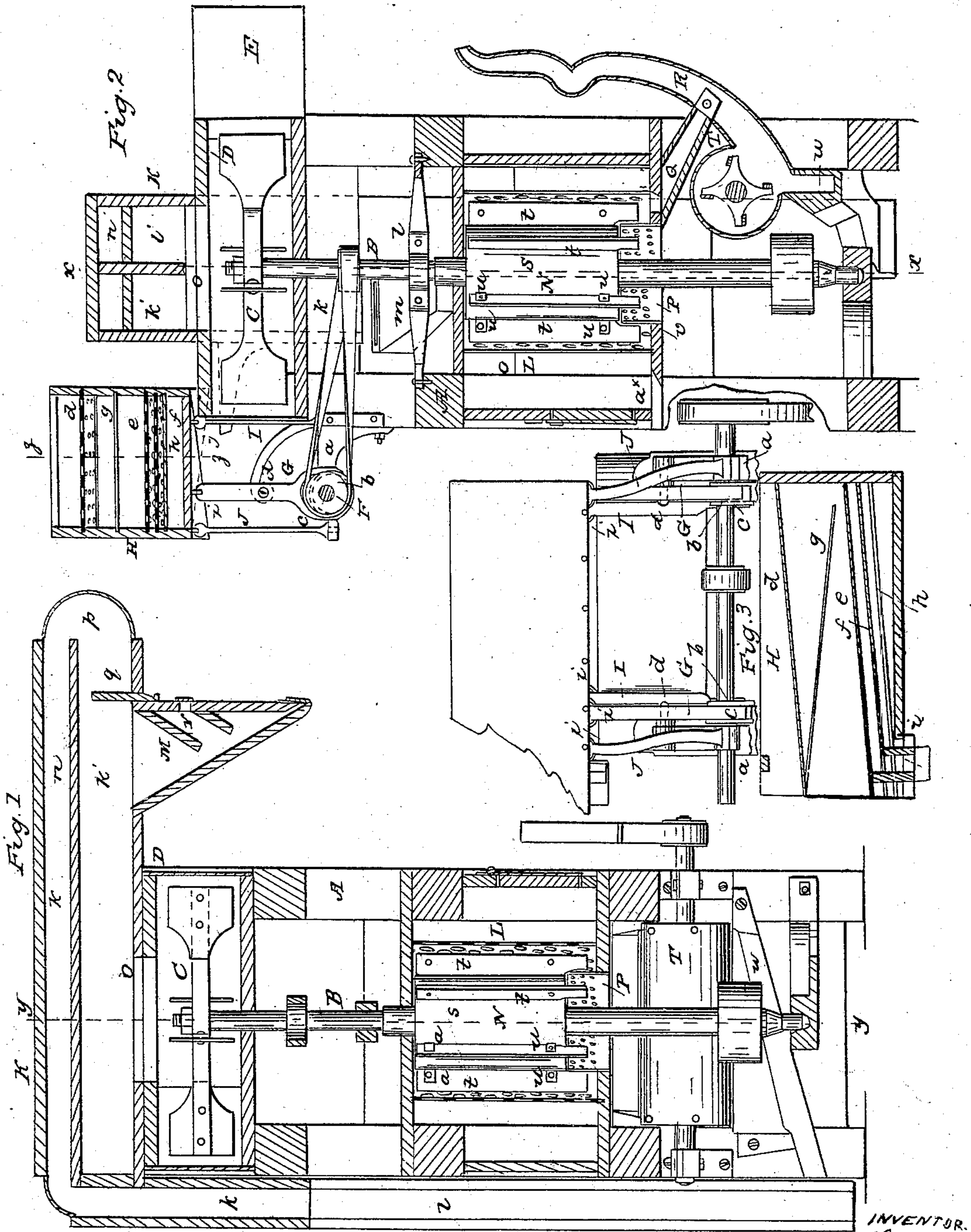


R. P. PHENIX.

Grain Cleaner.

No. 39,774.

Patented Sept. 1, 1863.



WITNESSES
J. W. Coombs

INVENTOR.
B. M. Phenix
admo of R. P. Phenix
deceased
per M. M. M.
att'y

UNITED STATES PATENT OFFICE.

R. M. PHENIX, OF BLACK RIVER FALLS, WISCONSIN, ADMINISTRATOR OF
THE ESTATE OF R. P. PHENIX, DECEASED.

IMPROVEMENT IN SMUT-MACHINES.

Specification forming part of Letters Patent No. 39,774, dated September 1, 1863.

To all whom it may concern:

Be it known that I, R. M. PHENIX, of Black River Falls, in the county of Jackson and State of Wisconsin, and administrator to the estate of R. P. PHENIX, deceased, do hereby declare that the said R. P. PHENIX, deceased, who resided in Bangor, in the county of La Crosse and State of Wisconsin, did invent a new and Improved Grain Cleaner and Separator; and be it further known that I, R. M. PHENIX, aforesaid, do, for the purpose of obtaining Letters Patent in trust for the heirs of the said R. P. PHENIX, hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section of said invention, taken in the line *x x*, Fig. 2; Fig. 2, a vertical section of the same, taken in the line *y y*, Fig. 1; Fig. 3, a vertical section of a portion pertaining to the same, taken in the line *z z*, Fig. 2; Fig. 4, a side view of Fig. 3, with a portion of the framing which supports it and the driving parts.

Similar letters of reference indicate corresponding parts in the several figures.

The invention consists in a novel and improved arrangement of suction-blast spouts, two fans, a separator, and a scouring device, as hereinafter fully shown and described, whereby oats, cockle, and impurities may be separated from wheat, and the latter, in its passage through the machine, cleansed from smut, dirt, and all other foreign substances.

To enable those skilled in the art to fully understand and construct the invention, I will proceed to describe it.

A represents a rectangular frame, which may be constructed in any proper manner to support the working parts of the machine; and B is a vertical shaft, which is placed centrally in the frame A, and has a fan, C, on its upper end, which is inclosed within a cylindrical case, D, said case having a horizontal discharge-spout, E. The fan-case D is on the top of the frame A, and to the upper part of the latter, at one side, there are attached two bearings, *a a*, in which a shaft, F, is fitted, said shaft having two eccentrics, *b b*, upon it, which work in forks or yokes *c c* at the lower

ends of levers G G, which have their fulcra at *d*. (See Figs. 2 and 3.)

H is a grain-separator, designed for separating oats, cockle, and other foreign substances from wheat. This separator is composed of a rectangular box, which contains a series of screens, *d e f*, and inclined boards or plates *g h*. The box rests on the upper ends of four vertical springs, I, and two rocking supports, J J, the latter being rods or bars having their lower ends provided with tenons, which are fitted loosely in holes at the outer ends of the bearings *a a* of the shaft F. The upper ends of the levers G G, as well as the upper ends of the springs I and supports J J, are connected to the bottom of the separator-box by means of joints or staples *i*, and when the shaft F is rotated the eccentrics *b b* of said shaft, in connection with the levers G G and springs I, give a lateral vibrating motion to the separator-box in a direction toward and from the fan-case D. The two upper screens, *d e*, in the separator are wheat-screens—that is to say, they admit of the wheat passing through them, but exclude oats and large foreign substances. Between the two screens *d e* there is placed an inclined board or plate, *g*, which conducts the wheat that passes through screen *d* upon the head or elevated end of screen *e*. (See Fig. 3.) The screen *f*, which is immediately below the screen *e*, does not admit of the wheat passing through it; only cockle and fine impurities pass through it and fall upon plate *h*, and are discharged from the separator-box from a side spout, *i*. The wheat passes from the screen *e* into a side spout, *j*, through which it is conducted into a suction-blast spout, *k*. The lateral shake motion which is given the separator-box through the medium of the eccentrics, levers, and springs causes the oats to pass freely over the screens *d e* without the liability of passing through said screens. This result is due to the easy motion produced by the eccentrics and the springs, in connection with the lateral movement of the separator. The usual longitudinal shake motion, which is given the separator by cranks, causes the former to operate with a jerking or jamming movement, and the oats are liable to be arrested in their passage over the screen and pass down through it.

K represents a box, which contains two suction-blast spouts, k l , the former one, k , having been previously referred to. This box K has a horizontal position at its upper part, and rests on the top of the frame A. The other part of the box has a vertical position, and extends down at one side of the frame A, as shown in Fig. 1. This vertical portion of the box K has its two spouts k l of unequal length, k being much shorter than l , as the former only extends down a short distance below the side spout, j , of the separator-box. The spout k , it will be recollected, receives the wheat from the separator-box, and said wheat is subjected to a suction-blast in k , and falls from the lower end of the latter into an inclined spout, m , by which it is conducted into the perforated cylindrical screen L of a scouring device hereinafter described. The upper horizontal part of the box K has its suction-spouts k l divided each into two parts by a horizontal partition, n , and the lower spouts, k' l' , in said horizontal part of K communicate with the fan-case D, as shown at o , Fig. 1. The horizontal partition n does not extend the whole length of the horizontal part of the box K. A space, p , is left at one end, so that the spouts k k' communicate with each other and also the spouts l l' .

M is a chess-box, which is attached to the horizontal part of K, near the space p , each spout k' l' is provided with a slide, q , to regulate the separation of the dust from the chess in said spouts, and a valve, r , is fitted in the side of box M to regulate the draft. (See Fig. 1.)

The scouring device is composed of the perforated cylindrical screen L, previously referred to, and a beater, N, the latter being formed of a cylindrical head, s , placed on the shaft B within the screen L, and having a series of metal plates, t , secured radially to it. These plates t are attached to the ends of bolts u , which are screwed into the head s . By this arrangement the plates t are firmly secured to the head s and retained in proper position. The cylindrical screen I is fitted within a box, O, formed by inclosing a part of

the frame A, and a circular opening, v , is made in the center of the bottom of said box, in which a perforated upright tube, P, is fitted. This tube P projects upward within the box O a suitable distance, and the bottom of the head s is directly over it. The wheat is thoroughly scoured by the action of the plates or beaters t , and the smut and dust expelled or driven out through the perforated cylindrical screen L into box O, and thence out through an opening, a^x , while the wheat passes down through a spout, Q, into a blast-spout, R, the blast being generated by a fan, S, within a case, T. This fan-case communicates, by means of a spout, w , with the lower end of the suction spout l , and the wheat passes from the spout R down into spout w , and thence into the lower part of spout l , when it is subjected to another blast generated by the fan C. Sound wheat, therefore, is discharged from the lower ends of both of the suction-blast spouts k l , while the dust and light impurities are drawn up through said spouts and around through the space p and into the fan-case D, from which it is ejected through the spout E. The chess settles in the box M, and this separator of the chess from the light impurities may be regulated as required by adjusting the slides q . The strength of the blast may be regulated by adjusting the valve r . By this simple arrangement a thorough separation of the wheat from all impurities is effected.

None of the parts herein described are claimed as new, separately or in themselves considered; but,

Having thus described the invention, what is claimed as new, and for which Letters Patent is desired, is—

The combination of the grain-separator H, fans C S, suction-spouts k l k' l' , blast-spout R, the scouring device, and the chess-box M, all arranged to operate as and for the purpose set forth.

R. M. PHENIX.

Witnesses:

R. C. BRYAN,
WM. L. FULLER.