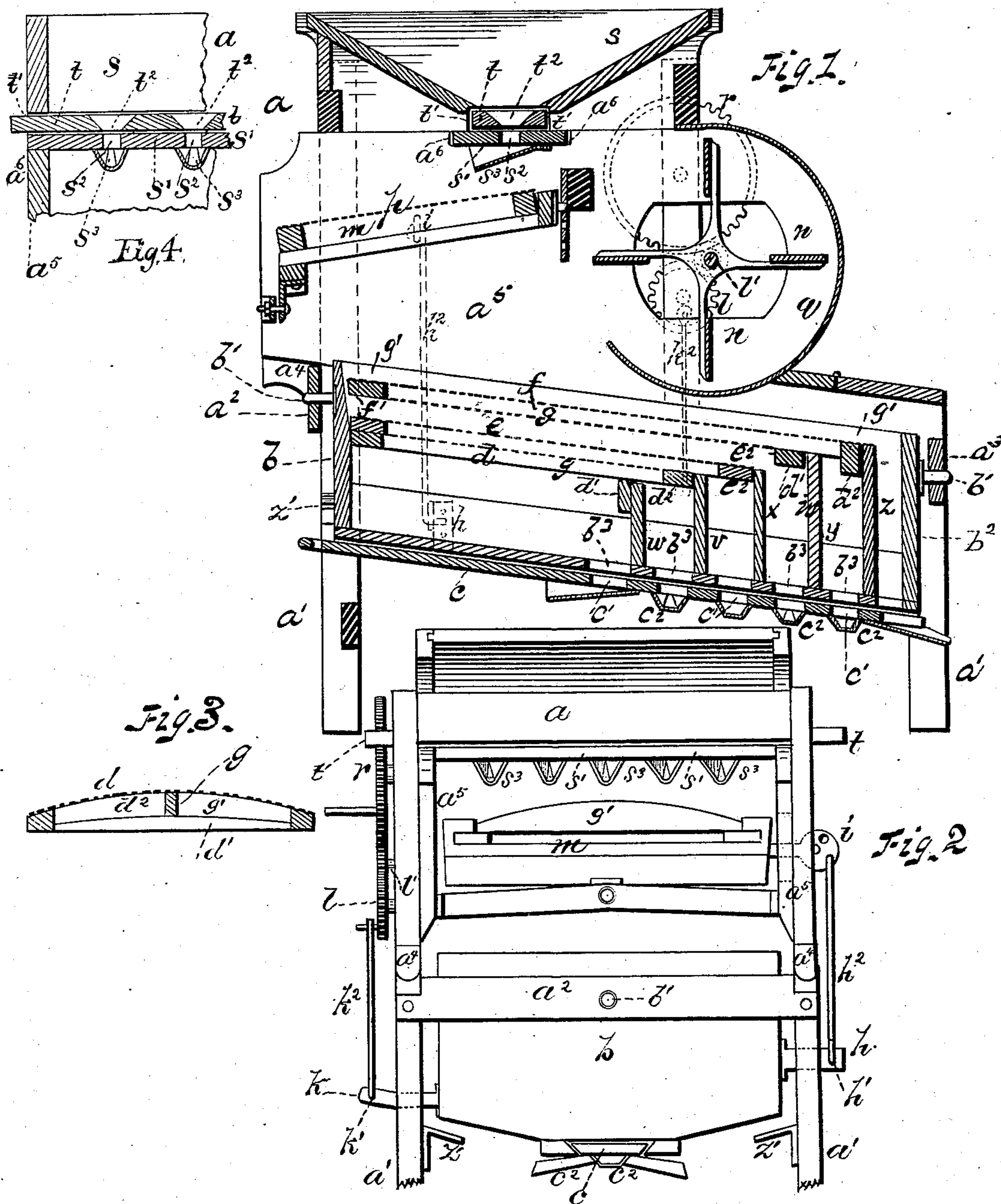


(No Model.)

J. F. HATFIELD.
GRAIN SEPARATOR.

No. 255,285.

Patented Mar. 21, 1882.



WITNESSES
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UNITED STATES PATENT OFFICE.

JAMES F. HATFIELD, OF DUBLIN, INDIANA.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 255,285, dated March 21, 1882.

Application filed June 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HATFIELD, of Dublin, in the county of Wayne and State of Indiana, have invented a new and valuable Improvement in Grain-Separators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical section of my grain-separator. Fig. 2 is an end view of the same, and Fig. 3 is a detail view. Fig. 4 is a partial detail in section.

This invention relates to improvements in grain-separators; and it consists in the construction and novel arrangement of parts, as hereinafter set forth, and more particularly pointed out in the appended claim.

In the annexed drawings, the letter *a* represents a frame supported on legs *a'*, and provided with top and bottom end rails, *a² a³*, slanting side rails, *a⁴*, and side boards, *a⁵*. Extending lengthwise of this frame is a cradle, *b*, which is pivoted at its ends to the end rails or bearings, *a² a³*, by journals *b'*. This cradle is divided into boxes by the transverse partitions *w v x y z*, each succeeding partition rising above the one preceding it. In the bottom of the cradle, just above each of these partitions or bulk-heads, and also just above the lower end, *b²*, of the cradle, is made a discharge-opening, *b³*. Arranged along the bottom, in slideways and under these openings, on the outside of the cradle, is a slide-board, *c*, having apertures *c'* placed at the same intervals as the openings *b³*. On the under side of this slide, over the apertures *c'*, are located the inclined chutes *c²*, whereof the end chutes extend longitudinally and the intermediate ones transversely and alternately in different directions.

Within the cradle *b* the separating-screens are placed. Usually three screens, *d e f*, are employed, the first and third being double and the second single. The screen-frames are formed each with a longitudinal middle bar, *g*, and with arched or convex end bearings, *g'*, forming the ridges of the frames on which the screens

or sieves are fastened. By this construction each screen is designed to have a convex form transversely, the rise being central and longitudinal. The double screens *d* and *f* have convex cross-bars *d'* and *f'*, arched like the bearings *g'*, secured to the under side of the longitudinal bars of their frames a short distance within the end bars, *d²* and *f²*, and to these cross-bars the under sieves of the double screens, when thus constructed, are secured. The double screen *d*, which is the shortest, is put in place with its upper end bearing against that of the cradle, its cross-bar *d'* against the partition or bulk-head *w*, and its end bar, *d²*, against the bulk-head *v*. The single screen *e* is then put in place on screen *d*, its end bar, *e²*, bearing against partition *x*. On this screen *e* the third and largest one, *f*, is placed, its cross and end bars bearing against the bulk-heads *y* and *z*.

The sieves are designed to be graduated in fineness from the uppermost, which is the coarsest, down to the bottom one. The convex shape given to the sieves prevents any accumulation of grain along the middle line and insures a thorough shaking and spreading during the oscillation of the cradle. The journals *b'* of the cradle *b* are located near the top, considerably above the middle horizontal plane of the cradle, so that nearly all of the sieves are below the central line of motion of the cradle. This gives to the cradle a pendulous movement, and the sieves move in concave curves. In this way the grain is thoroughly sifted, and yet not roughly jostled about, for the grain on the upper side of the sieve is lifted without being thrown, and on the lower side it comes down without the sieve being pulled away from it. In this way the grain is only affected by the rocking motion, and not the rising and falling of the various parts of the sieves; and hence has ample time to be thoroughly sifted, so that grain of different sizes are not driven off at the end of the screens, but are separated.

On the frame, at the corners of the cradle, are situated the bracket-stops *z'*, which are designed to produce a continual jarring action on the cradle during its movement, and thereby prevent the grain from lodging in the screens at any point.

The division of the cradle by the partitions, and the corresponding relation in length of the various screens, is designed to provide an independent box for each separation, and by means of the slide and its spouts the discharge can be made into separate measures or receptacles.

Fastened to the opposite sides of the cradle, but near opposite ends, are brackets h and k , having eyes h' and k' , in which are hooked the ends of connecting-rods h^2 and k^2 , the former leading to the attachment-lug i , which projects from the upper chaff-screen frame and is provided with perforations for adjustment. The latter rod, k^2 , is pivoted to a gear-wheel, l , engaging a pinion on the end of the fan-shaft l' .

The chaff-screen frame m is pivoted at its ends above the cradle b , and is inclined in the opposite direction, as shown in the drawings. In this frame is seated the chaff-screen p , which is arranged in convex form on arched or upwardly-curved end bearings, g' , in a manner similar to the screens of the cradle. The fan n is transversely arranged in its case q at the end of the frame over the lower end of cradle b . Geared to and situated above the fan-pinion is the toothed driving-wheel r .

In the top of the sides a^5 of the frame are formed seats a^6 , in which rest the ends of the bottom strip, s' , of the hopper, said strip being furnished with a series of holes, s^2 . The flaring ends of the hopper converge downwardly toward the bottom s' , which is placed a little below the lower edges of the flaring ends of the hopper, and the sides of the latter are recessed at t' , so that a slideway is formed above the strip for a slide-bar, t , having a like number of apertures, t^2 , and provided at its edges with hand-purchases. The bottom s' is provided with spouts s^3 on its under side, leading from the holes s^2 and opening above the chaff-screen in the direction from the fan. Into this hopper s the grain to be cleaned and separated is poured, and the supply to the screens is regulated by the position of the

slide-bar t . The machine being put in motion, the fan n is turned, and at the same time the chaff-screen frame and the cradle are rocked or oscillated. The blast from the fan drives off the chaff and dust, the grain falling through to the cradle, and whatever small particles of dust or chaff pass through the chaff-screen are blown off below said screen and above the cradle. In the cradle the grain is separated and carried to the boxes, as already described.

By this machine it is designed that the grain shall be thoroughly cleaned and separated, the construction of the screens and their oscillating movement giving them a very rapid and perfect sifting action. The chaff-screen and cradle are well balanced and easily put in motion. By the rocking action the weight on each screen is distributed on each side of the axial line, effecting a balanced condition, so that the machine runs light under all circumstances. The oscillatory motion given the chaff-screen tosses the falling grain and chaff about, thereby loosening and separating the particles and providing for the thorough action of the blast.

I am aware of a grain-separator having a series of screens, and of another having a rocking cradle; but in this latter the central line of motion is below the screens.

What I claim is—

In a grain-separator, the combination, with the oscillatory cradle b , having partitions w x y z and discharge-openings b^3 , of the inclined double-arched screens d and f , the single screen e , and the slide-board c , having apertures c' and inclined chutes c^2 , substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES F. HATFIELD.

Witnesses:

ERIE LAMB,
WILLIAM F. MEDSKER.