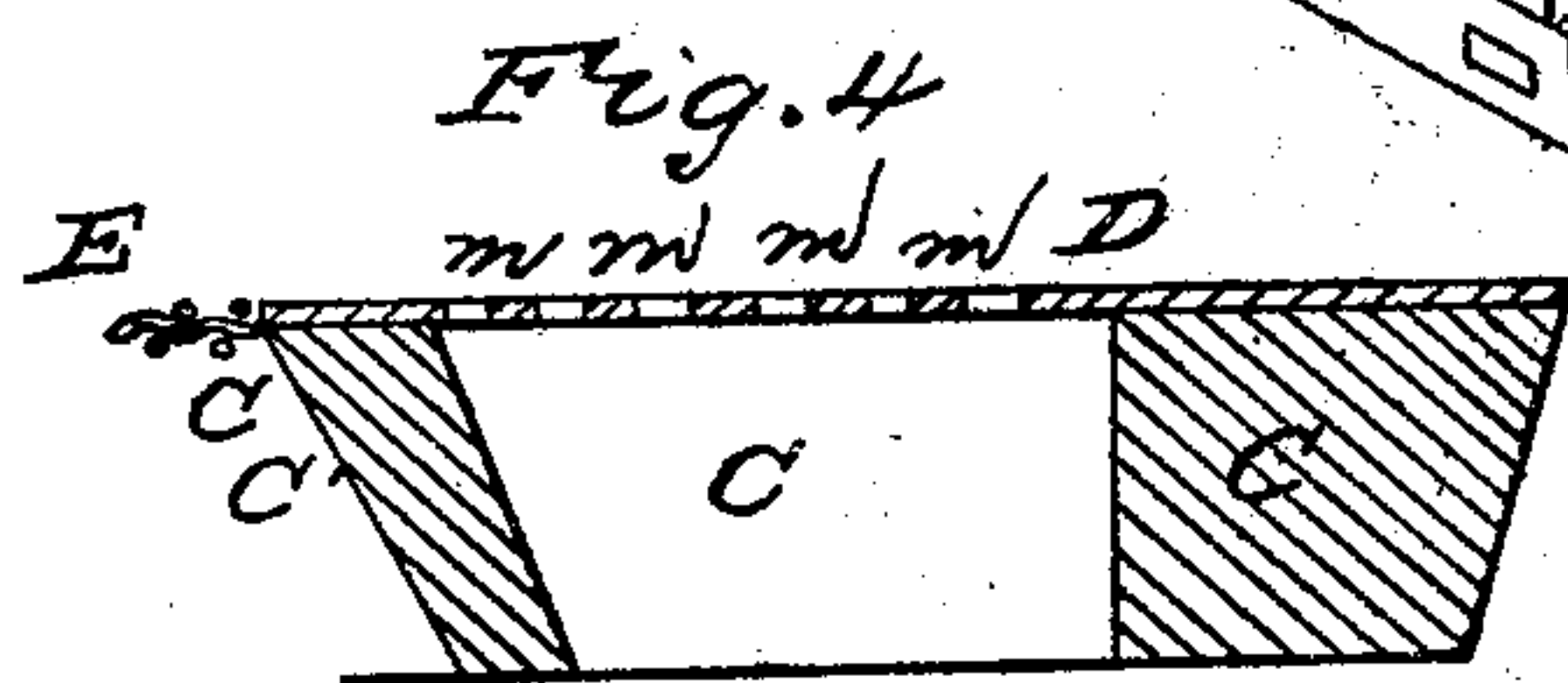
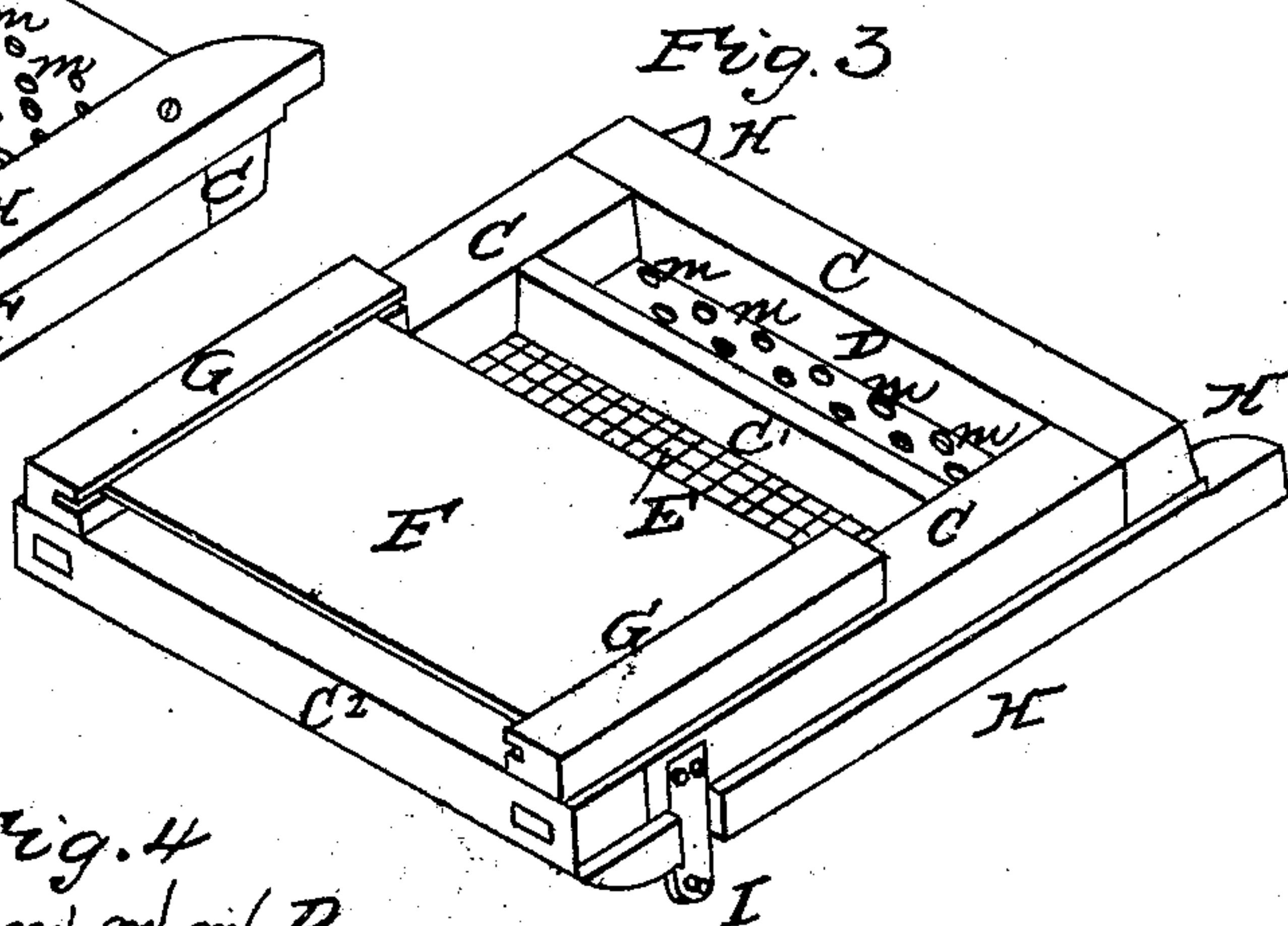
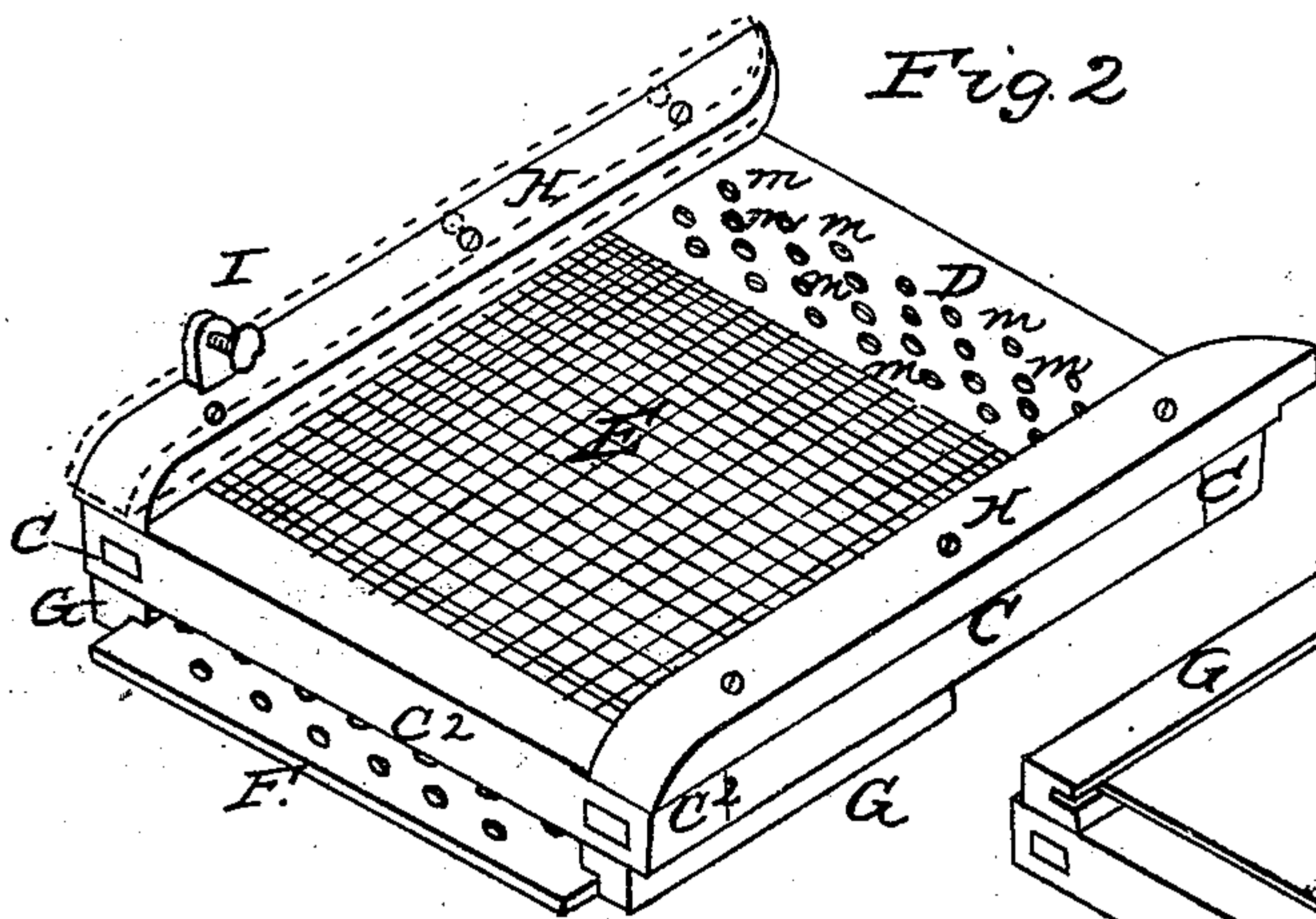
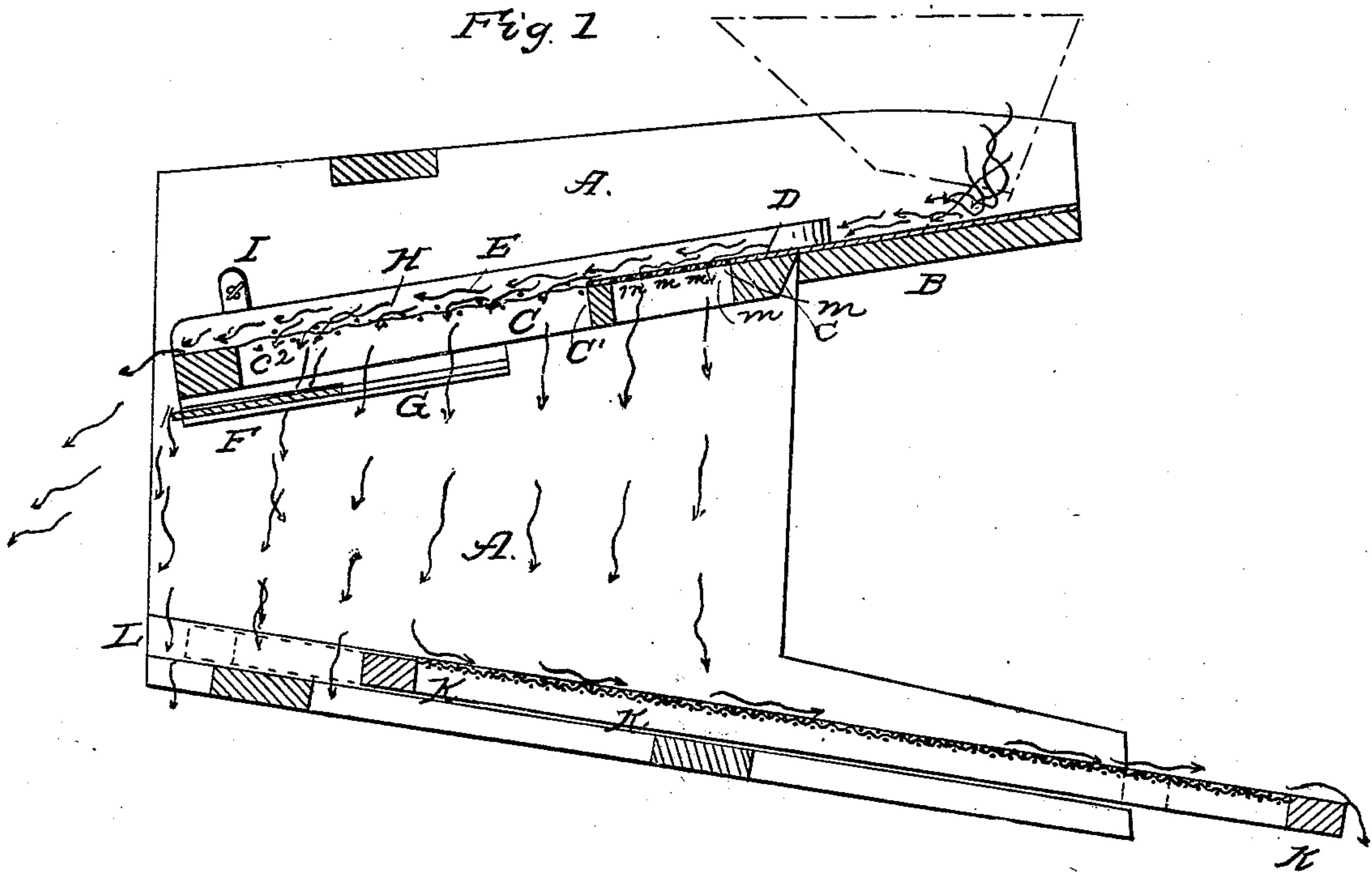


E. YOUNGS.  
Grain Separator.

No. 39,090.

Patented June 30, 1863.



Witnesses  
R. D. Smith  
Thos. Scivoner

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# UNITED STATES PATENT OFFICE.

ELIJAH YOUNGS, OF TUSCARORA, NEW YORK.

## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 39,090, dated June 30, 1863.

*To all whom it may concern:*

Be it known that I, ELIJAH YOUNGS, of Tuscarora, in the county of Livingston and State of New York, have invented a new and Improved Grain-Separating Apparatus; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, the same letters indicating the same parts in all the figures.

My invention consists in providing the ordinary fanning or separating mills with a sieve of peculiar construction, and also with an adjustable discharge-screen, whereby a more complete separation of different kinds of grain may be obtained.

That this may be made clear, and to enable others to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 is a longitudinal vertical section of the shoe of the mill, A being one side of the same, and B being the chute-board. C is one of the longitudinal or side bars of sieve-frame,  $c$   $c'$   $c^2$  being the transverse bars. D is a perforated plate, forming the upper end of the sieve. E is the wire-gauze, as commonly used, forming the lower end of the sieve. F is a plate attached to the under side of the rear end of the sieve-frame C. G are the guides or grooves in which the plate F is placed. H are strips used for adjusting the sieve to fit the shoe, and for other purposes, as will hereinafter more fully be shown. I is a set-screw, by means of which the lower end of the sieve-frame C is fixed in position. K is an adjustable discharge-screen. L are the grooves in which the screen K moves.

Fig. 2 is a top view of the sieve. Fig. 3 is a bottom view of the sieve. Fig. 4 is a longitudinal vertical section of a portion of the sieve, exhibiting another mode of constructing bar  $c'$ .

Red arrows represent oats, and the black arrows indicate wheat.

The screen K may be fixed in position by means of set-screw or any other suitable device.

My sieve is constructed as follows: The frame is made in the ordinary form, with the addition of a bar,  $c'$ , extending across from side to side near the upper end. The lower portion of the frame, from  $c'$  to  $c^2$ , I cover with wire-

gauze in the ordinary manner. The upper part of the frame, between  $c$  and  $c'$ , and which abuts against the chute B, I cover with a perforated plate of metal or other suitable material. On the lower side of the bars C, I place the strips G, and attached to them, either rigidly or adjustably, is the plate F, which may be either plain or perforated. Upon the upper sides of the bars C, I place the strips H, which should be slightly broader and about one inch longer than the frame of the sieve. The upper ends projecting beyond the edge of the sieve rest upon the chute-board B, thereby supporting that end of the sieve and maintaining its position in line with the surface of the chute. These strips are of sufficient width to cover the bar C, thereby confining the grain to the area of the sieve proper, and in attaching them to the sieve-frame they may be so adjusted by projecting sidewise beyond the edge of the frame C as to cause the said frame accurately and fully to fit the sides of the shoe. The sieve may be inclined at any desirable angle to accommodate it to the different kinds or qualities of grain, and may be fixed in position by the set-screw I or any other suitable device. In the lower part of the shoe is the ordinary discharging-screen, K, rendered adjustable by moving longitudinally in the grooves L, as shown by the red lines. The plates D and F, I prefer to make of zinc, on account of its smoothness and freedom from corrosion. The transverse bar  $c'$  may be made as exhibited in Figs. 1 and 3, but preferably in the manner indicated in Fig. 4, as offering less obstruction to the blast.

The operation of my apparatus is as follows: When the grain is placed in the hopper (indicated by the red lines) it descends upon the chute-board B, which is violently agitated by the machinery attached to the mill. This agitation not only causes the grain to slide down toward the sieve, but also causes it to assume a peculiar arrangement, the heavier grain settling at the bottom and the lighter being carried to the surface. The peculiar shape of the oats also causes them to arrange themselves longitudinally and to slide down the chute and over the sieve endwise. Upon passing over the plate D a portion of the heavier grain—wheat, &c.—will fall through the holes  $m$   $m$ , while the oats, being longer



than the diameter of the holes and being buoyed over by the blast, will pass to that portion of the sieve covered with the wire-gauze, where the greatest strength of the blast is received and by the strength of which the oats will be carried down and over the rear end of the sieve, as indicated by red arrows, whereas the wheat, owing to its greater gravity, will pass freely through upon the screen K and be discharged in the direction of the black arrows. In practice the inclination of the sieve may be so adjusted that all of the wheat will find its way through the sieve, while nearly all of the oats will pass down and over its rear end. A small portion of oats, mixed with grains of wheat, which, owing to lightness or other causes, have not fallen through the upper part of the sieve, will fall through the meshes near the rear end of the sieve. This mixed portion either falls upon the plate F, which, if perforated, acts as a second sieve, or it falls the direction of the mingled red and black arrows past the rear end of the screen K, which has been adjusted by sliding it forward in direction of black arrow sufficiently to allow all the impure grain to fall past it. It may be remarked that the plate F is especially valuable in those machines which, owing to construction, will not allow the screen K to be moved sufficiently far in direction of black arrow to accomplish the above-mentioned purpose. It will now be clearly seen that the grain is divided in three separate and distinct parcels: First, that portion consisting of pure sound wheat, which, passing through the plate D and upper portion of the wire-gauze, falls upon the adjusted screen K, and is received in its proper receptacle at the lower or front end of the same, as shown by the black arrows;

second, that portion of pure oats which, passing over the rear end of the sieve, as seen by red arrows, is received and secured in any desirable manner; third, that portion of mixed grain which passes through the meshes of the sieve nearest the rear end of the same, and is caught upon the plate F or falls into the "chess-box" placed beneath the rear end of the screen K and shoe, as shown by mingled red and black arrows. This latter portion may be placed in the hopper and passed again through the mill to secure a further separation.

I am aware that perforated metallic plates have been used for the purposes of a sieve, and I do not claim such. Neither do I claim the making the sieve vertically adjustable, nor do I claim the separating-plate F independently; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. A sieve constructed partly of wire-gauze and partly of a perforated plate, substantially as described.

2. A sieve constructed as above described, in combination with a separator-plate, F, attached to under side of the rear end of the sieve, said plate F to be either plain or perforated, fixed or adjustable.

3. The adjustable strips H or their equivalents, for the purpose set forth, and substantially as described.

4. The combination of the sieve E and the adjustable discharging-screen K, for the purpose set forth, when constructed and arranged substantially as described.

ELIJAH YOUNGS.

Witnesses:

R. D. O. SMITH,

THOS. SCRIVENER, Jr.