(No Model.)

A. WALDBAUR.

CENTRIFUGAL MACHINE.

No. 343,932. Patented June 15, 1886.

Fig. 1.

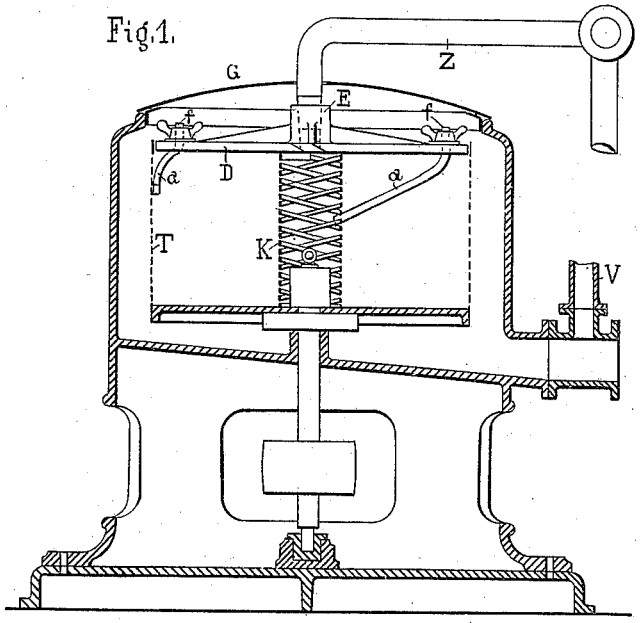


Fig. 6.

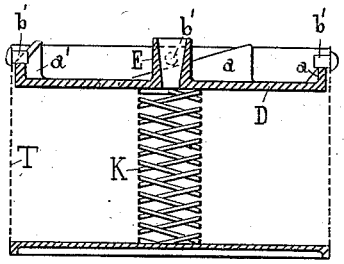


Fig. 7.

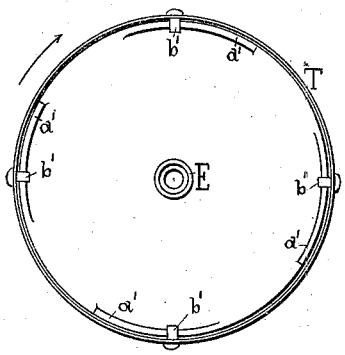


Fig. 2.

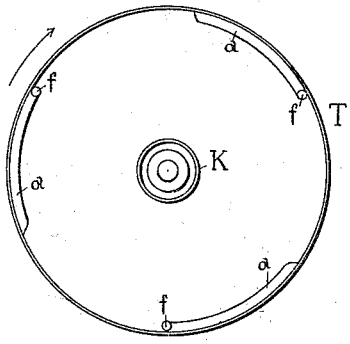


Fig. 4.

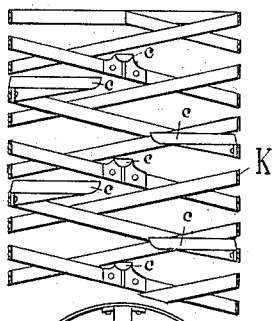


Fig. 3.

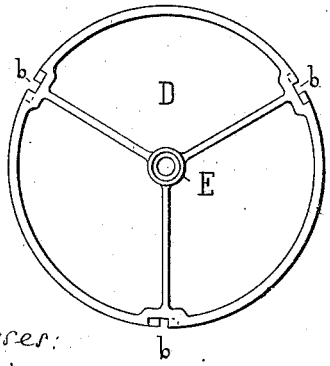
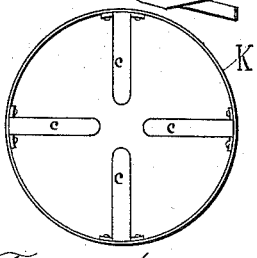


Fig. 5.



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UNITED STATES PATENT OFFICE.

ADOLF WALDBAUR, OF AUGSBURG, BAVARIA, GERMANY.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,932, dated June 15, 1886.

Application filed May 5, 1886. Serial No. 201,253. (No model.)

To all whom it may concern:

Be it known that I, ADOLF WALDBAUR, doctor of philosophy, a subject of the King of Würtemberg, and residing at Augsburg, Kingdom of Bavaria, German Empire, have invented new and useful Improvements in Centrifugal Machines, whereof the following is a specification.

With the present arrangements for carrying out the different processes of bleaching, dyeing, washing, drying, &c., of textile fibers, yarn, and the like, the ware has to be repeatedly removed from one apparatus to the other. This causes much waste of time. The ware, which is apt to come out of order by the operations, requires to be frequently repacked, and is exposed to the danger of being damaged, and the requisite apparatuses are complicated and expensive.

The object of my invention is to provide means for carrying out the various aforesaid processes one after the other without removing or repacking the ware, for preventing the layers of the same from shifting, and for causing it to be compressed in proportion to the strength of the current of fluid passing through the material. For this purpose I employ a centrifugal machine, the rotating basket whereof is provided with a cover fitting loosely into it, in combination with guiding devices, whereby the cover, when supported by elastic or compressible material packed into the basket, will be caused to screw itself down within the basket in consequence of its tendency, resulting from inertia, to remain behind relatively to the basket while rotating. Moreover, I arrange in the middle of the latter a small longitudinally-resilient and therefore compressible basket having orifices, and serving to produce and maintain a hollow space, from which the fluid designed for the treatment of the material percolates the latter. This basket may be provided with contrivances for conducting the fluid toward its periphery.

The invention also comprises means for drawing off noxious gases and vapors emanating from the liquids employed, and also adapted for sucking air or gases through the material under treatment.

On the annexed sheet of drawings a centrifugal machine constructed according to my invention is represented in two different arrangements.

Figure 1 shows the complete machine of the first arrangement in sectional elevation. Fig. 2 is a plan of the basket; Fig. 3, a top view of the cover of the latter. Figs. 4 and 5 show, in sectional elevation and in plan and to a larger scale, the inside basket. Fig. 6 is a sectional elevation, and Fig. 7 a plan, of the main basket with cover of the second arrangement.

On the inner surface of the wall of the basket T, Figs. 1 and 2, are fixed three or more inclined ledges, *a*, which thus form parts of screw-threads, and the cover D, Figs. 1 and 3, is provided with corresponding notches, *b*, the sides whereof constitute the counterparts of the said threads. The incline of the ledges *a* is such that the cover, inserted into the basket while at rest and turned in a direction contrary to the normal rotation of the basket, will screw itself down on the ledges *a*. The said ledges terminate at their upper ends in screws provided with thumb-nuts. The inner basket, K, is made of strips of metal plaited together, and it is provided on the inside with gutters *c*, fixed to the said strips and extending toward the centre of the basket. By these gutters the liquid flowing in from above is conducted to the periphery of the said basket The supply-pipe Z for the liquid fits with its conical end into the tubular projection E of the cover D, and it is provided at *e* with a joint for allowing it to be turned back and to sink with the cover.

The means for removing noxious gases and vapors and drawing air and gases through the machine consists in a pipe, V, communicating with the casing M and leading to an exhauster, and in a cover, G, for closing the casing. Supposing the basket T to be filled with the material to be treated, the cover D is placed upon the latter, so that the screws *f* project through the notches *b*. It is then pressed down by the thumb-nuts until the notches register with the guiding-ledges *a*. Thereupon the basket is put in rotation. During this rotation the cover D tends to remain behind in respect to the basket, in consequence of its inertia, and from this follows that it will screw itself down on the ledges *a*, so as to compress the material. This effect is greater in proportion as the basket runs quicker. As soon as a sufficient speed is attained, the supply-pipe Z is turned down and introduced with its conical end into the tubular projection E of the cover D. Communication with

the reservoir containing the liquid to be used having then been established, the latter is drawn into the basket K by the sucking action of the centrifugal force, and distributed upon the periphery of the basket by the gutters *c*. The said sucking action also tends to keep the pipe Z tight in the tube E. With the increase of speed of the basket, and the consequent increase of compression of the material, the force with which the liquid is drawn through the latter becomes greater. The current of the liquid thus regulates itself automatically, according to the degree of compression of the material, while at the same time the layers thereof are prevented from shifting by the action of the centrifugal force, and from thus coming out of order. In the measure, as the cover D descends, the basket K is compressed, together with the material, in vertical direction, so that a free space for the passage of the liquid will constantly be maintained in the center of the basket T. In case gases or vapors are to be drawn off, or to be sucked through the pipe Z and the material, the casing M is closed by the cover G, and the exhauster connected to the pipe V is put in operation.

By means of the described machine the different processes of bleaching, dyeing, and washing, and also of drying by air and treating by gases may be carried out in succession without removing the ware from the machine.

The modified arrangement of the basket T and the cover D (shown by Figs. 6 and 7) consists in an inversion of the means for guiding the latter, the cover being in this case provided with ribs *a'*, whose upper edges form screw-surfaces, while to the basket are fixed pins or rollers *b'*, under which slide the said ribs. The operation of this arrangement is the same as that of the one described first.

I claim as my invention—

1. In a centrifugal machine, the combination, with the basket T and the cover D, of screw surfaces and corresponding counterparts adapted to cause the cover, supported by elastic material, to screw itself down within the basket, when, in consequence of its inertia, the said cover rotates at a lower speed than the basket, substantially as and for the purpose described.

2. The combination, with the basket T, having guiding-ledges *a*, forming portions of screw-threads, of a cover, D, provided with notches *b*, fitting upon the said ledges, substantially as and for the purpose specified.

3. The combination, with the basket T and cover D, of the basket K, constructed to be resilient lengthwise, and having orifices for the passage of fluid, substantially as and for the purpose set forth.

4. The combination, with the basket T and the cover D, of the longitudinally-resilient basket K, having orifices, and to the inside of which are fixed gutters *c*, as and for the purpose described.

5. The combination, with the basket T, cover D, and casing M, of the cover G, pipe Z, for the supply of fluid, and pipe V, leading from the casing M to an exhauster, substantially as described, and for the purpose set forth.

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

ADOLF WALDBAUR.

Witnesses:
P. LOPES MARTINS,
JUAN CARLOS LEUCH.