

Fig. 1

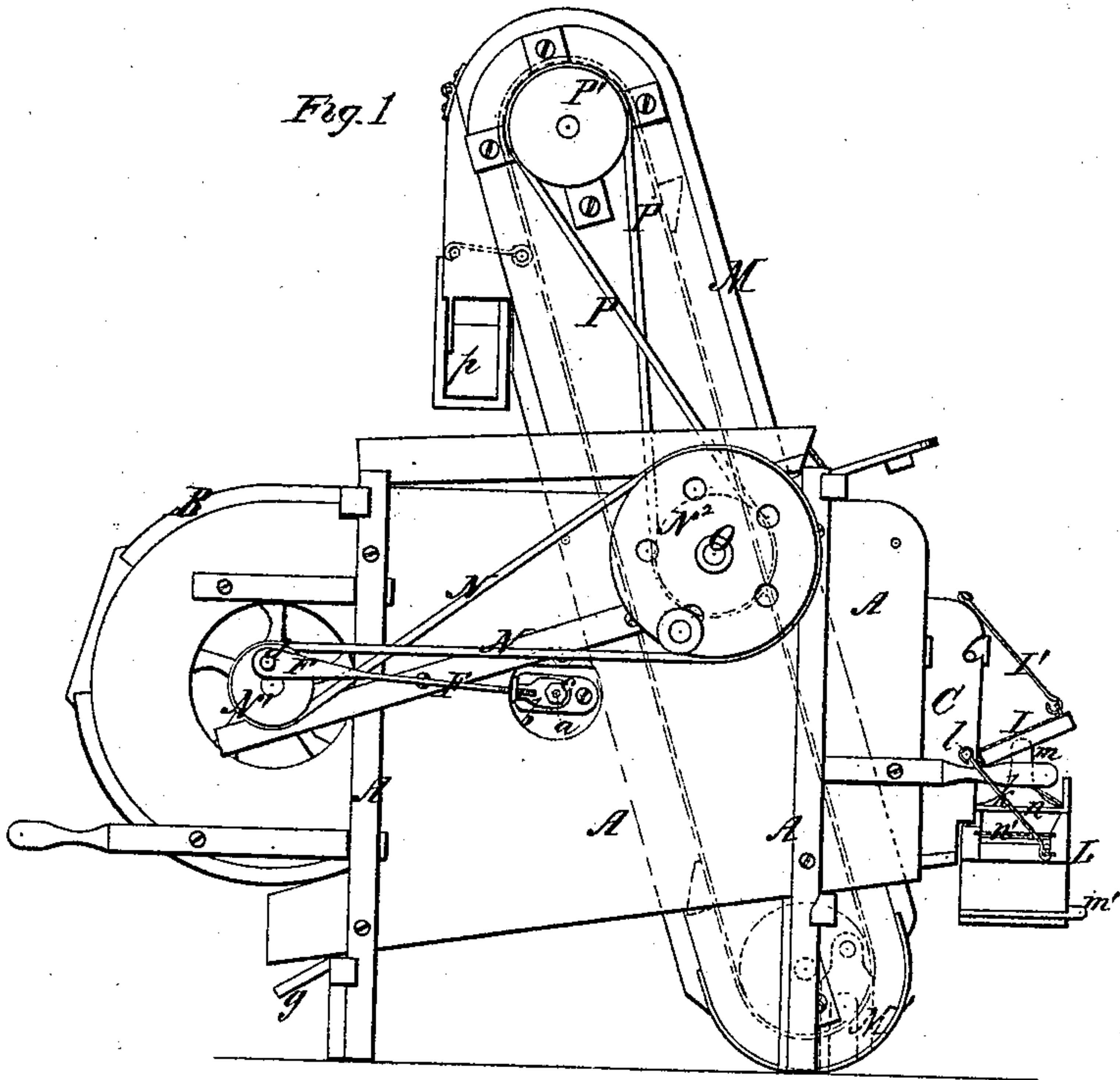
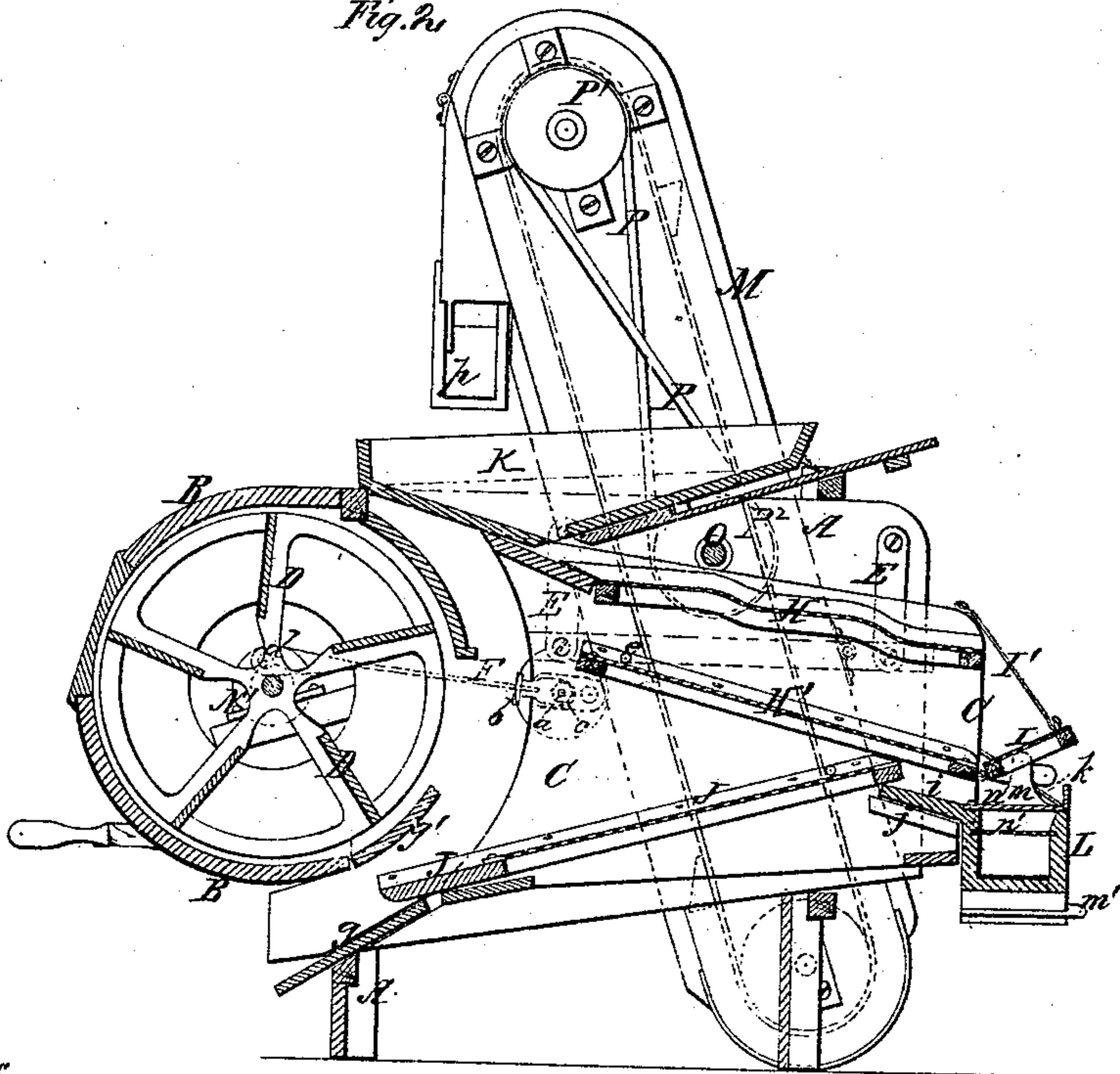


Fig. 2



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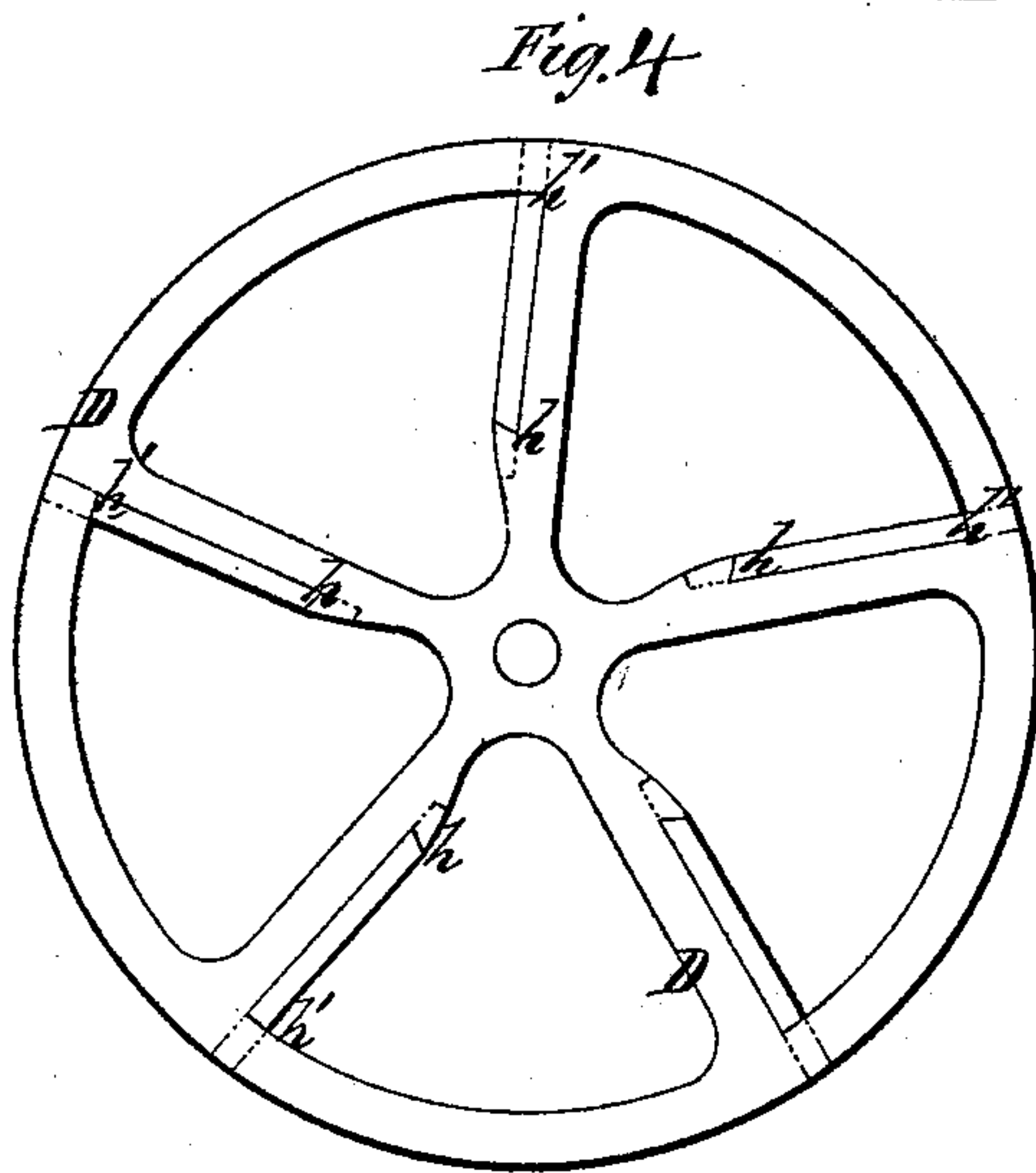
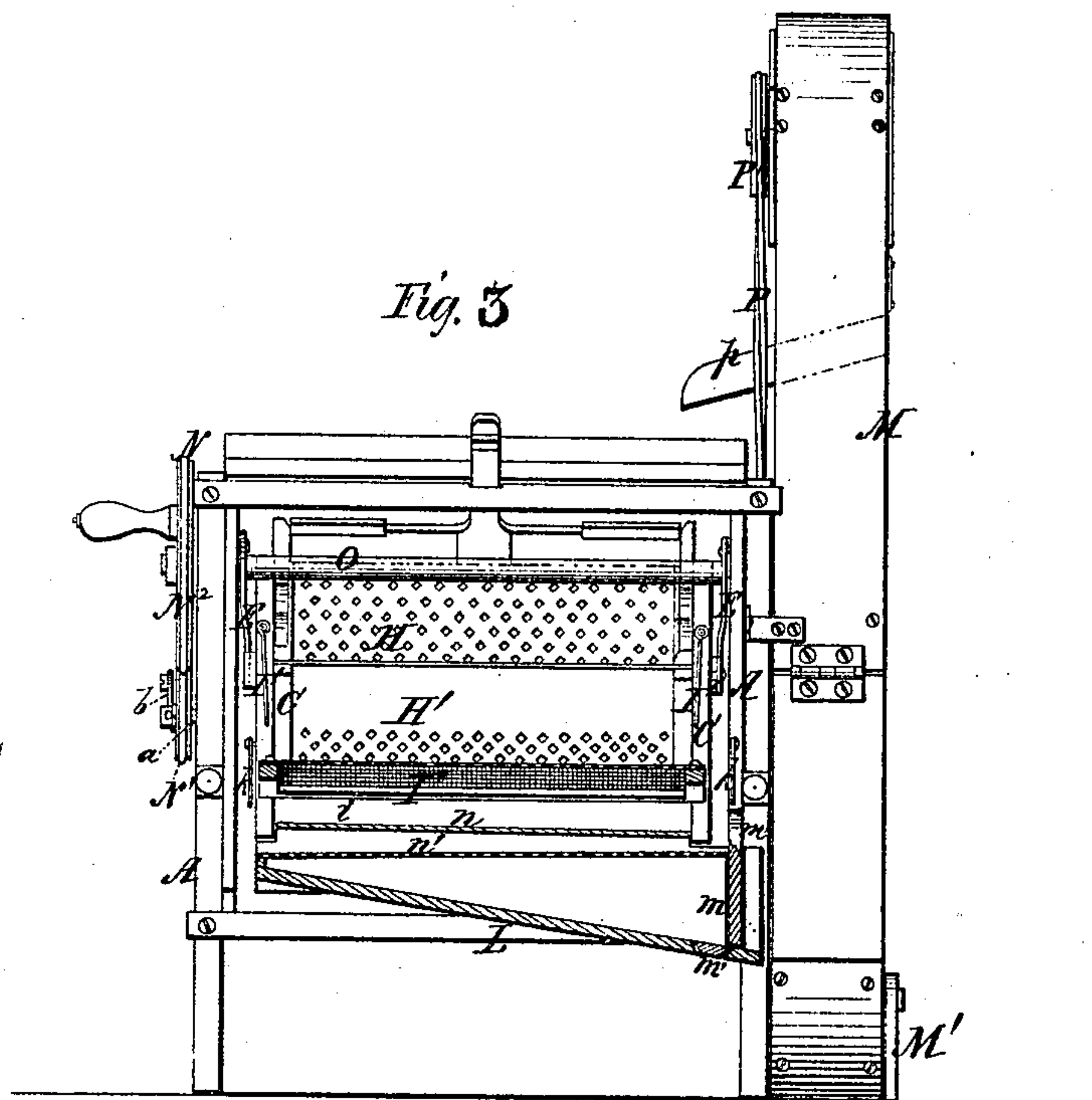
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GRAIN-SEPARATOR.

No. 175,700.

Patented April 4, 1876.



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UNITED STATES PATENT OFFICE.

GEORGE B. HARRINGTON AND EDWARD H. CLINTON, OF IOWA CITY, IOWA.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 175,700, dated April 4, 1876; application filed May 15, 1875.

To all whom it may concern:

Be it known that we, GEORGE B. HARRINGTON and EDWARD H. CLINTON, of Iowa City, county of Johnson and State of Iowa, have invented a new and useful Improvement in Fanning-Mills; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of our improved fanning-mill. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a vertical transverse section of the same. Fig. 4 is an end view of the blast-fan.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of our invention consists in certain constructions and combinations of parts, as hereinafter described and specifically claimed.

A is the case for the shoe C; B, the case for the fan D. The shoe C is hung by pendent links E E so as to vibrate, and it has wrists *a* on each of its sides, extending through oblong holes in the side boards of the case A. These wrists have angle-iron eye-pieces *b b* fitted loosely upon them and confined by nuts *c c*. Into the free ends of these angle-iron pieces the screw-threaded ends of the pitmen-rods F F are inserted, said rods extending from cranks *d d* of the fan-shaft. By this arrangement the shoe is vibrated squarely, being moved by rods on each side of the case A; and by means of the screw-threads on the pitmen and the tapped eyes of the angle-iron pieces, the distance that the shoe moves out beyond the front of the case A, and the distance between the shoe and the fan, can be increased or decreased, as necessity may demand. The shoe is provided with a corrugated sheet-metal screen, H, having diamond-shaped passages through it. It also is furnished with an adjustable sheet-metal screen, H', having a partly-perforated and partly plain surface, the perforations being of diamond shape. This screen is hung by its rear end on pivots *e*. Just in front of this screen, and connected to it by flexible joints, a wire-gauze cut-off, I, is arranged and suspended by means of hooks I'. This cut-off is outside of the case A, as shown.

Another screen, J, is arranged to incline in an opposite direction to the screen H'. At the end of this screen a tail-board, *g*, and a guard-board, *g'*, are applied, being fitted in grooves of the case A. The screens H H' are inclined toward the front of the case A, and the screen J and the cut-off screen I are inclined toward the back of the machine, and all of the screens are exposed to the blast of the fan D. By this arrangement the grain which passes in from the hopper K is subjected to the blast upon screens H, H', and J, and any tendency of the blast to blow over light valuable grain is counteracted by the cut off I, while at the same time the light chaff and dust can be blown up over and through the cut-off. By having the screen H perforated over its entire surface the full effect of the blast upon the grain while it is in its dirtiest condition is secured, and the dirt and chaff are blown away before it falls upon the screen H'. And by having the screen H' imperforate over a portion of its surface the smaller grain or seed which fall through the meshes of the screen H will not be blown over the front of the screen H', but will be conducted down to the perforated cut-off I, and by it allowed to descend into an auxiliary separator, L, arranged directly under it, as will be presently described. The fan which we employ has its blades fastened to the heads by dovetails *h* and abutting shoulders *h'*, the dovetails *h* entering similar recesses cut in the arms of the heads or ends of the fan, and the shoulders bearing against the inner faces of the heads or end pieces. The heads are suitably fastened upon the shaft, and thus the blades and heads are held firmly together without the aid of nails, screws, or other fastenings which are liable to split the blades when they are under strain. L is an auxiliary separator spout or trough, hung upon the front of the shoe by means of a lip, *i*, which rests on short cleats *j* of the shoe. This separator is sustained by hooks *k*, which are fastened to pins *l* on the sides of the shoe. The separator L has an end gate, *m*, and a bottom valve, *m'*. It is also provided with an imperforate plate, *n*, inclining toward the gates, and with a perforated plate, *n'*, inclining from the gates, while the bottom of the spout or trough which holds these plates in-

clines toward the gates. The grain or seed which falls through the meshes of the cut-off I, which receives the trash and allows it to be blown away, is received upon the plate *n* and conducted toward the gated end of the trough or spout L and deposited upon the plate *n'*, and by the inclination of this plate *n'* is conducted toward the opposite end of the trough L, and in its passage a separation takes place, one portion passing off over the end of the sieve *n'*, and the other portion passing into the trough and to the gated end of the trough L, where it is taken out through either of the gates. M is an elevator, arranged on the side of the case A in proper relation to the hopper. It may consist of a case and an endless belt with cups or blades adapted for carrying up the grain. At the bottom of the spout of the elevator an opening, M', is formed for the grain to pass to the elevating-belt, and at the upper part of the spout a trough or conductor, *p*, leading into the hopper, is provided for conducting the grain from the elevator into the hopper. For operating the fan, shoe, and elevator, belts and pulleys are provided, as shown in the drawings. The crossed belt N, passing over a crank-pulley, N¹, of the fan, and over a pulley, N², of a shaft, O, and the crossed belt P, passing over a pulley, P¹, of one of the shafts of the elevator-belt and over a pulley, P², of the shaft O, the whole machine is set in operation. By passing the shaft O through the fanning-mill above the shoe, one end of it serves for operating the elevator placed on one side of the machine, in close relation to the receiving-hopper, and the other end serves for operating the fan and the shoe. This renders the machine, including the elevator, very compact and convenient.

What we claim is—

1. In combination with a fanning-mill shoe,

constructed with an upper perforated sieve, H, and a lower perforated sieve, J, the sieve H', perforated from a line drawn transversely at or near its center to its edge farthest from the fan, substantially as and for the purposes described.

2. In combination with a fanning-mill shoe, constructed with an upper perforated sieve, H, and a lower perforated sieve, J, and the sieve H', perforated from a line drawn transversely at or near its center to its edge farthest from the fan, the deflecting sieve or perforated cut-off I, substantially as and for the purposes described.

3. The auxiliary separator L, constructed to discharge at opposite ends, and provided with the imperforate plate *m* and the perforated plate or sieve *m'*, the wing-shelf *i* for attaching it to the ledges *j* of the fanning-mill, and the hooks *k*, substantially as and for the purposes described.

4. The combination of the angular eye-bearings *b b*, with the wrists *a a* of the shoe, and with the screw-threaded pitmen F F of the cranks *d d* of the fan-shaft, substantially in the manner shown and described.

5. In a fanning-mill fan, the blades attached to the end or head pieces of the fan by dovetails and shoulders, substantially as described.

6. The combination of the main driving-shaft O, provided with pulleys N² and P², with the fan-shaft having a crank-pulley, N¹, for actuating the shoe, and with the pulley P¹, which drives the elevator, the parts being arranged as described, and operating substantially as herein set forth.

GEORGE BYRON HARRINGTON.

EDWARD HENRY CLINTON.

Witnesses:

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