C. A. W. JAQUETT.

Mill for Reducing Grain.

No. 199,070. Patented Jan. 8, 1878.

fig. 1.

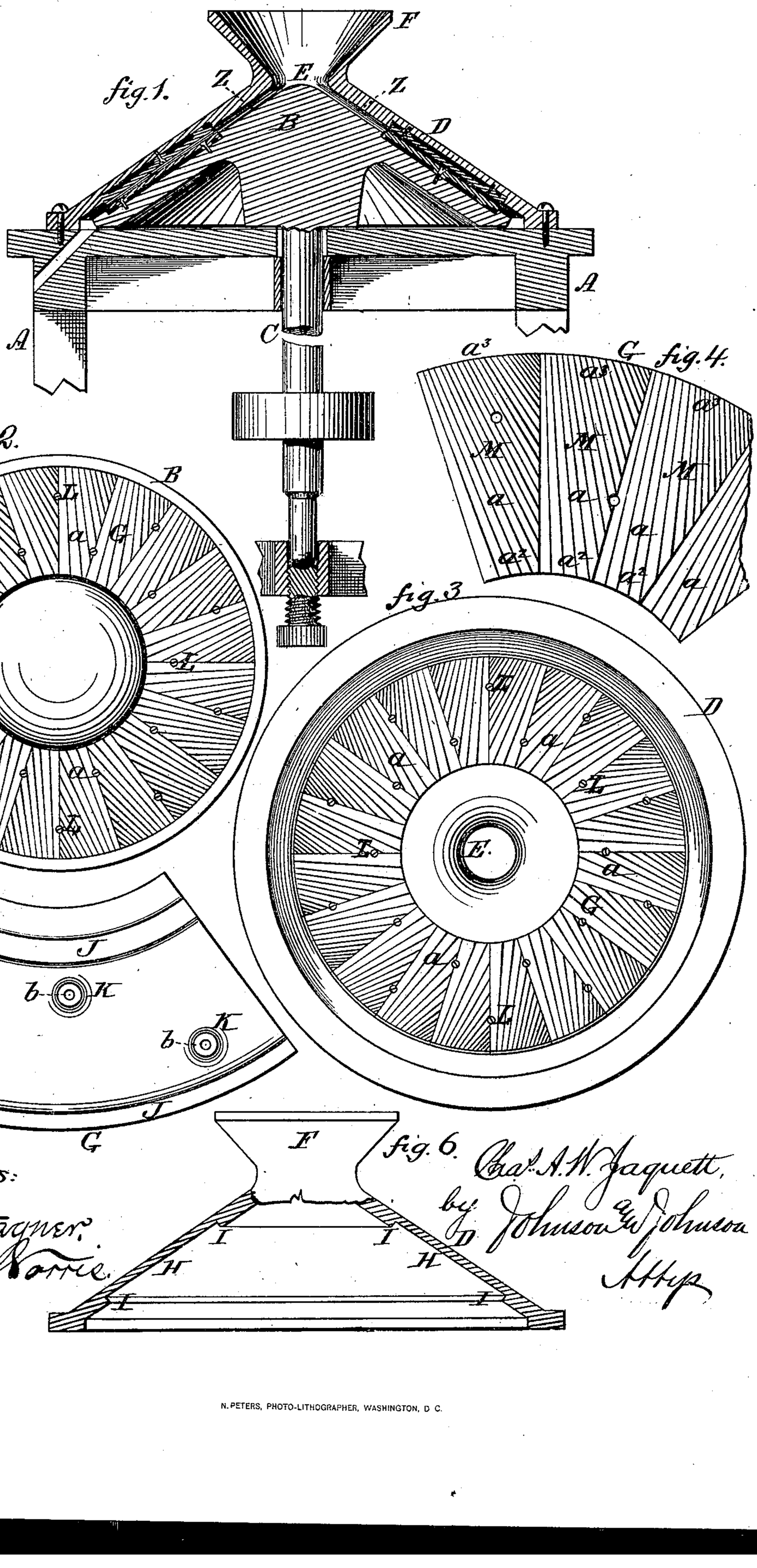

fig. 2.

fig. 4.

fig. 3

fig. 5.

fig. 6.

Witnesses:

J. West Wagner.

Floyd Norris.

Chas. A. W. Jaquett,

by D. Johnson & W. Johnson

Attys

UNITED STATES PATENT OFFICE.

CHARLES A. W. JAQUETT, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MILLS FOR REDUCING GRAIN.

Specification forming part of Letters Patent No. **199,070,** dated January 8, 1878; application filed July 2, 1877.

To all whom it may concern:

Be it known that I, CHARLES A. W. JAQUETT, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Mills for Disintegrating Grain; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which they appertain to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My improvements are designed especially to prevent making flour in mills for disintegrating grain. This I accomplish by constructing and arranging the cone and shell and the disintegrating-surfaces in such relation to each other and the eye of the hopper as to form an evener or uniforming-space with smooth surfaces, within and between which the grain is received from the hopper, and evenly and uniformly spread out in as thin a layer as possible, and without any disintegrating action whatever, and pass it in such uniform thin layer to the cutting action of the sharp-ridged plates. The disintegrating-surfaces for this purpose do not extend to the top of the cone or of the shell, but stop short thereof for about one-third the distance from such point. The surfaces of this evener-space are plane and smooth, and the width of the space should be only sufficient to even the grain in kernels, and conduct such thin layer to the working-plates. This preliminary evening process of the kernels is of vital importance to prevent grinding, and I have found it effective for the purpose stated.

As the sharp edges of the cutting-ridges of the plates become dull, they make more or less flour, and to prevent this they must be removed and renewed at comparatively short periods of time. In the mills hitherto in use this was done at considerable expense, trouble, and loss of time in the operation of the mill. I have found it a matter of great importance to lessen the work and trouble necessary for this removal and renewal. For this purpose, both in the runner and in the shell, I form seats, with right-angled shoulders for both the inner and outer edges of the sectional plates, and secure these plates within the seats by screws having their heads countersunk in the disintegrating-surfaces of the sections, the holes for said countersunk screws passing through boss-bearings of the plates. By this construction the sectional plates can be easily and quickly fitted in place and secured, and by simply removing the cap or shell to expose the disintegrating-surfaces of both the cone and the shell, and by simply taking out the countersunk screws, the sectional plates can be removed and renewed. The boss-bearings give firm supports for these screws as they pass through holes in said bearings, and have their heads countersunk below the plane of the cutting-ridges. The right-angled shoulders relieve all side strain upon the screws, and allow the sectional plates to be put in and taken out quickly and easily.

Referring to the drawings, Figure 1 represents a vertical section of a disintegrating-mill, showing the evener-space between the cone and the shell for passing the grain in a thin even layer from the hopper to the disintegrating-plates; Fig. 2, a plan of the runner; Fig. 3, an inverted view of the shell or cap; Fig. 4, an enlarged view of one of the plate-sections; Fig. 5, a back or under view of the same; and Fig. 6, a section of the cap, showing the annular recessed seat and the right-angled shoulders I I, to receive the plate-sections.

The frame A of the mill may be of any suitable construction to support the runner B and its driving-spindle C, which is adapted for vertical adjustment by a step-screw.

The runner is of conical form, and the shell D is of corresponding form, and is secured to the top of the frame, with suitable outlet-openings for the grain.

The shell or cap has a central eye, E, and feed-hopper F for the grain. The apex of the runner terminates in the eye E, and for a space of about one-third the distance to the base the cone has a plane smooth surface. Corresponding to this surface, the shell has also a smooth surface, and the space Z, Fig. 1, between these two surfaces, is of uniform width, for the purpose of receiving and spreading the grain in a thin even layer, and without subjecting it to any disintegrating action what-

ever, or producing any flour, but to serve the function of evening and presenting the grain in a thin and uniform layers of grains, and so present them to the action of the disintegrating-plates. The centrifugal force of the cone and the descent of the grain through the evener-space Z give it the desired condition to enter the teeth of the sectional plates without producing flour, which would be the case, to a greater or less extent, if the grain were subjected to the cutting action direct from the hopper, or in irregular streams, or in comparatively thick bodies.

The contiguous surfaces of the cone and shell are fitted with cast-iron plates G, having sharp-edged ridges *a* formed in sections upon their acting-surfaces. These plates are made in sections of suitable size, and their cutting-edges are formed to act in opposition to each other—that is, the oblique cutting-ridges of the several divisions of the runner act to present the grain against the oblique ridges of the several divisions of the shell. These disintegrating-surfaces extend from the termination of the evener-space Z to the base of the cone, and they are fitted in seats H in the cone and shell, between right-angled shoulders I I. (Shown more clearly in Fig. 6.)

The sections G are cast so as to be fitted closely together, and they are secured by screws L, passing through holes *b* in boss-bearings K, the heads of said screws being countersunk in the rigid surface and below the plane of such surface. The boss-bearings give a firm support to the screws, and the shoulders I I relieve them from side strain.

The shoulders being right-angled to the seats H, the sections can be readily set in and removed for renewal, and secured by the countersunk screws, all with little trouble or loss of time, and simply by removing the shell.

This facility for renewal is of great advantage, because unless the cutting-ridges are kept sharp they will fail in their proper function.

Each section has segmental bearings J; but the boss-bearings K are especially for the support of the countersunk securing-screws, as the plates are thin, and would not answer so well in giving the proper brace to the screws.

The plates G are in sections of equal area, each having four (more or less) surface-divisions of sharp-edged ridges, arranged in a peculiar manner for effecting the complete disintegration of the kernels, while producing the least quantity of flour. The ridges *a* are sharp-edged, and are uniform in distance apart at the outer edge a^3, and differential in distance apart at the inner edge a^2, and at one division-line of each division, so that the long ridges and the gradually-shortening oblique ridges join at the division-lines. At the receiving end of each section the spaces between these sharp ridges are comparatively wide and deep, with inclined bottoms or surfaces extending from the base of one ridge to the cutting-edge of the other, while at the outer end of each section these ridges terminate closer together, and form fine shallow teeth.

The effect of this construction is to freely receive the wheat from the evener-space Z and cut it into comparatively large particles, and reduce these particles by the division oblique terminating ridges.

I have tried this construction, and found it to give the best results, and especially in making the least flour, which is a matter of vital importance.

The formation of the inner and outer shoulders directly within the runner and shell, using countersunk screws, avoids the necessity of separate shouldered sections of the runner and the shell to form self-holding dovetail shoulders, which bolted sections are constantly liable to work loose and open the dovetail joints. It avoids also the expense of such construction. It avoids also a comparatively expensive construction which has been used, in which the plates have been secured by a single shoulder and a central solid screw-threaded boss secured by a nut, the screw-stem being formed upon the reduced shank of the boss.

I claim—

In a mill for disintegrating grain wherein is combined a runner-cone, B, with a shell, D, having disintegrating-surfaces, the combination, with said disintegrating-surfaces, of the evener-space formed by the two smooth concentric zones or surfaces upon the cone and shell extending down from the eye or apex thereof.

In testimony that I claim the foregoing I have affixed my signature in the presence of two witnesses.

CHARLES A. W. JAQUETT.

Witnesses:
GEORGE D. KING,
SAMUEL F. TAGGART.