(No Model.)

J. PYE.

SCALPING MACHINE.

No. 454,065. Patented June 16, 1891.

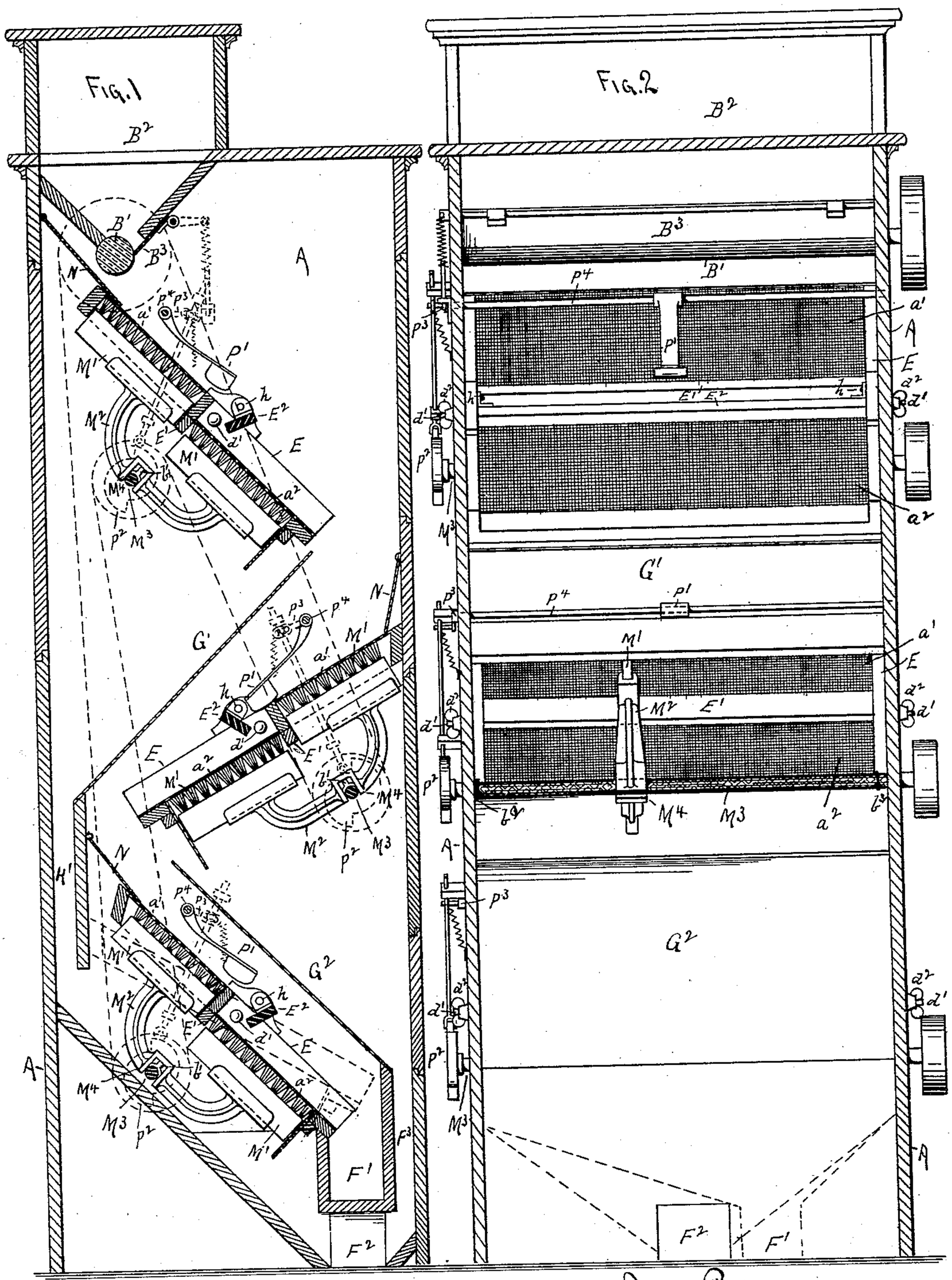
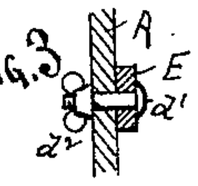


Fig. 3



WITNESSES.
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UNITED STATES PATENT OFFICE.

JAMES PYE, OF MINNEAPOLIS, MINNESOTA.

SCALPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 454,065, dated June 16, 1891.

Application filed March 8, 1889. Serial No. 302,451. (No model.)

To all whom it may concern:

Be it known that I, JAMES PYE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Scalping-Machines, of which the following is a specification.

This invention relates to "scalping-machines" for separating the products of the rolls in flour-milling; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claim.

In the drawings, Figure 1 is a sectional side elevation, and Fig. 2 is a sectional front elevation, of the scalper. Fig. 3 is a detached sectional detail illustrating the manner of clamping the adjustable screens.

A is a casing or frame, which may be of any suitable size or form, but for ordinary use is about five feet high and twenty-four by twenty-eight inches inside. In the upper part of the frame A is journaled a revolving feed-roll B′, having the feed-hopper B^2 above it, and a spring-actuated feed-slide B^3, by which the flow may be regulated, the latter being connected to the lower part of the hopper, as shown. Across the interior of the casing A are pivoted a number of inclined screen-frames E, the upper frame arranged to discharge its tailings upon the next one below it, and so on, the tailings from the lower screen being discharged into a discharge-spout F′, from which they are conveyed again to the rolls or stones for further reduction. Beneath the upper screen E is arranged an inclined chute G′ to receive the material passing through the screen and convey it by a spout H′ to a discharge F^2, while a similar chute G^2 and the discharge F^3 likewise convey the material falling through the remaining screens into the same discharge-spout F^2. All the material passing through the screens is thus discharged at F^2, and all the tailings from all the screens is discharged at F′. I have shown three of these screens E arranged in zigzag or alternating order; but of course it will be understood that any number may be employed, and that they may be arranged in any manner to cause the material to flow from one to the other in regular order. The screens are each shown with the screen material, which is usually wire-cloth arranged in two sections a' a^2, the sections a' being attached to the upper edge of the screen-frame and the sections a^2 being attached to the lower edge of the screen-frame. A cross-bar E′ is arranged across each of the frames E to carry the inner edges of the two sections a' a^2 of the screens. By this construction the material flowing over the upper sections a' and passing to the lower section a^2 is caused to fall over the cross-bar E′ with some force upon the next section, and be thereby subjected to a tumbling motion, which greatly assists in the separation of the particles and breaks up any regularity of position which they may have assumed by their difference of gravity.

Suspended by pivots *h* across each of the frames E, just in advance of its cross-bars E′, is a retarding-strip E^2, whose function it is to form a stop to the material as it falls over the cross-bars and retard its downward flow and prevent its too rapid motion down the screen, thereby greatly assisting the action of the cross-bars and still further agitating and breaking up the regular arrangement of the particles.

The pivoting of the retarding-strips E^2 to the side frames of the screens above their edges so that they hang downward with their lower edges near the screens is an important feature of my invention, as they are rendered thereby automatic in their action, their gravity keeping them down in place and holding them against the ordinary pressure of the flowing material, but so that they are capable of yielding in event of any extra flow of material and allow it to pass, and thus avoid choking or clogging of the machine.

In the manufacture of flour, when the grain is passed between the rolls to partially reduce it the result is a mass consisting of particles of free middlings, flour, particles of middlings clinging with more or less tenacity to particles of the husk and bran, and particles of free husk and bran, and to separate the particles of the free middlings from the combined husks and middlings and from the free bran is the function of the machine illustrated in the drawings, such machines being technically called "scalpers," the action of separating the free middlings immediately

after each "break" or passage of the grain through the rolls being termed "scalping." The wire-cloth on the screen-frames will therefore be graded to correspond with the fineness of the material to be acted upon, so that the middlings and flour only will pass through the meshes of the cloth, while the bran or husk will pass over the "tail" of the screens.

I have shown each screen E divided into two of the sections a' a^2; but a greater number of these divisions may be employed if required, so as to increase the amount of the agitation imparted to the material flowing over them. I have also shown but one of the flexible retarding-strips E^2 upon each screen; but two or more may be employed, if required, according to the nature and condition of the material passing through the machine.

Each of the screen-frames is pivoted by bolts d' to the frame A, so that the inclination may be adjusted to any required extent to regulate the flow and adapt the machine to the condition of the material.

In the drawings the upper and lower screen-frames are shown set at their highest or most nearly perpendicular angle of inclination, while the central screen-frame is shown set at its lowest or most nearly horizontal angle of inclination to illustrate the adjustable feature of the screen-frames; but in practice all the screen-frames of each machine will be set at the same angle. Each of the bolts d' passes out through the sides of the casing A and is provided with thumb-nuts d^2, by which the screen-frames may be clamped and held at any required angle.

Beneath the sections a' a^2 of the wire-cloth brushes M′ are arranged, being supported loosely in brackets M^2, the latter resting upon reversed threaded screw cross-rods M^3, as shown. Within each of the hubs M^4 of the brackets M^2 is a swiveled catch b', adapted to rest in one of the threads of the screw-rods, and thereby couple the brackets to the screw-rods, so that when the latter are revolved the threads, acting upon the catches, will cause the brackets to travel along the screw-rods and carry the brushes M′ with them and thus brush the under side of the cloth. At each end of the rods M^3 a stop-ring b^2 is secured, against which the catch b' strikes to reverse the catch and throw it into the other and reversed thread in the screw-rods, this action causing the brushes to travel regularly back and forth beneath the cloth. The bolts d' and screw-rods M^3 not being in line, the adjustment of the screen-frames changes the relative positions of the screen-frames and brackets M^2; but by arranging the brush-heads loosely in the brackets they will slide back and forth in the brackets and not change their positions with relation to the screen-frames. By this simple construction the brushes are caused to constantly travel back and forth beneath the screen-frames and retain their positions, no matter at what angle of inclination the screen-frames may be placed.

Hinged to the casing A above the upper end of each of the screens E is a guide-plate N, adapted to overlap the upper edges of the screen-frames to guide the material from the feed-hooper to the first screen and from one screen to the other, so that it will not pass between the edges of the screens and the casing.

P′ P′ represent a series of knockers, one for each of the screen-frames and adapted to be actuated by cams P^2 on the extended ends of the screw-rods M^3, acting on arms P^3 on the rods P^4 of the knockers at regular intervals to subject the screen-frames to a sharp blow at each revolution of the screw-rods to assist in the separation of the material by imparting a jarring motion to the screen-frame and thereby agitate the material more thoroughly.

Having thus described my invention, what I claim as new is—

The combination of a frame-work, an adjustably-inclined screen loosely mounted therein, a revolving reversely-threaded screw-rod arranged transversely beneath said screen, brackets mounted on and moved back and forth by said rod, which also forms the fulcrum of said brackets, and brushes resting in said brackets and in contact with said screen, substantially as and for the purpose set forth.

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

JAMES PYE.

Witnesses:
C. N. WOODWARD,
H. S. WEBSTER.