(No Model.) 2 Sheets—Sheet 1.

J. F. HATFIELD.

GRAIN SEPARATOR.

No. 422,776. Patented Mar. 4, 1890.

Fig. 1.

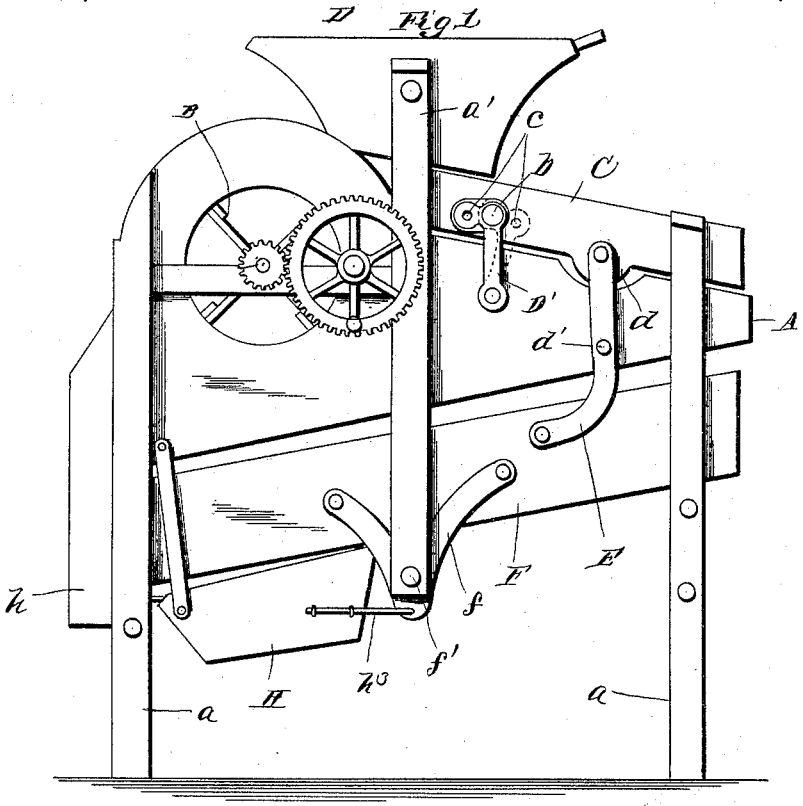
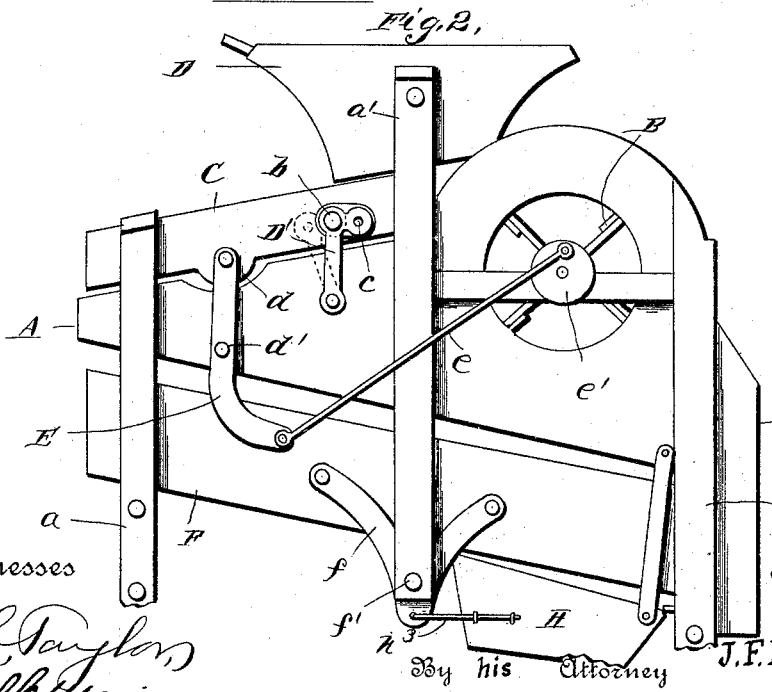


Fig. 2.



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

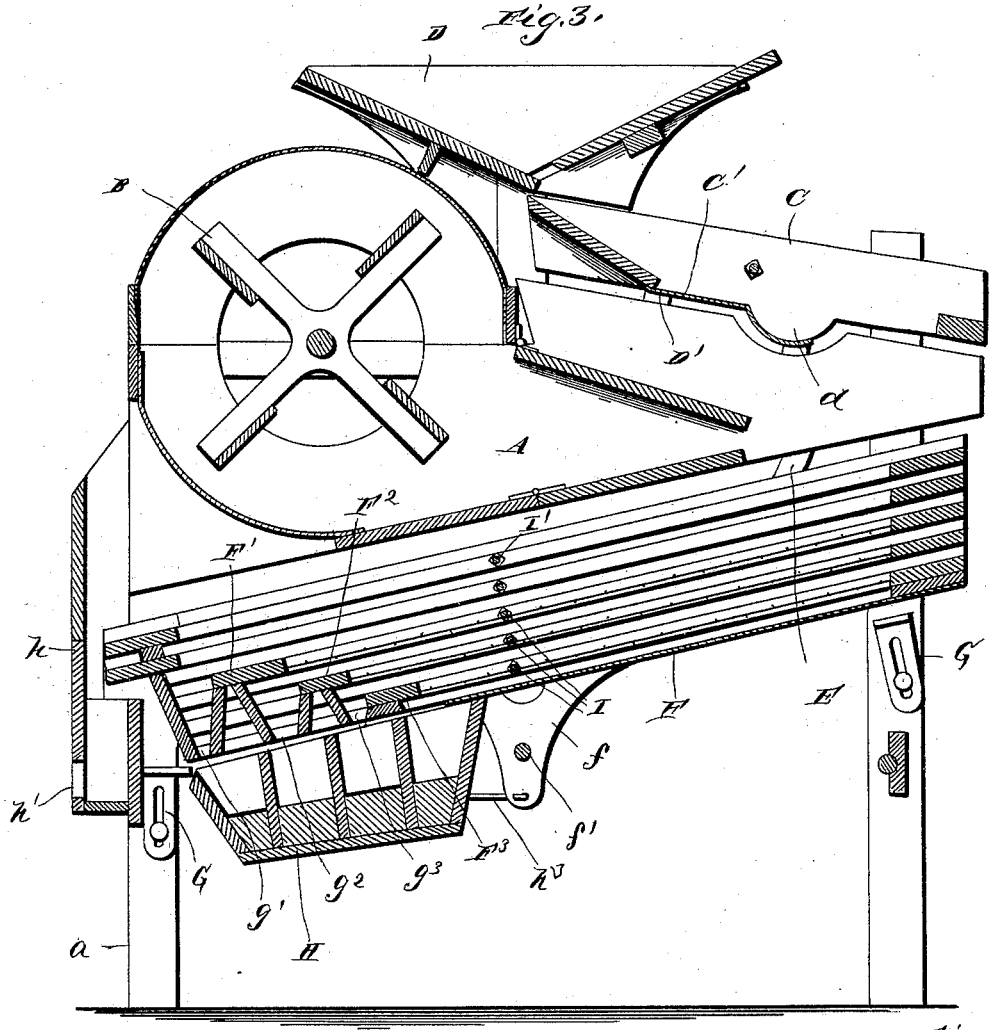


Fig. 4.

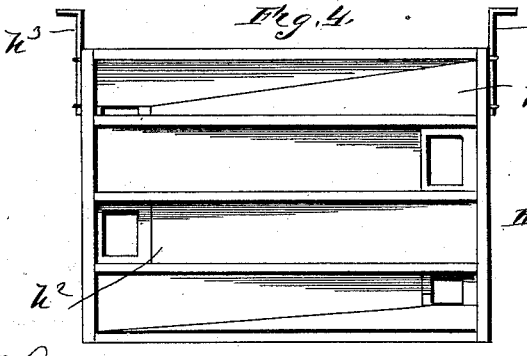
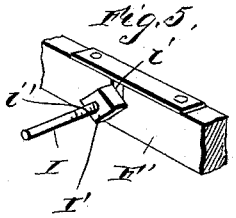


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES F. HATFIELD, OF DUBLIN, INDIANA.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 422,776, dated March 4, 1890.

Application filed September 30, 1889. Serial No. 325,536. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HATFIELD, 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-Separators; 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 representation of a side view of the separator, illustrating the invention as also in dotted lines the second position of the upper shoe-lever. Fig. 2 is a view of the opposite side of the separator. Fig. 3 is a longitudinal section, and Figs. 4 and 5 are details.

This invention relates to certain improvements in grain-separators; and it consists of the novel combination and construction of parts, as will fully appear from the following description and accompanying illustrations.

In the embodiment of my invention I employ a closure or casing A, which is suitably supported in position upon legs or standards *a a*, disposing in one end of said closure in the upper part a rotary fan B, which is suitably driven.

C is an inclined upper shoe carrying a sieve C′, and having one end arranged under the usual hopper D, secured at its ends to and between uprights *a′*, fastened to and projecting upward from the casing or closure A. This screen or sieve has a smooth upper and is preferably of zinc, and to effect a separation of the grain from oats and "white caps," a smooth endwise movement is imparted to the shoe. This is obtained by employing in connection with the actuating mechanism presently described) of the shoe a right-angle) lever D, connecting or pivoting its lower end to the closure or casing and providing a pivotal connection, as at *b*, between it and the shoe in alignment with the lower pivot. In this treatment of the grain the oats and white caps slide over and out of the sieve or screen away from the grain. In the removal of chaff from the grain, however, an up and down jarring motion is imparted to the shoe C by removing the pivot *b* of the lever D′ and effecting a connection between the upper end of said lever and the shoe, as at *c*. In this case the grain is jarred or carried off away from the chaff.

E is a curved lever, of which two are employed, connected preferably to a downward extension *d* of the shoe C, and fulcrumed, as at *d′*, upon the side of the casing or closure A, the lower end of said lever having connection with a pitman *e*, connected to an eccentric *e′* on the end of the fan-shaft. This mechanism is for actuating the sieve or screen carrying shoe C.

F is a lower shoe, which has an opposite inclination to the upper shoe C and carries a series of sieves or screens F′ F^2 F^3 for the further treatment of the grain. This shoe has opposite downwardly-extending arms or pendants *f*, connected thereto a short distance inward from its lower end, and pivoted near their lower ends it may be to downward extensions of the hopper-supporting uprights *a′*. These arms or pendants may have a common pivot by employing a rod *f′* extending through them and secured or bearing in the uprights. This shoe also has connection with and is actuated by the lever D′.

Arranged so as to stand a short distance below the shoe F are brackets G G, which are adjustably connected to the inner sides of the closure-supporting standards or legs *a a* to vary the distance between the latter and the shoe. It will be observed that as the shoe F is actuated through the lever D′ it will, by the aid of its pivoted pendants or arms *f* and the brackets G, against which it strikes, be rocked up and down from end to end through the jarring motion imparted to the shoe, and screens will dislodge any adhering grain and thus liberate it, permitting the whole of the grain to pass out of the screens. The screens or sieves F′ F^2 F^3 are stair-steps in length, their rear ends terminating successively one inward from the other, and discharge, respectively, into a series of chutes or spouts *g′* g^2 g^3, arranged in the rear lower end of the shoe F. The chaff is carried off into the trunk *h*, at the rear end of the casing, the bottom of which inclines from the center laterally in

two directions. At the base of each incline of the bottom of the trunk h is a discharging opening or outlet h' for the contents thereof.

Instead of causing the lower shoe to carry the grain receiving and discharging chutes or spouts as heretofore, which puts that much more weight on the gearing or actuating mechanism, I provide a supplemental shoe H for carrying the spouts or chutes, designated at h^2, and impart a vibratory motion to said shoe by connecting it, through pitmen or rods h^3, with the lower ends of the pendants or arms f, dislodging any possible adhering grain therein.

I is a rod, one provided for each sieve or screen, which has its ends resting between and in vertical slots i in the sides of the screen or sieve frame, and provided with screw-threads i' at its ends, upon which are carried nuts I', so that in event of the swagging of the wire of the screen or sieve, by running the butts on said rod to cause them to press against and spread or bow outward said screen-frame sides, the swag or looseness in the wire or screen will be compensated and the screen be tightened.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In a grain-separator or fanning-mill, the combination, with the upper or top screen-shoe and its actuating mechanism, of the right-angle lever having changeable connections with said shoe, one at its upper end and the other at its angle, the lower end of said lever having a fixed pivotal connection with the closure or casing, substantially as set forth.

2. In a grain-separator or fanning-mill, the combination, with the lower screen-shoe and its actuating mechanism, of the pendent pivoting-arms connected to the under side of said shoe, and the bracket arranged to permit the jarring thereby of the said shoe and its screens, substantially as specified.

3. In a grain-separator or fanning-mill, the combination, with the lower screen-shoe and its actuating mechanism and pivoting pendants, of the supplemental shoe carrying the grain-discharging spouts or chutes and having pitmen-rod connection with said pivoting pendants, substantially as specified.

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

JAMES F. HATFIELD.

Witnesses:
J. C. BENSON,
SOLOMON HUDDLESTON.