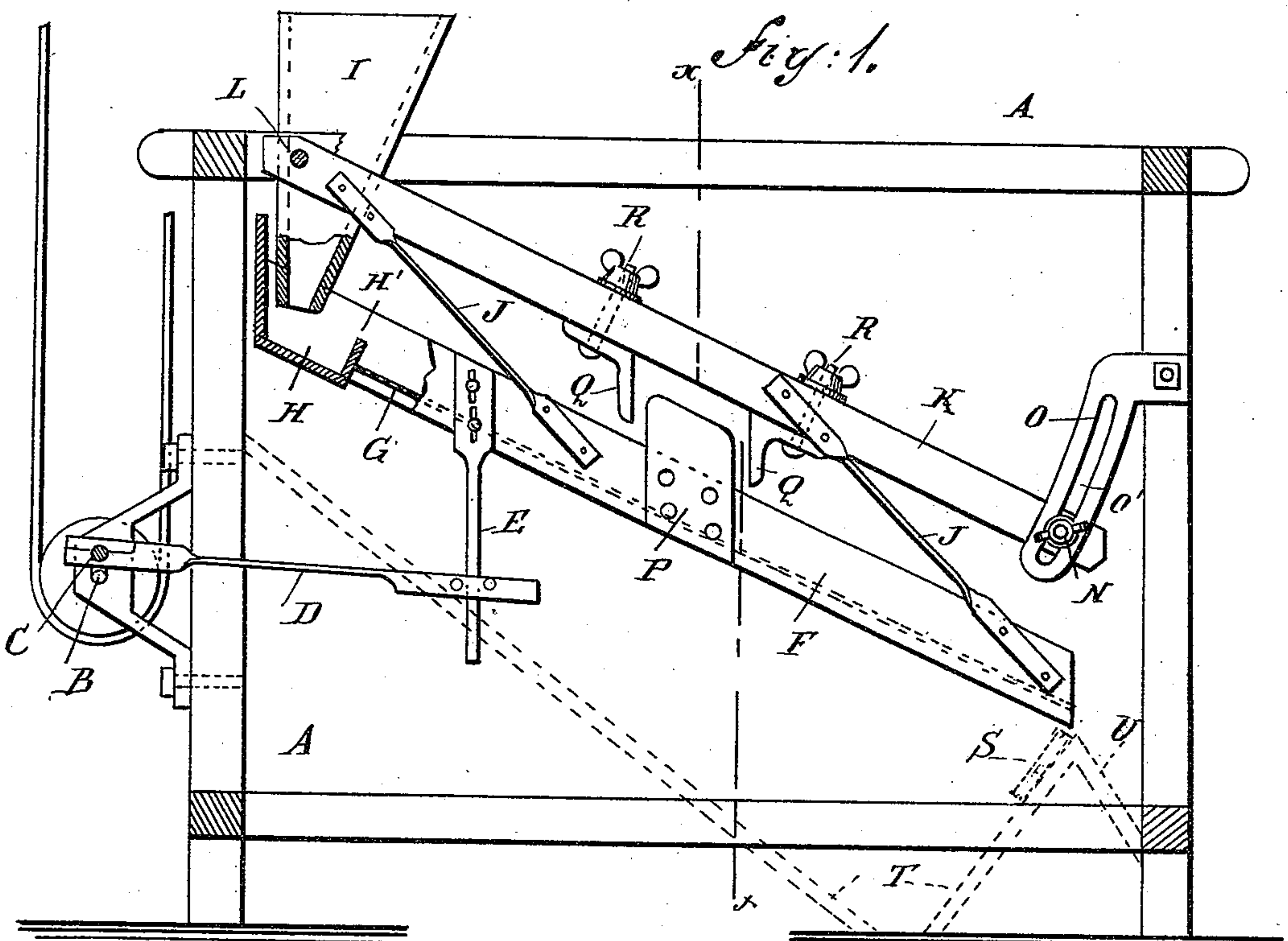


(No Model.)

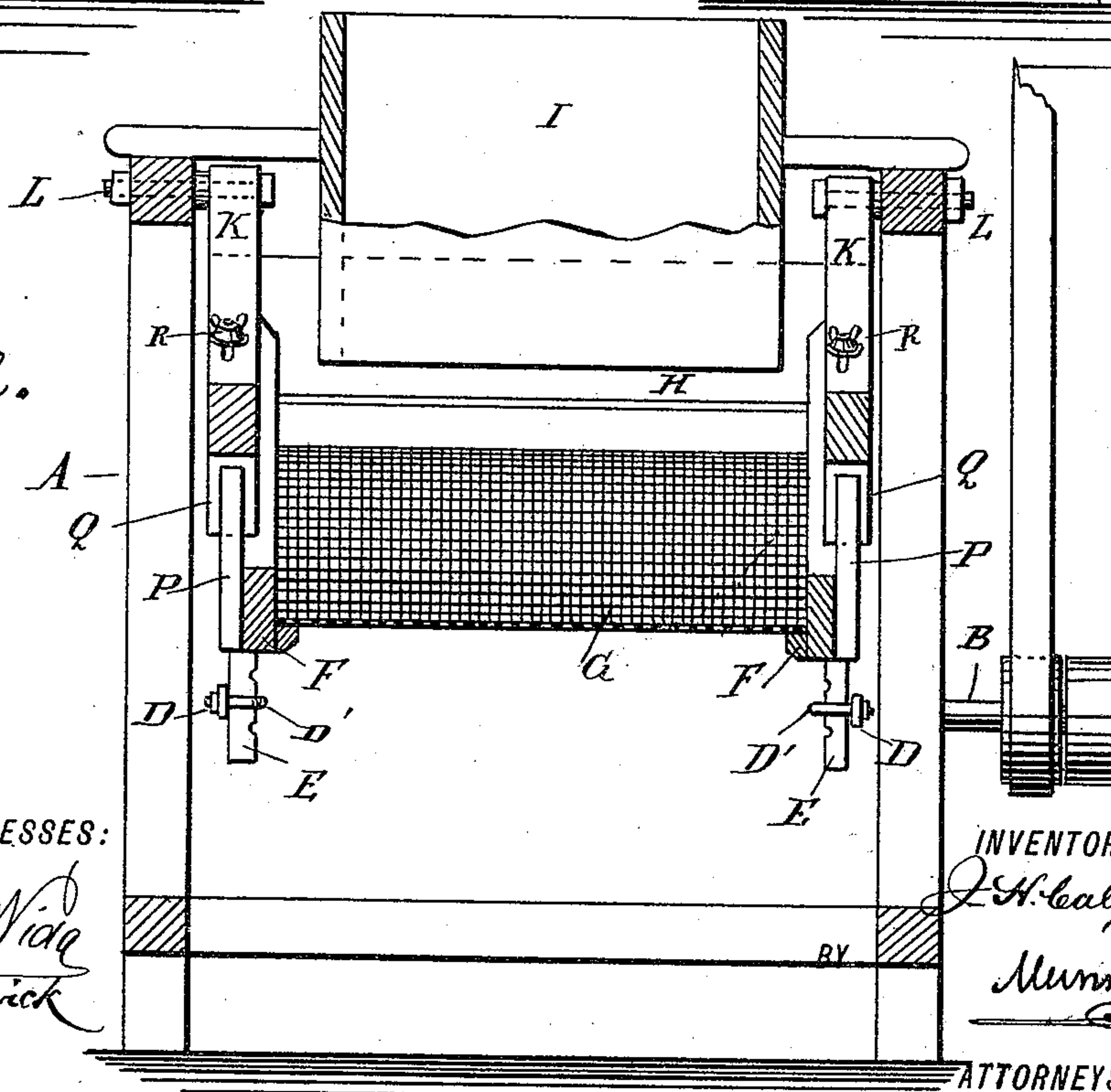
J. H. CALKINS.  
GRAIN SEPARATOR.

No. 430,335.

Patented June 17, 1890.



*Fig: 2.*



WITNESSES:

*Chas. Vick  
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INVENTOR:

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JAMES H. CALKINS, OF OWOSSO, MICHIGAN.

## GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 430,335, dated June 17, 1890.

Application filed September 16, 1889. Serial No. 323,990. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. CALKINS, of Owosso, in the county of Shiawassee and State of Michigan, have invented a new and Improved Grain-Separator, of which the following is a full, clear, and exact description.

My invention is an improvement in the class of grain-separators having a vibratory sieve, which is suspended or supported by elastic arms or bars and operated by suitable connections with a crank-shaft or its equivalent.

My improvements consist in the means for elastic and yet adjustable connection between the sieve and driving crank-shaft, in the means for adjusting the pivoted bars or frame, from which the sieve is suspended by elastic bars, and in adjustable stops for coacting with fixed "bumper-plates" on the sieve-frame, all as hereinafter more fully indicated.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation of the improvement with parts in section, and Fig. 2 is a transverse section of the same on the lines  $x$   $x$  of Fig. 1.

The improved grain-separator is provided with an open frame A, on one end of which is mounted to turn in suitable bearings a shaft B, to be turned either by hand or by power, as desired. On the shaft B are formed crank-arms C, pivotally connected with pitmen D, extending into the open frame A and adjustably connected by a clip D' or other means to the lower end of spring-arms E, fastened on the sides of the sieve-frame F, held in an inclined position and supporting the usual sieve G, onto the upper end of which is discharged the grain from an overflow-receptacle H, held in the frame F, and into which discharges the hopper I, secured on the frame A and containing the grain to be separated. The elastic, and also adjustable, connection between the driving or crank shaft and the sieve, as above described, proves to be a practically important and valuable feature of my machine.

The sieve-frame F is supported on each side by two spring-bars J, fastened on the arms K, pivotally connected at their upper ends,

at L, to the frame A, and provided on their lower ends with bolts N, passing through segmental slots O' in the arms O, projecting from the end of the frame A. The arms K extend parallel, or nearly so, with the sides of the sieve-frame F, and the spring-bars J are placed in an inclined position, as is plainly shown in Fig. 1.

On each of the sides of the frame F is secured a bumper P, projecting upward between two angle-irons Q, held adjustably on the under sides of the arms K by means of bolts R, passing through suitable slots in the said arms K. At the lower end of the sieve-frame F and at the under side of the same is arranged a transversely-extending tail-board S, serving to direct the broken grain from the lower end of the sieve G into the usual hopper T, on which the board S is secured. The good grain passes over the lower end of the sieve G and over an inclined board U to the floor or to a receptacle held below the said board U.

The operation is as follows: When the main driving-shaft B is set in motion, a swinging motion is imparted to the sieve-frame F. The bumper P during the forward and upward motion of the sieve-frame F strikes against the angle-irons Q on the arms K, so as to limit the forward and upward motion of the frame before the crank-arm C has completed its stroke. The spring-arms E bend sufficiently to permit said crank-arm and the lever D to complete the stroke. By the sieve-frame F and the sieve G thus bumping against the angle-irons Q the sieve receives a jar, so as to agitate the grain passing over and down the sieve, whereby the broken grain and other substances are separated from the good grain and rapidly fall through the sieve into the hopper T. It will be seen that by this jar the grain in the overflow-receptacle H easily passes over the transverse lower board H' into the sieve G. The throw of the sieve-frame F and the sieve G can be increased or diminished by adjusting the pitman D higher or lower on the spring-arms E, and the amount of jar given to the sieve can be increased or diminished by adjusting the stops Q on bars K. It will be seen that the jar given to the sieve G prevents the latter from being blocked



up as all the particles between the meshes of the sieve are displaced by the bumping previously described.

It is understood that by moving the arms K farther up or down the incline of the sieve is increased or diminished, so that the grain passing from the overflow-receptacle H onto the sieve travels faster or slower over the said sieve.

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

1. In a grain-separator, the combination, with the crank-shaft, the vibratory sieve-  
15 frame, and means for suspending the latter, of elastic or spring arms E, attached to the sieve-frame, the pitmen D, and means for rigidly connecting the said parts E D, substantially as specified.

20 2. In a grain-separator, the combination, with the crank-shaft, the vibratory sieve-frame, and its elastic suspending-bars J, of the pitmen D, the elastic arms E, pendent from the sieve-frame, and the clips D', which  
25 connect said pitmen and arms adjustably, yet rigidly, as shown and described.

3. In a grain-separator, the combination of the vibratory sieve-frame F, having the upwardly-projecting plates or bumpers P at-

tached to its sides, with the stops Q Q, which  
30 are adjustable (on a suitable supporting-frame) toward and from each other, as and for the purpose specified.

4. In a grain-separator, the combination, with the frame or arms K, which are pivoted  
35 at one end, and means for adjusting them at the other end, of the vibratory sieve-frame F, the elastic bars J, which connect the said parts K J, bumpers and stops Q P, attached to the latter and adapted to engage, as speci-  
40 fied, and the elastic pendent arms E E, pitmen D D, adjustable clips D' D', and the driving-shaft, as shown and described.

5. In a grain-separator, the slotted rigid  
45 arms O, attached to the separator-frame, and clamping-bolts N, with the pivoted adjustable bars K K, the vibratory sieve-frame F, and bumpers and stops P Q, applied as shown, the elastic connections J between the said parts  
50 K F, and the means of elastic connection between the sieve-frame and shaft, consisting of the elastic arms E, pitmen D, and devices for securing them together adjustably, as shown and described.

JAMES H. CALKINS.

Witnesses:

A. D. WHIPPLE,  
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