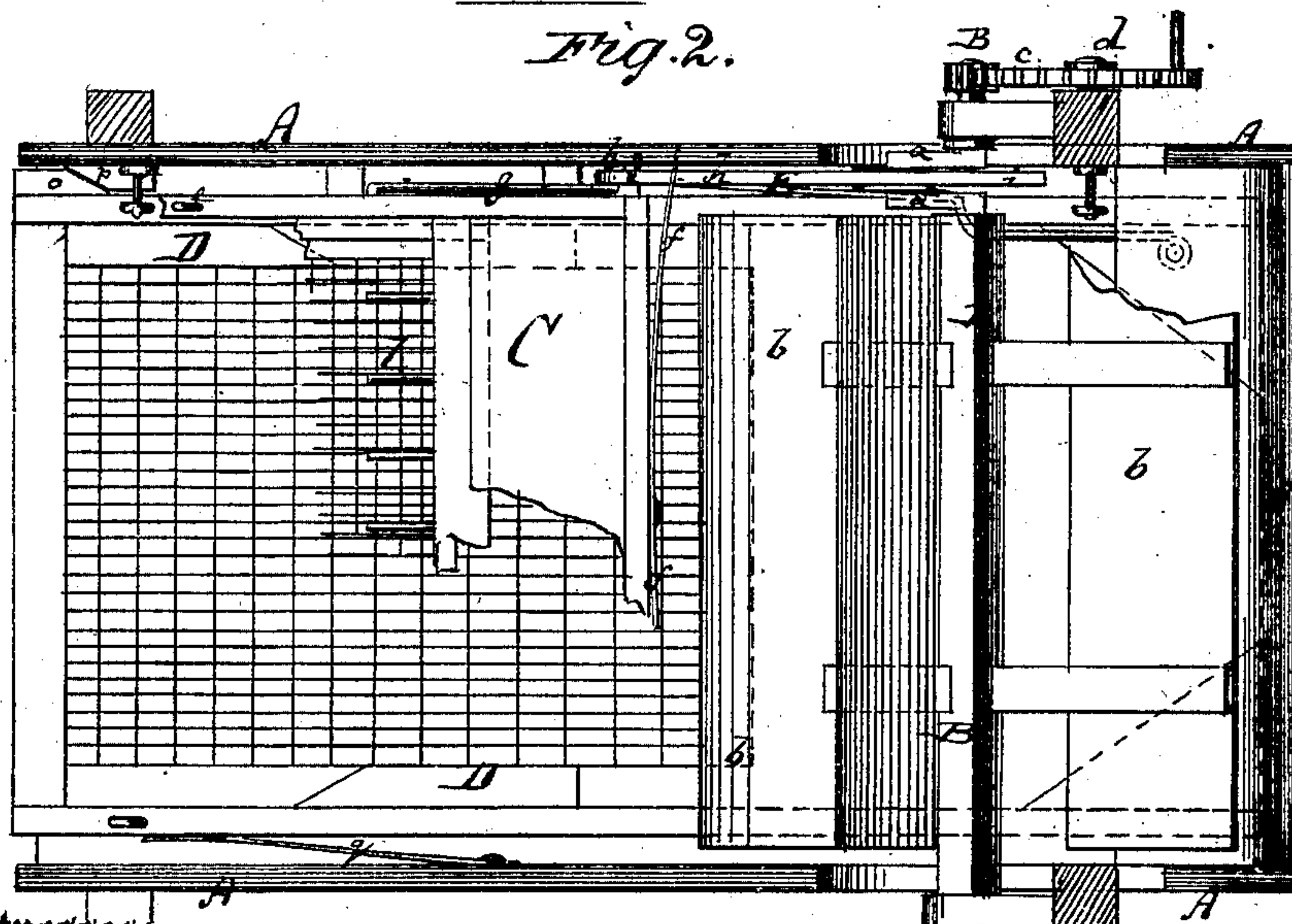
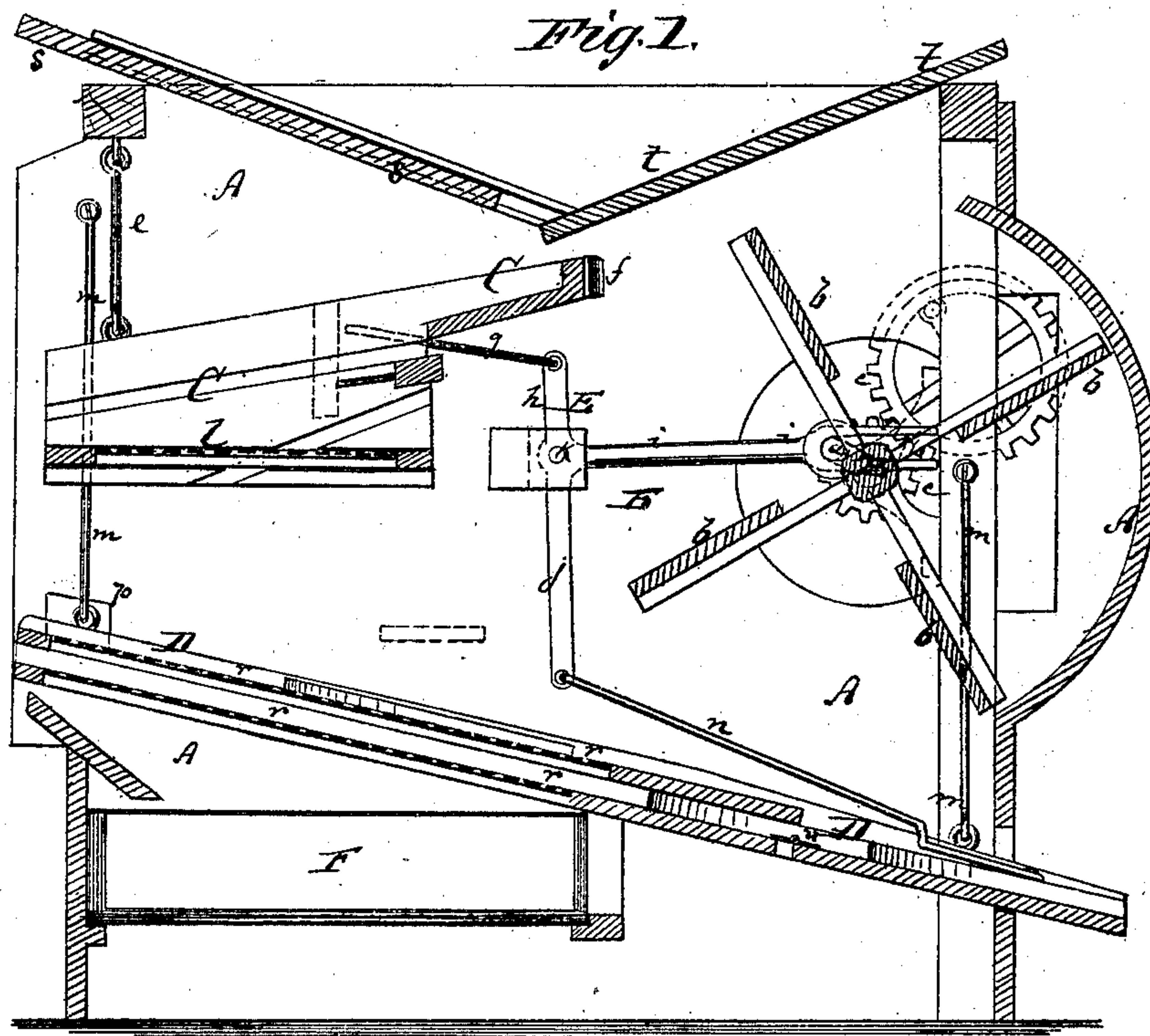


S. S. HAMMOND & J. S. PADEN.
GRAIN SEPARATOR AND FANNING MILL.

No. 112,141.

Patented Feb. 28, 1871.



Witnesses:

John Decker.
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United States Patent Office.

SAMUEL S. HAMMOND AND JOHN S. PADEN, OF NORTH EAST,
PENNSYLVANIA.

Letters Patent No. 112,141, dated February 28, 1871.

IMPROVEMENT IN GRAIN-SEPARATORS AND FANNING-MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, SAMUEL S. HAMMOND and JOHN S. PADEN, of North East, in the county of Erie and State of Pennsylvania, have invented a new and Combined Grain-Separator and Fanning-Mill; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 represents a vertical longitudinal section of the combined grain-separator and fanning-mill.

Figure 2 is a plan or top view, partly in section, of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to improvements in the arrangement of mills for separating and fanning grain, and has for its object chiefly to provide clear unobstructed air-passages for the artificial draught and ready access to all parts.

The invention consists in a new mechanism or combination of means for imparting reciprocating motion to the upper and lower shoes, and also at the same time a lateral vibration to the lower shoe.

A in the drawing represents the frame-work or casing of the mill.

In the same is hung the transverse fan-shaft B, which is, near one end, provided with a crank, *a*, whereby it imparts motion to the shoes C and D.

The shaft B carries also the blades or wings *b* of the fan, and is, by gearing, *c c*, or otherwise, connected with the driving-shaft *d*, to which rotary motion can be imparted by suitable mechanism.

C is the upper shoe.

It is, near the back end, suspended from the sides of the case A by means of jointed rods or links, *e*, and at its front end by a spring, *f*.

This spring is flat, and is, at its middle, fastened to the front end of the shoe C.

The ends of the spring enter indentures that are provided for their reception in the sides of the case A, as indicated in fig. 2.

The shoe C is, by a rod, *g*, connected with one arm, *h*, of a T-shaped shaker or lever E.

This shaker or lever E is, at the junction of its three arms, *h*, *i*, and *j*, pivoted to the sides of the case A by a pin or bolt, *k*, and has the end of its horizontal arm, *i*, forked to straddle the crank *a*, as shown, so that the rotation of the shaft B will cause the lever E to oscillate on its pivot.

The lever E, being by the rod *g* connected with the shoe C, causes said shoe to be drawn forward and backward alternately.

The spring *f*, being strained during the backward motion of the shoe C, hastens, as it contracts, the forward motion of said shoe, and produces thereby a peculiar jerking motion which will tend to clear the sieves of the shoe from all matter resting thereon, and to prevent the clogging of the meshes.

The shoe C has its sides provided with several sets of grooves, as shown in fig. 1, so that it may receive its sieve or sieves, *l*, in suitable position, and in accordance with the kind of grain to be cleaned.

The lower shoe D is, by two pairs of jointed rods or links, *m*, suspended from the sides of the case A, and is, near the front end, connected with the lower arms *j* of the lever E by a rod, *n*.

The oscillation of the lever E serves thus also to impart back-and-forward motion to the shoe D.

To one side of the shoe D is affixed a projecting block, *o*, which is in constant contact with a block, *p*, that projects from the side of the case A.

The contiguous faces of the blocks *o p* are inclined, as shown in fig. 2, so that, during the longitudinal motion of the shoe D, the passing of the block *o* over *p* will produce a lateral motion.

A spring, *q*, abutting against the opposite side of the shoe D, holds the blocks *o p* in constant contact, and produces the return stroke of the lateral motion.

The sieves *r* in the shoe D are applied in suitable manner.

By the arrangement of the driving mechanism, *i. e.*, of the lever E and its connections, at the side, the air-passages for the draught are left quite unobstructed, and more perfect and rapid operation is thus obtained.

F is a drawer or vessel, arranged under the shoe D, to receive the matter dropping through the same.

The hopper of the mill consists of two sliding plates, *s* and *t*, which can be moved apart or together.

The back plate *s* serves to regulate the feed of the mill, to supply the same with a greater or lesser amount of material at the time, so that thereby the feed can be adjusted in accordance with the power applied to the shaft, and with the condition of the grain to be cleaned.

The front plate *t* of the hopper is also adjustable, to give access to the fan, and to the shaking mechanism. This makes the removal of the cylindrical shell of the fan unnecessary and cheapens the construction of the mill.

The lower part of the shoe D contains a hinged valve, *u*, by which a rapid discharge downward can be obtained.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The combination of the shaker E with the shoe D, blocks *o p*, and spring *q*, all arranged as described, for the purpose of imparting a double motion to the shoe, substantially as herein shown and described.

2. The general combination of the shoes O D, springs *f q*, blocks *o p*, and shaker C, with each other,

to operate substantially as herein shown and described.

SAMUEL S. HAMMOND.
JOHN S. PADEN.

Witnesses:

JAMES COREY,
H. A. FROSS.