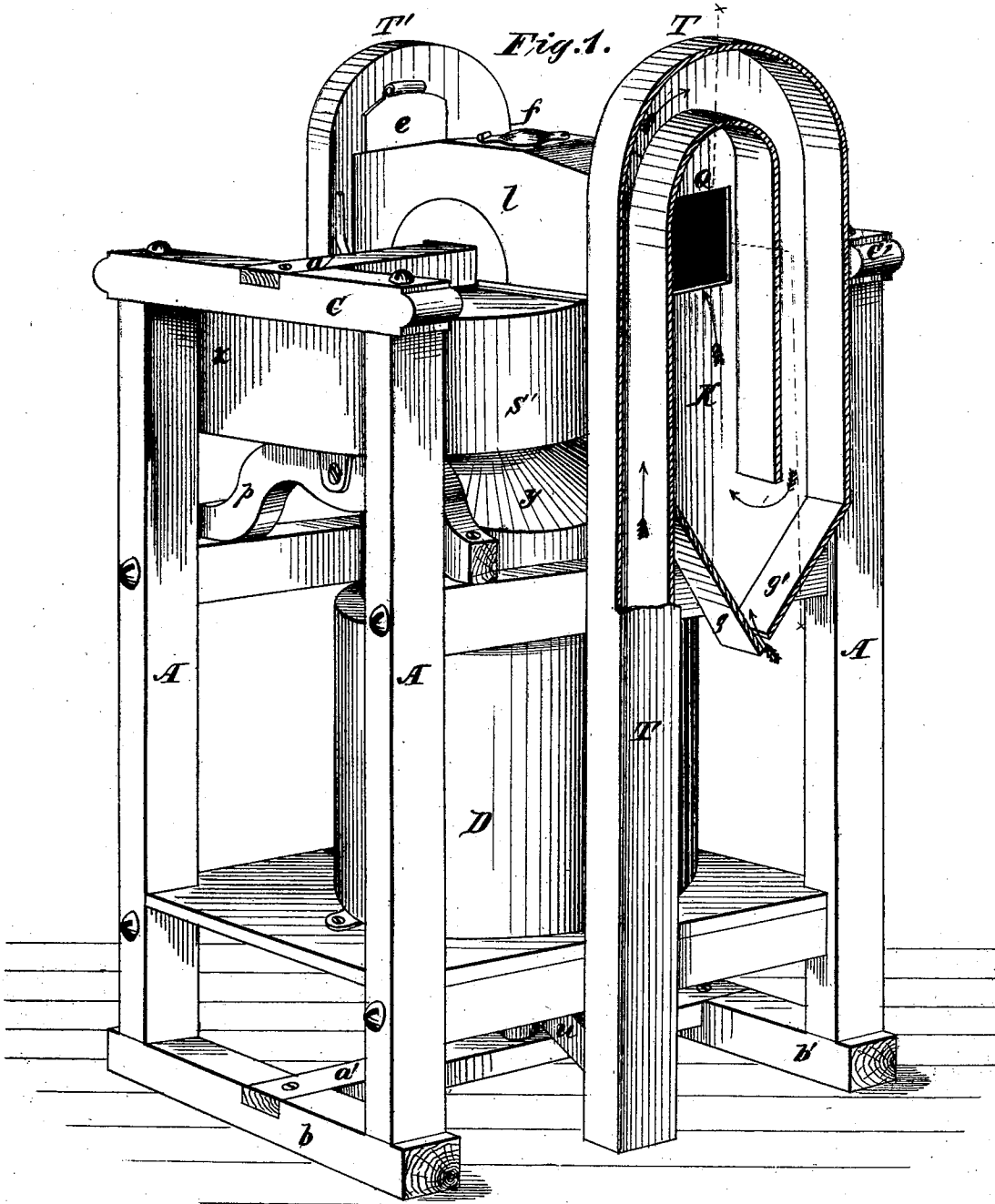


G. H. RICE.

Improvement in Grain-Hulling and Cleaning Machines.

No. 128,424.

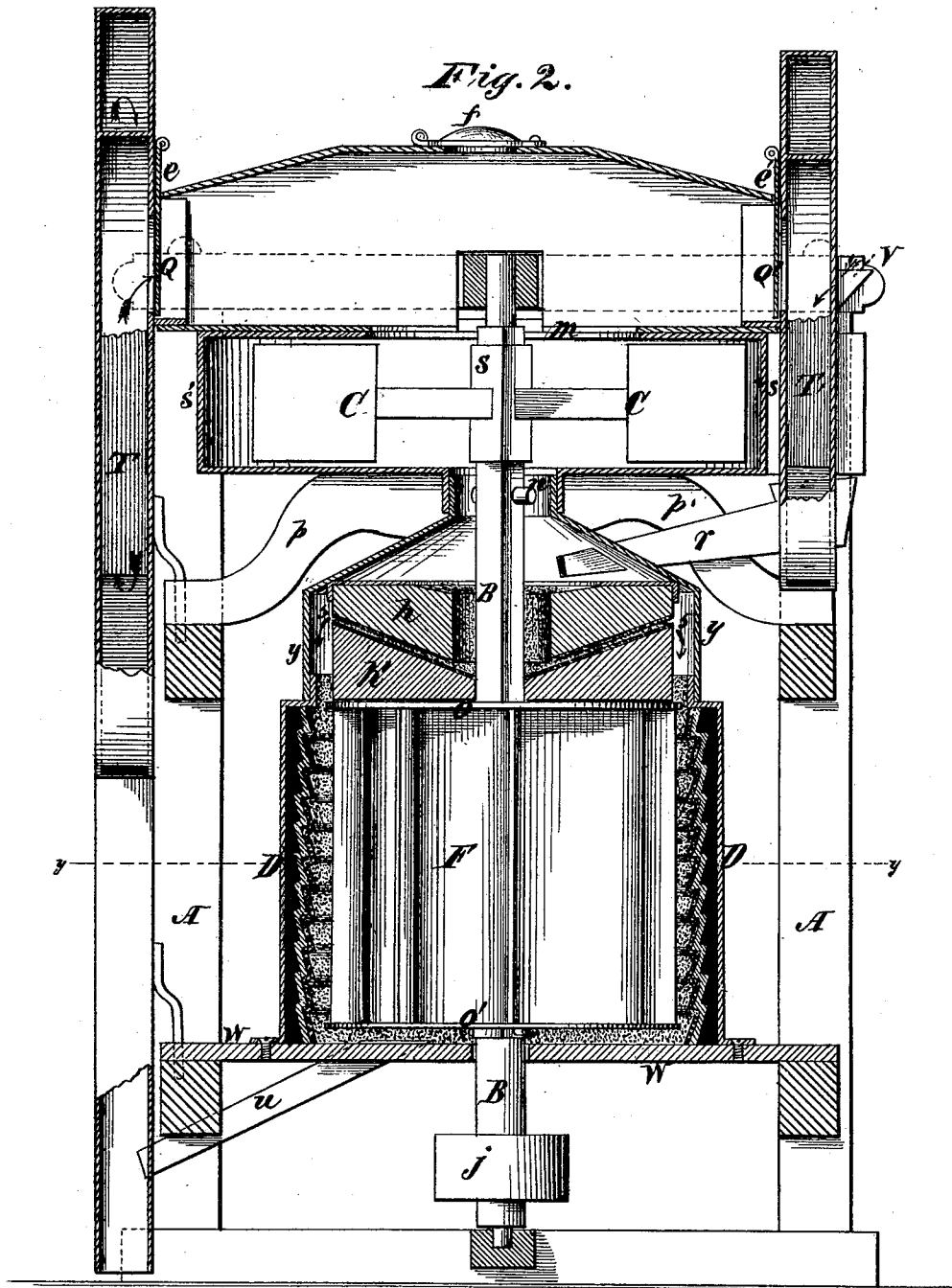
Patented June 25, 1872.



Witnesses.
Wm. L. Rice
J. C. Rice

Inventor.
George H. Rice

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B. C. Rice

Inventor:
George H. Rice

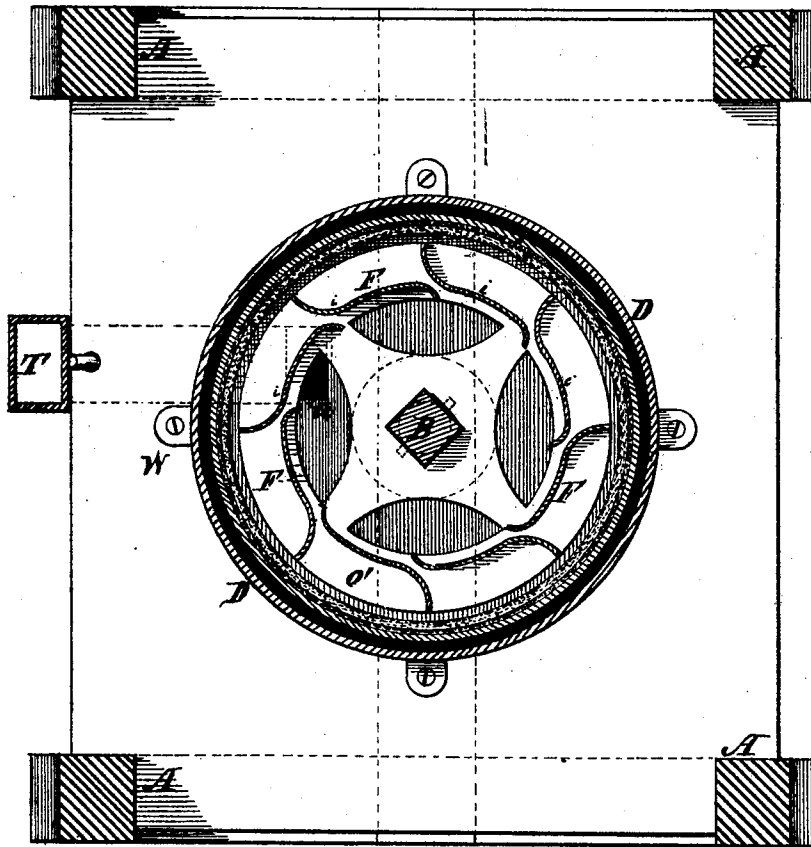
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Fig. 3.



Witnesses.

Jm. L. Rice

J. C. Rice

Inventor.

George H. Rice

UNITED STATES PATENT OFFICE.

GEORGE H. RICE, OF KINGSTON, PENNSYLVANIA.

IMPROVEMENT IN GRAIN HULLING AND CLEANING MACHINES.

Specification forming part of Letters Patent No. 128,424, dated June 25, 1872.

Specification describing a certain Improved Grain Hulling and Cleaning Machine, invented by GEORGE H. RICE, of Kingston, in the county of Luzerne and State of Pennsylvania.

This invention relates to a machine by which wheat, rye, buckwheat, and similar grains may be hulled, scoured, and separated from chaff in a thorough and expeditious manner, its construction being shown by the accompanying drawing, in which—

Figure 1, Sheet 1, is a perspective view of the machine, a portion of the outer wall of the separating-tube being removed. Fig. 2, Sheet 2, is a view showing the internal construction, partly in section. Fig. 3, Sheet 3, is a horizontal section of the drum-fan and scouring-cylinder on line *yy*, Fig. 2.

A is the frame, which supports the various parts, an extended description of it being unnecessary. *a a'* are beams, connecting and firmly attached to the cross-pieces *b b'* and *c c'*. In these beams are holes, which receive the journals of the vertical shaft B, upon which are fixed all the other moving parts. C is a fan, in this instance having four wings, two only of which are shown in the drawing. This fan is secured upon the shaft B, immediately below the beam *a*, by means of a square sleeve, *s*, which prevents its turning upon the shaft, and is inclosed by a circular case, *s'*, having a tangential spout, *z*. The case *s'* rests upon the cross-pieces *p p'*. Beneath case *s'* and connected with it by the short passage or neck *n* is a circular chamber, *y*, within which are arranged two hulling-stones, *h h'*, one above the other, a slight distance apart. The lower stone *h'* has a concave upper surface, and is firmly attached to the shaft B, which passes through its center. The upper stone *h* has a convex under surface, and is rigidly attached to the top of the stationary chamber *y*, as shown, or in an equivalent manner. In the middle of the stone *h* is a circular aperture having a diameter about one-third that of the stone. Through the center of this aperture the shaft B passes. The space between the two stones is for the reception of the grain in the process of hulling, and I contemplate regulating its extent by means of a suitable adjustment, which, however, I have not shown. By a slight alteration the upper stone may be fixed to the shaft, and the lower one fixed to the wall of

the chamber *y*. Immediately under and adjoining the chamber *y* is the scouring-cylinder D, standing upon the platform *w*. The inner surface of the wall of this cylinder is formed in a series of annular corrugations and coated with emery. The object of these corrugations is twofold—viz., to gain a greater scouring surface than could otherwise be had in the same limits, and to prevent the grain from falling too rapidly to the floor of the cylinder. Within the cylinder D rotates the drum-fan F, which is fixed upon the shaft B. This drum-fan is composed of two disks, *o o'*, having square holes in their centers to fit over the shaft B. Between and connecting these disks is arranged a series of reverse curved blades, *i i i*, extending from the outer edges of the disks inwardly, in the manner shown in the drawing, Fig. 3. Between these blades are spaces for the passage of air. Between the inner edges of the blades *i i i* and the center of the lower disk *o'* are openings for the free admission of air to the interior of the drum-fan. Beneath the platform *w* is a belt-wheel, *j* upon the shaft B, around which passes the belt which communicates motion to said shaft. T is the separating-tube, arranged upon one side of frame A in such a position that its lower end reaches below the platform *w*, upon which the scouring-cylinder stands, so that the spout *u*, which carries off the grain, &c., from the cylinder, may lead into the said separating-tube. Said tube extends upward a short distance above the top of frame A, when it is bent over and extends downward about one-third its length, the walls being extended so as to inclose the space K between the two legs of the tube. The front wall of the chamber K thus formed and of the upper part of the tube is removed in the drawing. Both the front and back walls of the chamber K and short leg of the tube extend below the open lower ends of said chamber and short leg to two slanting shelves, *g g'*, one of which, *g'*, slants downward from the end of the outer wall of the short leg of tube T, and the other from a corresponding point on the wall of the long leg opposite the lower ends of the two shelves nearly, but not quite, meeting. Q is an opening in the back of the chamber K leading into the box *l*, which is arranged upon the case *s'* of the fan C. This box *l* connects the

chamber and tube T, just described, with another chamber and tube, T', upon the opposite side of frame A, and in all respects similar to the first, with the exception that its long leg does not extend below the case *s'*, and terminates in the hopper-shaped end of a spout, *r*, which leads into the chamber *y* above the hulling-stones. Openings in the top of the case *s'* and the bottom of the box *l* form a passage-way for draught and chaff. *e e'* are sliding doors for regulating or cutting off the draught through the openings Q Q'. *f* is a pivoted cover to a hole in the top of box *l*, which may be used for inspection or regulating the draught. V is a hopper arranged upon and opening into the leg of the tube T', which terminates in spout *r*.

Having now described the construction of my invention, I will proceed to describe its operation.

The grain to be operated upon is conveyed from the bin or other receptacle by a spout or elevator and is emptied into the hopper V, whence it passes down the tube T' into the spout *r*, which empties it into the opening in the center of the stone *h*; and by the turning of the stone *h'* it is drawn in between the two stones and hulled, the grain and chaff together being forced outward from between the two stones as fresh grain is drawn in. It now falls, in the direction of arrows 5, into the scouring-cylinder D, as soon as it enters which it is forced, by the blast from the drum-fan F, against the corrugated emery-coated wall of the cylinder, and is swept round and round by the blast until its gravity brings it to the floor, by which time it is properly scoured. By means of the spout *u* and the apertures in the bottom disk of the drum fan, a constant supply of air is kept up in the interior of said fan, and is forced, between the blades *i i i*, against the cylinder-walls. From the floor of the cylinder D the grain and chaff is led, by the spout *u*, to the separating-tube T, the heavy grain falling downward through said tube, and the light grain and chaff being carried upward by a draught of air through the tube in the direction of the arrows 1 and through opening Q into the box *l*, from which they pass through passage-way *m* into the case *s'*, whence they are expelled through spout Z by the action of fan C, which also creates the draught through the

tube T. The slanting shelves *g g'* carry off such screenings, dirt, and chaff as would settle and choke up the passage if the bottom of the chamber K and tube were level. At the space between the lower ends of the shelves *g g'*, also, a current of air enters which perfectly cleans the screenings. In the tube and chamber on the other side of the frame the action of the draught is similar to that just described.

It will be seen that by having the machine so constructed that all the moving parts are carried by the same shaft, great economy of power is effected, as well as compactness and simplicity of mechanism. The machine may be constructed so as to have either the upper or lower hulling-stone revolve, as desired.

The case *s'*, chamber *y*, and cylinder D may be made of sheet-iron or any suitable material, as may also the separating-tube. In the drawing the cylinder D has double walls, the inner one being corrugated.

I claim—

1. The scouring-cylinder D, having its inner surface formed of annular corrugations and coated with emery or its equivalent, in combination with the drum-fan F, for the purpose set forth.

2. The combination of the tubes T T', constructed as described, box *l*, and case *s'*, for the purpose set forth.

3. The tube T, constructed substantially as described, with chamber K and opening Q, in combination with box *l* and fan C, for the purpose set forth.

4. The sliding doors *e e'*, in combination with box *l*, apertures Q Q', and tubes T T', all constructed as described.

5. The combination of the scouring-cylinder D, spout *u*, and separating-tube T, all constructed as described.

6. The combination of the hulling-stones *h h'*, scouring-cylinder D, drum-fan F, spout *u*, separating-tube T, box *l*, and fan C, all constructed and arranged substantially as described.

In witness whereof I have hereunto set my hand this 19th day of April, 1872.

GEO. H. RICE.

Witnesses:

WM. L. RICE,
J. C. RICE.