(No Model.) 3 Sheets—Sheet 1.

A. S. PEREZ.

MACHINE FOR HULLING COFFEE BERRIES.

No. 568,144. Patented Sept. 22, 1896.

Fig. 2

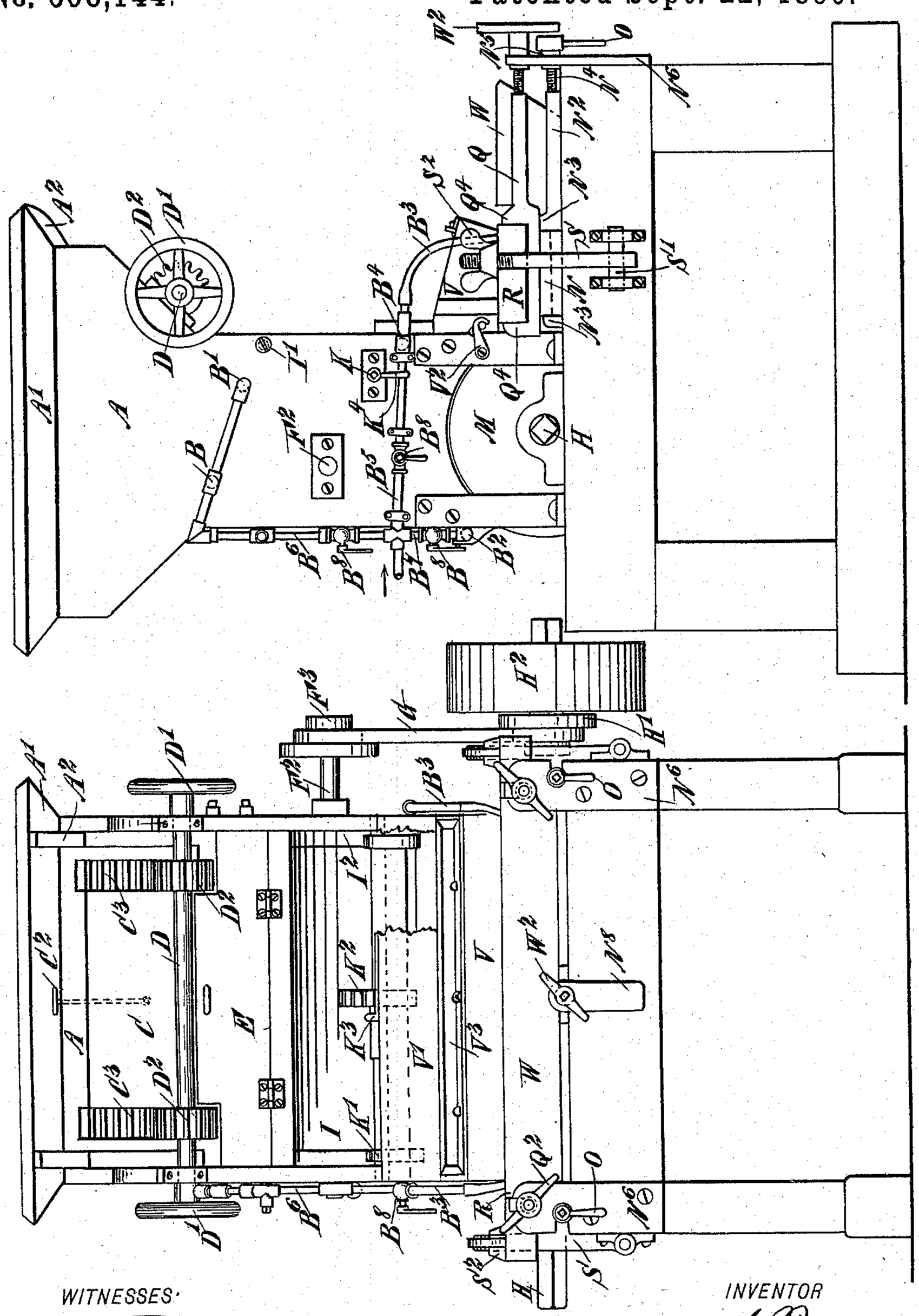

Fig. 1

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Fig. 4

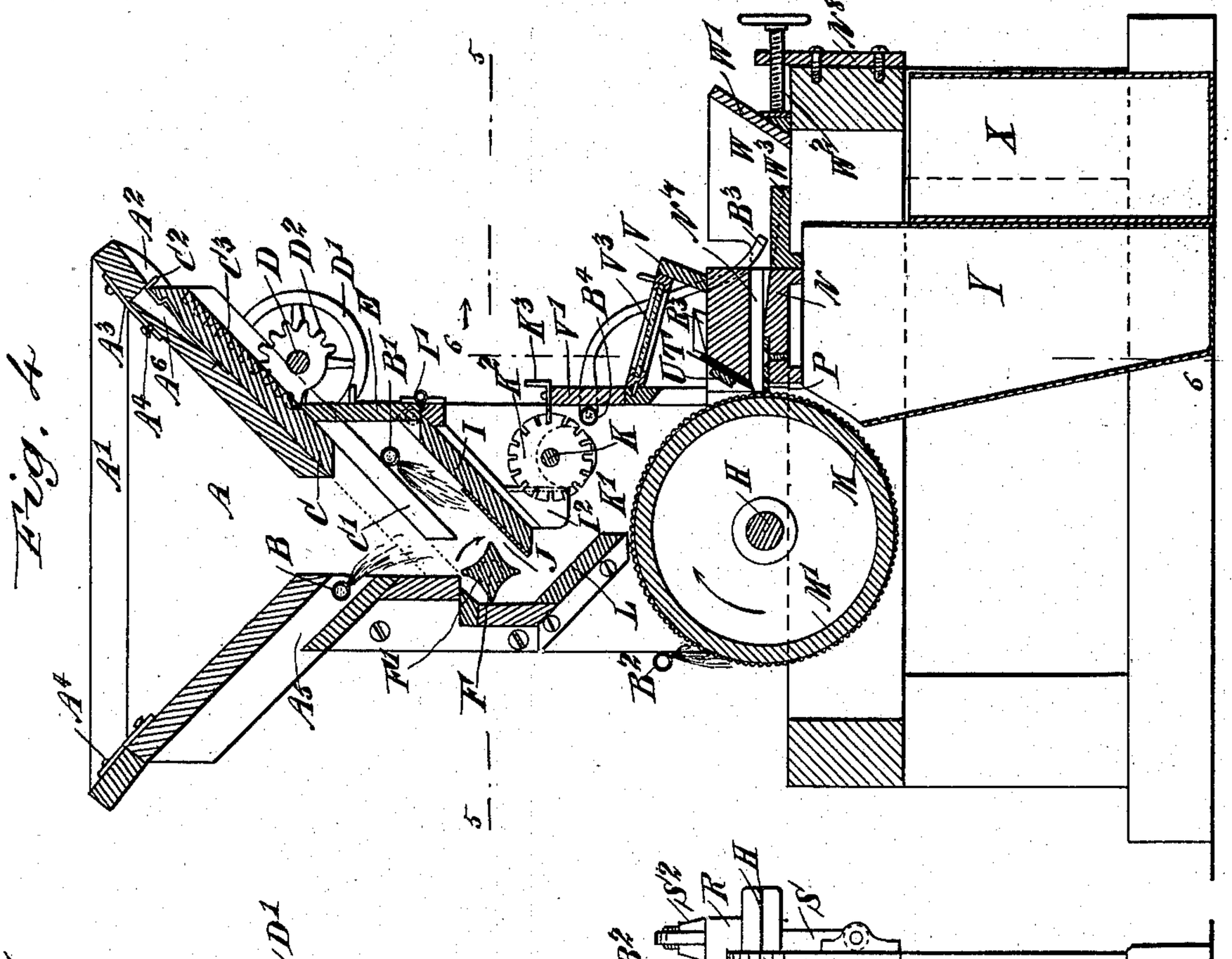

Fig. 5

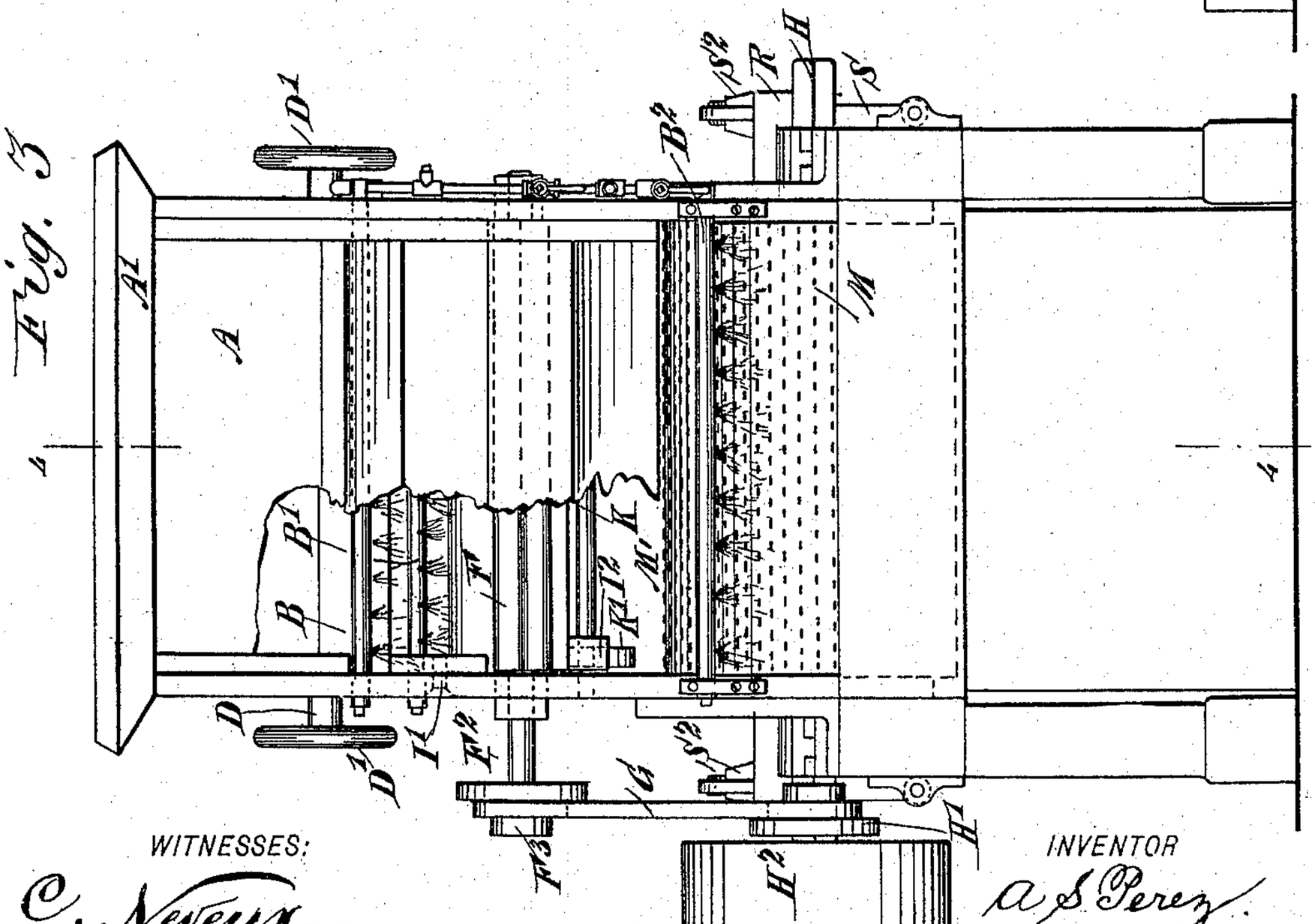

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Fig. 9

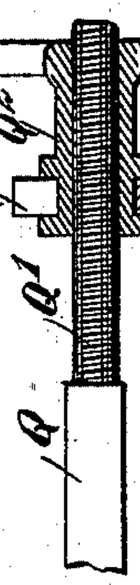


Fig. 5

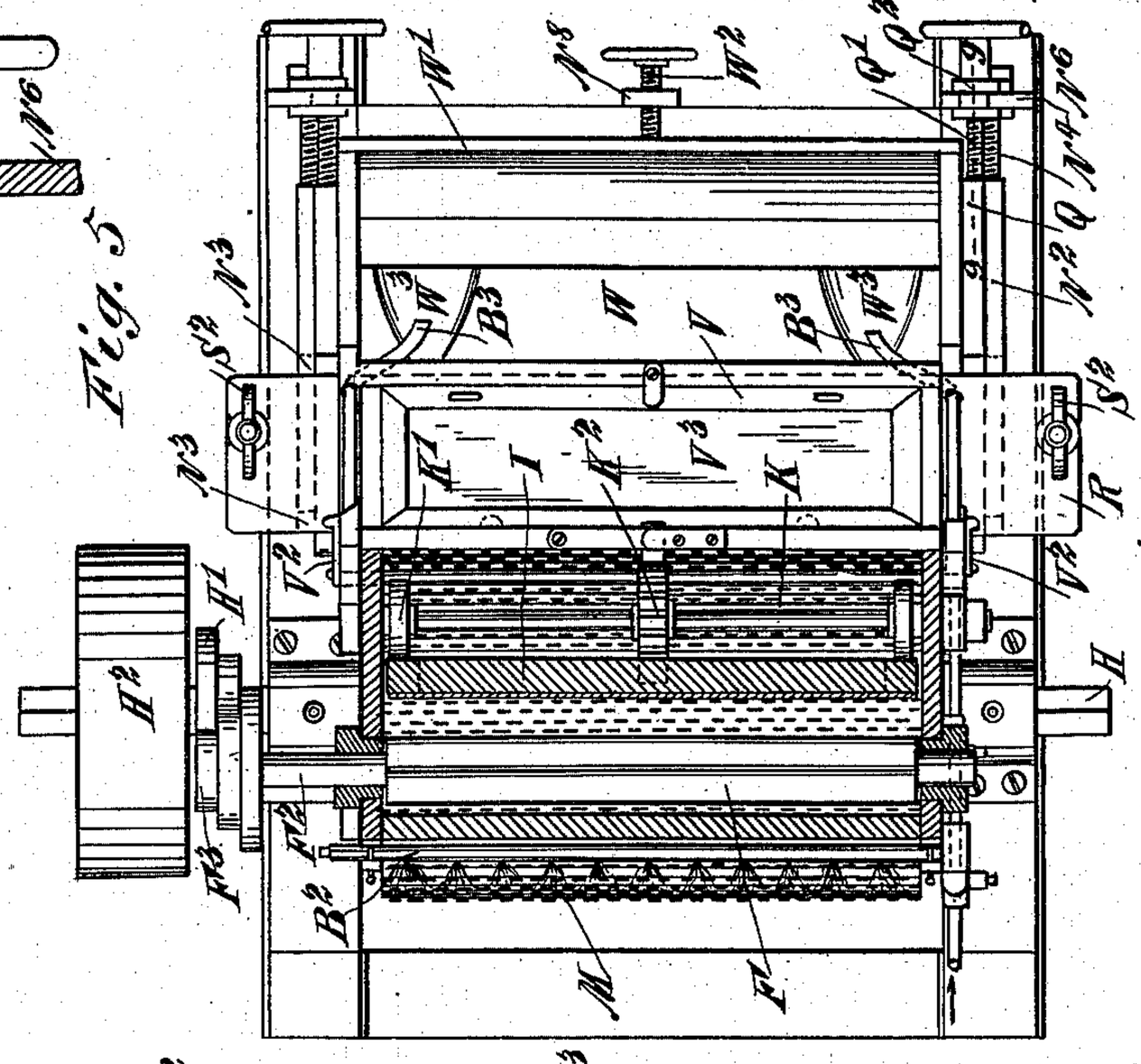


Fig. 7

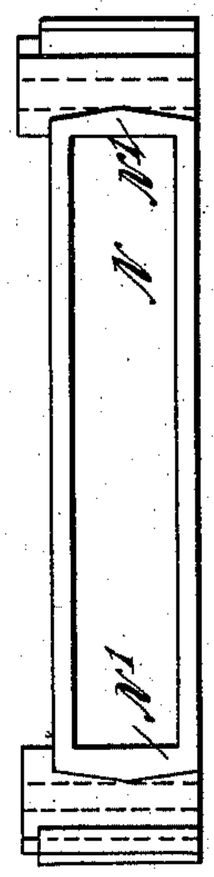


Fig. 8

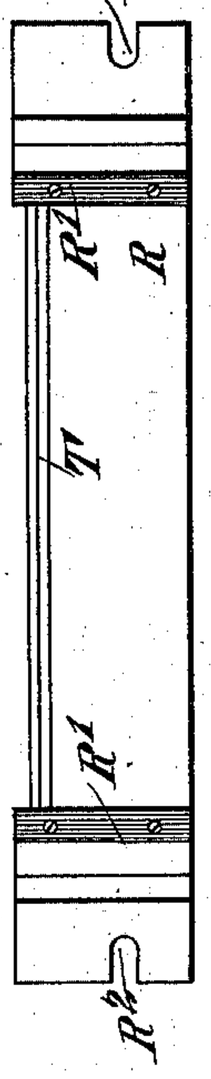
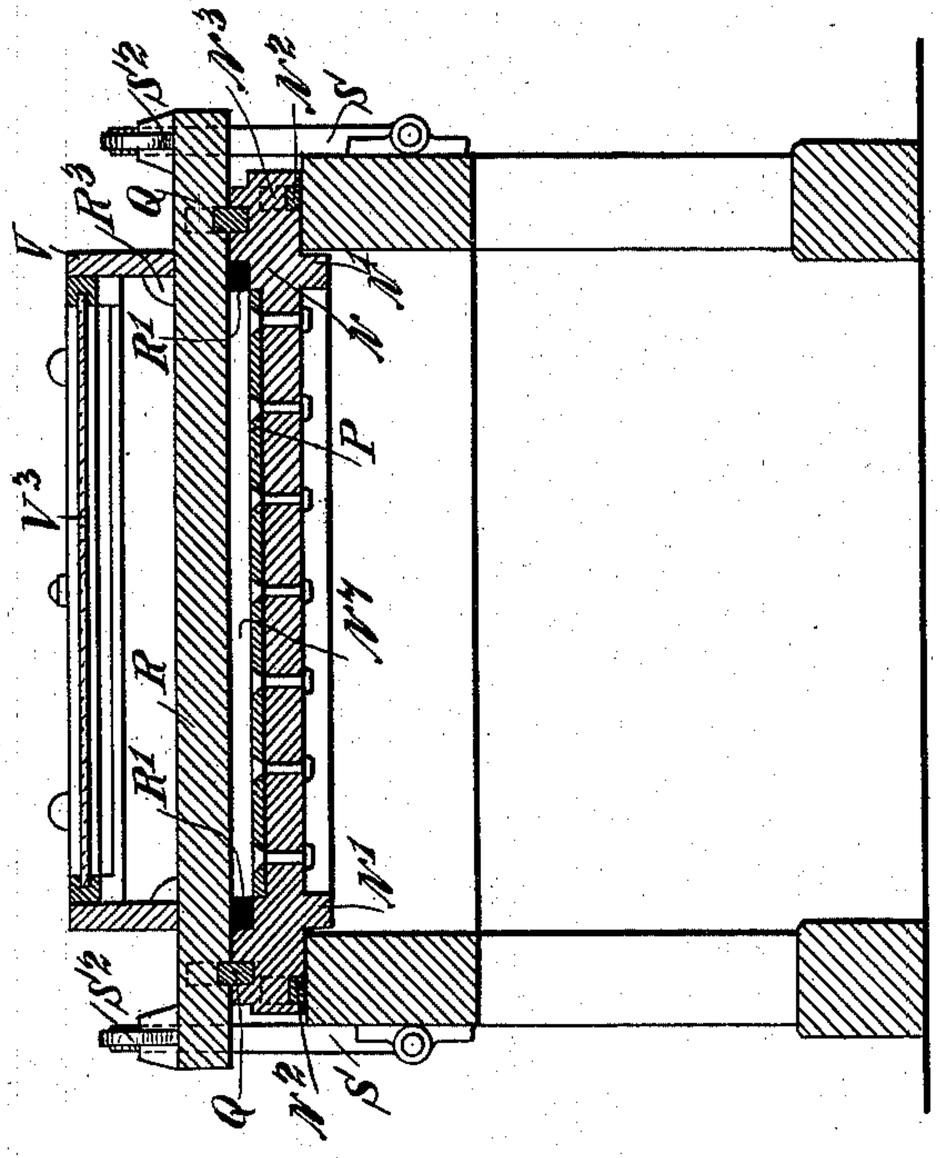


Fig. 6



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UNITED STATES PATENT OFFICE.

ANTONIO S. PEREZ, OF NEW YORK, N. Y.

MACHINE FOR HULLING COFFEE-BERRIES.

SPECIFICATION forming part of Letters Patent No. 568,144, dated September 22, 1896.

Application filed November 19, 1895. Serial No. 569,420. (No model.)

To all whom it may concern:

Be it known that I, ANTONIO S. PEREZ, a citizen of Venezuela, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Machines for Hulling Coffee-Berries, of which the following is a full, clear, and exact description.

My invention relates to machines for hulling coffee-berries, and has for its object to thoroughly effect the separation of the grains from the hull without breaking the grains and to so construct the machine that its main parts will be readily accessible and exposed to view during the operation of the machine.

The invention also comprises an improved arrangement of the sprinkling-tubes employed to discharge water against various parts of the machine for the purpose of cleaning them and of assisting in the separation of the grains from the broken hulls.

To these ends my invention consists of certain features of construction that will be hereinafter described and claimed.

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

Figure 1 is a front elevation of the improved machine. Fig. 2 is a side elevation thereof. Fig. 3 is a rear elevation of the machine. Fig. 4 is a longitudinal sectional elevation of the same, taken on the line 4 4 of Fig. 3. Fig. 5 is a sectional plan on line 5 5 of Fig. 4. Fig. 6 is a cross-sectional elevation on line 6 6 of Fig. 4. Figs. 7 and 8 are inverted plans of certain slides forming part of the machine; and Fig. 9 is a detail sectional elevation of the adjusting device for one of said slides, taken on line 9 9 of Fig. 5.

The improved machine comprises a hopper A, having a separate removable top A′, provided with projections A^2 to guide it on the body of the hopper, and held in position by means of catches A^3, pivoted to the body of the hopper, and engaging pins A^4 on the top A′. At its rear the hopper is provided with a channel or opening A^4, in which is located a perforated pipe B, arranged to discharge water into the lower part of the hopper. At the front of the hopper a bottom C is mounted to slide on guides C′, and when in its upper position the said bottom is locked by means of a spring-catch C^2, secured to the hopper and adapted to be received in a recess A^6 thereof. The projections A^2 of the top A′ also limit the upward movement of the bottom C, but when said top is removed the bottom likewise may be taken out. In order to slide the bottom up and down, I provide a transverse shaft D, provided with hand-wheels D′ or like devices for turning it, and on said shaft are secured pinions D^2, engaging rack-surfaces C^3 on the bottom C. The pinions D^2 are preferably mutilated, so as to facilitate the removal of the bottom C. On the front of the outlet of the hopper is located another perforated pipe B′, and a hinged leaf or panel E, secured to the frame of the machine, normally covers an opening leading to said pipe, so that by swinging the leaf E down access may be had to the pipe B′.

At the rear of the machine and directly below the outlet of the hopper is located the distributer F, consisting of a rotatable rod having a plurality of concave faces F′, the shaft F^2 of said distributer carrying a step-pulley F^3, adapted to be driven by a belt or like connection G from a similar pulley H′ on the driving-shaft H, said shaft also carrying a main pulley H^2.

At the front of the machine and extending from a point adjacent to the lower end of the hinged leaf E to a point below the distributer F is located the adjustable graduator I, whose office is to regulate the width of the throat J at the side and below the said distributer. The graduator is pivoted to the frame by means of trunnions I′, and is provided at its lower end with brackets I^2, engaged by cams or eccentrics K′, secured to a shaft K, said shaft being also provided with a ratchet-wheel or notched wheel K^2, adapted to be locked by a pawl or latch K^3. A crank or handle K^4, Fig. 2, serves to turn the shaft.

From the bottom C to the throat J the downward passage for the berries is normally closed on all sides. Below the throat J is arranged an inclined guide L, whose lower end is adjacent to the periphery of the cylinder M, held to rotate with the driving-shaft H. Said cylinder is provided with a rough surface, which may be produced by fastening on the cylinder a sheet of metal M′, having pro-

jections formed thereon. The cylinder in operation rotates in the direction indicated by the arrow in Fig. 4. Adjacent to the rear surface of the cylinder is arranged a third sprinkling-pipe B^2.

Adjacent to the front surface of the cylinder a slide N is mounted to move on the frame toward and from the cylinder, said slide having ledges N′, Fig. 6, at its bottom to guide it on the frame. The bottom of the slide is also recessed near its outer edges to receive the adjusting-rods N^2, on which the slide is loosely set between projections N^3 on said rods, Fig. 2, and the said rods have screw-threaded portions N^4, engaged by nuts N^5, mounted to rotate (without sliding) in stationary bearings N^6. The nuts may be turned by means of a wrench, as indicated at O, or in any other approved manner. In order to facilitate the movement of the slide when the adjusting-rods N^2 are actuated successively, the side surfaces of the projections N′ are tapered toward each end, Fig. 7. The slide N is provided with a recess N^7 in its upper surface, and the said recess receives a blade P, which projects beyond the rear edge of the slide. (See Fig. 4.) This arrangement permits of readily filing the edge of the blade when it has become worn. The portion of the recess N^7 forwardly of the blade P is inclined downwardly, so that said recess increases in height toward its front end. The upper surface of the slide N is also provided near its outer edges with longitudinal recesses adapted to loosely receive adjusting-rods Q, capable of moving longitudinally in said recesses, and provided at their front ends with threaded portions Q′, screwing into nuts Q^2, held in slots Q^3 of the stationary bearings N^6, it being understood that the nuts are held against sliding movement, Fig. 9. The slots Q^3 permit of lifting the nuts Q^2 and the adjusting-rods Q out of their bearings. The rear ends of the rods Q are formed with upward projections Q^4, Fig. 2, between which is held a second slide R, adapted to rest on the lower slide N. A packing R′, secured to the bottom of the slide R, extends into the recess N^7 along the sides thereof, Fig. 6. The slide is also provided with recesses to partly receive the adjusting-rods Q. In order to press the slide R down upon the slide N, I provide screw-rods S, mounted to turn and slide in stationary guides S′ and adapted to swing into notches R^2 at the sides of the slide R. Winged nuts S^2 engage the upper surface of said slide. It will be seen that this tightening device may be moved longitudinally with the slide R, and when the screw-rods S are swung out of the notches R^2 (see Fig. 8) the slide may be lifted off the machine. The rear end of the slide R is inclined downwardly, Fig. 4, and has secured to it a yielding strip of rubber or like material T, projecting beyond the slide and adjacent to the cylinder M, and on top of said yielding strip is secured a rigid blade U, sufficiently spaced from the cylinder to allow coffee-grains to pass without being broken. The upper surface of the slide R is further provided with projections R^3, adapted to prevent lateral movement of a casing V, fitted with its rear edge under a stationary board V′ of the casing, catches V^2, Figs. 2 and 5, being employed to securely hold the casing against the frame and produce a tight joint. The casing is provided with a transparent top V^3, which permits of watching the operation of the cylinder and the blades. The projections R^3 also serve to guide the slide R on the casing V when said slide is adjusted. The casing is removable upon unfastening the catches V^2.

Abutting against the front end of the slide N is a discharge-slide W, having its front end W′ formed like a hopper and slidable longitudinally upon the frame. In order to press said discharge-slide against the slide N and secure a tight joint between them, I provide a screw W^2, engaging the stationary bearing N^8 and the said discharge-slide. The latter is formed at its sides with gradually-deepened grooves W^3, into which water may be discharged by means of flexible tubes B^3, passing through perforations in the slide R. Said tubes are connected to a transverse imperforate tube B^4, which is connected to the supply-pipe B^5, Fig. 2, having a branch B^6 leading to the perforated pipes B and B′, and another branch, B^7, leading to the perforated pipe B^2. Cocks B^8 are provided at suitable points in the pipes B^5, B^6, and B^7.

Suitable chutes and boxes are provided to receive the hulls and the grains, and, as illustrated in Fig. 4, the grains are received in a box X, while the hulls are delivered to a box Y. It will be understood, however, that any approved arrangement may be adopted.

The operation of the machine is as follows: The bottom C being closed, the hopper A is filled with coffee-berries. The shaft H is then rotated to impart motion to the cylinder M and to the distributer F. The graduator I is adjusted to provide a throat J of a width corresponding to the size of the berries, and water is turned on to issue from the sprinkling-pipes B and B′. The bottom C is then raised until it is held by the catch C^2. The berries then fall upon the graduator and upon the concave surfaces F′ of the distributer, the latter agitating the mass, so that with the assistance of the stream of water discharged from the pipes B B′ the berries are constantly carried down the throat J without any danger of crowding. If any stone or other hard material that might injure the hulling mechanism should get into the hopper, the operator can readily see and take out such foreign matter through the opening above the board V′, the berries gliding down the inclined guide L, and thus being directed toward the cylinder M, which carries them toward the blades

U and P and the flexible strip T. The rigid blade U opens the berries without crushing the grains, the hulls adhering to the cylinder, while the smooth grains, after flexing the yielding strip T, pass into the recess or outlet N^7, the material following upon the cylinder crowding the grains outward. This crowding action will be sufficient to effect the discharge of the grains except at the sides of the delivery-slide W, where the jets of water delivered from the pipes B^3 will assist in carrying or sweeping off the grains. The attendant is enabled to constantly watch the operation through the glass top V^3. The grains fall into the box X, while the hulls continuing to adhere to the cylinder (the blade P preventing the grains from being crushed) finally drop into the box Y. Any matter that may still adhere to the cylinder is washed off by water discharged from the pipe B^2.

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

1. The combination of the hopper having inclined sides, the bottom mounted to slide along one of said sides, the removable top arranged in the path of travel of the bottom, whereby the top forms a stop normally preventing withdrawal of the bottom, and the hulling mechanism below the outlet of the hopper, substantially as described.

2. The combination of the hopper having inclined sides and inclined channels below said sides, sprinkling-pipes in said channels, a hinged leaf or panel at the outer end of one of the channels, and a hulling mechanism below the hopper, substantially as described.

3. The combination of the hopper having inclined sides and inclined channels below said sides, a bottom fitted to slide in one of said channels in contact with one of the inclined sides, sprinkling-pipes located in said channels, a leaf or panel hinged at the outer end of one of the channels and adapted to engage the sliding bottom, and a hulling mechanism below the hopper, substantially as described.

4. The combination of the hopper having inclined sides and inclined channels below the same, sprinkling-pipes in said channels, a hinged panel at the outer end of one of said channels, a movable distributer below the outlet of the hopper, an adjustable graduator hinged adjacent to the lower end of the said panel and extending toward the distributer, and a hulling mechanism below the graduator, substantially as described.

5. The combination of the hopper having inclined sides and inclined channels below the same, sprinkling-pipes in said channels, a movable distributer below the outlet of the hopper, an adjustable graduator extending adjacent to the distributer, said graduator being inclined and forming the lower wall of one of the said inclined channels, and a hulling mechanism below the graduator, substantially as described.

6. The combination of the rotatable cylinder, mechanism for feeding the material thereto, the hulling mechanism arranged to coöperate with the cylinder, and a sprinkling device arranged to discharge water on that part of the cylinder which rotates toward the discharge end of the feed device, to clean the cylinder before it receives the material, substantially as described.

7. The combination of the rotatable cylinder, mechanism for feeding the material thereto, the yielding strip adjacent to the cylinder, the rigid upper blade above said yielding strip, and the lower blade below the yielding strip and separated therefrom by a recess or chamber increasing in height from the cylinder outward, substantially as described.

8. The combination of the rotatable cylinder, mechanism for feeding the material thereto, an upper slide movable toward and from the cylinder, the superposed strips or blades carried by the said slide, a lower slide movable toward and from the cylinder independently of the upper slide, and the lower blade carried by the lower slide, the slides inclosing between them a recess for the delivery of the material, substantially as described.

9. The combination of the rotatable cylinder, the feed mechanism, the lower slide carrying a blade adjustable toward and from the cylinder, the upper slide adjustable independently of the lower slide and inclosing therewith a recess for the delivery of the material, a packing engaging the upper and lower slides at the sides of said recess, and the strips or blades secured to the upper slide, substantially as described.

10. The combination of the cylinder, the feed mechanism, the upper and lower slides independently adjustable toward and from the cylinder and carrying strips or blades adjacent thereto, said slides inclosing between them a recess for the escape of the material, and a tightening device for pressing the upper slide down upon the lower slide, said tightening device being movable toward and from the cylinder to follow the upper slide in its movement, substantially as described.

11. The combination of the cylinder, the feed mechanism, the slides adjustable toward and from the cylinder and carrying blades forming therewith the hulling mechanism, said slides inclosing between them a recess or chamber for the escape of the material, and the discharge-slide abutting against the outer end of the lower blade-carrying slide, substantially as described.

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Witnesses:
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JNO. M. RITTER.