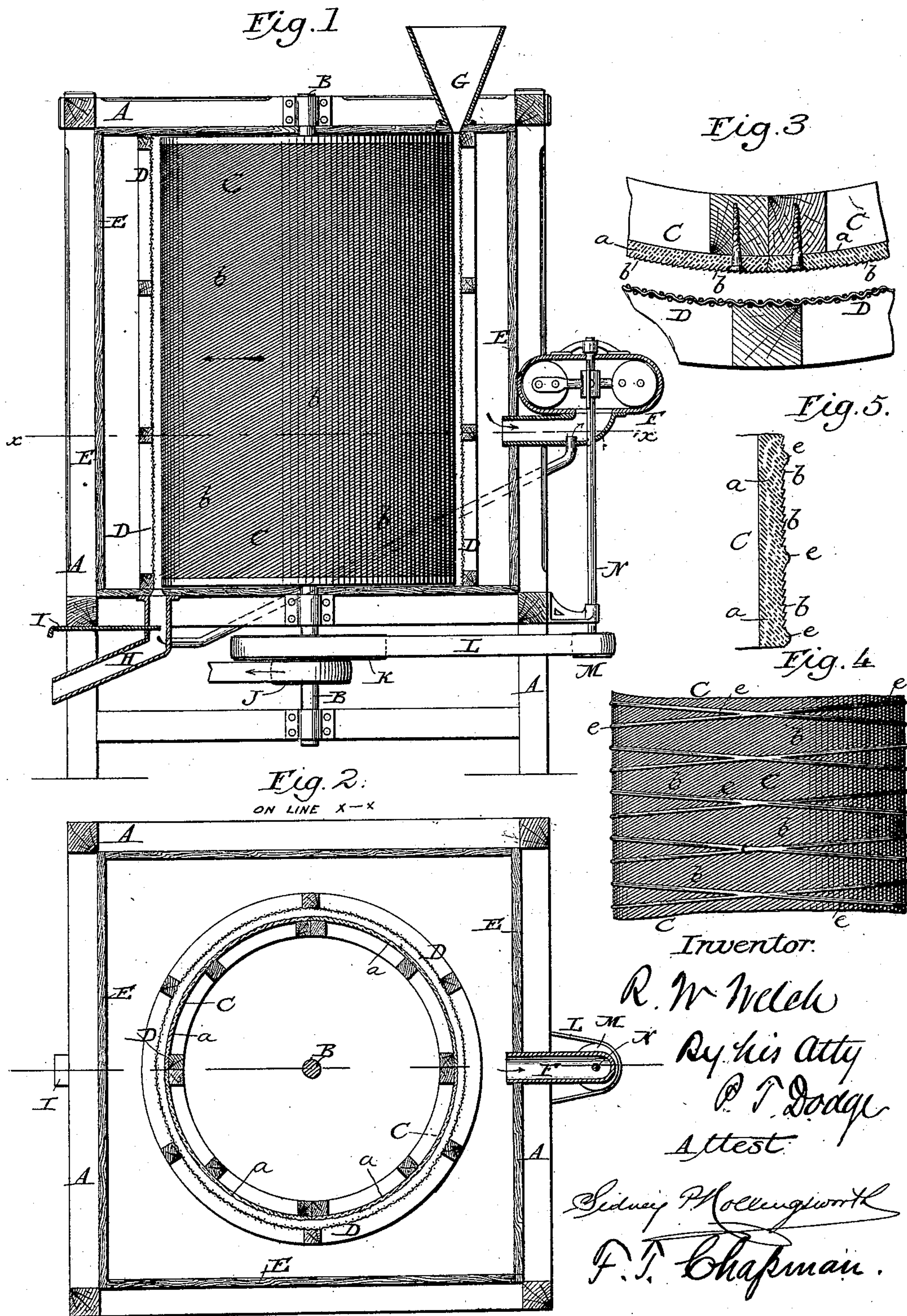


(No Model.)

R. W. WELCH.
WHEAT CLEANING MACHINE.

No. 405,288.

Patented June 18, 1889.



Inventor.

R. W. Welch

By his Atty

P. T. Dodge

Attest

Sidney H. Moultonworth

F. T. Chapman.

UNITED STATES PATENT OFFICE.

ROSIA W. WELCH, OF BALTIMORE, MARYLAND, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO WILLIAM T. BROMWELL AND JOSEPH S. TAYLOR, JR., BOTH OF SAME PLACE.

WHEAT-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 405,288, dated June 18, 1889.

Application filed May 27, 1887. Serial No. 239,527. (No model.)

To all whom it may concern:

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

The aim of this invention is to provide a machine by which wheat-berries may be entirely freed from dirt and extraneous matters and from the fibrous or fuzzy portions at their ends without fracturing or weakening the husk, and which shall at the same time be adapted to run without injurious wear for a long period of time. Machines containing two concentric cylinders between which the grain was treated have heretofore been made in a variety of forms. Certain of these machines were defective in that they failed to properly clean the grain, while others which operated in a satisfactory manner were objectionable in that their active surfaces were rapidly worn away by the friction of the wheat and the cutting action of the dust and silicious matters.

In the accompanying drawings, Figure 1 represents a vertical section through a machine constructed on my plan, a portion of the internal parts being shown in elevation. Fig. 2 is a horizontal section of the same on the line $x x$. Fig. 3 is a cross-section, on an enlarged scale, of a portion of the inner and outer cylinders. Fig. 4 is a face view showing modifications of the surface of the inner cylinder. Fig. 5 is a vertical section of the same.

Referring to the drawings, A represents a rigid frame, which may be of any construction adapted to sustain the parts hereinafter described.

B is the main shaft, located centrally and vertically in the frame and sustained in suitable bearings at its ends.

C represents a vertical cylinder mounted centrally on the main shaft and clothed externally with plates a , of glass, chilled iron, hardened steel, or other equivalent refractory material. These plates, which are preferably made solid or without perforations, have their outer surfaces formed with a se-

ries of grooved corrugations or serrations b trending downward spirally from the upper to the lower end and in the direction in which the cylinder revolves, as indicated by the arrow. The ribs thus extended downward and forward in the direction of rotation form an essential feature of my present invention.

It is to be observed as a distinguishing feature of the present machine that the entire or substantially the entire surface of the cylinder is ribbed or corrugated, and that in this regard it differs essentially from a machine having a smooth cylinder with a single spiral rib or a series of widely-separated ribs.

The ribs of my cylinder are not designed or adapted to act with a cutting or grinding effect. On the contrary, they are purposely made of such small size and arranged at such great distance from the surfaces of the outer cylinder that they act simply with a lifting and turning effect upon the grain.

D represents a second and larger cylinder fixed in position around and concentric with the rotary cylinder, and composed of wire-cloth, perforated sheet metal, or other equivalent material. This outer cylinder, which is fixed rigidly in position, stands ordinarily at a distance of about seven-sixteenths of an inch from the surface of the inner cylinder, and is ordinarily extended upward a short distance above the inner cylinder to facilitate the introduction of the grain, as shown in the drawings.

E represents a tight casing or jacket fixed rigidly in the frame around the outer or perforated cylinder, closed at its upper and lower ends, and communicating on one side with an exhaust-fan F, which acts to draw air from the interior of the machine through the mass of grain and outward through the perforated cylinder D. Connecting the fan F with the spout H is the pipe or jacket k . This is designed to separate from the grain any particles of straw, dirt, or the like which, owing to their size, could not be blown through the pervious cylinder into the jacket E.

At its upper end the machine is provided with an ordinary feed-spout G, opening into the space between the two cylinders, and at

its lower end is provided with a delivery-spout H, leading from said space, and also with a gate I, by which the delivery of the grain may be retarded or checked at will.

5 The lower end of the main shaft is provided with a driving-pulley J, also with a second pulley K, connected by a belt L with the pulley M on the lower end of a vertical shaft N, which carries the fan at its top. This shaft
10 N may be supported in brackets on the main frame or otherwise.

In operating the machine the fan is set in motion and the inner cylinder revolved rapidly in the direction indicated by the arrow.
15 Grain is then introduced continuously through the feed-spout G and the gate I properly adjusted to retard the flow, the object being to insure the gradual but uniform descent of the grain through the machine, so
20 that each and every berry may be properly acted upon.

The interior of the machine is filled with a compact body of grain, and as the cylinder revolves its ribs, acting upon this grain, urge
25 the same around horizontally between the two cylinders, at the same time exerting a lifting action on those berries which lie on the inside of the mass, the effect of which is to cause a rapid and continuous circulation of the mass
30 in different directions. The result is to cause such attrition between the berries themselves and between the berries and the outer cylinder and the corrugated surface of the inner cylinder that a perfect cleansing action is se-
35 cured, the dust and small impurities being carried off by the air through the fan and the cleansed grain delivered at the base.

I recommend for use in the machine an inner cylinder having a glass surface, as I find
40 that it will withstand the wear for a long period of time, and that its surface acquires a peculiar texture and condition which causes it to act in a peculiarly efficient manner upon the grain.

45 I do not claim, broadly, a machine having

two concentric cylinders, or a machine in which the inner cylinder is ribbed or corrugated. The essence of the invention in this regard resides in forming or breaking up the whole surface of the cylinder into a series of 50 ribs or corrugations which descend in a forward direction, so as to have in addition to their ordinary action a lifting effect on the grain.

I propose in certain cases to provide the inner cylinder, in addition to the serrations therein, with two spiral ribs *e*, extending around the same in opposite directions, one tending to urge the grain upward and the other to urge it downward. These ribs will 60 assist materially in maintaining the proper agitation of the grain and in equalizing the wear on the surface of the cylinder.

In practice it is found that a single large rib encircling the cylinder has the effect of 65 producing much greater wear at one end than at the other.

I do not claim herein the feature or combination of features described or shown in my previous applications, filed November 27, 1886, 70 No. 220,052, and July 9, 1886, No. 207,597.

Having thus described my invention, what I claim is—

In a wheat-cleaning machine, an external vertical cylinder, in combination with an internal vertical cylinder, the latter having its 75 surface composed of the impervious plates having their entire outer surface broken by a series of fine ribs *b*, and provided in addition to said ribs with the two series of larger ribs 80 *e*, extending spirally around the cylinder in reverse directions, as shown.

In testimony whereof I hereunto set my hand this 21st day of May, 1887, in the presence of two attesting witnesses.

ROSIA W. WELCH.

Witnesses:

PHILIP T. DODGE,
F. T. CHAPMAN.

It is hereby certified that Letters Patent No. 405,288, granted June 18, 1889, upon the application of Rosia W. Welch, of Baltimore, Maryland, for an improvement in "Wheat-Cleaning Machines," were erroneously issued to said Welch and William T. Bromwell and Joseph S. Taylor, Jr., as assignees of "three-fourths" interest in said invention instead of *five-eighths* interest as shown by assignments of record in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 16th day of July, A. D. 1889.

[SEAL.]

CYRUS BUSSEY,

Assistant Secretary of the Interior.

Countersigned:

C. E. MITCHELL,

Commissioner of Patents.