

(No Model.)

E. TAVERNIER.

PROCESS OF EXTRACTING TANNIN FROM WOOD.

No. 351,540.

Patented Oct. 26, 1886.

Fig. 1

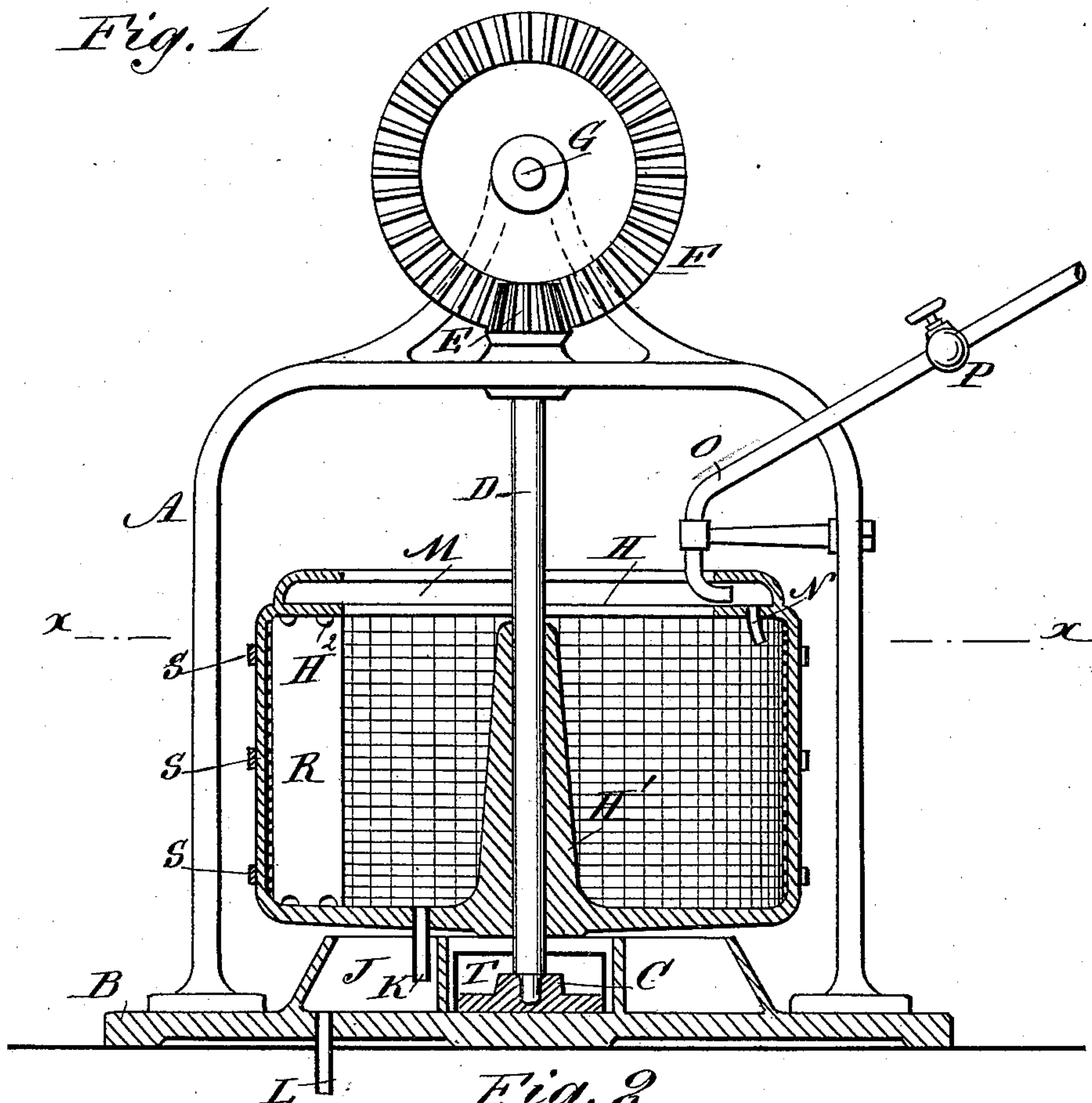
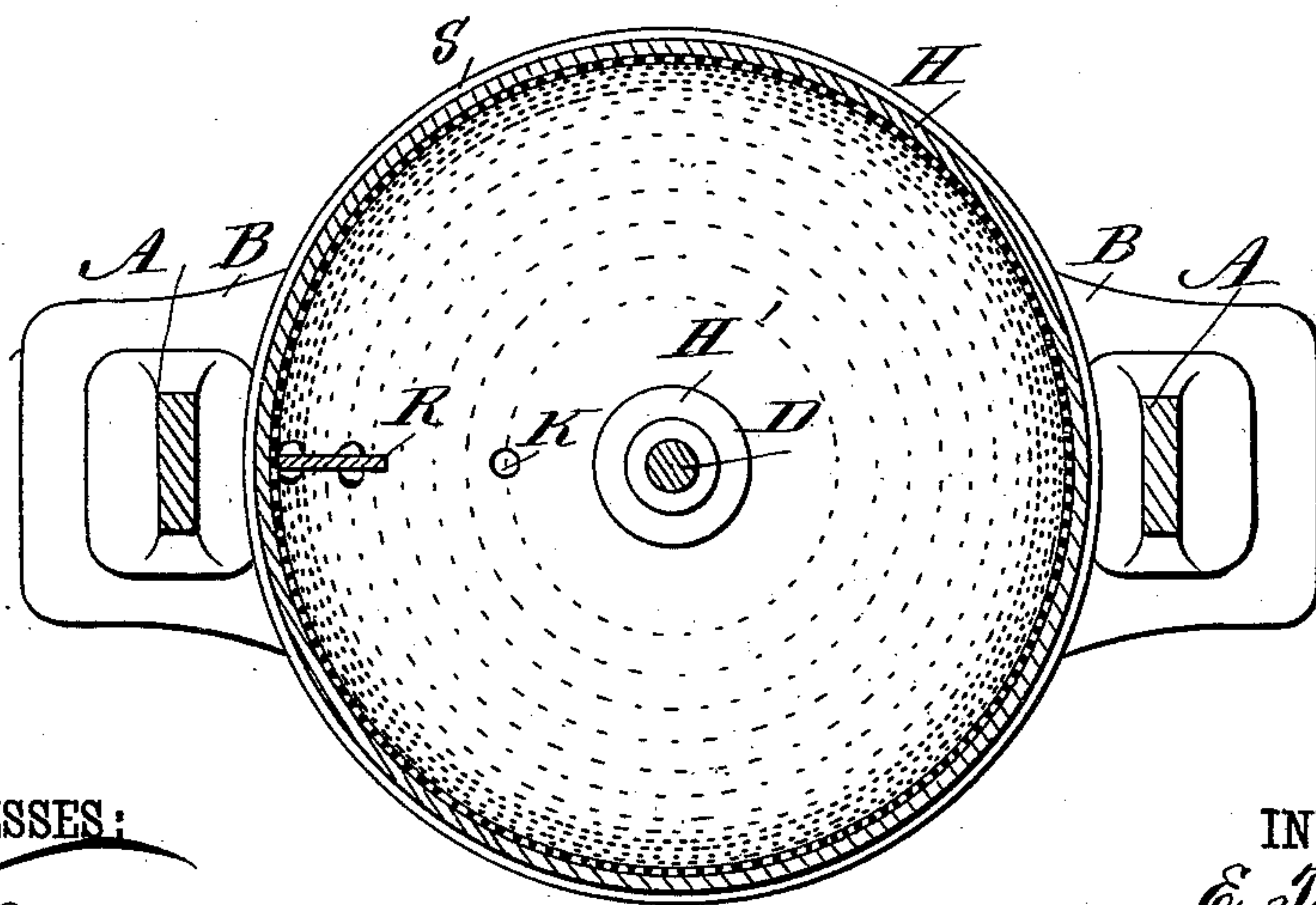


Fig. 2



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EDOUARD TAVERNIER, OF PARIS, FRANCE.

PROCESS OF EXTRACTING TANNIN FROM WOOD.

SPECIFICATION forming part of Letters Patent No. 351,540, dated October 26, 1886.

Application filed September 17, 1885. Serial No. 177,337. (No model.) Patented in Germany October 1, 1884, No. 254; in France November 3, 1884, No. 165,140, and in Austria January 1, 1885, No. 34,969.

To all whom it may concern:

Be it known that I, EDOUARD TAVERNIER, of Paris, France, have invented a new and Improved Apparatus for Extracting Tannin, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a cross-sectional elevation of the improved centrifugal apparatus which I use. Fig. 2 is a sectional plan view of the revolving cylinder on the line $x x$, Fig. 1.

The upright frame A is secured on the base B, and in said frame, and a step, C, on the base B, the vertical shaft D is journaled, and on the said shaft D a bevel-pinion, E, is mounted, which engages with a bevel cog-wheel, F, on a driving-shaft, G. A centrifugal cylinder, H, made of any suitable material, preferably copper, is provided with a hub, H', which is rigidly mounted on the shaft D, so that the cylinder H will revolve with the shaft D. An annular box or compartment, J, is formed on the base B below the cylinder H, and into said box the outlet-pipe K of the cylinder projects, said outlet-pipe being near the center of the cylinder H, as shown. A pipe, L, conducts the liquid from the box J.

The cylinder H is provided on its top edge with an inwardly-projecting flange, H², in which a smaller chamber, M, is formed, having its inner side open. A pipe, N, extends from the chamber M into the cylinder H, and a pipe, O, projects into the open side of the chamber M, and has a cock, P. A partition, R, is held removably between cleats or pins in the cylinder H, the edge of the partition resting against the inside of the cylinder H, and the partition standing radially. Strengthening-bands S are passed around the cylinder H. An oil-chamber, T, is formed around the step C.

The operation is as follows: The wood is cut very finely transversely to the fibers, and in such a manner that all the cells are opened, and then the tannin is extracted by means of steam or boiling water. Preferably this extracting takes place in a vacuum-pan, and the

wood is subjected to the action of steam or hot water a number of times until all the tannin, &c., is extracted. The liquid obtained contains gums, resins, coloring-matter, and tannin. The liquid is then filtered, preferably in a filter-press, and then it is conducted into the centrifugal machine described above. Before conducting the liquid into the centrifugal machine a layer of canvas or other fabric is placed against the inner side of the cylinder H, and the partition R is placed in the cylinder. The liquid is conducted by the pipe O into the compartment M, and flows from the same through the pipe N into the cylinder. The dense parts of the liquid are forced against the sides of the cylinder H, and as more liquid is conducted into the cylinder the thickness of the layer of dense parts gradually increases and gradually forces the less dense particles toward the middle of the cylinder, and then the less dense part—that is, the liquid which has been deprived of its coloring-matter and other impurities—flows through the pipe K into the box J, and from the same through the pipe L, and so on, the operation being continuous. The partition R causes the liquid to revolve with the cylinder.

I am aware that bodies of different specific gravities have been separated by means of a centrifugal machine; but I am not aware that a decoction of tannin has ever before been so treated.

I have been experimenting with tannin extracts for several years, and I have discovered that in a slightly-acidulated decoction most of the harmful matters are in suspension in the liquid of the solution, but in such a fine state that they will pass through any sieve. I have discovered, besides, that under the influence of a strong agitation or powerful vibration a certain quantity of movement is restored to the molecules, changing the combinations and rendering those substances insoluble which were not so before. I therefore invented an apparatus for carrying out this method of treating the tannin extracts.

My discoveries may be stated as follows: First, in a decoction of oak or chestnut there are matters held in suspension which are very finely divided, having apparently the density

of the liquid in which they are held, and these matters, composed of mucilage or gum, cannot be filtered, nor can they be separated except by centrifugal force; second, certain products forming bibasic compositions become, under molecular agitation, monobasic, and therefore insoluble. All these bibasic products are harmful in tannin. I have discovered that they can be eliminated by centrifugal force, the denser impurities being forced away from the center of the machine, and the purer liquid passing out through the opening K near the central part of the cylinder.

15 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The process herein described of eliminating the heavier impurities of a tannin extract from the lighter and purer portion, which consists in separating the heavier impurities by centrifugal action and drawing off the purer and lighter liquid from a point nearer the center of rotation, substantially as set forth.

25 2. A centrifugal machine comprising a revoluble cylinder, provided with an inlet near

its upper edge and an outlet in its bottom, near the center thereof, substantially as set forth.

3. A centrifugal machine comprising a revoluble cylinder having an annular chamber opening inward around its upper edge, a supply pipe leading into said chamber, an outlet pipe in the bottom of said chamber, leading into the upper part of the cylinder, and an outlet in the bottom of the cylinder, near the center thereof, substantially as set forth.

4. A centrifugal machine having a revolving cylinder, a chamber formed on said cylinder, and a pipe projecting into said chamber, substantially as herein shown and described.

5. In a centrifugal machine, the combination, with the cylinder H, of the outlet pipe K and the annular box J below the revolving cylinder, substantially as herein shown and described.

The foregoing specification of my improvement signed in the presence of two witnesses.

EDOUARD TAVERNIER.

Witnesses:

ROBT. M. HOOPER,

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