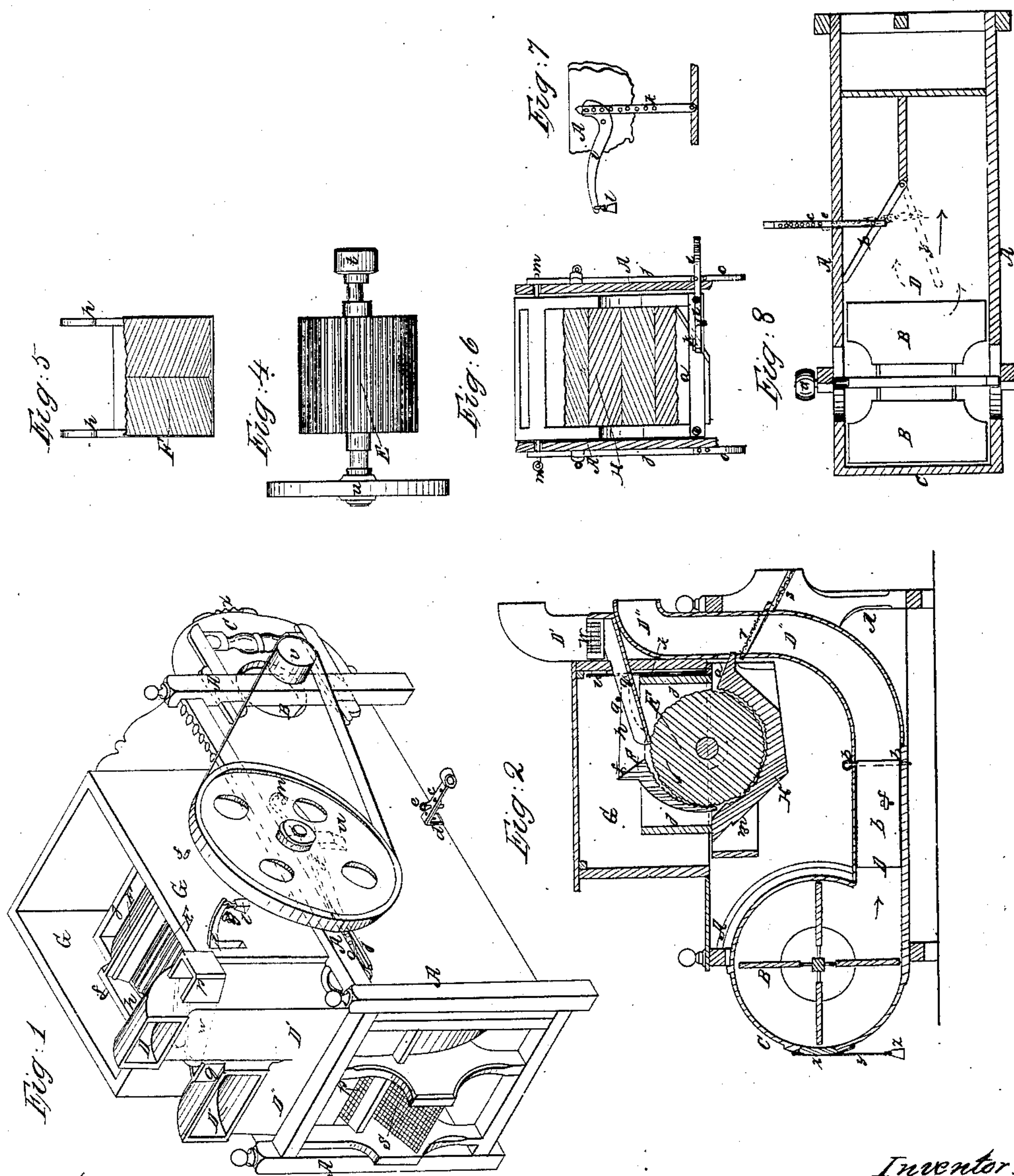


Wallace & Mellon,

Grain Cleaner,

No 23,205,

Patented Mar. 8, 1859.



Witnesses:
 A. W. Cunningham
 Hugh Bennett

Inventor.
 Hugh Wallace
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UNITED STATES PATENT OFFICE.

HUGH WALLACE AND WM. MELLON, OF NORTH SEWICKLY, PENNSYLVANIA.

GRAIN-CLEANING MACHINE.

Specification of Letters Patent No. 23,205, dated March 8, 1859.

To all whom it may concern:

Be it known that we, HUGH WALLACE and WM. MELLON, of North Sewickly P. O., in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Grain-Cleaning Machinery; and we hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the machine; Fig. 2, a vertical longitudinal section; Fig. 3 a top view of the fan and air-passages, used in the machine; and Figs. 4, 5, 6 and 7 representations of parts of the machine, to which more special reference will be had in the description below.

In all these figures, the same letters of reference are marked on alike parts.

A is the frame work, forming a large box or casing.

B is a fan of ordinary construction. C, the casing of the fan.

α is a valve, covering an opening in the casing of the fan, and being kept down on the same, by means of the string y , to which a weight z is attached. This valve serves for the purpose of allowing a portion of the wind, created by the fan, to escape, whenever its pressure or draft exceeds its proper strength.

D is the wind duct, which is divided into two distinct ducts D' , D'' , by a partition (a).

b is a valve, having its fulcrum at b' , b' , at the end of the partition a .

c is a rod, attached to the valve. By means of this rod, which is provided with a number of holes, the angle piece d , on the outside of the frame A, and the pin e , the valve can be secured in any desired position or angle. If the same is in the position, as shown in full lines in Fig. 3, all the wind, created by the fan, is turned into the duct D'' , if however its position is such, as indicated by dotted lines in Fig. 3; the wind will pass partly into the duct D' and partly into the duct D'' .

E is a cast iron cylinder, (shown separately in Fig. 4), the convex surface of which is corrugated, as represented in Figs. 2 and 4.

F is a concave piece, (shown separately in Fig. 5, which is a view of the same from below). The concave surface of this piece is also corrugated, the corrugations being arranged as seen in Fig. 5. The concave F is made so as to encircle a portion of the top surface of the cylinder; it is hung on the rod f , which forms its fulcrum. The concave is kept down by its own weight on the cylinder surface; but is prevented from being in actual contact with it by the rod g , against which its arms h , h , rest. The rods f and g pass through, and are supported by, the box G, inclosing the upper portion of the cylinder, and the concave F, and forming a part of the framework of the machine. H is another concave piece, (a top view of which is shown separately in Fig. 6). It encircles the lower portion of the cylinder and is also provided with corrugations, running in zig-zag directions, as indicated in Fig. 6. This concave is kept up to the cylinder by means of the lever i and the levers j , j , the lever i together with the link k , connecting it with the concave; and a weight l hung to the lever end, is represented separately in Fig. 7. The weight l is made sufficiently heavy to counterbalance not only the weight of the concave, but to keep the same up on the respective side, with the proper degree of pressure. The levers j , j , act in a similar manner on the other side of the concave piece H; they are connected therewith by the pins m , m , which pass through openings in the framework A of a sufficient size to allow the levers to freely play up or down. These levers j , j , are represented in Fig. 4, partly in dotted, and partly in solid lines; they are provided with the springs o , o , which bear against the rail A' of the framework. By these levers the concave piece H is kept up, to the cylinder with a pressure, proportioned to the power or strain of the springs o , o .

J, J, is a frame or curb, resting on the concave piece H, and inclosing the concave piece F. *p* is a hopper, with a sieve *w*, crossing the duct D'; *q*, a chute or conductor, leading from the sieve *w*, to the top of the cylinder E.

r is a sieve, crossing the duct D'', and

s another sieve, communicating with the sieve *r*.

t is a pulley on the shaft of the cylinder E (see Fig. 4) to which motion is communicated from the motive power, by means of a belt.

The motion of the fan B is derived from the cylinder shaft, by means of the pulleys *u* and *v*, connected by a belt.

The operation of the machine is as follows: The grain to be cleaned, is thrown into the hopper *p*, and in passing over the sieve *w* is exposed to the action of the current of air passing up the duct D', whereby any light substances, mixed with the grain, are blown out through the mouth of the duct D'. From the sieve *w* the grain drops into the chute *q*, by which it is conducted on the top of the cylinder E, which revolves in a direction, as indicated by arrow in Fig. 2; it is thereby drawn under the concave F.

The corrugations of the cylinder and concave produce a thorough rubbing of the grain, and all foreign substances, capable of being crushed (such as clods of earth, &c.), that may be mixed with the grain, are pulverized thereby. By arranging the corrugations of concave F in the manner, as represented in Fig. 5; the grain has a tendency of gathering toward the middle of the surfaces of the concave and cylinder, in passing through between them; the curb J will prevent at the same time any grains from getting off the surfaces at the sides. When the grain leaves the concave F it immediately enters between the concave H and the cylinder, which operate in a similar rubbing manner on the same; the corrugations of the shell or concave H however, being arranged in a zig-zag manner (as seen in Fig. 6), cause the grain to move in a corresponding way in passing through, viz: to move alternately to the right and to the left, until it arrives at the chute *x*, provided at the piece H; from this chute it drops on the sieve *r*, and in passing over the same, it is exposed to the action of the current of air passing up the duct D'', whereby all dust and other light substances, (separated and formed by

the rubbing process) are blown off, through the mouth of the duct.

From the sieve *r*, the grain finally drops and passes over the sieve *s*, whereby it is cleaned from such heavy substances, that have not been removed by the previous fanning process.

The concaves F and H are arranged so, as to be kept up to the cylinder, by weight, levers and springs as has been described above; hereby they are capable to yield or recede from the cylinder, in case any stones or other hard substances, should enter between their operating surfaces. This arrangement prevents breakage and destruction of those parts, which otherwise would occur.

By the arrangement of the rod and arms of the concave F, this latter piece is prevented from getting into contact with the cylinder E at times when no grain passes through these parts; this prevents useless wear and friction, which otherwise would take place.

By the arrangement of the valve *b*, (which has been described above,) a greater or lesser portion of the current of air, produced by the fan, may be turned into either the duct D' or D'', as the nature of the grain to be cleaned may require it.

With some grain, the preliminary fanning, as produced by the current up the duct D', may appear unnecessary; in this case, the duct D' can be closed entirely by the valve, and the whole current of air turned into the duct D''.

We wish to state, that the machine herein described has been practically tried, and proved to be of superior effectiveness, and to answer its purpose in the most perfect manner.

We are aware, that cylinders, with shells or concaves have been used before for the purpose of pulverizing, rubbing or grinding substances, and wish it distinctly understood that we do not claim this. But

What we do claim herein as new, and desire to secure by Letters Patent, is:

The arrangement of the valve *b*, ducts D' and D'', and sieves *w* and *r* substantially as described and for the purpose set forth.

HUGH WALLACE.
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Witnesses:

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