

(No Model.)

R. W. WELCH.  
GRAIN SCOURING MACHINE.

No. 377,919.

Patented Feb. 14, 1888.

Fig. 2

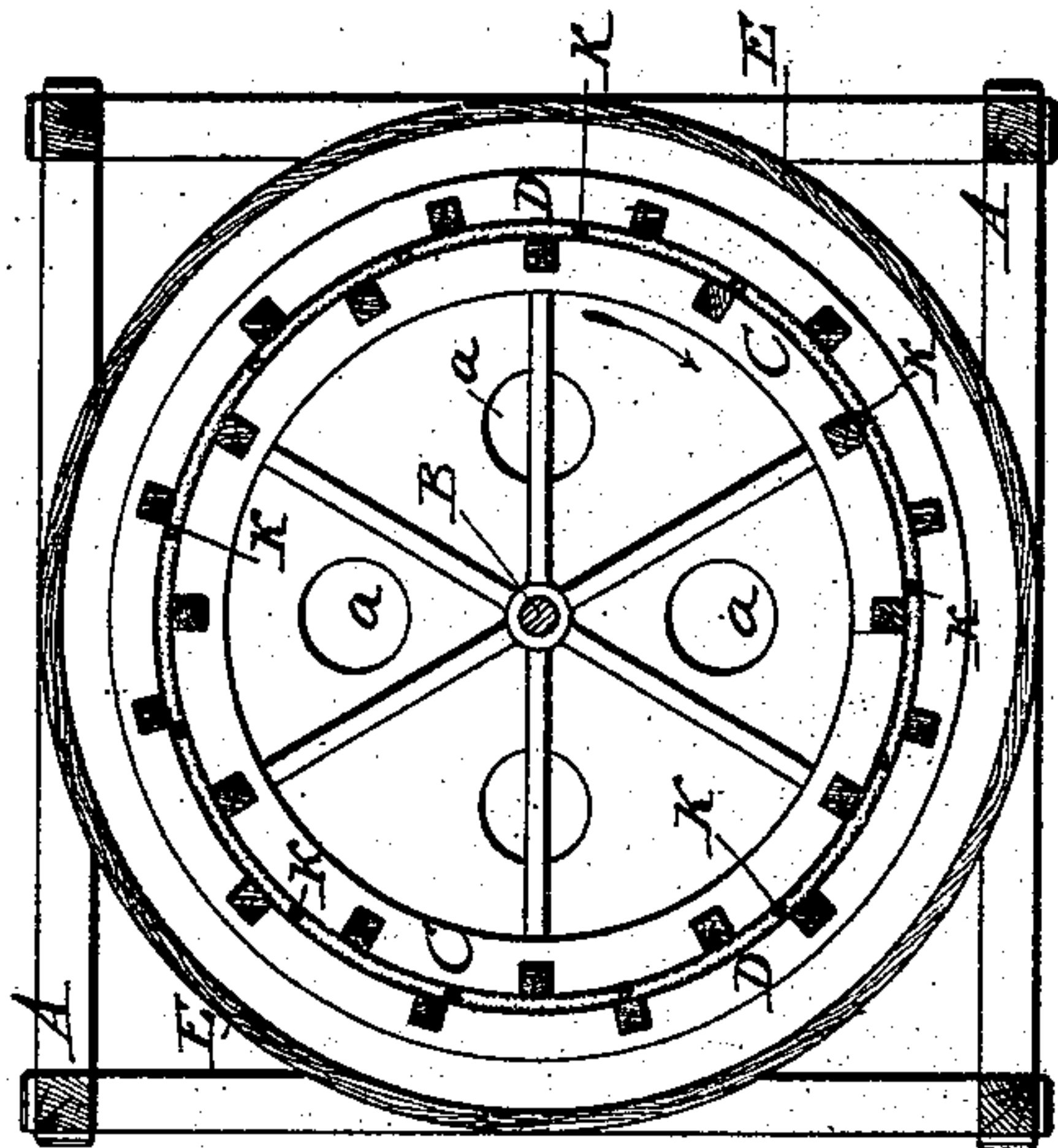
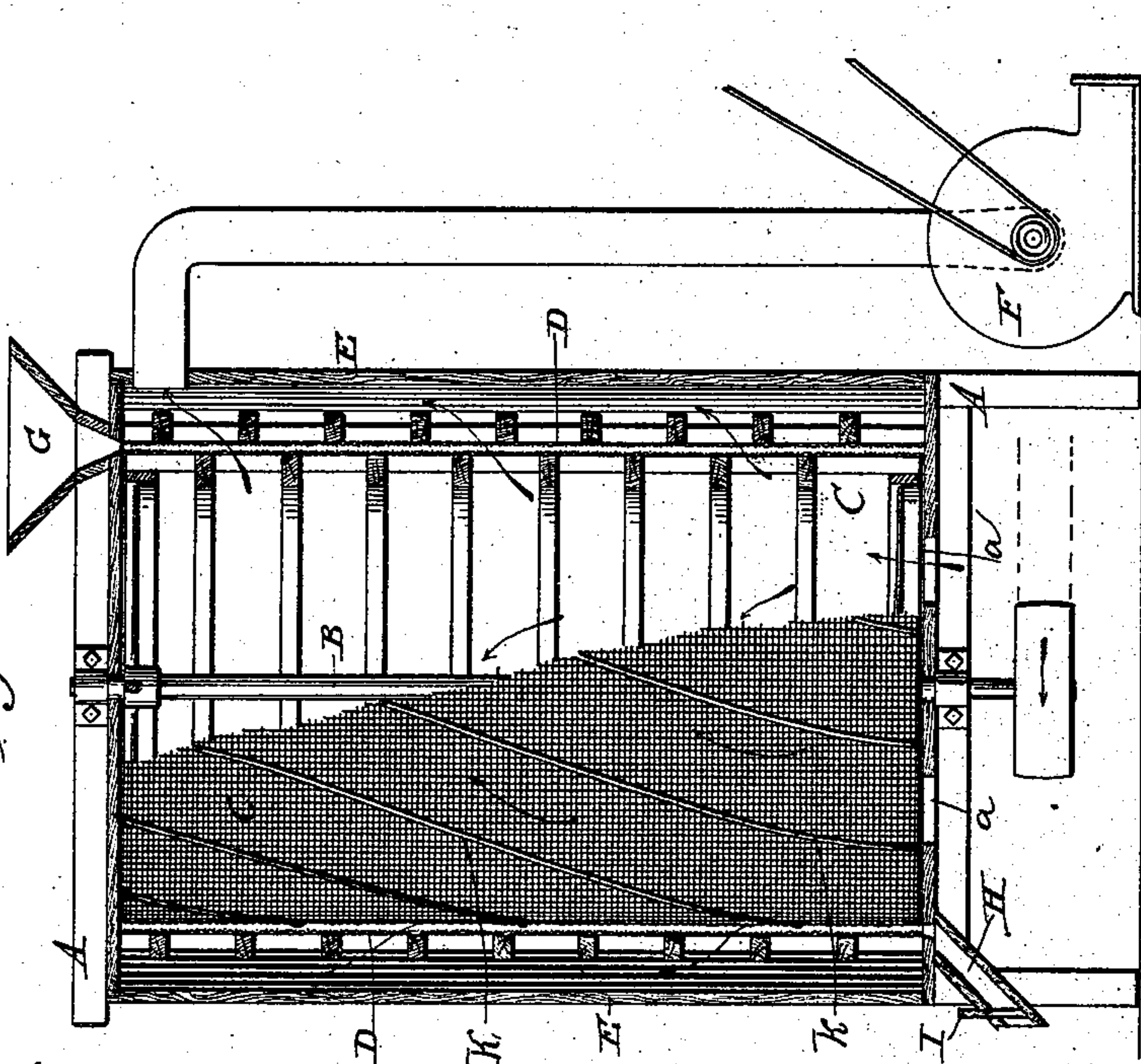


Fig. 1



Attest

Sidney P. Hollingsworth  
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Inventor.

R. W. Welch.  
by his Atty.  
P. T. Dodge



# UNITED STATES PATENT OFFICE.

ROSIA WASHINGTON WELCH, OF BALTIMORE, MARYLAND, ASSIGNOR, BY  
DIRECT AND MESNE ASSIGNMENTS, TO THE WELSH WHEAT CLEANING  
AND MANUFACTURING COMPANY OF BALTIMORE CITY.

## GRAIN-SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,919, dated February 14, 1888.

Application filed July 9, 1886. Serial No. 207,597. (No model.)

*To all whom it may concern:*

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

In the manufacture of wheat-flour at the present day it is the aim of the miller to loosen or remove the outer husk or skin of the berry  
10 in large pieces as the first step in the process, it being found that the husk, once reduced or broken, produces in the flour fine specks or impurities, which it is impossible to remove by subsequent treatment.

15 Various machines have been contrived for the purpose of scouring, cleaning, and polishing wheat previous to the reducing operations; but most of these machines are highly objectionable, for the reason that the husk of  
20 the wheat is subjected, on the one hand, to a scouring, cutting, or grinding action, by which its strength or thickness is reduced, and, on the other hand, subjected to a percussive action, which tends to fracture the husk. The result  
25 is that when the grain is subjected to the action of the machines designed to remove the husk the latter is fractured and disintegrated, instead of being delivered therefrom in large flakes.

30 Now it is the aim of my invention to provide a machine which will free the berry from all adhering dirt and foreign matters and from all loose external fibers without reducing in any manner the strength of the husk and with-  
35 out subjecting the berry to any considerable degree of heat, which is objectionable for the reason that it results in the darkening of the flour.

40 In constructing my machine I have had in view the subjection of the grain to a gentle but long-continued rubbing action in connection with a draft, by which the impurities are removed.

Referring to the accompanying drawings,  
45 Figure 1 represents a partially-broken vertical central cross-section of my machine; Fig. 2, a horizontal cross-section of the same.

A represents a rigid frame, provided at its upper and lower ends with suitable bearings

to receive a vertical shaft, B, which carries a  
50 vertical cylinder, C. This cylinder consists of a hollow or skeleton frame covered on its outer surface with woven-wire cloth—that is to say, cloth or gauze composed of round wires, and which presents a slightly-roughened or  
55 uneven surface, without sharp corners or angles. The employment of this wire-cloth, as distinguished from other pervious material, is important, in that it will subject the grain to a rubbing action and to sufficient friction  
60 and attrition to remove impurities therefrom without cutting, abrading, or otherwise weakening the husk.

D represents a stationary cylinder surround-  
65 ing the rotary cylinder C, and concentric therewith, an annular space of half an inch (more or less) existing between the two cylinders from top to bottom. This outer cylinder consists of a skeleton frame-work coated on the  
70 inner surface with wire-gauze similar to that with which the inner cylinder is covered.

E represents a stationary casing completely  
surrounding the outer cylinder, D, and communicating at any suitable point with the ex-  
75 haust-fan F or equivalent means for exhausting the air. At the base of the machine openings *a* are provided for the free admission of air to the interior of the cylinder C, whence it passes through both cylinders and the in-  
80 tervening space into the casing E, and finally outward through the fan F.

At the top of the machine I provide a suitable hopper, G, through which the grain is delivered into the annular space between two  
85 cylinders. At the foot of the machine the space between the two cylinders is closed, except that an outlet-spout, H, is arranged at one side, as shown, and provided with a valve, I, of any suitable character, by means of which  
90 the outlet-opening may be varied in size or entirely closed in order to retain the descending grain within the machine and between the two cylinders for any required length of time.

On the surface of the cylinder C, I secure a  
95 suitable number of oblique ribs, K, trending forward toward their lower ends. These ribs are preferably composed of round steel wires secured to the outer surface of the cylinder.



They project beyond the cylinder but a slight distance, and their function is to assist in agitating or turning the grain so that it will in advancing flow horizontally between the two cylinders. It is to be understood that these ribs are not for the purpose of scouring or beating the grain. They act merely to assist in maintaining the movement of the grain, so that each berry shall be kept in constant motion and caused to rub every portion of its surface against its companions and against the surface of the wire-cloth.

In operation the inner cylinder is rotated in the direction indicated by the arrow and the fan maintained constantly in motion. The grain is delivered through the hopper into the space between the cylinders in such quantity that the annular space is at all times filled from top to bottom with a compact body of grain. The air ascending into the interior cylinder passes thence through the thin stratum of grain and carries away the dust and impurities as rapidly as they are set free.

It is to be particularly noted that this is not an impact machine, and that its parts are not constructed or permitted to operate in such manner as to strike the grain or to throw or impel the same violently against the outer cylinder.

It is also to be noted that the ribs on the inner cylinder are of slight elevation and project but a small portion of the distance to the outer cylinder, their purpose being to rub against, turn over, and gently agitate the grain lying on the inside of the central column, and not to lift or revolve bodily the entire column.

It is further to be noted that in the operation of my machine the space between the cylinders is at all times filled with a solid column of grain, which is slowly descending, subject to a constant motion of the parts one against another.

I am aware that many machines have been proposed with vertical cylinders and with wide revolving blades therein to throw the grain outward, and, also, that concentric wire-cloth cylinders without ribs or beaters have been proposed; but my machine is distinguishable therefrom in the character and action of its small ribs and in having means for retarding or choking back the grain to maintain a solid column between the cylinders.

What I claim is—

1. In a machine for scouring wheat by attrition between the kernels, the combination of an outer cylinder, an inner concentric rotary cylinder provided on its outer surface with small ribs trending downward and forward, their peripheral surfaces widely separated from the outer cylinder, and an adjustable gate for retaining the grain between the cylinders, whereby the maintenance of a solid column of grain and a prolonged movement of the kernels upon and against each other are secured.

2. In a wheat-scouring machine, the combination of an outer vertical pervious cylinder, a jacket completely encircling the same, an exhaust-fan communicating with the interior of said jacket, a central rotary cylinder provided on its outer surface with spiral ribs of slight elevation adapted to act upon the inner surface only of the grain-column, and a gate for controlling the escape of the grain, that a solid column may be at all times maintained between the cylinders.

In testimony whereof I hereunto set my hand, this 9th day of June, 1886, in the presence of two attesting witnesses.

ROSIA WASHINGTON WELCH.

Witnesses:

JNO. T. MADDOX,  
EDWARD L. WILSON.