

(No Model.)

H. SUMMERFELD.

FANNING MILL.

No. 359,944.

Patented Mar. 22, 1887.

Fig. 1.

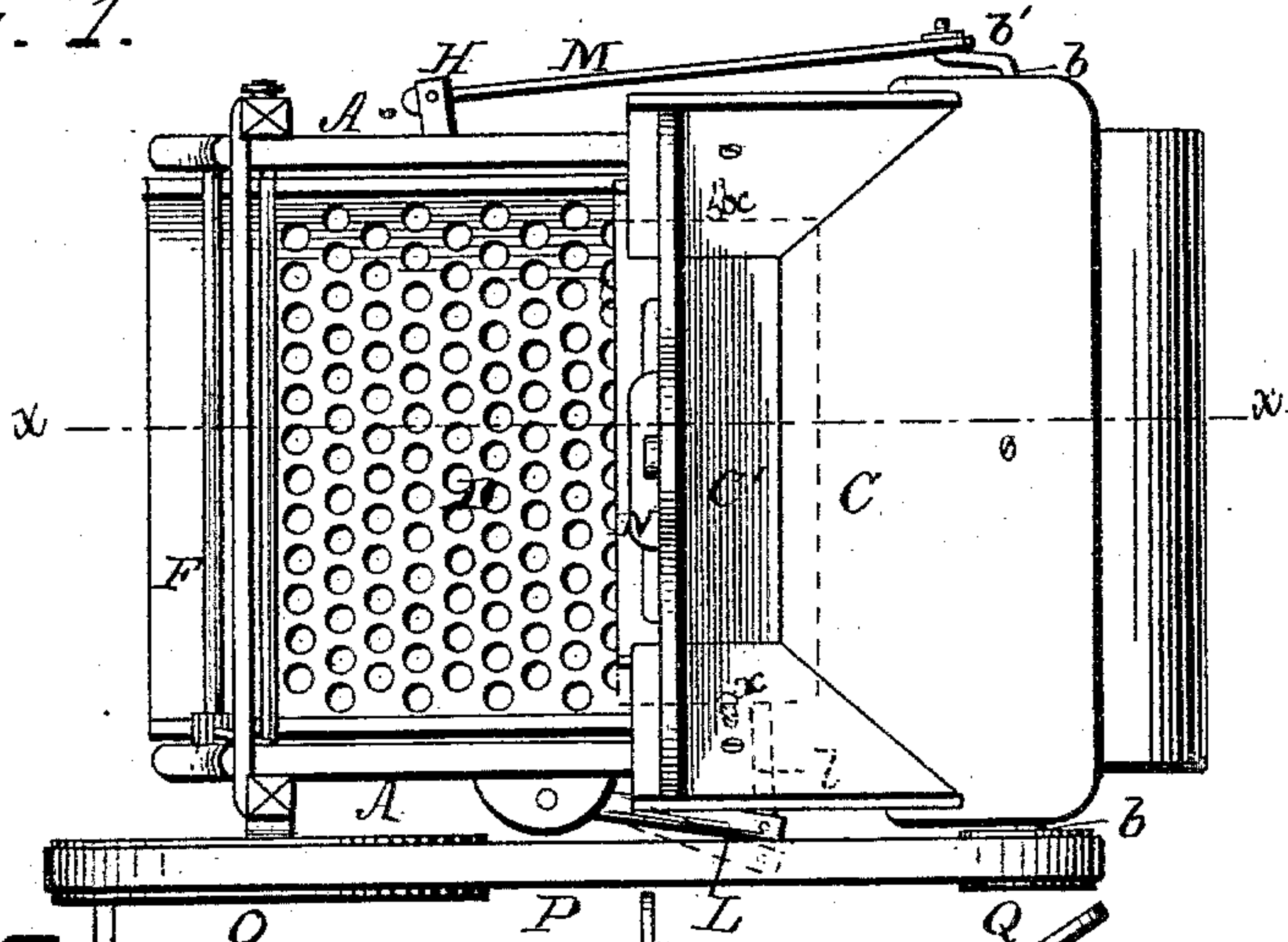


Fig. 2.

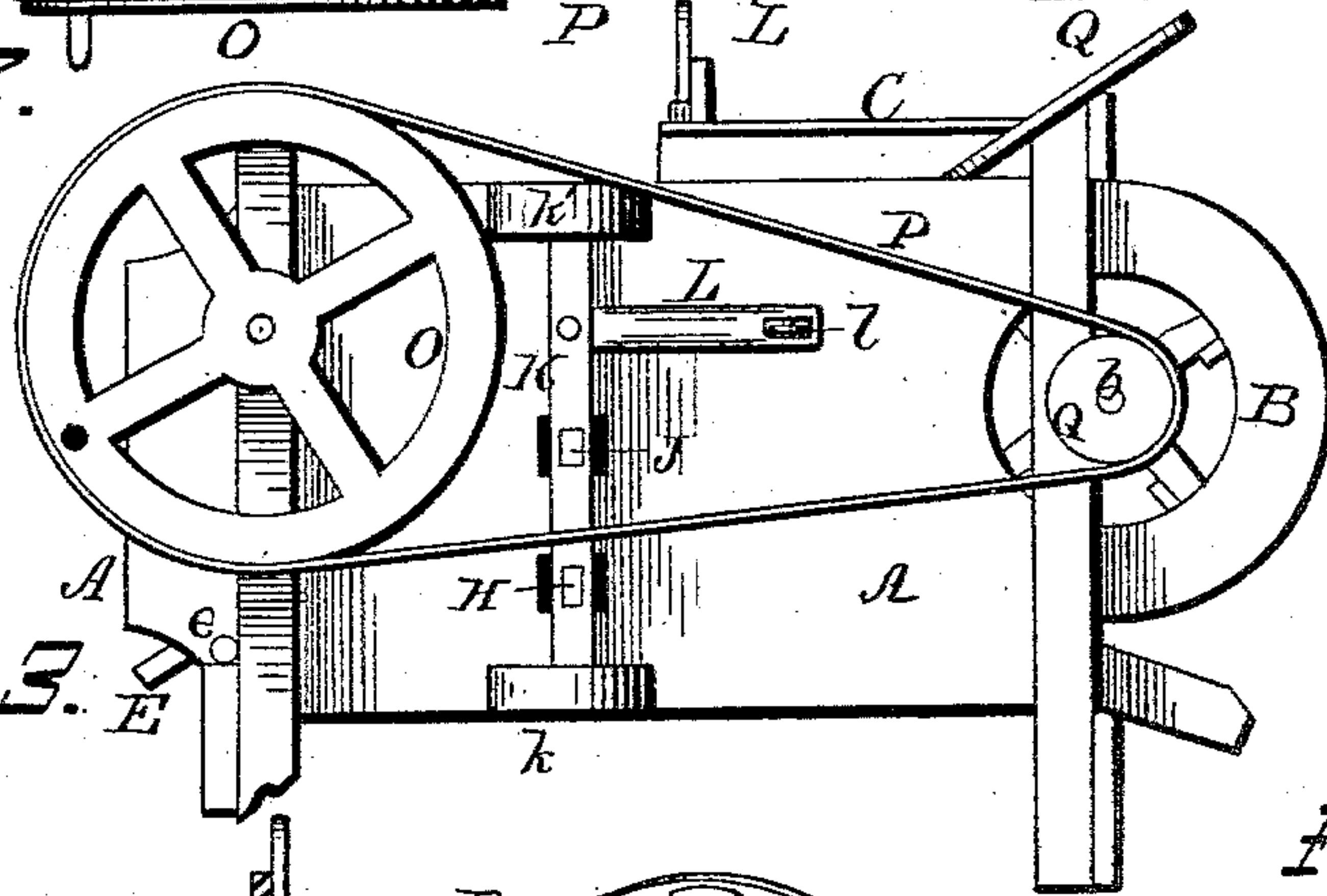


Fig. 3.

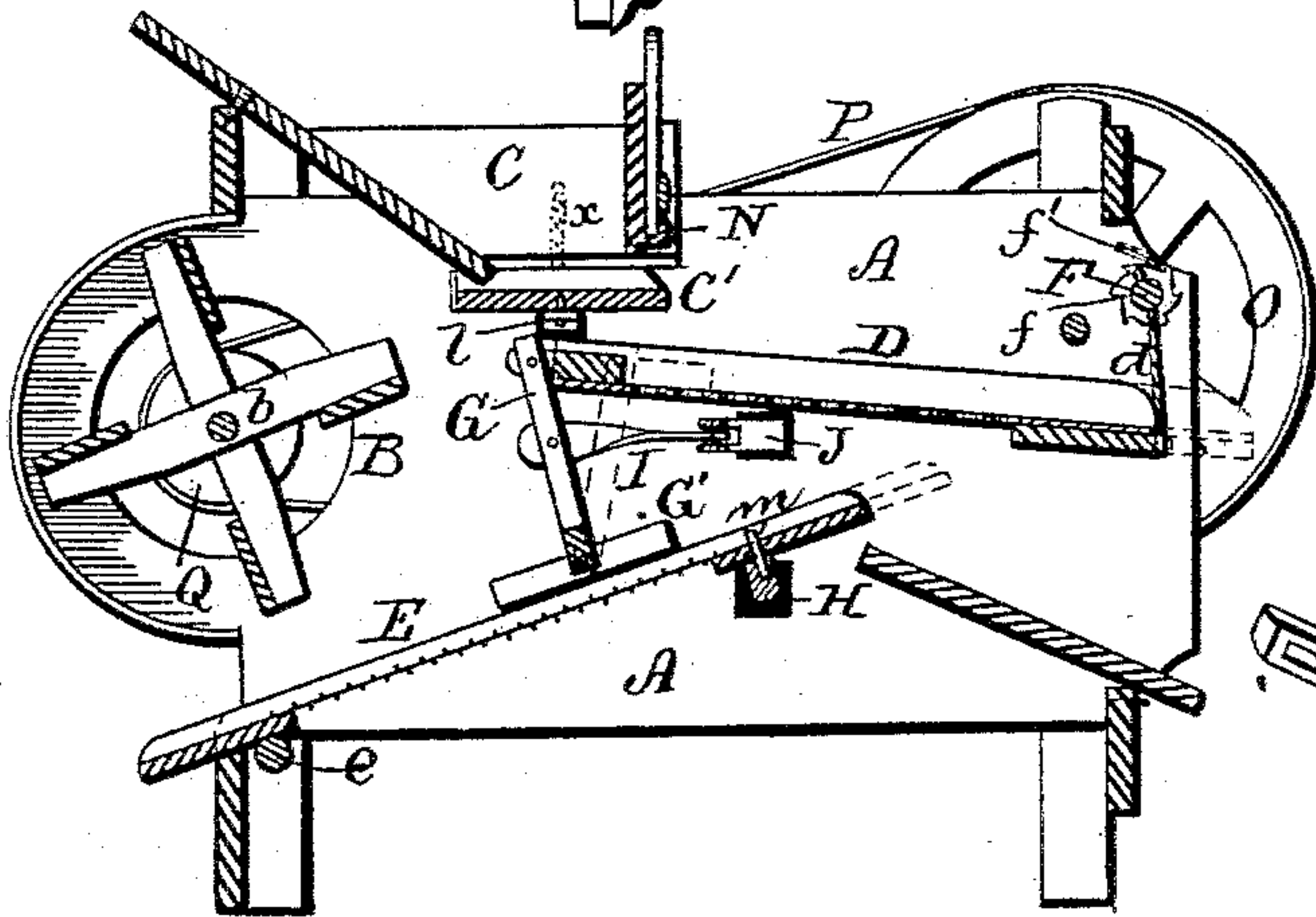
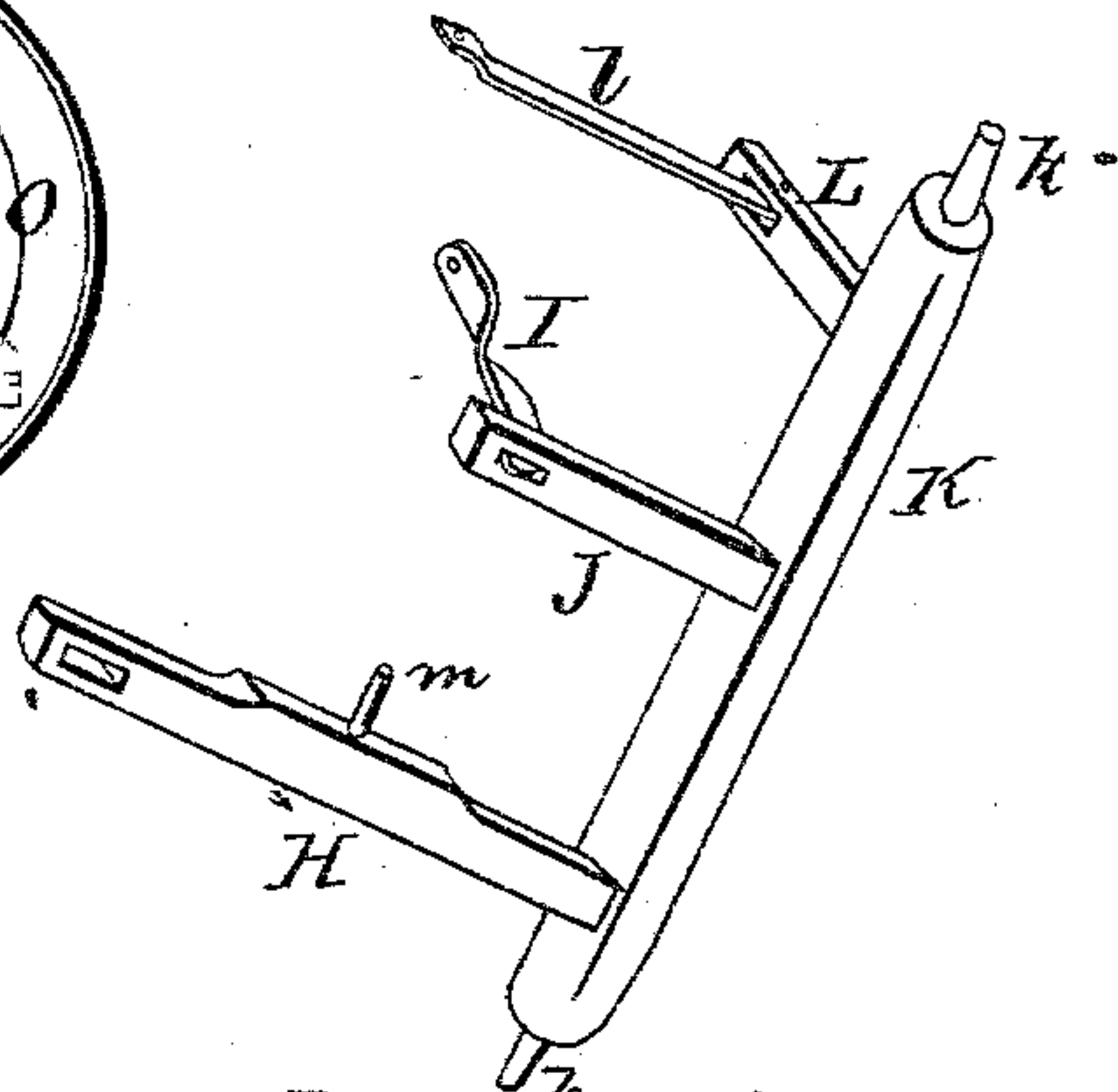


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## FANNING-MILL.

SPECIFICATION forming part of Letters Patent No. 359,944, dated March 22, 1887.

Application filed September 3, 1886. Serial No. 212,639. (No model.)

*To all whom it may concern:*

Be it known that I, HEINRIH SUMMERFELD, a citizen of the United States, residing at Canton, in the county of McPherson and State of Kansas, have invented certain new and useful Improvements in Fanning-Mills; and I do hereby 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.

My invention relates to improvements in fanning-mills or grain-separators, particularly that class intended to be operated by hand-power, in which the grain as it passes through a series of vibrating screens of varying fineness is subjected to a blast of air from a fan; and my said invention consists in certain details of construction of the parts for accomplishing the desired result—viz., effectually cleaning and sorting the grain without complicating the mechanism necessary for this purpose—as will hereinafter more fully appear, and be pointed out in the claims.

The object of this invention is, while bearing in mind the primary object to be accomplished—that of the proper cleaning of the grain—to reduce the number and simplify the construction of the parts necessary for this purpose, so as to bring the machine within the reach of farmers of limited means.

For a better understanding of the details of construction and arrangement of the parts of my invention, reference is had to the accompanying drawings, in which—

Figure 1 is a plan view, Fig. 2 a side elevation, and Fig. 3 a vertical central sectional elevation on the line  $xx$  of Fig. 1, of a fanning-mill constructed according to my invention. Fig. 4 is a detached perspective view of the pivoted bracket, showing the arms or levers for effecting the desired reciprocating movement of screens and bottom of hopper.

A A represent the frame of the machine, within which, at one end, is arranged the fan B, at its top the hopper C, and centrally therein the screens D and E. These screens D and E are arranged at different inclinations, are of different degrees of mesh, discharge at opposite ends of the machine, and both have a longitudinally-reciprocating motion. The top

screen, D, is suspended at its outer end by cords  $d$ , wound upon a shaft, F, and at the center of its inner end by a vertical bar, G, pivoted thereto, and through which it receives its movement, as will presently appear. The outer end of the lower and finer screen, E, rests upon a roller,  $e$ , and at its inner end it is supported upon and receives its motion from an arm, H, of the bracket shown in Fig. 4. The vertically-arranged bar G, for operating the top screen, is hinged or pivoted at its bottom end to a cross-piece, G', and about its central portion is secured to a link, I, which in turn is secured to a short arm, J, of the bracket shown in Fig. 4. This bracket, Fig. 4, is employed to communicate the proper reciprocating motion both to the screens and bottom of the hopper, is made vibrating from the fan-shaft, and consists of a vertically-arranged post, K, having journals  $kk$  at each end, which are received in bearings  $k'k'$  at the top and bottom of the frame or casing, as seen in Fig. 2, and three laterally-projecting arms, H, J, and L, to the outer end of the one H of which the pitman M from the crank  $b'$  of the fan-shaft  $b$  is secured, whereby the necessary movement of the parts is effected. Said arms are connected to the lower and upper screens and bottom of the hopper, respectively, whereby the necessary reciprocating motion of these parts is imparted thereto from the fan-shaft.

As before stated, the outer end of the arm H is secured to the pitman M of the fan-shaft, and at its central portion it is secured by a pin,  $m$ , to the lower screen, E, whereby motion is imparted to said screen, and also to the post K, and in turn to the arm J, and thence, through link I and bar G, to the upper screen, and, through the arm L and connection  $l$ , to the bottom C' of the hopper C. This bottom of the hopper is suspended upon cords  $x$  at each end, as shown in dotted lines, Figs. 1 and 3, and inclines slightly forward, so as to discharge upon the screen D. At the front of the hopper is arranged a gate, N, for regulating the amount of feed from the hopper to the screens, and the movement of this bottom is transversely of the machine, or at right angles to the direction of motion of the screens.

O is the hand power-wheel, connected by



belt P to a pulley, Q, on the fan-shaft, whereby the machine is driven.

Referring again to the screen D, as before stated, it is supported at its front end by cords 5 d, which are secured to a shaft, F, and this shaft has upon its end a ratchet-wheel, f, which is engaged by a pawl, f', so that the elevation or depression of the front of said screen D may be effected, in order to give to the same a 10 greater or less degree of inclination.

The operation is as follows: Motion being imparted to hand-wheel O, and from thence to the fan B and post K, and through its arms to the screens and bottom of the hopper, the agitation of said bottom C' causes a gradual and 15 even feeding of the grain across the width of the screen D. As the grain flows from the hopper upon and through the screen D, the blast from the fan acts upon it and carries off the 20 chaff and other lighter particles. Falling through this screen the grain is still subjected to the air-blast, and, striking upon the lower screen, E, it is discharged at the end of the machine, while the lighter particles and smaller 25 grains pass through said screen E and fall beneath the machine.

The roller-bearing e at the lower end of the screen E permits a free and easy movement of said screen, and by reason of the adjustment 30 of the outer end of the top screen the grain may be longer subjected to the air-blast.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States, is as follows, viz:

1. A fanning-mill comprising the frame A, 35 hopper C, fan B, fan-shaft b, hand power-wheel O, band P, the laterally-vibrating bottom or shoe C' of the hopper, longitudinally-vibrating screens D and E, means for adjust- 40 ably suspending the upper screen at its outer end, a roller for supporting the lower screen at its outer end, and connecting devices for imparting the motions to the shoe and screen, substantially as described, for the purposes 45 specified.

2. A fanning-mill comprising the frame A, hopper C, fan B, fan-shaft b, power-wheel O, band P, the longitudinally-vibrating screens 50 D and E, discharging at opposite ends of the machine, and transversely-vibrating shoe C' of the hopper, the post K, arms H, J, and L, the one L being at right angles to the ones H and J, pin m, vertical bar G, rod I, bar l, and pit- 55 man M, all constructed and arranged substantially as described, for the purposes specified.

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