A. L. & C. H. STEERE.

MACHINE FOR SHELLING AND GRADING PEANUTS.

APPLICATION FILED DEC. 29, 1911.

1,083,150.

Patented Dec. 30, 1913.

2 SHEETS—SHEET 1.

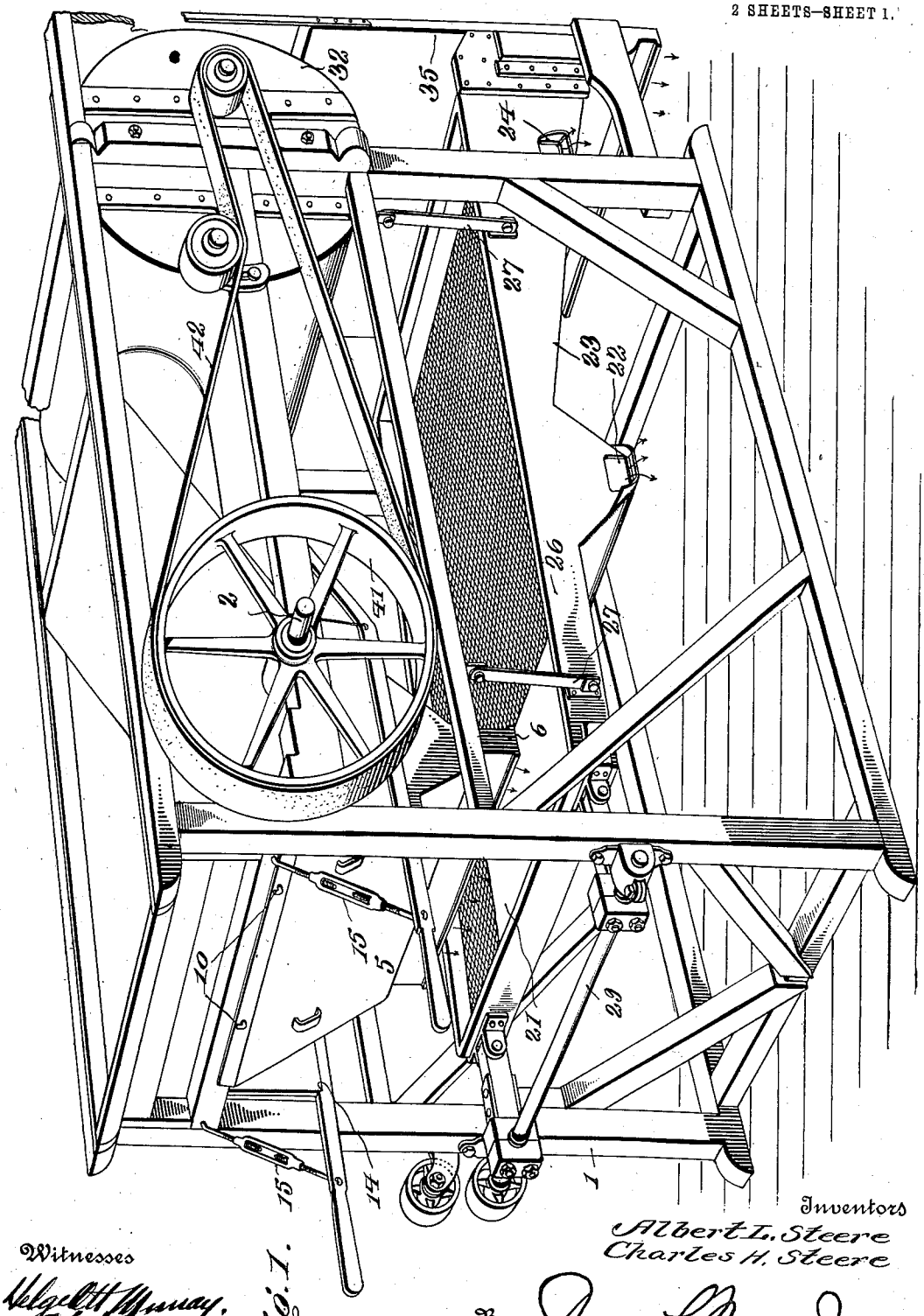


Fig. 1.

Witnesses

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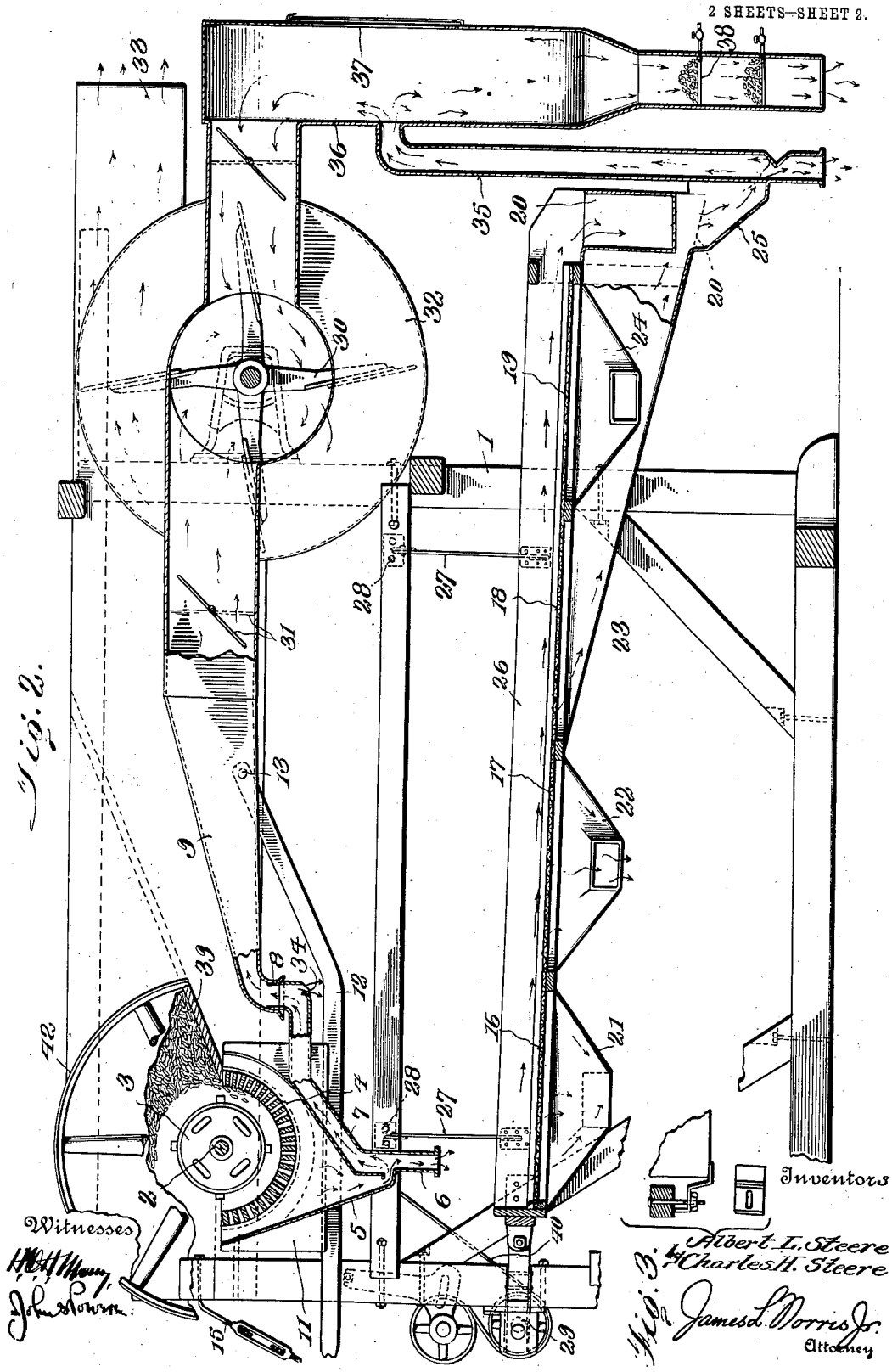


Fig. 2.

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Fig. 3.

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UNITED STATES PATENT OFFICE.

ALBERT L. STEERE AND CHARLES H. STEERE, OF PETERSBURG, VIRGINIA.

MACHINE FOR SHELLING AND GRADING PEANUTS.

1,083,150. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed December 29, 1911. Serial No. 668,489.

To all whom it may concern:

Be it known that we, ALBERT L. STEERE and CHARLES H. STEERE, citizens of the United States, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented new and useful Improvements in Machines for Shelling and Grading Peanuts, of which the following is a specification.

This invention relates to improvements in machines for shelling and grading peanuts and it proposes a machine in which the peanuts, after their passage through the sheller, will be graded in a continuous and reliable manner, according to both size and condition; in which the grading operations are effected by a novel and efficient combination of mechanical and pneumatic agencies; in which efficient provision is made for the delivery of shelled peanuts free from dust, hulls, or extraneous matter; and in which efficient provision is made for the complete recovery of all peanuts which pass through the sheller.

The above and other features of improvement will be readily apparent from a consideration of the drawings forming a part of this specification and in the light of the description to follow.

In the said drawings: Figure 1 is a perspective view of a peanut shelling and grading machine in which the features of the present invention are incorporated. Fig. 2 is a view thereof, partly in side elevation and partly in longitudinal section. Fig. 3 is a detail view of a spout supporting device to be herein described.

Similar characters of reference designate corresponding parts throughout the several views.

The working parts are supported from an upright frame designated generally by the numeral 1, and which needs no detailed description, it being sufficient to say that this frame is suitably braced and that it includes corner posts and longitudinal and transverse bars connecting the same and having their locations and dimensions selected with regard to the parts for which they furnish support.

The sheller comprises a ribbed cylinder 3 which is suitably mounted on the shaft 2, and works concentrically with relation to a concave cradle 4. The cradle 4 is arranged below the cylinder 3 and comprises a number of suitably spaced parallel bars which have a semi-circular cross sectional disposition and through which the peanuts and the shells stripped therefrom pass. The peanuts and the shells thus delivered from the cradle fall into a discharge spout 5, which terminates in a depending extension 6, through which the peanuts pass to the grading screens to be later referred to.

The invention comprehends the separation of the peanuts, from the chaff, *i. e.* the shells, skins, and dirt, during their passage through the spout 5. Accordingly, only the peanuts will pass through the extension 6, while the chaff will pass through a conduit 7 which is set into the spout 5 and terminates adjacent the extension 6. It may be noted that the latter is off-set with relation to the body of the spout in such manner that the products delivered by the cradle, pass under the conduit 7, the peanuts falling perpendicularly through the extension 6 and the chaff passing perpendicularly into the conduit 7. This disposition of parts has been selected because it is best calculated to provide for an efficient initial separation of the peanuts and chaff.

The spout structure, which, in this instance, comprehends the spout 5, the extension 6, and the conduit 7, may, when necessary, be removed as a unit from the machine and when the spout structure has been removed, the cradle 4 may be removed with equal facility for the purpose of cleaning, substitution, or repairs. The forward end of the conduit 7 is fitted as at 8 in the adjoining end of an air shaft 9 of which the conduit forms, in effect, a continuation or extension. The spout structure is supported by brackets 10^a secured to side bars of the frame adjacent the connection 8, and by hooks 10, carried by some fixed part of the frame or of the machine and engaging through openings in the outer and adjacent side of the spout 5. The brackets 10^a are held in place by bolts which pass through slots in said brackets, and by loosening the bolts the brackets may be slipped outwardly so as to disengage the conduit 7 and enable the latter to be moved downwardly so as to break its connection 8 with the shaft 9. When said conduit has thus been disengaged from said shaft, the hooks 10 may be disengaged from the spout 5, and the whole spout structure may then be removed as a unit from the machine.

The sides of the spout 5 are cut away concavely at their upper ends and the bars

which form the cradle 4 project beyond the sides of the spout, through the cut away portions thereof and are connected to vertical side plates 11. Having in view the ready removal and assemblage of the cradle, the support for the latter comprises a pair of longitudinally disposed levers 12, the inner ends of which are pivoted as at 13 to side bars of the frame 1. The plates 11 have their under edge faces grooved or recessed as at 14 to slidingly fit over the levers 12. These levers are normally sustained with their major portions in a horizontal position by hangers 15, the upper ends of which are suitably connected to or anchored in the frame of the machine, and the lower ends of which have detachable hook-like engagement with said levers. The hangers 15 are made in upper and lower sections which are connected by a turn buckle and the sections of each hanger may be completely dissociated by a manipulation of the turn buckle connection. Assuming that it is desired to remove the cradle 4 for any particular purpose, the spout structure is first removed in the manner explained, and thereupon the sections of the hangers 15 are dissociated, whereby the levers 12 may be lowered on their pivots 13 as far as may be necessary for the purpose in view. At such time the cradle 4 will move rearwardly by gravity, its side plates 11 sliding along the levers 12, as will be readily apparent. When the cradle has moved along said levers to a sufficient extent, it may be lifted bodily therefrom and replaced after being cleaned or repaired, or a new cradle may be substituted. In assembling the cradle, its side plates 11 are placed on the levers 12 in the manner explained, and the cradle is pushed into a position under the cylinder 3, at which time the levers 12 are raised into a horizontal position and are secured by connecting the sections of the hangers 15 through the agency of the turn buckles. Thereafter, the spout structure is replaced by engaging the hooks 10 with the outer side of the spout 5, and by establishing the relation of the conduit 7 and the air shaft 9 through the agency of the connection 8.

The peanuts which fall from the extension 6 are mechanically graded as to size, preferably through the agency of a series of continuous riddles disposed in a common plane. Four of these riddles are shown, being designated in the order of their arrangement by the numerals 16, 17, 18, and 19 respectively. The riddle 16 is arranged at the rear end of the machine immediately under the extension 6, and is of relatively fine mesh, being provided to effect the separation of the nuts of smallest size and of split nuts and fragments of nuts, these products being known to the trade as "No. 3's" and having a relatively small value. The riddle 17 which is adjacent the riddle 16 is of somewhat coarser mesh and is provided to effect the separation of a grade of nuts known to the trade as "No. 2's", and which are intermediate in size and value between the No. 3 nuts which pass through the riddle 16, and the nuts known as "No. 1's" which pass through the riddle 18. The No. 1 nuts are those of standard and merchantable size, and of which by far the largest yield is obtained. In addition to the three grades of nuts referred to, there is still another grade known as the "Jumbos", the number of which is conparatively small. These are nuts of extraordinary size and their separation is provided for by the riddle 19, which is located at the forward end of the machine. The machine provides not only for the separation of the shelled nuts into the several grades referred to, but for the separation of the shelled nuts from any unshelled nuts which may have escaped the action of the shelling mechanism and for the grading of the unshelled nuts according to their size. The unshelled nuts are known as "nubs" and they are graded according to size into "No. 1 nubs" and "No. 2 nubs". The manner of separating and grading the nubs will be referred to later, it being sufficient for the present to say that the No. 1 nubs, being those of largest size and of greater size than the "Jumbo" nuts, pass over the forward end of the "Jumbo" riddle 19 and into a laterally disposed and inclined discharge chute 20.

The riddles 16, 17, and 19 are arranged above laterally disposed and inclined discharge chutes 21, 22, and 24, respectively, which may discharge at one or both sides of the machine, as preference may dictate. The riddle 18 is arranged above a discharge chute 23, which extends longitudinally of the machine and is forwardly and downwardly inclined. It may be noted that the chute 23 extends under the chute 24 and that the forward extremity of the chute 23 extends under the chute 20, and well over the mouth of a spout 25, to which a later reference will be made.

The riddles 16, 17, 18, and 19, their respective discharge chutes 21, 22, 23, and 24, and the discharge chute 20, for the "No. 1 nubs" are carried by a vibratory frame 26, the support for which preferably consists of spring steel hangers 27 of such relative length that the riddles, as a series, have a forward and downward inclination of sufficient degree to induce the movement of the nuts in a forward direction and at a desired rate of speed. In order that the inclination of the riddles may be varied as preference and working conditions may dictate, the upper ends of the hangers 27 are connected to plates 28, which are secured in any suitable manner for longitudinally slid-

able adjustment to side bars of the frame 1. The longitudinal vibration of the riddles as a series is effected by eccentric strap and pitman connections from a transverse shaft 29, arranged at the rear end of the frame.

As stated previously, the separation of the nuts and the chaff is effected in the spout 5, the chaff passing into the conduit 7. The air shaft 9, to which said conduit is connected, leads to a fan 30 which is arranged at the forward end of the machine and is operable to produce a suction current in the shaft 9, the intensity of which may be regulated by a suitable damper 31. The chaff passing through the shaft 9 is drawn into the casing 32 of the fan 30 and is discharged from the latter through one or more outlet tubes 33, with which said casing is provided. The conduit 7, which is of considerably less diameter than the shaft 9, is upwardly and perpendicularly offset adjacent the connection 8, and the portion of said conduit so offset is provided at its lower end with an opening 34, through which any entrained peanuts that may have been carried over with the chaff may escape and fall upon the riddles.

The spout 25, into which the No. 1 peanuts run from the chute 23, passes the peanuts into a vertical conduit 35 through the open lower end of which the peanuts are finally discharged into any receptacle of suitable character, provided for the purpose. The "No. 2 nubs" are unshelled peanuts of a size equal to the size of the No. 1 shelled peanuts, but, of course, of considerably less weight. These "No. 2 nubs" of which there will be relatively few, together with the No. 1 peanuts, pass through the riddle 18, along the chute 23, through the spout 25, and into the conduit 35, from the lower end of which the No. 1 peanuts discharge by gravity. The conduit 35 communicates at its upper end with an air shaft 36, of considerably greater diameter and which, in turn, communicates with the fan casing 32, and is provided with a damper to regulate the intensity of the air current. The shaft 36 has an opening, suitably located above its discharge end and in relation to the conduit 35. This opening, controlled by a draft regulating slide 37, not only supplies air to said shaft, but serves the further purpose of enabling access to certain of the bolt connections employed when the shaft 36 is to be removed from the machine. Inasmuch as the No. 2 nubs are of considerably less weight than the peanuts, said nubs will be drawn upwardly through the conduit 35 into the shaft 36, and owing to the increased diameter of the latter and the consequent lessened strength of the air current, the nubs will drop to the bottom of the shaft 36 from which they will ultimately be discharged. By preference, the shaft 36 carries near its lower end two counterweighted tilting valves or gates 38, upon which the nubs fall and which yield on their pivots when the accumulated weight of the nubs is sufficient to overcome the counterweights. The arrangement of the conduit 35 and the shaft 36, in relation to the fan 30, not only provides for the separation of the standard or most valuable grade of peanuts from any nubs that may have been carried over therewith, but provides also for the delivery of the peanuts in a clean condition, since any chaff or extraneous matter which may have accumulated during the passage of the peanuts along the riddles will be drawn upwardly through the conduit 35, and through the shaft 36, into the fan casing 32, from whence it will be discharged through the outlet tubes 33.

To summarize the operation of the machine: Peanuts are fed to the sheller in a relatively large quantity along an inclined shelf 39 which terminates adjacent the cradle 4, the peanuts passing between said cradle and the cylinder 3 and being freed from their shells by these instrumentalities. The shelled peanuts and the chaff then pass into the spout 5, wherein a separation is effected, the peanuts dropping upon the riddle 16 and the chaff passing through the conduit 7, air shaft 9, fan casing 32, and discharge tubes 33, any peanuts carried over with the chaff through the conduit 7 being passed to the riddles through the opening 34. The shelled peanuts are mechanically separated by the riddles into the four grades referred to, the "No. 1 nubs" being discharged through the chute 20 and the "No. 2 nubs" passing with the No. 1 peanuts into the conduit 35, in which the nubs and peanuts are separated and the peanuts freed from any accumulated matter, the peanuts discharging through the lower end of said conduit, the nubs being drawn into the shaft 36, in which they collect and from which they are ultimately discharged by the automatically acting valves 38, and dust or other foreign matter being drawn into the fan casing 32 and discharged through the outlet tubes 33.

Any desired arrangement of driving means may be employed. As shown, the shaft 29 is driven from the shaft 2 by a belt 40, trained over a pulley (not shown) at one end of said shaft 2, and the shaft of the fan 30 is driven by a belt 41, trained over a pulley 42 upon the other end of the shaft 2.

Having fully described our invention, we claim:

1. In a machine of the type set forth, the combination with a peanut grading screen, of a vertical conduit which receives shelled peanuts and nubs from said screen and which has an open lower end through which the shelled peanuts may fall, an air shaft of greater diameter than the conduit and connected to the upper end of the latter, the

air shaft having an opening, suitably located above its discharge end and in relation to said conduit, and through which air may pass into said shaft, and a fan to produce a suction current through the air shaft and the conduit and to thereby cause the separation of the shelled peanuts and nubs in the conduit.

2. In a machine of the type set forth, in combination, peanut shelling means, a spout structure supported in relation to the shelling means and into which the peanuts and chaff pass from said means, said spout structure comprising a spout having a peanut delivery extension and a conduit connected to the spout and through which the chaff is carried, an air shaft, a detachable connection between the air shaft and the conduit and means detachably engaged with the outer side of the spout and furnishing support for the spout structure.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ALBERT L. STEERE.
CHARLES H. STEERE.

Witnesses:
HUNTER A. YOUNG,
ROBERT L. REGESTER.