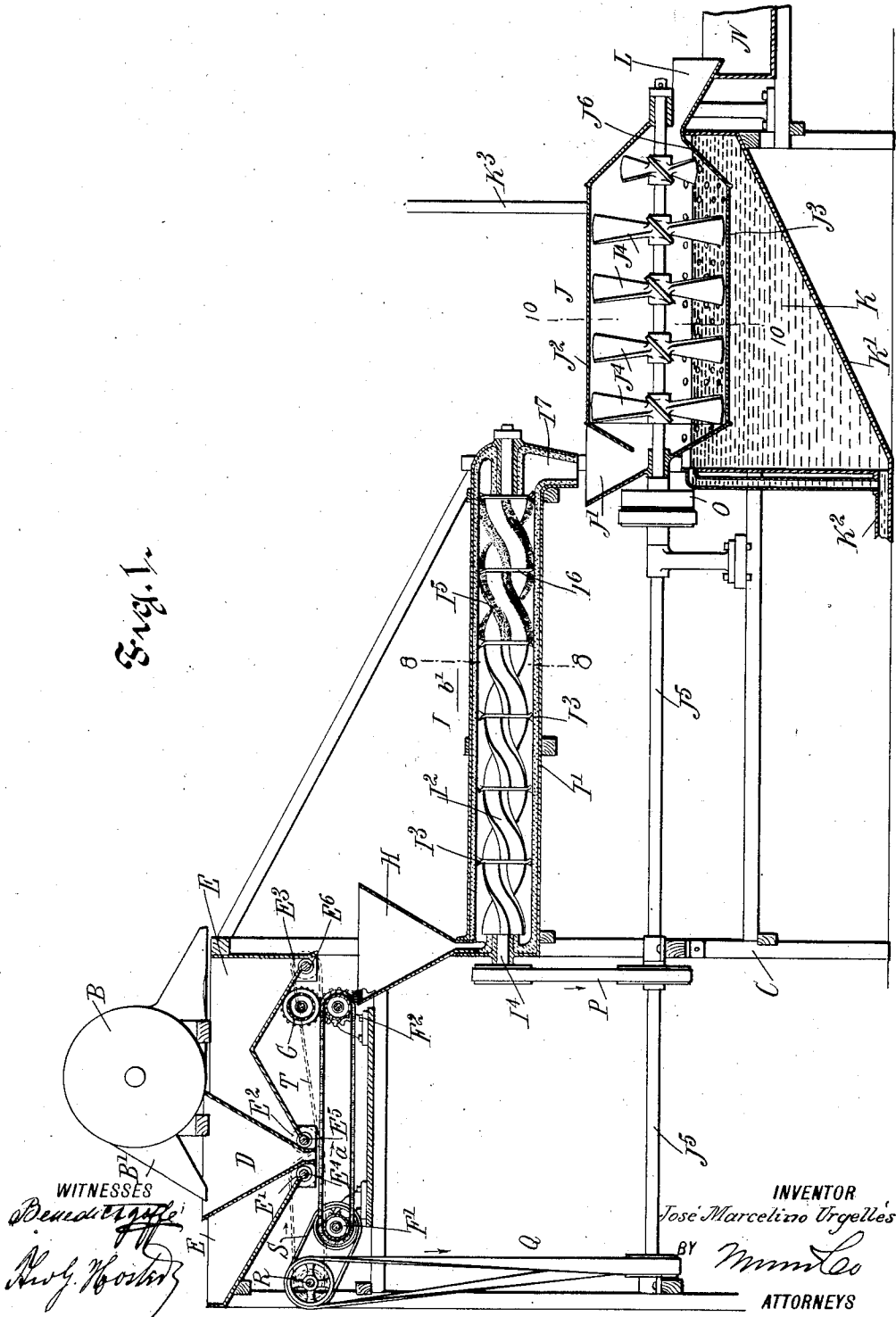


J. M. URGELLÉS.
MACHINE FOR REMOVING PULP FROM COFFEE BERRIES.
APPLICATION FILED DEC. 11, 1911.

1,038,031.

Patented Sept. 10, 1912.

3 SHEETS—SHEET 1.



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Fig. 2.

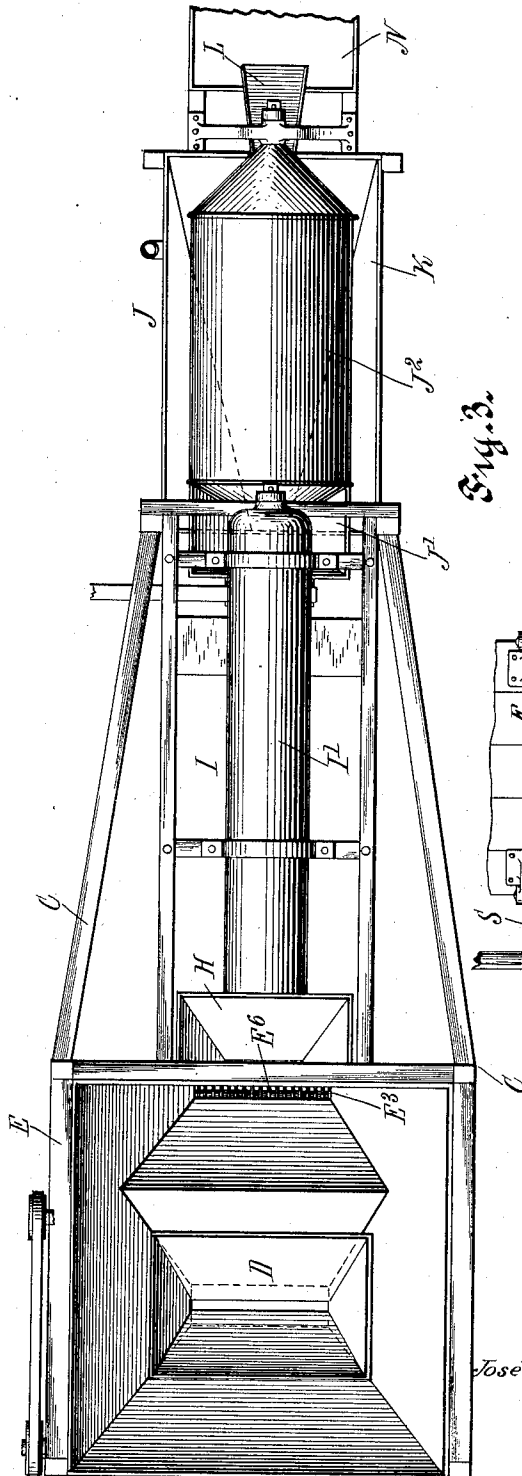
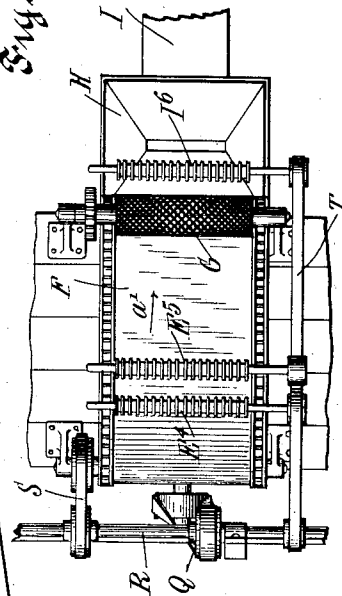


Fig. 3.



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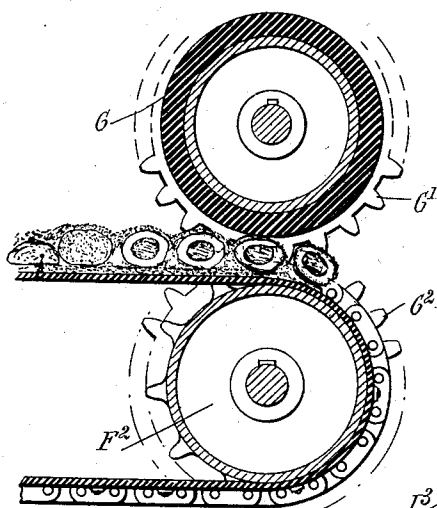


Fig. 4.

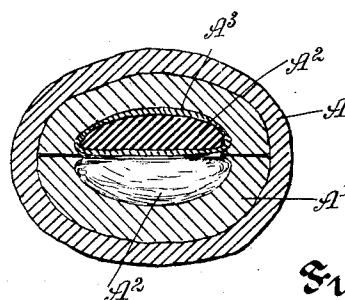


Fig. 5.



Fig. 7.

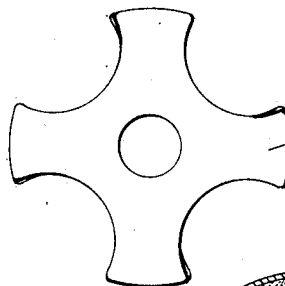


Fig. 6.

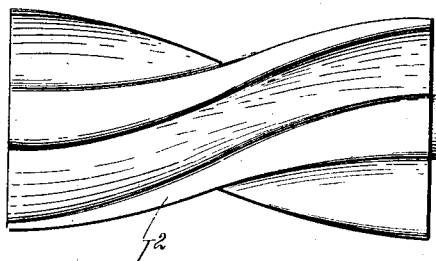


Fig. 9.

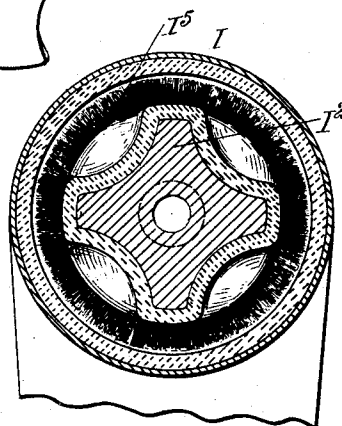


Fig. 8.

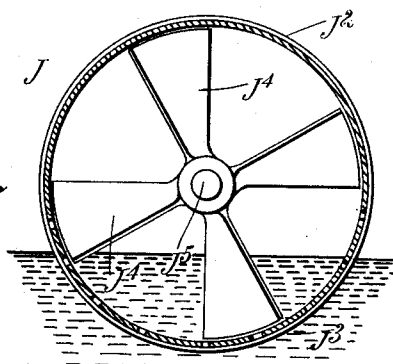


Fig. 10.

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UNITED STATES PATENT OFFICE.

JOSÉ MARCELINO URGELLÉS, OF BARACOA, CUBA.

MACHINE FOR REMOVING PULP FROM COFFEE-BERRIES.

1,038,031.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed December 11, 1911. Serial No. 664,927.

To all whom it may concern:

Be it known that I, JOSÉ MARCELINO URGELLÉS, a citizen of the United States and a resident of Baracoa, Cuba, have invented a new and Improved Machine for Removing Pulp from Coffee-Berries, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for removing the pulp from coffee berries in a very simple, effective and economical manner and without injury to the beans. For the purpose mentioned, use is made of an embedding means for embedding sand, sawdust or a similar material in the pulp of the berries, a grinding, tumbling and brushing means receiving the berries from the said embedding means and causing the embedded material to loosen and detach the pulp from the berries, and a washing and agitating means into which discharges the said grinding, tumbling and brushing means to finally remove the pulp and the material from the berries and discharge the latter separately from the removed pulp and material.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal central section of the machine for removing the pulp from the coffee berries; Fig. 2 is a plan view of the same with the skin remover omitted; Fig. 3 is a plan view of the embedding device with the hoppers for the berries and abrading material removed; Fig. 4 is an enlarged sectional side elevation of the endless belt and presser roller for pressing the abrading material into the pulp; Fig. 5 is an enlarged section of a coffee berry; Fig. 6 is an enlarged face view of one of the feed wheels in the grinding, tumbling and brushing device; Fig. 7 is an edge view of the same; Fig. 8 is an enlarged cross section of the grinding, tumbling and brushing device, the section being on the line 8—8 of Fig. 1; Fig. 9 is an enlarged side elevation of one of the grinding rollers; and Fig. 10 is an enlarged cross section of the washing and agitating device, the section being on the line 10—10 of Fig. 1.

Coffee berries as harvested (see Fig. 5), have an outer skin A, which incloses a layer of pulp A' surrounding two beans A² each

inclosed in a shell A³. The berry is first treated in a skin remover to remove the outer skin A and to cleave the remaining portion, so that practically two berries are had, each containing a bean A² inclosed in a shell A³, and the latter surrounded by a layer of pulp A'. The pulp A' is a sweet, mucilaginous substance of a light color and clings very tenaciously to the shell A³, and the object of the machine presently to be described is to remove this pulp A' in a simple, effective and economical manner.

The outer skin A of the berry is removed and the berry is cleft or split in a skin remover B of any approved construction and mounted on a suitable framework C which also supports the machine for removing the pulp from the coffee berries. The skin remover B is provided with a discharge spout B' which discharges the berries into a central hopper D surrounded by a hopper E containing sand, sawdust or a like material to be used as a grinding or abrading material for loosening and removing the pulp from the berries as hereinafter more fully described. The hopper E is provided with three discharge spouts E', E² and E³, of which the discharge spout E' is provided with a feed roller E⁴ adapted to discharge onto the upper run of an endless belt F passing around two rollers F' and F² journaled on the framework C. The roller F' is driven, as hereinafter more fully described, so that a traveling motion is given to the belt F in the direction of the arrow a', and hence the abrading material discharged by the spout E' onto the upper run of the belt F is in a thin layer, onto which pass the berries discharged from the hopper D. The spout E² is provided with a feed or distributing roller E⁵ and discharges abrading material onto the berries carried along by the belt F so that the berries are covered up by another layer of abrading material. By the arrangement described the coffee berries are interposed between the bottom and top layers of abrading material and this abrading material is pressed into the pulp A' by the use of a presser roller G arranged over the belt F at the roller F², the presser roller C being journaled in suitable bearings on the framework C and being connected by gear wheels G', G² with the roller F² to rotate in unison with the same (see Figs. 1 and 4). It is understood that when the berries with the two layers of abrading material pass be-

tween the presser roller G and the belt F then the abrading material is forced into the pulp to be embedded therein. The peripheral face of the presser roller G is preferably of rubber or similar material sufficiently elastic to take a good hold of the abrading material and to press the same into the pulp A'. The berries with the abrading material embedded therein drop off the forward end of the belt F into the hopper H into which discharges the spout E³ so as to supply an additional amount of abrading material to the hopper H, the said spout E³ being provided with a feed or distributing roller E⁶ similar to the rollers E⁴ and E⁵. The hopper H delivers the berries with the abrading material embedded therein and the additional abrading material received from the spout E³ to one end of a horizontally-disposed casing I' of a grinding, tumbling and brushing device I mounted on the framework C. In the casing I' are arranged a series of grinding rollers I², one in front of the other, and provided with spiral ribs and separated from each other by feed wheels I³, and the said grinding rollers I² and feed wheels I³ are secured on a shaft I⁴ extending centrally through the casing I and journaled in the ends thereof. On the shaft I⁴ in front of the last grinding roller I² and feed wheel I³ are arranged spiral brushes I⁵ secured on the shaft I⁴ and also separated from each other by feed wheels I⁶. The casing I' is preferably provided with a lining of cement or a similar material presenting a roughened surface, and the grinding rollers I² are provided with a similar coating or face, so that the berries with the abrading material therein and the additional abrading material supplied, as before mentioned, are subject to a grinding and tumbling action whereby the pulp is loosened and more or less detached from the berries, and the berries and the abrading material are fed forward by the action of the spiral ribs of the rollers I² and by the feed wheels I³, and the said berries and abrading material are finally subjected to the action of the brushes I⁵ to detach as much as possible the pulp from the berries, the berries, pulp and abrading material being advanced or moved forward by the brushes and the feed wheels I⁶ to be finally discharged through a spout I' arranged on the forward end of the casing I'. The spout I' extends downwardly and discharges the berries, pulp and abrading material into a hopper J' of a washing and agitating device J provided with a fixed casing J² having its lower portion J³ perforated and extending within a washing tank K containing water or other washing liquid. The tank is provided with an inclined bottom K' leading to a discharge spout K² for discharging the abrading material and pulp from the tank to a suitable

place of discharge. Within the casing J² are arranged agitating wheels J⁴ spaced apart and secured on a shaft J⁵ extending centrally through the casing J² and journaled in suitable bearings arranged on the said casing. When the machine is running the wheels J⁴ agitate the berries in the water so that the berries are thoroughly washed and any pulp that may adhere to the berries is removed therefrom especially as the sand and other abrading material facilitates the final removal of any particles of the pulp that may adhere to the berries.

It is understood that the agitating wheels J⁴ agitate the berries, pulp and abrading material for the purpose mentioned, at the same time feeding the materials forward and allowing the final abrading material and the pulp to pass through the perforations in the bottom part J³ of the casing. It is further understood that the lower portion J³ of the casing J² is filled with water which passes through the perforations and the abrading material and pulp which pass through the perforations drop down on the inclined bottom K' of the tank K to slide down on the said bottom to the outlet spout K². The forward end J⁶ of the casing J² extends to within a short distance of the shaft J⁵ and leads to a spout L which discharges into a suitable receptacle N for receiving the berries, it being understood that the berries are carried forward in the casing J² by the agitating wheels J⁴ and finally pass over the end J⁶ into the spout L, while the abrading material and pulp passes through the perforations in the lower portion J³ of the casing J² and into the tank K to be discharged therefrom through the spout K² as above explained.

On the shaft J⁵ are secured fast and loose pulleys O connected by belt with other machinery for imparting a continuous rotary motion to the shaft J⁵, and the latter is connected by a suitable driving gear P, such as belt and pulleys, with the shaft I⁴ to rotate the latter and the rollers I², wheels I³, I⁶ and brushes I⁵ secured on the said shaft. The shaft J⁵ is also connected by a driving means Q, such as belt and pulleys, with a countershaft R journaled on the framework C and connected by a driving means such as pulleys and belt S with the roller F' for imparting a continuous traveling motion to the endless belt F. The countershaft R is also connected by a driving gear T, such as belt and pulleys, with the distributing or feed rollers E⁴, E⁵ and E⁶ to rotate the same.

The operation is as follows: When the shaft J⁵ is driven then the belt F travels in the direction of the arrow a', and the layer of sand or other abrading material is carried forward by the belt under the spout of the hopper D so that the berries drop onto

this layer of sand to be carried along by the belt under the spout E² to receive another layer of sand on top, and then the berries with the sand on top and bottom are carried forward under the presser roller G which presses the sand or other abrading material into the pulp of the berries. The latter with the embedded abrading material drop into the hopper H to finally pass into the casing I' together with an additional amount of abrading material supplied through the spout E³. Within the casing I' the berries with the embedded abrading material are subjected to a grinding and tumbling action by the rollers I² so that the pulp is loosened by the abrading material and more or less detached from the berries. The berries and the abrading material are carried forward in the direction of the arrow b' within the casing I' and are finally subjected to the action of the brushes I⁵ which tend to further free the berries from the pulp, and the berries, pulp and abrading material finally pass by way of the spout I⁷ into the hopper J' and into the washing and agitating device J in which the berries are subjected to a washing action and are finally separated from the pulp and sand and discharged separately through the spout L into the receiving receptacle N, while the pulp and abrading material are discharged through the perforations of the portion J³ into the tank K and from the latter by way of the spout K² to a suitable place of discharge.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A machine for treating coffee berries, comprising embedding means for embedding an abrading material in the pulp of the berries, means for grinding, tumbling and brushing the berries and the abrading material to cause the latter to loosen and detach the pulp from the berries, and means for subsequently separating the berries from the pulp and abrading material.

2. A machine for treating coffee berries, comprising in combination the following instrumentalities, namely, an embedding device for embedding an abrading material in the pulp of the berries, a grinding, tumbling and brushing device into which discharges the said embedding device and arranged to loosen and detach the pulp from the berries, and a washing, agitating and separating device into which discharges the said grinding, tumbling and brushing de-

vice and arranged to separate the berries from the detached pulp and abrading material.

3. A machine for treating coffee berries, comprising a traveling surface, feeding means for feeding abrading material onto the said traveling surface, feeding means for feeding the berries in between the said abrading material, means for pressing the abrading material into the pulp of the berries, and grinding means for subjecting the berries and the abrading material to a grinding action to loosen the pulp from the berries.

4. A machine for treating coffee berries, comprising a traveling surface, feeding means for feeding abrading material in separate layers onto the said traveling surface, feeding means for feeding coffee berries between the said layers of abrading material, and a presser roller operating in conjunction with the said traveling surface for pressing the said abrading material into the pulp of the coffee berries.

5. A machine for treating coffee berries, comprising a traveling surface, a feeding device over the said traveling surface for feeding a layer of an abrading material onto the said surface, a second feeding device adjacent the said first feeding device for feeding coffee berries onto said layer of abrading material, a third feeding device adjacent the said berry feeding device for feeding a layer of abrading material onto the said berries, and a presser roller operating in conjunction with the said traveling surface for pressing the abrading material into the pulp of the said berries.

6. A machine for treating coffee berries, comprising embedding means for embedding an abrading material in the pulp of the berries and a grinding, tumbling and brushing device having a casing into which the berries are discharged from said embedding device, a shaft centrally in the said casing, a series of grinding rollers mounted on the said shaft and having spiral ribs, feeding wheels on the said shaft between adjacent rollers, and brushes on the said shaft and having spaced rows of bristles.

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

JOSÉ MARCELINO URGELLÉS.

Witnesses:

THEO. G. HOSTER,
PHILIP D. ROLLHAUS.