

L. GATHMANN.
GRAIN SEPARATORS.

No. 195,211.

Patented Sept. 18, 1877.

Fig. 1

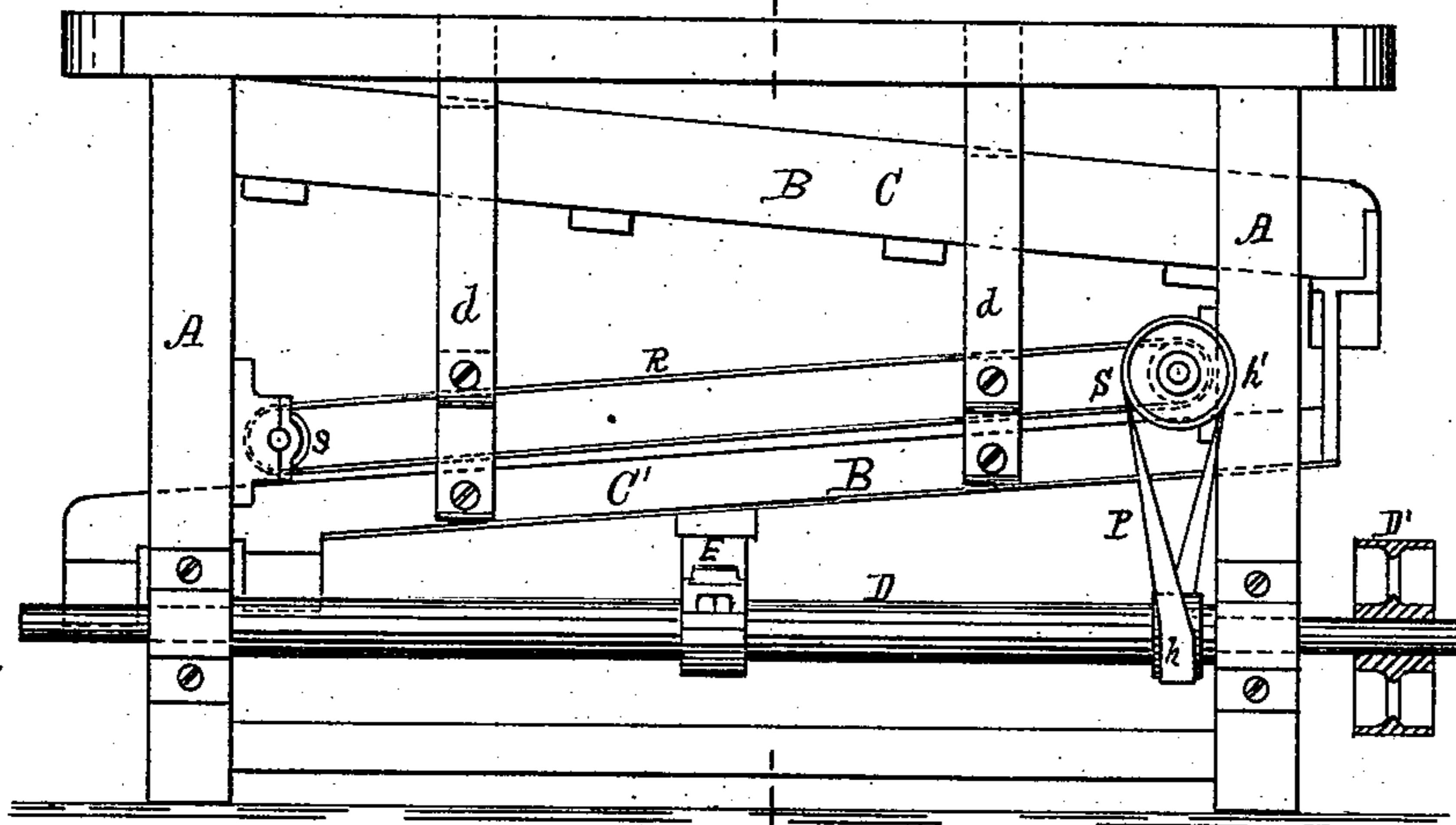


Fig. 2

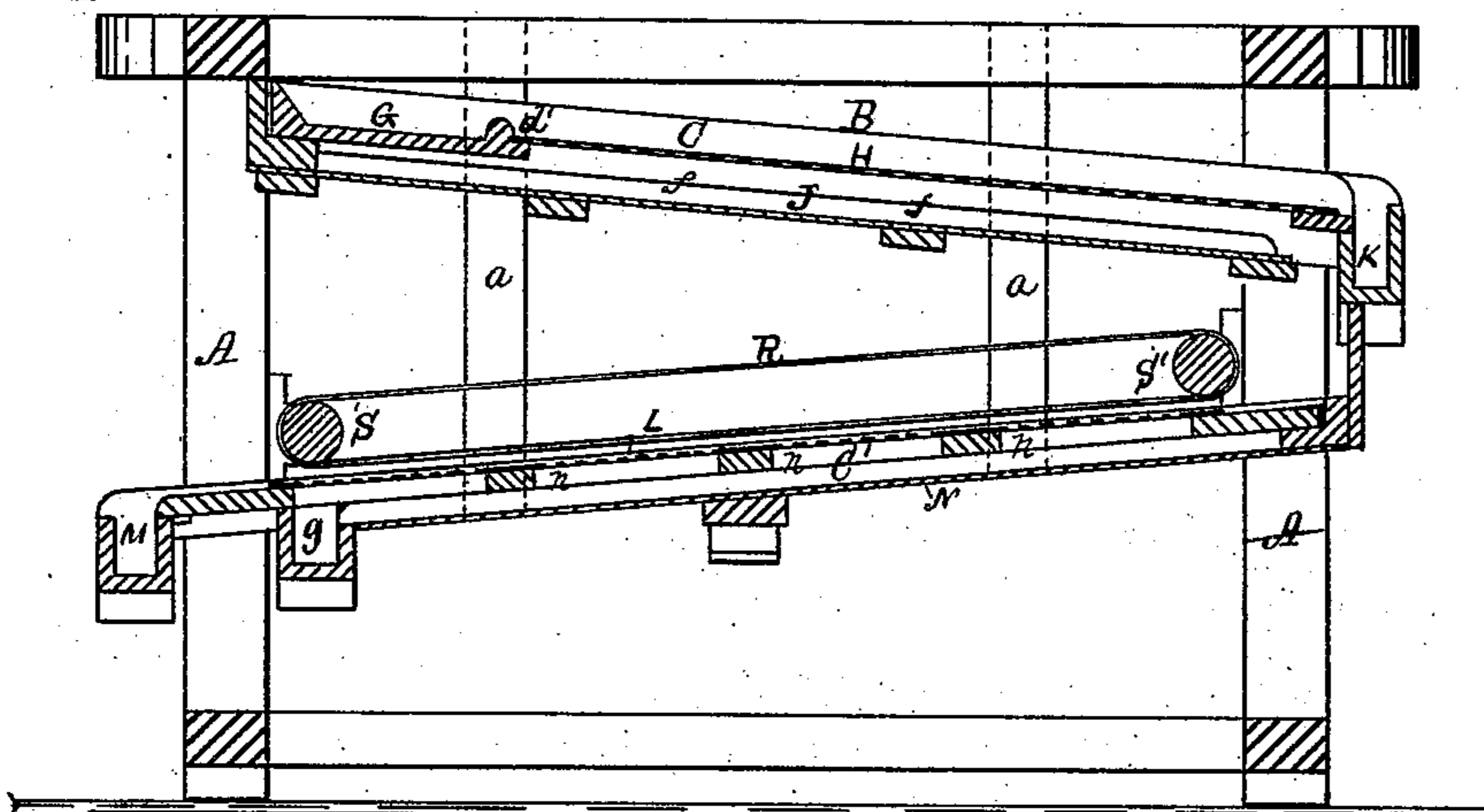
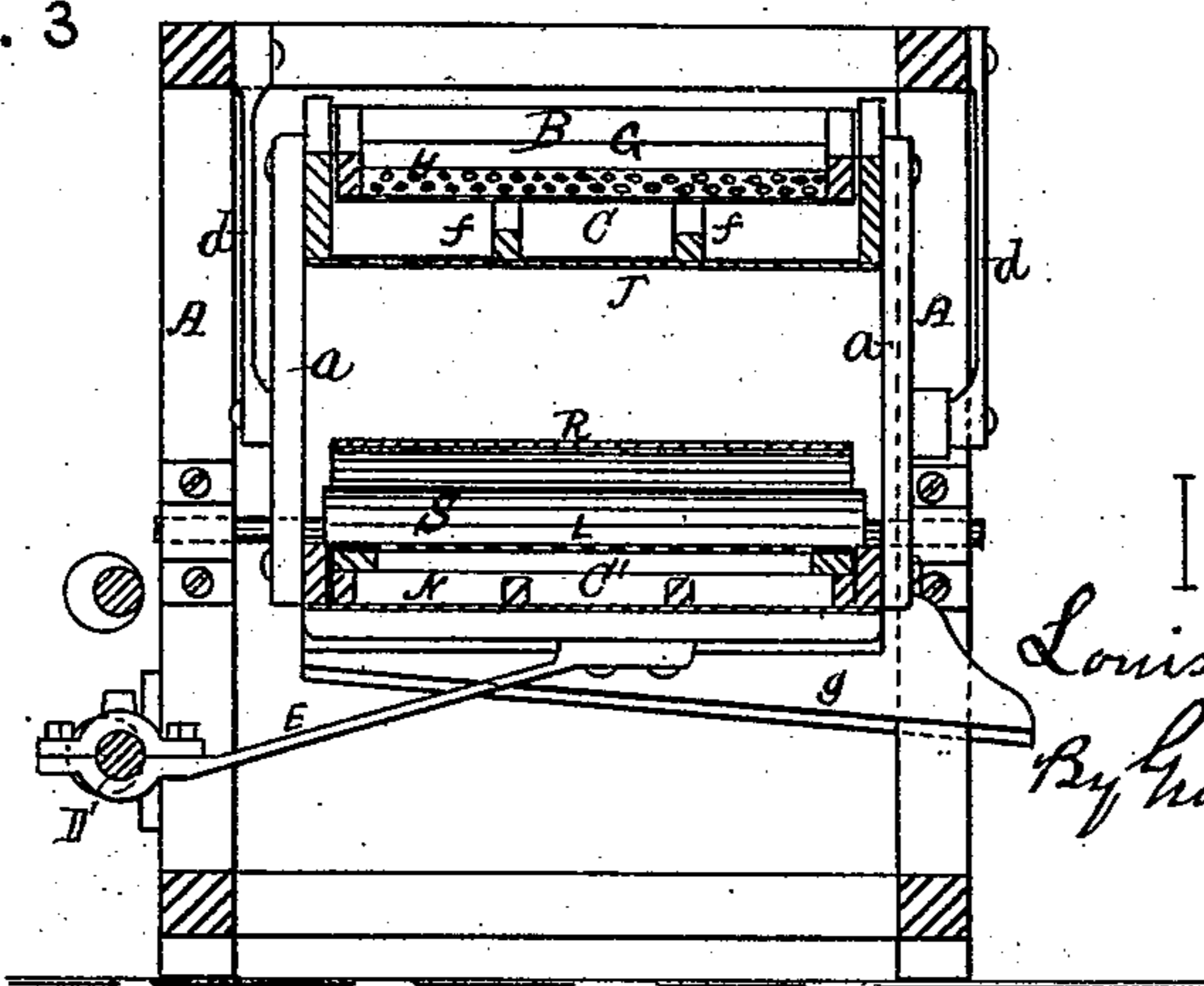


Fig. 3



WITNESSES:

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LOUIS GATHMANN, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **195,211**, dated September 18, 1877; application filed February 26, 1877.

To all whom it may concern:

Be it known that I, LOUIS GATHMANN, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Grain-Separators; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a side elevation of a grain-separator embodying my invention. Fig. 2 represents a longitudinal central section of the same; and Fig. 3 represents a vertical transverse section of the same, showing the parts which are at the left hand of line *x* in Fig. 1.

Like letters of reference indicate like parts.

The object of my invention is to provide a machine for separating cockle from wheat, and also to separate the smaller from the larger kernels of wheat; and my invention consists in the construction and arrangement of the several parts, as hereinafter more fully described and claimed.

In the drawing, A represents the framework of the machine, which may be made as shown, or in any other suitable form that will receive the operating parts. B represents the shoe proper, which is made in two parts, C and C', connected one to the other by vertical bars *a a*, located at or near each end of the shoe and upon opposite sides of the same, as shown in Figs. 2 and 3. The shoe is suspended within the frame by a series of flat wood or metal springs, *d*, each attached at its lower end to one of the bars *a*, and at its upper end to the upper member of the frame, so as to admit of a lateral vibrating movement of the shoe without the frame. D is the main driving-shaft, journaled to the frame, and is provided at one end with a pulley, D', around which is passed a suitable belt, (not shown,) communicating with any desired motor for imparting motion to the machine. E is a connecting-rod, which is attached at one end to the lower surface of the part C' of the shoe, and eccentrically connected at its opposite end to the shaft D, by which means the re-

ciprocating movement is imparted to the shoe by the rotation of the shaft.

The part C of the shoe is arranged on an incline toward the rear end of the machine, and the part C' is arranged on an incline toward the front end of the machine, as shown in Figs. 1 and 2, for the purpose of allowing the different grades of grain to be discharged at opposite ends of the machine. G is a distributing-apron, located at the front end of the part C of the shoe, immediately under a suitable hopper. (Not shown.) H is a preparatory or grading screen, located within the part C, and extending from the rear edge of the apron to the rear end of the shoe.

The apron G is provided at its edge adjacent to the screen H with a rib, *d'*, projecting upward therefrom and extending across the shoe. This rib serves to prevent the grain from passing immediately from the apron to and upon the screen, and thereby causes the grain to spread over the entire surface of the apron, and so that it is evenly distributed over the entire width of the screen.

J represents a conveying-apron, which is permanently attached to the lower surface of the part C of the shoe, and extends nearly to the rear end of the shoe, as shown in Fig. 2. This apron is provided with a series of longitudinal ribs, *f*, extending the entire length of the apron, and at uniform distances one from the other, the object being to keep the grain spread over the entire surface of the apron, so that the grain will be discharged uniformly therefrom. K is a spout, which is attached to the part C of the shoe, immediately under the rear end of the screen H, into which the kernels of grain which are too large to pass through the screen are deposited.

L is the cockle-screen, which is located within the part C' of the shoe, and extending the entire length thereof. M is a spout, which is attached to the front end of the part C', immediately under the front end of the screen L, into which the cleaned grain is discharged from said screen. N is the bottom proper of the shoe, and is provided, at a point near the front end of the screen L, with a spout, *g*, into which the cockle passing through said screen is deposited, and from which spout the cockle is discharged from the machine. R is an endless

apron, which is mounted upon transverse rollers S S', journaled to the frame-work of the machine, so as to freely revolve.

The endless apron R is made of any suitable fabric, and is of the proper width and length to extend over the entire perforated surface of the screen, and is so adjusted as to bring the lower half of the apron in close proximity to the upper surface of the screen, as shown in Fig. 2.

P is the driving-belt, which passes around a pulley, h', on the end of roller S', by which means a continuous rotary motion is imparted to the apron R by the rotation of the main shaft.

The several screens are made of perforated zinc, attached to a suitable frame, and so secured within the shoe as to admit of being removed therefrom when desired. The perforations in the screen H are larger than the perforations in the cockle-screen L, so as to separate the coarser from the finer or smaller kernels of grain and the cockle, preparatory to the discharging of the cockle and smaller kernels of grain upon the screen L for the final separation of the cockle from the grain.

The arrangement of the screen L and apron R with relation to each other is such that when the apron is in motion its lower half will move in the direction of the flow of the grain on the screen, and in close proximity thereto, and so as to hold the kernels flat upon the screen, and at the same time cause them to move over the surface of the screen toward its lower end, and by so arranging the screen as to cause it to reciprocate in planes transverse to the travel of the lower surface of the apron, the grain is spread evenly over the entire surface of the screen, thereby rendering the separation of the cockle from the grain more perfect than would be the case if the screen reciprocated in planes parallel with the flow of the grain and the travel of the lower surface of the apron.

The screen L is provided with a series of cross-bars, n, located at a uniform distance each from the other, so as to hold the entire

surface of the screen in a plane parallel with the lower surface of the apron.

The machine being in motion, the grain to be separated is deposited upon the distributing-apron G, from whence it flows upon and over the screen H, when the smaller kernels and the cockle pass through the perforations in the screen and fall upon the conveying-apron J, while the larger kernels pass over and off the screen H into the spout K, and are discharged from the machine. The kernels of grain and cockle upon the apron J pass over and off the said apron, and are discharged upon the upper end of the screen L, and pass under the revolving apron R, which holds the kernels of grain flat upon the screen, and prevents them from tipping into the perforations in the screen, the diameter of the perforations being less than the length of the kernels, and the kernels of grain are carried over and off the screen by the apron and deposited in the spout M, from whence they are discharged from the machine, while the cockle passes through the perforations in the screen and falls upon the bottom board N, and rolls down said bottom board and falls into the spout g, from whence it is discharged from the machine.

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

1. The combination, with the laterally-reciprocating screen L, of the revolving endless apron R, substantially as and for the purpose specified.

2. The combination, with the reciprocating screen L and revolving apron R, of the grading-screen H, substantially as and for the purpose specified.

3. The reciprocating screen L, provided with a series of cross-bars, n, for supporting the center of the screen, in combination with the revolving apron R, substantially as and for the purpose specified.

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Witnesses:

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