

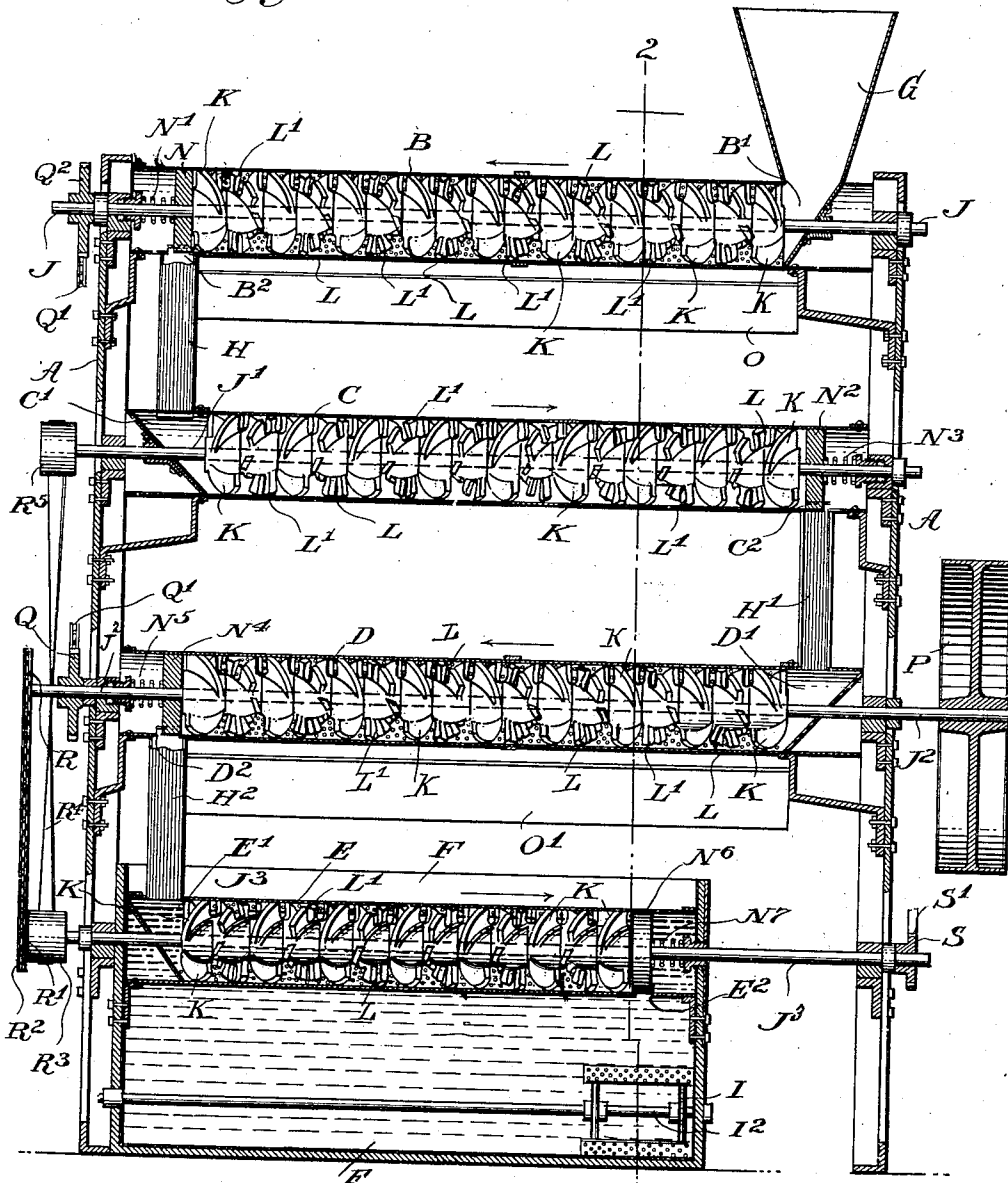
J. M. URGELLÉS.
MACHINE FOR REMOVING PULP FROM COCOA AND OTHER PULPY BERRIES.
APPLICATION FILED JUNE 16, 1913.

1,110,167.

Patented Sept. 8, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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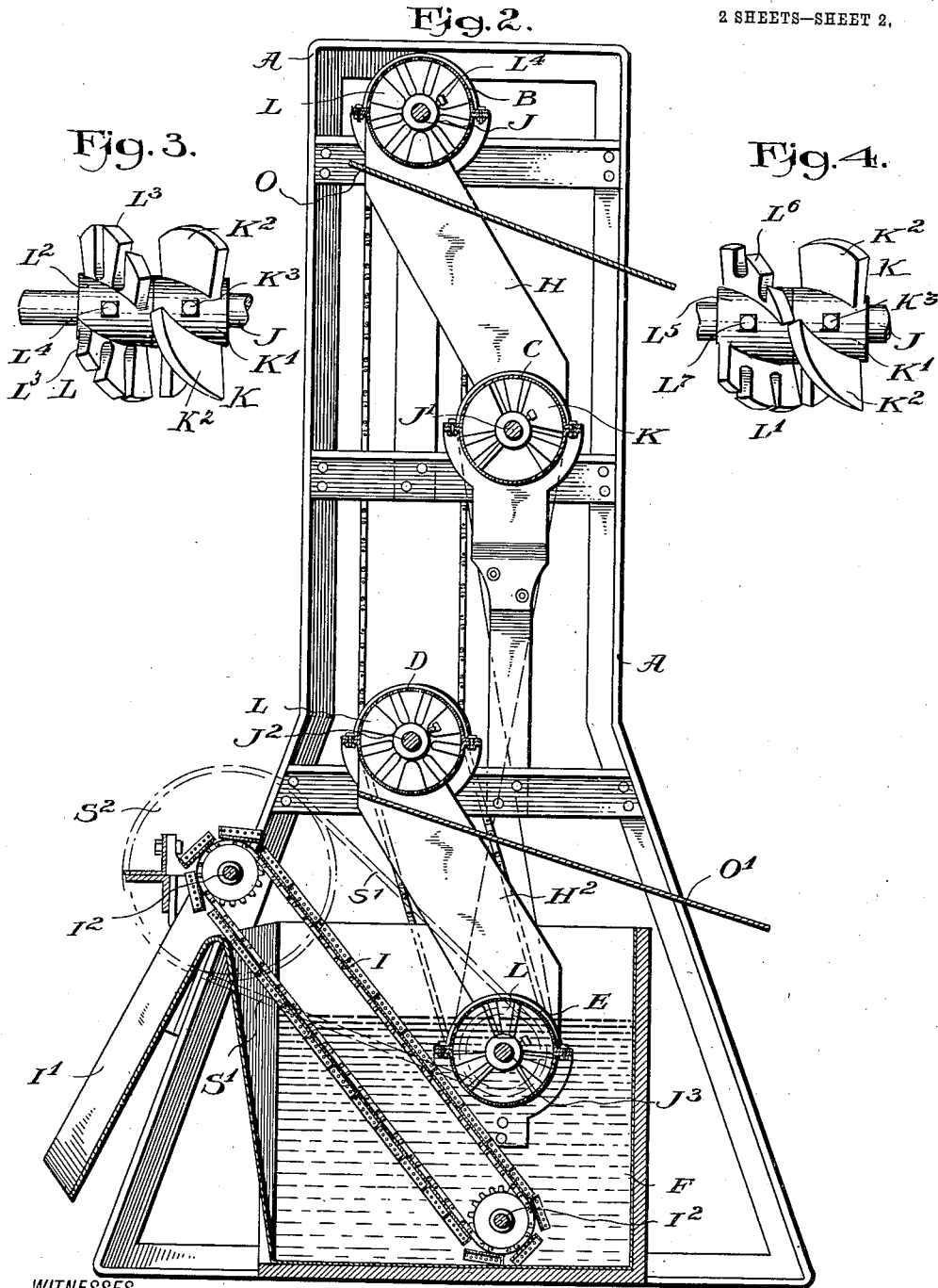
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JOSÉ MARCELINO URGELLÉS, OF BARACOA, CUBA.

MACHINE FOR REMOVING PULP FROM COCOA AND OTHER PULPY BERRIES.

1,110,167.

Specification of Letters Patent.

Patented Sept. 8, 1914.

Application filed June 16, 1913. Serial No. 774,007.

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, West Indies, have invented a new and improved Machine for Removing Pulp from Cocoa and other Pulpy 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 pulp from cocoa and other similar pulpy berries in a very simple and economical manner and without injury to the berries. In order to accomplish the desired result use is made of a series of drums arranged one above the other and having their inlet and exit ends arranged alternately on opposite sides of the machine, a feed hopper at the inlet end of the uppermost drum, chutes connecting the exit end of one drum with the inlet end of the next drum below, revoluble feeding members arranged in the said drums and rubbing and feeding members arranged in the said drums alternately with the said feeding members. Use is also made of means whereby the berries are retarded in the drums to insure a thorough rubbing action of the berries with a view to separate the pulp from the berries.

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 sectional side elevation of the machine for removing the pulp from pulpy berries; Fig. 2 is a cross section of the same on the line 2—2 of Fig. 1; Fig. 3 is an enlarged side elevation of one of the feeding members and one of the adjacent rubbing members on the same shaft, the rubbing member having each spiral blade divided radially from the hub to the peripheral edge of the member; and Fig. 4 is a similar view of the feeding member and the rubbing and feeding member having spiral blades each divided from the peripheral face inward to within a distance of the hub.

The machine for removing the pulp from cocoa and other pulpy berries is mounted on a suitably constructed frame A supporting a number of drums or cylinders B, C and D located one below the other with a fourth lowermost drum E located a distance below the drum D and fixed within a washing tank F. The uppermost drum B is pro-

vided at the right-hand end with an inlet B' connected with a hopper G containing the berries to be treated, and the left-hand end of the drum B is provided at its bottom with an outlet B² opening into a chute H leading to an inlet C' in the left-hand end of the drum C, which latter is provided at its right-hand end with an outlet C² connected by a chute H' with an inlet D' on the right-hand end of the drum D. The left-hand end of the drum D is provided with an outlet D² connected by a chute H² with the inlet E' of the drum E, which latter is provided at the right-hand end with an outlet E² opening into the tank F opposite an elevator I for carrying the berries out of the tank F to a chute I' arranged outside of the tank F and delivering the berries to a basket or other receptacle held on the lower end of the chute I'.

Centrally through the drum B extends a shaft J journaled in suitable bearings on the frame A, and on this shaft J are secured feeding members K and rubbing and feeding members L, L', of which the feeding members K are each provided with a hub K' and spiral blades K² disposed radially and having uninterrupted faces, as plainly indicated in Figs. 3 and 4. The hub K' is secured by a set screw K³ or other suitable fastening means to the shaft J. Each of the rubbing and feeding members L is in the form of a wheel and is provided with a hub L² and spiral blades L³ each of which is divided radially from the hub L² to the peripheral face of the blades so as to form a number of separate arms or pins spaced from each other and with the edges of adjacent members parallel so that each arm is fan-shaped, that is, each face is narrower at the hub L² than at the peripheral edge. A set screw L⁴ screws in the hub L² against the shaft J to secure the rubbing and feeding member L in position on the shaft J between the feeding members K. By the use of the set screws K³, L⁴, the members K and L can be adjusted relative to each other so that more or less of a passage is formed between the corresponding blades K² and L³ with a view to feed the berries slower and cause more rubbing thereof, or to feed the berries faster and to reduce the rubbing action according to the nature of the berries under treatment. Thus for berries with a very tenacious pulp the passage is reduced to feed the berries slower and to cause more rub-

bing, and with berries having a less tenacious or soft pulp the passage between the adjacent blades is increased to feed the berries faster and to cause less rubbing thereof.

5 Each rubbing and feeding member L' (see Fig. 4) consists of a hub L^5 provided with spiral blades L^6 disposed radially and divided radially from the peripheral face to within a distance of the hub L^5 so as to

10 provide each blade with a solid portion adjacent the hub, and arms or pins extending radially outward from the said solid portion, as will be readily understood by reference to Fig. 4. It will be noticed in this case

15 that the arms or pins of the blades L^6 are considerably shorter than the arms or pins of the blades L^3 of the rubbing and feeding members L . A set screw L^7 serves to fasten the member L' to the shaft J between a pair

20 of feeding members K . As shown in Fig. 4, for instance, the passage adjacent the ends of the blades K^2 , L^6 is very narrow, while the passage shown in Fig. 3 is wider, that is, the adjacent ends of the blades K^2 and L^3

25 are spaced farther apart. By the arrangement described each rubbing and feeding member L alternates with a feeding member K , and each rubbing and feeding member L' likewise alternates with a feeding member

30 K , and the members L and L' are alternately arranged one relative to the other throughout the length of the drum B . The feeding members K are arranged adjacent the inlet B' and the outlet B^2 , and the outlet B^2 is controlled by a retarding block N

35 mounted to slide on the shaft J and pressed on by a spring N^1 so as to push the retarding member N toward the last feeding member K . Now it will be noticed that

40 when the shaft J is rotated and with it the members K , L and L' and berries pass into the inlet B' from the hopper G then such berries are correctly fed from the right to the left in the drum B , and during this

45 travel are caused to rub one against the other and against the blades of the feeding members K and those of the rubbing and feeding members L , L' to loosen the pulp from the berries and also to detach some of

50 the pulp from the berries. The drum B is perforated to allow the loose, detached pulp to pass out through the perforations and to drop onto a chute O for carrying the pulp to one side of the machine. The berries and

55 pulp remaining in the drum B finally reach the retarding block N , which is pushed by the advancing berries to the left to allow the berries to pass through the outlet B^2 into the chute H , which delivers the berries

60 to the inlet C' of the next drum C . This drum C is provided with a centrally-disposed shaft J' on which are secured the feeding members K and the rubbing and feeding members L and L' , the same as

65 above described relative to the drum B so

that further description of the same is not deemed necessary. A retarding member N^2 similar to the member N is arranged in the right-hand end of the drum C and is pressed on by a spring N^3 to control the outlet C^2 of

70 the drum C . The drum C is non-perforate, and when the machine is in use water is poured into the inlet C' in sufficient quantity to aid in the separation of the pulp from the berries during their travel from

75 the left to the right in the drum C , the water also rendering the pulp more watery and thinner. The berries and pulp finally pass through the outlet C^2 and the chute H' into the inlet D' of the drum D , which latter

80 is provided with a centrally-disposed shaft J^2 journaled on the main frame A , and provided with the feeding members K and the rubbing and feeding members L , L' , the same as above described relative to the

85 drums B and C . A retarding member N^4 is arranged on the left-hand end of the drum D and is pressed on by a spring N^5 , and the retarding member N^4 controls the outlet D^2 leading to the chute H^2 . The drum D is

90 perforated for the passage of the water and pulp separated from the berries, it being understood that the same action takes place in the drum D as above described relative to the drums B and C , so that the pulp is

95 practically all removed from the berries, and a large portion of the pulp passes through the perforations of the drum B onto the chute O' which delivers the pulp to one side of the machine. The berries

100 next pass from the drum D into the drum E by way of the chute H^2 and the inlet E' , and in this drum E is centrally arranged a shaft J^3 provided with feeding members K and rubbing and feeding members L , L' , the

105 same as above described relative to the drums B , C and D . A retarding member N^6 pressed on by a spring N^7 is arranged on the right-hand end of the drum E and controls the outlet E^2 , through which drop the

110 berries onto the elevator I to be carried out of the tank F as before mentioned. The drum E is perforate and is submerged in the water in the tank F so that a washing and rubbing action is given to the berries

115 to completely remove all traces of pulp from the berries and to allow the pulp to pass through the perforations into the tank F to settle to the bottom thereof.

In order to impart the desired motion to

120 the shafts J , J' , J^2 and J^3 , use is made of a pulley P secured on the shaft J^2 and connected by belt with other machinery for imparting a rotary motion to the shaft J^2 and the members L and L' secured on the said

125 shaft. On the left-hand end of the shaft J^2 is secured a sprocket wheel Q connected by a sprocket chain Q' with a sprocket wheel Q^2 attached to the shaft J , so that when the shaft J^2 is rotated a like rotary motion is

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given to the shaft J and the members K, L and L' secured thereon. On the left-hand end of the shaft J² is secured a sprocket wheel R connected by a sprocket chain R' with a sprocket wheel R² secured on the shaft J³, so that when the shaft J² is rotated a like rotary motion is given to the shaft J³ and the members K, L and L' secured thereon. On the shaft J³ adjacent the sprocket wheel R² is secured a pulley R³ connected by a crossed belt R⁴ with a pulley R⁵ secured on the left-hand end of the shaft J' to rotate the latter when the machine is running. On the right-hand end of the shaft J³ is secured a sprocket wheel S connected by a sprocket chain S' with a sprocket wheel S² secured on the shaft I² of the endless bucket elevator I to cause the buckets to travel and take up the berries when the machine is running.

From the foregoing it will be seen that when the machine is running the berries are continually subjected to a rubbing action against each other and against the blades of the members K, L and L' so that the pulp is gradually removed from the berries and the latter are separated from the pulp and finally washed while passing through the drum E in the tank F. The berries are not liable to be injured during the rubbing action, as the berries are continually rolled over and fed forward in the several drums to prevent crushing of the berries. It will be noticed that by increasing or decreasing the tension of the several springs N', N³, N⁵ and N⁷ the berries can be retarded more or less in the several drums according to the nature of the berries under treatment at the time, that is, the tension is increased if the pulp is very tenacious and the tension of the springs is decreased in case the pulp is soft and less tenacious.

It is understood that the berries treated in this machine have the skin or pod removed prior to placing the berries into the hopper G. Very light, defective berries are separated from the good marketable berries in the tank F, as such light, defective berries do not drop down but rise on the water to the level thereof and are removed by the use of a strainer.

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

1. A machine of the class described, comprising a series of fixed drums arranged one above the other and having their inlet and exit ends arranged alternately on opposite sides of the machine, a feed hopper at the inlet end of the uppermost drum, chutes connecting the exit end of one drum with the inlet end of the next drum below, revoluble feeding members and spiral rubbing and spiral feeding members arranged alternately in each of the said drums, the uppermost

and third drum being perforated, and a chute beneath each of the said perforated drums and extending to one side of the machine.

2. A machine of the class described, comprising a series of fixed drums arranged one above the other and having their inlet and exit ends arranged alternately on opposite sides of the machine, a feed hopper at the inlet end of the uppermost drum, chutes connecting the exit end of one drum with the inlet end of the next drum below, revoluble feeding members and rubbing and feeding members arranged alternately in each of the said drums, a washing tank filled with water and in which the lowermost drum is submerged, the lowermost drum and sundry of the other drums being perforated, and chutes beneath the perforated drums and extending to one side of the machine.

3. A machine of the class described, comprising a series of fixed drums arranged one above the other, and having their inlet and exit ends arranged alternately on opposite sides of the machine, a feed hopper at the inlet end of the uppermost drum, chutes connecting the exit end of one drum with the inlet end of the next drum below, revoluble feeding members and rubbing and feeding members arranged alternately in each of the said drums, a washing tank filled with water and in which the lowermost drum is submerged, the lowermost, the next to the lowermost and the uppermost drums being perforated, and chutes beneath the uppermost and next to the lowermost drums and extending to one side of the machine and an elevator extending into the said washing tank at the exit end of the lowermost drum to receive the cleaned berries from the latter and carrying the same out of the washing tank.

4. A machine of the class described, provided with a drum, a shaft in the said drum, revoluble feeding members on the said shaft, two sets of revoluble rubbing and feeding members secured on the said shaft and alternating with the said feeding members, the rubbing and feeding members being arranged alternately one to the other throughout the length of the shaft, each of the said feeding members having a hub and spiral uninterrupted blades extending radially from the said hub and each of the said rubbing and feeding members having a hub and spiral blades radially divided, and means for adjustably securing the said members to the said shaft.

5. A machine of the class described, provided with a drum, a revoluble shaft in the drum, feeding members on the shaft and each formed of a hub and spiral blades, and two sets of rubbing and feeding members on the shaft and arranged alternately with each

other, and with the feeding members, each rubbing and feeding member being formed of a hub and spiral blades, the members of one set having their blades divided from the peripheral face to within a short distance of the hub and the members of the other set having their blades divided from the peripheral face to the hub to form fan-shaped arms.

- 10 6. A machine of the class described, provided with a drum having at one end an inlet and at the other end an outlet, a spring-pressed retarding member at the outlet end of the drum and controlling the said outlet,
- 15 a revoluble shaft centrally arranged in the said drum, a series of feeding members each having a hub secured to the shaft and uninterrupted spiral blades extending radially

from the said hub, the feeding member at one end of the series being adjacent the said retarding member, and the feeding member at the other end of the series being at the inlet of the drum, and a series of rubbing and feeding members alternating with the said feeding members and each having a hub secured to the shaft and divided blades extending radially from the hub and gradually widening at their faces from the base to the outer end.

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,
GEORGE H. EMSLIE.