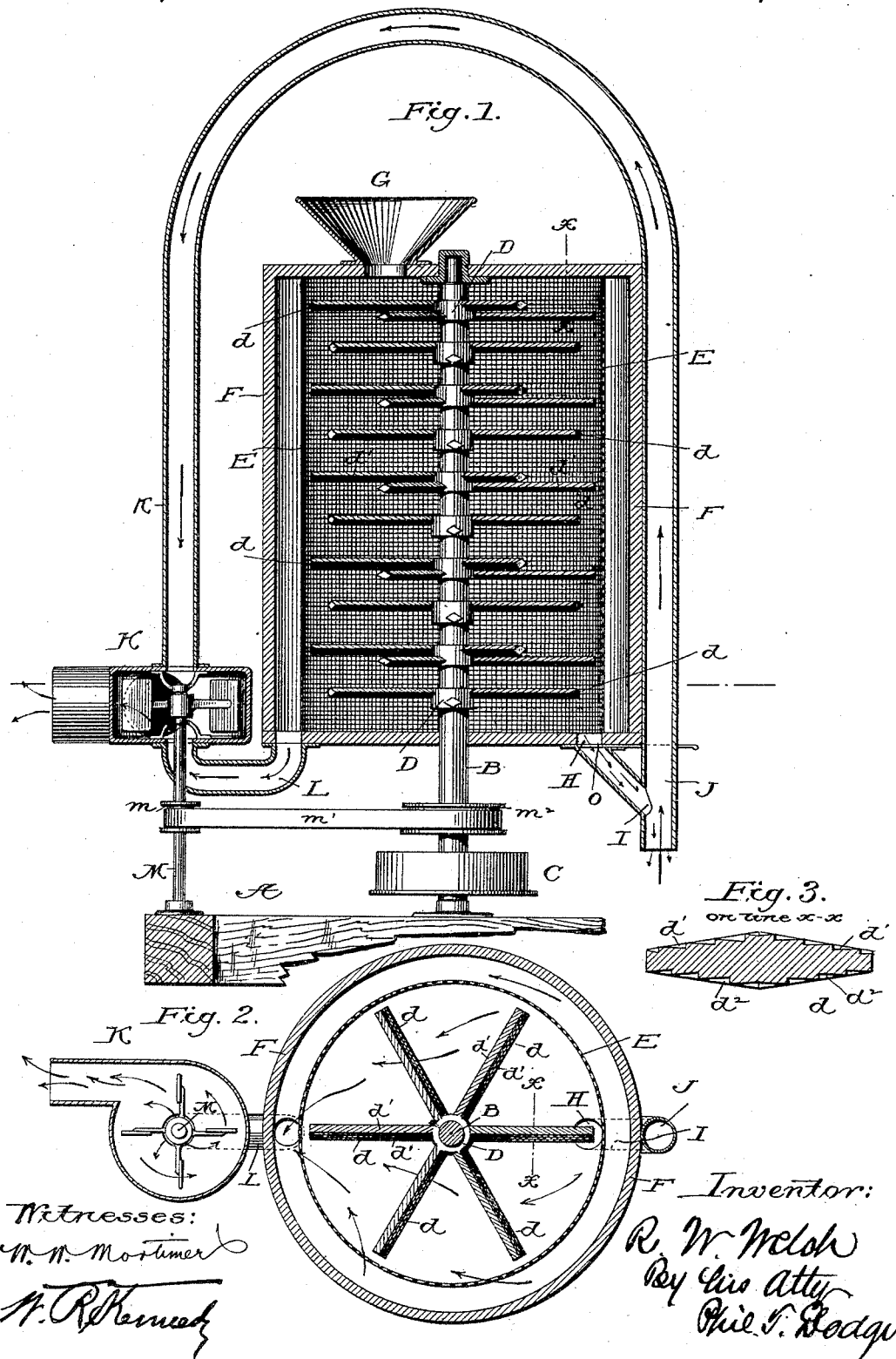


(No Model.)

R. W. WELCH.
GRAIN SCOURING MACHINE.

No. 491,623.

Patented Feb. 14, 1893.



UNITED STATES PATENT OFFICE.

ROSIA W. WELCH, OF BALTIMORE, MARYLAND, ASSIGNOR OF THIRTEEN-SIXTEENTHS TO WILLIAM H. KELLUM, AND W. H. KELLUM, TRUSTEE, OF SAME PLACE.

GRAIN-SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 491,623, dated February 14, 1893.

Application filed April 22, 1891. Serial No. 389,911. (No model.)

To all whom it may concern:

Be it known that I, ROSIA W. WELCH, of the city of Baltimore, and State of Maryland, have invented certain Improvements in Grain-Scouring Machines, of which the following is a specification.

This invention relates to an improved machine for scouring and polishing wheat, rice and other grains.

10 The machine consists essentially of an upright cylinder and a centrally-revolving shaft carrying a series of outwardly-extending arms the surfaces of which are serrated to act upon the grain, as hereinafter explained in detail.

15 It also includes a surrounding exhausted chamber through which the light impurities are removed.

In the accompanying drawings,—Figure 1 is a vertical central cross-section of the machine in accordance with my invention. Fig. 20 2 is a horizontal cross-section of the same. Fig. 3 is a cross-section through one of the scouring arms on the line $x-x$ of Figs. 1 and 2.

Referring to the drawings,—A represents a 25 rigid frame of any appropriate form; B, a vertical shaft mounted in suitable bearings in the frame and provided with the driving-pulley C.

30 D D is a series of collars fixed upon the shaft one above another, and each provided with a series of outreaching arms d . These arms, which are commonly staggered, or, in other words, arranged alternately at the upper and lower sides of the collars, are made 35 of a diamond-form in cross-section, and are each provided, as shown in Fig. 2, with teeth or serrations d' d^2 , on their upper and lower faces. As shown in Fig. 2, the serrations extend obliquely across the surface of the arms 40 from each edge backward and outward, so that when the arms are rotated by the shaft in either direction the serrations on the forward edge will tend to crowd the grain outward from the center.

45 E is an upright cylinder of wire cloth or other appropriate pervious material, fixed in the frame in such position that the outer ends of the arms d , travel close to its inner surface. F is a chamber or casting surrounding the

pervious cylinder in such manner as to leave 50 an air space between them.

G is a hopper at the top of the machine through which the grain is introduced into the interior of the cylinder.

H is an opening at the base through which 55 the grain escapes into a conductor, I, by which it is delivered through the lower end of a vertical spout, J. This spout J is continued over the top of the machine and communicates at the opposite side with the suction eye of a horizontal suction fan, K, of ordinary form, whereby an upward current of 60 air is introduced through the spout J in order to act upon and remove the light impurities from the outgoing grain. A second air-spout, 65 L, is connected with the lower eye and communicates with the space around the pervious cylinder, the result of this arrangement being to cause the passage of air outward through the mass of grain and through the 70 pervious cloth taking with it the light fine impurities. The fan is mounted on a vertical shaft, M, and receives motion through a pulley, m , thereon and belt m' , through a pulley, m^2 , on the main-shaft. The outlet H is provided 75 with an adjustable valve or gate, O, by means of which the rate of discharge of the grain may be controlled.

In operating the machine the shaft is rapidly revolved causing the arms D to sweep 80 around within the cylinder. The grain is delivered constantly through the hopper, G, into the pervious cylinder, and the gate O so adjusted as to keep the cylinder filled with grain. As the blades revolve they force their 85 way through the surrounding grain which is caused to circulate rapidly subject not only to the scouring action of the external wire cloth but to the effect of the teeth or serrations on the blades, and also to the attrition 90 or scouring action of the kernels one upon another.

The silicious matters in the grain tend to wear away the teeth or serrations on the 95 arms. When the arms are turned in one direction the teeth are worn away on the advancing side with the effect of bringing them to a sharp edge on the rear side so that when

they are dulled in one direction they are sharpened in the other and it is only necessary to reverse the motion of the machine from time to time in order to maintain the teeth constantly in an operative condition.

5 Having thus described my invention, what I claim is,—

1. In a grain-scouring machine, the combination of the pervious vertical cylinder, the vertical rotary shaft therein and the series of radial arms on said shaft, said arms being tapered or wedge-shaped in both directions from a median longitudinal line, and having on their faces teeth inclined to the path of rotation and having vertical outer faces.

15 2. In a grain-scouring machine, the combi-

nation of the pervious vertical cylinder, the vertical rotary shaft therein, and the series of radial arms or blades on said shaft, diamond-shaped in cross-section, and having on their upper and lower faces teeth or serrations inclined from the edges toward the outer ends and having their front walls vertical, whereby the movement of the arms in either direction will force the grain outward.

25 In testimony whereof I hereunto set my hand, this 3d day of March, 1891, in the presence of two attesting witnesses.

ROSIA W. WELCH.

Witnesses:

PHIL. T. DODGE,
W. R. KENNEDY.