(No Model.) 3 Sheets—Sheet 1.

C. E. LIPE.

HULLING AND CLEANING MACHINE.

No. 525,813. Patented Sept. 11, 1894.

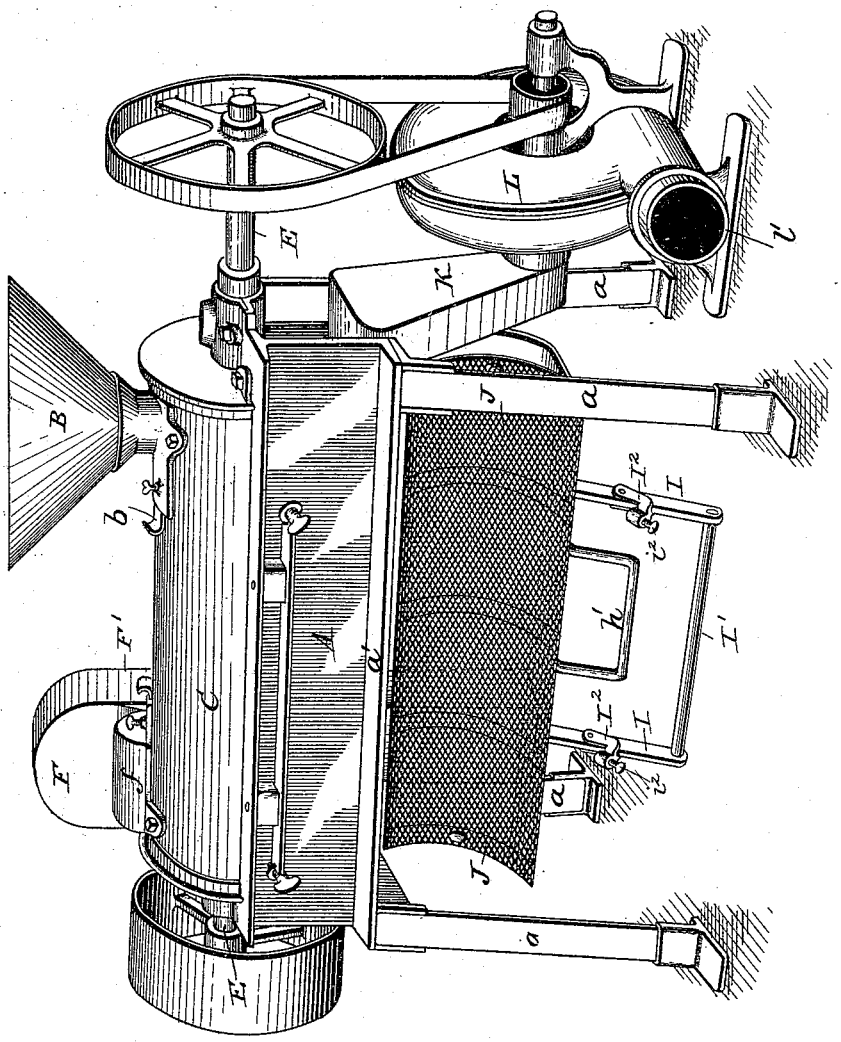

FIG. 1.

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H. E. Davis

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(No Model.) 3 Sheets—Sheet 2.

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FIG. 2.

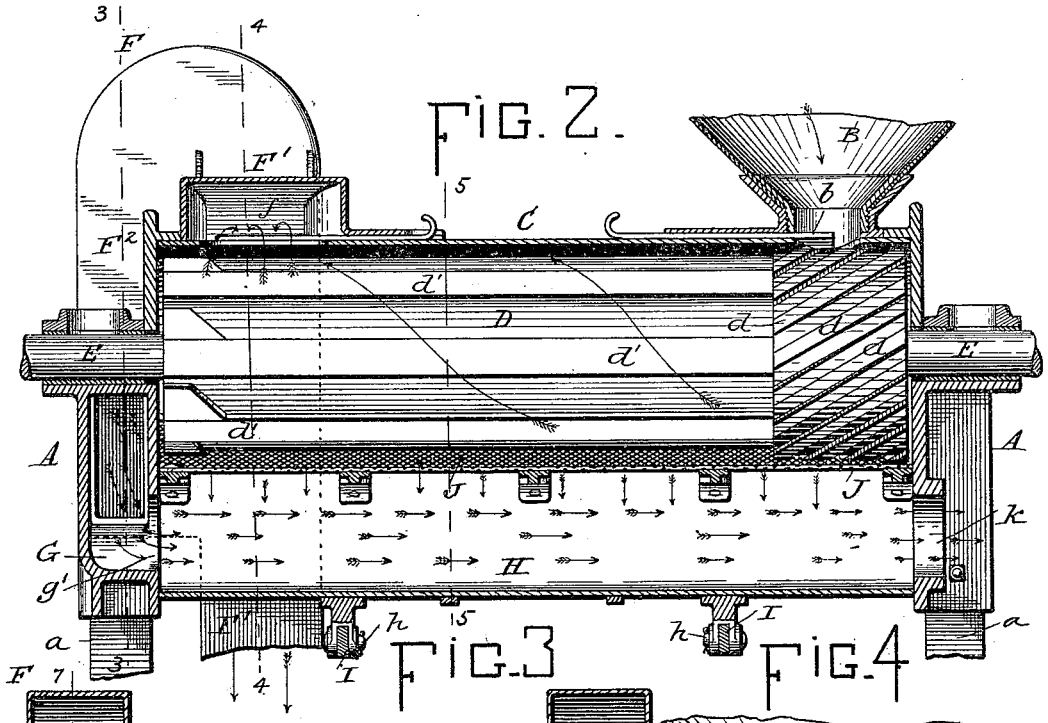


FIG. 3

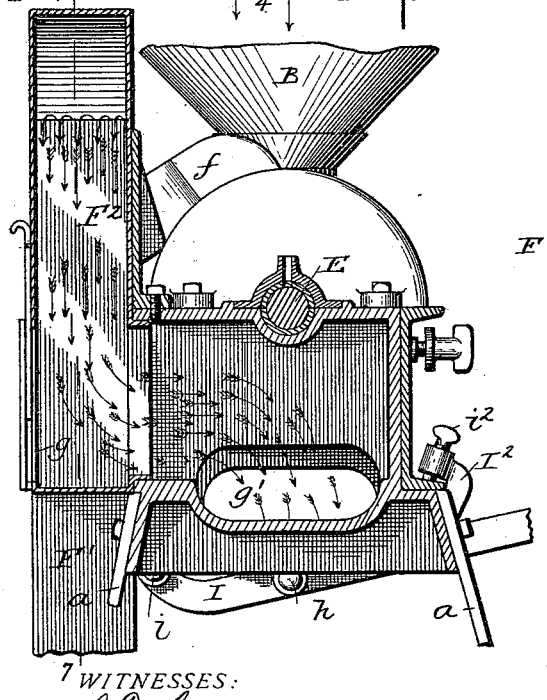
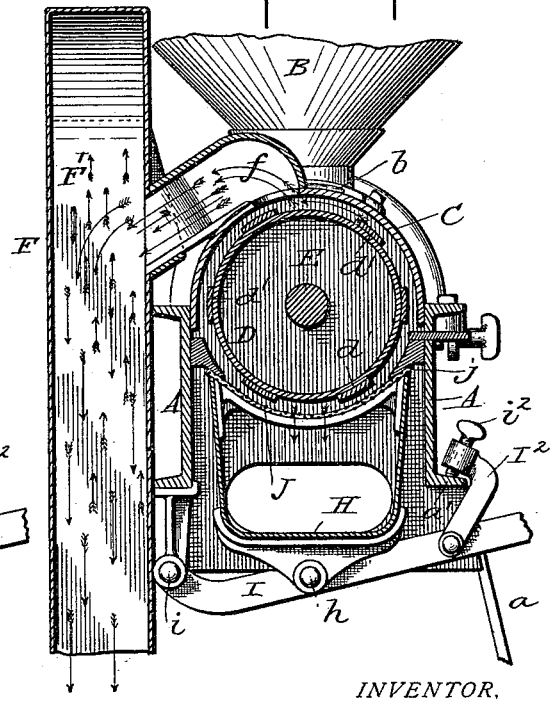


FIG. 4



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HULLING AND CLEANING MACHINE.

No. 525,813. Patented Sept. 11, 1894.

FIG. 5

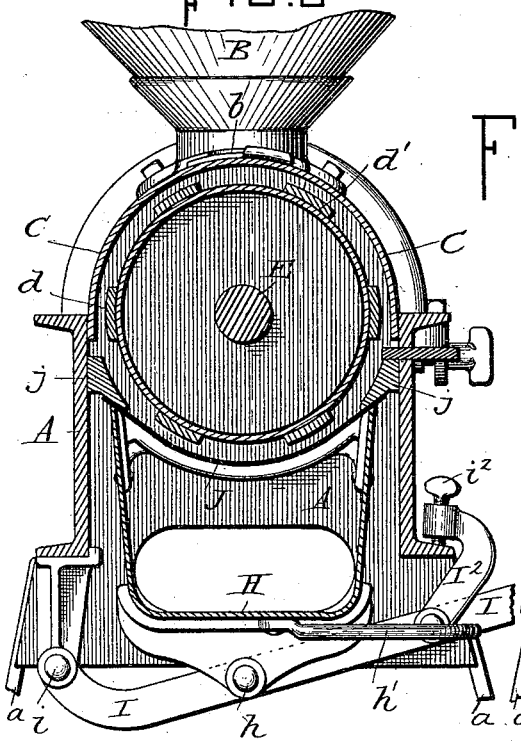


FIG. 6.

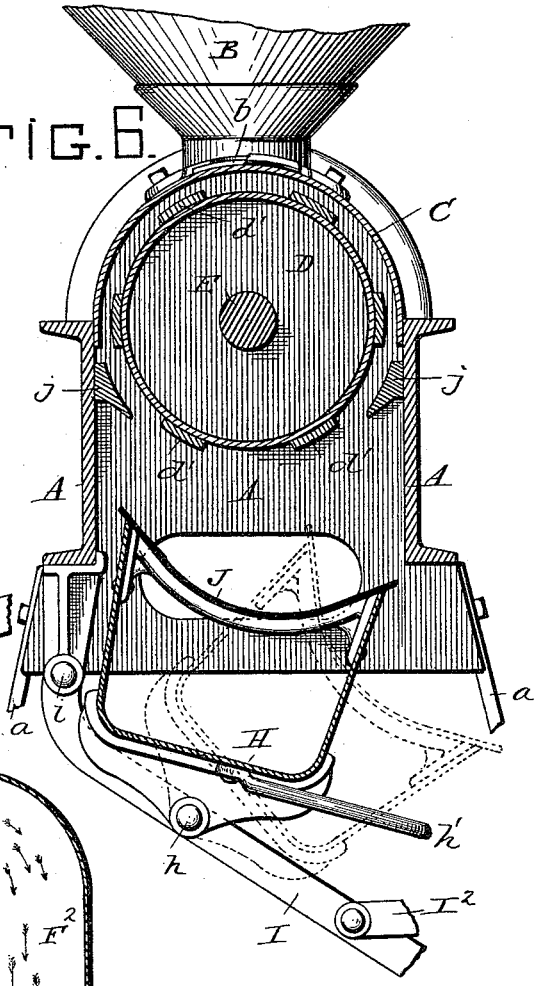
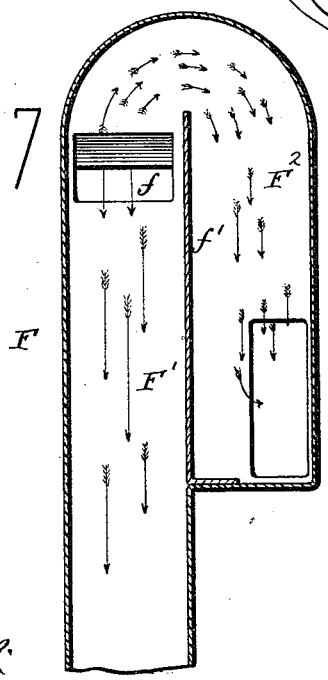


FIG. 7



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UNITED STATES PATENT OFFICE.

CHARLES E. LIPE, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE ENGELBERG HULLER COMPANY, OF SAME PLACE.

HULLING AND CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 525,813, dated September 11, 1894.

Application filed February 10, 1894. Serial No. 499,810. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. LIPE, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Hulling and Cleaning Machines, of which the following is a specification.

My invention more especially relates to mechanism adapted for hulling, cleaning, and separating grains or berries, such as coffee, of the class in which the hulling-casing and fans rotate on an axis substantially horizontal, in contradistinction to the class in which the axis on which these parts rotate is vertical or substantially so.

The special object of my invention is successfully to separate the berries or grains from their hulls, dust, and other impurities by simple and effective means, which ends I attain by certain novel combinations, constructions, and organizations of instrumentalities hereinafter specifically designated.

In order to carry out my invention in the best way now known to me, I employ a series of beaters, rotating on a substantially horizontal axis, in a suitable casing, the bottom or under section of which is composed of an open-ended trough, having a perforated or reticulated cover and hinged so as to swing open when required, for the purpose of cleansing or affording access to the beaters or to the interior of the casing. The cover of this trough, when closed, abuts against suitable longitudinal ribs or flanges in the casing, and the trough is controlled by hinged levers, carrying clamping devices to lock it in place. The ends of the trough and cover fit between the heads or ends of the casing or frame. An opening in the casing allows the berries, hulls, &c., to pass therefrom into a separating-tube down which the berries or grains fall by gravity, while the lighter hulls are carried upward by an air-blast over a partition in it, through which tube and the trough they pass to a discharge-spout. The air-blast, feed, and discharge are regulated by suitable means.

The accompanying drawings show so much only of my improved machine as is necessary to illustrate the subject-matter herein claimed, it being understood that unless otherwise indicated, the parts embody the most approved forms of construction of the present time.

The feed-end of the machine I term the front, and the opposite or discharge-end, the rear. That side of the machine on which the trough opens I term the right; the other side, the left of the machine.

Figure 1 represents a perspective view of the machine, with the trough swung downward; Fig. 2, a vertical, central, longitudinal section through the machine, with the trough in working position; Fig. 3, a vertical, transverse section through the discharge-end of the machine, on the line 3—3 of Fig. 2, looking toward the feed-end; Fig. 4, a similar section, on the line 4—4 of Fig. 2; Fig. 5, a similar section, on the line 5—5 of Fig. 2; Fig. 6, a similar section, with the trough swung downward or open, as in Fig. 1, and Fig. 7, a vertical section through the duplex separating tube, on the line 7—7 of Fig. 3.

The mechanism is shown as mounted on a stout main frame A, resting on legs *a*. The berries or grains are fed from a hopper B, provided with a feed-slide or valve *b*, into a casing C, in which a beating or hulling cylinder D, revolves on a shaft E, carrying driving-gears or pulleys actuated from a suitable prime-mover. The beating cylinder is shown as provided both with diagonally-inclined ribs *d*, and straight bars *d'*, which separate the hulls from the berries or grains, and discharge them altogether at the upper, rear end into a short duct *f*, which is bent downward at about an angle of forty-five degrees, and enters one leg F', of a separating-tube F, through which the grains fall, (see Fig. 7) and are discharged into a suitable receptacle; while the hulls and lighter impurities are carried upward by an air-blast or current, over a diaphragm or partition *f'*, and down the other leg F^2, of the separator tube, into a box G, in the head of the frame at the discharge-end of the machine. A slide or valve *g*, (Fig. 2) in the short leg F^2 regulates the draft by admitting more or less air at this point. This valve G, it will be observed, serves to regulate the blast through the casing, as well as that through the separating tube, which purpose is also served, to some extent, by the hopper valve *b*, also suit-

able regulating valves may be used wherever necessary for the proper working of the machine.

From the box or casing C, the hulls, &c., are driven through an opening g', into a trough H, having a closed bottom and sides, but open ends and top. This trough fills the space between the ends or heads of the frame, but is free to move laterally therein, being for this purpose connected by pivots, h, with levers I, I, in turn connected at their rear ends to the back of the frame by pivots i. These levers are connected by a cross-bar or handle I′ in front, for convenience in manipulation, and also carry bent arms or swing-links I^2, the heads of which are adapted to overlap a flange a', on the frame, and carry set-screws i^2, bearing thereon to lock the levers and consequently the trough securely in place, while permitting it readily to swing open when desired. This trough is covered by a perforated diaphragm or reticulated screen J, curved to conform to the beating cylinder D, the lower portion of which it surrounds, abutting, when in its closed position, against longitudinal ribs j on the casing or frame. This screen in fact constitutes the bottom of the casing through which fine dust finds its way therefrom to the trough. The trough is rocked on its pivots h, on its levers I, by means of a bar h'. The trough and screen J, can thus readily be moved out of the way to clean it, or to afford access to the beaters, and quickly replaced and locked in position. The hulls, &c., pass from the trough through the opening k, in the feed-end of the frame, to a spout K, opening into a fan L, which discharges them through a spout l, into an appropriate receptacle.

From the foregoing description it must be seen that the grains are discharged by gravity through the long leg F′, of the separating-tube, against an upwardly-moving blast or current of air, which carries the hulls, dust, and lighter impurities up the long leg F′, over the top of the partition f', down the short leg F^2, through the box G, trough H, spout K, and fan L. The fine particles of dust are drawn directly from the beater-case through the screen J, into the trough H, and pass through the fan with the other impurities. I am thus, by my improvements, enabled thoroughly to separate berries or grains from their hulls, and other extraneous matters, by simple and effective means.

I claim as of my own invention—

1. The combination of a main frame; a casing; beaters therein; a feed hopper near one end thereof, and a discharge duct or spout on the upper side of the opposite end of the casing; a duplex or divided separating-tube, into one leg of which the berries or grains, hulls, &c., are carried by an air-blast or current, and down which the berries or grains fall by gravity, against the upward current; a diaphragm or partition in the separating-tube over which the hulls and lighter impurities are carried by the blast into the other leg of the separator-tube; a box in the casing or frame in which this leg of the tube terminates; a trough underneath the beaters, through which trough the hulls, &c., pass; a screen separating the trough from the beater-casing, and a fan, which removes these hulls, &c., from the trough and discharges them into a suitable receptacle, the combination being and operating substantially as and for the purposes specified.

2. The combination of a casing; a beating cylinder revolving therein on an axis substantially horizontal; a discharge-duct or spout leading from the upper side of the casing; a duplex or divided separating-tube into one leg of which the berries or grains, hulls, &c., are carried by an air-blast or current, and down which the berries or grains fall by gravity, against an upward current; a diaphragm or partition in the separating-tube, over which the hulls and lighter impurities are carried by the blast through the other leg of the separator-tube; a trough beneath the beaters; a screen constituting the lower section of the casing, and a suction-fan which draws the hulls, &c., through the separating-tube, screen, and trough and discharges them into a suitable receptacle, the combination being and operating substantially as and for the purposes specified.

3. The combination of a casing; a feed-hopper near one end thereof; its regulating-valve; beaters therein revolving on an axis substantially horizontal; a discharge-duct or spout on the upper side of the opposite end of the casing; a duplex or divided separating-tube into one leg of which the berries or grains, hulls, &c., are carried by a suction-blast or current through the casing, and down which leg they fall by gravity against an upward current; a blast-regulating valve in the separating-tube; a diaphragm or partition in the separating-tube over which the hulls and lighter impurities are carried by the blast through a trough beneath the beaters; a screen interposed between the beaters and trough; a fan, and an exhaust-spout connecting the fan and trough, the combination being and operating substantially as and for the purposes specified.

4. The combination of a casing, a feed hopper near one end thereof, its regulating valve, a beating cylinder revolving in the casing on an axis substantially horizontal, a trough beneath the beating cylinder, a reticulated screen between the trough and casing through which dust, &c., may directly pass, a suction fan connected with the trough, a duplex or divided separating tube connected with the discharge-end of the casing, through one leg of which tube the grain is discharged against the incoming air-blast, and through the other leg of which the hulls and like particles are drawn through the trough, and a regulating valve in the separating tube to regulate the blast both through the casing and separating tube, substantially as hereinbefore set forth.

5. The combination of rotating beaters; their casing or cover; longitudinal ribs (*j*) therein; a trough or duct beneath the beaters; hinges connecting the trough and casing; a screen mounted on the trough and constituting the lower section of the beater-casing, and clamps for locking the trough and screen in proper relation to the beaters and ribs, the combination being and operating substantially as and for the purposes specified.

6. The combination of a casing; rotating beaters; a trough or duct thereunder; a screen carried by the trough; supporting arms or levers beneath the trough; pivots connecting these levers with the casing; pivots connecting these levers and the trough; bent arms or swing-links on these levers, and clamp-screws on the links interlocking with a flange on the casing or frame, the combination being and operating substantially as and for the purposes specified.

7. The combination of the ends or heads of the frame; passages therethrough; beaters, and an open-ended trough or duct between these heads; a screen mounted on the trough beneath the beaters, and hinge-connections which permit the trough and screen to swing laterally between the heads, the combination being and operating substantially as and for the purposes specified.

8. The combination of the frame; the casing; the beaters; the open-ended trough and screen hinged beneath the beaters; supporting-levers pivoted on the frame, and pivots connecting the trough and levers, whereby the screw and trough may be swung away from the casing and then further rocked on their pivots, the combination being and operating substantially as and for the purposes specified.

In testimony whereof I have hereunto subscribed my name.

CHARLES E. LIPE.

Witnesses:
K. F. CASSIDY,
A. A. SCHENCK.