

J. W. JOHNSON.  
GRAIN-SEPARATOR.

No. 177,252.

Patented May 9, 1876.

Fig. 1.

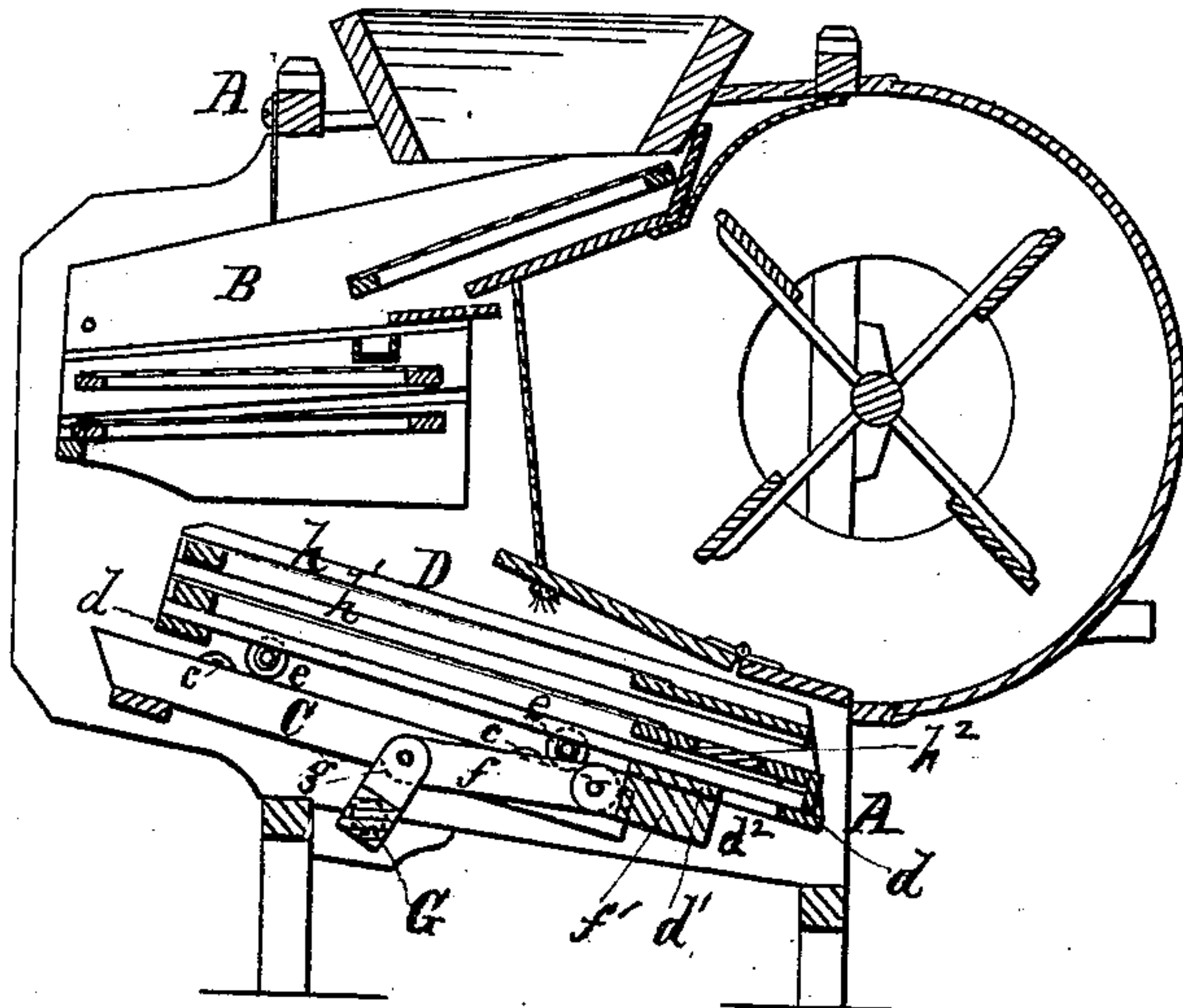


Fig. 2.

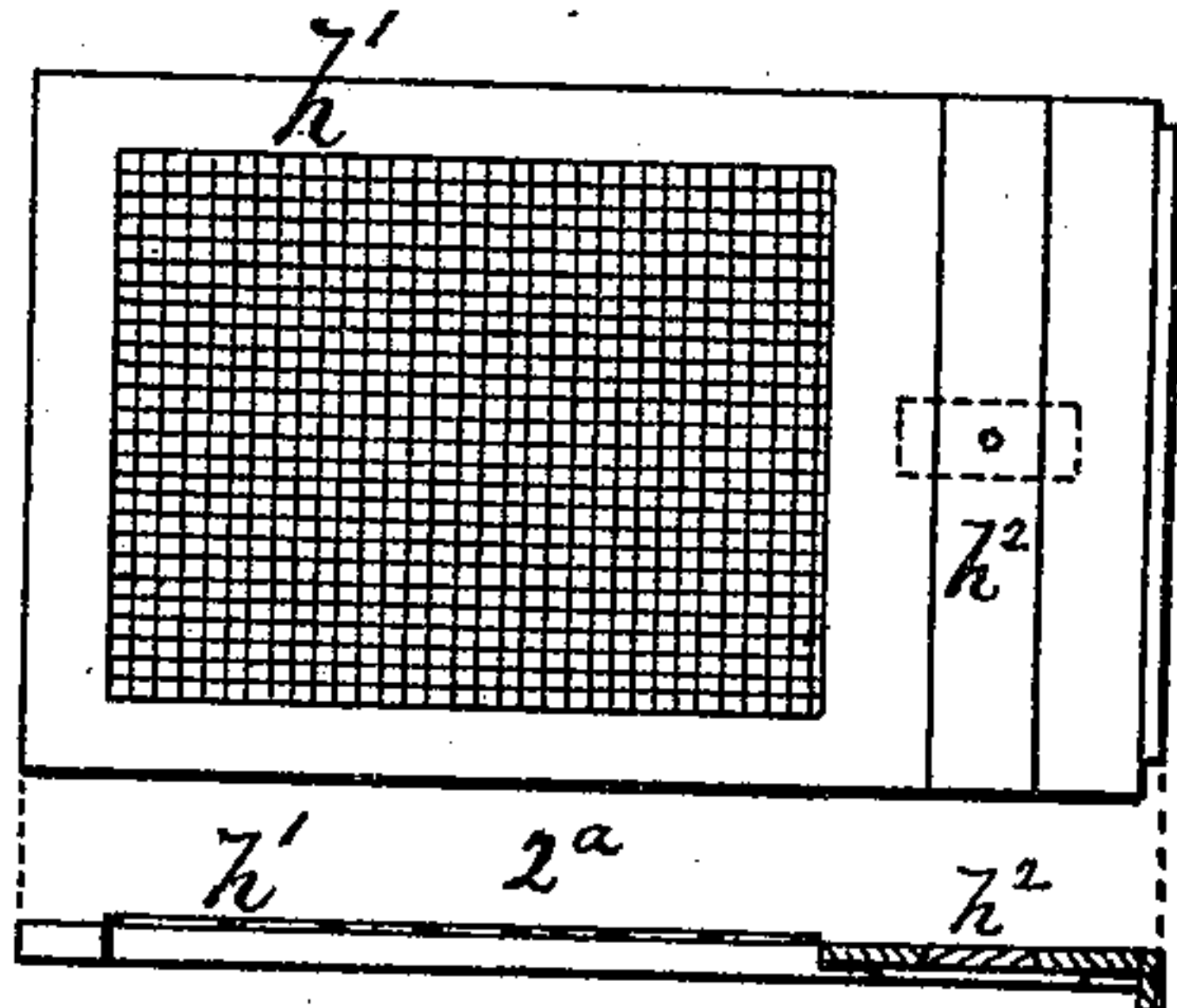


Fig. 3.

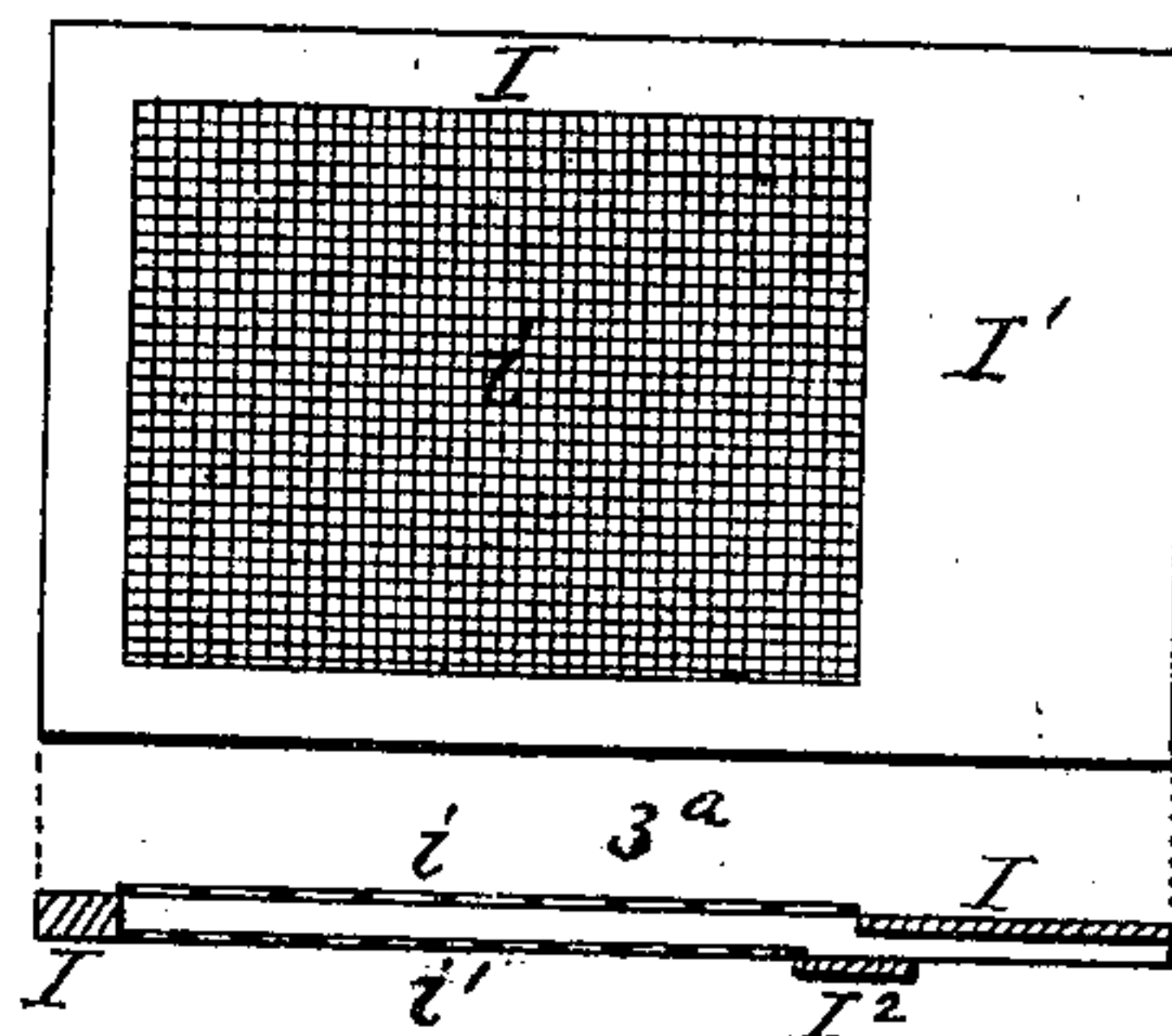
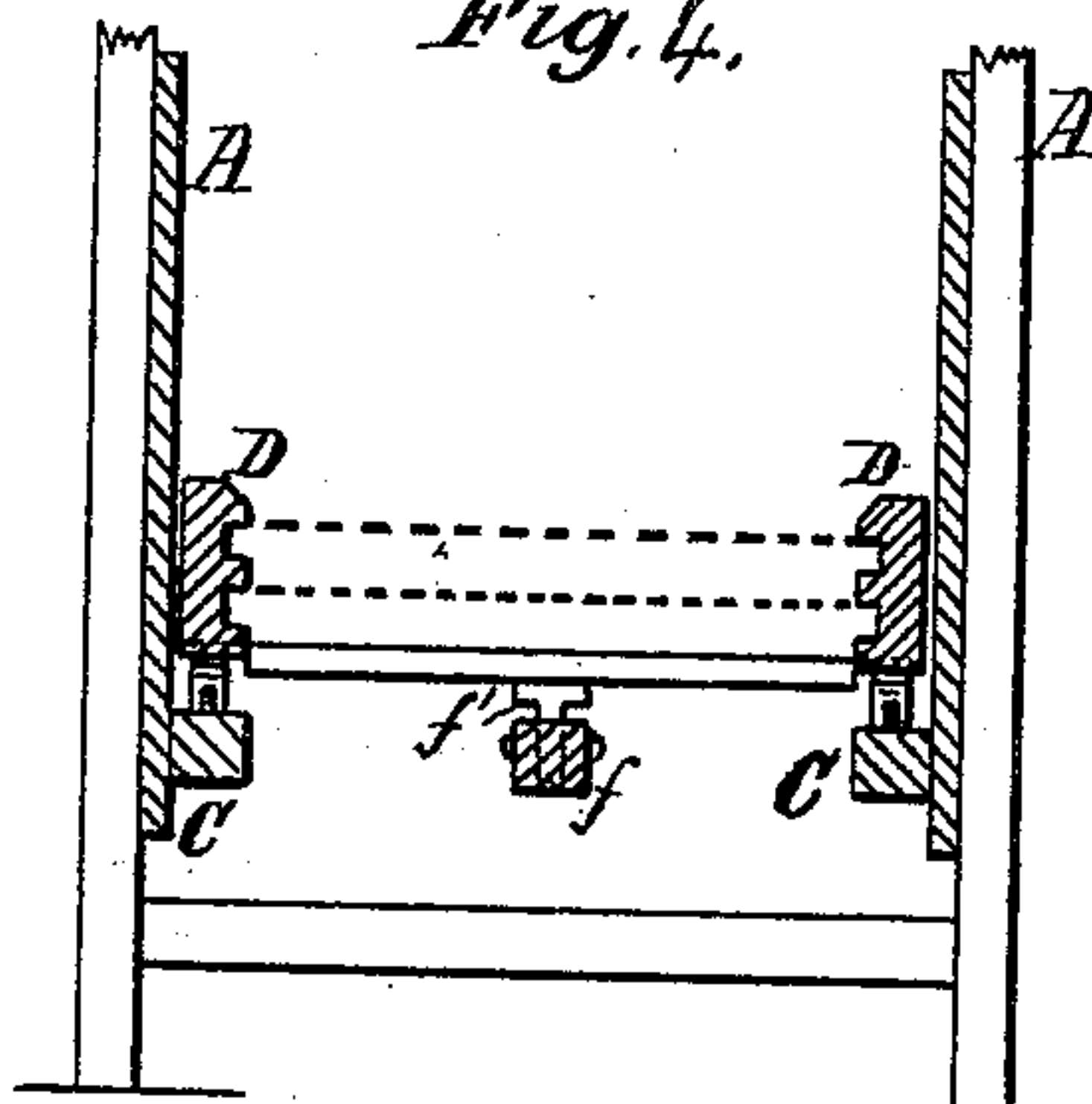


Fig. 4.



Witnesses:  
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John G. Center.

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# UNITED STATES PATENT OFFICE.

JOHN W. JOHNSON, OF TOWANDA, PENNSYLVANIA, ASSIGNOR TO UNITED STATES FANNING MILL COMPANY, OF SAME PLACE.

## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 177,252, dated May 9, 1876; application filed May 4, 1876.

*To all whom it may concern:*

Be it known that I, JOHN W. JOHNSON, of Towanda, county of Bradford, State of Pennsylvania, have invented certain new and useful Improvements in Fanning-Mills and Grain-Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a vertical longitudinal section through a fanning-mill and separator, having my improvements applied. Figs. 2 2<sup>a</sup> represent a plan view and a longitudinal section through the lower long screen. Figs. 3 3<sup>a</sup> represents similar views of the grass-seed separator and screen, and Fig. 4 represents a vertical transverse section through the separator-screen frame and screens.

Similar letters of reference denote corresponding parts wherever used.

My invention has for its object the improvement of the machine upon which Letters Patent were granted to me July 27, 1875, in which a longitudinally-reciprocating, long, double screen or separator was arranged within the machine-frame, underneath the transversely-vibrating shoe, and disconnected therefrom, for separating and cleaning seed-grain; and the present improvement consists in combining the long separator-screens with a grooved reciprocating frame, mounted on rollers, adapted to run on an adjustable frame or ways, and connected with the rock-shaft, from which it receives its vibrations through the medium of a crank-arm and pivoted or jointed link, arranged centrally underneath the screen-frame, for facilitating and steadying the movements of said frame.

In the accompanying drawings, A represents the frame-work of the machine, and B the shoe, with its usual screens, arranged within the frame or casing A; said parts in their organization or general arrangement and operation being similar to what is described in my former patent, referred to; or any usual or preferred construction may be employed.

Underneath the shoe, and near the bottom of the main-frame casing, is a frame composed, preferably, of two parallel longitudinal bars,

C C, inclined in an opposite direction to the screens in the shoe, and pivoted at their rear lower ends to the main-frame casing, one upon each side. The forward or upper ends are connected rigidly by a transverse bar, C', by means of which the bars or frame C may be vibrated or adjusted for changing their angle of inclination, a pin, passing through any one of a series of perforations in the casing, serving to hold the forward end of the frame at the desired adjustment. Above the frame C is a long rectangular screen-frame, consisting of two longitudinal side bars, D D, grooved on their inner faces for the reception of the screens, and rigidly connected by transverse strips or bars  $d d$  and  $d^1$ , attached to the lower faces of bars D, as shown in Fig. 1, the two,  $d d$ , uniting the bars D at their ends, while the bar  $d^1$  is placed intermediate, sufficiently removed from the rear bar  $d$  to form a passage at  $d^2$  for grain or seed, said bar serving as the point of attachment for the jointed pitman or connecting-rod  $f f'$ . The frame-bars D D are mounted on rollers  $e e$ , which rest and move back and forth on the frame-bars C, and little spurs  $c c$  or corrugations on the upper face of said bars  $c$ , within the path or throw of the rollers  $e$ , serve as the screen-frame,—D, is reciprocated to impart a jolting or knocking movement to said frame, and thus to assist in the operation of separating the grain, &c., by keeping the meshes of the bolt clear. The bar  $d^1$  of the screen-frame has rigidly connected with it, midway of its length, a block or arm,  $f'$ , forming one part of the pitman, and to this arm one end of the part or arm  $f$  is pivoted, the other end being pivoted to a crank-arm,  $g$ , on a rock-shaft or bar, G, to which motion is imparted by any convenient arrangement of driving devices, preferably that described in my former patent, referred to. By this central arrangement of the pitman  $f f'$  cramping or binding of the screen-frame is avoided, while by the jointing of the pitman or rod  $f f'$  it is adapted to permit all necessary adjustments of the frame C and the varying relations between the bar  $d^1$  and the rock-shaft G. For simply separating seed-grain, a plain wire screen,  $h$ , is employed inserted in the upper groove of frame D, having



a mesh sufficiently large and open to pass all except the full plump grains required for seed, the latter passing off at the tail end of the screen.

For saving all the grain, separating from it only the chaff and impurities, a finer screen,  $h^1$ , is employed; but where it is desired to separate the plump grain for seed, and also to save separately the smaller or shriveled grain, the screen  $h^1$  is placed in the frame D, underneath the screen  $h$ , and a valve,  $h^2$ , near its lower end, and over the opening  $d^2$ , is removed, and a box or receptacle is placed underneath said opening, to receive the smaller grain from the screen  $h^1$ , while the plump grains are passed out at the tail end of the upper screen  $h$ , as before.

Where it is desired to separate grass-seed from the grain, and to separate it from impurities and save it, a lower double-screen grass-seed separator or slide is employed, either alone or in connection with an upper slide,  $h$  or  $h^1$ , as described.

This slide consists of a rectangular frame, I, having a broad tail-piece or board,  $I^1$ , let in flush with the upper faces of the side bars, and the opening through the said frame is covered by a wire cloth,  $i$ , through which the grass and other small seed, together with the impurities, can pass, while the grain passes down over the screen and tail-board, escaping at the lower end, as before. The frame or slide I, the bars of which are from one-half to three-quarters of an inch thick, adapting it to slide in the groove in the frame D, is covered on its lower face with a second wire gauze or screen,  $i'$ , of finer mesh than the screen  $i$ , and adapted to retain the grass-seed, while permitting the finer seed and impurities to pass through. The grass-seed passes down

over the screen  $i'$ , and escapes over a narrow tail-piece or board,  $I^2$ , into a suitable receptacle arranged within the machine-frame, and underneath the discharging end of the screen  $i'$  and tail-board  $I^2$ .

By the addition of the lower screen  $i'$  and the board  $I^2$ , it will be seen that the single slide I is made to perform the function of a double screen, and a thorough separation of the grain and grass-seed from each other is effected, and of both from the chaff and other impurities.

The ordinary cleaning of the grain is effected through the upper screen, mounted in the shoe B, in the usual manner; but for seed-grain, and the other purposes described above, the grain is discharged from the shoe upon the screens of the lower longitudinally-reciprocating frame D, and there operated upon as described.

The screen-frame D, with its supporting-frame or ways C, may be applied to any of the various forms or constructions of fanning-mills in common use; and a particular description of the mill itself is, therefore, unnecessary.

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

The grooved reciprocating screen-frame D, mounted on friction-rollers on the adjustable frame C C', in combination with the jointed connecting-rod  $f f'$ , and crank-arm  $g$  on the rock-shaft G, arranged centrally of the width of the screen-frame, and underneath the same, and operating as described.

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Witnesses:

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