

(No Model.)

2 Sheets—Sheet 1.

F. G. BOYNTON
SCALPER AND GRADER.

No. 462,618.

Patented Nov. 3, 1891.

Fig. 2.

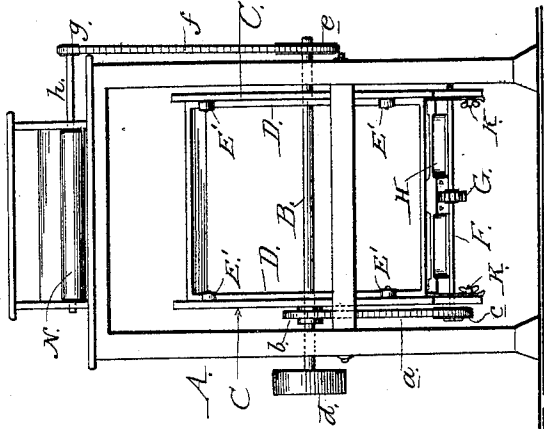


Fig. 1.

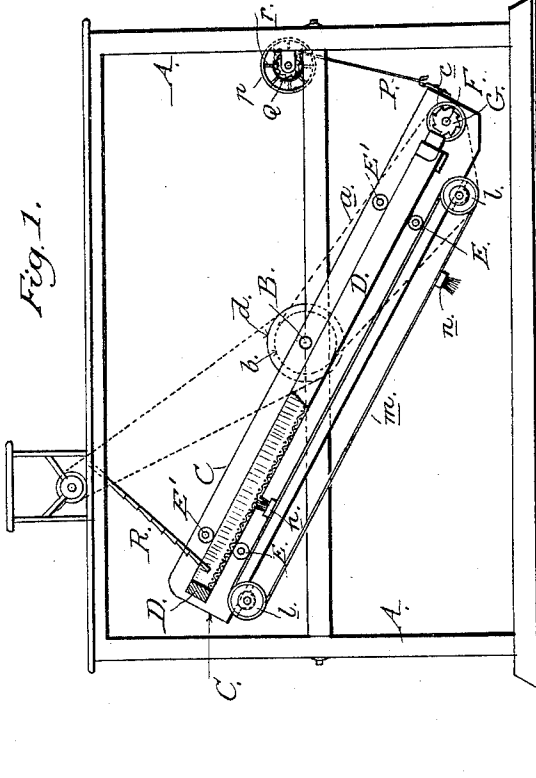


Fig. 4.

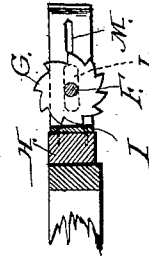
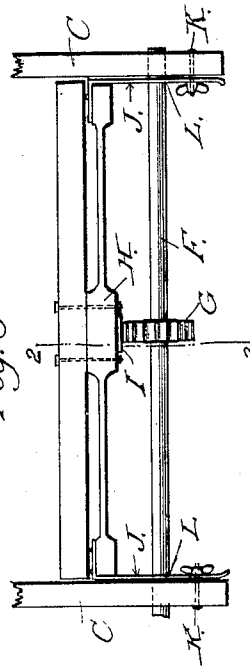


Fig. 3.



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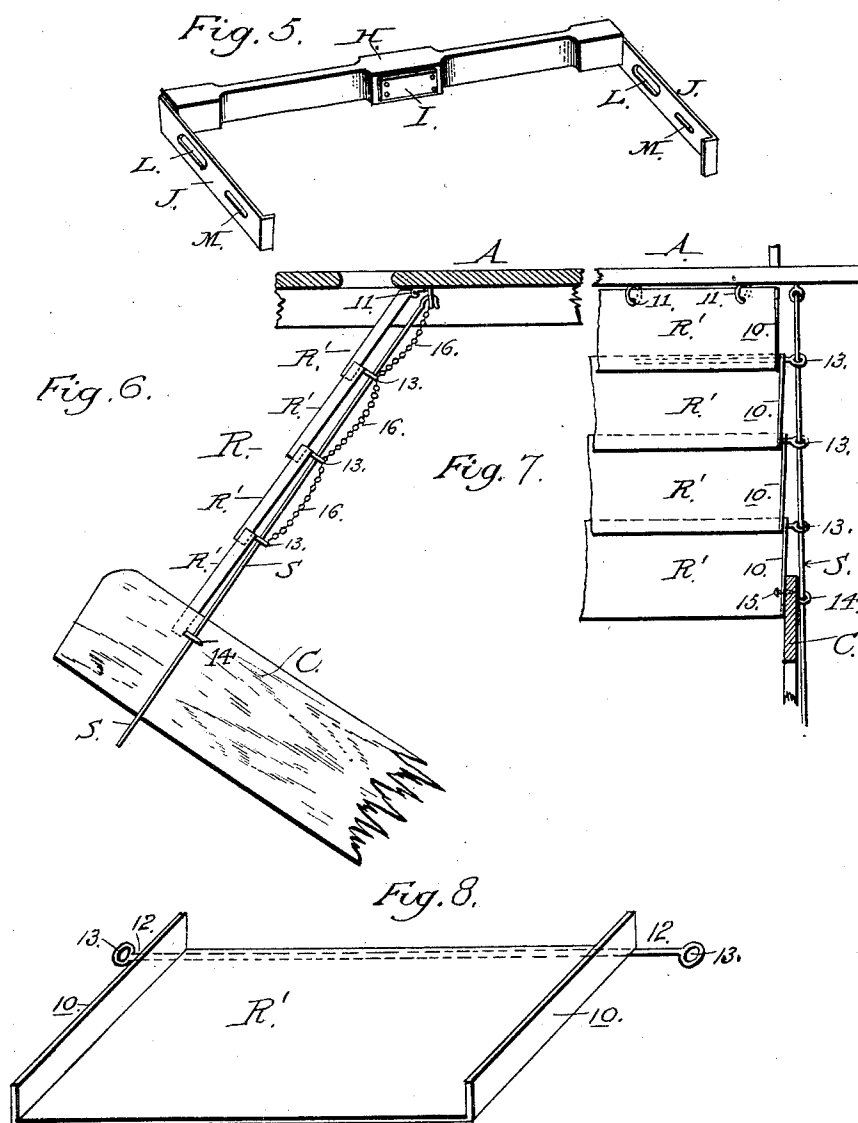
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UNITED STATES PATENT OFFICE.

FRANK G. BOYNTON, OF GRAFTON, NORTH DAKOTA.

SCALPER AND GRADER.

SPECIFICATION forming part of Letters Patent No. 462,618, dated November 3, 1891.

Application filed June 22, 1891. Serial No. 397,075. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. BOYNTON, a citizen of the United States, residing at Grafton, in the county of Walsh and State of North Dakota, have invented certain new and useful Improvements in Scalpers and Graders, as set forth in the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of my improved scalper and grader, showing one side of the adjustable centrally-hung frame removed. Fig. 2 is an end view of the same. Fig. 3 is a detail showing in plan the lower ends of the frames C and D and the means for vibrating the frame D endwise. Fig. 4 is a cross-sectional view of the same on the line 2 2 of Fig. 3. Fig. 5 is a perspective view of the spring-plate H and its adjusting-straps. Fig. 6 is an enlarged side view of the telescopic feed-board. Fig. 7 is a plan view showing one end of the feed-board. Fig. 8 is a detail of one of the feed-board sections.

My invention relates to certain new and useful improvements in machines for separating and grading flour, meal, or middlings ground on rolls, millstones, or other grinding machines or mills; and my invention consists in the constructions and combinations of devices which I shall hereinafter fully describe and claim.

To enable others skilled in the art to which my invention appertains to make and use the same, I will now describe its construction and indicate the manner in which the same is carried out.

In the said drawings, A represents the external casing or frame-work which supports the operating parts of the machine. Extending transversely through this frame or casing, with its ends mounted in suitable bearings, is the main shaft B, upon which is centrally hung a frame C, open at its top and bottom and having mounted in its lower ends a knocker-shaft F, carrying at its center a knocker G, which is actuated by power derived from the main shaft through the medium of a belt a, passing from a pulley b on the main shaft to a smaller pulley c on the knocker-shaft, the said main shaft carrying, also, at one end a band-pulley d, to which

power is applied from any suitable source, and at its opposite end a pulley e, from which a belt f runs to a pulley g on the end of the feed-roll shaft h, this latter shaft having its feed-roll N mounted in a suitable housing at the upper part of the main frame, and the housing having an inclined feed-board R, for directing the flow of the material in the usual manner.

The frame C has mounted on its inner sides, near the upper and lower ends, suitable rollers E, upon which a sieve-frame D rests, while other rollers E', similarly mounted, rest upon the upper sides of the sieve-frame and assist in confining the sieve-frame D, so that its only movement can be an endwise one parallel with the outer frame C, which carries it.

The knocker G is designed to operate against the middle portion of a wood or metal spring-plate H, bolted near its center to the lower end of the sieve-frame and having its ends unconnected with the sieve-frame and attached to metal straps J, adapted to be secured to the lower sides of the frame C and provided with bolts K, working in slots M, whereby the straps may be adjusted to regulate the tension of the spring-plate, said straps being also slotted at L for the passage of the knocker-shaft F, and the middle portion of the spring-plate being provided with a wear-plate I, against which the knocker operates.

In the lower sides near the ends of the frame C are mounted pulleys l, around which passes a belt m, carrying brushes n, which travel immediately below and against the lower face of the bolting-silk or wire-cloth of the sieve-frame to keep the same from clogging, the said belt being operated by the belt which actuates the knocker or by any other suitable means.

From the foregoing description it will be observed that the frame C, which carries the vibrating sieve-frame, is centrally hung upon the main shaft, so that said shaft serves as an axis, about which the frame may be turned to vary its inclination and the consequent flow of the material. As the knocker-shaft and knocker are carried by the frame C, it is manifest the adjustment of the frame does

not destroy or affect the alignment of the knocker with the sieve-frame, as the position of the several parts is always maintained without regard to the inclination of the frame.

5 Therefore the sieve-frame may be inclined from any position between a horizontal and vertical, and in whatever position it may be placed it receives the full force of the knocker, whose position with relation to the frame is
10 always the same.

In order that the frame C may be held after its desired inclination has been obtained, I connect the lower end of the frame with a strap, rope, chain, or other connection P,
15 which is adapted to be wound upon a drum Q, mounted on the main frame and having a hand-wheel *p* and pawl-and-ratchet mechanism *r* for operating and controlling it. By this means the lower end of the frame C is
20 prevented from dropping after the frame has been adjusted to the desired inclination.

The feed-board R, which I have disclosed in the drawings, is one especially adapted to operate with my centrally-pivoted frame, and
25 consists of a number of sections R', (see Figs. 6, 7, and 8,) adapted to slide one within the other to vary the length of the feed-board to correspond with the adjustment to the frame C, each section having side flanges 10 to prevent the stock from running over the sides
30 of the board. The upper section of this feed-board is loosely suspended from the main frame at 11, and each succeeding section has secured to its upper under surface a rod or wire 12,
35 which extends beyond the sides of the section and is provided with eyes or loops 13, through which are adapted to pass rods or wires S, also suspended from the top of the machine, one upon each side of the feed-board, the said rod
40 or wire S also passing through a guide loop or eye 14 on the exterior of the frame C, and the lowermost section of the feed-board being attached to the inner sides of the said frame by a pin 15, so as to hold said lower section at any
45 given distance above the surface of the bolting-cloth or wire-gauze with which the vibrating sieve is clothed. When the feed-board is extended its full length, the several sections thereof are held in proper place by means of
50 short chains 16, secured at their upper ends to the main frame and extending to the lower section and being secured to each of the sections. The material to be separated is fed to the sieve-frame by means of the feed-roll and inclined feed-board R, and when the machine
55 is in operation the knocker G operates against the spring-plate H and imparts to the sieve-frame a short, quick, sharp jar endwise in the direction of the flow of the material on the
60 sieve, giving to the sieve greater capacity and better results than is obtained by the use of the eccentrics and strap attachments common to this class of machines.

By confining the sieve-frame within the
65 outer frame, which remains stationary during the operation of the machine, it is manifest

there can be no movement of the sieve-frame except the end motion before mentioned, as the rollers E and E' prevent any other movement and also furnish a guide for the recip-
70 roations of the sieve-frame. Therefore the latter frame has a smooth straight movement parallel with the outer frame C, to cause the material to flow down to the lower end of the sieve-frame without any jumping motion. 75

My machine is designed especially to separate coarse or fine stock equally well, as the frame C, which supports the vibrating sieve-frame, is adjustable about its shaft to vary its inclination from a level to an angle of
80 forty-five degrees while running without interfering with the motion of the vibrating sieve and its actuating mechanism. The motion of the vibrating sieve-frame may be varied so that a light or heavy jar may be im-
85 parted by means of the tension-straps J before mentioned.

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

1. In a scalper and grader, the combination of the frame C, a shaft passing transversely through the central portion of said frame, an adjusting mechanism at one end of said frame and an adjustable feed-board at the opposite,
95 a sieve-frame located between the walls of the frame C, and means for imparting an endwise movement thereto, substantially as herein described.

2. A suspended feed-board consisting of a
100 series of sections adapted to telescope and having end flanges and guide-loops, and rods secured at one end and passing loosely through said guides, substantially as herein described.

3. A feed-board consisting of a series of
105 sliding sections, each provided with guide-loops or eyes, in combination with rods passing through said loops, and flexible connections between adjoining sections and holding them together, substantially as herein de-
110 scribed.

4. The combination, with a swinging frame having guides 14, of a feed-board consisting of a series of connected slidable sections, the upper one of which is hung from a main
115 frame while the lower one is connected with the swinging frame, and rods attached to the main frame, passing through the guides 14 and guides on the slidable sections and forming the connection between the feed-
120 board and swinging frame, substantially as herein described.

5. In a scalper and grader, the main frame or casing and the main shaft, in combination with the frame C, mounted at its center
125 upon said shaft so that its inclination may be varied, a sieve-frame confined between the walls of the pivotal frame and adapted to have an endwise movement only, a shaft mounted in the lower end of the pivotal
130 frame, a knocker on said shaft in alignment with the sieve-frame for imparting a jarring

movement thereto parallel with the pivotal frame, a spring between the knocker and sieve-frame, and means for actuating the knocker-shaft, substantially as herein described.

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6. In a scalper and grader, the combination of a main frame or casing, a centrally-pivoted frame therein having the rollers E and E', a sieve-frame confined between the rollers, so that it may have an endwise movement only parallel with the pivotal frame, a knocker-shaft and a knocker for actuating the sieve-frame, a spring between the knocker and sieve-frame, and a traveling belt with brushes below the sieve-frame, said sieve-frame, spring knocker-shaft, knocker, and brush-carrying belt being mounted in the pivoted frame, whereby the positions of these parts is maintained without regard to the inclination of the pivoted frame, substantially as herein described.

7. In a scalper and grader, the combination,

with a sieve-frame adapted to have an endwise movement, of a knocker-shaft and knocker, a spring-plate secured at its center to the sieve-frame, and the tension-straps adjustably connecting the ends of said spring with a non-reciprocating part, substantially as herein described.

8. In a scalper and grader, the centrally-pivoted frame C, the sieve-frame therein, the knocker-shaft and knocker, and means for actuating the same, in combination with the spring-plate H, secured at its center to the sieve-frame, the tension-straps connected with said ends and slotted to receive the knocker-shaft, and bolts passing through slots in the straps and adjustably securing the straps to the pivotal frame, substantially as herein described.

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Witnesses:

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