

(No Model.)

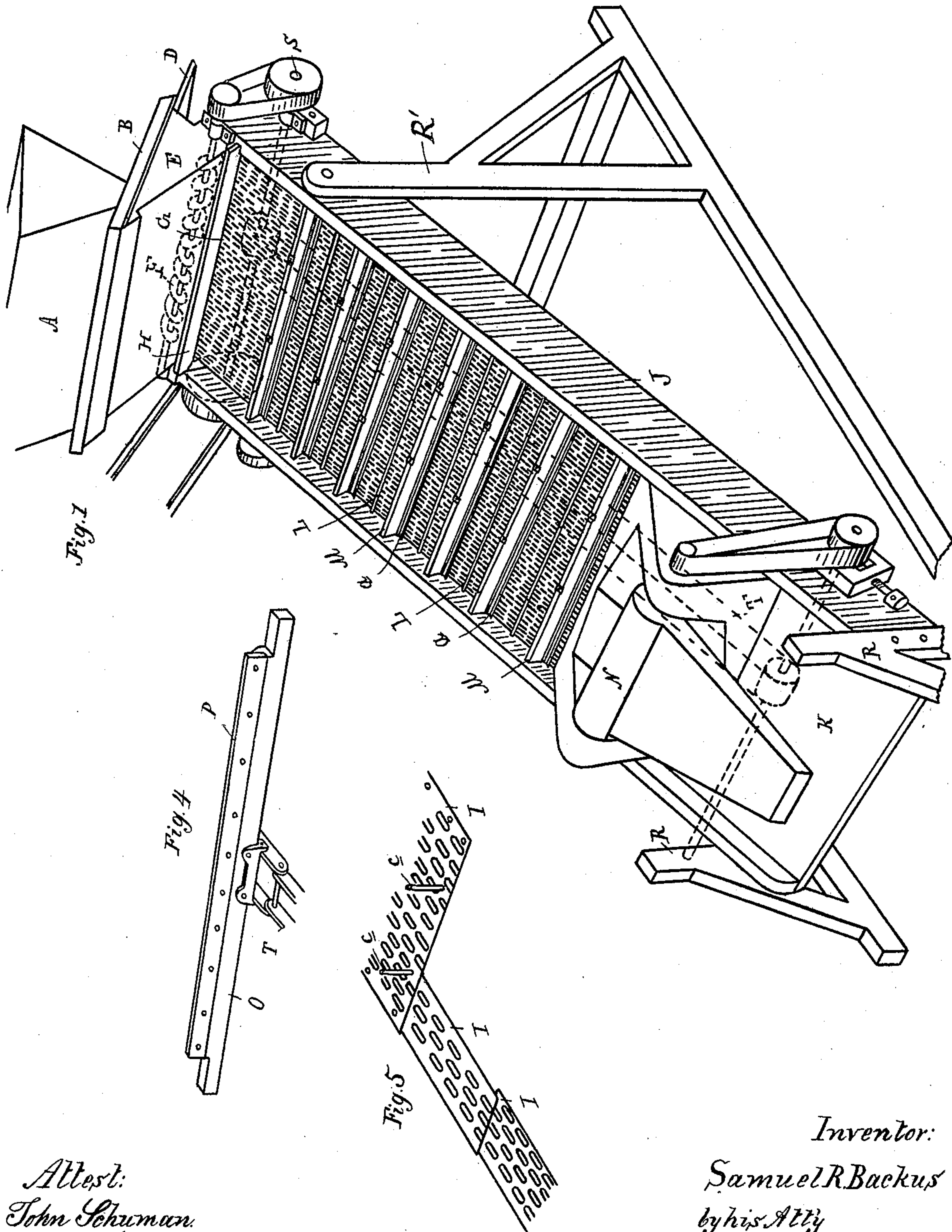
2 Sheets—Sheet 1.

S. R. BACKUS.

GRAIN CLEANER AND GRADER.

No. 323,099.

Patented July 28, 1885.



Attest:
John Schuman.
[Signature]

Inventor:
Samuel R. Backus
by his Atty
[Signature]

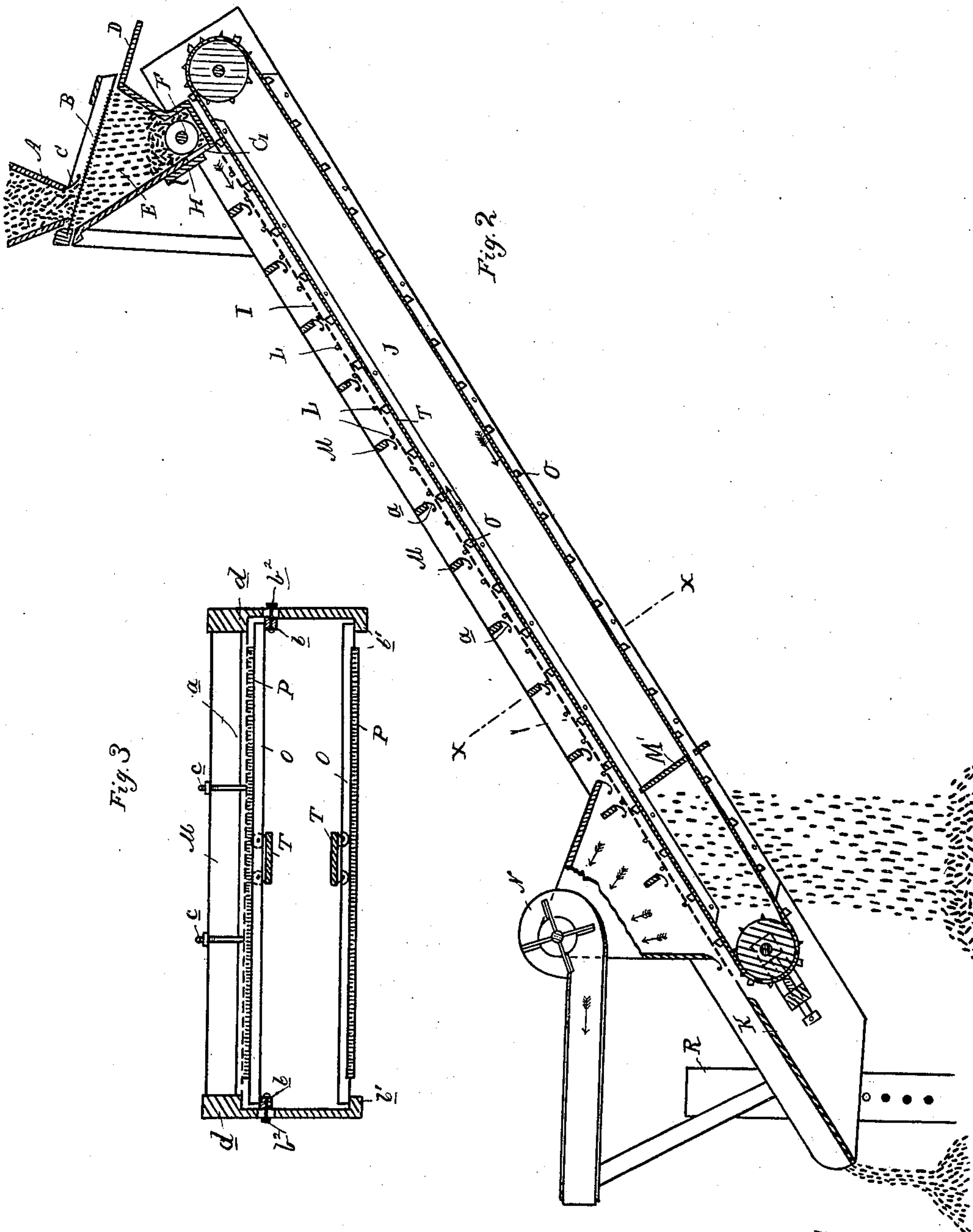
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UNITED STATES PATENT OFFICE.

SAMUEL R. BACKUS, OF TOLEDO, OHIO.

GRAIN CLEANER AND GRADER.

SPECIFICATION forming part of Letters Patent No. 323,099, dated July 28, 1885.

Application filed February 18, 1885. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. BACKUS, of Toledo, in the county of Lucas and State of Ohio, have invented new and useful Improvements in Grain Cleaners and Graders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

10 This invention relates to new and useful improvements in grain cleaners and graders; and the improvement consists in the peculiar combinations and the arrangement and construction of parts, all as more fully hereinafter described and claimed.

15 In the drawings which accompany this specification, Figure 1 is a perspective view of my device. Fig. 2 is a vertical central longitudinal section. Fig. 3 is a cross-section on line 20 *xx*. Figs. 4 and 5 are detached details referred to hereinafter.

A is a hopper or bin into which the grain is deposited. Below this hopper an inclined screen, B, of perforated sheet metal, is secured, 25 having perforations of suitable size to allow the grain to easily fall through but arrest the straw, sticks, and similar matter, which are gradually forced out under the pliable apron C at the spout of the hopper and pass off over 30 the tail-board D. This screen or sieve B may be either stationary or shaking. The grain falling through the screen B is collected in the conveyer-trough E, in which a right and left screw conveyer, F, evenly distributes it 35 along the feed-opening G, which is provided with the feed-slide H.

Through the feed-opening G the grain is carried by its gravity over a screen, I, secured in the inclined chute J. The screen I is made of 40 perforated sheet metal in sections which overlap each other, as shown in Fig. 5, and are removably secured in position in any proper manner, so they may be easily changed for sections of finer or coarser mesh, according to 45 the nature of the grain or seed to be graded. At the lower end this screen terminates in an imperforate section, K, which forms the discharge end for the highest grade, while the inferior grades pass through the screen I, which 50 may be either stationary or vibrating.

At suitable distances apart there are fastened across the screen I small check-wires L,

or other like obstructions, which the grain rolling down the screen must strike, and check-boards M are secured across the chute 55 a little distance above the screen, and have pliable aprons *a* attached to their lower ends. The grain, in striking the wires L, jumps upward, and, striking the check-boards M, is again thrown upon the screen, thus completely 60 mixing the grain and turning the grains over and over in their progress over the screen. The pliable aprons *a* prevent the grain from getting choked at the check-boards, and they also serve to check the too rapid fall of the 65 grain over the inclined screen.

N is a suction-fan, arranged a little distance above the screen, near the lower end thereof. It removes all chaff, dust, chaff, &c., that may have escaped the screen, and carries it off to a 70 proper place. The sections of the screen near its lower end are of larger mesh, to permit the finer grain to pass through, as shown in Fig. 2, while the coarser grains pass over the imperforate part K, as seen in the same figure. 75

M' is a division-board to keep the dust and finer grain that fall through the upper part of the screen from mixing with that passing through below said board. An endless chain or belt, T, carrying slats O, provided with pliable scrapers P, is rapidly moved along on the 80 under side of the screen, and any grain that is too large to go entirely through the holes will be brushed off or up-ended, thus keeping the perforations in the screen always clean, and 85 making the grain move downward. The slats are supported upon their ends by suitable cleats, *b*, adjustably secured to the sides of the chute, preferably by means of bolts *b*², passing through said cleats and through slots in the 90 side of the chute, as clearly shown in Fig. 3, so as to keep the scrapers always in contact with the screen, and also to take off the strain at the lower line of slats. A suitable tightener is arranged to tighten the belt or chain when 95 required.

To prevent the screen I from sagging by placing too much weight on the slats, and to keep the grain even on the screen, the sections of the screen are supported at short intervals 100 by small bolts *c*, which are soldered to the screen and provided with nuts on top to secure the screen to the check-boards.

The sections of the screen are made to over-

lap from top down, which gives the grain a little jump in passing from one section to the other, and also permits the scrapers to pass more freely.

- 5 The scrapers P are made of rubber, leather, or other suitable flexible material secured to the edges of the slats, as shown in Fig. 4. For their proper operation, it is of great advantage to make the screen-sections of perforated sheet
10 metal, with elongated perforations extending in the longitudinal direction of the screen.

The lower end of the chute is adjustably supported between standards R, or other similar devices, so as to change the inclination of the
15 chute and give more or less velocity to the grain, according to the desired grade or kind of work. The upper end of the chute is supported in any convenient manner, preferably by being pivoted in uprights R', as shown in
20 Fig. 1.

The power is conveyed to the different parts as fully shown in Fig. 1, and the device may be constructed either of a stationary or of a vibrating or shaking nature.

- 25 From the above description the operation of the device will be readily understood.

What I claim as my invention, and desire to secure by Letters Patent, is—

- 30 1. In combination with an inclined grain-chute having a screen, I, secured therein, the wires L, secured across the face of the screen, and the check-boards M, having pliable aprons a, arranged substantially as and for the purposes described.

2. In combination with an inclined chute 35 having a screen, I, secured therein, the endless belt or chain T, carrying slats O, with pliable scrapers P, and the cleats b, adjustably secured to the sides of the chute and supporting said slats in contact with the under side of
40 said screen, and the cleats b', supporting the lower line of slats and preventing sagging and strain, all arranged substantially as described.

3. The combination, with an inclined grain-chute having secured therein a screen, I, formed
45 of sections overlapping each other, of the wires L, secured across the face of the screen, and the check-boards M, provided with pliable aprons a, arranged substantially as and for the purposes described. 50

4. The inclined chute J, combined with the screen-sections I, provided with bolts c and nuts, substantially as and for the purpose specified.

5. In a grain cleaner and grader, a screen, 55 I, made in removable sections of perforated sheet metal overlapping each other, in combination with the chute J, and screw-bolts c, whereby the said screw-sections are adjustably supported from the chute, substantially as de- 60 scribed.

SAMUEL R. BACKUS.

Witnesses:

W. H. ALEXANDER,
W. C. CRABBS.