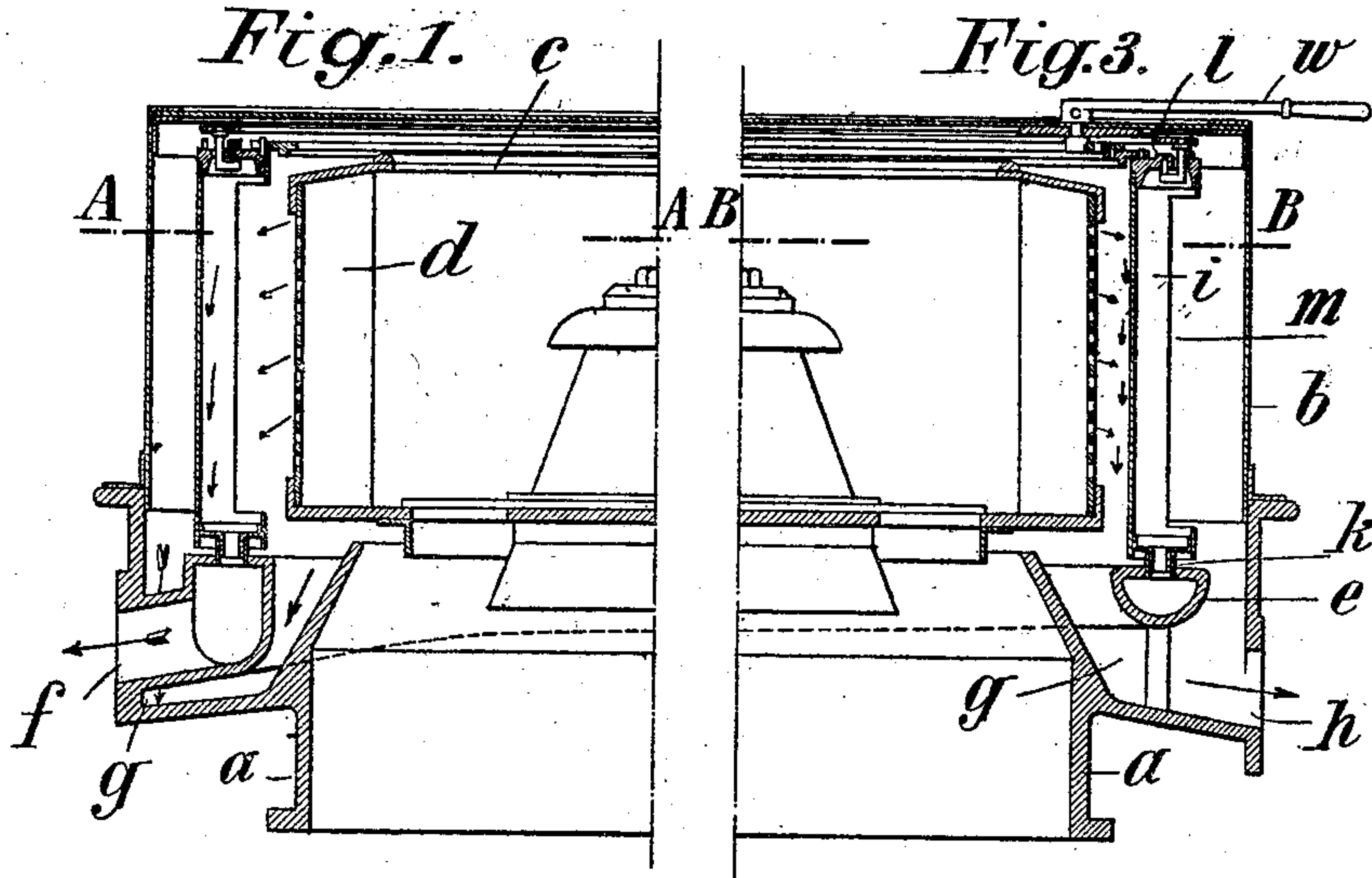
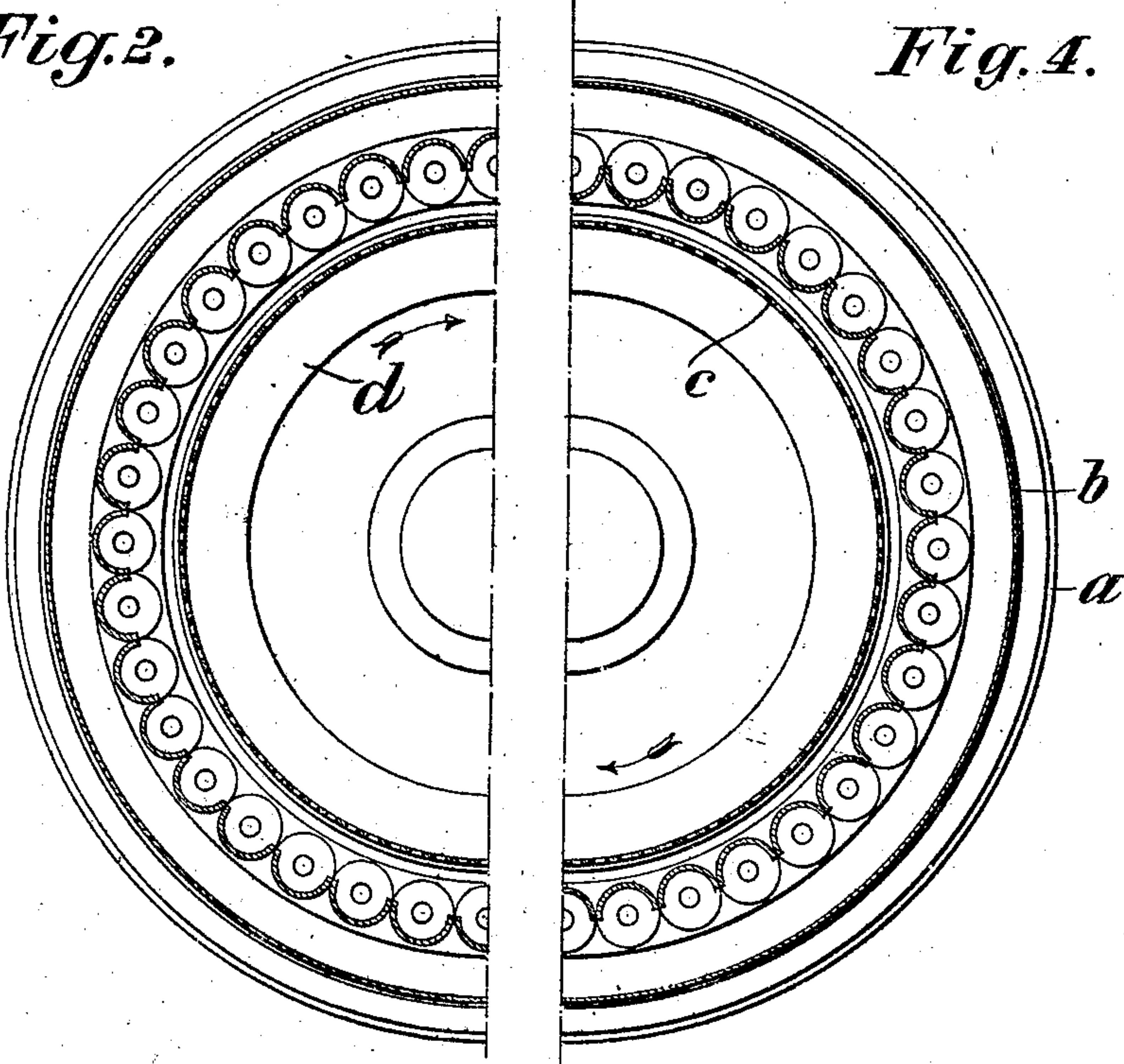


Fig. 2.



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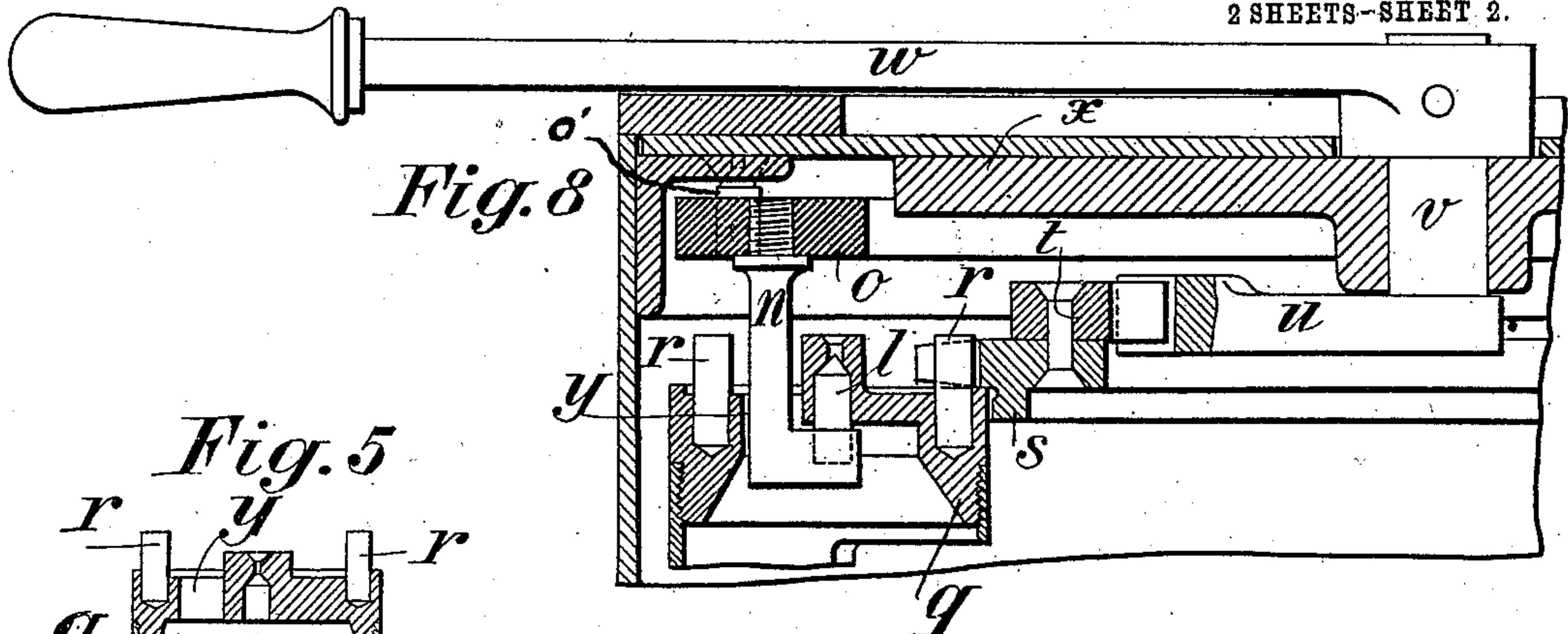


Fig. 8

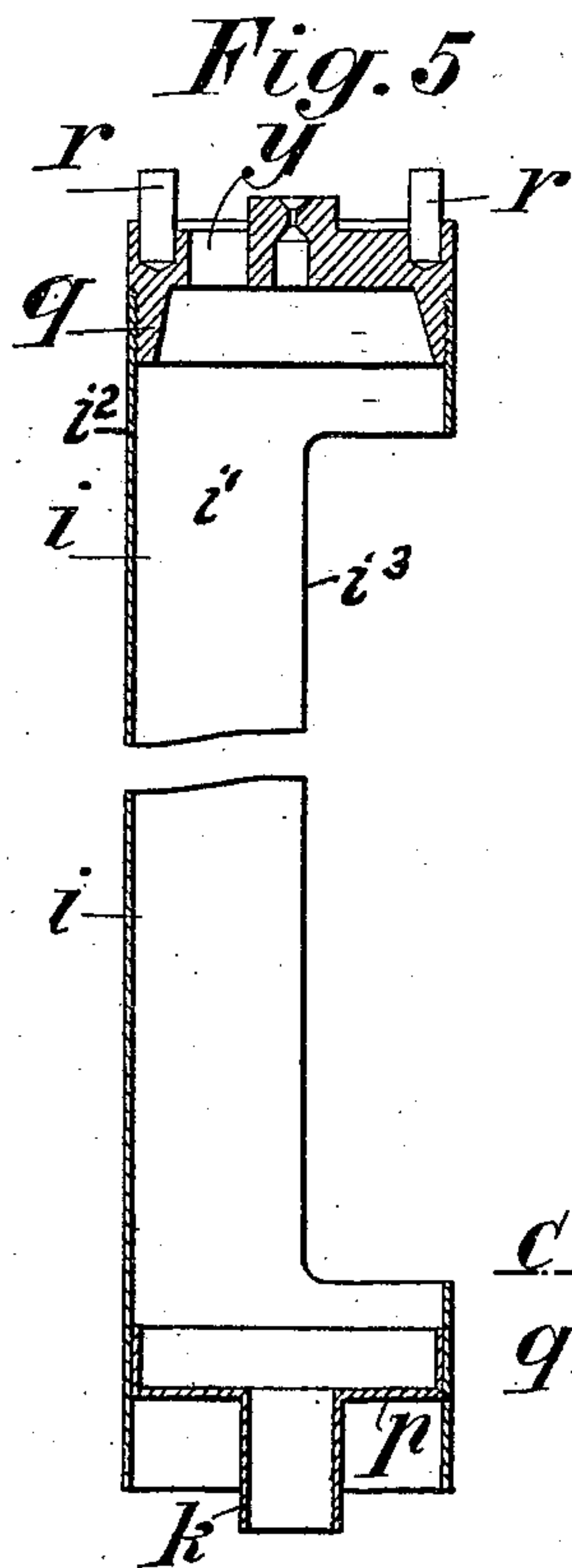


Fig. 5

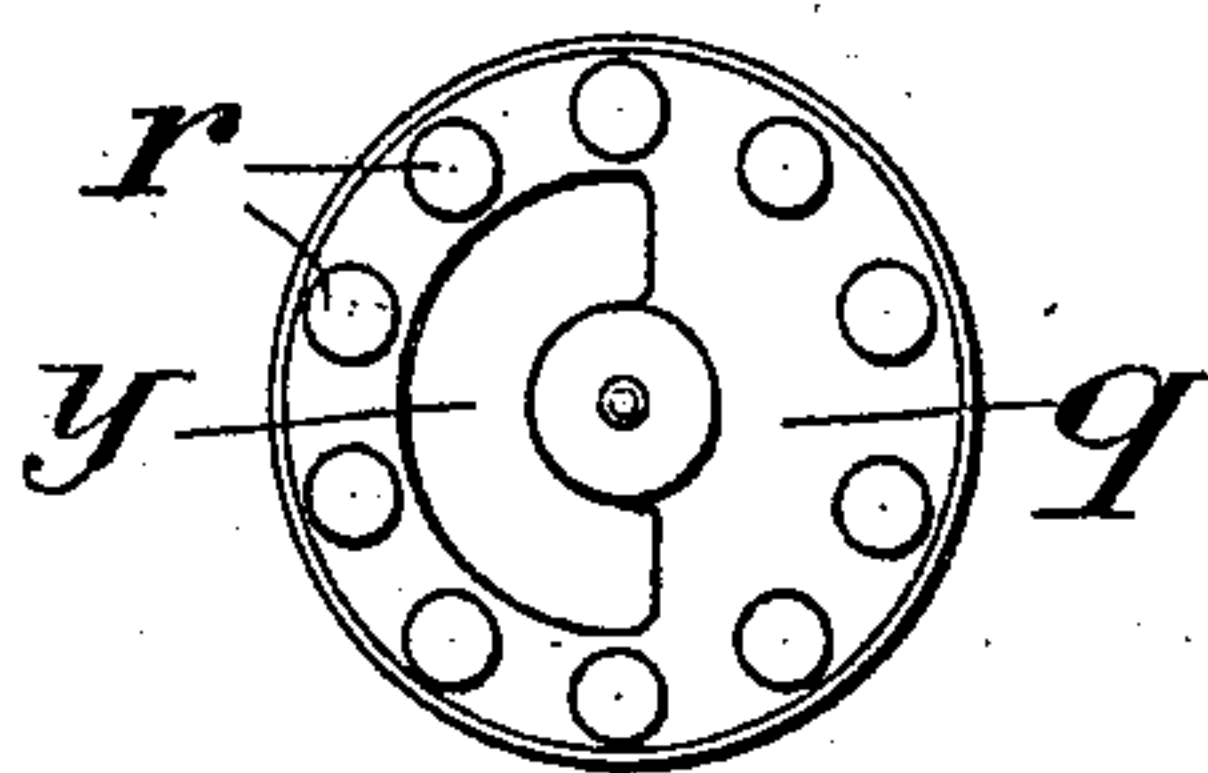


Fig. 6

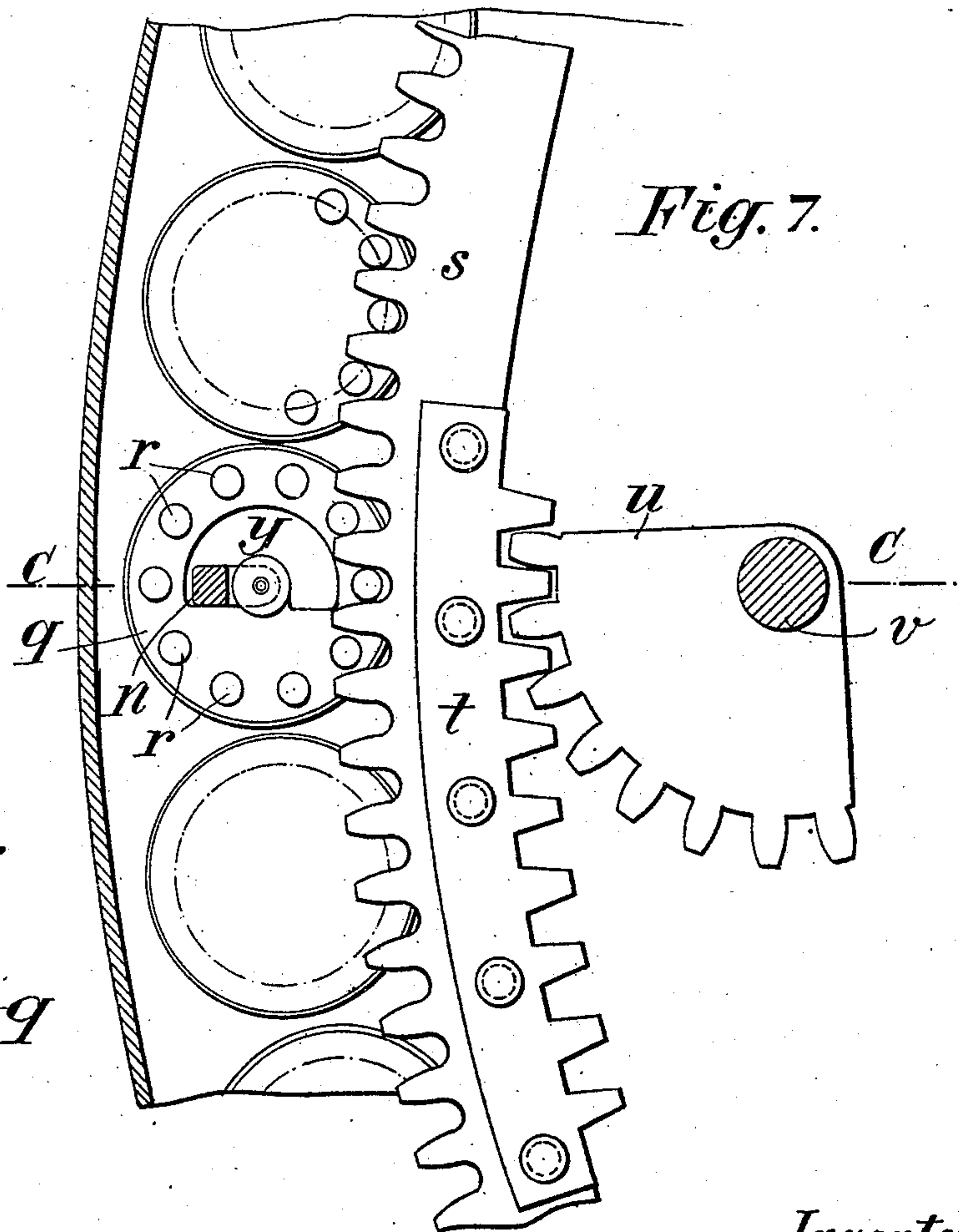


Fig. 7

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UNITED STATES PATENT OFFICE.

FRANZ HAMPL, OF ELBE-TEINITZ, AUSTRIA-HUNGARY.

CENTRIFUGAL DEVICE.

No. 928,750.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed March 25, 1908. Serial No. 423,164.

To all whom it may concern:

Be it known that I, FRANZ HAMPL, a subject of the Emperor of Austria-Hungary, and resident of Elbe-Teinitz, Austria-Hungary, have invented a certain new and useful Centrifugal Device, of which the following is a specification.

When mother-liquor is obtained from crystals, such as sugar crystals for instance, by centrifugal action, it is necessary to purify the crystals by means of washing liquid or the like and therefore the mother-liquor when discharged is accompanied by liquids of different degrees of purity resulting from the washing operation. The separation of the mother-liquor from the liquid in centrifugal apparatus has heretofore been found to be difficult because the mother-liquor is discharged very slowly and therefore the liquids discharged immediately following the washing operation are mixed with the mother-liquor under way.

The present invention has for its object a provision of centrifugal apparatus wherein a plurality of movable receivers are arranged around the zone of discharge of the usual drum, the receivers being adapted to be turned toward or away from the drum so as to either receive or deflect the liquids discharged therefrom.

The invention will be more fully described in connection with the accompanying drawing and will be more particularly pointed out and ascertained in and by the appended claims.

In the drawing:—Figure 1, is a partial vertical sectional view of a centrifugal apparatus embodying my invention showing the receivers in a position to admit liquids discharged from the drum. Fig. 2 is a sectional view on lines A—A of Fig. 1. Fig. 3 is a view similar to Fig. 1 showing the receivers in a position to deflect the liquid discharging from the drum. Fig. 4 is a sectional view on line B—B of Fig. 3. Fig. 5 is a vertical sectional view of one of the receivers detached from the apparatus. Fig. 6 is a plan view thereof. Fig. 7 is a plan view partly in section of the actuating means for the receivers. Fig. 8 is a sectional view on line C—C of Fig. 7.

Like characters of reference designate similar parts throughout the different figures of the drawing.

In the embodiment shown a base *a* is provided and is equipped with a trough *g* for receiving the wash water and a closed run-way or tube *e* for receiving the mother-liquor. The trough *g*, which is preferably open, is provided with an outlet at *h* and the tube or run-way *e* is provided with an outlet at *f* and both the trough and run-way are of circular formation. An outer casing is indicated at *b* and extends upwardly from the base *a* and closes the upper portion of the apparatus. A supporting member preferably in the form of a ring *o* is secured at *o'* to a part of the casing *b* and is provided with a plurality of depending bearing supports *n* provided with bearing studs *l* the purpose of which will hereinafter more fully appear. A rotatable drum *c* having a perforated peripheral wall is disposed within the casing and is provided with a pocket or receiving peripheral cavity for the material which is indicated at *d*. Said drum may be rotated in any convenient manner not shown. Between the drum *c* and the outer casing *b* a plurality of receivers are interposed which preferably surround the drum *c* and form thereabout a practically closed wall. Said receivers are indicated at *i* and are provided with receiving portions *i'* and deflecting portions *i''* and said portions are located within the zone of discharge of the drum *c*. Said receiver is preferably formed of a tube the receiving portions *i'* being made accessible to the discharging liquid by cutting away a portion of each tube as at *i'''*. In order that the portions *i'* and *i''* may be moved into an acting relation with respect to the liquid discharged from the drum *c* said receivers are mounted in a manner to be rotated axially and means are provided whereby a single operating member may be employed to change the position of all of said receivers simultaneously from a receiving to a deflecting position, and vice versa. First referring to the mounting of said receiver the lower ends are preferably provided with cup-bearings *p* which form the bottom of said receiver. The bearing extensions *k*, depending from the cup *p*, extend into the tube or run-way *e* and the latter forms a bearing box by means of which axial rotation may be imparted to the receivers *i* and whereby the same may be held in a given position, with respect to their lower ends. The upper ends of said receivers *i* are pro-

vided with heads q and in the present embodiment said heads q are provided with axially disposed recesses for receiving the bearing-studs l and the supports n not only
 5 serve to retain the upper end of the receivers i in axial alinement with the lower end but they also serve to support the receivers i .

Means for rotating the receivers i consist in part of a circular rack s the teeth of which
 10 engage rack studs r projecting upwardly from the heads q and said rack s is provided with a segment rack t which meshes with a toothed segment u . Said segment u is mounted upon a vertical shaft v upon the
 15 upper end of which a lever w is secured. The heads q of the receivers i are provided with openings y to which the support n projects.

When the mass d to be treated or subjected
 20 to centrifugal action is disposed in the drum c the receivers i occupy the position shown in Fig. 1, the receiving portion i' admitting the horizontal jets discharged from the drum and conveying the mother-liquor to the cups
 25 p from which it passes through the extensions k to the run-way or tube e from whence it is delivered to the outlet f . Subsequent to the separation of the mother-liquor and prior to the washing operation the handle or
 30 lever w is actuated to rotate the receivers i and bring the deflecting portions i'' thereof abreast of the drum c as shown in Fig. 3, from which it will be seen the washing liquid is deflected by the portions i'' of said receivers
 35 into the trough g from whence it flows outwardly to the outer casing. It will be seen that the portions i' and i'' are distinct and separate and that the mother-liquor is never brought into contact with the washing liquid
 40 as in either positions of the receivers. The adjacent margins abut as shown in Figs. 2 and 4 so as to form a continuous wall around the drum c . After the receivers have been turned in the position shown in Fig. 3 the
 45 mother-liquor in the portions i' may slowly descend and continue to discharge through the tube e and as the deflecting portions i'' extend below the cup p it would be impossible for the washing liquid to in any way
 50 gain access to the tube e or in any way intermingle with the mother-liquor. Furthermore the distinct and independent portions i' and i'' protect the mother-liquor and the washing liquid with which the respective
 55 portions are moistened so that after the portion i'' is reversed from a non-acting position to an acting position it is used solely to receive the mother-liquor, the same being true of the portion i' .

60 I claim:—

1. A centrifugal separator comprising in combination, a rotatable drum, a closed wall comprising independent reversible
 65 means abreast of said drum constructed to form a closed wall thereabout in either posi-

tion of adjustment, and independent means for conveying the liquid discharged by said first mentioned independent means.

2. A centrifugal separator comprising in combination, a rotatable drum, a closed wall
 70 surrounding said drum and composed of a plurality of reversible receivers provided with receiving and deflecting portions constructed to form a closed wall about said drum in either of said reverse positions, and
 75 means for reversing the position of said receivers.

3. A centrifugal separator comprising in combination, a movable centrifugal member, a closed wall comprising a plurality of re-
 80 versible receivers provided with receiving and deflecting portions located abreast of said member constructed to form a closed receiving or deflecting wall about said member, and means for reversing said receivers
 85 to alternately bring said receiving and deflecting portions into acting relation with respect to said member.

4. A centrifugal separator comprising in combination, a movable separating member, a wall surrounding said member comprising
 90 a plurality of movable receivers located abreast of said member, and means for reversing said receivers to bring the same out of receiving relation with respect to said
 95 member and form a closed wall thereabout.

5. A centrifugal separator comprising in combination, a rotatable drum, a wall surrounding said drum composed of reversible
 100 receivers provided with receiving and deflecting portions located abreast of said drum, means for reversing said receivers to alternately bring said receiving and deflecting portions into acting relation with respect to
 105 said drum and form a closed wall in either of the reverse adjustments, and independent means for receiving the liquid discharged by the deflecting and receiving portions.

6. A centrifugal separator comprising in combination, a movably separating member, a closed wall comprising independent receiving
 110 and deflecting means located abreast of said member, and mechanism for reversing said means, said means forming a closed wall about said member in either position of
 115 adjustment.

7. A centrifugal separator comprising in combination, a rotatable drum, a closed wall comprising a plurality of axially movable receivers located abreast of said drum
 120 and provided with receiving and deflecting portions constructed and arranged to form a closed wall about said drum in either position of adjustment, and means for reversing said receivers to alternately bring said de-
 125 flecting and receiving portions into acting relation with respect to said drum.

8. A centrifugal separator comprising in combination, a rotatable separating member, a plurality of axially movable receivers
 130

provided with receiving and deflecting portions located abreast of said member and forming a continuous wall for the same, and means for reversing the position of said receivers to alternately bring said receiving and deflecting portions into acting relation with respect to said member and form a closed wall thereabout.

9. A centrifugal separator comprising in combination, a separating member, a plurality of receivers provided with receiving and deflecting portions located abreast of said member, and a single operating mechanism for reversing said receivers to alternately bring said receiving and deflecting portions into acting relation with respect to said member and form a closed wall thereabout.

10. A centrifugal separator comprising in combination, a separating member, a plurality of reversible receivers abreast of said members, and means communicating with said receivers for carrying off the liquor therefrom and forming a bearing for said receivers.

11. A centrifugal separator comprising in combination, a separating member, a plurality of movable receivers abreast of said separator, said receivers having hollow bearing members at their lower ends for discharging the liquid contents of the receivers, and a tube or runway for receiving said bearings and the contents discharged therefrom.

12. A centrifugal separator comprising in combination, a separating member, a plurality of reversible receivers abreast of said

separator, and a plurality of extending bearing members projecting into said receivers and supporting the same at their upper ends.

13. A centrifugal separator comprising in combination, a separating member, a plurality of receivers abreast of said separators, and a plurality of bearing members engaging and supporting said receivers wholly at the upper ends thereof.

14. A centrifugal separator comprising in combination, a separating member, a plurality of movable receivers abreast of said member, bearing members engaging and supporting said receivers wholly at their upper ends, and means engaging said receivers at their upper ends for rotating the same about said bearings.

15. A centrifugal separator comprising in combination, a rotatable separating member, a plurality of reversible receivers abreast of said separator and provided with receiving and deflecting portions each collectively arranged to form a continuously closed wall in either position of adjustment, independent discharge outlets for said receiving and deflecting portions, and gearing mechanism for reversing the position of said receivers to alternately bring said receiving and deflecting portions into acting relation with said separating member.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

FRANZ HAMPL.

Witnesses:

ADOLPH FISCHER,
ARTHUR SCHWEZ.