

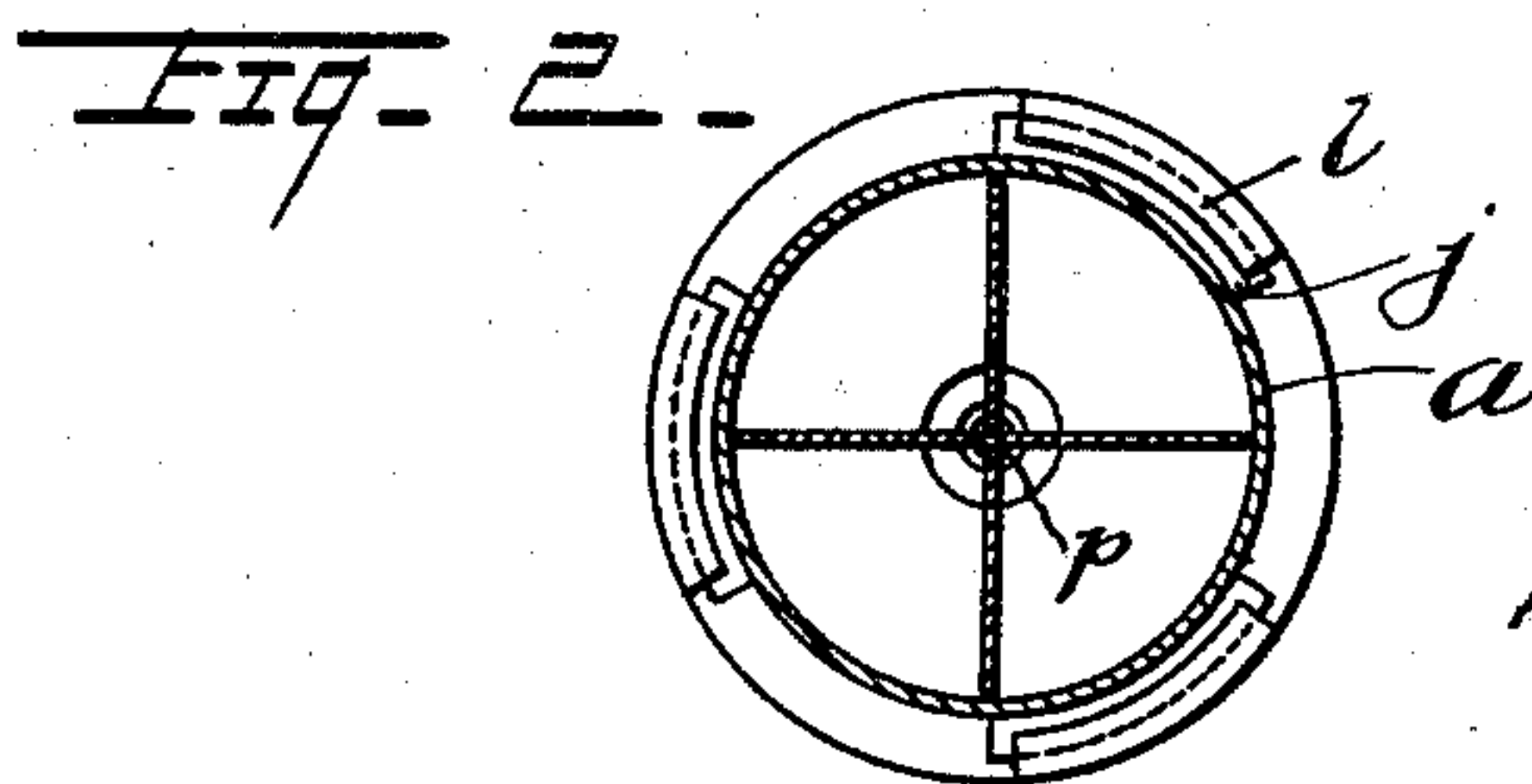
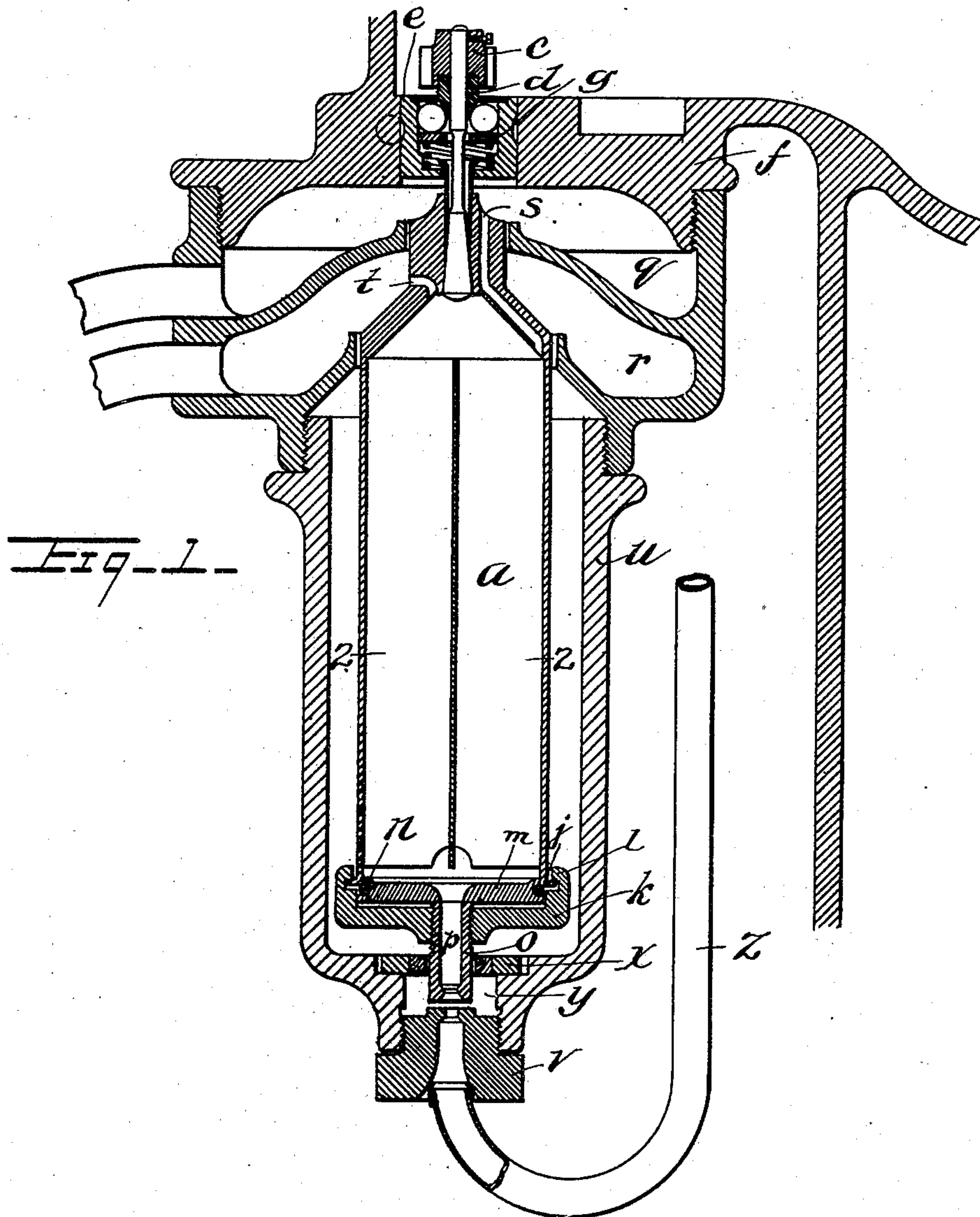
No. 685,874.

Patented Nov. 5, 1901.

D. T. SHARPLES.
CENTRIFUGAL LIQUID SEPARATOR.

(Application filed July 18, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

DAVID TOWNSEND SHARPLES, OF WESTCHESTER, PENNSYLVANIA.

CENTRIFUGAL LIQUID-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 685,874, dated November 5, 1901.

Application filed July 18, 1900. Serial No. 23,993. (No model.)

To all whom it may concern:

Be it known that I, DAVID TOWNSEND SHARPLES, a citizen of the United States of America, and a resident of Westchester, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Centrifugal Machines, of which the following is a specification.

My improvements relate particularly to centrifugal liquid-separators, and are fully described in connection with the accompanying drawings.

Figure 1 is a sectional elevation of a machine embodying my improvements. Fig. 2 is a cross-section of the centrifugal vessel, taken on the line 2 2 of Fig. 1.

The rotary separator vessel *a* is of tubular form, as shown, and is carried entirely by means of a top spindle *b*, which is so mounted in a bearing located above the vessel as to allow the suspended rotary vessel to swing out of the normal axis of rotation whenever such a movement is developed by the operation of the vessel without subjecting it to any action in restraint of said swing other than the natural effect of gravity and the analogous influences provided for as hereinafter described.

The spindle *b* is preferably secured axially in the top of the vessel *a*, as shown, with its tapered lower end firmly driven into the correspondingly-tapered axial opening therein. Its projecting upper portion is connected to suitable driving means, as wheel *c*, and is provided with a bearing-head *d*, which rests upon a series of balls arranged around the body of the spindle in a circular pocket formed in a bearing-ring *e*, rigidly securable to the fixed supporting-frame *f* of the machine. These balls bear upon an annular plate *g*, which is supported on a spiral spring *h* within said pocket and forms a vertically-yielding suspension-bearing for the rotary vessel.

The compound liquid to be separated is admitted through the axial opening *p* at the bottom of the vessel, and the heavier and lighter constituents are continuously discharged, as usual, through outlets *s* and *t*, respectively, at the top of the vessel, the wall of which is imperforate, as usual in this class of machines.

The open lower end of the tubular vessel is preferably provided with flange-like projections *j*, regularly spaced around the periphery and designed to be engaged by similar reversed projections *l* on the bottom cap *k* after the latter has been applied to the vessel by passing its projections *l* between the projections *j* on the vessel and then turning the cap in a well-known manner. Within the cylindrically-recessed cap *k* is provided a loose joint-plate *m*, preferably fitted with a rubber ring *n*, which latter is adapted to be pressed tightly against the lower edge of the vessel by the forcing upward of the plate *m* within the cap. This is effected, as shown, by means of a hollow screw-neck *o*, which engages a central opening in the cap *k* and serves to draw the latter into firm connection with the vessel at the same time that it forces the joint-plate into close contact with its lower edge. The cap *k* is accurately centered on the vessel, so that the hollow neck, in connection with a central opening in the plate *m*, forms an axial inlet to the vessel.

The receiving-pans *q* and *r* for the lighter and heavier liquids discharged at the top of the vessel through the respective outlets *s* and *t* are formed, as shown, in a single piece, which is accurately secured to and carried by the overhanging portion *f* of the frame, and a fixed casing *u* for the rotary vessel is in like manner secured to and carried by the pan-casing, this construction being preferred for machines of small size, though it may be modified, if desired, to provide a more direct connection with the frame.

At the bottom of the casing *u* and directly under the inlet-neck *o* is a fixed nozzle *v*, the reduced outlet of which is located in the normal axis of rotation of the vessel and slightly below the flared inlet *p* to the neck *o*, and surrounding which is a receiving-chamber or drip-cup *y*, formed in the lower portion of the casing. A supply-pipe *z*, connected with any suitable reservoir, conveys the liquid to be operated on to the nozzle *v* under a sufficient pressure to discharge from the latter and through the inlet-neck *o* into the vessel a vertical column of the liquid. Any portion of the latter which may fail to properly enter or to be retained in the rotary vessel will be

caught in the drip cup or chamber *y* and brought under the action of the inflowing jet, so as to be drawn in therewith through the flared opening *p*. This construction of
5 feed-inlet, however, together with the other features not herein referred to, form no part of the present invention, the matter of which is particularly pointed out in the following claims.

10 What I claim is—

1. In a centrifugal machine a rotary separator vessel having an open end provided at intervals with flange-like projections, in combination with a cap-piece provided with re-
15 versed projections adapted by a partial turn of the cap to engage or disengage with said projections on the vessel, a joint-plate loose within said cap, and a clamping device in the latter adapted to simultaneously seat said

joint and secure the cap, substantially as set forth. 20

2. In a centrifugal machine a rotary separator vessel having an open end provided at intervals with flange-like projections, in combination with a cap-piece provided with re-
25 versed projections adapted by a partial turn of the cap to engage or disengage with said projections on the vessel, a joint-plate loose within said cap, and a clamping device adapted to force the joint-plate and the cap apart,
30 thus seating both joint-plate and cap and securing the same, substantially as set forth.

Signed by me at Westchester, Pennsylvania, this 9th day of July, 1900.

DAVID TOWNSEND SHARPLES.

Witnesses:

J. ROBERTS COMFORT,
H. S. LIMBURGER.