

(No Model.)

2 Sheets—Sheet 1.

N. G. NUMSEN.

PEA GRADER.

No. 435,153.

Patented Aug. 26, 1890.

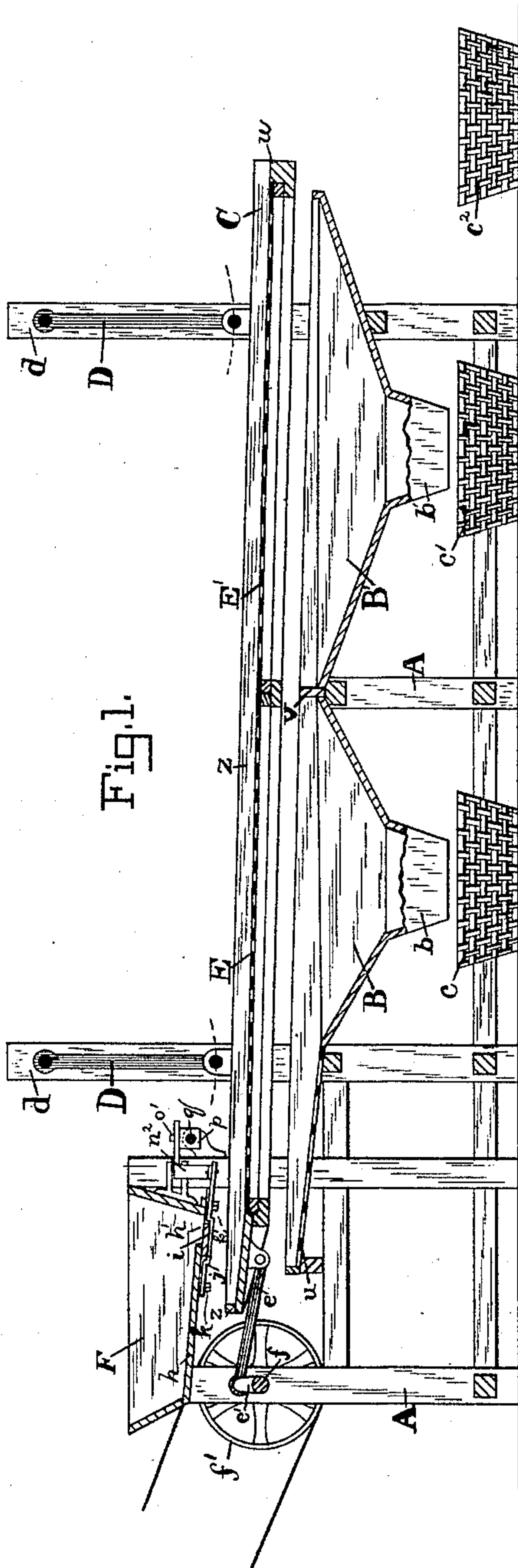


Fig. 1.

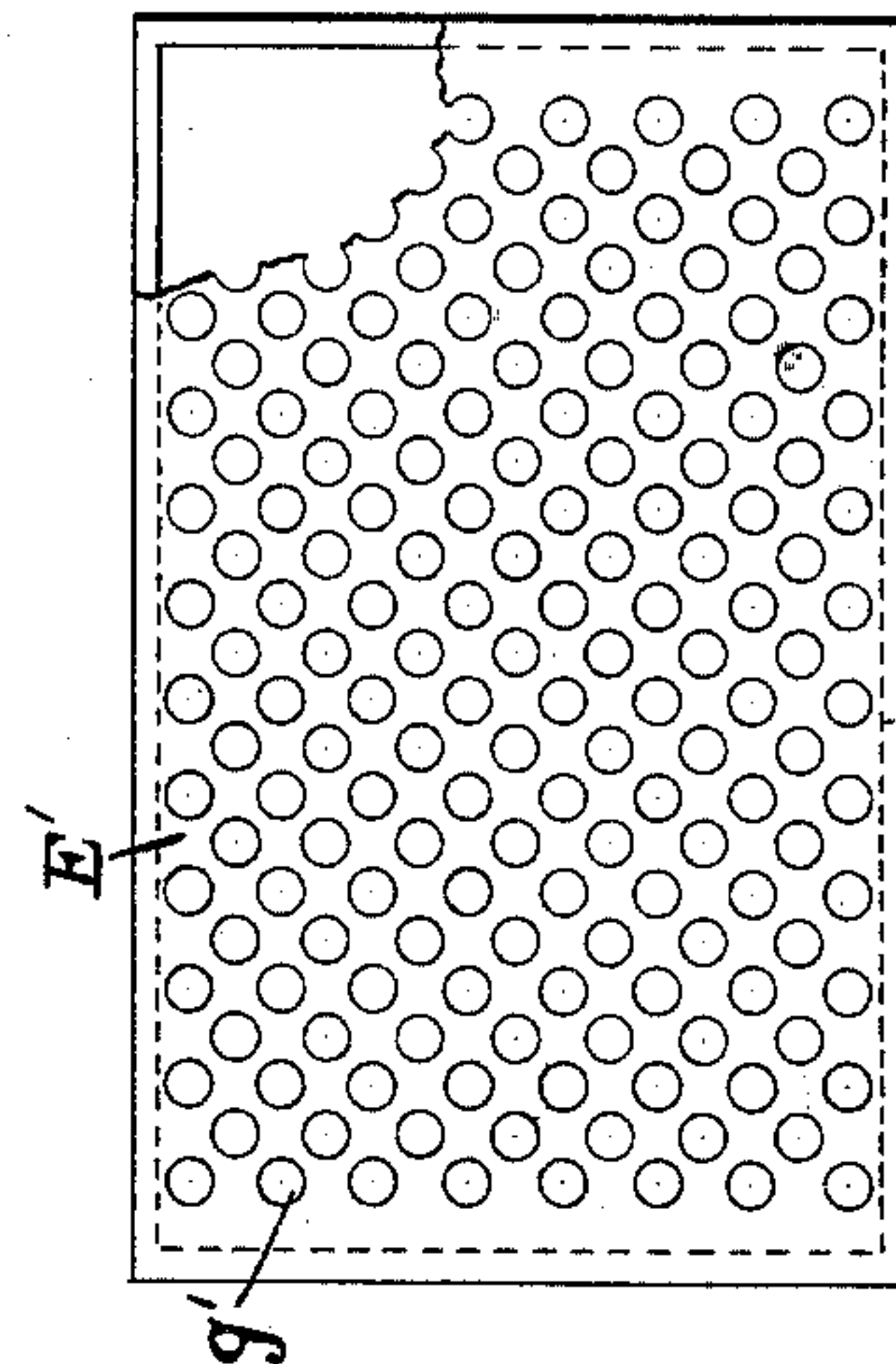


Fig. 4.

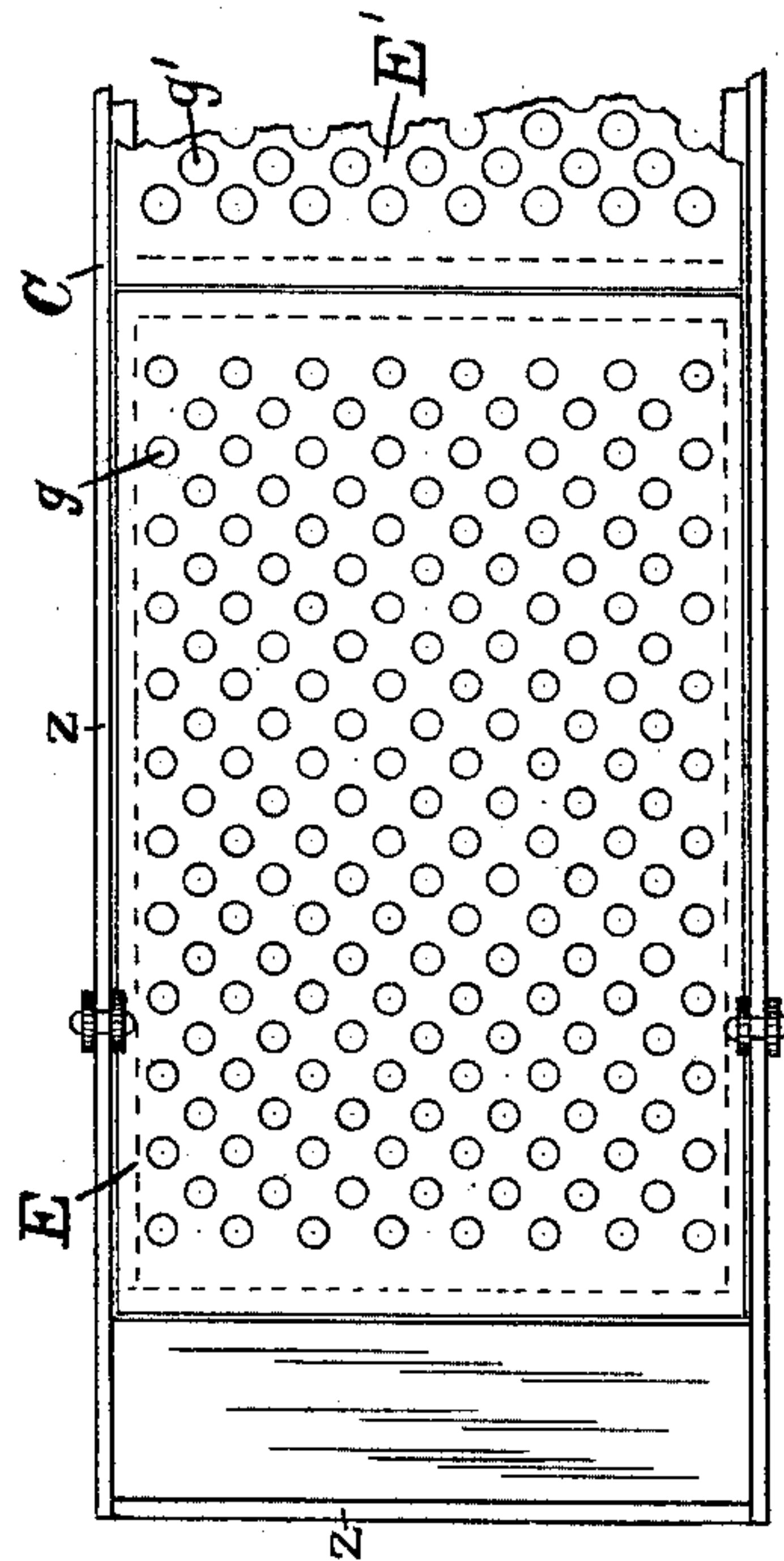


Fig. 3.

WITNESSES:

A. Q. Babendries.

Otto H. Ehlers.

INVENTOR:

N. G. Numsen.

BY

Chas B. Mann

ATTORNEY.

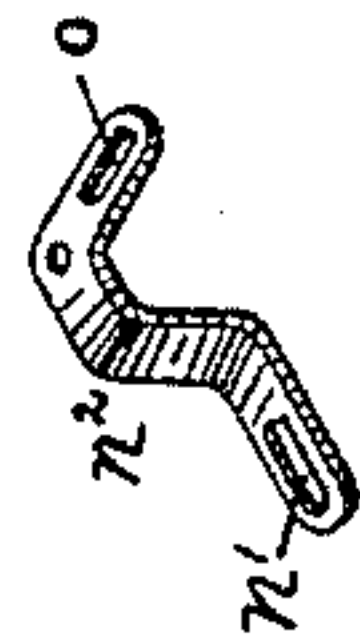
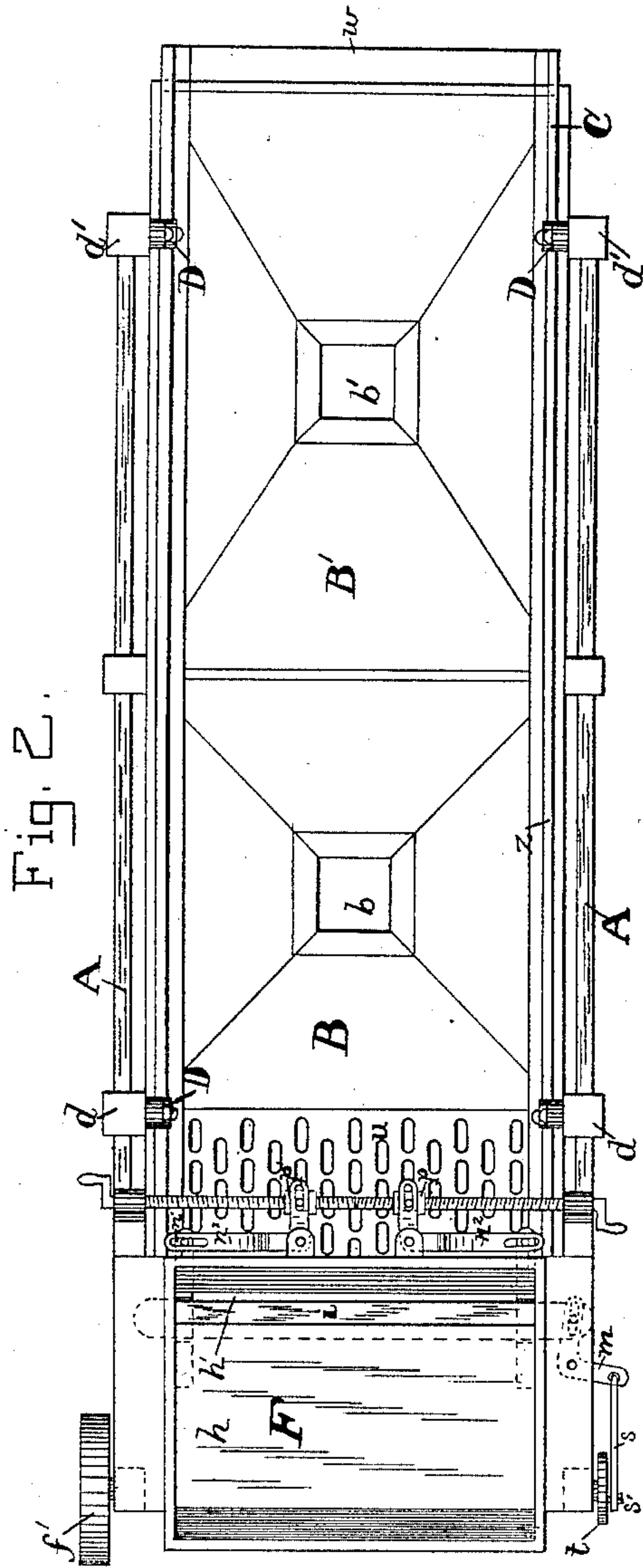
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2 Sheets—Sheet 2.

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No. 435,153.

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WITNESSES:

Otto A. Ehlers.

A. Q. Babendreier.

INVENTOR:

A. G. Kumsen,

BY *Chas B. Mann*
ATTORNEY.

UNITED STATES PATENT OFFICE.

NATHANIEL G. NUMSEN, OF BALTIMORE, MARYLAND.

PEA-GRADER.

SPECIFICATION forming part of Letters Patent No. 435,153, dated August 26, 1890.

Application filed March 15, 1890. Serial No. 344,046. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL G. NUMSEN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Pea-Graders, of which the following is a specification.

This invention relates to a pea-grader, and has for its object to provide a special construction for grading or separating hulled peas which are in bulk into lots of several different sizes, so as to have each lot consist of peas of a uniform size.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of the machine. Fig. 2 is a top view of the same. Fig. 3 shows a top view of part of the vibrating frame with the perforated grading-plates in position. Fig. 4 is a top view of one of the perforated grading-plates, one corner of which is broken away to show the frame. Fig. 5 shows a plan view of the means for vibrating the feed-board, also means for expanding or contracting the feed-opening. Fig. 6 is a perspective view of the bell-crank lever for expanding or contracting the opening in the bottom of the hopper.

The letter A designates the frame.

BB' are funnel-shaped accumulators, with a separating-wall *v* between them for collecting the graded peas, and provided at the bottom with chutes *bb'*, for conveying the graded peas to separate baskets or receptacles *cc'*. The vibratory or swinging frame C is composed only of the side and end pieces and a central cross-piece, if desired, and is supported by swinging hanger-rods D, attached to the uprights *d d'* of the frame A. The swinging frame C hangs in an inclined position, and has a wall *z* on two sides and front end for confining the peas, and is vibrated or reciprocated by a connecting-rod *e*, one end of which is attached to the frame and the other to a crank *e'* on a shaft *f*, which is revolved by a belt passing over a pulley *f'* on the shaft. This frame C is also provided with detachable metal plates E E', provided with perforations *g g'*. The perforations *g* in the first or highest plate are smaller than those *g'* in the second, and allow the smallest peas and dirt to fall through the perforations *g* in the front end of the first

plate E and lodge upon an inclined sieve *u*, so placed that the small peas will roll down its surface into the first funnel-shaped accumulator B and be collected by it, together with those peas falling through the remaining part of the first perforated plate E, thus assorting one size of peas, the dirt having fallen through the sieve *u* to the ground or into some suitable receptacle placed under the sieve. Those peas which do not pass through the holes or perforations *g* in the first plate E will pass on to the second plate E', through whose larger perforations *g'* the second size of peas fall. Those peas not falling through the perforations *g'* in the second plate E' will pass over the back edge *w* of the swinging frame C and fall into a third basket or receptacle *c²*.

The hopper F is stationary at the front end of the machine, and has an inclined bottom *h*, with a rectangular feed-opening *h'*, which extends crosswise from one side of the hopper to the other. A feed-board *i* is under the feed-opening, and has an endwise vibration when the machine is in operation. This feed-board *i* is supported by guides *j j'*, and has a pin *r*, which engages with a slot *m'* in one arm of a bell-crank lever *m*, the other arm of which is connected by a rod *s* to a crank-pin *s'* on a disk *t*, mounted on the main shaft *f*. Thus it will be seen that the feed-board will be vibrated endwise, as stated, thus continually loosening the peas above it in the hopper F and preventing them from choking the feed-opening. To regulate the size of the feed-opening, the feed-board guides *j j'* are each provided with a notch or recess in its upper surface, or next the hopper, in which the feed-slide is retained and guided, and are supported by bolts *k k'*, which pass through slots *l l'* in the guides *j j'* and into the hopper-bottom. To one end of each of the guides *j j'* is fixed a pin *n*, entering the slot *n'* in one arm of one of the bell-crank levers *n²*, the other arm of which has a slot *o*, in which is a pin *o'*, fixed to one of the screw-nuts *p p'*, traveling on the opposite threads of a right and left hand threaded shaft *q*, the reverse threads meeting in the center. This shaft is supported by the frame A, and is provided with two cranks *q' q²*—one at each end—so that the

shaft can be turned, and thereby enlarge or contract the feed-opening h' in the bottom of the hopper.

Some of the advantages of this invention are that the perforated sheet-metal grading-plates form a smooth surface, on which the peas will roll down. The peas are usually wet and clog together, and will choke the grading-openings where an uneven surface, like that formed by a wire screen, is used. By having the sheet-metal grading-plates removable they can be taken out often and easily cleaned, thus always having a clean surface. As there is neither top nor bottom to the frame, the plates are easily removed by passing the hand in under the sides and lifting them up, and in replacing them they are simply laid in on a ledge or other retainer within the frame. They are preferably made to abut, so that the peas can roll from one to the other without being obstructed or retarded, although the same result could be secured by placing the end of the first plate upon or above the end of the second plate to form a step, over which the peas would roll in passing from one plate to the other.

The advantage of having the feed-board i not only adjustable, but also to vibrate endwise, is that while the amount of feed can be regulated the peas will be prevented from choking the feed-opening h' in the bottom of the hopper.

Having described my invention, I claim—

1. In a machine for grading peas, the combination of a frame having a vibrating frame therein and a feed-hopper above one end of the vibrating frame, having a feed opening or slot in its bottom, longitudinally-movable guides upon the bottom of the hopper transversely across the feed-opening, each guide having a notch or recess in its side next the hopper, a longitudinally-movable feed-board in the notches in the guides, whereby the board may be moved laterally by the guides to regulate the size of the feed-opening and longitudinally to prevent the opening from being clogged or closed, and means for moving the guides and for reciprocating the feed-board, substantially as described.

2. In a machine for grading peas, the combination of a hopper having a feed-opening in the bottom, a feed-board under the opening, guides $j j'$, for supporting the feed-board, and having an adjustment, bell-crank levers for adjusting the said guides, pins fixed to nuts traveling on the opposite threads of a right and left hand threaded shaft for moving the bell-crank levers, and a crank on the shaft for turning the same, for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

NATHANIEL G. NUMSEN.

Witnesses:

A. O. BABENDREIER,
JOHN E. MORRIS.