2 Sheets—Sheet 1.

J. W. CORMACK.

Smut Mill.

No. 15,841. Patented Oct. 7, 1856.

Fig. 5

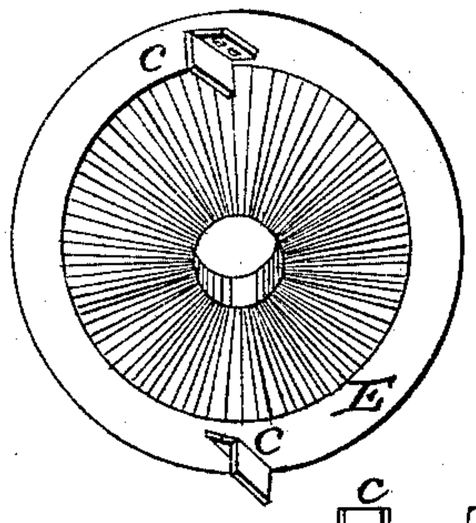

Fig. 4

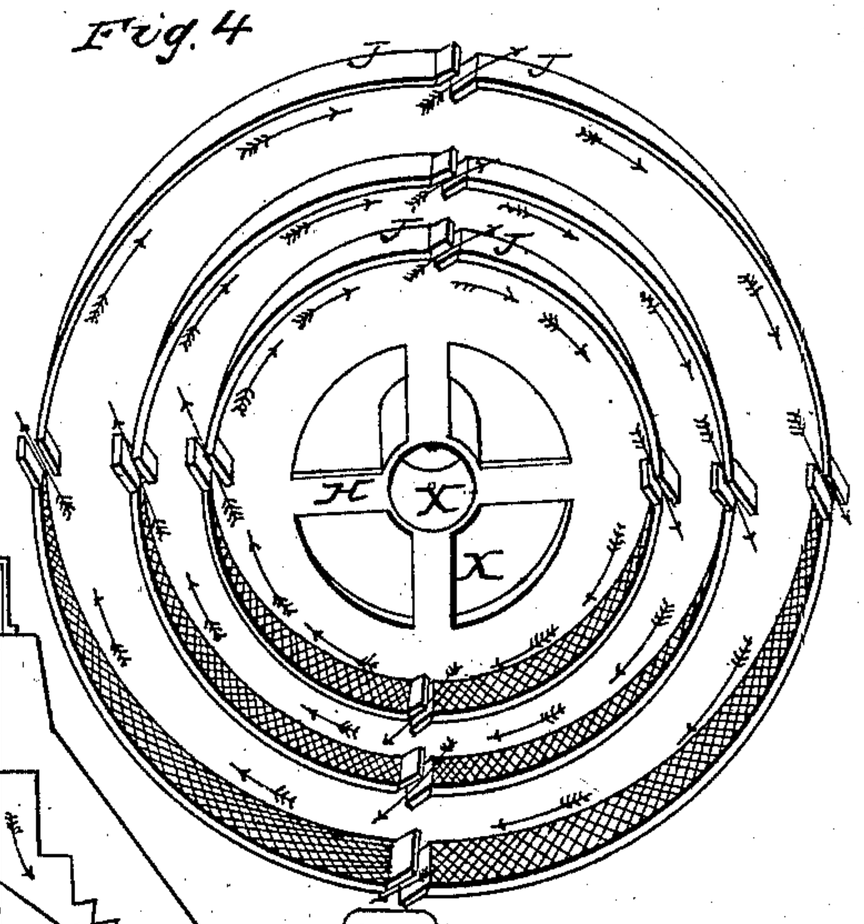

Fig. 1

section

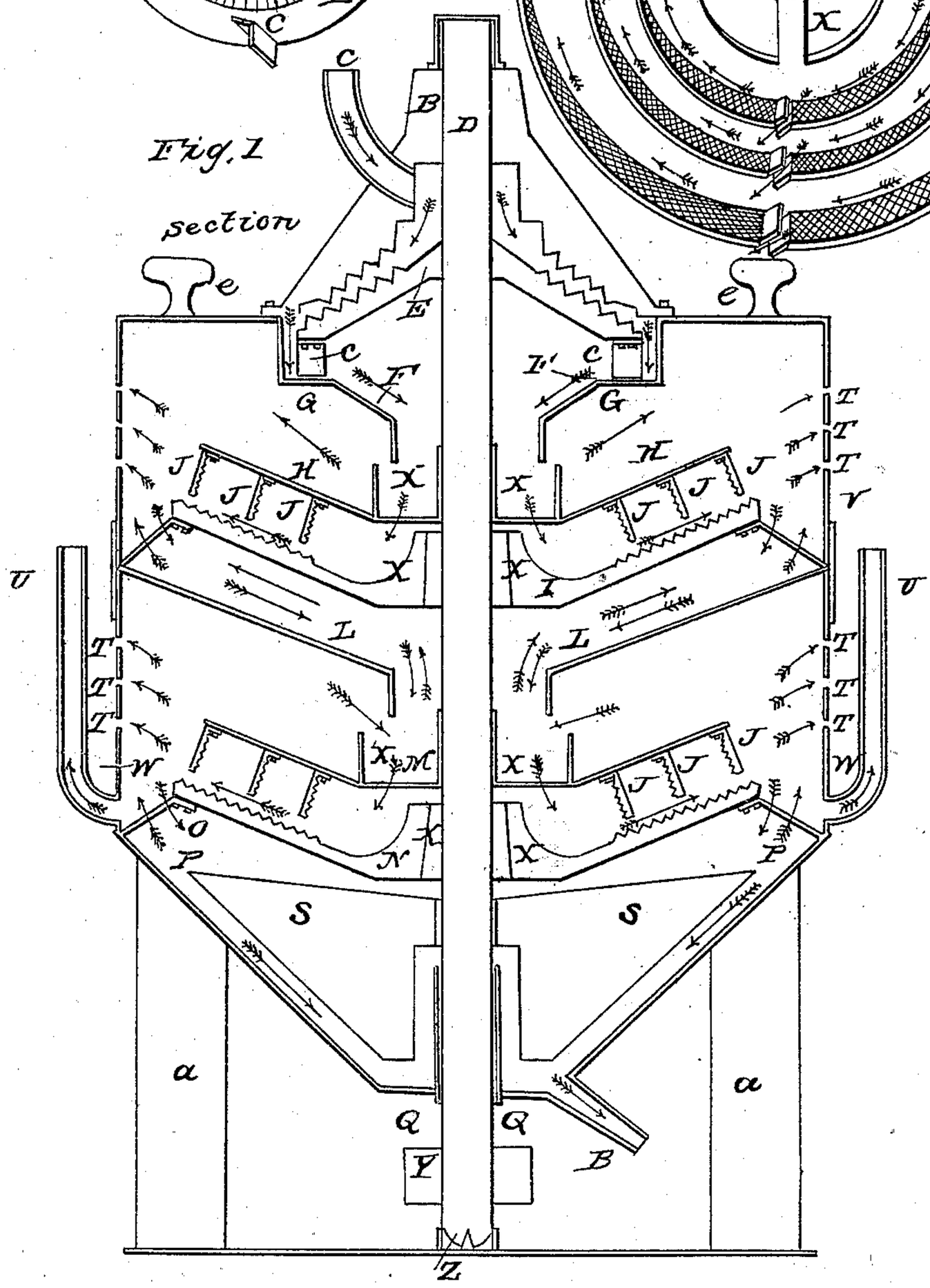

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Fig 3

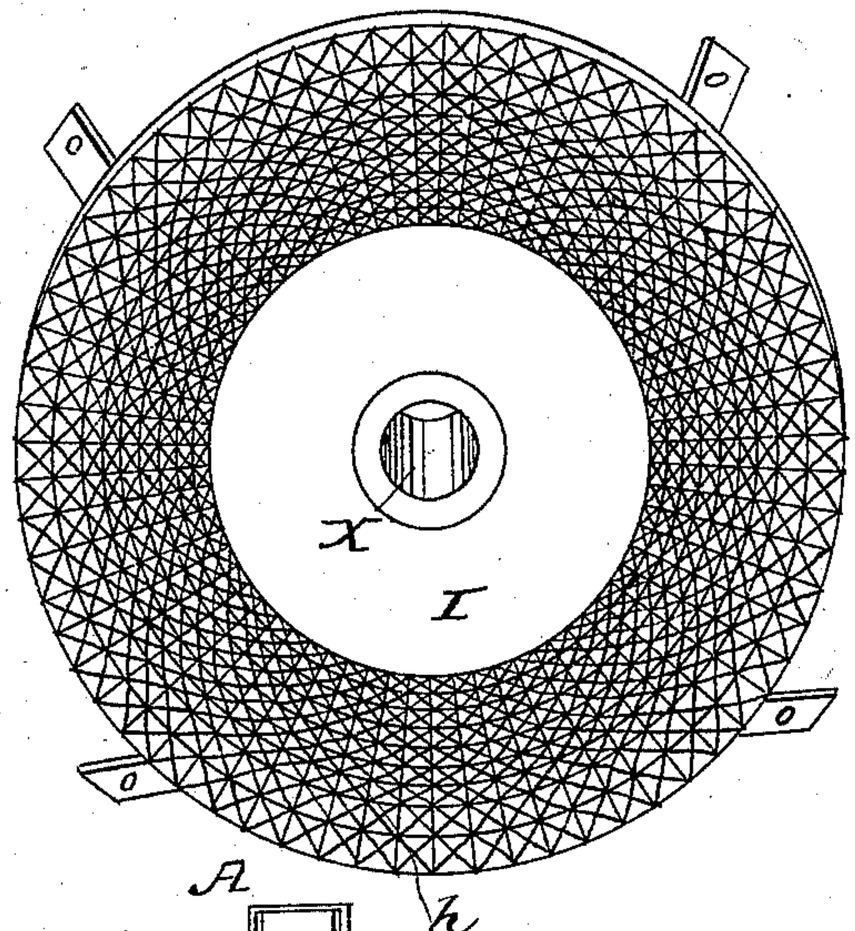
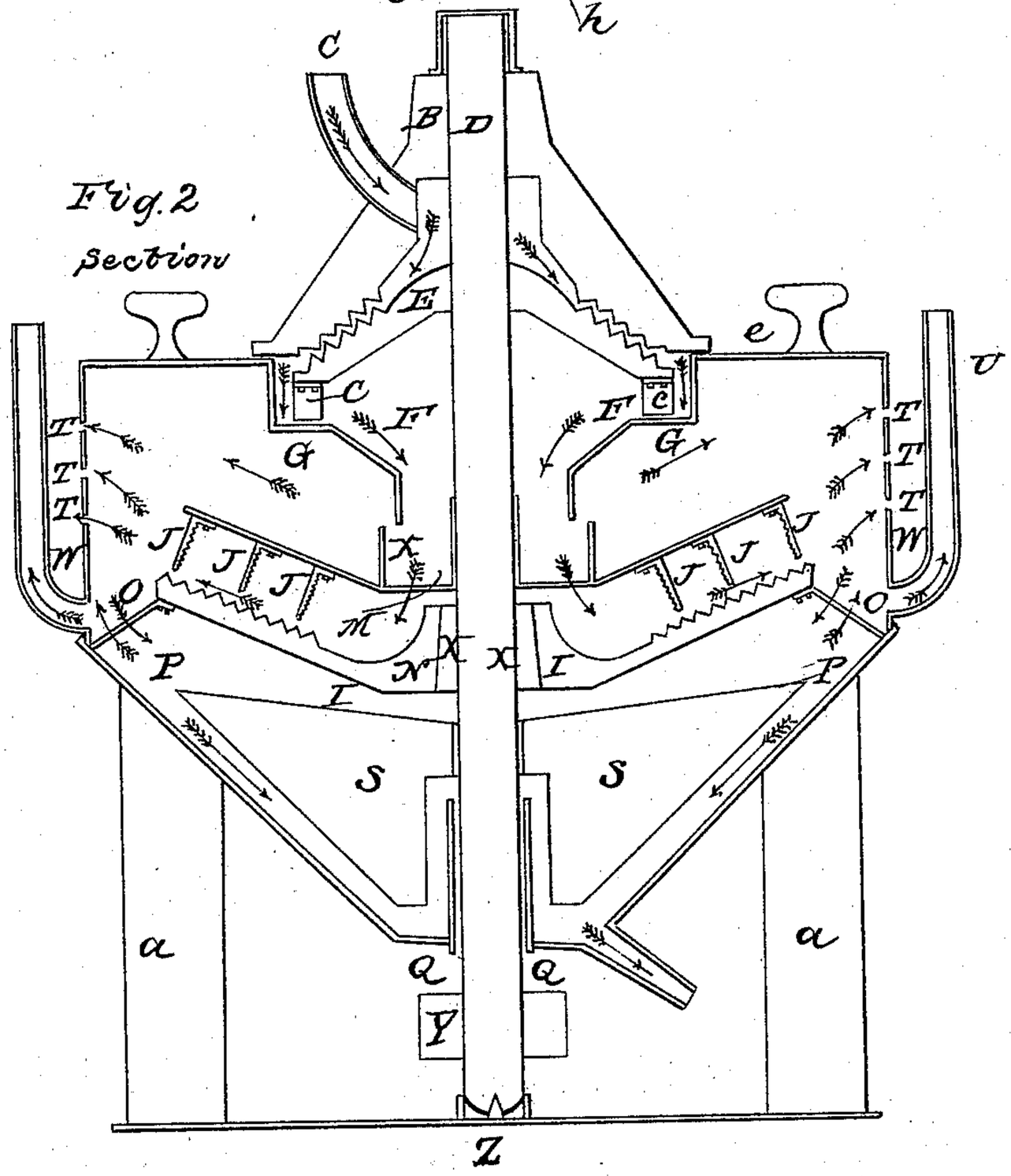


Fig. 2
Section



UNITED STATES PATENT OFFICE.

JOEL W. CORMACK, OF QUINCY, ILLINOIS.

SMUT-MILL.

Specification of Letters Patent No. 15,841, dated October 7, 1856.

To all whom it may concern:

Be it known that I, JOEL W. CORMACK, of the city of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful improvements in smut-mills for the purpose of cleaning and scouring grain, hulling rice and buckwheat, pearling barley, and other scouring and cleaning operations upon grain-seeds; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Like letters refer to like parts.

Figure 1 is a sectional view of the machine where two sets of scouring surfaces are used. Fig. 2 is a sectional view of the machine where one set of scouring surfaces are used. Fig. 3 is a perspective view of one of the stationary cones with its scouring surface. Fig. 4 is a perspective view of the bottom of one of the revolving cones. Fig. 5 is a perspective view of the bottom of the breaking cone with creepers or flights attached.

To enable others skilled in the art to make and use my improvement I will proceed to describe its construction and operation.

Fig. 1 is a sectional view of a smut machine where two sets of scouring surfaces are used. A is a cap placed upon the conical cap B for the purpose of covering the top end of the shaft D. The spout C is for the purpose of conveying the grain into the machine. D is the shaft to which the revolving cones are made part. The conical cap B is fastened to the top plate *e*, *e*, in any suitable manner and is made concave on its inner side, and provided with teeth or spikes placed in such a manner as to pass between the teeth or spikes upon the convex side of the revolving cone E. The cone E is provided on its convex side with teeth or spikes similar to those on the conical cap B, for the purpose of breaking the white cups, straw, and all other foreign substances. By this process the grain is prepared for scouring and cleaning. To the lower side of the revolving cone E, at, or near the outer edge, are creepers or flights *c*, *c*, bolted or fastened at a proper angle, to push or feed the grain into the hopper F. The hopper F conveys the grain to the center where it falls through the revolving cone H, into the concave side of the stationary cone I. The revolving cone H is provided on its lower convex side with a series of rims or flanges as is represented in Fig. 4, and marked J, J, J, J. These rims are bolted or fastened to the revolving cone H in any known manner, and are provided with corrugated or rough surfaces on one or both sides as though most proper. The lower edges of the rims or flanges J, J, J, J, upon the cones H and M are placed as near the surface of the stationary cones I, and N as can be, and not crush the grain that might be forced between them. The cones E, H and M are fastened to the shaft D, and revolve with it, also the revolving cones H and M are provided with openings X for the purpose of supplying air to the suction through, between the revolving and stationary cones, which suction, is caused by the motion of the revolving cones, and its rims, or flanges also to allow the grain to fall upon the stationary cone I. This draft or suction between the cones is considered an important point in the operation of the machine. The stationary cone I is provided with corrugated or rough surfaces upon its concave side as is represented in Fig. 3, for the purpose of scouring the grain as it passes over it while it is carried around by the force of the rims or flanges J J J J, and the suction caused by the revolving cones combined with the centrifugal force of the machine. K, K, are the bearers that support the stationary cone I. The hopper L receives the grain as it falls over the outer edge of the stationary cone I, and conveys it to the center where it falls into the stationary cone N, and is carried around and operated upon between the cones M and N as above described. The revolving cone M, the stationary cone N and the bearers O, O, are the same as H, I, and K. The case or hopper P, is for the purpose of receiving the grain as it passes from the scouring surfaces of the cones M and N and also answers for the purpose of a fan chamber and is provided with the opening Q for the purpose of supplying the fan with air, also is provided with the spout R for the purpose of conveying the grain out of the machine. S, is the fan for forcing the air through the grain as it is passing through the machine for the purpose of driving the dust and all other like matter through the openings, T, and spouts U. The whole of these are surrounded by the perforated cases V, and W as is represented, to which cases are attached the spouts U, as is seen by the drawings. The fan S, forces a strong current of air between the outside cases V and W and the outer edges of the cones for the purpose of cleaning from dust

and other matter at a point when it is spread out to its thinnest and greatest surface which will be readily seen to be a more perfect method than has been heretofore used and is one of the main points of the improvement. The arrows that point downward show the course of the grain in its passage through the machine. The arrows that point upward show the course of the currents of air through the grain from the blast or fan S. The pulley Y is attached to the shaft D, for the purpose of receiving a belt from the driving power. Z is the box for the shaft D to rest and run in. *a*, *a*, posts of the machine frame. *e*, *e*, is the top plate resting upon and fastened to the posts *a*, *a*.

Fig. 2 is a sectional view of the machine when only one set of scouring surfaces is used. It is the same as Fig. 1, with the revolving cone H, the stationary cone I and brace or legs K, the hopper L and perforated case V removed and the top plate *e*, *e*, and its attachments lowered down as is represented in Fig. 2.

Fig. 3 is a perspective view of one of the stationary cones. I is the cone, X the air passage also to allow the shaft D to turn freely in it. *h* is the scouring surface corrugated or roughened.

Fig. 4 is a perspective view of one of the revolving cones. H, is the cone provided with the rims or flanges J, J, J, J. These rims or flanges are divided into four parts each, or any number of parts required and as many circles of them as is found proper to use operating as described. The sides of these rims or flanges are corrugated or roughened on one or both sides as circumstances should require to present a large and sufficient scouring surface. The ends of these rims or flanges are angular for the purpose of forming creepers or flights for the purpose of forcing the grain outward in a spiral line in connection with the rims and suction current of air. The grain passes over a grit scouring surface. Where these rims or flanges meet at their ends is a passage left for the free passage of the grain in its course from the inner to the out edge of the stationary cone I. The course the grain takes to reach the outside is indicated by the arrows. X is an opening for the air current and for the grain to fall through in its passage from the hopper L to the top side of the stationary cone I.

Fig. 5 is a perspective view of the bottom of the breaking cone E with the creepers or flights attached.

In the operation of this machine the grain enters in at the spout C and passes downward between the conical cap B, and the revolving cone E. In passing through between the teeth or spikes of the cap and cone E it breaks the white caps, straw hulls, and other foreign matter, then falls upon the flat surface G, where it is kept loose, and is fed into the hopper F, by the creepers or flights *c*, *c*. It then passes down the hopper F and falls through the revolving cone H upon the stationary cone I, it then is carried outward by the effect of the suction and centrifugal force of the revolving cone and is secured by the action of the corrugated or roughened surfaces of the rims or flanges J, J, J, J, and stationary cone I, as it passes over them and through the openings as is represented. The arrows in Fig. 4 indicate the manner it passes from one chamber or set of rims to the other. When it reaches the outer edge of the stationary cone it falls over it and down into the hopper L. As it passes over the edge of the stationary cone it strikes a strong current of air and it being spread out thin and over a large surface it will be cleaned in a more effectual manner than has been heretofore used. The arrangement for having a strong current of air strike the grain when it is spread over its greatest extent and in its thinnest position is one of the great advantages of this machine. The grain then passes down the hopper L, then through the revolving cone M to the stationary cone N and then passes out of these cones in the same manner as out of the upper set of scouring surfaces, it then falls into the fan chamber P and passes out of the machine by the spout R.

The great advantages of this machine are, it has a large scouring surface and that surface placed in such a manner as to produce the greatest effect required upon the grain with less power than any other machine and at the same time the different currents of air from the fan chambers is such in combination with the rest of the machine that it does not allow the grain to roll in the dust and dirt but keeps it loose and removes the dust and other substances as fast as it is scoured, from the grain, also when the rims or scouring surface are worn out they can be easily removed, and new ones put in their places at a very slight expense as most of the machine is made of cast iron.

Having thus fully described the construction and operation of my invention I do not claim the creepers, or flanges or cone in themselves as new.

What I claim as new and desire to secure by Letters Patent is—

The combination of the cones E, and creepers *c*, *c*, arranged and operating in connection with the flanged rims J, J, J, J, attached to the cones H and M, in the manner and for the purpose set forth and described.

JOEL W. CORMACK. [L. S.]

Witnesses:
F. C. WALKER,
HORACE L. HERVEY.