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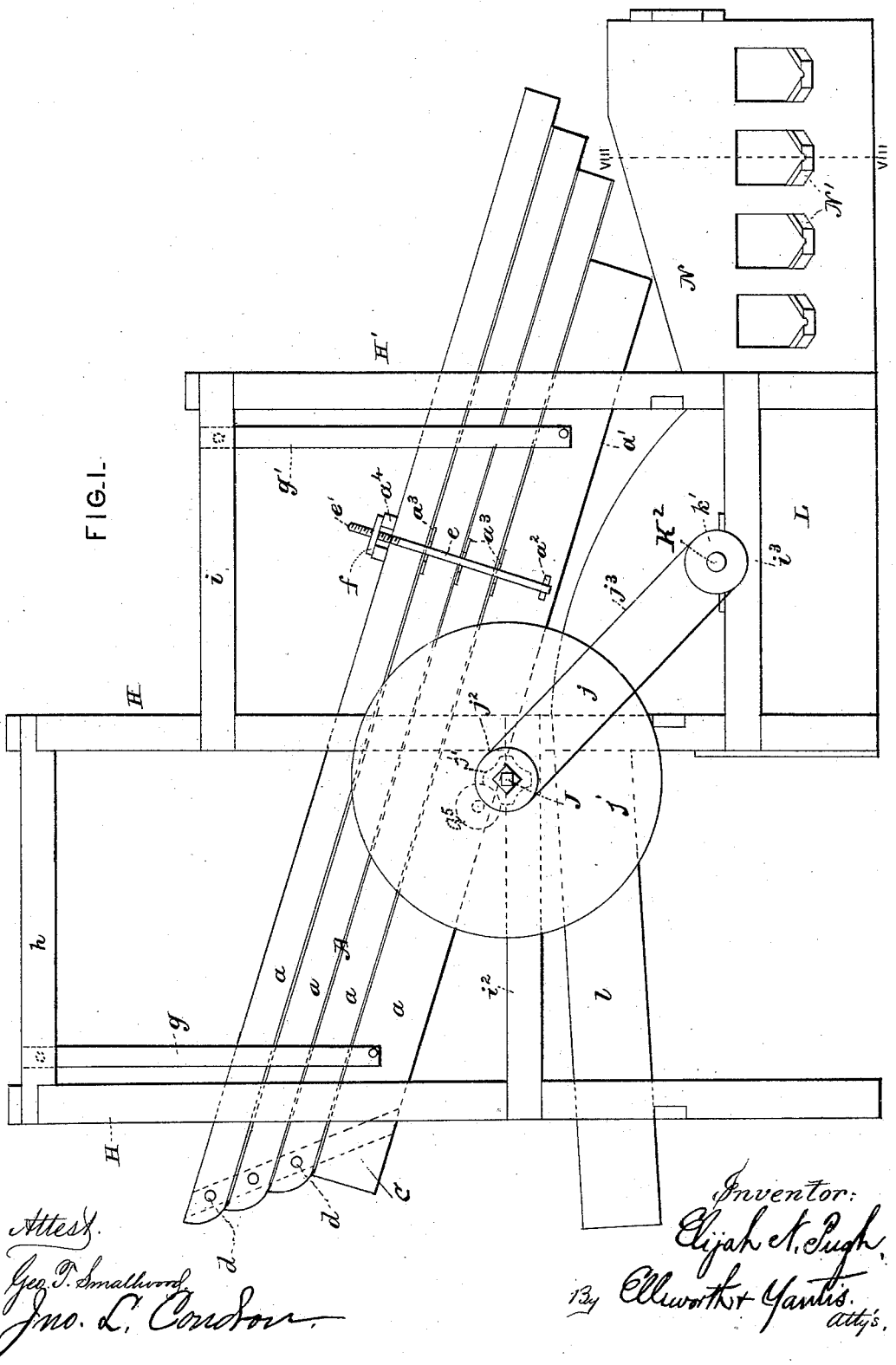
E. N. PUGH.

GRAIN SEPARATOR AND GRADER.

No. 385,427. Patented July 3, 1888.

FIG. 1.



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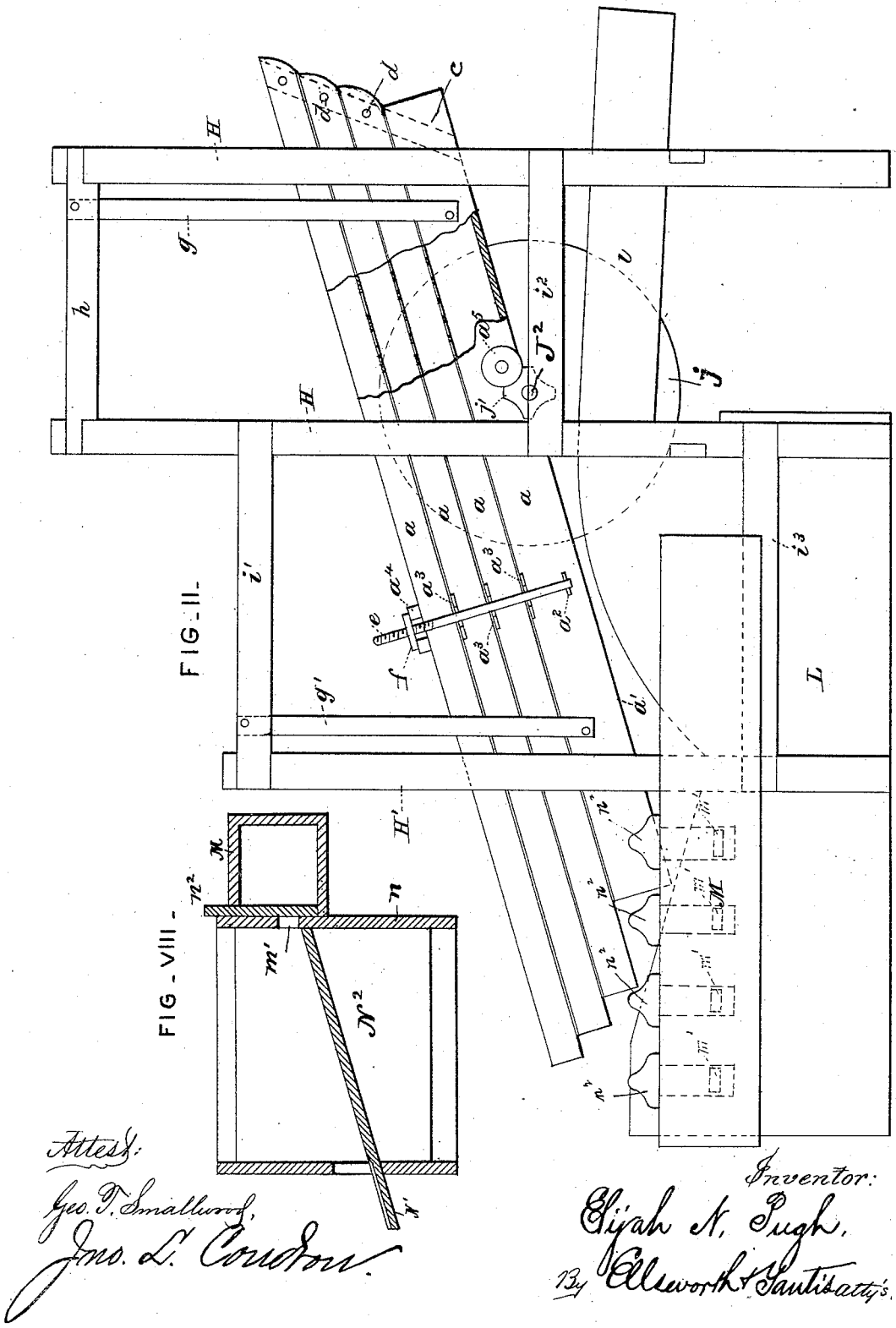

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GRAIN SEPARATOR AND GRADER.

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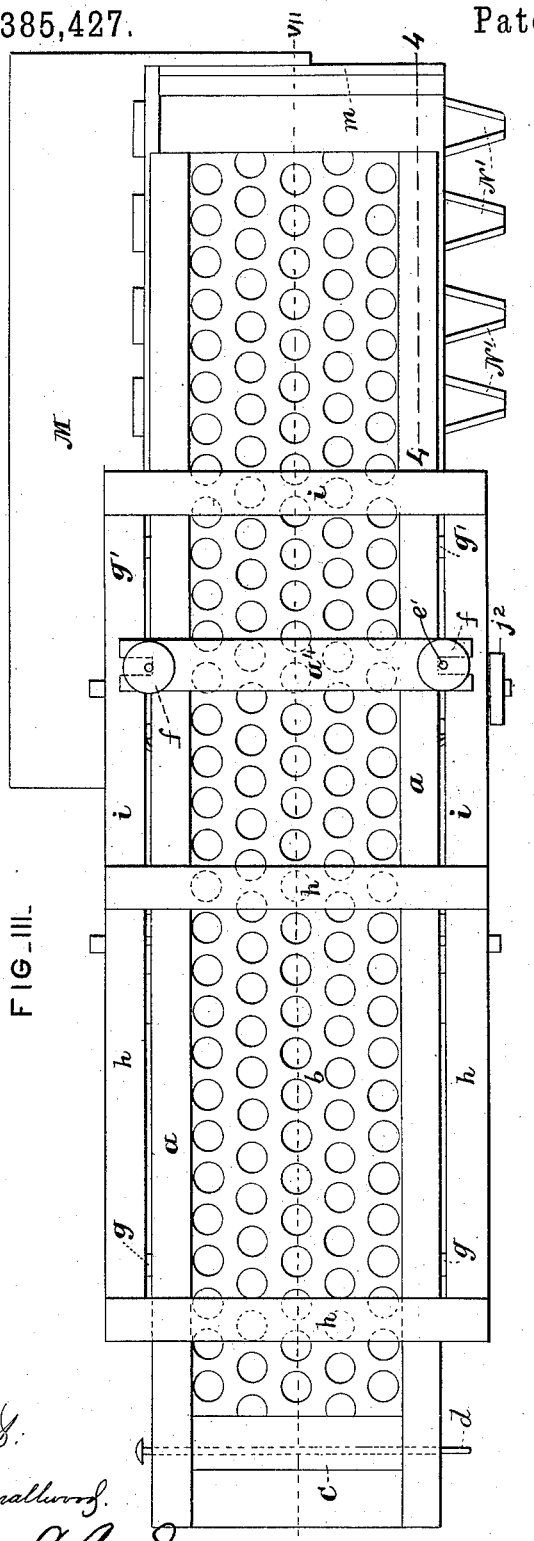

FIG. III.

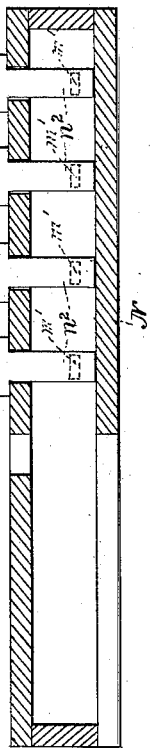

FIG. IV.

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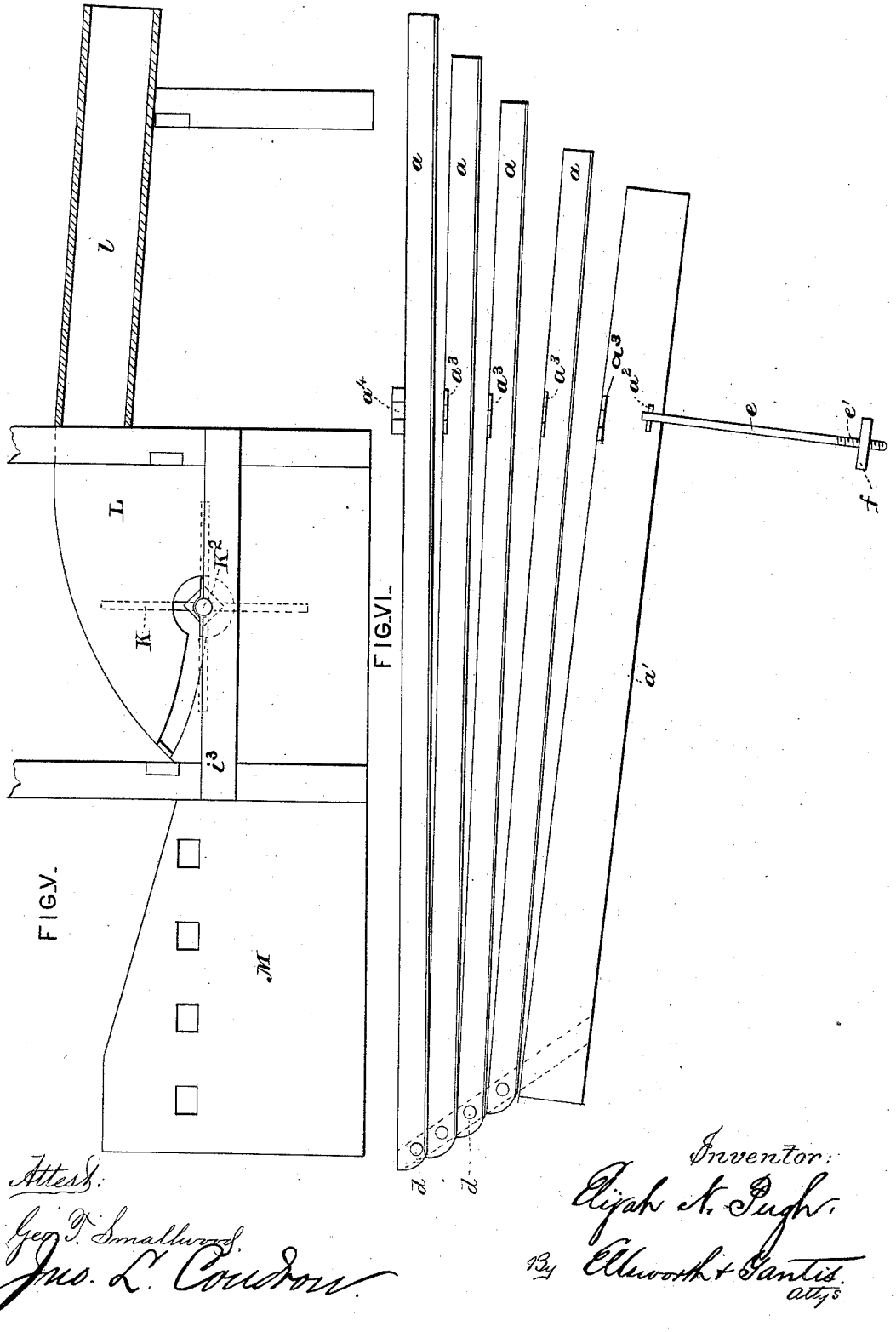

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GRAIN SEPARATOR AND GRADER.

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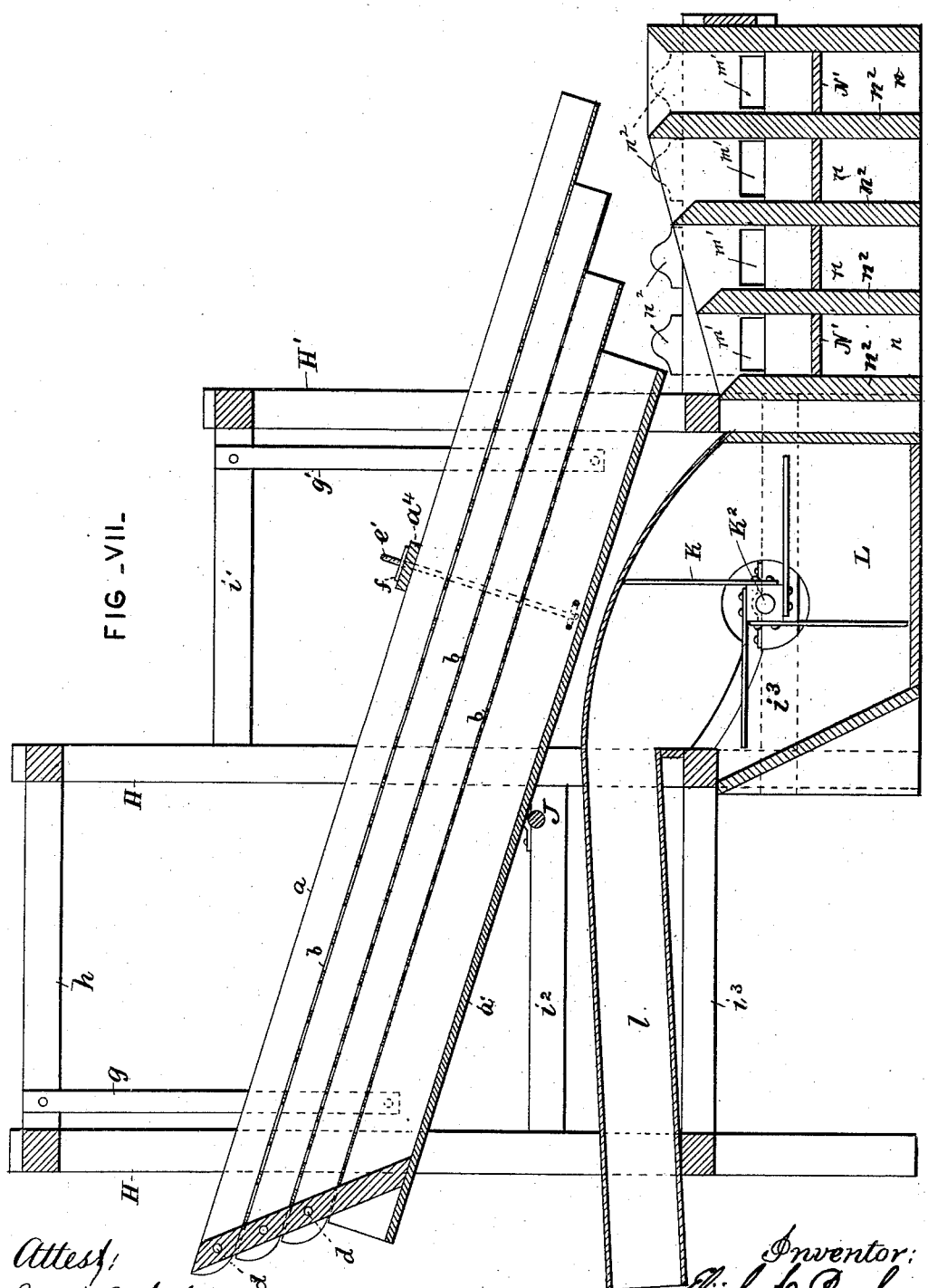
FIG. VII.



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UNITED STATES PATENT OFFICE.

ELIJAH N. PUGH, OF WILLIS, KANSAS.

GRAIN SEPARATOR AND GRADER.

SPECIFICATION forming part of Letters Patent No. 385,427, dated July 3, 1888.

Application filed May 6, 1886. Serial No. 201,299. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH N. PUGH, of Willis, in the county of Brown and State of Kansas, have invented certain new and useful Improvements in Grain Separators and Graders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for separating grain; and it consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation of my improved separator and grader. Fig. II is a similar view of the same, looking at the opposite side from that shown in Fig. I. Fig. III is a plan view of the same. Fig. IV is a sectional view on the line 4 4 of Fig. VII. Fig. V is a side elevation of the lower portion of the machine, the shoe being removed. Fig. VI is a detached view in side elevation of the shoe with its screen-frames in raised position. Fig. VII is a longitudinal section of the machine on the line VII VII, Fig. III; and Fig. VIII is a transverse vertical section of the grain-box and wind-box on the line VIII VIII, Fig. I.

In the said drawings, A designates a shoe composed of a series of frames, *a*, all of which, excepting the lowermost, carry screens *b*. These screens are each formed of a single piece of zinc, perforated or slotted in increasing fineness, the uppermost screen being the coarsest and the lowest one the finest, as indicated in Figs. II and VII. Each of the frames *a* is formed of two longitudinal side pieces united by a bottom piece, which is secured to the under edges of the side pieces, and which, except the lowest, are perforated or slotted to form the screens before referred to. These frames are connected at their upper ends to an end piece, *c*, by removable pivot-pins *d*, which are inserted through the upper ends of the frames, and which extend laterally through the end pieces, as best shown in Fig. III. The lowermost frame, *a*, is formed with a solid bottom, *a'*, and at each side, near its lower end, said frame carries outwardly-extending perforated lugs a^2, to which are pivotally connected the lower ends of two rods, *e*. The upper ends of these rods are screw-threaded, as indicated at *e'*, to receive nuts *f*, for a purpose to be hereinafter described. Each of these rods, when in position, is embraced by U-shaped lugs a^3, which extend horizontally outward from the sides of said frames, there being two of said lugs for each of the frames, excepting the uppermost frame. When in position, the upper ends of these rods enter rectangular slots formed in the ends of a bar, a^4, this bar being placed removably across the uppermost one of the frames *a*. The rods *e* are held in position by the nuts *f*, which are screwed tightly down upon the ends of the bar a^4 for this purpose. Thus the rods, in connection with the lugs a^3, hold the frames *a* securely together. By unscrewing the nuts *f* the bars or rods *e* may be readily turned down upon the lugs a^2, so as to permit the frames *a* to be lifted at their lower ends for inspection. It will also be seen that the frames may be readily removed by withdrawing the pins *d*.

The shoe thus constructed is supported at its upper end by a pair of pivoted or flexible hangers, *g*, which depend from the upper part of a frame composed of four vertical standards, H. The upper ends of these standards H are connected by a rectangular frame, *h*, within which may be inserted the lower end of a discharge-tube of a bin or other grain-receptacle. The lower end of the shoe is supported by a pair of pivoted or flexible hangers, *g'*, which depend from the cross-beams *i i'* of an auxiliary rectangular frame supported by a pair of vertical standards, H', connected at their upper ends to the standards H by the said cross-beams, as shown. Each pair of standards H are connected near their lower ends by horizontal beams i^2, and each of the standards H' is connected at its lower end to the adjacent standards H by horizontal cross-beams i^3, as shown. Upon the beams i^2, and in suitable bearings thereon, is mounted a horizontal shaft, J, which carries at one end a band-wheel, *j*, to receive power from a belt running to a suitable motor. A crank may connect directly with the motor in lieu of the band-wheel and

belt just described. Near each of its ends the shaft J carries a multiple cam-wheel, j', which engages a roller, a^5, journaled in the side of the lowest frame, a, whereby the frames are jolted up and down, as well as reciprocated longitudinally. The shaft J also carries at one end a pulley, j^2, which engages through a band, j^3, a pulley, k', upon the shaft K^2 of a fan, K. This shaft extends transversely of the machine, and is mounted in suitable bearings on the horizontal beams i^3. The fan-box L discharges through a spout, l, which extends horizontally toward the front of the machine, and which throws the chaff in a heap upon the ground or floor near the machine. The fan-box receives its air from a wind-box, M, the outer end of which is covered by a slide, m, as shown. This wind-box communicates, through openings m', (see Figs. VII and VIII,) with compartments in a grain-box, N, said compartments being formed by upright partitions n, as shown in Figs. VII and VIII. Between each pair of these partitions is placed an inclined spout, N', leading out of the chamber or casing N from the side opposite to the box L. The openings m' are closed or varied in area by a series of vertical slides, n^2, which work over said openings so as to cut off the air from one or more of the compartments, as desired. By closing the slide m the draft may be partially or entirely cut off from the fan.

It is only when the machine is provided with the grain-box N that the frames are arranged overlapping at their lower ends, as shown. Otherwise the frames may be all of equal length.

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

1. The combination, with the series of pivoted frames, each, excepting the lowermost, provided with a screen, of a pair of rods pivotally secured to the sides of the lowermost frame, the bar a^4, provided with the end slots, and the clamping-nuts adjustable on said rods, whereby said frames are bound together, substantially as described.

2. The combination, with the end pieces, c, the frames a, pivotally secured thereto, and the intermediate frames having the U-shaped lugs a^3 and the removable pivot-pins d, of the rods e, having screw-threaded portions e' and the clamping nuts f, and the bar a^4, extending across the uppermost frame and having the slotted projecting ends, substantially as set forth.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

ELIJAH N. PUGH.

Witnesses:
NATHAN SUGGET,
JOHN W. EXLINE.