

No. 735,855.

PATENTED AUG. 11, 1903.

F. BLANC.

CLASSIFYING APPARATUS FOR COAL OR OTHER MATERIALS.

APPLICATION FILED JULY 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.

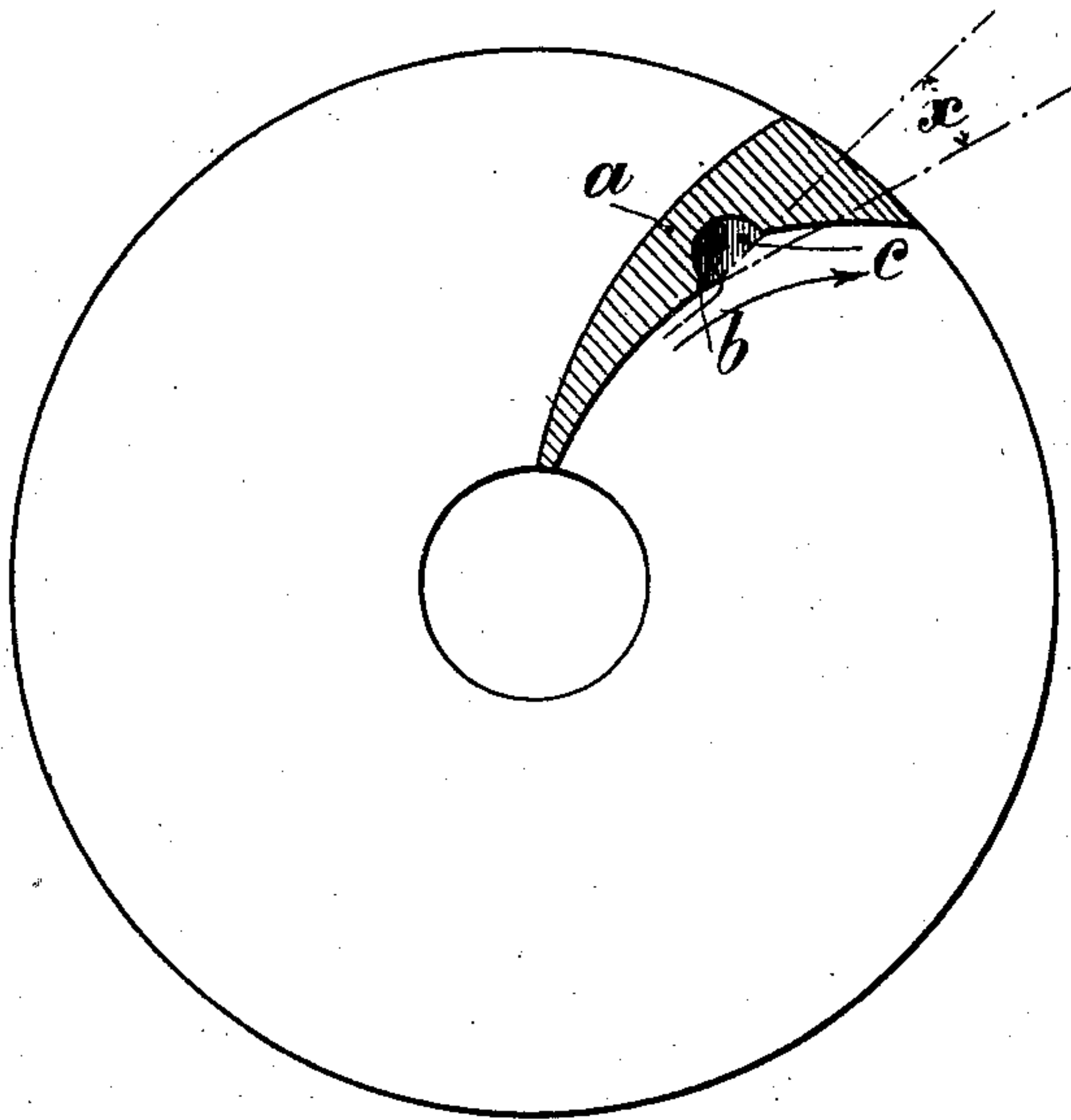
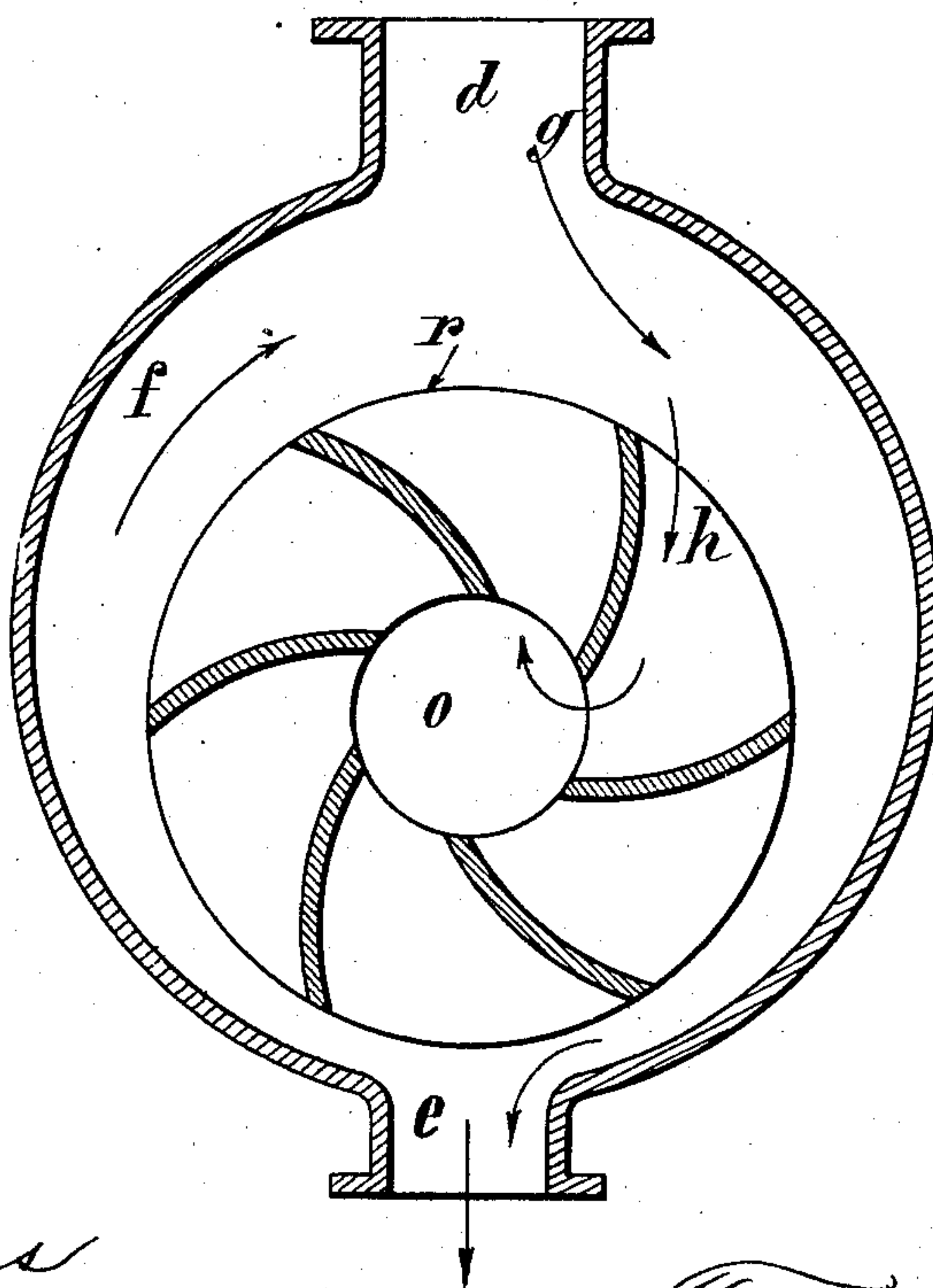


FIG. 2.



Witnesses  
H. K. Brown  
C. W. Hartup

Inventor  
François Blanc,  
By O. M. E. Fowler,  
Attorney

No. 735,855.

PATENTED AUG. 11, 1903.

F. BLANC.

CLASSIFYING APPARATUS FOR COAL OR OTHER MATERIALS.

APPLICATION FILED JULY 8, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

FIG. 1.<sup>a</sup>

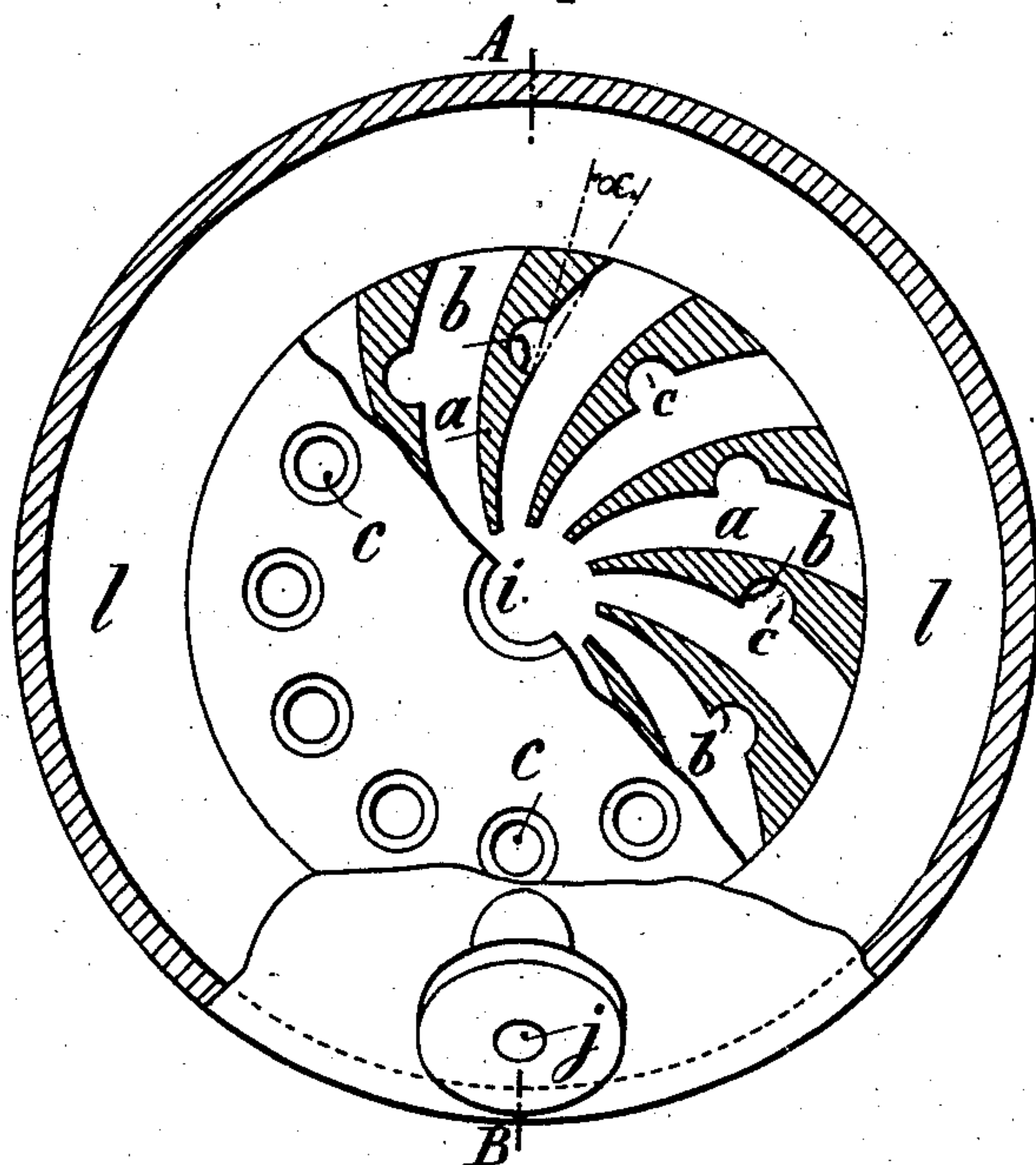
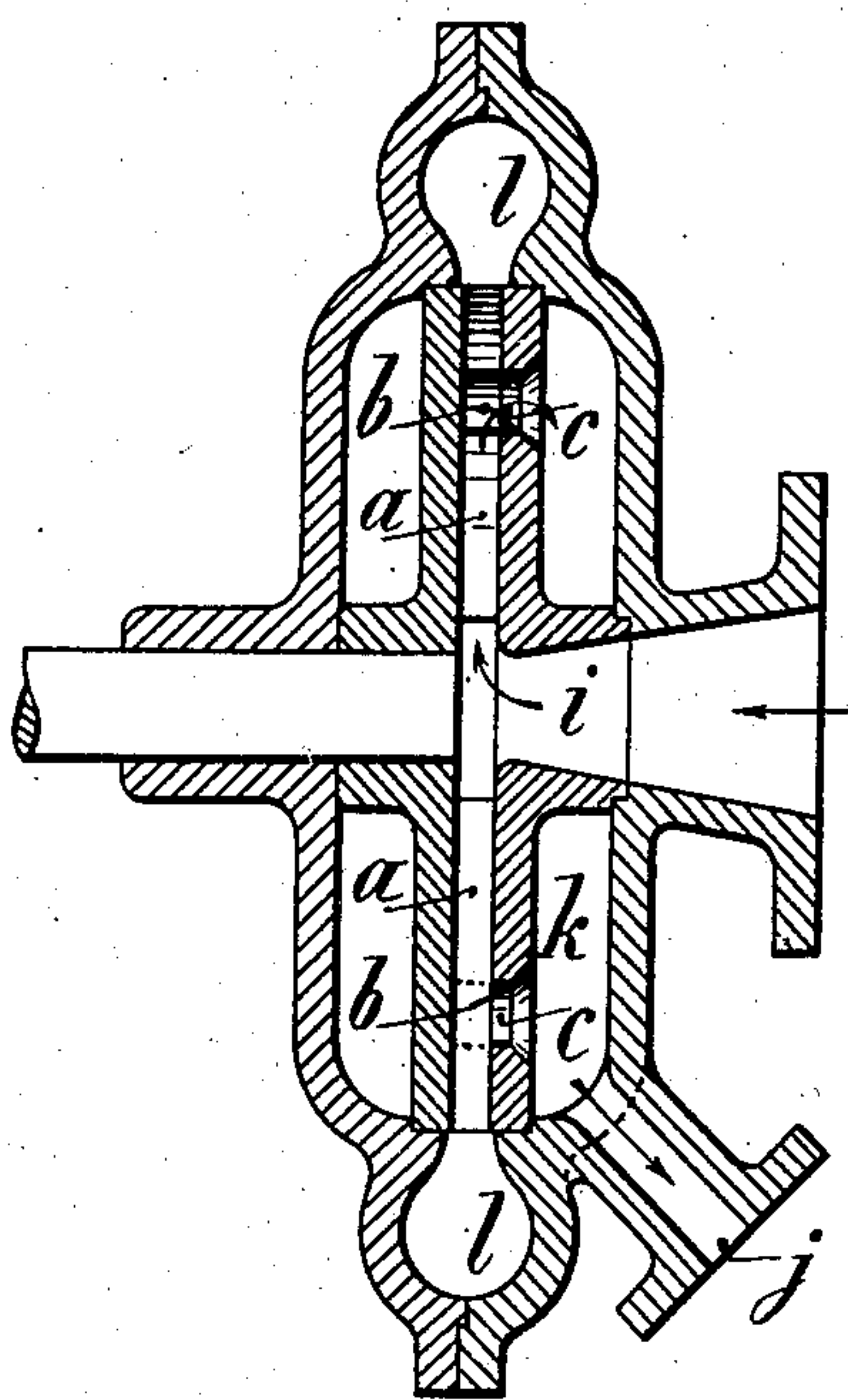


FIG. 2.<sup>a</sup>



Witnesses

W. H. Boulter

*[Signature]*

Inventor

François Blanc

By *[Signature]* Boulter

Attorney



# UNITED STATES PATENT OFFICE.

FRANÇOIS BLANC, OF CHAMBON, FRANCE.

## CLASSIFYING APPARATUS FOR COAL OR OTHER MATERIALS.

SPECIFICATION forming part of Letters Patent No. 735,855, dated August 11, 1903.

Application filed July 8, 1902. Serial No. 114,794. (No model.)

*To all whom it may concern:*

Be it known that I, FRANÇOIS BLANC, a citizen of the Republic of France, residing at Chambon, Loire, in the Republic of France, have invented certain new and useful Improvements in Classifying Apparatus for Coal or other Materials, of which the following is a specification.

The present application relates to an apparatus which allows of the sorting or classifying of the articles according to their difference in weight or density.

In a liquid having a rotary and a traveling or translation motion which tends to force it away from or bring it near to the axis of rotation—for instance, the motion which takes place in a centrifugal pump and in certain kinds of turbines—two more or less solid particles of different weight contained in the liquid will travel through the interior of the liquid in two different paths or trajectories, resulting from the combined action of centrifugal force and the carrying-away force.

The object of my invention is to effect the separation of the trajectories, and consequently to establish a method of classifying by weight of the solid particles previously mixed with a liquid which traverses the apparatus. In this way it is possible to obtain and enrich the mixture of solid particles by isolating, for instance, in the treatment of coal, all the slaty parts, and for metalliferous sand all the particles of a weight heavier than a determined weight.

The accompanying drawings represent schematically two apparatus based on the principle above mentioned, with the aid of which the invention can be carried out.

Figure 1 is a device for effecting the separation of the particles treated by the action of centrifugal force, the current moving away from the axis of rotation. Fig. 1<sup>a</sup> is an elevation of the construction seen in Fig. 1, partly broken away and being partly in section. Fig. 2 is a form of turbine producing the same result, the current being drawn inward to the axis of rotation. Fig. 2<sup>a</sup> is a sectional view on the line A B of Fig. 1<sup>a</sup>.

In Fig. 1 the shaded part represents only one of the blades of the turbine, in which the separation of the paths of travel is obtained in the following manner: On the blades *a* of

the device—for instance, of a centrifugal pump—a projection *b* is arranged, forming with the direction of the current an angle which can vary according to the nature of the mixtures to be treated. With a determined rate of discharge the speed of rotation is such as to allow particles of the same diameter and of a weight greater than the determined weight to enter the hollow space beyond the projection *b*, from whence a channel *c*, traversing the device, affords a passage to a chamber where the classified products are deposited.

In practice it is necessary to take into consideration the cases where the mixture must be drawn toward the axis of rotation instead of being forced away from it, as in Fig. 1. The apparatus indicated in Fig. 1 cannot be used in such cases. The paths of travel of materials of different density cannot be simply separated in the interior of the device, and recourse must be had to another device or form of construction.

As indicated in Fig. 2, the materials to be classified suspended in a liquid current enter through an inlet *d* a casing in which a wheel *f*, with bent arms or blades or inclined channels, rotates in the direction of the arrow *f*, between which blades the liquid is obliged to pass before escaping through the center passage *o*. The solid particles carried along by the current, which enters under pressure, can only traverse the wheel *r* in the direction of the arrows *g h* so far as the traveling force of the current is sufficient to overcome the effect of the centrifugal force, which tends to force them away from the center *o*. At a determined speed of rotation the light particles will escape with the current through the central passage *o*, while the heavier particles, for which the centrifugal force is of greater importance, will remain indefinitely in the space surrounding the movable wheel *r* without being able to traverse it. They can be removed in various ways. The simplest consists in putting the space surrounding the movable wheel in communication through an opening *e* with a deposit-chamber outside the apparatus.

The apparatus shown in Fig. 2 can be considered as supplementary to the first-described apparatus, Fig. 1, in so far as it serves

to complete the classifying of materials having already passed through to the latter apparatus. The apparatus shown in Fig. 2 has in this case a double object—to effect a more  
5 complete classification and to absorb the *vis viva* which the mixture possesses on issuing from the previous apparatus.

What I claim as my invention, and desire to secure by Letters Patent, is—

10 A classifying apparatus for minerals and other materials comprising a chamber, a wheel therein provided with blades, a projection on

the inner surface of each blade and at a determined angle thereto, a hollow recess beyond said projection in connection with a de- 15  
posit-chamber, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANÇOIS BLANC.

Witnesses:

ACHILLE MARILLIER,  
JEAN ROBELET.