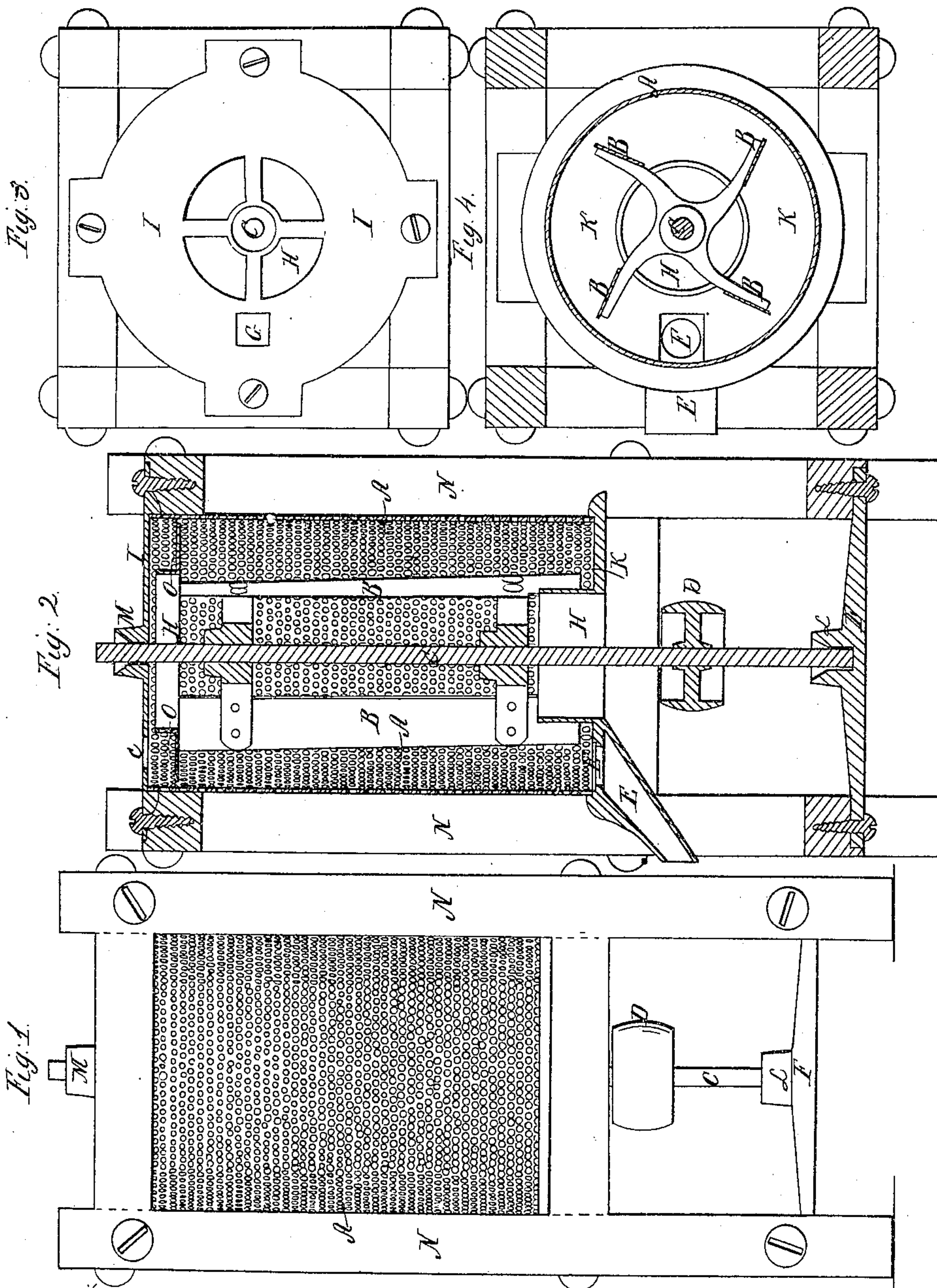


G. E. Throop.

Sinut Mill.

N^o 41,031.

Patented Dec. 22, 1863.



Witnesses:
Stephen A. Goodwin
James A. Bowles

Inventor,
Gardner E. Throop

UNITED STATES PATENT OFFICE.

GARDNER E. THROOP, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GRAIN-SCOURERS.

Specification forming part of Letters Patent No. 41,031, dated December 22, 1863.

To all whom it may concern:

Be it known that I, GARDNER E. THROOP, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Grain-Scourers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in constructing and arranging in a cylindrical form of a metallic sheet of the requisite length, so punctured and perforated with numerous small holes with square edges that a cutting or shearing surface is constantly presented to the grain in its winding course down through the cylinder, in which is located a revolving fan, and all located in a frame of sufficient strength and size.

Figure 1 is a perspective view. Fig. 2 is a vertical sectional view. Fig. 3 is a top view. Fig. 4 is a horizontal sectional view.

Similar letters refer to similar parts in the different figures.

N N, Fig. 1, is the frame, usually made of wood, but can be made of iron, of the requisite size and form.

A is a perforated cylindrical metallic sheet of sufficient length and thickness to answer the purpose designed. This cylindrical sheet is punched or perforated with numerous small holes about the sixteenth of an inch in diameter. They might be a very little larger and a trifle smaller, but the size represented in the drawings and model accompanying this specification is the size usually found to answer the purpose. These holes are very close together, so close that about one-third of the metal is cut away. They also present a shearing surface to the grain in its downward course, which is constantly recurring at every perforation.

C is a shaft passing through the perforated cylindrical metallic sheet.

L is the bottom oil-cup, in which the shaft C is inserted, revolving in its box immediately below the oil-cup.

M is the top oil-cup, through which the top end of the shaft passes. The upper end of the shaft works in a box immediately below the top oil-cup.

D is the driving-pulley, located on the shaft C and under the perforated cylindrical metal-

lic sheet. It also may be located on the upper end and above the upper oil-cup.

F is a bridge-tree, passing from one side of the frame to the other, upon which is located the oil-cup L and the box in which works the lower end of the shaft C.

I, Fig. 2, is the top plate, resting upon the upper end of the frame, and is usually made of metal.

K is a plate of the same material and situated near the other or opposite end of the frame.

G represents an aperture through the top plate, I.

B B are fan-blades attached to shaft C.

O O is a circular piece of metal attached to the upper ends of the fan-blades B B.

H H are openings in the upper and lower plates, I and K.

E E is the discharge-spout.

When this machine is in use, motion is communicated to the fans B B and shaft C by a belt passing around the pulley D. By this means the fans B B are caused to revolve to the requisite velocity, which is usually from five hundred to one thousand revolutions per minute. This generates a strong and powerful current of air, which passes from the center out through the various apertures in the cylindrical metallic sheet. These apertures are round and small in size; but I do not confine myself to an aperture strictly round in form. They may be diamond shape and a little larger or smaller than those shown in the drawings or model accompanying this specification. They are also cut perpendicularly to the surface of the metallic cylinder, thus presenting a sharp and cutting edge to the grain as it passes through the cylinder as before alluded to. When the fans B B are revolving to the requisite velocity, the grain is admitted within the cylinder through a spout or conduit through the aperture G. It falls upon the circular plate O O, fastened upon the upper ends of the fan-blades B B, which revolving rapidly, is carried outwardly by centrifugal force and passes into the currents of air generated by the revolution of the fan-blades B B, and constantly tends to pass through the apertures or perforations of the perforated cylindrical metallic sheet. The blossom end of a kernel of wheat is lighter than the seed end. The blossom end is also covered with

a hairy fibrous substance. This hairy fibrous substance is strongly charged with dust and other foreign substances, which are injurious to the bolt-cloth and greatly lower the quality of flour. The descent of the wheat or grain through the cylinder is winding or circuitous. Some of the advantages of this invention are as follows: The grain in passing down through the cylinder is made to come in contact with the inner surface of the cylinder, and as there is a separate and distinct current of air through each aperture, and the blossom end of a kernel of wheat is lighter than the seed end, it is held suspended or balanced in the current of air with the lightest end nearest the concave surface of the cylinder, and as the kernel or grain in its winding or circuitous course through the cylinder is constantly rubbed or impinged against the many sharp edges formed by the numerous perforations or apertures in the metallic cylinder, by the time it passes out at the discharge-spout E the fibrous hairy substance, with all other foreign matter mingled with it is thoroughly rubbed or scoured off, and is forced out through the perforations by the strong currents of air generated by the revolving fans inside of the cylinder. The kernel or grain as it passes in its course downward is forced in contact with the numerous perforations in the cylinder. These present a shearing edge to the grain of wheat caused by the edges of the holes gradually approaching each other, and in this arises one of the greatest and principal advantages in using a cylindrical metallic sheet with perforations or apertures of the size and form described in this specification.

This invention is also adapted to hulling those kinds of grain which require to be hulled, such as buckwheat, rice, &c. Other machines designed for this purpose have holes or apertures much longer one way than the other, something like a slot; but no machines have ever been used with so numerous and so many perforations in as this one. The cutting-surface presented in the multitude of perforations give an advantage and produce an effect that no other scouring-machine possesses. The kernel is constantly forced against sharp

edges which recur at every perforation, by the rapidly-revolving fan-blades or their equivalent, on the inside. No dependence is placed upon the grain coming in contact with the edges of the apertures as a means of scouring in any of the machines heretofore in use. The holes or slots have always been so constructed that there was little or no scouring-surface presented, but in my invention a cutting surface is presented of three thirty-seconds of an inch in length at every perforation; also, there are several rings passing around the inside, or several ribs running perpendicularly through the cylinders of scouring-machines heretofore in use, as well as other modifications to secure a rough and uneven surface for the grain to strike against, but none have used or employed the means here shown to accomplish the purpose here designed—viz., the scouring of grain by a perforated metallic case and revolving fans, or their equivalent, within said metallic cylinder. In this invention no such rings are necessary, making this machine cheaper and more simple in its construction.

I make in this machine the ordinary application of the external case or box, with the necessary pipes for controlling the grain and air in passing into or away from the cylindrical metallic sheet.

I do not claim cylindrical metallic sheets, for such have been in use before, perforated with apertures of various forms, but cylindrical metallic sheets with such numerous small perforations are new and have not been in use heretofore in grain-scouring machines.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In combination with a grain-scourer constructed substantially as described, the combination of the revolving fan blades B B, or their equivalent, with the cutting surfaces or edges in the metallic cylinder A, made by the numerous small perforations in said cylinder, substantially as described.

GARDNER E. THLOOP.

Witnesses:

STEPHEN A. GOODWIN,
JAMES A. COWLES.