

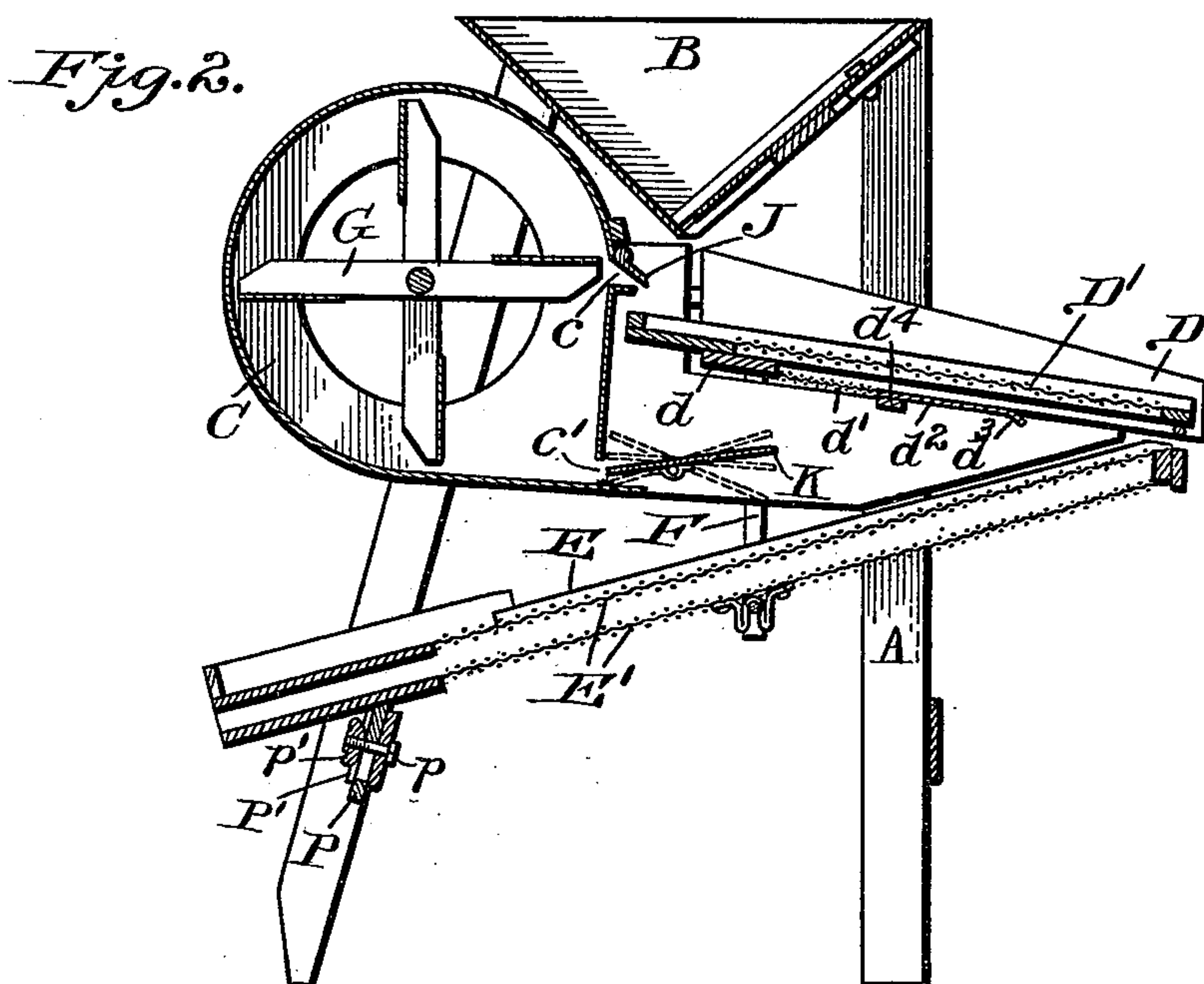
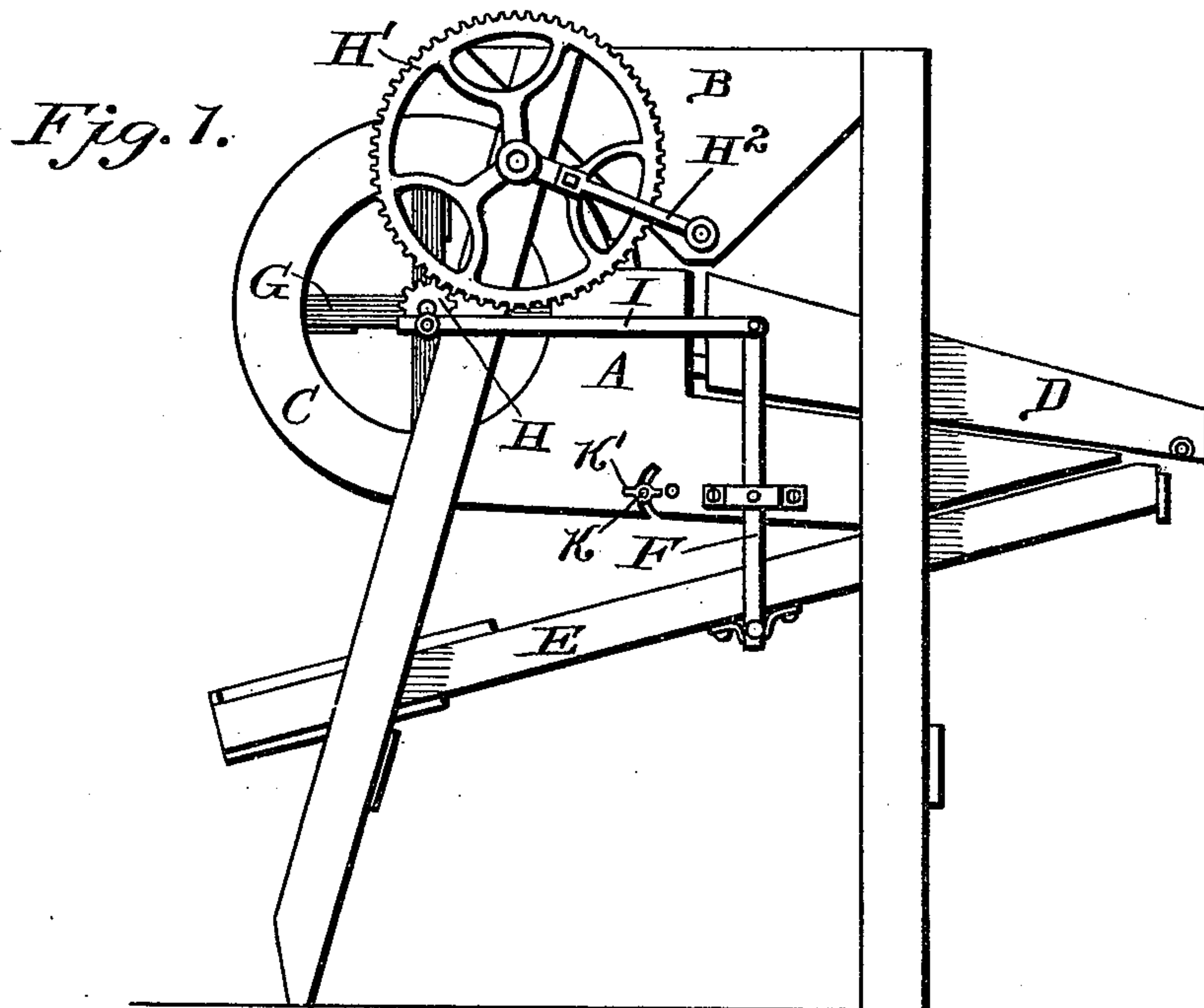
No. 635,223.

Patented Oct. 17, 1899.

T. M. BALES.
GRAIN CLEANER.

(Application filed Aug. 2, 1898.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

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GRAIN-CLEANER.

SPECIFICATION forming part of Letters Patent No. 635,223, dated October 17, 1899.

Application filed August 2, 1898. Serial No. 687,563. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MONROE BALES, a citizen of the United States, and a resident of Dublin, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Grain-Cleaners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side elevation of a machine embodying the invention. Fig. 2 is a central vertical longitudinal section of the same.

This invention is designed to provide means of improved character in a grain-cleaner for controlling and regulating the draft or blast in order to effect a more perfect separation of the dirt and chaff, the machine being what I term a "triple-draft" cleaner. It is also designed to provide means whereby the inclination of the lower or grain shoe may be adjusted at will in order to hold the grain thereon for a longer or shorter time, as may be desired.

With these objects in view the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates the frame of the mill, B the hopper, and C the blast or fan wheel chamber and casing.

D designates the short upper or chaff shoe; D', the removable screen or riddle therein; E, the long lower or grain shoe, and E' E' its riddles or screens.

F designates the pivoted straps which connect the two shoes; G, the blast wheel or fan; H, its driving-pinion; H', the driving gear-wheel; H², the operating-crank, and I the connecting-rods from wrist-pins on the pinion H to the upper end of the respective straps F.

The upper shoe D has at its upper portion and underneath the upper portion of the screen D' a transverse strip *d* and below this a somewhat wider strip or piece of wire-cloth *d'* of fine mesh. Below this wire-cloth is a

piece of sheet metal *d*², which extends down to a point a few inches from the adjacent ends of the two shoes, the lower edge of which may be bent downwardly toward the lower shoe, as indicated at *d*³. Strip *d*, wire-cloth *d'*, and piece *d*² are supported in an inclined plane substantially parallel with the planes of the shoes. Secured to the under side of the wire-cloth *d'* and piece *d*² where they join each other is a transverse strip or cleat *d*⁴, which holds them together and also forms an air-brake.

The blast-wheel casing C has an upper blast-opening *c* above the chaff-screen D and a lower blast-opening *c'* below the chaff-shoe. These openings *c* and *c'* are located at the top and bottom of a partition, which is placed centrally of the discharge of the fan-casing. Pivoted in front of the opening *c* to control the discharge therefrom is a wind-board J and pivoted in front of the opening *c'* is a second wind-board K, the purpose of which is to divide the blast of air which issues from the said opening and direct a portion of the same up through the wire-cloth *d'* and chaff-screen D' and a portion downwardly upon the screens of the grain-shoe, as hereinafter described. Said board K has at one end a stud *k*, which projects loosely through an arcuate slot in the frame-casing and is provided with a thumb-nut *k'*, by means of which the adjustment of said board may be secured.

The lower shoe has its upper screen extending to a point considerably above the bottom of the blast-wheel casing and the opening *c'* in order that the blast from said opening may be caused to pass over a considerable portion of said screen.

P designates a block which is mounted in guides P' on the lower rear frame-piece A' to slide toward and away from the under side of the lower end portion of the lower shoe, its purpose being to provide an adjustable support therefor whereby the inclination of said screen may be varied to suit the particular work in hand. For instance, in separating clover and timothy seed this shoe should be raised more nearly to a horizontal position in order to hold the seed back and give it more time to get through the screen. The same is true in separating cheat or cockle from wheat. The slide P works on a pin or bolt *p*, and its

adjustment is secured by means of a thumb-nut and washer p' .

When the mill is in operation, the blast of air from the upper blast-opening c strikes the chaff-screen D' and blows off the lighter and looser chaff, being caused to strike the screen at a greater or less angle by the adjustment of the wind-board J . The blast from the lower opening is divided, a portion of the air passing upwardly through the wire-cloth d' and screen I' and a portion striking the sheet-metal piece d^2 , whereby it is deflected downwardly onto the upper end portion of the grain-shoe, and thereby blowing out light chaff and fine stuff which has found its way through screen D . This draft, together with the vibratory motion of the long shoe, loosens up the chaff and dirt on the grain-riddle of this shoe and, in combination with the upper and intermediate drafts, cleans the grain thoroughly. The board K can be adjusted so as to divide the draft to cause more or less of it to pass through the upper or lower opening and to cause it to strike the screens at different angles, or it may be adjusted to throw all the air up through the wire-cloth d' or all downwardly onto the screens of the long shoe at any desired point.

In cleaning timothy or clover seed or other small light seeds the upper wind-board J is preferably closed and the lower wind-board K is adjusted to a position such that its rear edge is just above the top of the blast-opening c' . This directs all the blast downwardly on the upper end of the sieves in the lower shoe just where it is needed in order to blow out all the fine dirt and chaff which passes through the sieve of the upper or chaff shoe.

If the grain is light and chaffy and the blast is too strong, the board K should be adjusted to cause the draft to strike the lower shoe more directly, so that it will have a longer distance to blow the chaff along the screen and making it less liable to blow the good grain out.

The transverse strip or cleat d^4 above described acts as an air-brake to cause the air to pass up through the wire-cloth d' , the effect being to loosen up the chaff on the screen D' and to give the upper downward draft better opportunity to blow it away.

The mills are provided with the usual interchangeable screens of different mesh to adapt them to all kinds of grain.

It will be observed that by forming the openings at the top and bottom of the discharge of the fan-casing by means of the partition therein I am enabled to control or deflect the blast by means of the wind-boards placed at said openings with great facility.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a grain-cleaner, the combination of the fan-casing; the blast-fan; the partition arranged in connection with the fan-casing to leave an upper and a lower opening; the blast-deflector for the upper opening; and the wind-board arranged in coöperative relation to the lower blast-opening and the upper and lower shoes, the upper shoe being provided with the imperforate strip d^2 , and the perforated sheet or screen d' , the parts specified being so arranged that the blast from the lower opening may at will be directed partly through the screen d' , and partly upon the screen of the lower shoe, or entirely through the screen d' , or entirely upon the screens of the lower shoe, substantially as specified.

2. In a grain-cleaner, the combination of the fan-casing; the blast-fan; the partition arranged in connection with the fan-casing to leave an upper and a lower opening; the blast-deflector for the upper opening; the wind-board arranged in coöperative relation to the lower blast-opening, and the upper and lower shoes, the upper shoe being provided with the imperforate strip d^2 , having a downwardly-bent portion, and the perforated sheet or screen d' ; and the air brake or deflector at the lower edge of said screen, the parts specified being so arranged that the blast from said lower opening may at will be directed partly through the screen d' , and partly upon the screen of the lower shoe, or entirely through the screen d' , or entirely upon the screens of the lower shoe, substantially as specified.

3. In a grain-cleaner, the combination of the fan-casing; the blast-fan; the partition arranged in connection with the fan-casing to leave an upper and a lower opening; the blast-deflector for the upper opening; and the wind-board arranged in coöperative relation to the lower blast-opening and the upper and lower shoes, the upper shoe being provided with the imperforate strip d^2 , and the perforated sheet or screen d' , the parts specified being so arranged that the blast from said lower opening may at will be directed partly through the screen d' , and partly upon the screen of the lower shoe, or entirely through the screen d' , or entirely upon the screens of the lower shoe; together with means for varying the inclination of the lower shoe, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS MONROE BALES.

Witnesses:

ALBERT BURR,

W. E. CAROTHERS.