

No. 760,590.

PATENTED MAY 24, 1904.

E. J. VODRA.
GRADING MACHINE.

APPLICATION FILED SEPT. 20, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

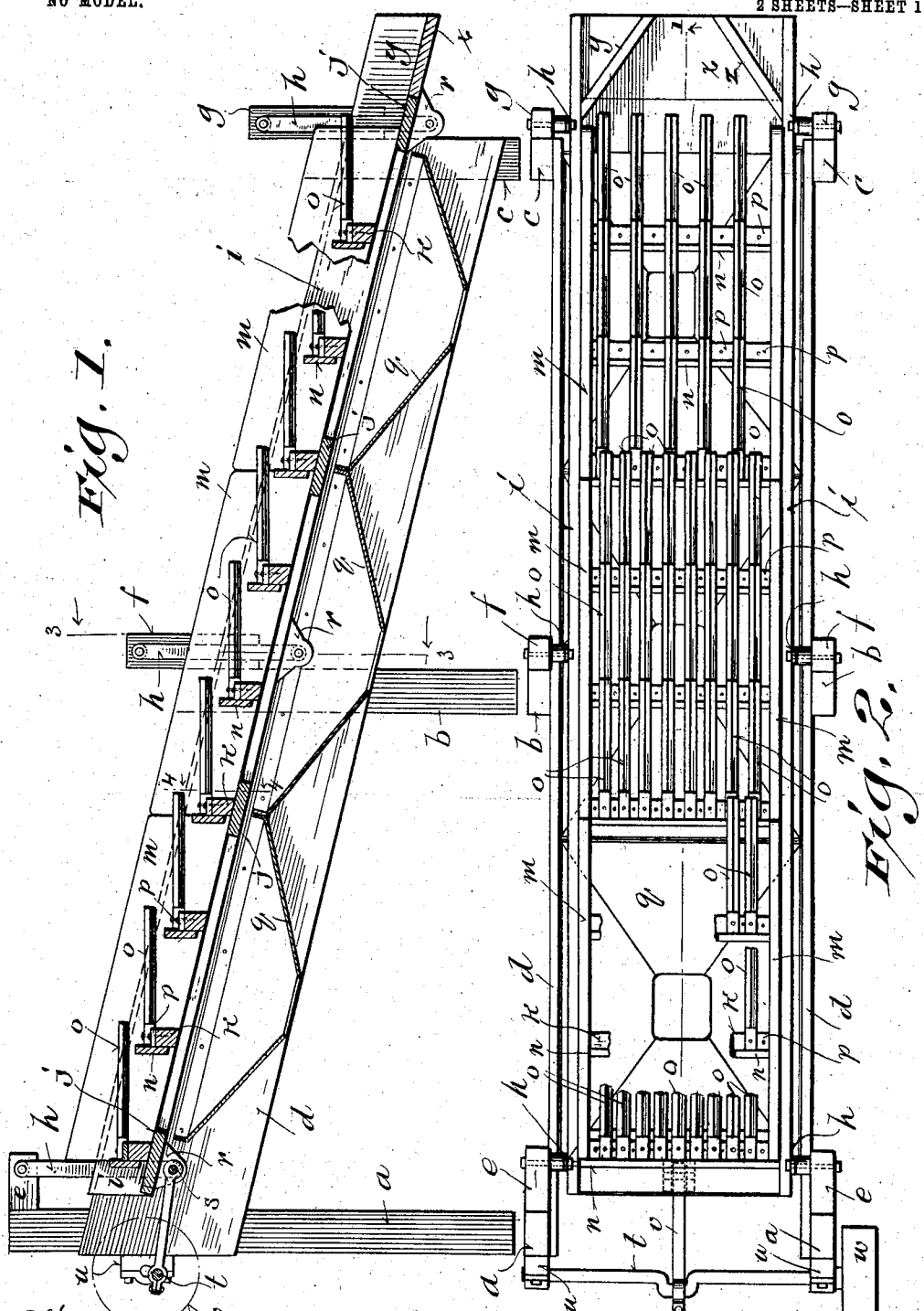


Fig. 1.

Fig. 2.

Witnessed:
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B. C. Poloff

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2 SHEETS—SHEET 2.

NO MODEL.

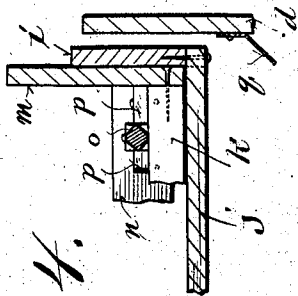


Fig. 4.

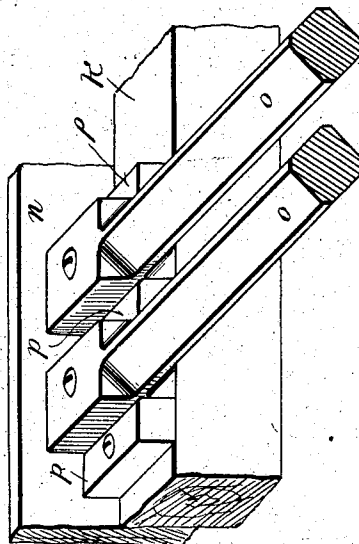


Fig. 5.

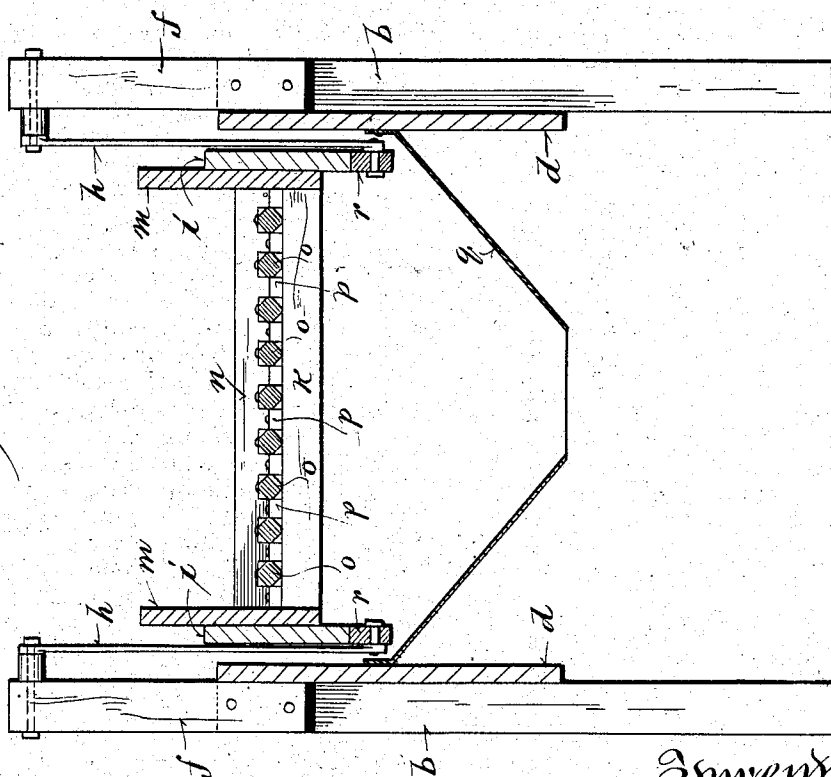


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWARD J. VODRA, OF TWO RIVERS, WISCONSIN.

GRADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 760,590, dated May 24, 1904.

Application filed September 20, 1901. Serial No. 75,909. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. VODRA, a citizen of the United States, and a resident of Two Rivers, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Grading-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has especial reference to machines for grading bean-pods for canning factories; and it consists in certain peculiarities of construction and combination of parts, as will be fully set forth hereinafter in connection with the accompanying drawings and subsequently claimed.

In the said drawings, Figure 1 is a longitudinal sectional view of a machine embodying my present invention, taken on the line 1 1 of Fig. 2. Fig. 2 is a plan view of the said machine, portions being shown broken away in both figures to better illustrate certain details of construction. Fig. 3 is a transverse vertical sectional view taken on the planes indicated by the line 3 3 in Fig. 1 and drawn to an enlarged scale. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 1. Fig. 5 is an enlarged detail perspective view.

Referring to the drawings, *a a b b c c c* represent the uprights of successively decreasing height, and *d d* the inclined side pieces of a frame, the said uprights rising from any suitable base and being transversely braced together to form a rigid support, the base and braces being of any ordinary construction and not herein shown. Secured to the said uprights are offset extensions, (marked *e e*, *f f*, and *g g*, respectively,) and to the upper or outer ends of these extensions there are pivotally secured the upper ends of hangers *h h*, whose lower ends are pivotally secured to the shaking-screen, next to be described. This shaking-screen comprises, primarily, two inclined side boards *i i*, connected at intervals by the transverse boards *j j*, same being laid flatly against the under sides of the boards *i i*, and hence being similarly inclined, and resting on these transverse boards *j j* are transverse beams *k k*, and inclined upright boards *m m* are secured to the side boards *i i* on the

inner sides thereof and similarly resting on the boards *j j* between the ends of the transverse beams *k k* and the said side boards *i i*, the attachment of the boards *j j* to the side boards *i i* and of the latter to the boards *m m* being plainly shown in the detail view, Fig. 4. These beams *k k* are slightly inclined in opposite directions on both their upper and lower surfaces with vertical sides, as best shown in Fig. 1, and transverse upright boards *n n* are secured to the sides of these beams *k k* nearest to the upper or higher end of the machine, while secured, as by bolts, to the upper faces of said beams *k k* are the squared ends of the screen-sticks *o o*, the said sticks *o o* all projecting rearwardly and slightly upwardly toward the lower end of the machine in regular descending series, as best shown in Fig. 1. These screen-sticks are arranged with each two adjacent sticks on a beam *k*, being separated by spacing-blocks *p*; also bolted to the upper faces of the said beams, and in the illustration here given the said beams, with their screen-sticks, are arranged in groups of three beams each, although there may be as many of said beams in a group as desired in any given instance, and the shaking-screen may contain as many groups as thought necessary, three only of such groups being shown in the present drawings, and beneath each group an open four-faced hopper *q* is secured to the inclined outer side boards *d d* of the stationary frame. The screen-sticks are all preferably of uniform size and shape throughout the entire machine; but the spacing-blocks *p p* in each successive group are of different and increasing width, the narrowest blocks, *p*, being between the sticks *o*, secured to the upper group, (of three beams in this instance,) while somewhat wider blocks, *p*, are employed between the sticks *o* of the next group and still wider blocks between the sticks of the next lower group, and so on, if more than three groups are employed.

At intervals corresponding to the location of the upright extensions *e f g*, &c., the side boards *i i* of the shaking-screen are provided with blocks *r r* on their under sides, to which are pivotally secured the lower ends of the

hangers *h h*, and at the upper or higher end of the machine the lower ends of the adjacent upper pair of hangers *h h* are connected by a transverse rod *s*, which extends entirely across the machine and through both of the upper pair of blocks, while the lower ends of the other hangers are merely pivotally connected to the blocks on opposite sides, as best shown in Fig. 3. A transverse crank-shaft *t* is journaled in suitable bearings *u u*, secured to the uprights *a a* at the head end of the machine, and a link *v* connects the cranked portion of the said crank-shaft with the described front transverse rod *s*, the said crank-shaft having a pulley *w* at one end, whereby power is transmitted to the same. The tail end of the shaker-screen is provided with a suitable shoe, the simplest form of which is a transverse board *x*, extending across from one side board *i* to the other, and with two converging upright boards *y z*, arranged to extend from said side boards toward the center of said board *x*.

The operation of my machine will be readily understood from the foregoing description of its construction, taken in connection with the accompanying drawings, which clearly show the preferred shape of the screen-sticks *o o*, the same beyond their squared attaching ends being substantially lozenge-shaped in cross-section, with narrow flattened longitudinal surfaces at the top, bottom, and each side at the intersection of the widest faces thereof, this form having been found to give the best results in practice. The bean-pods containing the green beans are strung and canned in that way; but it is very desirable that the pods should be graded as to size, and to that end all the pods are dumped on the upper group of beams and screen-sticks (suitable receptacles being placed beneath the hoppers *q q*) and power imparted to the pulley *w*, which causes the entire screen to be reciprocally shaken, and the smaller pods will fall through between the sticks *o o* of the said upper group into the hopper and receptacle beneath, those of larger size being shaken over onto the beams and sticks of the next group, and so on, to the tail end of the machine, where any that fail to fall through between the sticks *o o* of the lowermost group will be discharged from the shoe *x y z* into a proper receptacle, to be again passed through the machine for grading, if desired. Thus all of the pods are properly graded preparatory to being canned. The transverse upright boards *n n* prevent the pods from being shaken toward the head end of the machine into the wrong hoppers.

My machine is very simple and economical in construction and extremely efficient in use, and while I have illustrated the preferred construction it will be understood that I do not limit myself to the precise mechanical details shown, as same may be varied within the scope

of what is herein claimed without departure from my invention.

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

1. In a grading-machine, the combination with a stationary frame, having a series of uprights thereupon, a series of hangers pivoted to the uprights, an inclined shaking-screen, suspended from the uprights, and comprising side boards connected by series of transverse beams, with series of screen-sticks projecting from the upper surface thereof at intervals, toward the rear end of the machine, the free rear ends of said screen-sticks projecting upwardly to a higher plane than their front ends secured to said transverse beams, and means for reciprocally shaking the said screen.

2. In a grading-machine, the combination with a stationary frame having a series of uprights thereupon, a series of hangers pivoted to the uprights, an inclined shaking-screen, downwardly-extended bearings on the screen to which the hangers are pivotally secured, and comprising side boards connected by series of transverse beams, arranged on successively lower planes, from the head to the tail end of the machine, and series of screen-sticks projecting from the upper surface of said beams, toward the tail end of the machine, the sticks on each beam being spaced at equal intervals apart, and the said beams arranged in groups, with the sticks on all the beams in the first group adjacent to the head of the machine being nearer together, than the sticks on all the beams in the second group, and so on, to the tail end of the machine, and the rear ends of all the screen-sticks projecting upwardly to a higher plane than their front ends, said rear ends being free and projecting over the front ends of the screen-sticks in the next lower or rearward group of screen-sticks, and means for reciprocally shaking the said screen.

3. In a grading-machine, the combination with a stationary frame, having series of hangers pivotally secured thereto, and series of stationary hoppers rigidly secured to said frame, of an inclined shaking-screen, suspended by said hangers above said hoppers, and comprising inclined side boards connected by series of transverse beams, arranged in groups, corresponding to the hoppers below, and disposed in descending planes; transverse upright guard-boards rising from the said beams on the sides nearest the head end of the machine, and series of screen-sticks projecting upwardly and rearwardly from said beams, the sticks on each beam being spaced by blocks intermediate adjacent sticks at equal distances apart, and the spaces between the sticks on the beams in different groups, being of different widths, increasing from the head end to

the tail end of the machine, and means for reciprocatively shaking the said screen.

4. In a grading-machine, the combination with a stationary frame, having series of hangers pivotally secured thereto, of a shaking-screen, having inclined side boards connected by series of transverse beams having an inclined surface, and series of screen-sticks projecting rearwardly and upwardly from said inclined surface, said sticks having squared ends bolted to the beams, and the balance of said sticks being of substantially lozenge shape in cross-section with narrow flattened longitudinal surfaces at the top, bottom, and sides of each stick, at the intersection of the widest faces thereof, and means for reciprocatively shaking the said screen.

5. In a grading-machine, the combination with a stationary frame having series of hangers pivotally suspended therefrom, of an inclined shaking-screen, supported by said hangers, said screen having a series of transversely-arranged beams and independent screen-sticks secured to the upper end thereof and projecting therefrom with the free rear ends of the screen-sticks of each series projecting at a plane above and overlapping the attached head ends of the screen-sticks of the next lower series, and means for reciprocatively shaking the said screen.

6. In a grading-machine, the combination with a stationary frame having a series of hangers pivotally suspended therefrom, of an inclined shaking-screen supported by said hangers, said screen having a series of transversely-arranged beams and independent screen-sticks secured to the upper surface thereof and projecting therefrom with the free rear ends of the screen-sticks of each series projecting at a plane above and overlapping the detached ends of the screen-sticks of the next lower series, means for reciprocatively shaking the said screen, and a stationary hopper arranged beneath and common to all of said sticks.

7. In a grading-machine, the combination with a stationary frame, of an inclined shaking-screen suspended therefrom, comprising transversely-arranged beams having inclined upper surfaces, and a series of spaced sticks secured at their forward ends to said inclined

surfaces of the beams, their rearward ends being free and overlapping the adjacent beams and secured forward ends of the adjacent series.

8. In a grading-machine, the combination with a stationary frame, of an inclined shaking-screen suspended therefrom, comprising transversely-arranged beams having inclined tops, a series of spaced sticks secured at their forward ends upon said inclined tops of the beams, their rearward ends being free and extending above the next lower beam and overlapping the secured forward ends of the adjacent series, and a stationary hopper arranged beneath said screen and common to each of the series of sticks.

9. In a grading-machine, the combination with a stationary frame, of an inclined shaking-screen suspended therefrom, comprising transversely-arranged beams spaced from one another, and having oppositely-inclined tops and bottoms, a series of sticks secured to said inclined upper surface of one of said beams, spacing-blocks intermediate the adjacent sticks, a supplemental series of sticks secured to said inclined surface of another of said beams, and spacing-blocks of relative different size from the first-mentioned blocks, intermediate the adjacent sticks, the rearward ends of all of said sticks being free and overlapping the secured forward ends of the adjacent series.

10. In a grading-machine, the combination with a stationary frame, uprights upon the frame, and an inclined shaking-screen, links upon opposite sides of the frame having pivotal connection respectively at their upper ends to the uprights and at their lower ends to the screen, the pivotal connection at the lower ends of said links including a transversely-arranged rod extending between the links, a crank-shaft connected to said rod, and means for operating the shaft to shake the screen.

In testimony that I claim the foregoing I have hereunto set my hand, at Two Rivers, in the county of Manitowoc and State of Wisconsin, in the presence of two witnesses.

EDWARD J. VODRA.

Witnesses:

FRED W. DICKE,
PETER SCHROEDER.