

No. 691,045.

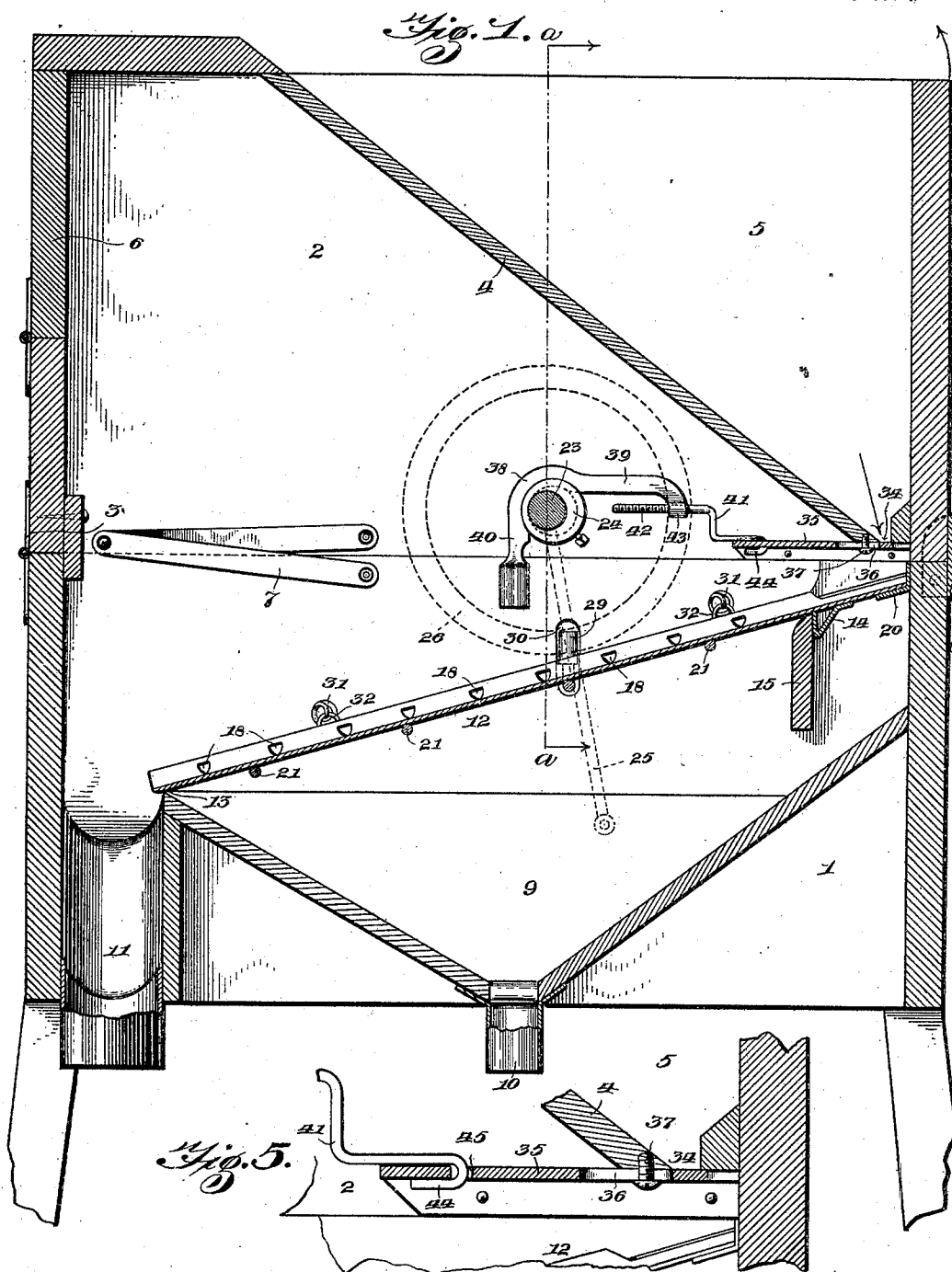
Patented Jan. 14, 1902.

W. W. CLIMENSON & W. D. WINGER.
MACHINE FOR SEPARATING COCKLE FROM WHEAT.

(Application filed Nov. 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 2.

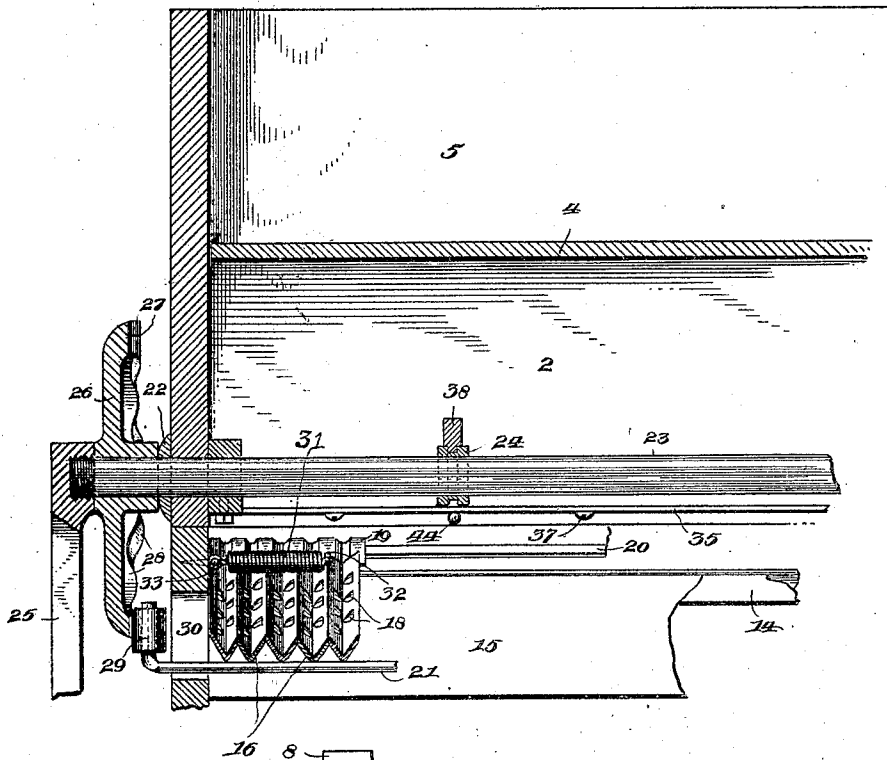


Fig. 3.

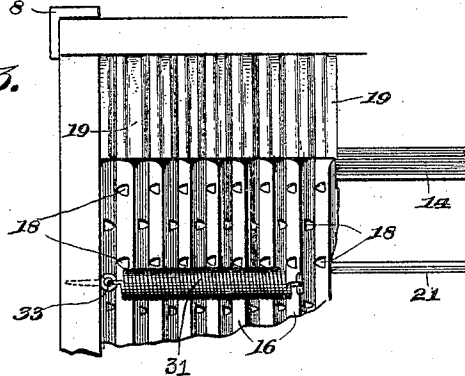
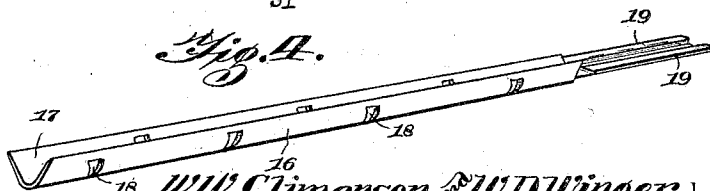


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM W. CLIMENSON AND WILLIAM D. WINGER, OF HONEYBROOK,
PENNSYLVANIA.

MACHINE FOR SEPARATING COCKLE FROM WHEAT.

SPECIFICATION forming part of Letters Patent No. 691,045, dated January 14, 1902.

Application filed November 9, 1900. Serial No. 35,970. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM W. CLIMENSON and WILLIAM D. WINGER, citizens of the United States, residing at Honeybrook, in the county of Chester and State of Pennsylvania, have invented a new and useful Machine for Separating Cockle from Wheat, of which the following is a specification.

Our invention is an improved machine for separating cockle and other impurities from wheat; and it consists in the peculiar construction and combination of devices herein-after set forth, and pointed out in the claims.

One object of our invention is to provide an improved automatically-operated and adjustable feed mechanism for regulating the supply of the wheat to the separating-shoe.

A further object of our invention is to effect improvements in the construction of the separating-shoe.

A further object of our invention is to provide improved means for vibrating the shaking-shoe laterally.

A further object of our invention is to provide a light, cheap, simple, and portable machine which is thoroughly efficient in separating cockle and other impurities from wheat and which may be operated either manually or by other power.

In the accompanying drawings, Figure 1 is a vertical transverse sectional view of a separating-machine embodying our improvements. Fig. 2 is a partial sectional view of the same on a plane indicated by the line *a a* of Fig. 1. Fig. 3 is a top plan view of a portion of the separating-shoe and of one corner of the casing in which the same is located. Fig. 4 is a detail perspective view of one section of the separating-shoe. Fig. 5 is a detail section showing the feed-plate and coacting parts.

In the embodiment of our invention we provide a suitable inclosing case which comprises the lower section 1 and the upper section 2, the latter being hinged on one side to the lower section, as at 3, and adapted to be opened therefrom and closed thereon, at will. The upper section 2 is provided with an inclined feed-board 4, which extends downward nearly to one side, which we will call the "front" side, of the upper section, and

forms a hopper 5 in said upper section. The rear side of the upper section is provided with a hinged board 6, which is adapted to be opened to permit access to the interior of the machine without the necessity of opening the hinged upper section 2. This hinged board 6 also enables the separating-shoe and operating mechanism to be inspected when the machine is at work. The usual straps are provided, which connect the upper and lower sections and limit the extent to which the upper section may be turned when opened from the lower section. The machine is preferably provided at the front corners of the casing with angle-irons 8, which are secured to the upper portion of the lower section and engage the lower side of the upper section at the front corners thereof when said upper section is closed on the lower section, as shown. In the lower section is a hopper 9 to receive the cockle, which hopper is provided with a discharge-spout 10. In rear of the hopper 9 is a discharge trough or spout 11 for the wheat.

A laterally-vibratory shoe 12 is disposed in the lower section 1 of the casing in an inclined position over the hopper 9 and adapted to discharge onto the trough or spout 11. The lower portion of the separating-shoe is supported on the rear side of the hopper 9, as at 13. Said separating-shoe has on its under side, near its front or upper end, a laterally-disposed rib 14, and the same bears against the front side of a longitudinally-disposed bar 15 in the lower section 1, which bar supports the upper portion of the inclined separating-shoe. The said separating-shoe is composed of a series of sections 16, arranged side by side, each of the said sections forming a substantially V-shaped trough 17, having openings 18 in its sides of a size and shape adapted for the passage of cockle through the said openings. The said sections 16 being secured side by side form, in effect, a series of downwardly-inclined parallel corrugations, the depressed portions or troughs of which have the openings 18 in their sides. At the upper end of each section 16 the sides thereof are bent outward horizontally to form wings 19, and in the formation of the shoe from a series of the said

sections 16 the said horizontally-disposed wings 19 of the respective contiguous sections 16 overlap each other, as shown, thereby strengthening the connections between said sections. The rib 14 is soldered at various points to the under side of the sections 16 near the upper ends thereof, thereby securing the said sections together, and the upper ends of the said sections are further secured together by a metallic strip 20, which forms a flange at the upper side of the separating-shoe and bears under the upper ends of the sections 16 and is soldered to certain of the said sections at suitable distances apart, and thereby the said overlapping portions of the said sections are maintained in place, and the said sections throughout the entire extent of the separating-shoe are in contact with each other. Rods or wires 21 are disposed longitudinally under the said separating-shoe at suitable distances apart and are soldered at suitable intervals to certain of the sections 16. Said sections are preferably made of suitable sheet metal. It will be observed by reference to the drawings that the inclined sides of the troughs of the separating-shoe will cause the wheat-berries discharged thereon to be disposed longitudinally of the said troughs and to slide down the same, owing to the vibration of the separating-shoe, into the trough or spout 11. This longitudinal disposition of the wheat-berries prevents the same from being discharged through the openings 18 and falling into the hopper 9, but owing to the size and shape of the cockle the latter while passing downward in the said trough with the wheat-berries is caused by the lateral vibration of the separating-shoe to be passed through the openings 18, fall from the shoe to the hopper 9, and thereby become separated from the wheat. In practice we find that our separating-machine is highly efficient and thoroughly separates the cockle from the wheat.

In the ends of the upper section 2 of the casing are bearings 22, in which is journaled a shaft 23, that extends transversely through the upper section 2 near the center thereof. The said shaft is provided with a suitable number, usually two, of peripherally-grooved eccentrics 24, which are disposed at a suitable distance apart. At one end of the shaft 23 is a hand-crank 25 (indicated at Fig. 2) and a wheel 26, the latter being provided on its inner side with an inturned flange 27, having a circumferential series of sinusoidal cams 28. The said cams are engaged as the said wheel rotates with the shaft 23 by a roller 29, which forms a tappet and is supported and journaled on the upturned end of one of the strengthening-bars 21, with which the separating-shoe, as before described, is provided. The said bar 21, which carries the roller 29, passes through a vertical slot 30 in one end of the lower section 1 of the casing, the said slot 30 being of sufficient size to clear the said roller 29 and to enable the said roller to

pass therethrough when the separating-shoe is being placed in or removed from the lower section 1. A series of springs 31 are disposed above the separating-shoe and hooked thereto, as at 32, and also connected to one end of the section 1, as at 33. In the form of our invention here shown said springs are coiled retractile springs; but any suitable form of springs may be employed, and the same may be attached to the separating-shoe and to any suitable support by any suitable means, and we do not limit ourselves in this particular. The said springs, said tappet-roller, and cam-wheels coact to vibrate the separating-shoe laterally when the machine is in operation, as will be understood.

In the bottom of the hopper 5, between the lower side of the inclined board 4 and the contiguous front side of the upper section 2 of the casing, is formed a narrow feed-opening 34, which is above the upper side of the separating-shoe, and the length of which is practically coextensive with the width of the separating-shoe. Under the said feed-opening 34 is disposed a feed-plate 35, which is provided with a series of transverse slots 36, in which operate screws 37, that secure the said feed-plate to the under edge of the inclined board 4. The said feed-plate is thereby adapted to reciprocate laterally and to open the feed-opening 34 to any required extent and cut off the said opening 34. Eccentric-straps 38, which are right angular in form and provided each with a horizontal arm 39 and a vertical arm 40, engage the grooved peripheries of the eccentrics 24. The arms 39 of said eccentric-straps are connected to the feed-plate by hook-links 41, which have threaded sections 42, screwed in threaded eyes 43, with which arms 39 are provided, and have hooks 44, which engage openings 45 in the feed-plate. The lower ends of the arms 40 are enlarged and suitably weighted to keep the straps 38 in engagement with the eccentrics 24. It will be understood from the foregoing and by reference to Fig. 1 of the drawings that the said straps 38 may be readily unshipped from the eccentrics. It will be further understood that by means of said eccentric-straps and the hooks 41 in coaction with the eccentric 24 the feed-plate is reciprocated so as to alternately open and cut off the feed-opening 34, and thereby feed the grain to the separating-shoe. The hooks 41, which form the links that connect the eccentric-straps with the feed-plate, being adjustable longitudinally with relation to the said eccentric-straps adapt the feed-plate to be so adjusted as at each operation thereof to open the feed-opening to any desired extent, and hence the feed of the grain from the hopper 5 to the separating-shoe may be regulated as may be necessary to secure the best results. By this means each grain of wheat which passes through the machine may be caused to slide downward in the bottom of one of the troughs which constitute the separating-shoe, and

each of the cockle-seeds may be also caused to pass downward in the bottom of one of the said troughs, so as to secure the separation thereof from the wheat by the lateral vibration of the separating-shoe.

Having thus described our invention, we claim—

1. A separating-shoe for the purpose set forth, comprising a series of sections each of which forms a trough with inclined sides having openings therein, the said sides of the said sections at one side of the said shoe being bent outward and overlapped, and a cross bar or strip bearing under said overlapped portion of the said sections and secured to certain of them at suitable distances apart, whereby said sections are maintained in place when assembled, substantially as described.

2. In a machine for separating cockle from wheat, the combination of a casing having a hinged upper section, provided with a feed-hopper, and a lower section having a discharge-hopper for cockle and a discharge-trough for wheat, at one side of said cockle-hopper, a shaft journaled in bearings in the sides of said upper hinged section, an eccentric and a cam-wheel on said shaft, a feed-plate in the throat of said feed-hopper, a strap engaging said eccentric and connected to said feed-plate, a separating-shoe in the lower section of the casing, above the cockle-hopper and adapted to discharge into the wheat-trough, said shoe having a tappet engaging said cam-wheel, and a spring, coacting with said cam-wheel and tappet to vibrate said shoe, substantially as described.

3. A separating-shoe for the purpose set

forth, comprising a series of sections each of which forms a V-shaped trough, the inclined sides of which have openings therein, and said sides of said sections, at one side of the said shoe, being outturned to form horizontal overlapping wings, substantially as described.

4. The combination of a separating-shoe having a tappet, a revoluble shaft having a cam-wheel to engage and operate said tappet and thereby vibrate said shoe, eccentrics on said shaft, a feed-hopper having a feed-opening, a feed-plate, and connections including an adjusting device between said feed-plate and said eccentrics whereby said feed-plate is operated and may be adjusted, for the purpose set forth, substantially as described.

5. In a machine of the class described, the combination of a hopper having a feed-opening in its lower side, a reciprocating feed-plate to open and close said opening, an eccentric, means to operate the same, a strap engaging the upper side of said eccentric, adapted to be lifted therefrom, and having the arms 39 and 40, and a screw-link connected to the arm 39, adjustable longitudinally therein and having a hook engaging an opening in the feed-plate, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM W. CLIMENSON.
WILLIAM D. WINGER.

Witnesses:

A. B. RUTT,
T. J. HUGHES.