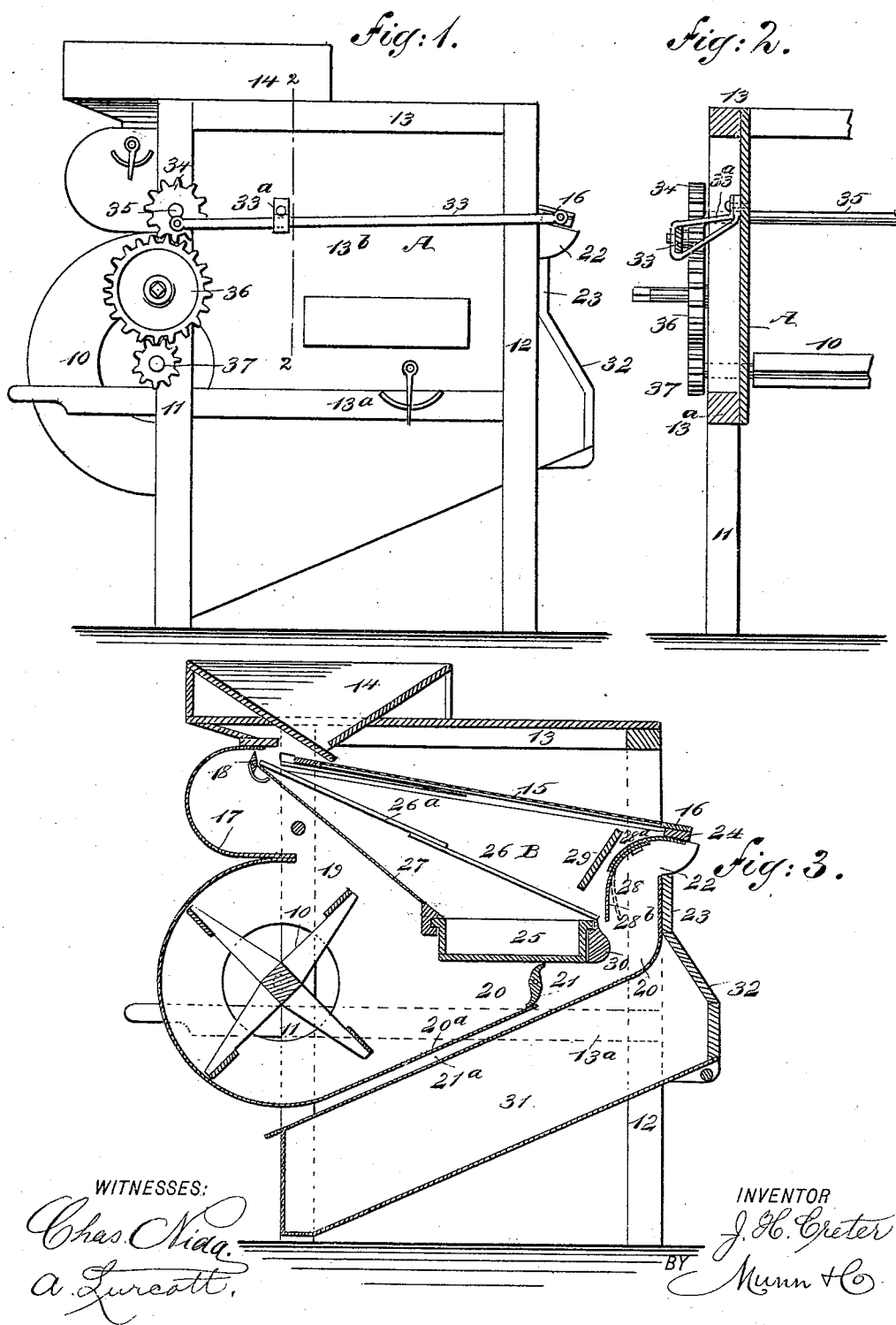


(No Model.)

J. H. CRETER.
GRAIN SEPARATOR.

No. 520,729.

Patented May 29, 1894.



UNITED STATES PATENT OFFICE.

JOSEPH H. CRETER, OF NEWCOMERSTOWN, OHIO.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 520,729, dated May 29, 1894.

Application filed December 14, 1893. Serial No. 493,715. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. CRETER, of Newcomerstown, in the county of Tuscarawas and State of Ohio, have invented a new and Improved Grain-Separator, of which the following is a full, clear, and exact description.

My invention relates to grain separators, and it has for its object to improve upon the construction of such a machine shown in Letters Patent granted to me March 22, 1891, No. 239,226, said improvements consisting in providing guides for the driving rods or pitmen of the screen, in the location of the gearing, the shape of the valves employed in the various flues or ducts of the machine, and in the construction of the deflector carried by the screen, the said deflector being made in sections, one section having yielding or adjustable connection with the other.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the grain separator. Fig. 2 is a section of part of the body taken practically on the line 2—2 of Fig. 1; and Fig. 3 is a central longitudinal section through the entire machine.

In carrying out the invention the body of the machine may be said to consist of rear posts 11, forward posts 12, cap rails 13, and bottom rails 13^a, together with side frames 13^b supported by the posts and the rails.

A fan 10 is supported at the rear of the machine, the fan shaft being located in suitable journals carried by the rear posts, and the fan and its casing extend practically from one rear post to the other. A hopper 14 is erected upon the top of the body and extends over the rear thereof, as shown in Figs. 1 and 3, being carried back a sufficient distance to fit upon the rear end of the screen 15, thereby giving the entire length of the screen full opportunity to work, and at the same time permitting the screen to extend practically the whole length of the machine. The screen is represented as resting at its forward inclined end upon a cross bar 16. Air is admitted into

the space above the screen through the medium of an upper air flue 17, formed by a jacket located at the back of the machine between the hopper and the fan casing. The flue 17 extends the whole width of the machine, and is enlarged in proportion to the throat in which is located a valve 18, this throat being made smaller than the throat of the passage 19 through which the air is forced by the fan into the body of the flue. The valve 18 constitutes one of the improvements and it consists of a body of substantially a diamond shape and a tail curved in direction of the screen and attached to the lower portion of the body. In this form of valve air may be positively shut off from the screen, as at times it is not desirable to subject the seed to be cleaned to the action of air, since many of the seeds may be blown away by such action as for example, a blast of air would be injurious over the screen when such seed as blue-grass, tobacco, or cotton-seed is being cleaned.

The construction of the flue 17 gives the machine power by the condensation and pressure of the atmosphere, to work with uniformity and to separate any kind of grain or seed whether light or heavy. The valve 18 is so constructed and arranged that it will direct the air above the screen. It is essential that the currents should be thus directed above the screen and not be allowed to come in contact with it. The upper current of air will thus clean the grain, or partially clean it, before it falls upon the screen, thereby permitting the grain more readily to go through the screen and enabling the machine to work faster than fanning mills ordinarily do.

A lower flue 20, acts with the fan, and receives its air therefrom. The bottom of the said flue, for a portion of its length, consists of an inner lower extension 20^a of the fan casing, and the flue at the inner termination of the said bottom may be entirely closed through the medium of a valve 21, which valve may be termed an S-valve, being shaped practically as is that letter, and is adapted to have bearing against the bottom portion 20^a, and against the upper support forming a portion of the outer wall of the said flue 20. By reversely curving the ends of the valve 21 its edges will not become notched or indented

thereby forming air outlets as would be the case with a soft wood valve having knife edges like the valve F' in my patent referred to. The edges of said valve sometimes clamp on small sticks or hard particles which make indentations and destroy the effectiveness of the valve. The flue 20 is continued forwardly and upwardly, and terminates beneath the forward end of the screen, its forward end being provided with an open mouth 22, located above a front-board 23, forming a portion of the front of the body. The flue 20 is provided with a branch 21^a, which commences at the valve 21 and extends downward and rearward, the lower end being open, as shown in Fig. 3, and through this branch flue whatever material that may escape through the screen finds its exit.

A shake bar 24 is secured upon the forward and outer end of the screen 15, and is supported by extensions from the sides of the body, the side supports being located at the mouth 22 of the flue 20. A drawer 25 is represented as being located immediately above the valve 21; in fact, the upper portion of the valve, when the drawer is employed, engages with the bottom of the drawer when the valve is closed. The drawer is beneath the screen, and above this drawer a slide 26 of a chute chamber B, is located, sliding under the thick section 26^a whenever it is desirable to uncover the drawer in order to admit into it refuse from the seed, such as cockle, chess, or small or shriveled wheat, that will not sell and will not do for seed. Otherwise, the two slide sections 26 and 26^a constitute an inclined partition and receive and direct the material passing through the screen into the upper forward portion of the flue 20, so that it may escape through the branch flue 21^a. The drawer may be removed at the will of the operator. The space at the rear of the drawer is separated from the fan chamber by a sheet iron partition 27, which prevents any seed from dropping into said chamber. A circular sheet iron deflector 28, is secured to the bottom of the shake bar and extends downwardly and rearwardly into the chamber B, and so separates that chamber from the upper portion of the flue 20. Another of the improvements consists in the construction of this deflector which is made in two sections 28^a and 28^b, the lower section being adjustable upon the upper one or hinged or pivotally connected therewith, in order that its lower end may be free; and immediately back of the said deflector 28, an inclined guide board 29 is located, for the purpose of feeding the refuse seed or grain into the drawer 25, when the slide 26 is open.

I have devised a passage-way of special construction to guide the grain which falls from the screen 15, into the upper portion of the flue 20, this passage being formed by a block 30, as shown in Fig. 3, and the forward or lower end of the slide 26 rests preferably upon this block. The contour of the block

upon its upper side is approximately an ogee curve. This block thus curved or beveled is in the relation as shown, to the lower edge of the deflector so that the grain as it falls strikes upon the upper inclined surface of the block and is deflected directly across a current of air passing up the flue 20 and regulated by the valve 21. The deflector 28, as the screen is reciprocated, assists in carrying the grain from the slide 26 over the block 30, and assists likewise in removing any grain from the block that may adhere thereto. Thus it will be observed that the deflector 28 is brought in engagement at its lower end with a more or less solid substance; and when the deflector 28 is made as shown under my old form of patent, that is, in one piece, the lower portion of the deflector is constantly breaking, wearing or becoming torn, while by constructing the deflector in two sections, and permitting the lower section to swing to a greater or less extent, the deflector may do its work without injuring itself, and the lower section of the deflector may be adjusted to or from the surface over which it is to pass, in the event it should possibly become worn. The block 30, also serves to prevent the air from going up the passage down which the grain falls. The lower side of the block 30, is rounded, to allow free passage of air into the upper portion of the flue 20. The groove in which the single screen lies is cut into the siding of the body A, and the use of the shoe is dispensed with. The groove is cut single at the forward end and double at the rear end, so that with the single screen the width of the opening above the screen may be varied at pleasure. The screen 15 is represented in the drawings Fig. 3, as located in the upper groove, but it may be partially drawn out and slipped into the lower groove at the will of the operator. This construction makes the machine simple and lessens its cost.

Underneath the fan, the flue 20 and the extension 21^a, a box 31, is located, having a suitable opening usually covered by a door 32 and located at the front. This box is adapted to receive the screen when not in use. It extends slightly in front of the front posts 12 in order to provide room for long screens. The driving mechanism of the various operating parts is more clearly shown in Figs. 1 and 2. The proper longitudinal motion is imparted to the shake bar by means of rods 33 attached thereto and carried back to pinions 34, which are fixed upon a shaft 35, journaled preferably in the rear posts 11 of the machine. The attachment between the rods or pitmen 33, is usually accomplished by means of wrist pins fixed eccentrically and at a sufficient distance from the center to give a proper amount of motion upon the revolution of the shaft 35.

Another improvement consists in attaching to the sides of the body A straps 33^a, of an elastic material such as rubber. These straps are carried around the pitmen, and serve to

maintain said pitmen upon the wrist pins, and to insure their positive action in connection with the pinions. A gear 36, is journaled upon one of the rear posts, and is driven
5 by a pinion 37, located on the fan shaft, and communicates motion to one of the upper pinions 34. One of the pinions 34 may be a band wheel, or both of the said pinions may be made to mesh with gears 36. Obviously the
10 shaft 35 may be cranked and connected directly to the rods or pitmen 33 if preferred. The stems of the valves 18 and 21 project through side walls of the machine, and are provided with cranks or handles by means of
15 which they may be conveniently operated, as illustrated in Fig. 1. The valves 18 and 21 manifestly permit the blast to be regulated according to the will of the operator, and according as he may find necessary; and it is
20 likewise obvious that the valves when constructed as above set forth may be employed to completely shut off air, both from the screen and from the upper portion of the flue 20 into

which the screened grain enters. Other means for communicating motion to the screen may
25 be employed, but those shown are preferred.

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

The combination, with a screen, a chute 30 below the screen, and a block having an ogee form in cross section, and located at the delivery end of the chute, of a deflector having its lower end extending below the plane of the said chute, said deflector being constructed
35 in pivotally connected sections, the upper section being secured to the screen to reciprocate therewith and the lower section being free to yield when it strikes a stationary part of the machine, substantially as shown and
40 described.

JOSEPH H. CRETER.

Witnesses:

D. C. WHITING, Sen.,
L. P. WILSON,
WILLIS R. CRATER.