W. HOUGHTON.

Grain-Cleaners.

No. 144,455. Patented Nov. 11, 1873.

Fig: 1.

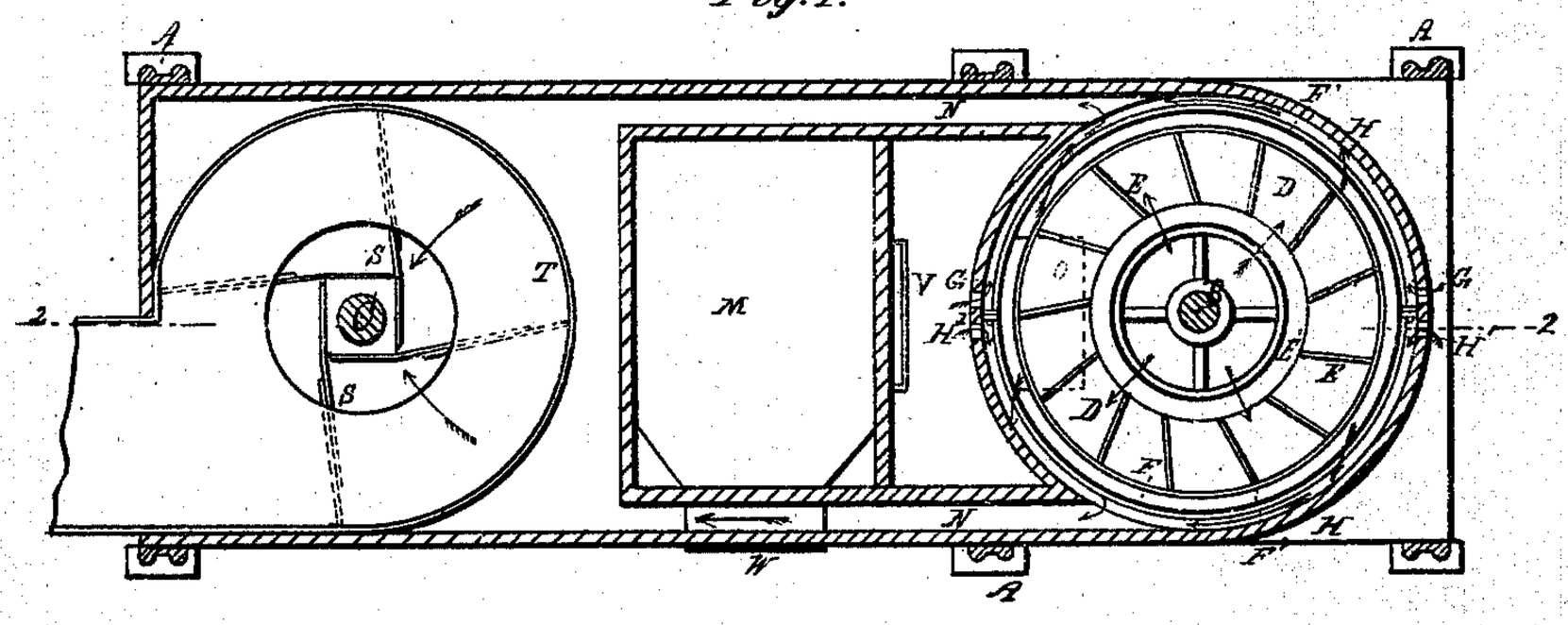
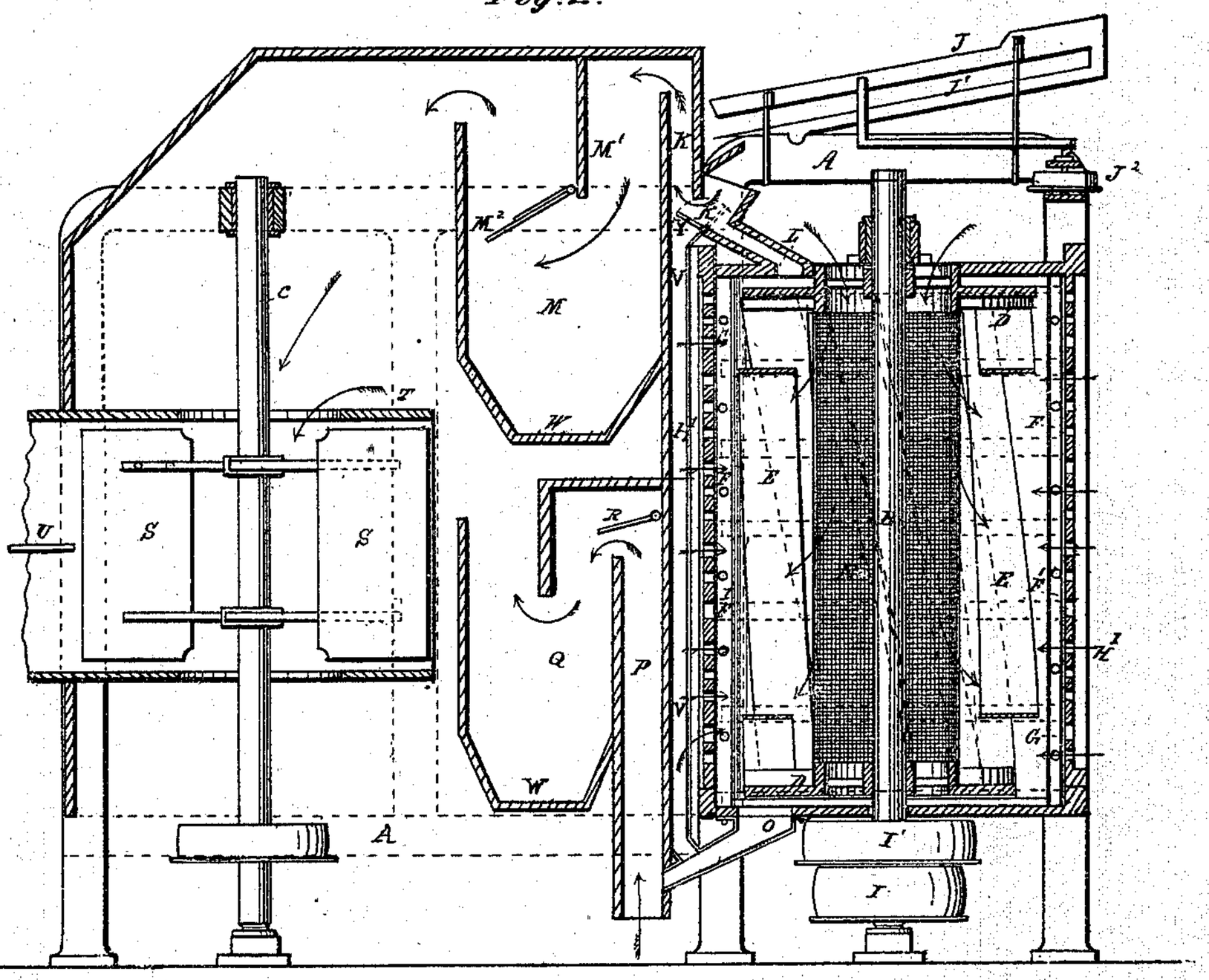


Fig: 2.



Witnesses

Solon C. Kemon

Chas. A. Pettit

Inventor

William Houghton

per Munn & Co

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM HOUGHTON, OF GREAT GRIMSBY, ENGLAND.

IMPROVEMENT IN GRAIN-CLEANERS.

Specification forming part of Letters Patent No. **144,455**, dated November 11, 1873; application filed January 23, 1873.

To all whom it may concern:

Be it known that I, WILLIAM HOUGHTON, of Great Grimsby, in the county of Lincoln, England, have invented a new and useful Improvement in Grain-Cleaners; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification.

The invention will first be fully described, and then pointed out in the claim.

Figure 1 shows a plan of the machine in section on line 1 1. Fig. 2 is an elevation of the machine in section on line 2 2, Fig. 1.

A is the cast-iron frame-work, by which the shafts B and C of the smutter or scourer and the fan are supported in suitable bearings at top and bottom. D D are the top and bottom frames of the scourer-cylinder keyed on shaft B. E are the blades or beaters of the scourer, fixed at the top and bottom ends to the frames D. E′ is the inner cylinder of wire-cloth or perforated metal, also fixed at top and bottom to the frames D, and placed so as to form a sort of backing to the blades E, as shown, so as to prevent grain passing to the center of the scourer, while the apertures therein permit a current of air entering at the upper end of the scourer to pass through, as indicated by the arrows. The blades E′ are fixed obliquely, as shown in the plan, and also inclined or spirally, as shown in the elevation. Each blade is made of a plate of wrought-iron, curved to the proper form, so that its outer edge conforms to the circumference of the cylindrical scourer, and is equidistant at all parts from the outer fixed cylinder F, by which the scouring of the grain is effected. The said cylinder consists of two halves formed of plates of the ordinary perforated steel clothing encircled by semicircular hoops F′, connected at the opposite sides by vertical ribs or flanges G, by which the two halves of the cylinder are united. H is an outer casing of wood, encircling cylinder F at a suitable distance therefrom, so as to leave a passage for air, which enters through apertures H′ at opposite sides of the casing, which also incloses the sides and part of the end of the machine, as shown.

The action of the apparatus is as follows: Power is applied to pulley I to rotate the scourer from any suitable prime mover, the fan-shaft C being driven by a belt from pulley I′, while the separators are likewise operated by a belt from the top of shaft B. The grain is supplied to the first separator sieve or shoe J, which retains all stones or matters larger than the grain, whence it passes on to the second separator J^1, which removes loose dust and small seeds, both separators being mounted and operated from a crank on the spindle of pulley J^2, in the ordinary manner. The grain passing over the second separator is delivered through a chute into a spout, K, whence it meets an upward current of air, which, passing through it as it falls, removes any loose smut-balls and other light impurities before the grain enters the scourer through the chute L. The air-current carries the impurities into the upper exhaust-box M, in which a curtain, M^1, is placed, together with a damper, M^2, which may be closed, more or less, as required, to cause the heavier particles to be deposited in box M, while only the very light dust is carried on to the fan. The grain being fed to the scourer is subjected to the action of the beaters, which throw it off against the steel clothing of cylinder F, whereby the adhering smut is detached, the resulting dust being carried away by the air-draft through the perforations in cylinder F to the fan by the side passages N N, Fig. 1. The grain gradually passes down through the scourer to the bottom, whence it escapes by the exit O, which carries it into a second exhaust-spout, P, where as it falls it is again subjected to a current of air, whereby the remaining impurities are separated and carried upward into a second exhaust-box, Q, in which the heavier particles, consisting principally of unsound grain, are deposited, the remainder passing on to the fan. A damper, R, is provided to regulate the strength of the air-current in passage P. S is the fan by which the draft is created, the course of the several air-currents being indicated by the arrows. T is the fan-casing, and U is a horizontal division-plate placed in the mouth of the fan to keep the matters arriving from the upper part of the scourer and upper exhaust-box separate from those from the lower part of the machine, which being partly of a useful character, it is advantageous to ob-

tain unmingled with the first refuse. V is a spout in continuation of spout K, through which the grain is passed directly into the exit O, when it is desired only to separate and clean it without subjecting it to the action of the scourer. Y is a valve, which, when brought into the position represented by dotted lines in Fig. 1, closes the passage to the scourer and opens spout V. The exhaust-boxes are emptied by valves W at the side of the machine.

Having described the nature of my invention, and the manner of performing the same, I would observe that I lay no claim to the invention of spiral blades or beaters for the scourer; but

What I claim as my invention, to be protected by the hereinbefore in part recited Letters Patent, is—

The combination with the said passages, exhaust-boxes, spouts, and fan, so arranged, of the spout V provided with valve Y, as and for the purpose set forth.

The above specification of my invention signed by me this 7th day of December, 1871.

WILLIAM HOUGHTON.

Witnesses:

DAN. FORSHAW,
24 *Royal Exchange, London.*

JAS. O. DEWEY,
53 *Chancery Lane, London.*