April 9, 1929. L. C. GEHRING ET AL 1,708,057

PROCESS OF CLEANING AND SEPARATING VEGETABLES FOR CANNING

Filed May 13, 1924 4 Sheets-Sheet 1

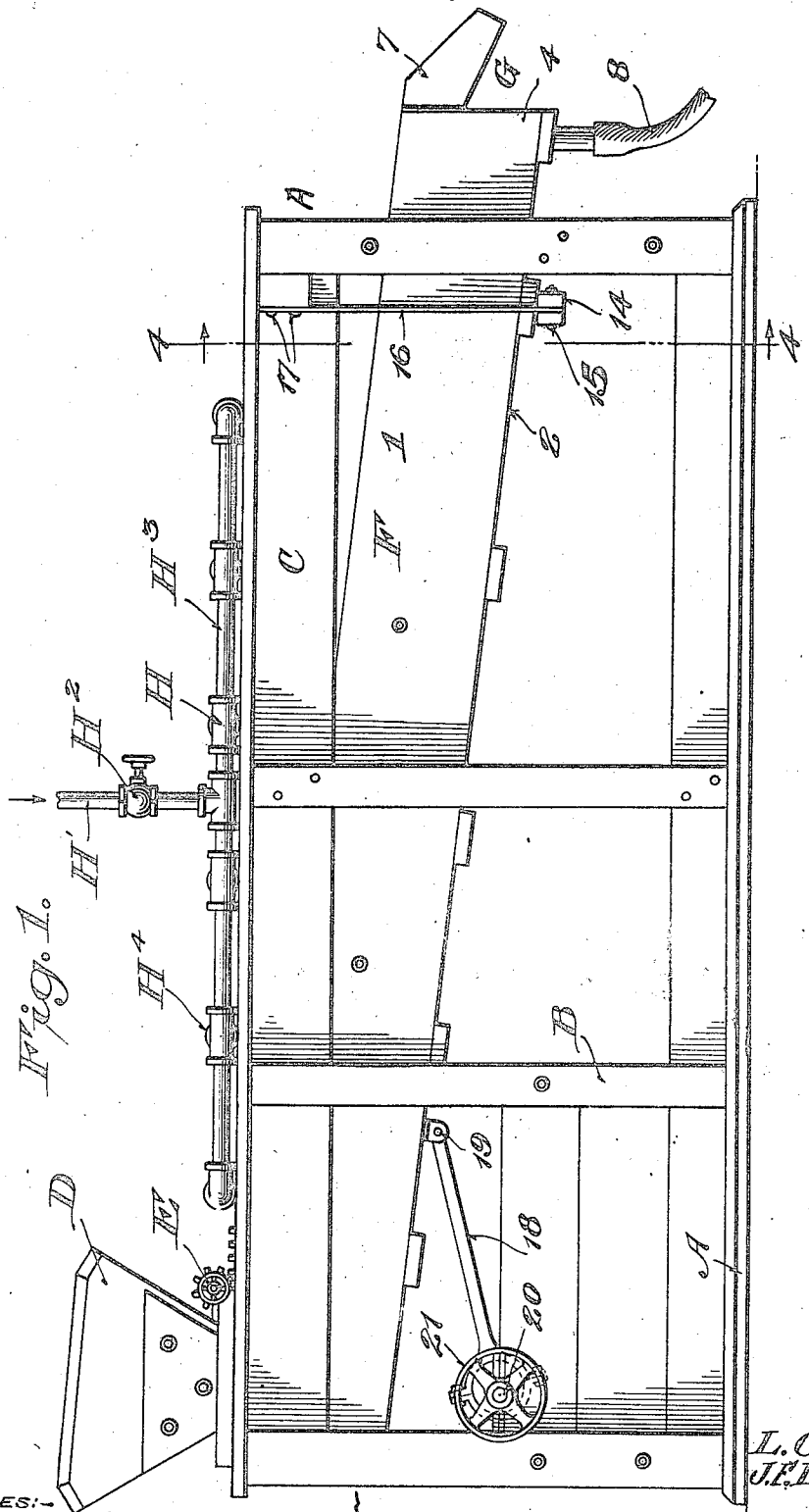


Fig. 1.

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Filed May 13, 1924 4 Sheets-Sheet 2

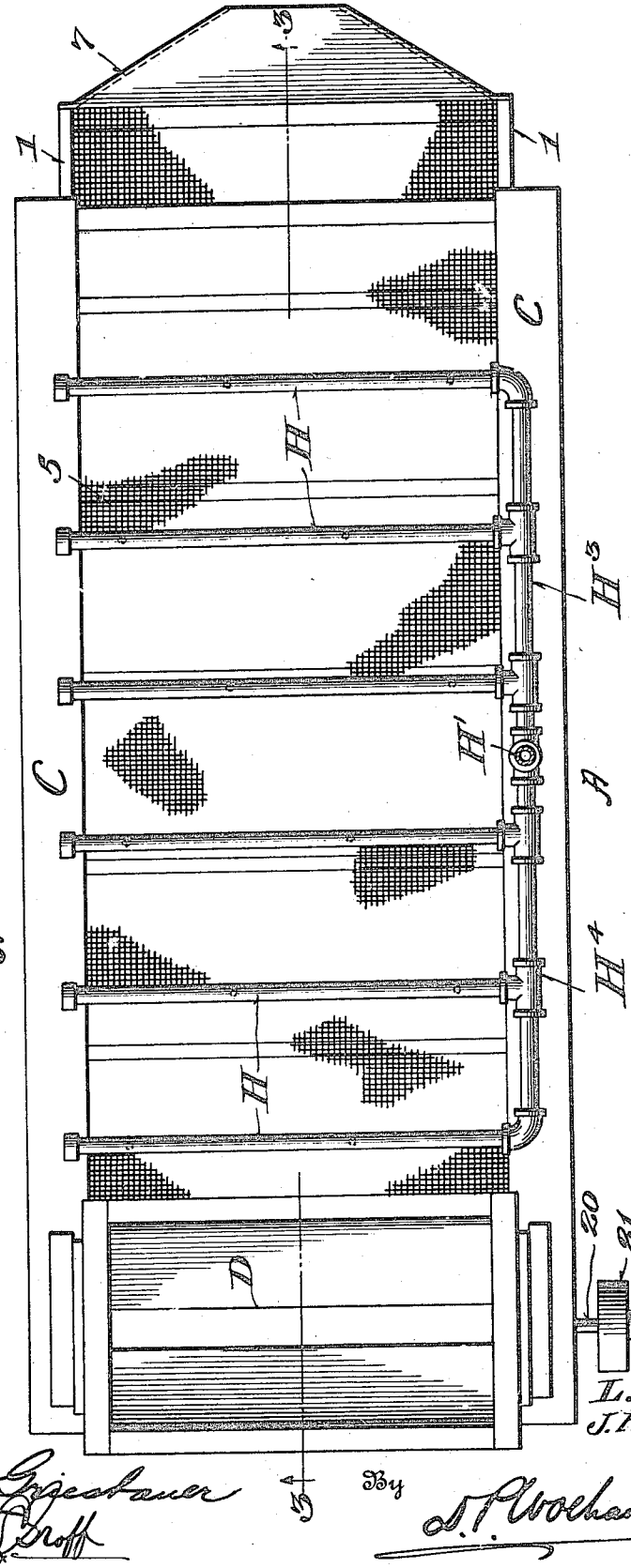


Fig. 2.

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PROCESS OF CLEANING AND SEPARATING VEGETABLES FOR CANNING

Filed May 13, 1924 4 Sheets-Sheet 3

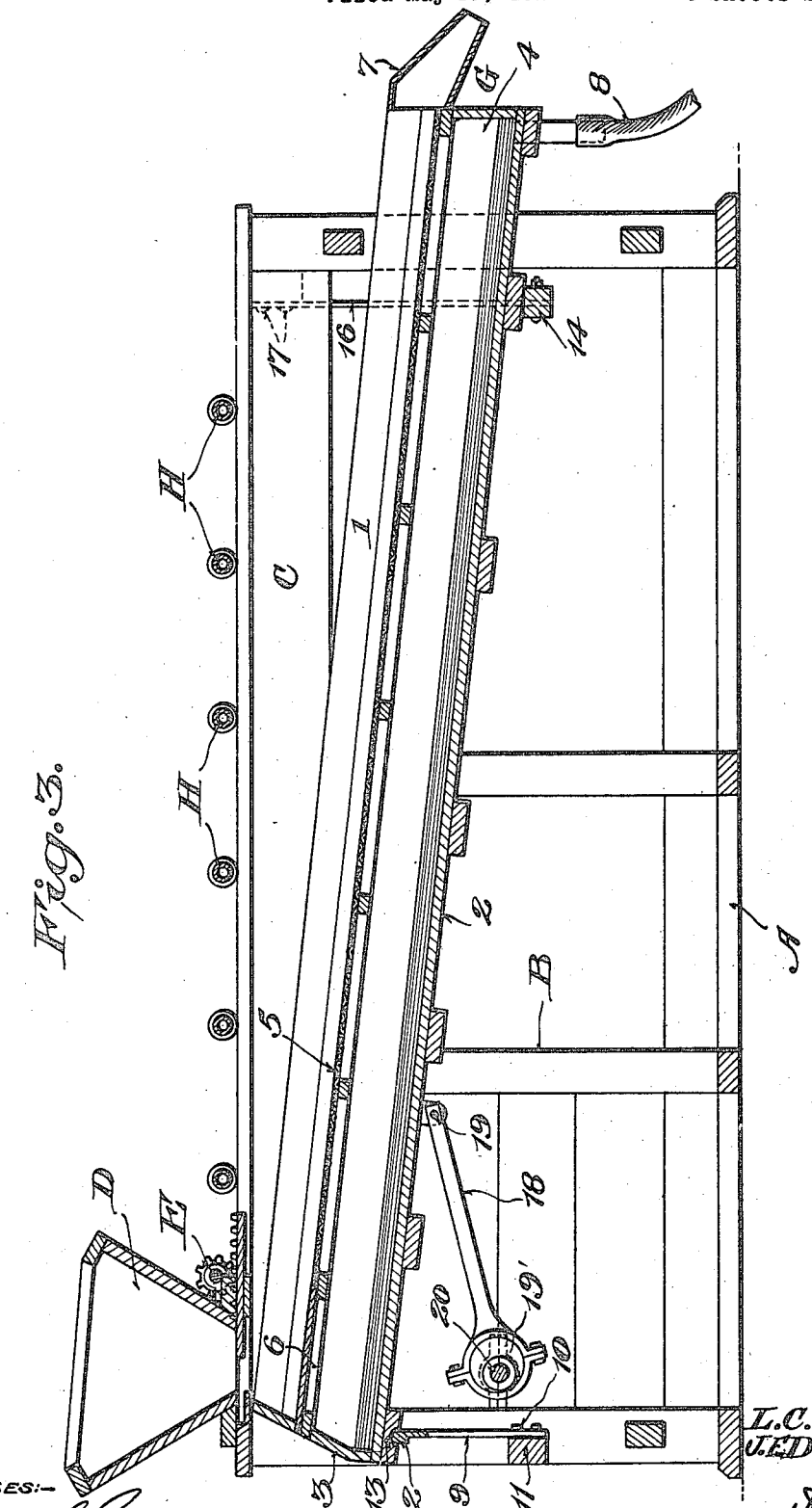


Fig. 3.

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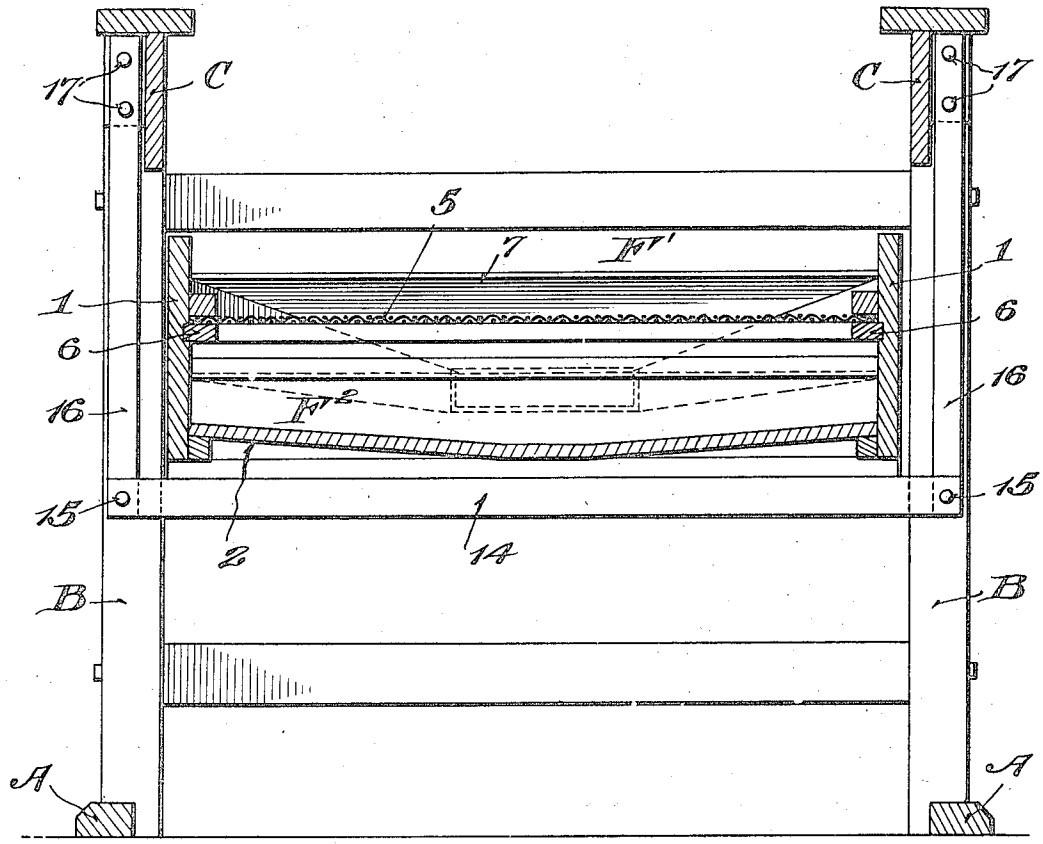
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PROCESS OF CLEANING AND SEPARATING VEGETABLES FOR CANNING

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Fig. 4.



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UNITED STATES PATENT OFFICE.

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PROCESS OF CLEANING AND SEPARATING VEGETABLES FOR CANNING.

Application filed May 13, 1924. Serial No. 713,014.

This invention relates to process of thoroughly and expeditiously removing foreign matter, hulls and the like from vegetables, more particularly, vegetables of the type of peas or beans which present a more or less comminuted mass when handled in bulk, preparatory to canning.

To that end the invention contemplates a simple and practical construction having the capacity for handling food articles of the character described preparatory to packing or canning in such a way as to effectually remove dirt, hulls, shells, damaged specimens, adulterations, or inferior ingredients, thereby insuring that only a uniformly perfect and wholesome stock is delivered to the cans, jars, or other containers.

Heretofore, it has been the practice to effect the cleaning of peas and beans by hand labor, and not only is that practice expensive and tedious but because of the deceptive character of some of the foreign matter carried along with the food articles, detection is difficult. Furthermore, hand separation is likely to involve a mashing or crushing of the product.

Accordingly, the invention has in view a process that will reduce manual labor to a minimum and mechanically clean and separate small hull particles and split or broken meats from the whole meats by proper agitation and washing thereby simultaneously dissolving lumps of dirt and separating the imperfect meats and undesirable foreign matter.

A further object of the invention is to provide a simple and substantial construction which may be economically made and easily maintained in operative condition.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a side elevation of the improved apparatus.

Figure 2 is a top plan view thereof.

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 1.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

The present invention is, as heretofore indicated, of special utility in the process of handling of peas and beans in the bulk after they have been shelled by the usual threshing outfit and after they have been graded and blanched or partly cooked. Heretofore this step has been customarily performed by hand labor after the peas or beans have been laid out on a table or traveling conveyor, and, of course, the effectiveness of the cleaning operation depends entirely upon the accuracy, adeptness and experience of the persons employed for that work. Obviously, that practice is not only unreliable but is slow and wasteful, because, as has been demonstrated, a machine or apparatus of the present type, working at normal capacity will remove in approximately one-half hour about one bushel of hulls, dirt and other foreign substances and ordinarily it would require the labor of one hundred people working for the same period to accomplish that end. Therefore, the present machine is particularly designed with a view to effecting a considerable economy in labor and time and also providing a standardized high grade output.

Referring more particularly to the drawings which illustrate a practical embodiment of the invention it will be observed that the same comprises in its organization a suitable main frame A including the vertical struts or supports B for carrying the super-structure or top rail C, and a feed hopper D having a manually controlled gate E for regulating and controlling the supply of material to the combined cleaning and separating unit designated generally as F. The said unit F is preferably suspended in the frame work of the apparatus in such a way as to have a longitudinal vibratory or reciprocatory movement and is also preferably arranged in a downwardly inclining position in such a way that the vibration thereof will assist the gravitation of the articles being handled from the hopper or feeding end toward the discharge end G.

On the top C of the frame there is provided a washing system designated generally as H, the same preferably consisting of a

supply pipe H^1 having a suitable control valve H^2 which supplies a manifold pipe H^3 which carries a plurality of transversely disposed spray pipes H^4 arranged over and above the combined cleaning and separating unit F. The said spray pipes H^4 are provided with jet openings which project a deluging spray of wash-water downwardly over the articles passing through the combined cleaning and separating unit F, and due to the fact that the said pipes are mounted on the horizontal top rail C while the body of the unit F inclines downwardly, the washing spray from the pipes H^4 strikes the articles on the foraminous partition of the unit F with gradually diminishing force as they approach the discharge end of the unit, thereby preventing the mashing or bruising of peas or beans softened by contact with the wash water from the preliminary spraying pipes.

Referring now more particularly to the construction and manner of mounting the said unit F it will be observed that the same is preferably of elongated box-like formation and comprises the opposite side members 1—1 having a troughed bottom 2 and the closed end walls 3 and 4 respectively located at the upper and lower ends of the unit. Within and between the walls 1—1 there is provided a suitable foraminous partition or screen 5 which may be carried in any suitable and convenient manner, as by the frame 6, and mounted about mid-way of the walls 1—1 to thereby divide the interior of the box-like unit into an upper food handling compartment F^1 and a lower waste compartment F^2. The screen 5 which is preferably of about #6 mesh extends from side to side and from the bottom end of the unit F to a point short of the delivery zone from the feed hopper D. At the point directly beneath the discharge end of the hopper D an imperforate plate is provided so that there is no danger of the peas and beans issuing from the feed hopper being forced through the screen due to the impact of their fall from the feed hopper onto the screen. It will therefore be apparent that the upper end of the separating partition or member 5 is formed by an imperforate plate located beneath the hopper.

The lower end of the combined washing and separating unit F is provided with a delivery spout 7 which receives all of the material from the discharge end of the screen 5, and the lower extremity of the waste compartment F^2 is provided with a discharge connection 8 which leads to waste.

For the purpose of suspending the unit F in the frame, the upper and higher end thereof is preferably supported upon the upright spring arms 9, which are secured as at 10 to the cross-bar 11 of the frame and have a relatively enlarged or upper head portion 12 for fitting into a suitable socket 13 of the bottom or floor 2. The lower end of the unit rests upon a suitable cross-bar 14 which is attached as at 15 to the lower ends of the pendant spring members 16 which are in turn secured as at 17 to the top C of the frame A. Adjacent the upper end of the unit there is provided suitable reciprocating means preferably in the form of a lever 18 which is connected as at 19 with the bottom 2 of the unit and is given a reciprocating motion by the cam or eccentric 19′ mounted upon a drive shaft 20 which may carry a pulley or equivalent member 21 for connecting with a suitable source of power, such for example, as a motor or engine of any well known type.

From the foregoing it will be apparent that after the hulled peas or beans are placed in the feed hopper D their passage into the cleaning and separating unit may be regulated at will by the operator by manipulating the feed gate E. After the delivery of the peas and beans onto the receiving plate 6 the vibratory motion of the unit will serve to assist the shifting or movement thereof onto the screen 5 over which the washing spray from the pipes H^4 is directed. As the unit vibrates or moves longitudinally in a reciprocatory manner the peas or beans will be spread out in a single layer over the screen 5 and obviously any dirt or foreign matter mixed therewith will be washed by the gentle but effective spray into the waste compartment F^2. Also, emasculated or damaged particles will drop through the mesh of the screen 5 and be carried to waste through the outlet 8 at the lower end of the unit. After passing through the length of the screen 5, and being subject to the cleansing action of sprays issuing from the battery of washing pipes, a thoroughly cleaned and uniformly whole product is delivered through the discharge spout 7.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit of the invention and scope of the appended claims.

We claim:—

1. A process for cleaning and separating peas or beans and the like which consists in simultaneously subjecting the same to agitation beneath a plurality of washing jets, the first of which level the mass and sweep away the hulls and superfluous material, and subsequently subjecting the separated product to the washing action of the remaining weaker jets.

2. A process for cleaning and separating peas or beans and the like which consists in simultaneously agitating the same beneath a series of washing jets of progressively diminishing force, the first of which level the

mass and sweep away the hulls and superfluous material, and the succeeding ones of which subject the separated product to the washing action of the weaker jets.

3. A process for cleaning and separating peas or beans and the like which consists in first subjecting said peas, beans or like to the action of a relatively strong washing jet which levels the mass and sweeps away the hulls and superfluous material and then subjecting the separated product to the washing action of weaker jets.

In testimony whereof we hereunto affix our signatures.

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