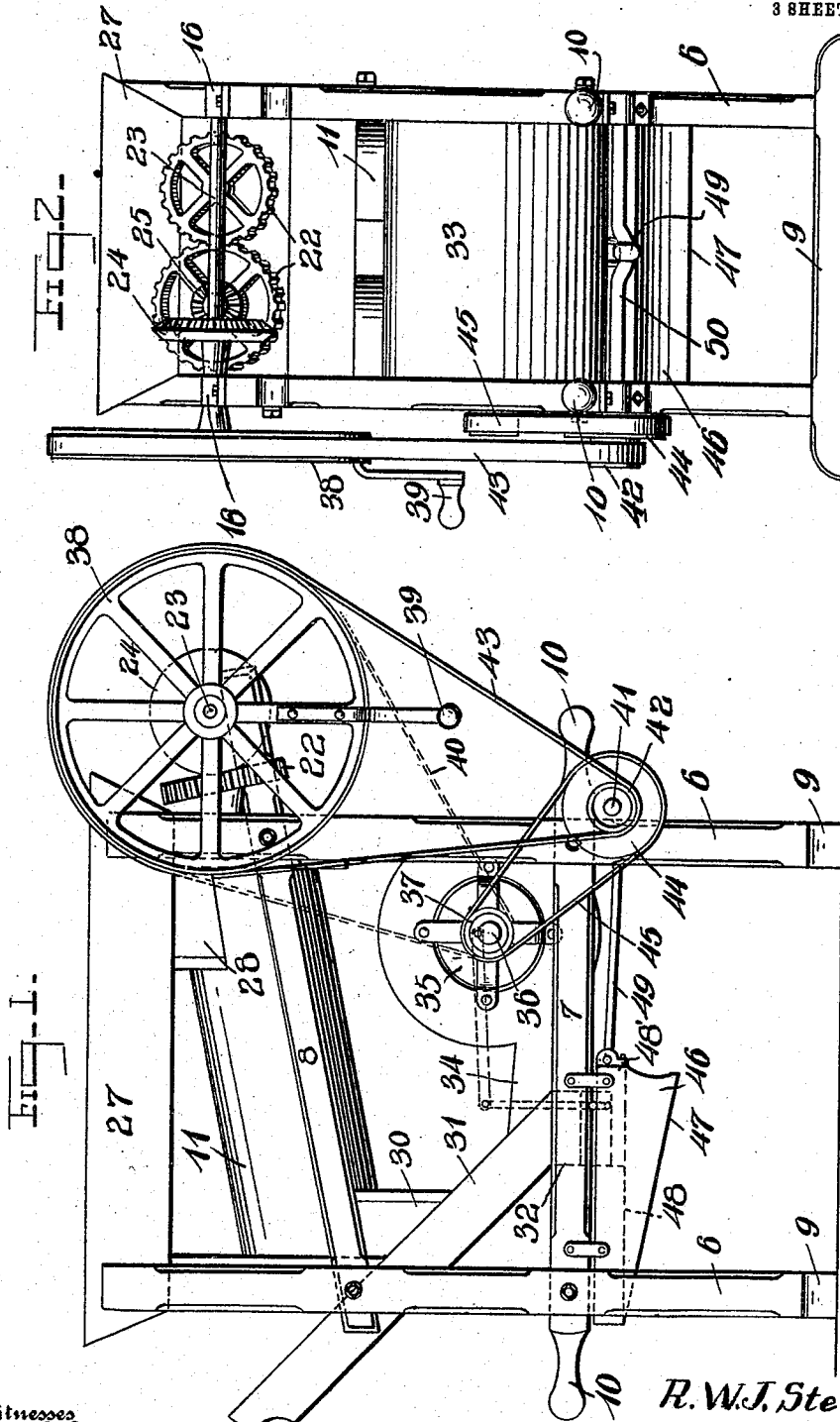


R. W. J. STEWART.
PEA HULLER.

APPLICATION FILED APR. 10, 1909.

932,510.

Patented Aug. 31, 1909.
3 SHEETS—SHEET 1.



Witnesses
W. H. Rockwell
C. E. McCarthy.

384

R. W. J. Stewart

Inventor

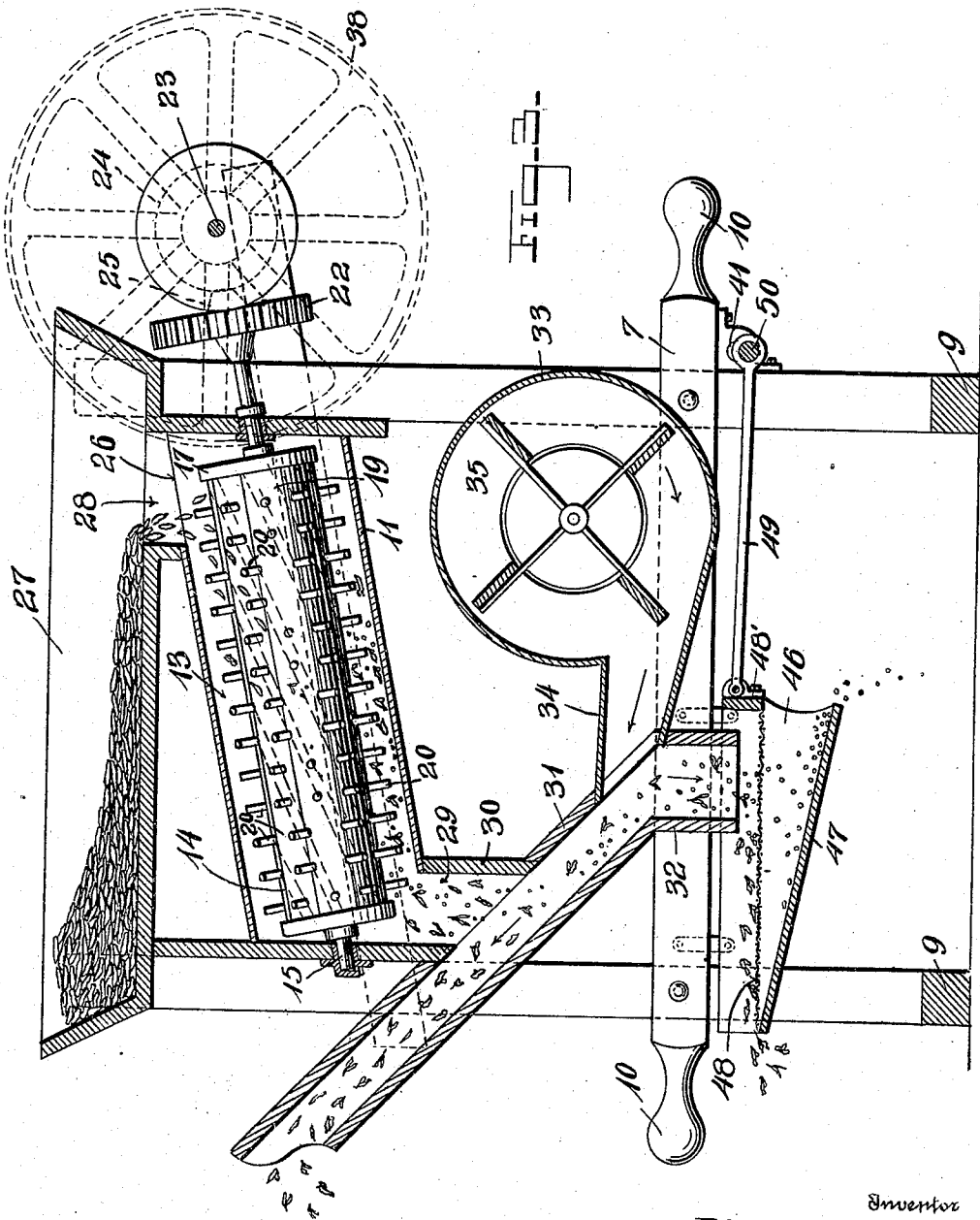
R. W. J. Stewart.

Attorney

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Witnesses
W. H. Rockwell
E. G. M. Carthy.

Inventor
R. W. J. Stewart.

By *[Signature]*

Attorney

R. W. J. STEWART

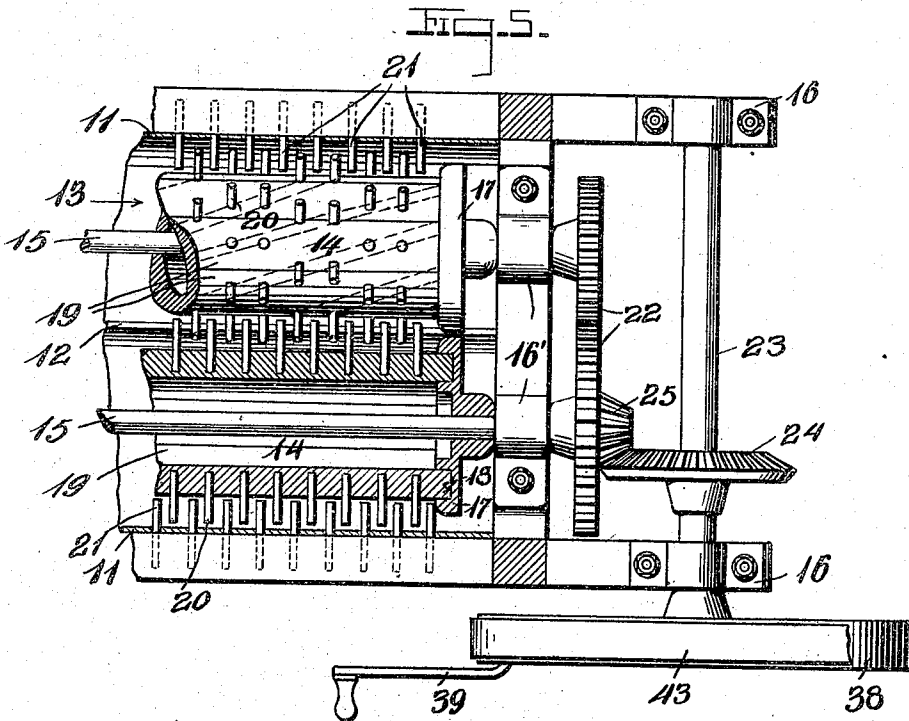
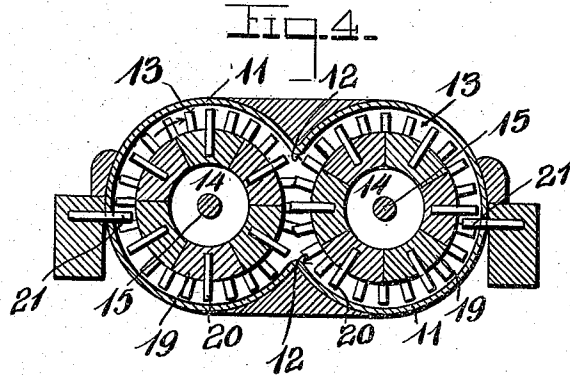
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W. H. Rockwell
C. L. McCarthy

By

R. W. J. Stewart.

Inventor

Attorney

UNITED STATES PATENT OFFICE.

REUBEN W. J. STEWART, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO WILLIAM HOWARD AND W. P. MOORE, OF CHATTANOOGA, TENNESSEE.

PEA-HULLER.

932,510.

Specification of Letters Patent.

Patented Aug. 31, 1909.

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To all whom it may concern:

Be it known that I, REUBEN W. J. STEWART, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Pea-Hullers, of which the following is a specification.

The present invention relates to means for removing and separating hulls from peas, and the primary object is to provide a novel, simple, compact and practicable structure, which will effectively remove the hulls from the peas without injuring the latter, and will afterward separate the hulls, the heavy ends and imperfect pods from the loose peas.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the machine. Fig. 2 is an end view of the same. Fig. 3 is a vertical longitudinal sectional view. Fig. 4 is a detail cross sectional view through the casing. Fig. 5 is a detail sectional view longitudinally of the hulling rolls, showing one of said rolls in section.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a supporting frame is employed that may be of any suitable character, but as shown, consists of standards 6 with suitable longitudinal beams 7 and 8 and lower cross bars 9. The beams 7 project beyond the standards and are preferably formed into handle grips 10, by which the apparatus can be readily transported.

Located longitudinally within the frame is a completely inclosed casing 11 of light sheet material, preferably steel, and consisting of upper and lower walls that are curved and have central inset portions 12, forming longitudinal compartments 13. It will be observed that this casing is disposed at an inclination, and arranged longitudinally therein are inclined hulling rolls 14. While these rolls may be constructed in a number of different ways, in the preferred embodiment, shafts 15 are employed that are journaled in boxes 16 and have heads 17 fixed thereto, these heads being provided in their inner sides with circular grooves 18. The bodies of the rolls are made up

of sections 19 of wood, as shown in Fig. 4, fitted together, and surrounding the shaft. Driven into these sections are radial projecting teeth 20 that operate in close proximity to the inner face of the casing, thus making it impossible for pods of peas to lie stationary and not be carried up through the stationary teeth inside of the casing. The teeth have overlapping but non-interfering paths of movement, as will be clear by reference to Fig. 5. It will also be noted that the teeth on each roll are arranged in spiral rows and that the teeth of each roll are staggered in lines longitudinally of the roll. Preferably there are six rows to each roll, the teeth being alternately one-half inch apart around the cylinder and one inch apart lengthwise on the cylinder, the rows of teeth around one cylinder intermeshing with those of the other. While this arrangement is important in order to insure the proper movement of the peas down the casing, and at the same time secure the hulling action, it will be obvious that the arrangement may be changed. Rows of stationary inwardly extending teeth 21 are arranged in the outer sides of the compartments, being driven into the bars 8. The rolls 14 are driven in opposite directions at different rates of speed, and for this purpose, the shafts 15 are provided at their upper and projecting ends with intermeshing gear wheels 22 of different diameters. In order to drive the rolls, a main drive shaft 23 is journaled upon the end of the machine having the gears 22, and this drive shaft is also provided with a beveled gear 24 meshing with a beveled gear 25, carried by one of the shafts. It will thus be evident that upon the rotation of the shaft 23, the rolls will be revolved in opposite directions at different rates of speed.

The top wall of the casing 11, at its upper end, is provided with an inlet opening 26, and a shallow hopper 27 supported upon the upper end of the frame and constituting a connection between the four standards is provided with a delivery opening 28 communicating with the inlet 26. The peas are placed in this hopper 27, as shown in Fig. 3, and are delivered through the openings 28 and 26 into the casing. The bottom wall of the casing 11, contiguous to its lower end, is provided with a discharge opening 29, leading from which is a depending delivery

chute 30. An upwardly and rearwardly inclined blast conduit 31 is arranged in the frame, and the chute 30 communicates with the top of the same, between its ends. The upper end of the conduit 31 is open, and the lower end, which is arranged vertically, as shown at 32, is also open. A fan casing 33, located within the frame below the casing 11, has a delivery spout 34, which communicates with the conduit 31, just above the vertical lower end portion 32. Arranged within the casing 33 is a revolving fan 35, which is provided with a fan shaft 36, carrying a pulley 37.

The main drive shaft 23 is provided at one end with a large belt wheel 38 that has a handle crank 39, and the fan shaft may be belted directly to the pulley 37 by a belt, indicated in dotted lines in Fig. 1, at 40. Preferably, however, in order to secure a high rate of speed on the part of the fan, a countershaft 41 is journaled on the frame, and has a pulley 42 thereon, around which a belt 43 passes, said belt also extending around the wheel 38. Another pulley 44, located on the shaft 41, has a belt 45 extending around the same and around the pulley 37. Arranged below the lower delivery end 32 of the blast conduit 31 is a separator shoe, comprising side walls 46 with a forwardly and downwardly inclined bottom 47. A substantially horizontal screen 48 is arranged over the bottom 47. The rear end of the screen is open, while the front end is closed by a transverse wall 48¹, to which is pivoted a pitman 49. This pitman is connected to a crank 50, formed in the shaft 41.

Briefly described, the operation of the machine is as follows: the drive shaft 23, being suitably rotated, if the peas to be hulled are delivered into the upper end of the casing, they will be carried in spiral paths down the same, the pods will be opened, and the peas released. The peas will thus be operated upon by the teeth for a comparatively long distance, and as a result, it is not necessary to have the rolls of large diameter in order to drive them at a very high rate of speed, thus saving much power. This is a valuable feature, particularly in hand-driven machines, and moreover where the threshing rolls are driven at a high speed, the peas are apt to be broken by the blows delivered to them, thereby rendering them valueless for seed. After having passed the entire length of the rolls, they fall from the housing or casing into the blast conduit, where they are winnowed by the blast of air from the fan, the hulls and chaff being blown through the upper or delivery end of the conduit, while the peas fall into the oscillating shoe or sieve. The peas pass through the screen and roll down the inclined bottom 47, where they are delivered

into a suitable receptacle that may be placed therebeneath. The short pieces and short ends containing faulty peas are discharged through the rear end of the shoe, as illustrated.

Besides the advantages above mentioned, it may also be stated that by rotating the rolls at different rates of speed, one acts substantially as a concave for the other, and in addition to the coacting threshing action of the rolls, said rolls also cooperate with the stationary teeth. Furthermore the casing or housing for the rolls, being of light sheet metal and having the quality of "giving" or being pliable, if the peas are caught between the ends of the teeth and the casing, they are not as apt to be split or broken. Furthermore with the arrangement shown, the peas cannot fall through the machine unthreshed, even if fed into the same while the mechanism is not in operation.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a pea hulling machine, the combination with a casing disposed at an inclination, of cooperating hulling rolls set at an inclination and arranged longitudinally within the casing, teeth carried by the peripheries of the rolls and having overlapping paths of movement, means for rotating the rolls in opposite directions at different rates of speed, means for feeding peas to be hulled into the upper end of the casing, and means for delivering the peas from the lower end of the casing.

2. In a pea hulling machine, the combination with a casing disposed at an inclination and comprising top and bottom walls having inset portions forming two longitudinal compartments, longitudinally disposed hulling rolls located respectively in the compartments, means for rotating the rolls in opposite directions and at different rates of speed, radial teeth projecting from the rolls and having overlapping paths of movement, inset teeth projecting into the compartments, a supply hopper delivering through the top wall into the upper part only of the casing, and a discharge chute delivering from the lower end only of said casing.

3. In a pea hulling machine, the combination with a supporting frame, of an inclined casing of sheet material curved in cross section and having its upper and lower walls

inset, forming separate compartments, the upper wall having an opening at its upper end, the lower wall having an opening at its lower end, inclined rolls located longitudinally within the compartments and having teeth extending into the outer sides of the compartments, a hopper supported on the upper end of the frame and delivering into the upper opening, an upwardly and rearwardly inclined blast conduit having open ends, a chute leading from the lower end of the casing into the conduit between its ends, a fan having a spout communicating with the conduit, a shaking shoe arranged below the lower end of the conduit, a drive shaft, and means connected to the drive shaft for rotating the rolls and the fan and for shaking the shoe.

4. In a pea hulling machine, the combination with an elongated completely inclosed casing, of cooperating hulling rolls located longitudinally within the casing, projecting teeth carried by the peripheries of the rolls and having overlapping paths of movement, means for rotating the rolls at different rates of speed and in opposite directions, and means for delivering peas into one end of the casing and discharging them from the other end of said casing.

5. In a pea hulling machine, the combination with a casing having inwardly projecting stationary teeth in its opposite sides, of cooperating rolls disposed longitudinally within the casing and having teeth that operate in close proximity to the casing to insure their engagement with the pods and carry said pods into engagement with the stationary teeth, the teeth of the rolls having overlapping paths of movement, means for feeding material to one end of the rolls, and means for delivering from the opposite ends.

6. In a pea hulling machine, the combination with a casing, of inclined rolls located within the casing and having projecting teeth, means for rotating the rolls at different rates of speed to cause one to act as the concave of the other, stationary teeth cooperating with both rolls, means for feeding material into the casing at one end only of the rolls, and means for delivering the material from the other ends.

In testimony whereof I affix my signature, in presence of two witnesses.

REUBEN W. J. STEWART.

Witnesses:

WM. HOWARD,
W. P. MOORE.