

(No Model.)

R. A. LISTER & M. PEDERSEN.
CENTRIFUGAL MACHINE.

No. 502,859.

Patented Aug. 8, 1893.

Fig. 1.

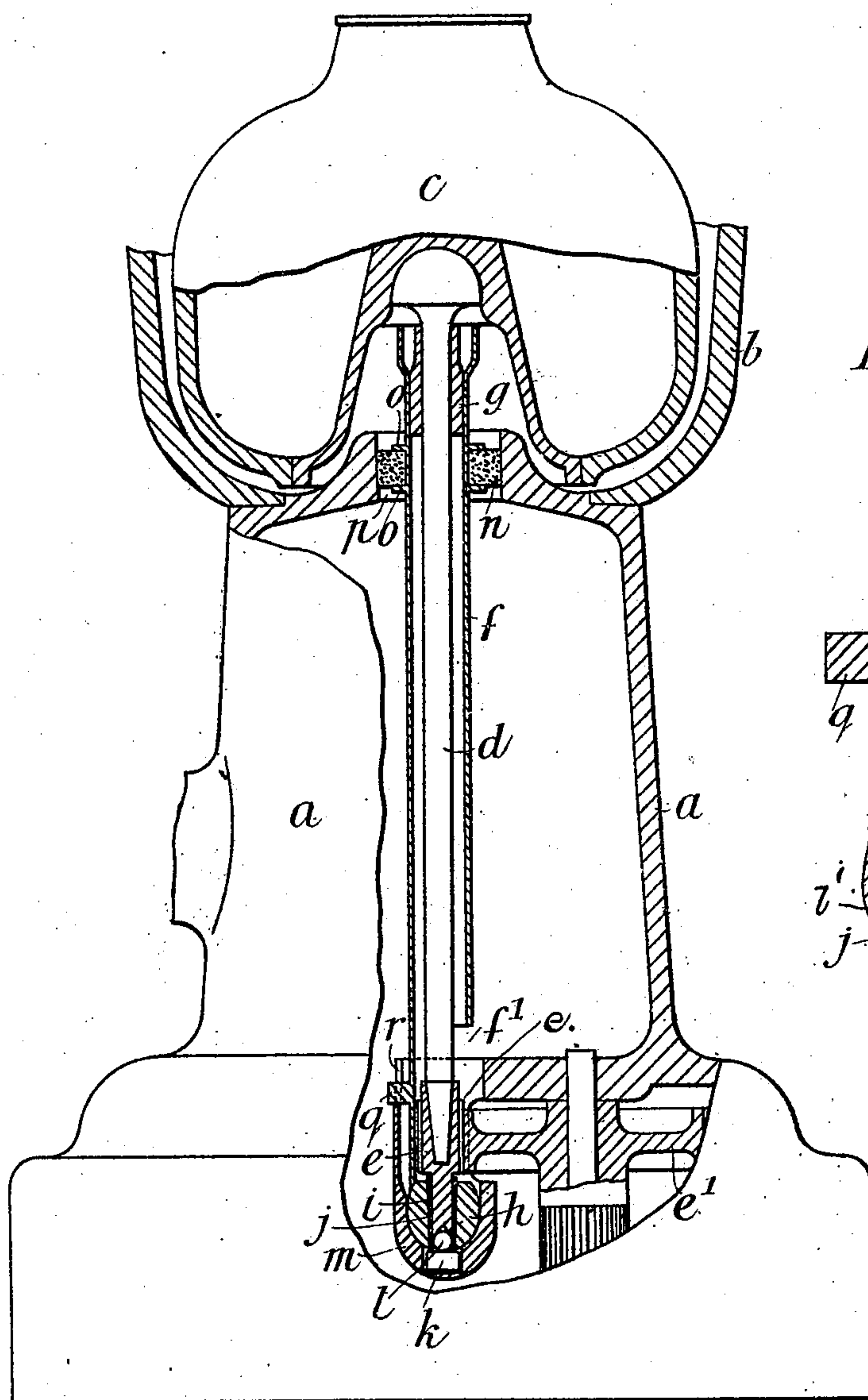
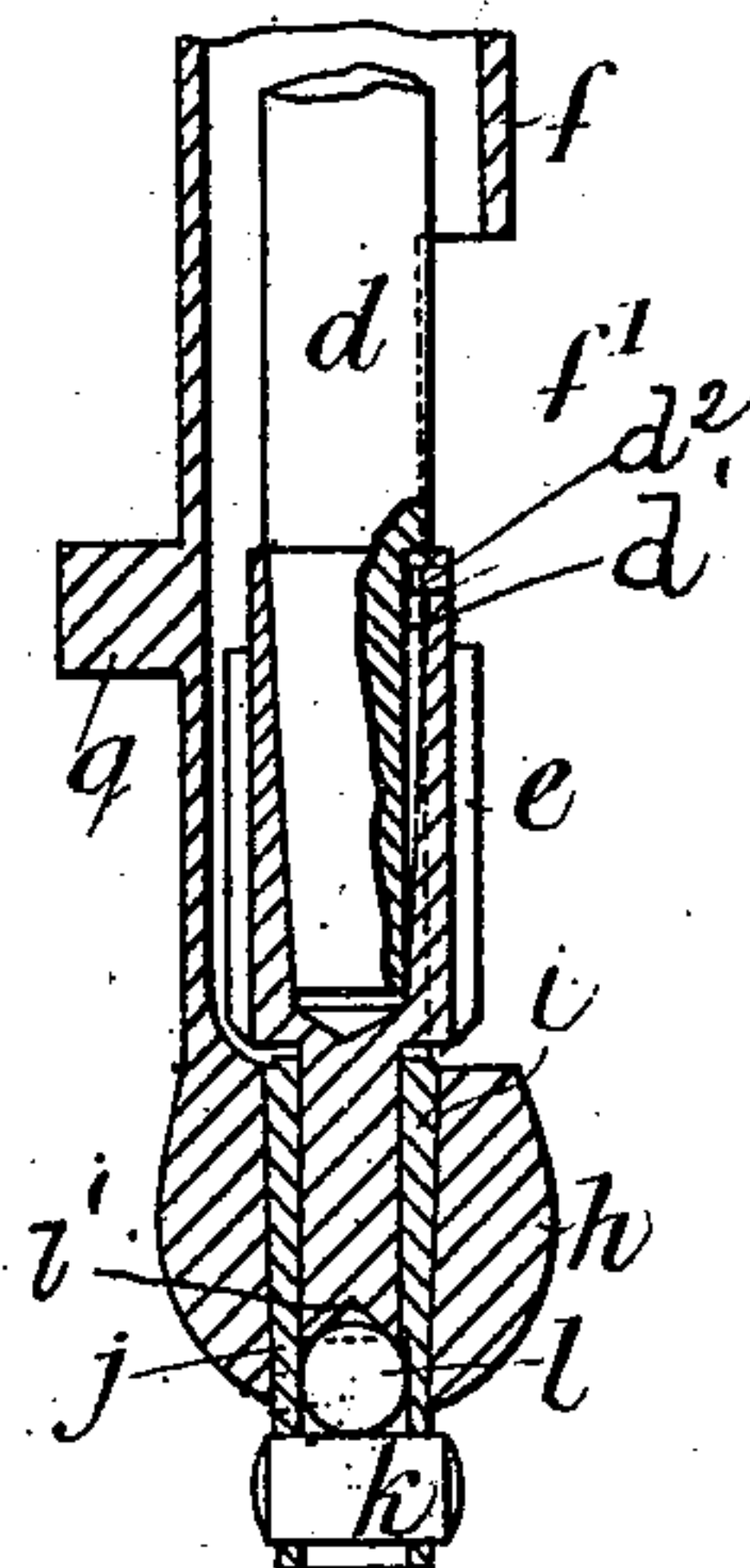


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

ROBERT ASHTON LISTER AND MIKAEL PEDERSEN, OF DURSLEY, ENGLAND.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,859, dated August 8, 1893.

Application filed May 8, 1893. Serial No. 473,475. (No model.) Patented in Belgium January 14, 1893, No. 102,975, and in Italy March 31, 1893, XXVII, 33,438, LXV, 399.

To all whom it may concern:

Be it known that we, ROBERT ASHTON LISTER and MIKAEL PEDERSEN, subjects of the Queen of Great Britain, residing at Dursley, England, have invented new and useful Improvements in or Applicable to Centrifugal Machines, (for which we have obtained patents in Belgium, No. 102,975, dated January 14, 1893, and in Italy, XXVII, No. 33,438, and LXV, No. 399, dated March 31, 1893,) of which the following is a specification.

Our invention relates to centrifugal machines and comprises improvements connected with the vertical spindle carrying the rotating drum or basket and in the means for supporting the same.

To enable the said invention to be fully understood we will describe the same as applied to a centrifugal machine for separating liquids and of the kind forming the subject matter of our application, Serial No. 451,687.

In the accompanying drawings:—Figure 1 is a sectional elevation of so much of such a centrifugal separating machine as is necessary to illustrate our invention, and Fig. 2 is a view drawn to a larger scale of part of the apparatus shown in Fig. 1.

a is the frame or standard of the machine upon the head of which standard is mounted a casing *b* for containing the centrifugal bowl or drum *c*.

d is the vertical spindle carrying the said drum, and *e* is the pinion at the lower end of the same through which motion is imparted to the said spindle by means of the gear wheel *e'*.

In the drawings the pinion *e* is represented as being made separate from the spindle *d* the two parts being connected namely, in the lower part of spindle *d*, is a groove *d'* to receive and engage with a pin *d''* projecting inwardly from the lower or pinion part of the spindle. When thus engaged, the two parts act as one, but its upper part can be easily raised and detached from its lower part.

f is a tube or sleeve inclosing the spindle *d*, which tube or sleeve is partially cut away at *f'* to allow the gear wheel *e'* to engage with the teeth of the pinion *e* and to allow of introducing the pinion (when made separate from the spindle) into and removing it from

the sleeve. The main or neck bearing of the spindle is formed in the upper end of the said sleeve by a bush *g* while the lower end of the said sleeve is formed of nearly spherical shape as at *h* and carries a foot step bearing for the spindle. This foot step bearing comprises a central vertical conical hole *i* provided with a lining or bush *j* which is made conical so that it can be fitted tightly within the hole *i* and which projects downwardly below the bottom of the spherical end. The weight of the spindle *d* is supported by a roller *k* inserted transversely through the projecting portion of the bush *j* as shown most clearly in Fig. 2, an antifriction ball *l* being placed between the roller and the spindle, the lower end of which spindle has preferably a countersink or cavity *l'* to receive such ball.

The tube *f* containing the spindle *d* is supported at its lower end in a cup-shaped hanger or bracket *m* formed upon the frame *a* and having a seat in which the spherical end *h* of the tube *f* rests in such a manner that slight lateral movements of the tube can take place. The upper end of the tube *f* is supported laterally by means of a ring *n* of india rubber or other flexible material which fits upon the tube *f* between two collars *o o* near this upper end, and also within an opening *p* in the upper end of the standard *a*, the said elastic ring serving to impart a certain amount of elasticity to the spindle in its movements. In order to prevent the tube or sleeve *f* from rotating, a projection *q* is formed upon it, the said projection engaging in a slot or notch *r* formed in the upper part of the hanger *m*.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a centrifugal machine, a footstep bearing for the vertical spindle provided at its base with a seat for a roller, on which a ball forming the bearing point of said spindle runs, in combination with such ball and roller.

2. In a centrifugal machine, the combination with the vertical spindle and with its pinion and driving wheel, of a tube or sleeve inclosing said spindle and having the spherical lower end carrying the footsteps and main bearings therefor, the said tube or sleeve hav-

ing a seat for an elastic bushing or collar near its upper end, and having at its lower end an opening for allowing the pinion to gear with the driving wheel and to allow the lower or
5 pinion end of the spindle to be easily removed and put in its place;—and a lug or projection to prevent the rotation of the tube or sleeve, all substantially as described.

3. In a centrifugal machine, in combination
10 with the tube or sleeve and its spindle bearing provided with a lug or projection, the

main frame constructed with a hanger having a seat for the spherically-shaped end of said tube or sleeve, and with a notch or slot to receive such lug or projection to prevent 15 the sleeve from rotating.

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Witnesses:

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