3 Sheets--Sheet 1.

G. E. CLARKE.

Fanning-Mills.

No. 134,643. Patented Jan. 7, 1873.

Fig. 1.

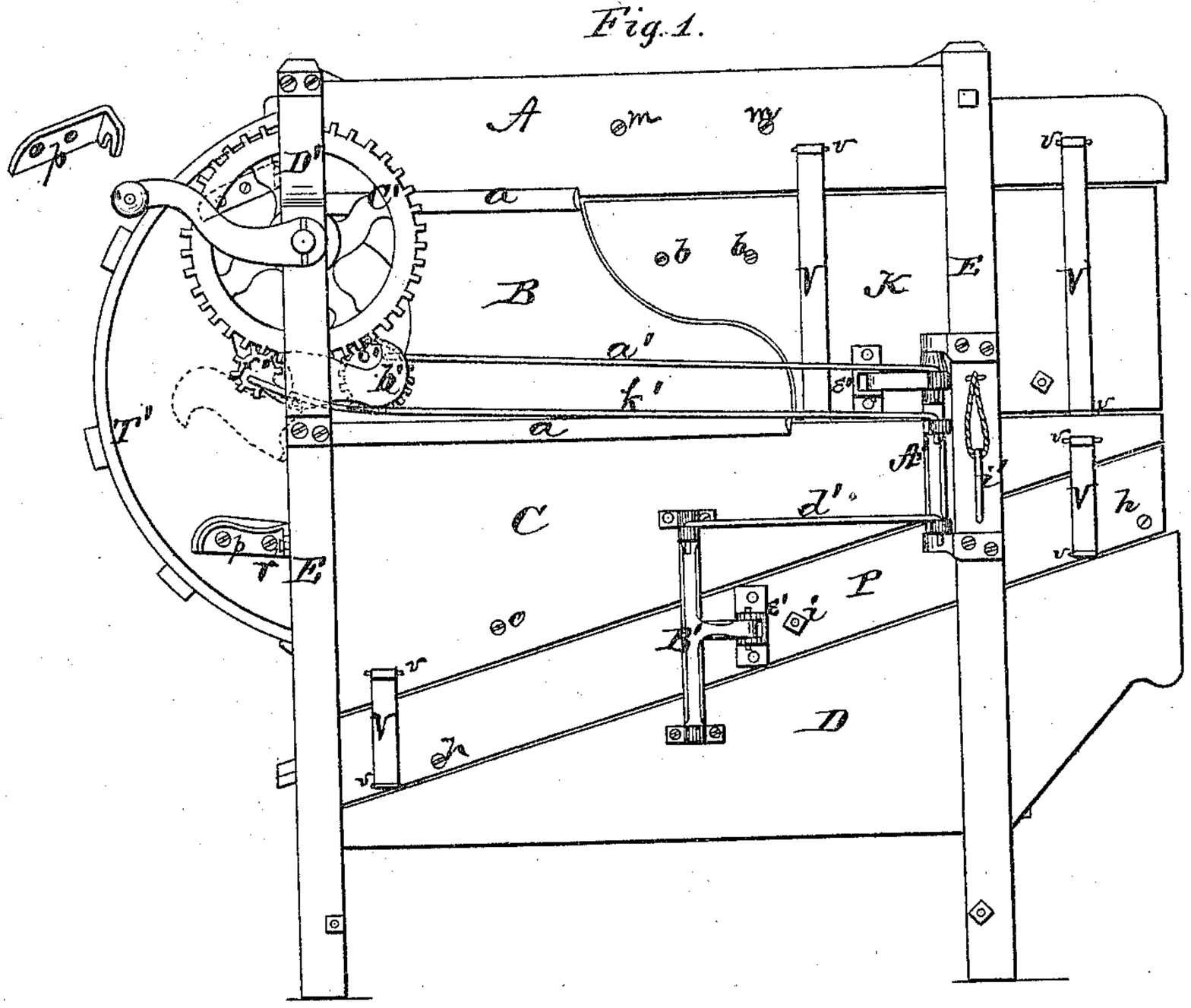

Fig. 3.

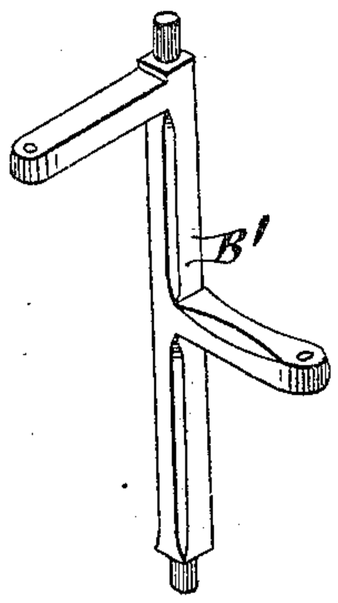

Fig. 4.

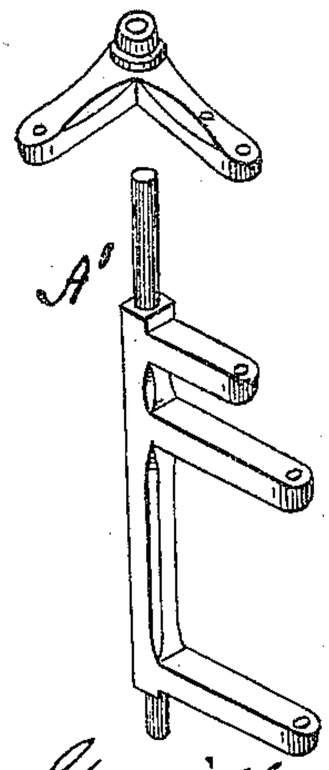

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Fig. 2.

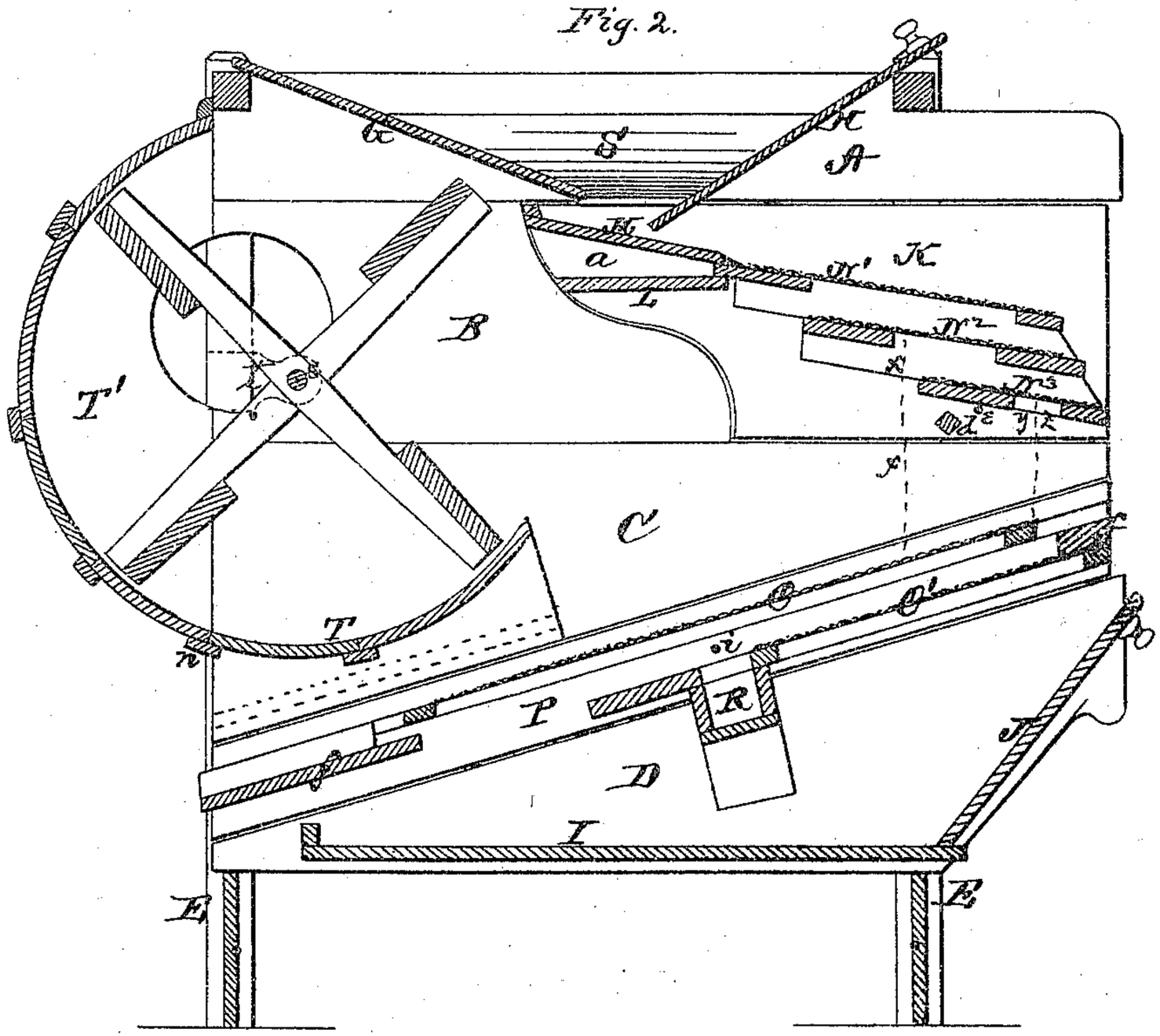
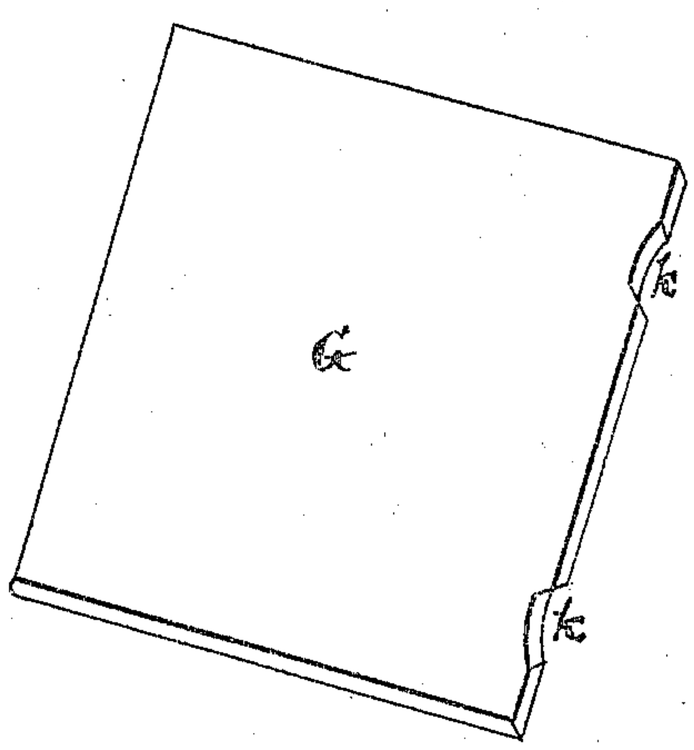
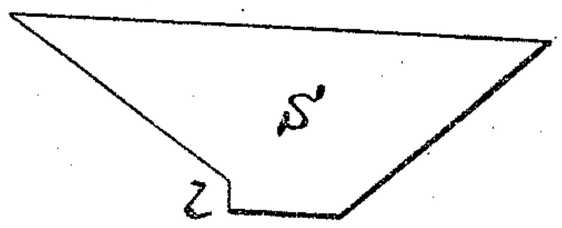
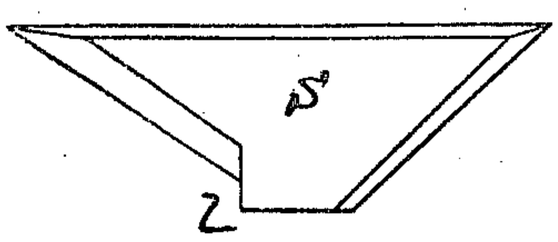


Fig. 5.







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3 Sheets--Sheet 3.

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Fig. 6.

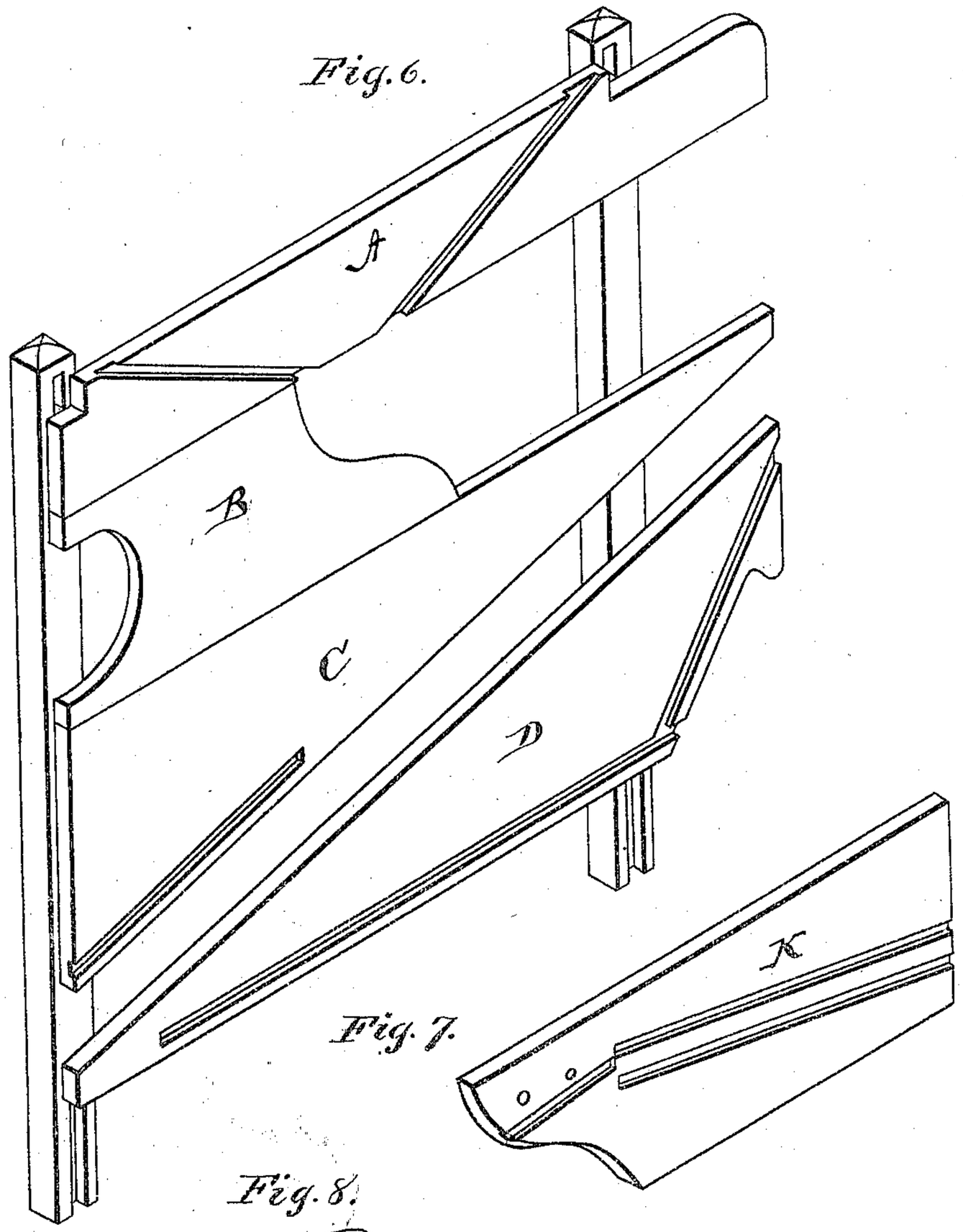
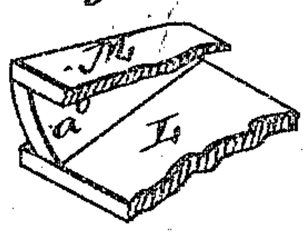


Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

GREVILLE E. CLARKE, OF KENOSHA, WISCONSIN.

IMPROVEMENT IN FANNING-MILLS.

Specification forming part of Letters Patent No. **134,643**, dated January 7, 1873.

To all whom it may concern:

Be it known that I, GREVILLE E. CLARKE, of Kenosha, in the county of Kenosha and in the State of Wisconsin, have invented certain new and useful Improvements in Fanning-Mills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists, first, in the construction and arrangement of the parts composing or forming the hopper of the fanning-mill; second, in the construction and arrangement of the wind-board and apron, the same being connected at their ends by triangular pieces; third, in the arrangement of the sieves in the upper shoe, whereby a part of the grain is allowed to fall through the second sieve past the third; fourth, in slotted metallic handles attached to the head of the mill and used to hook the same onto the main frame; fifth, in the arrangement of the rods, pinions, and cranks for operating the shoes; and, sixth, in a pivoted plate for confining said rods to the pinions.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation, and Fig. 2 a longitudinal vertical section, of my fanning-mill. Figs. 3 and 4 are perspective views of the cranks which vibrate the shoes of my fanning-mill, and Fig. 5 shows the pieces of which the hopper is composed. Fig. 6 is an inside view of the fanning-mill side. Fig. 7 is a similar view of the side of the shoe, and Fig. 8 shows a part of the wind-board and apron.

A, B, C, and D represent the four pieces of which each side of my fanning-mill is composed, and which are nailed or fastened securely on the posts E E. The piece of section A is provided with grooves to receive the ends of the pieces H and G of the hopper. The section C is provided with a groove to receive the under section of the head, which forms the casing around the fan. The section D is provided with grooves to receive the ends of the bottom I and end J of the box underneath. The sections A, B, and C are fastened together with battens or ribs *a a*, placed on the outside of the same, and securely nailed or screwed along the edges of said sections.

The object of making the sides of a fanning-mill in this manner without a glue-joint is for economy in manufacturing, as well as to avoid the consequences of climate and weather, as a fanning-mill is exposed to all kinds of weather. A side that is glued together is more liable to split and shrink apart than a side made in this way.

K represents the upper shoe, the sides of which are provided on the inside with grooves for the reception of the wind-board L. This wind-board is fastened to the apron M by means of angular pieces *a a* inserted between them, as shown in Fig. 2. The object of building the apron on the wind-board is to render it more easily put together and taken apart. The end of the apron M projects past the wind-board and angular piece the depth of the groove, so that when it is put in position in the side of the shoe, and fastened by screws *b b* passing through the shoe into the angular pieces *a a*, the sides of the shoe will be firmly secured together. N^1 N^2 N^3 represent the three sieves constituting the nest of sieves in the upper shoe K. This nest of sieves is constructed in such a manner that for taking oats out of wheat the oats will have a tendency to run down over the wire sieves, while the wheat runs through. As the oats run down the inclined plane of the sieves, they will pass over two or three meshes of the wire sieves safely; then they will begin to drop through. Therefore I have the inclined plane of the third sieve N^3 placed in front of the second inclined plane or sieve N^2, so that the wheat that goes through the first two or three meshes will fall down onto the screen of the lower shoe, as shown at *x*, Fig. 2, the remainder falling on the plane of the third sieve, when the same effect is produced. The wire-screen O in the upper groove of the bottom shoe P is adjustable, and can be drawn up so as to catch the wheat that comes through at *y*. The wheat that comes through toward the outer end of the sieve at *z* will have more or less oats with it, and will drop past the end of the top screen O, and fall on the lower screen O′, and be conveyed down into a spout, R, and pass out at the side of the mill. By constructing the nest

of sieves in this manner, a larger quantity of clean wheat is obtained. By means of and between the wind-board L and apron M is formed a recess, as shown in Fig. 2, for the purpose of receiving and supporting the upper end of the nest of sieves, and at the same time making a lap-joint that will prevent small seeds from passing through, the outer end being supported by the combination of a rod, *e*, and cross-bar *d* underneath the outer end of the nest of sieves. The lower shoe P, containing the screens O O′, is hung under and independent of the upper shoe; and, to render the same capable of being easily put together and taken apart, I connect the two sides together with cross-sections *f f*, fitting between from side to side, and secured to the sides by a screw, *h*, at each end, passing through the side into the cross-section; and to render the screen adjustable a rod, *i*, with thumb-nut on one end, passes through the center of the shoe between the two screens. G represents one side of the hopper provided with notches *k k* in one edge to receive the projecting corners *l* of the angular pieces S, thereby holding the same firmly in place, in combination with the two screws *m m*, passing through the side section A of the mill. By this means the hopper may be easily and quickly taken apart and put together, and the angular pieces S are also prevented from springing out of place by the action of the weather on the same. The drum-head or casing around the fan-shaft is made in two sections, T and T′, and connected together at the edges of the rear posts E E, the batten *n* being secured to the section T, which is held in position by the grooves in the side sections C C of the mill, and screws *o* passing through said side sections into the section of the heading. The outer half T′ of the casing is held in position by means of metallic pieces *p*, provided with slots at their front ends, which admit of their being slipped down under the head of screws *r*, which are secured in the posts E at each corner. These metallic pieces are fastened to the head-section T′, and form hands to be hooked on the posts to fasten the head, thereby rendering the fanning-mill easily taken apart and put together. The fan-shaft *s* is placed in boxes or bearings *t* attached to the inside edge of the posts of the fanning-mill, for the purpose of getting the head of the fanning-mill in sections sufficiently small that they may be packed in a package of suitable size for shipping.

The whole mill is constructed so that it can be taken apart and packed in a compact package which will not exceed more than a foot in thickness.

The shoes of the mill are hung on hinged straps V, the hinge being formed by a wire, *v*, passing through the end of the strap, and the ends of the wire passing through the side of the mill or side of the shoe, as the case may be, and bent or clinched, which renders the swinging of the shoe perfectly free of any resistance caused by having to bend the straps that support the shoe.

To operate the mill for cleaning wheat a rod, *a′*, is placed in one of the holes in the face of the pinion *b′*, which is secured upon the end of the fan-shaft *s*. The other end of the rod *a′* is placed in the upper arm of the sectional shake-crank A′, and this crank is, by a connecting-rod, *d′*, connected with another crank, B′. The two cranks A′ and B′ are connected with the shoes K and P, respectively, by the studs *e′ e′*, in such a manner that when the cranks receive motion, by means of the rod *a′*, the shoes will swing in opposite directions from each other, thus forming a perfect balance-wheel movement, the shake of the shoes not being felt, and the zigzag motion of the shoes balancing each other.

For cleaning fine seed, to produce a quicker motion on the shoe without increasing the motion of the fan-shaft, the rod *a′* is taken off and the rod *k′* is placed with one end in one of the holes in the face of the pinion *f′*, which is mounted in a suitable bearing in rear of the post E. Both of the pinions *b′* and *f′* receive their motion from a cog-wheel, C′, which is arranged between the post E and a guard, D′, and is operated by a crank or any other suitable means. *h′* is a plate pivoted on the inner side at the lower end of the guard D′, to hold the rods in position in the face of the pinions, and can be thrown out of the way so as to allow the rods to be taken out and put in with dispatch, and not liable to get out of order.

When grain is very full of fine seeds it is necessary to operate the screens faster than the upper sieves. To effect this the crank A′ is constructed in two sections, as shown in Fig. 4, the one fitting on the other, and connected or disconnected at will by the pin *i′;* and by having two or more holes at different distances from the center of the small pinion *f′* the shake of the shoes may be lengthened or shortened, at the same time increasing the motion without increasing the motion of the fan-shaft.

The studs *e′* on the shoes are constructed with a double lip or gib to receive the ends of the cranks between said lips to prevent all lost motion, which is the result when the crank is connected in the ordinary manner.

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

1. In combination with the grooved sections A of fanning-mill sides, the pieces G and S S, constructed as shown and described, and the slide H to form the hopper, as herein set forth.

2. The wind-board L and apron M, connected at the ends by triangular pieces *a a*, and forming a recess between their front edges, the apron also projecting beyond the wind-board and triangular pieces, all substantially as and for the purposes herein set forth.

3. The sieves N^1 N^2 N^3 in the shoe K ar-

ranged, substantially in the manner shown, so that a part of the grain will fall through the second sieve N^2 past the third sieve N^3, as and for the purposes herein set forth.

4. The metallic handles *p* provided with slots at their inner ends for the purpose of hooking the head of a fanning-mill onto the post or its equivalent, substantially as herein set forth.

5. The arrangement of the pinions *b' f'*, rods *a' k' d'*, and cranks A' B', substantially as and for the purposes herein set forth.

6. The pivoted plate *h'*, for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of June, 1872.

GREVILLE E. CLARKE.

Witnesses:
J. M. STEBBINS,
HOSEA BARNS.