

(No Model.)

2 Sheets—Sheet 1.

W. H. WEBB.
GRAIN SEPARATOR MACHINE.

No. 515,542.

Patented Feb. 27, 1894.

Fig. 1.

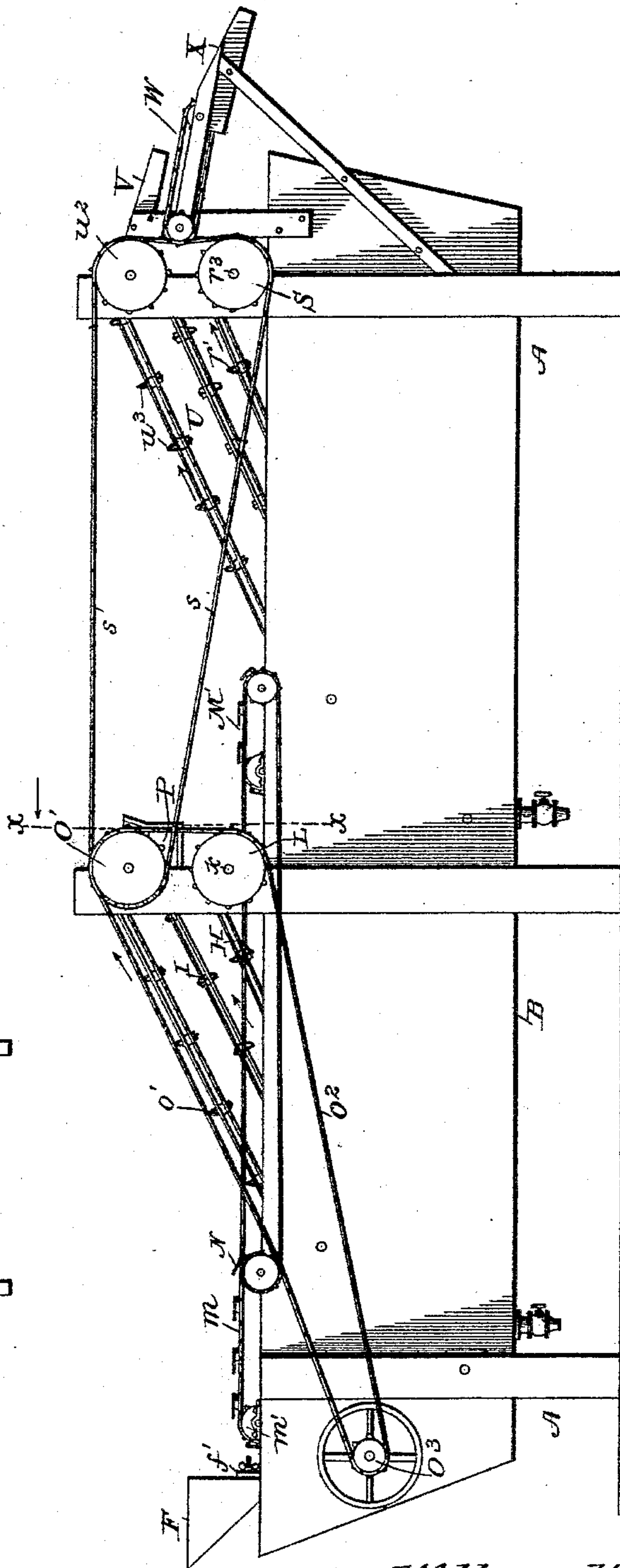
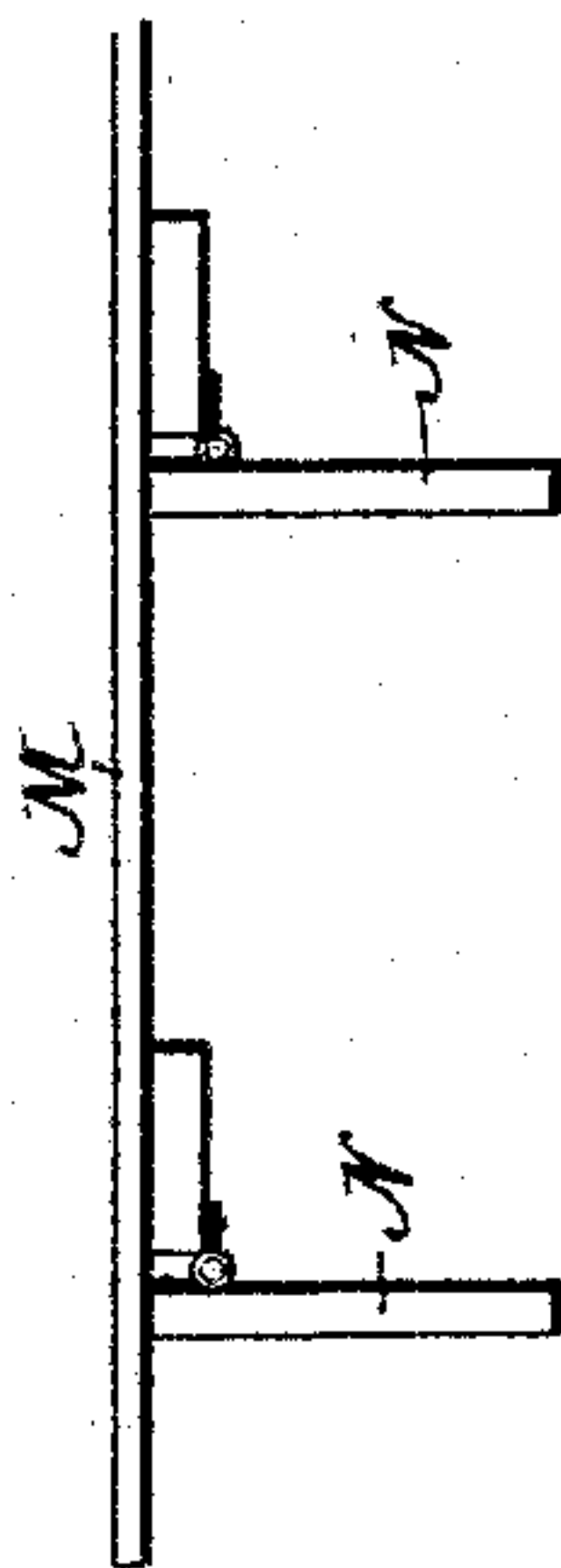


Fig. 4.



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2 Sheets—Sheet 2.

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Fig. 5.

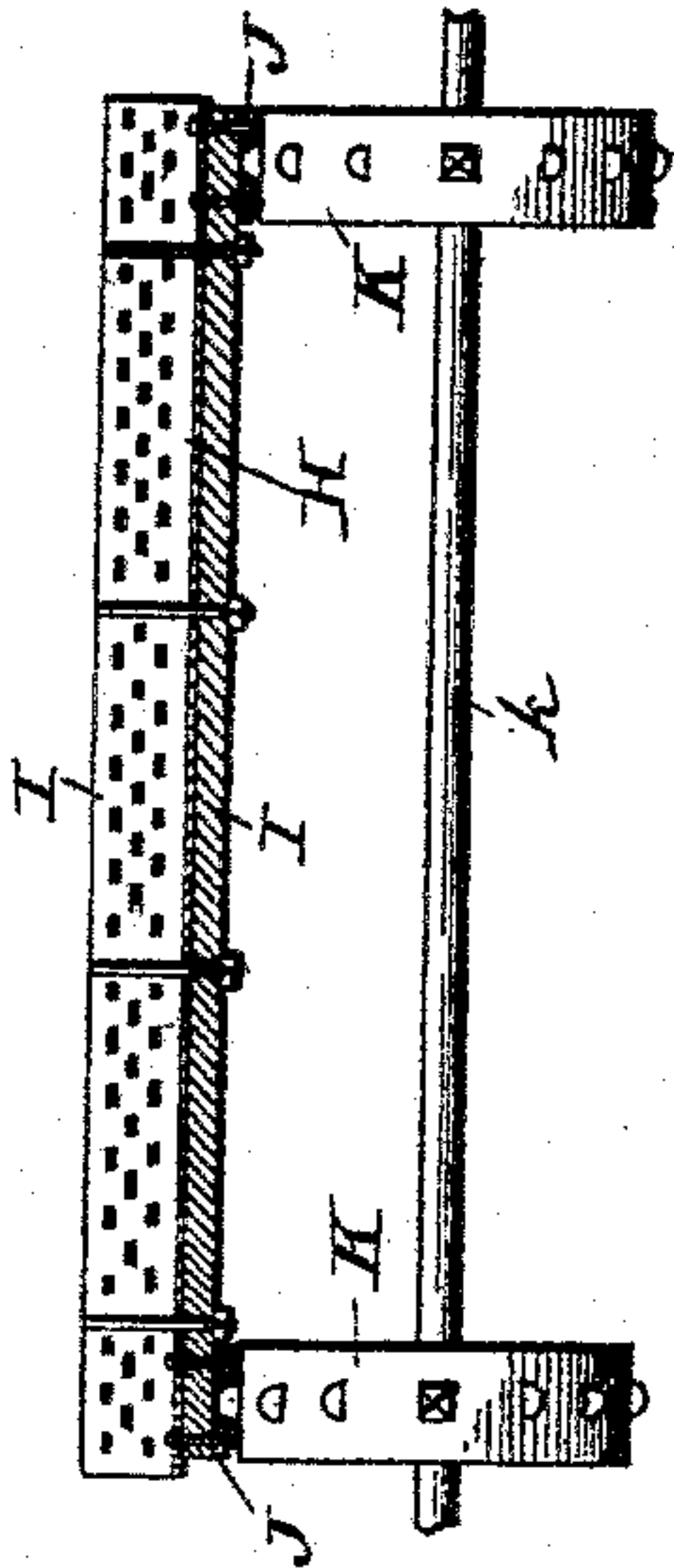


Fig. 2.

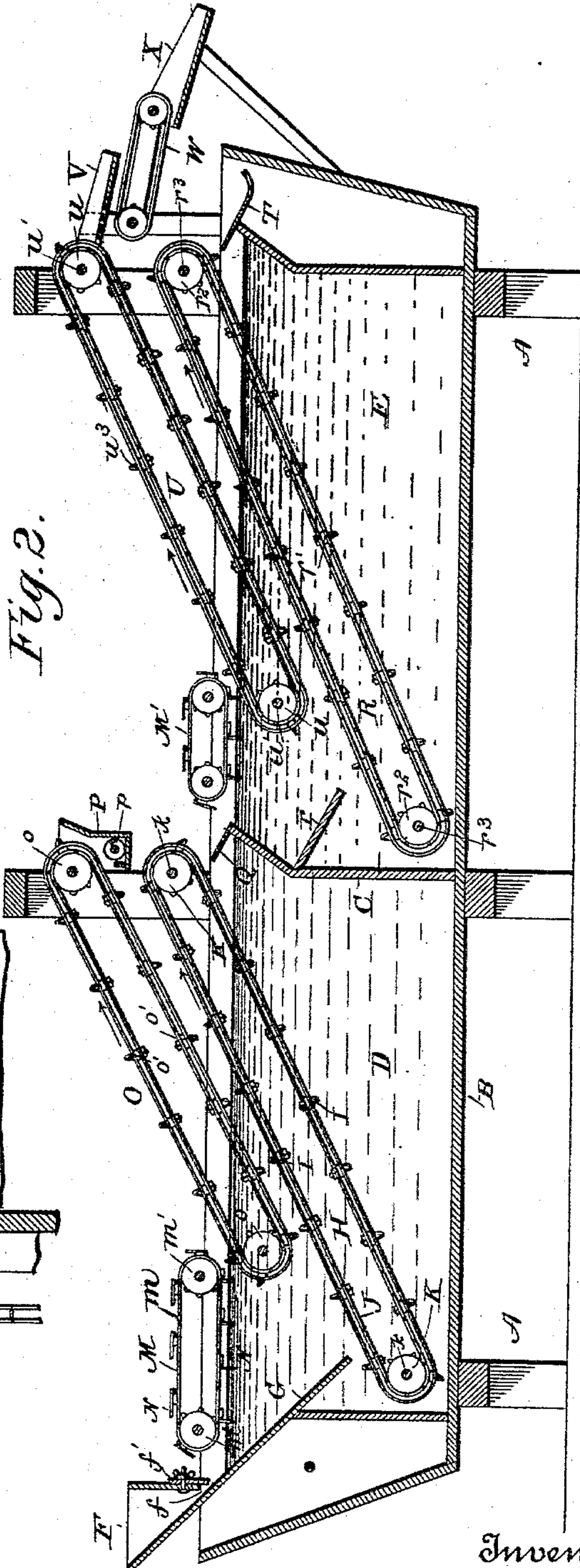
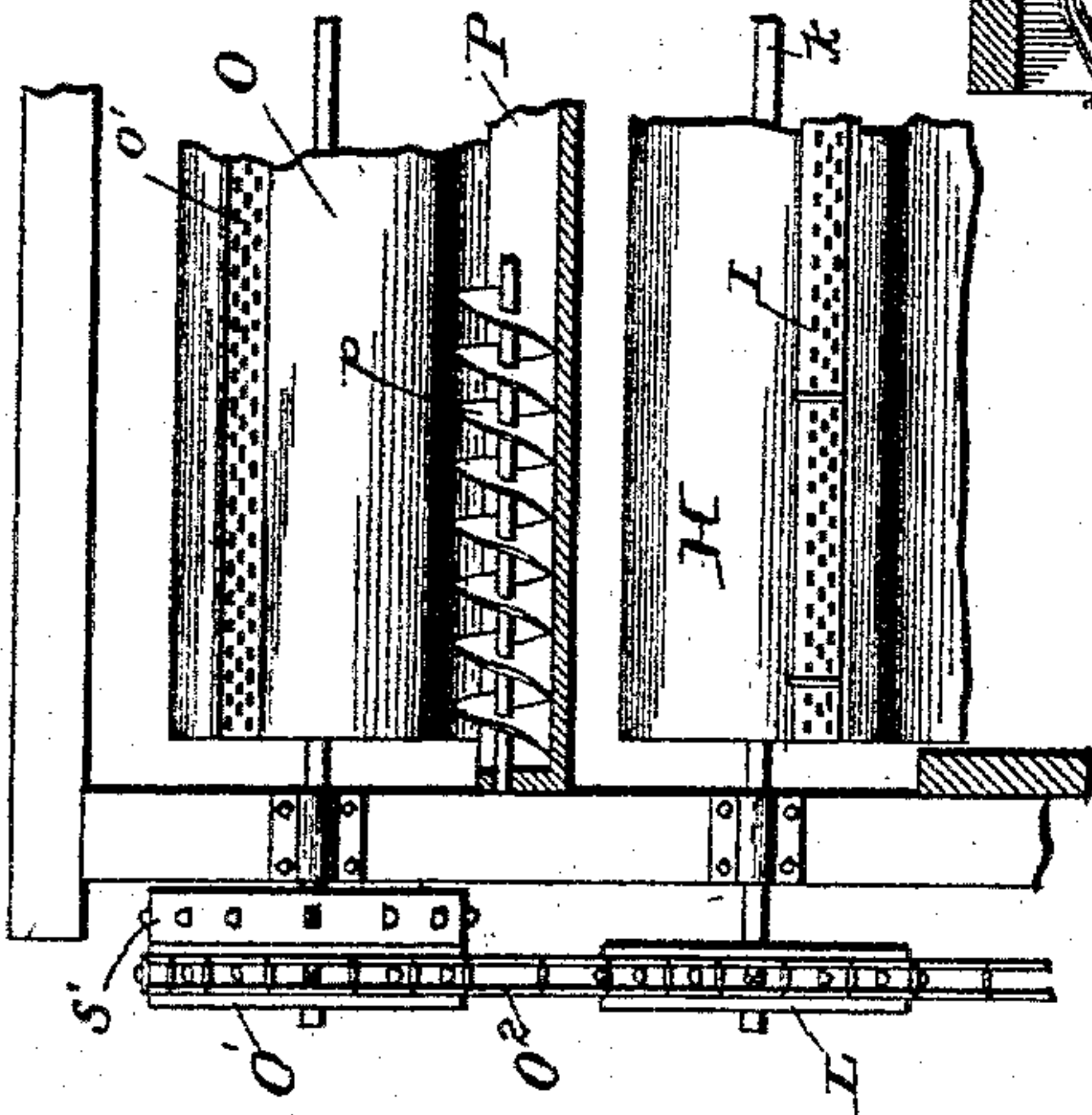


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM H. WEBB, OF LONGMONT, COLORADO.

GRAIN-SEPARATOR MACHINE.

SPECIFICATION forming part of Letters Patent No. 515,542, dated February 27, 1894.

Application filed May 11, 1893. Serial No. 473,772. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WEBB, a citizen of the United States, residing at Longmont, in the county of Boulder and State of Colorado, have invented a new and useful Grain-Separator Machine, of which the following is a specification.

This invention relates to grain separator machines; and it has for its object to provide an improved machine of this character, which, while particularly adapted for the separation of green from ripe peas for the convenience of canning factories, at the same time is also adapted for use as a grain separator for the separation of oats and barley and weed seeds from wheat, and other separations which will be hereinafter referred to.

To this end the main and primary object of the present invention is to provide an improved separator machine which dispenses with the ordinary sieve and air currents and relies particularly upon the natural specific gravity of the elements to be separated from each other.

With these and other objects in view, which will 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.

In the accompanying drawings:—Figure 1 is a side elevation of a separator constructed in accordance with this invention. Fig. 2 is a central vertical longitudinal sectional view of the same. Fig. 3 is a detail sectional view on the line $x-x$ of Fig. 1. Fig. 4 is an enlarged detail sectional view of a portion of one of the drag aprons. Fig. 5 is a detail sectional view showing the attachment of one of the perforated elevator slats.

Referring to the accompanying drawings, A represents a suitable frame in which is supported the elongated tank B, having a central partition C, which separates the tank into separate and independent vats D, and E, respectively, which vats are preferably designed to hold water having sufficient salt in order to give it the desired degree of density, the density of the liquid in the two vats being of different degrees as will be noted in connection with the devices employed in each

vat, and it will of course be understood that according to the nature and character of the work required of the separator, the liquid in the separate vats will of course be changed to suit the particular work.

Arranged over one end of the vat D, which may be termed the primary vat, is the feed box or hopper F, having at its lower end the feed opening f , controlled by the adjustable gate f' , and leading from the box or hopper F, is the inclined feed chute G, which projects below the surface of the liquid in the primary vat in close proximity to the inclined elevator apron H. The inclined elevator apron H, is made of suitable material such as prepared canvas, rubber or wire cloth, and is provided with the perforated elevator slats I, connected at their ends to the opposite endless apron chains J, passing over suitably arranged sprocket wheels K. The sprocket wheels K, of the apron H, are arranged inside of the vat D, near one lower corner thereof, and directly above one upper edge thereof, respectively, and the upper set of sprocket wheels K, are mounted on a suitable shaft k , driven by the drive sprocket wheel L, at one end of the shaft k .

Assuming the separator to be employed in separating green and ripe peas, the liquid in the vat D, is of a proper density so as to allow the green and ripe peas of their own specific gravity to be directed by the inclined feed board G, onto the first elevator apron H, while at the same time floating all trash and foreign matter. The trash and foreign matter which is thus separated from the peas in the primary vat D, and is floated on the surface of the liquid in such vat, is skimmed off of the liquid by the horizontal endless drag apron M. The endless drag apron M, carries the opposite sprocket chains m , which pass over suitably arranged sprocket wheels m' , driven by means of suitable gearing, and arranged at the upper edge of the vat D, and said endless drag apron M, carries the pivoted drag blades N, which feather on the top portion of the apron, and fall into a vertical position of their own weight to drag the trash and foreign matter along the surface of the liquid up to the refuse apron O. The refuse apron O, is arranged at an incline above the elevator apron

H, and has its inner end disposed directly under one end of the horizontal drag apron M, and said refuse apron O, is carried on the end sprocket wheel o , and is also provided with the perforated elevator slats o' , which slats as well as the slats I, of the apron H, allow the brine or liquid to settle back onto the apron and drip back into the vat, without being elevated together with the material on such aprons. The apron sprocket wheels o , are mounted on suitably arranged shafts journaled in the vat D, and in the frame above the shaft k , respectively, and the upper wheel shaft of said apron carries the drive sprocket wheel O' , over which passes the drive sprocket chain O^2 . The drive sprocket chain O^2 , also passes over the sprocket wheel L, of the shaft k , and is driven from the main drive wheel O^3 , suitably arranged.

The refuse elevated by the apron O, is deposited from its upper discharging end into the transverse conveyer box P, in which turns the screw conveyer p , which serves to carry the refuse to a point of deposit, while the green and ripe peas which are elevated by the inclined elevator apron H, are discharged from the upper end of such apron onto the perforated inclined chute board Q. The perforated inclined chute board Q, allows the liquid to drip back into the primary vat D, and at the same time directs the green and ripe peas, together, into the liquid of the secondary vat E, which liquid is of a different degree of density from that contained in the vat D, and is of such a density as to float all green peas, while the ripe peas of their own specific gravity settle onto the lower separator apron R, and are further assisted to drop thereon by the inclined deflecting board r .

The lower separator apron R, is arranged at an incline in the secondary vat E, and is constructed similar to the aprons H and O, previously described, being provided with the perforated elevator slats r' , and passing over the sprocket wheels r^2 , arranged on shafts r^3 , journaled in the vat E, and at a point above the same, respectively, and the upper of the shafts r^3 , carries at one end the large wheel S, over which passes the chain s , leading from a sprocket wheel s' , mounted on the same shaft as the wheel O' . Now as the elevator apron R, turns in the direction indicated by the arrow, the ripe peas which have settled thereon will be elevated out of the vat E, and over the upper end of the apron onto the perforated discharge chute T, which is arranged under the upper end of the apron R, at one upper end of the vat E, so that the liquid can drip back into the vat, while the chute T, being disposed at an angle, will lead the ripe peas to the point of discharge. The liquid in the vat E, floats the green peas, and such green peas are collected by the horizontal drag apron M'. The horizontal drag apron M', is arranged at the upper edge of the vat E, adjacent to the board Q, and is similarly constructed in every particular to the drag apron M, previously de-

scribed, and the drag blades of the latter drag apron M', carry the green peas up to the inclined upper separator apron U. The upper inclined separator apron U, is arranged in the same relative position above the apron R, with its lower end in the vat E, as the apron O, is arranged with respect to the apron H, in the vat D, and the said apron U, is arranged on the sprocket wheels u , the upper ones of which are mounted on the shaft u' , at one end of which is arranged the wheel u^2 , over which passes the chain s , which serves to communicate motion to both the lower and upper separator aprons, respectively, as may be clearly seen in the drawings. The upper separator apron U, is also provided with the perforated elevator slats u^3 , which serve to elevate the green peas up and over the upper end of the apron U, and onto the perforated trough V. The perforated trough V, is arranged at an incline and discharges onto the short smooth apron W. The short smooth apron W, is suitably arranged at an incline, and while allowing the good peas to roll over the same and onto the final discharge chute X, at the same time elevates all broken peas and discharges the same over its inner end, so that such broken peas will drop onto the chute T, and be discharged with the ripe peas.

Although I have set forth the herein described separator as operated in connection with the separation of green from ripe peas, nevertheless it will be apparent that the same could be equally as well adapted for separating oats and barley and weed seeds from wheat, as well as being adapted for wetting wheat, and also employing chemicals, such as vitriol in the vats for the purpose of preparing wheat, while at the same time providing for its separation from other foreign substances.

Changes in the form, proportion and the minor details of construction as embraced within the scope of the appended claims, may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a separator machine, the combination of a vat adapted to contain a liquid of a separating density, and separate superimposed elevator aprons working in the vat, substantially as set forth.

2. In a separator machine, the combination of a vat adapted to contain a liquid of a separating density, separate superimposed inclined elevator aprons having one end disposed in the vat to receive different separations, and a drag apron arranged adjacent to the lower end of one of said aprons to feed floating matter thereto, substantially as set forth.

3. In a separator machine, the combination of a vat or tank, adapted to contain a liquid of a separating density, separate superimposed

inclined elevator aprons working in and above the liquid within the vat, a feed box or trough arranged above the vat at one end and having an inclined feed chute projecting below the liquid of the vat in close proximity to the submerged end of the lower one of the aprons, and a horizontal drag apron arranged above the vat and adapted to work on the surface of the liquid adjacent to the submerged end of the other elevator apron, substantially as set forth.

4. In a machine of the class described, separate vats adapted to contain separating liquids of different degrees of density, superimposed elevator aprons arranged at an incline in one of the vats and one of which aprons discharges the heavier separations from the first vat into the other vat, elevating devices arranged in said other vat, and a feed box or hopper substantially as set forth.

5. In a separator, separate vats adapted to hold separating liquids, the liquid of one vat being different in density from that of the other vat, superimposed inclined elevator aprons having a portion thereof working in the liquid of each vat to elevate matter of different specific gravity, and horizontal drag aprons arranged to feed floating matter onto the submerged ends of the upper aprons, substantially as set forth.

6. In a separator, the combination of a vat adapted to contain liquid, an inclined endless elevator apron having the greater portion thereof working in the vat and leading from a point near its bottom, said elevator apron having perforated elevator slats, a similar inclined refuse apron arranged above said inclined elevator apron and having its lower end working in the liquid of the vat and also provided with perforated elevator slats, a horizontal drag apron having drag blades traveling at the surface of the liquid to feed floating matter onto the refuse apron, a conveyer arranged at the upper end of the refuse apron, and an inclined feed chute arranged at one end of the vat, substantially as set forth.

7. In a separator, the combination of the

separate liquid containing vats separated by a partition, a perforated inclined chute board arranged at the top of said partition, elevator aprons working into one of the vats, and one of said aprons discharging onto said inclined chute board, and corresponding elevator aprons arranged to partially work in the liquid of the other one of said vats, substantially as set forth.

8. In a separator, the combination of separated vats adapted to contain liquid, pairs of inclined elevator aprons having a portion thereof working in each vat to elevate matter of different specific gravity, horizontal drag aprons arranged in close proximity to one of said aprons in each vat and having pivoted drag blades to feed floating matter onto the apron adjacent thereto, and conveying devices arranged under the upper discharging end of each of said aprons, substantially as set forth.

9. In a separator, the combination of a vat adapted to contain a liquid, inclined endless separator aprons arranged one above the other and having a portion thereof working in the liquid of said vat, both of said aprons having perforated elevator slats, a horizontal drag apron arranged at the top of the vat to feed floating matter onto the upper apron, perforated chutes or troughs arranged under the upper discharging ends of both of said aprons, a short smooth apron arranged at a point between both of said perforated chutes or troughs, and at an angle, and a discharge chute arranged under the lower outer end of said smooth apron, substantially as set forth.

10. The herein described method of separating peas and grains, which consists in subjecting the material to the separating action of liquids of different degrees of density, successively, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM H. WEBB.

Witnesses:

GUY JOHNSON,
F. V. ANDREWS.