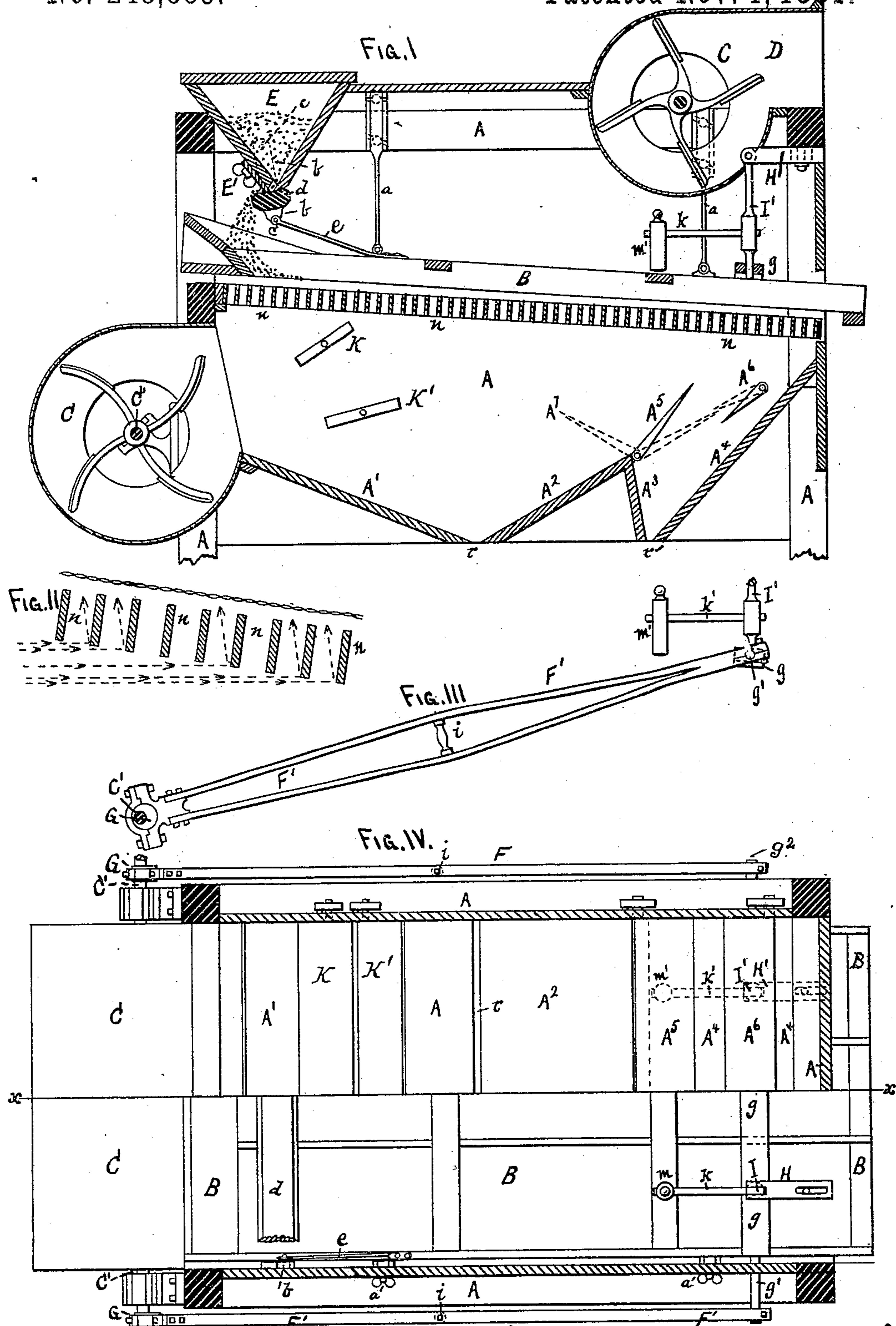


(No Model.)

C. G. ROLLINS.
MIDDLINGS PURIFIER.

No. 248,885.

Patented Nov. 1, 1881.



H. A. Gordon
Louis Feeder Jr. WITNESSES. *Charles Greenleaf Rollins* INVENTOR, BY *Louis Feeder & Co.* attys.

UNITED STATES PATENT OFFICE.

CHARLES G. ROLLINS, OF MINNEAPOLIS, MINNESOTA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 248,885, dated November 1, 1881.

Application filed August 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GREENLEAF ROLLINS, of Minneapolis, in the county of Hennepin and State of Minnesota, have made certain Improvements in Middlings-Purifiers, of which the following is a specification.

My improvements consists in novel organization of parts and in certain combinations of devices, hereinafter fully described, and then specifically designated by the claims.

My invention is fully illustrated in the accompanying drawings, in which Figure I is a longitudinal vertical section. Fig. II is an enlarged detail view of a portion of the screen and transverse slats detached, illustrating the manner in which the blast-currents are caught and distributed over the under surface of the bolting-cloth; Fig. III, a side view, detached, illustrating the manner of forming the connecting-rods and knockers. Fig. IV is a double plan view, that portion above the line $x x'$ being a sectional plan view of the machine below the shaker-frame, while that portion below the line $x x'$ is a plan view, in section, above the screen.

A is the frame or casing, in which the shaker-frame B is suspended by adjustable wooden-springs a in the ordinary manner.

C is the blast-fan below the screen, and D the exhaust-fan above the screen, and E the feed-hopper. On either end of the feed-hopper two hangers, $b b$, are pivoted at c (only one being shown) and connected to each other near the bottom by a cross-strip, d , which is formed slightly concave to correspond to the sweep of the hangers on the pivot c , while the bottom edges of the hopper E are made convex, to correspond to the concavity of the strip d . The lower edge of the rear side of the hopper E is made to fit the strip d closely, while a space is left between the bottom of the front side and the strip for the escape of the chop, while an adjustable slide, E' , will be arranged, as shown, over this opening, to regulate its width and control the flow of the middlings. By this arrangement, when the hangers b are oscillated the strip d will describe a small arc of a circle, and thus shake the middlings in a thin even stream over its edge down to the screen.

The axial line of the hangers b will be at a slight angle backward, as shown, so that a for-

ward and downward and an upward and backward motion is imparted to the strip d to cause the middlings to flow more freely and prevent any being carried backward by the return movement of the strip.

Rods e (only one being shown) connect the shaker-frame with the hangers b , so that the motion of the shaker-frame and feed-strip are simultaneous and correspond in speed and length of stroke, so that any variation in the shaker-frame will be communicated to the feed. The rods e , as will be seen, are pivotally connected to the lower ends of the hangers $b b$, and slightly flexible, if necessary.

Across the rear end of the shaker-frame a strip, g , is secured, and provided with studs g' g^2 , extending out through the sides of the casing, and upon which connecting-rods F F' are journaled and run back to eccentrics G G' on the main driving and fan shaft O', by which means the shaker-frame is vibrated. The connecting-rods F F' consist of two strips of wood, connected at either end in any suitable manner to the studs $g' g^2$ and eccentrics G, and spread apart at the center by a block or bolt, i , thus forming a truss-rod that can be made very light and strong.

H are two brackets or bars, secured to the frame A by set-screws working in slots in the brackets so that they may be adjusted inward and outward, and having rods I I', pivoted to their inner ends and extending downward, and with their lower ends fitting loosely through holes in the cross-bar g . Secured rigidly to these rods I I' and extending forward from them at right angles are small rods $k k'$, provided at their outer ends with heads or hammers $m m'$. These hammers come just above the shaker-frame B, so that when the latter is vibrated the strip g will carry the lower ends of the rods I I' back and forth, and their upper ends being pivoted in the brackets H, the hammers $m m'$ will be thrown up and down and strike the shaker-frame a slight blow at every stroke, and thus jar the dust, &c., loose from the bolting-cloth.

By adjusting the brackets H H' outward or inward the hammers $m m'$ may be raised higher or lower from the shaker-frame, and thus increase or decrease the lengths of their strokes, to cause them to give a lighter or heavier blow.

Light blows in rapid succession on the shaker-frame are much more effective than heavy blows at longer intervals, as the former do not disturb the flow of the middlings, while heavy blows have a tendency to shake up the middlings and disturb their even flow.

Any desired number of the knockers $m m'$ may be employed, but ordinarily two, as shown, will be sufficient.

Under some circumstances it may be found advantageous to suspend the knocking, which may be done by moving the brackets H back until the hammers $m m'$ are raised so high that the backward stroke of the shaker-frame is not long enough to throw them down in contact with it.

Across the frame of the machine, beneath the shaker-frame B , another frame is suspended, having transverse slats n arranged therein, as shown, and made adjustable vertically to alter its inclination.

In the ordinary arrangement of middlings-purifiers, where nothing is interposed between the bolting-cloth and blast from the fan, "eddies" and "whirls" of the air are formed, which act in an uneven manner upon the middlings; but by my arrangement of the slats n the blast-currents will be caught and turned upward against the cloth in small portions, (see Fig. 2,) and thus evenly distribute the air over every part of the under surface of the bolting-cloth and prevent any heavy blast coming in contact therewith. By this means all danger from an uneven blast is avoided and every portion of the cloth treated alike, thus avoiding any disturbance of the flow of the chop or the formation of eddies or whirls.

$K K'$ are two adjustable wings arranged across the machine in the blast-current, and adapted to regulate and control the blast, to cause heavier or lighter blasts to be directed to different parts of the shaker-frame B and slats n , according to the requirements of the different grades or condition of the chop.

The lower part of the casing A is divided by

chutes $A' A^2 A^3 A^4$ into two hopper-bottomed compartments, having narrow outlets $r r'$, in which the different grades of middlings fall.

A^5 is a wing or deflector pivoted at the conjunction of the chutes $A^2 A^3$, and adjustable from the outside of the machine, so that its upper point may be adjusted to correspond to the dividing-line between the clean and unclean middlings falling through the cloth. A^6 is another wing or deflector arranged to act in conjunction with the first wing, A^5 , to extend its length, so that where little or no unclean middlings exists it may all be run into the first compartment, $A' A^2$. The wing A^5 may be turned back, as shown by dotted lines A^7 , and thus enlarge the compartment $A^3 A^4$ when the middlings are very unclean. By this means the clean and unclean middlings are separated.

I am aware that it is not new broadly to provide "rappers," which are caused by the vibration of the shaker frame to rap the same during each movement.

What I claim as new is—

1. The combination and arrangement of the shaker-frame B , slats n , adjustable wings $K K'$, and fan C , substantially as set forth.

2. The combination, with the shaker-frame B and strip g , of the adjustable brackets $H H'$, rods $I I'$, and hammers $m m'$, secured to extensions $k k'$, all arranged to operate substantially as described.

3. The combination, with the feed-hopper E , having a convex lower edge, of the hangers b , and concave feed-strip d , connected pivotally by the rod e to the shaker-frame, whereby the strip is oscillated and the feed produced, as described, by the motion of the shaker-frame.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES GREENLEAF ROLLINS.

Witnesses:

C. N. WOODWARD,
LOUIS FEESER.