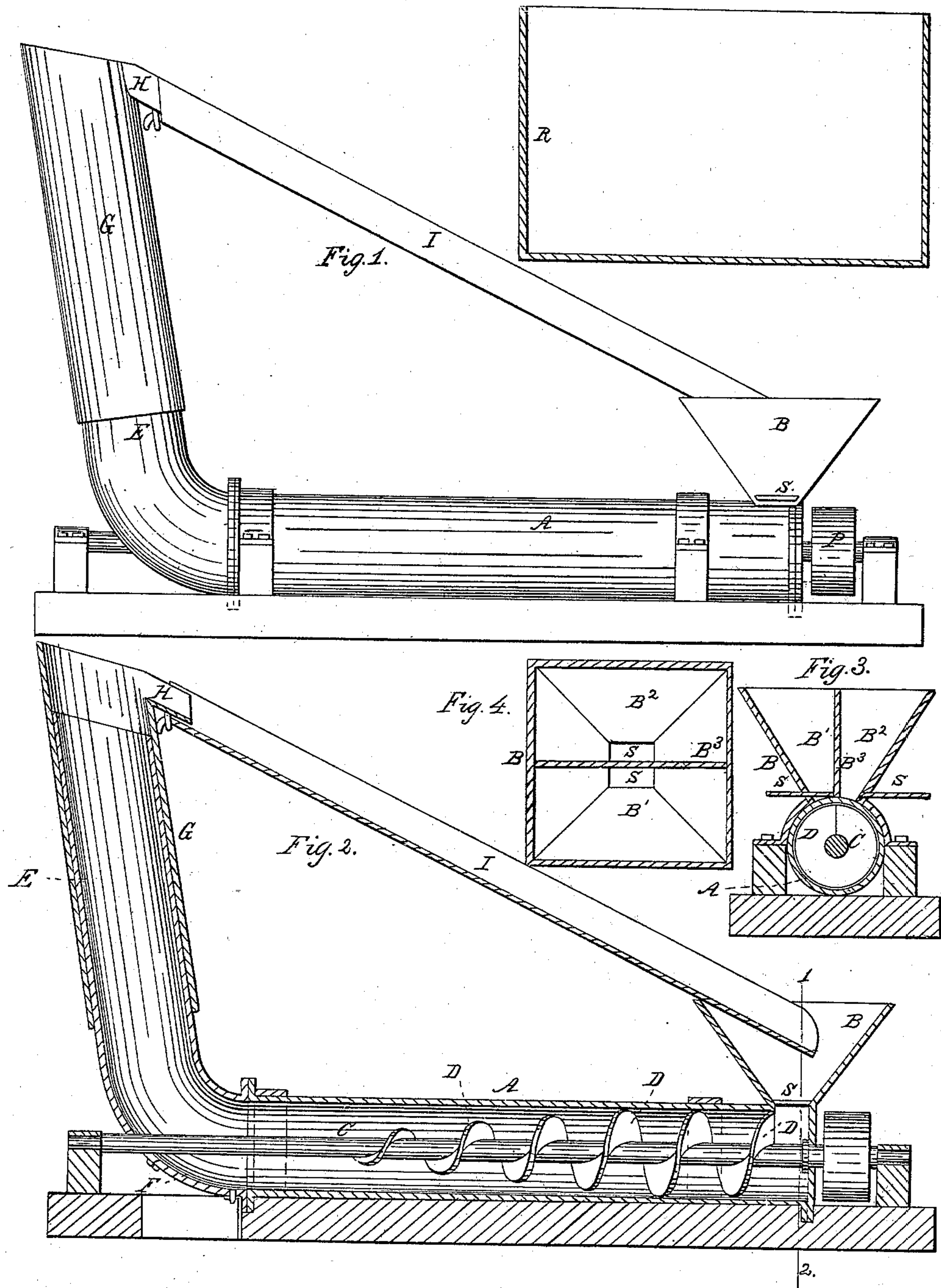


A. H. WRIGHT.

Rice Cleaner.

No. 33,276.

Patented Sept. 10, 1861.



Witnesses:

E. Mahan  
J. H. Powers

Inventor:

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# UNITED STATES PATENT OFFICE.

ALBERT H. WRIGHT, OF NEW YORK, N. Y.

## IMPROVEMENT IN RICE-CLEANING MACHINES.

Specification forming part of Letters Patent No. 33,276, dated September 10, 1861.

*To all whom it may concern:*

Be it known that I, ALBERT H. WRIGHT, of the city, county, and State of New York, have invented a new and useful Improvement in Machines for Cleaning Rice; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a side elevation of a rice-cleaning machine constructed after the improved plan. Fig. 2 is a longitudinal section of the same. Fig. 3 is a vertical transverse section of the same at the line 1 2 of Fig. 2. Fig. 4 is a top view of the hopper.

Similar letters in the figures refer to corresponding parts.

This invention relates to that class of rice-cleaning machines in which a revolving Archimedean screw or spiral wings are employed to force the grains of rice against and past each other, and by the rubbing or friction of their surfaces to clean the same; and it consists in curving and extending upward the rear end of the cylinder or case containing the screw and surrounding the extended portion with a corresponding telescopic sliding cylinder for increasing or diminishing the length in such a manner as to enable the weight and resistance of the rice, forced through the said upright extended portion by the screw, to produce the required degree of friction and rubbing of the surfaces of the grains of rice to effectually clean the same, and also in providing in connection therewith a peculiar-formed hopper divided longitudinally into two compartments, in which the given quantity of rice to be cleaned is received and retained a sufficient length of time to cool immediately after passing through the cylinders, and thence subsequently discharged into the forward end of the screw-cylinder.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The horizontal cylinder A, which may be formed of either cast or sheet metal or other suitable material, is secured firmly in a rectangular frame and provided at its front closed end with a peculiar-formed hopper B, through which the rice to be cleaned is introduced. This hopper is divided into two compartments B' B<sup>2</sup> by a vertical longitudinal partition B<sup>3</sup>

in its center, each of which compartments is supplied with a slide S at its lower part for shutting off and opening its communication with the cylinder A. The cylinder A contains a longitudinal shaft C, extending entirely through it and some distance beyond its ends, and turning in journal-boxes outside. This shaft C has a screw D formed on it, commencing at the rear of the openings at the bottom of the hopper and extending spirally to about three-quarters the length of the cylinder A. The first two or three turns of its spiral course around the shaft exactly fit the inner periphery of the cylinder A, and thence the remaining portion or turns around the shaft decrease in radius or taper down to the diameter of the shaft C.

To the rear open end of the cylinder A is secured by flanges or other suitable means the lower curved end of a slightly-inclined or upright tube or cylinder E, exactly corresponding in diameter with the cylinder A, and, in fact, forming an upward continuation of the same, an aperture being formed in its curved part for the screw-shaft to pass through. This tube or cylinder E is provided with a small door F at the lower part of its curved portion for allowing the discharge of the rice from the cylinder A and its conduit branch E, when desired, and is surrounded by a concentric sliding cylinder G, which exactly fits its outside after the manner of a telescopic sliding cylinder. The upper end of this last-mentioned cylinder G is provided with a short spout H, inclining toward the hopper, and to this spout is hooked the upper end of an inclined trough I, extending from beneath the same to the hopper B, in the closed compartment of which it terminates.

From the foregoing it will be perceived that when a high degree of speed is given the screw-shaft C by a band or belt passing around the pulley P on the same, and the rice to be cleaned is introduced into the cylinder A through either of the compartments of the hopper B, it will be forced by the screw D through the cylinder A and up through its curved continuation into the upper parts of the cylinders E G, the aggregate quantity of rice contained at one time in the cylinders A E G and undergoing the cleaning process being determined by the height of the short spout H of the sliding cylinder G, which can be raised or low-



ered to increase or diminish the extent of the column of rice to be raised therein, and consequently the resistance to the propelling force of the screw D upon the rice within the said horizontal cylinder A, the curved and slightly-inclined tube or cylinder E, and the corresponding sliding tube or cylinder G surrounding it. This height of the outer cylinder or tube G will depend in a great measure upon the state of the rice undergoing the cleaning process, and will be regulated by the judgment of the operator.

In operating the machine a given number of bushels of uncleaned rice is placed in one of the compartments B' B<sup>2</sup> of the hopper B, the slide S at the bottom of which compartment is opened to admit the passage of the rice therefrom into the cylinder A, while the slide in the other compartment in which the trough I empties is closed. The outer cylinder G being set to its proper height, the cylinder A and its conduit branch E will be filled with the rice, which will be moved by the action of the screw D upon it from the bottom of the open compartment of the hopper, through the said cylinder A and its conduit branch E and sliding cylinder G out of the spout H, and through the inclined trough I into the closed compartment of the hopper, where it will temporarily remain at rest to cool, causing its several grains in their unequal progress through the channels indicated to be crowded together and rubbed against each other, and thereby subjected to the required degree of friction to clean them of the cuticle covering the same or other extraneous matter attached to them. When all the rice in the open compartment of the hopper B is descended into the cylinder A, the slide S at its lower part is closed and the lower end of the trough I is transferred over it, so as to empty into it, and the slide s at the lower part of the other compartment is opened to allow the rice previously operated on to be again passed through the cylinders A E G and spout H and trough I into the compartment of the hopper from whence it was first taken. In this manner the slides S are alternately opened and closed and the lower end of the trough I in a corresponding manner alternately transferred from compartment to compartment of the hopper until the rice has been passed through the cylinders A E G a sufficient number of times to thoroughly clean it. When the lower end of the trough I is moved over an adjacent bin or receptacle R and the outer sliding cylinder G lowered as far as it can be,

and after all the rice that can be forced therefrom by the screw D is deposited in said bin or receptacle R, the door or gate F below the conduit branch E is opened to admit the discharge of the cleaned rice remaining in the cylinders A E G to prepare for a fresh supply of rice to be cleaned.

Not only is the column of rice in the conduit branch E and its surrounding cylinder G instrumental, by its resisting weight, in producing the friction upon the rice within the horizontal cylinder A, but it also serves to produce or rather continue the friction and rubbing of the surfaces of the grains of rice within the conduit branch E and surrounding cylinder G actually composing the said resisting-column. The upward propulsion of the rice through the said conduit branch moreover dispenses with the usual elevator.

The door F and opening in which it fits may, if desired, be made to extend forward one-half or two-thirds the length of the horizontal cylinder A.

The hopper B is represented in the drawings at a reduced size; but it may be made of sufficient capacity to contain from fifty to one hundred bushels of rice in each of its compartments.

This machine will clean coffee, wheat, and other grain equally as well as rice.

What I claim as new, and desire to secure by Letters Patent, is—

1. Combining with the horizontal cylinder A, containing the revolving screw D, the slightly-inclined or upright conduit branch pipe or cylinder E and surrounding telescopic sliding cylinder G for increasing and diminishing its length, and to which is attached the inclined trough I, leading to the hopper B, said conduit branch being secured at its lower curved end to the said cylinder A in such a manner as to form a continuation of the same, substantially in the manner and for the purpose herein fully set forth.

2. Dividing the hopper B into two compartments B' B<sup>2</sup>, having a slide S at the bottom of each, and employing in connection therewith the movable trough I for enabling the given quantity of rice introduced into one of the said compartments to remain at rest immediately after passing through the cylinders A E G sufficiently long to cool, as before described.

A. H. WRIGHT.

Witnesses:

E. MAHER,

WM. H. TOWERS.