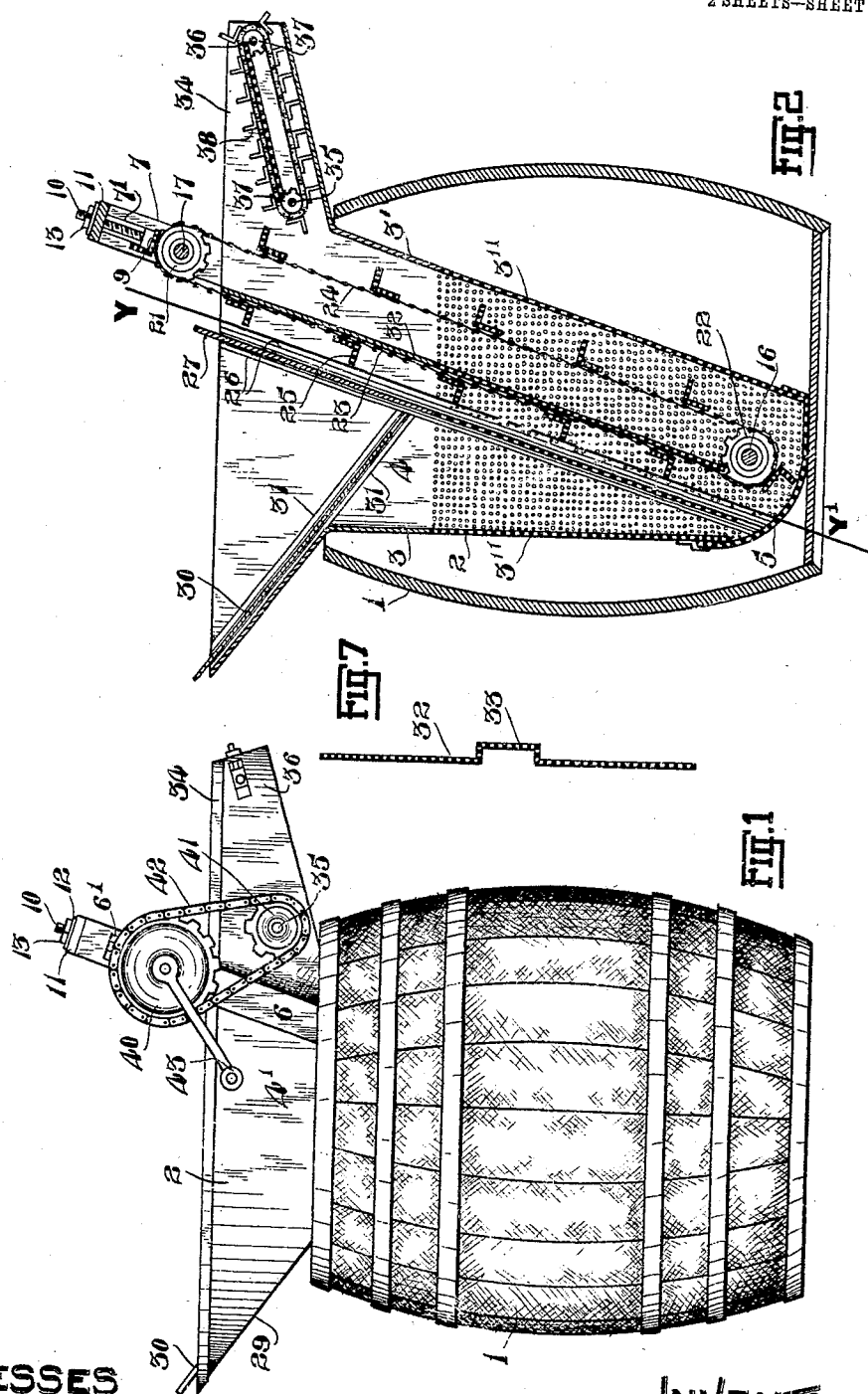


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GRAIN IMMERSING MACHINE.
APPLICATION FILED DEC. 2, 1907.

921,697.

Patented May 18, 1909.

2 SHEETS—SHEET 1.



WITNESSES

Jas. M. Tapley
Ernest L. Spurgeon

INVENTOR

S. T. Helgeson.

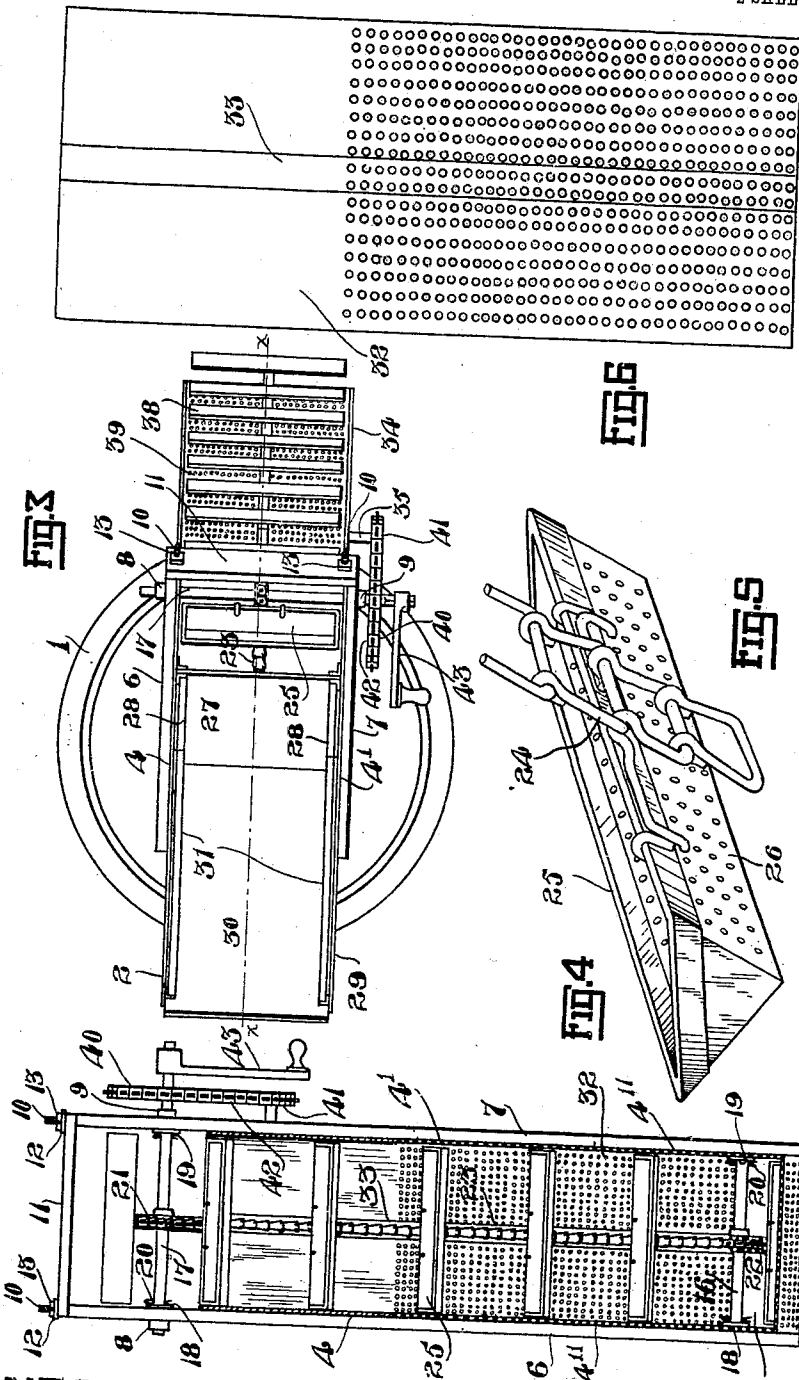
By *Ernest L. Spurgeon* Attorney

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UNITED STATES PATENT OFFICE.

STINER T. HELGESON, OF REGINA, SASKATCHEWAN, CANADA.

GRAIN-IMMERSING MACHINE.

No. 921,697.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed December 2, 1907. Serial No. 404,742.

To all whom it may concern:

Be it known that I, STINER T. HELGESON, of the city of Regina, in the Province of Saskatchewan, Canada, have invented certain new and useful Improvements in Grain-Immersing Machines, of which the following is the specification.

My invention relates to grain immersing machines, and the objects of the invention are to construct, firstly, a simple, inexpensive, and efficient machine, secondly, a machine which is especially adapted to fit within a barrel, where the barrel forms the tank, thirdly, a machine in which the pickling solution is free to circulate, fourthly, a machine in which at all times the immersed grain can be readily separated from the solution, and lastly, a machine which can be easily cleaned and from which any collected grain can be easily removed.

It consists essentially in a more or less rectangular casing open at the top, and perforated on all sides, for the greater portion of its length, a hopper and delivery spout carried by the casing and at opposite sides, at the top, above the perforated portion, a perforated door at the bottom of the casing, a series of perforated endless carriers forming an elevator within the casing, a plate partially perforated at the upper side of the ascending carriers, a partially perforated plate at the under side of the ascending carriers, a set of endless carriers forming a conveyer within the chute, and a screen directly beneath the upper side of the latter carriers, the casing being adapted to fit within a barrel, with the under side of the chute and the hopper resting on the edge of the barrel, the parts being arranged and constructed as hereinafter more particularly described.

Figure 1 is a side view of my invention in operative position. Fig. 2 is a vertical longitudinal sectional view, in a plane denoted by the line X X, Fig. 3. Fig. 3 is a plan view as in Fig. 1. Fig. 4 is a sectional view in a plane denoted by the line Y Y', Fig. 2, and looking toward the carriers. Fig. 5 is an enlarged, detailed, perspective, view of one of the perforated carriers, and the chain attachment thereto. Fig. 6 is a side view of one of the perforated plates. Fig. 7 is a cross sectional view of the plate 32, showing the longitudinal groove.

In the drawings like characters of refer-

ence indicate corresponding parts in each figure.

1 is an imperial barrel of the ordinary form, which holds somewhere in the neighborhood of thirty-five or forty gallons, and it is this which I use for the tank for the pickling solution, be it what it may.

2 is the casing, which may be rectangular in form, preferably of the form shown in the drawings, more particularly in Fig. 2, where the sides are formed to conform with the position of the conveyer. It is formed preferably of metallic sheets 3 3', and 4 4', suitably reinforced at the top and bottom and at the corners, and having a portion of their length solid, and the remaining or lower portions 3'' 3'', 4'' 4'', completely perforated, save for a small width at the sides and bottom, which is retained solid for the purpose of forming a joint.

5 is a perforated door forming a bottom to the casing to which it is hinged and held closed by any suitable hook or fastening. The cross sectional area of the casing is such that it can be easily inserted or placed within the barrel 1, and when in position in the barrel the level of the pickling solution is in line with, or above the perforated portion of the sheets.

6, 7 are braces passing obliquely, or from corner to corner, across the sides 4 4', and form also bearings for the shafts supporting the carriers, as more fully described hereinafter. The upper ends of the braces extend beyond the upper edge of the casing and have longitudinal grooves 6' and 7', respectively, cut therein, to receive the bearings 8 and 9, adapted to slide in the grooves.

10 are threaded rods passing upwardly from the bearings and through the end of the braces and the cross strip 11, and are supplied with a washer 12 and nut 13, so that screwing up the nut raises or lowers the bearings.

16 is a lower cross shaft carried at its ends in suitable bearings formed in the lower end of the braces directly opposite each other, the shaft extending transversely across the casing.

17 is an upper shaft carried in the bearings 8 and 9, and passing directly across, in alignment with the lower shaft.

18 and 19 are washers on the shafts, respectively, held tightly against the side or

casing by split pins 20 passing through the shaft. These are for the purpose of preventing longitudinal or end movement of the shafts.

5 21 and 22 are chain wheels, placed centrally on the shafts, and held thereon by a split pin which passes through a collar supplied on the wheel and through a hole in the shaft.

10 23 is an endless chain passing over and around the chain wheels, and is formed from a series of wire links 24, hooked the one to the other, as will readily be seen in Fig. 5. Although I prefer this form of wire chain,
15 yet I wish it to be understood that any other form may be used, as this forms no part of my invention.

25 are the carriers which are attached to the chain and are trough-shaped in cross section with the ends closed. The sides are perforated as at 26 and the corners and edges are suitably reinforced to give a strong carrier or cup. As will be seen in the drawings, these are fastened at their center to the
25 chain, so that the carrier on the upper side of the chain will convey material upwardly. It will be understood that the length of each carrier is such that it is free to be moved within the casing.

30 27 is a sliding plate passing within the casing, obliquely, just clear of the outer tips of the carriers, and has its upper portion solid, and its lower portion perforated, the perforated portion being in a line with the
35 perforated portion of the sides.

28 are angle bars grouped in pairs on the inner side of the casing, in which the latter plate slides.

29 is a lateral extension at the upper side of the casing, and 30 is a solid sliding plate operating over the bottom of the side extension, and extending obliquely beyond, in the closed position to the plate 27.

31 are angle bars fastened in the side of the casing between which the latter solid plate is adapted to slide.

It will be seen that the sides 4 4', the plate 27, and the plate 30, form at the top a hopper, and that by opening the slide plate 30
50 the grain in the hopper is directed down the plate 27 to the carriers. A further adjustment of the grain fed to the carriers can be had by raising the plate 27, which would allow a larger quantity of grain to pass than
55 if it were nearly shut.

32 is a permanent plate directly beneath the ascending side of the carriers, it being fastened at its sides to the casing, and it has formed in it a longitudinal channel 33, centrally, to allow for the chain 23. This plate
60 like the other plate has the portion above the water line solid, and that beneath the water line perforated.

34 is a chute opening to the opposite side
65 of the casing at the top, from the lateral ex-

tension 29, and has the bottom slanting upwardly, as is clearly shown by the drawings. 35 and 36 are shafts carried in bearings in the side of the chute, similar to the bearings
8 9, respectively, and 37 are chain wheels 70 centrally on the shafts. An endless conveyer 38 is carried on these latter chain wheels, of precisely the same form as the one in the casing, save that the cups or carriers are arranged closer together. 75

39 is a permanent screen directly beneath the carriers, on the upper side of the conveyer 38, and it may have a longitudinal channel formed centrally therein to receive the chain of the conveyer, as has the plate 27. 80

40 is a sprocket wheel at the end of the shaft 17, and 41 is a second gear wheel on the end of the shaft 35, and on the same side as the wheel 40.

42 is a chain inter-connecting the wheels, 85 and 43 is an operating handle on the shaft 17.

When it is desired to use my machine the casing and its dependencies are lifted and placed in the barrel, as shown in the drawings, the barrel being previously filled to the
90 desired height, with pickling solution. The grain to be treated is placed in the hopper and fed as required to the carriers by adjusting the plates 30 and 27. A right hand rotation of the handles causes the carriers 95 adjacent the plate 27 to move upwardly, and in doing so elevates the grain and deposits it on the screen 39, where it is carried off and thrown over the end of the chute by the second conveyer 38. As the under part of 100 the casing, or that entering the solution, is perforated, the solution has every chance to come in contact with the grain, and this advantage is readily apparent.

The plate 32 prevents any grain which 105 may be carried up and dropped from the carriers, from passing over and clogging the descending carriers, and also forms a board on which the solution carried up in the grain can drain back within the barrel. The carriers 110 being perforated allow all liquid elevated by them to pass out or drain. The screen 39 is for the purpose of receiving the grain thrown over from the carriers, and being open, any further liquid which may not 115 have drained back previously, drains back by dropping through to the bottom of the chute, and running to the barrel.

When sufficient grain is treated the casing with its dependencies is raised out of the 120 barrel, and the liquid and remaining grain are separated by this action, as the liquid passes through the perforations to the barrel. The grain can then be removed from the casing by opening the door at the bottom and I consider that I have gained a distinct advantage over the machines already 125 on the market in these two latter points, *i. e.*, separating and cleaning. Although I have described the casing as formed from me- 130

tallic sheets, yet it may have the upper solid portion formed of wood, and the lower portion of perforated metal, or any other combination of wood and metal, which may be considered advisable.

What I claim as my invention is:

1. In a grain immersing machine the combination with the liquid containing receptacle, of a casing having the lower end closed by a perforated door, the said casing being adapted to enter the solution within the receptacle, and having the portion entering the solution perforated, an opposing pair of oblique braces fastened to the sides of the casing, an upper and lower cross shaft supported in suitable bearings in the braces and having thereon, centrally, a chain wheel, a chain encircling the wheels and supplied with a set of carriers; a cross plate within the casing clear of the ascending tips of the carriers and having its lower portion perforated; a sliding plate supported within the upper portion of the casing, and making an

angle with the cross plate, the plates and the sides of the casing forming the hopper; a delivery chute in the opposite side of the casing from the hopper, as and for the purpose specified.

2. In a grain immersing machine the combination with the casing and the endless carriers within the casing; the inclined plate within the casing directed toward the carriers, of a second plate slidably interconnected with the casing and adjacent to the side of the ascending tip of the carriers, such latter plate forming with the former plate and the sides of the casing a hopper, and having its lower end perforated, as and for the purpose specified.

Signed at Winnipeg, in the Province of Manitoba, this 23rd day of October, 1907.

STINER T. HELGESON.

Witnesses:

GERALD S. ROXBURGH,
M. A. SOMERVILLE.