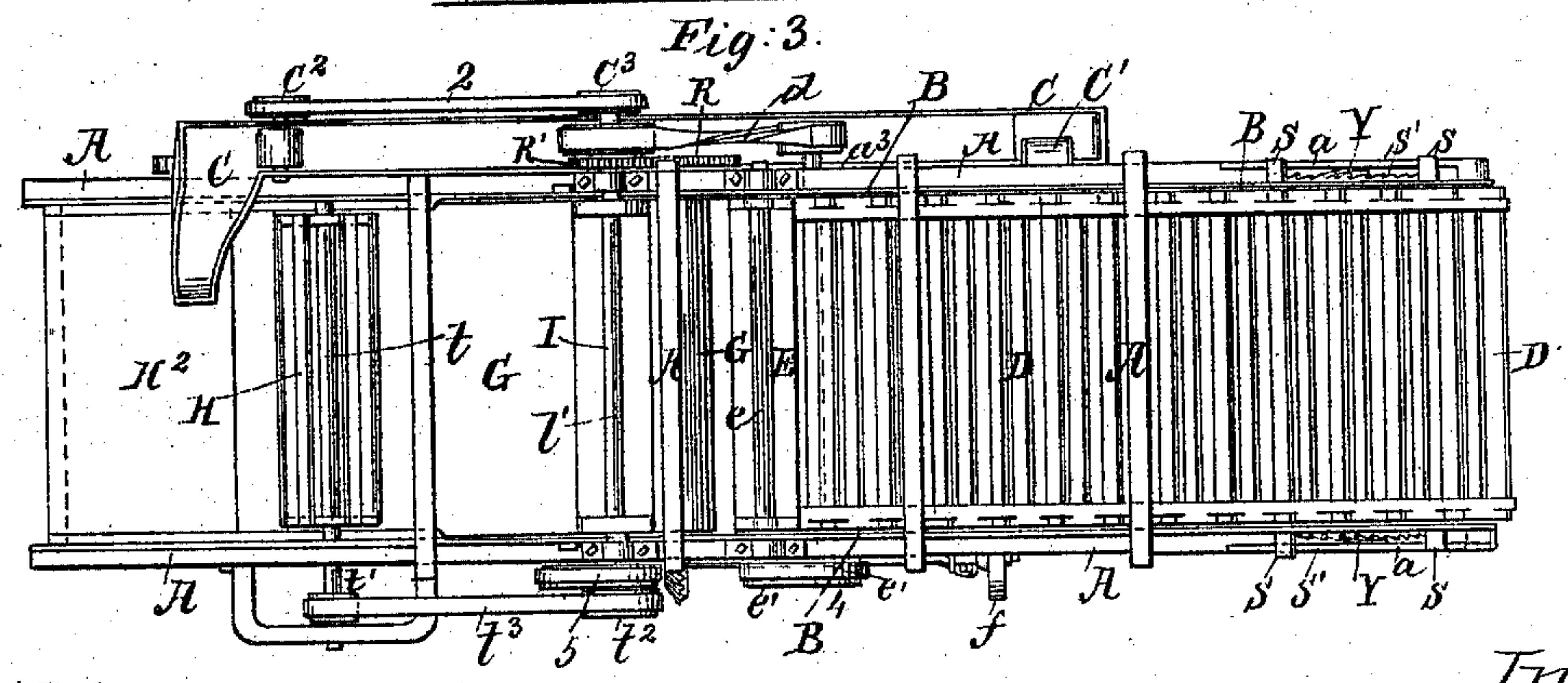
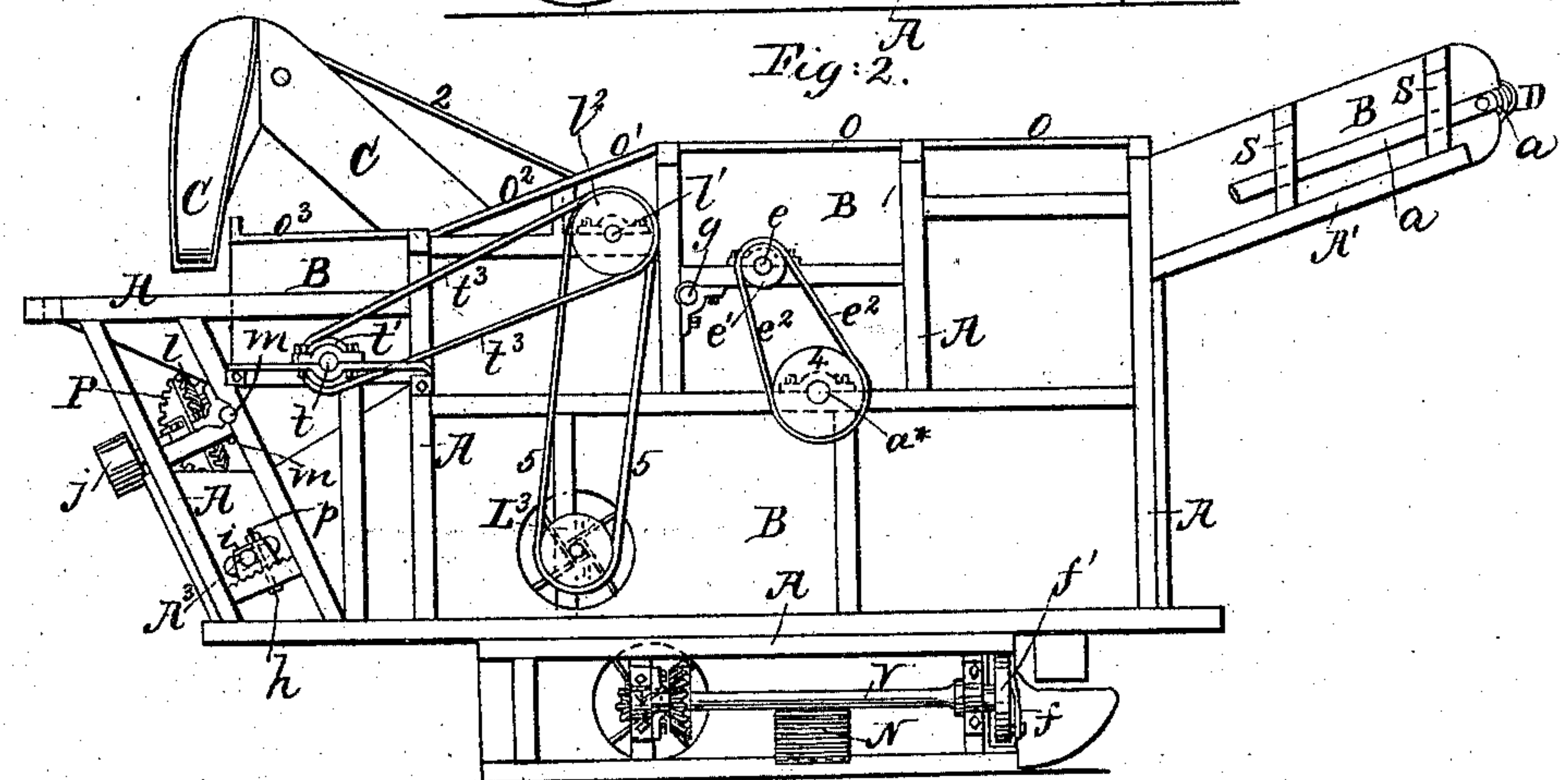
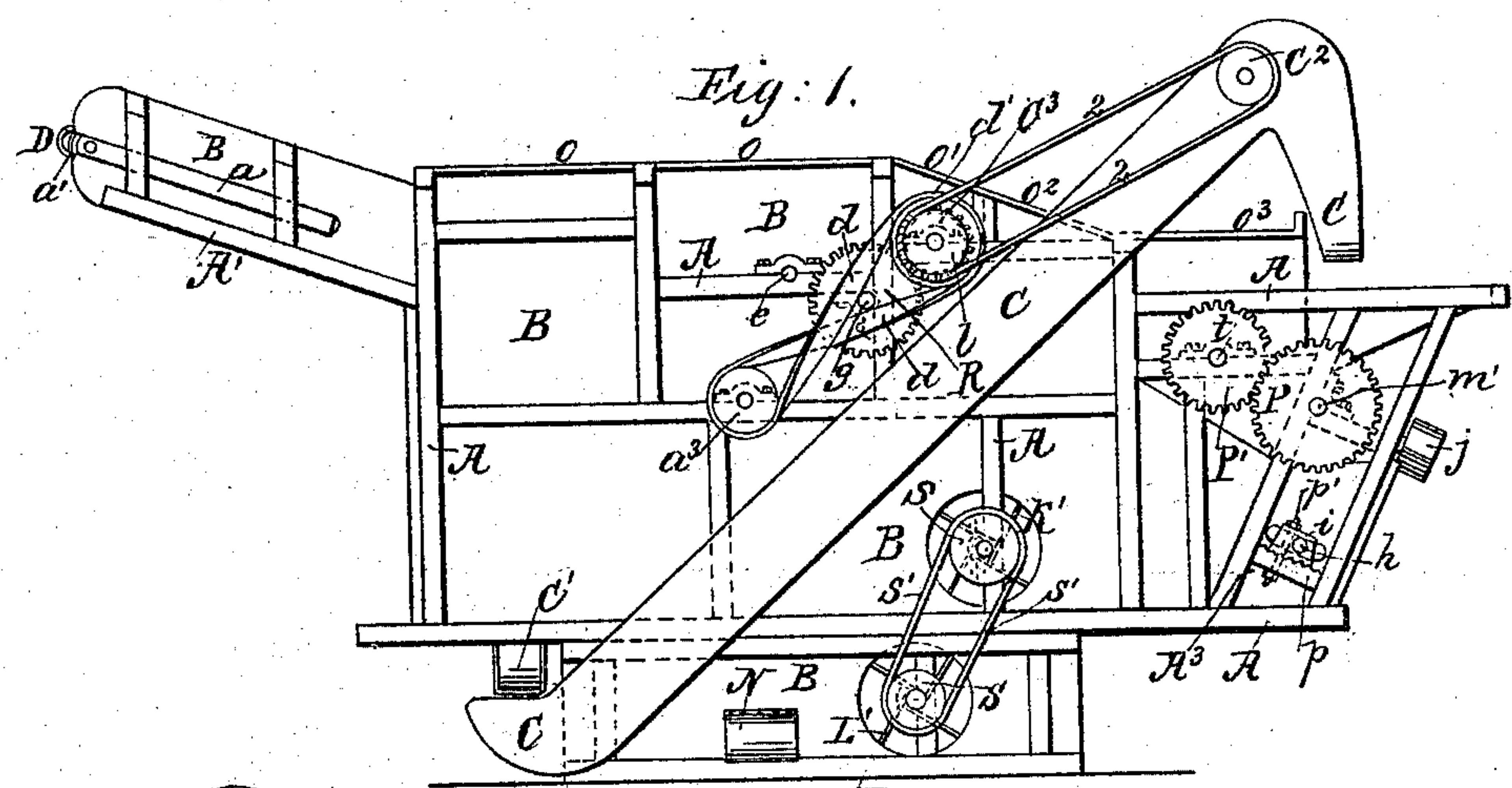


D. KANE.

Thrashing Machine.

No. 81,647.

Patented Sept. 1, 1868.



Witnesses.

J. & Campbell
J. N. Campbell

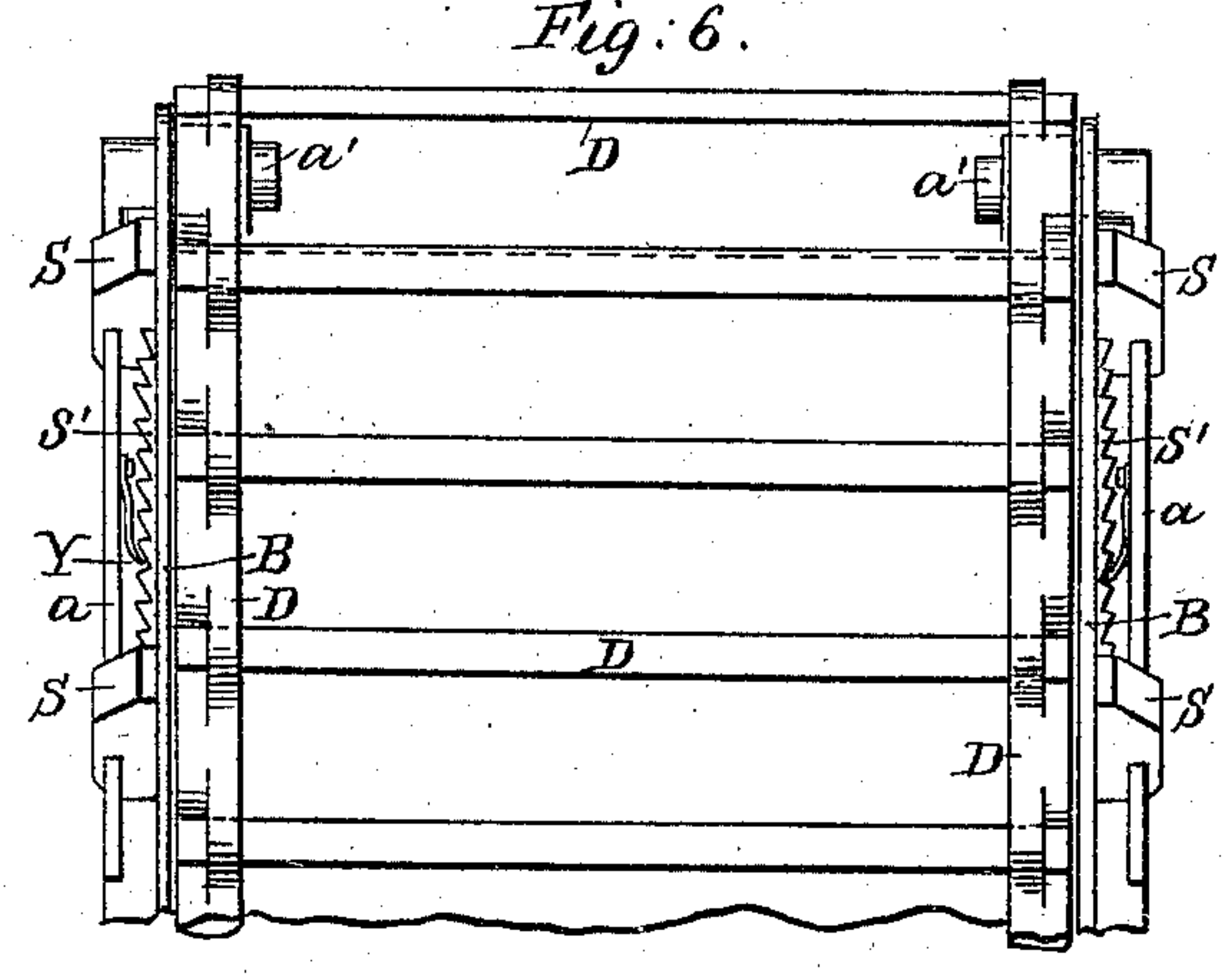
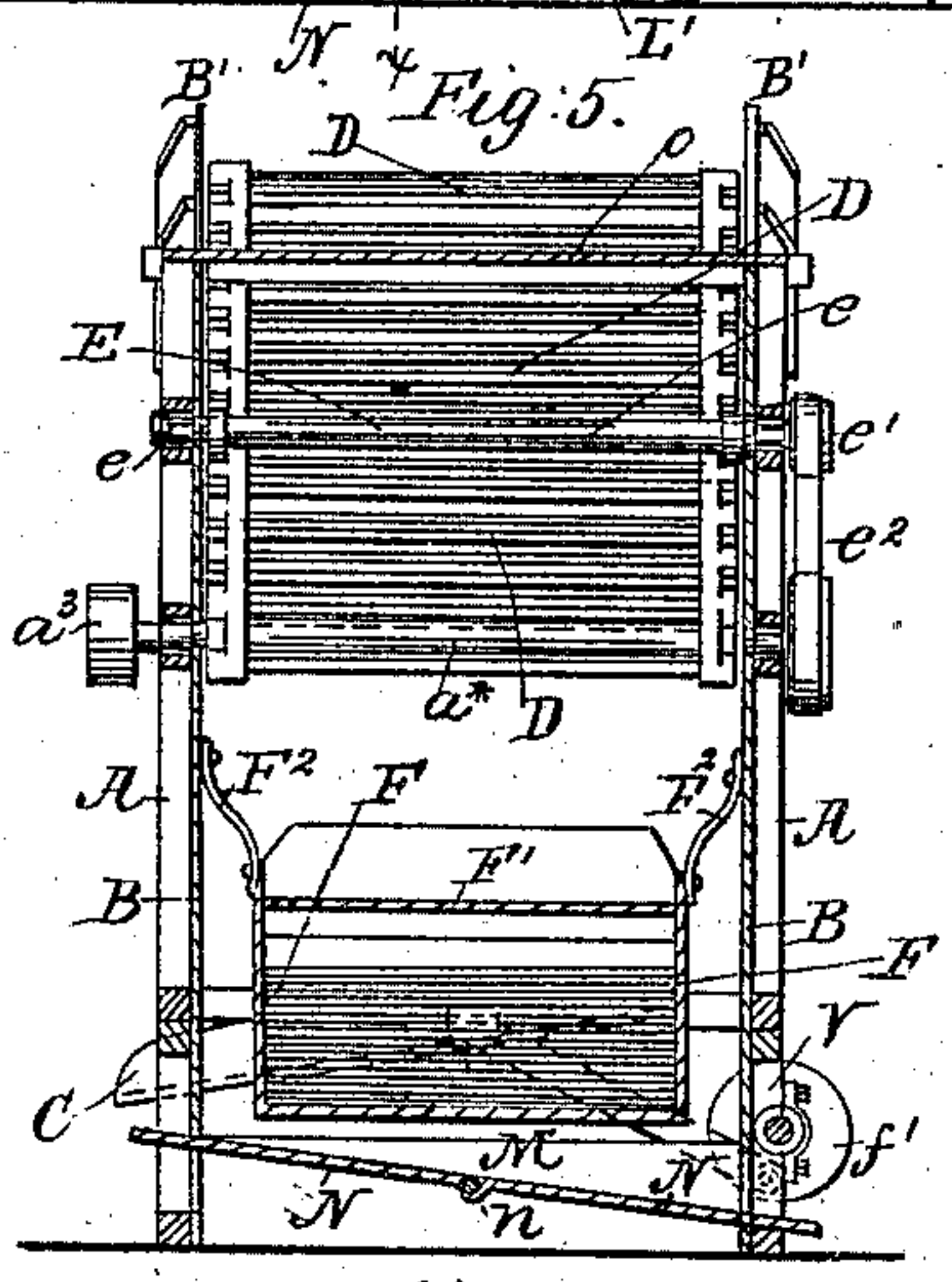
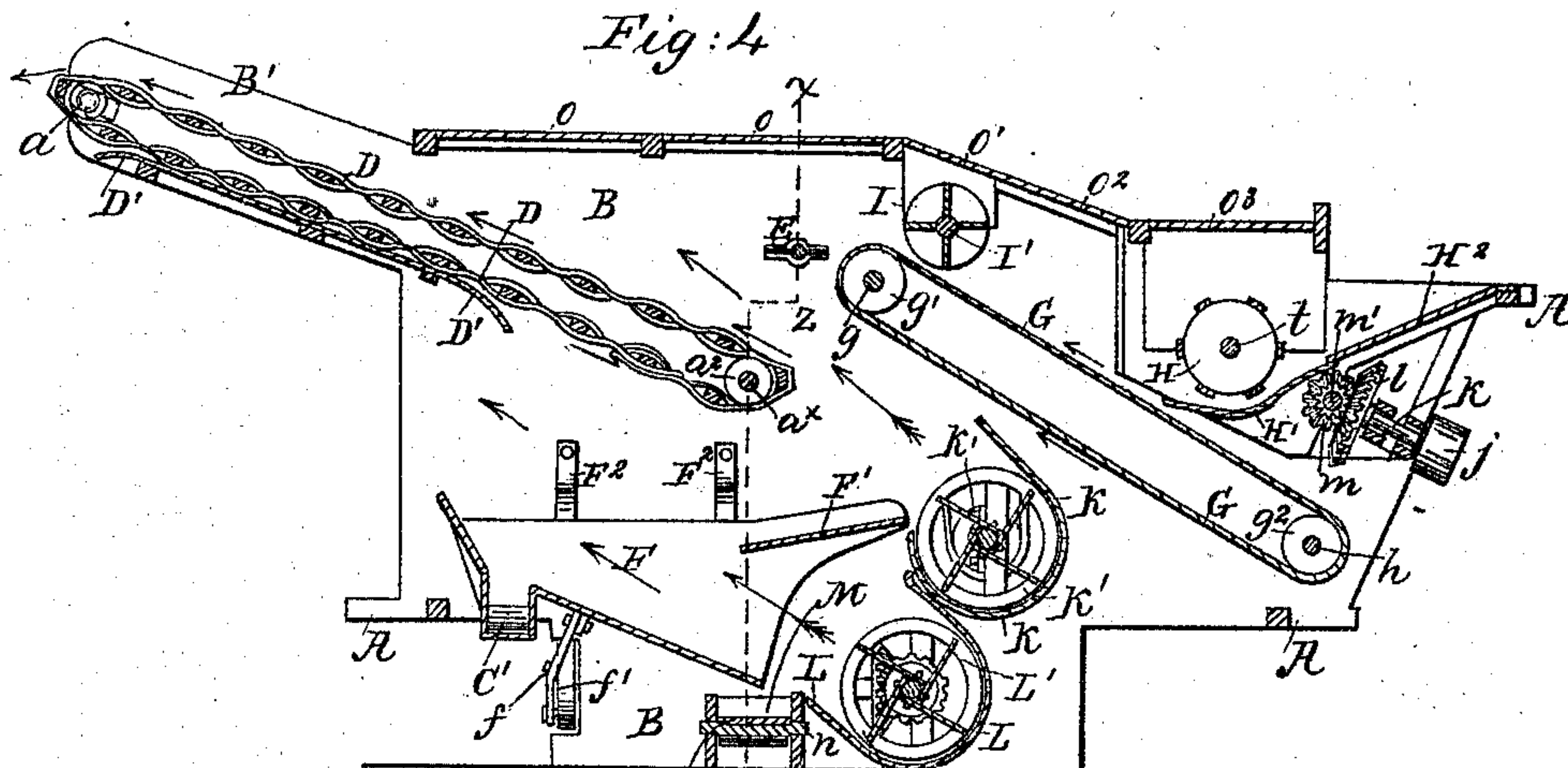
Inventor
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by
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Witnesses;

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DANIEL KANE, OF TIVOLI, IOWA.

Letters Patent No. 81,647, dated September 1, 1868.

IMPROVEMENT IN THRESHING-MACHINES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DANIEL KANE, of Tivoli, in the county of Dubuque, and State of Iowa, have invented a new and improved Grain-Threshing and Cleansing Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, plate 1, is an elevation of one side of the improved machine, showing the spout for elevating and conducting the unclean grain back to the threshing-chamber.

Figure 2, plate 1, is an elevation of the opposite side of the machine.

Figure 3, plate 1, is a plan view of the machine with all the covers removed.

Figure 4, plate 2, is a longitudinal section taken centrally through the machine.

Figure 5, plate 2, is a transverse section taken through the machine in the course indicated by dotted line $x x$ in fig. 4.

Figure 6 is an enlarged top view of the upper end of the straw-carrier, showing the devices for tightening the carrier.

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

This invention relates to certain novel improvements on machinery which is adapted for threshing and separating grain from straw, and then depriving the grain of chaff and other foreign substances.

One object of my invention is to direct a blast of air upward and through a space which is between the upper end of a grain and straw-elevating belt and the lower end of a straw-carrier, so that as the grain and trash fall from the belt through said space, nearly all the trash, which is lighter than the grain, will be blown upon the straw-carrier, and also to provide for directing another blast of air upward and through the separating-shoe, so that the screens are prevented from clogging, and the light chaff and all other impurities completely separated from the good grain, as will be hereinafter explained.

Another object of my invention is to arrange the driving-shaft, and also the gearing from which the threshing-drum receives its motion, beneath the feeding-board leading to the thresher, as will be hereinafter explained, so that said gearing will be protected from injury, and be out of the way of persons engaged in supplying the thresher with grain in the straw.

Another object of my invention is to employ a transverse grain-spout beneath the separating-shoe for receiving and conducting off the cleaned grain, which spout is so constructed that by tilting and inclining it the grain can be delivered outside of the machine, at either side thereof, as will be hereinafter explained.

Another object of my invention is to provide means for extending and shortening and regulating the tension of the straw-carrier and also the grain-belt, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The frame or housing of the machine may be constructed in the usual well-known manner, of vertical closed sides, B, consisting of thin planks fastened upon the inside of a framework, A, which is suitably braced and strengthened to adapt it for containing and supporting the several devices for threshing, elevating, separating, and cleaning grain.

At one end of this frame or housing is a hopper or inclined feeding-board, H^2 , over which the grain in the straw is fed to the threshing-drum H. This board is inclined toward the concave, H^1 , beneath the threshing-drum, and forms a cover for the gearing which communicate motion to said drum.

The threshing-drum is arranged over the concave, H^1 , and beneath a covering-board, O^3 , and it may be constructed in any suitable manner which will best adapt it for threshing grain.

The horizontal transverse shaft t , carrying the drum H, has its bearings in frame A, and on one end of it a spur-wheel, P' , is keyed, which engages with and receives rotary motion from a spur-wheel, P, and the end of a shaft, m' , extends across the frame A, beneath the feed-board H^2 , and carries a bevelled-spur wheel, m , which engages with the teeth of a spur-wheel, l , on an inclined longitudinal shaft, k . This shaft k is supported in

bearings upon cross-bars of frame A, and carries on one end a belt-wheel, *j*, for receiving motion from any convenient motor.

It will be seen that the spur-wheels *m* and *l* are both arranged beneath the feed-board *H*², so as to give motion to the threshing-drum through the side-wheels *P P'*, and so as to be out of the way, and not liable to injure a person standing near the feeding-end of the machine.

As the grain and straw leave the threshing-drum, they pass upon an inclined endless belt, *G*, which is carried by wheels *g*¹ *g*² upon horizontal transverse shafts *g h*, which belt extends from a point below the concave of the threshing-drum to a point which is considerably elevated above the horizontal plane of this drum. The belt *G* receives motion, in the direction indicated by the arrows in fig. 4, by means of a spur-wheel *R*, on shaft *g*, which engages with a spur-wheel, *R'*, on the shaft *l'* of beater-blades *I*; and this shaft *l'* receives motion from the shaft *t* of the threshing-drum through the medium of a belt, *l*³, passing around drums *l*¹ *l*².

The straw is subjected to the action of the revolving beating-blades *I* just before it leaves the upper end of the belt *G*, and while in the act of passing from the said belt to the lower end of an endless-slatted straw-carrier, *D*, over a space, *Z*, the straw is tossed and repeatedly struck by blades *E* upon a rapidly-rotating shaft, *e*, which blades effect the loosening of the straw and the separation of the grain from it.

Upon passing the space *Z* between the grain-belt and straw-carrier, nearly all the grain loosened from the straw will fall upon the inclined board *F*¹ of the screening-shoe *F* through a blast of air from a fan, *k'*, in a fan-case, *k*.

The straw-carrier *D* is made up of endless belts, which are passed around drums, *a*¹, upon a horizontal transverse shaft, *a*^x, and also around drums *a*¹, which are upon short shafts that are found on the inner sides of adjustable rods *a a*. This endless carrier is inclined toward the fan-case *k*, and its upper end is carried considerably higher than the belt *G* between the side extensions *B' A*¹ of the main frame.

Beneath the upper portion of the straw-carrier is an inclined guard-board, *D'*, which is designed for catching any grain which may fall from that portion of the carrier which is not arranged directly over the screening-shoe *F*, and conducting such grain back and causing it to fall into said shoe.

The straw-carrier is moved, in the direction indicated by the arrows in fig. 4, by the drums upon the shaft *a*, which latter carries a belt-wheel, *a*³, on one end, and a belt-wheel, *4*, on the opposite end. Belt-wheel *a*³ receives motion from a belt-wheel, *c*³, on shaft *l'*, through the medium of a belt, *d*, and belt-wheel *4* communicates motion to a belt-wheel, *e'*, which is keyed on the shaft *e* of tossing-blades *E* through belt *e*².

The belt-drums *a*¹ *a*¹, at the upper end of the straw-carrier *D*, pass around drums *a*¹, which turn upon studs that are on adjustable bars *a a*, which bars pass through and are guided by the vertical portions *S S* of the upper extended portions of the frame of the machine. On the inner sides of the slides or bars, spring-pawls, *Y Y*, are secured, which engage with teeth of racks *S' S'* on the frame *B'*.

It will be seen that by moving the slides or bars *a a* outwardly, the pawls *Y* will engage with the rack-teeth and hold said slides or bars to whatever position they may be adjusted.

The object of these adjusting-devices is to provide for shortening or lengthening the straw-carrier, also to provide for keeping this carrier under proper tension.

The shaft *h*, carrying drums at the lower end of the grain-belt *G*, has its bearings in blocks *i*, which are notched on their lower surfaces, and supported upon short notched bars, *A*³, of the frame *A*. These bearing-blocks, *i*, are confined down in place upon said notched bars *A*³, by means of bolts *p'*, which pass through oblong slots made through bars *A*³, thereby allowing the blocks *i* to be loosened and adjusted forward or backward for the purpose of tightening and keeping tight said belt *G*. The teeth or serrations on the blocks *i*, fitting into notches formed in the bars *A*³, will prevent said block from liability to slip.

The screening-shoe *F* is hung, by means of springs, *F*², so as to allow it to receive a lateral shaking-motion from a crank-wheel, *f'*, by means of a pitman-rod, *f*. The crank-wheel *f'* is keyed on a longitudinal shaft, *v*, which receives rapid rotary motion from the lower shaft of fans *L'* through the medium of bevel-spur wheel, as shown in figs. 2 and 4.

The shoe is provided with suitable screens, and also constructed with an inclined receiving-guide board, *F*¹, and a laterally-inclined trough or chute, *C'*. The bottom of the shoe inclines toward a transverse trough, *M*, leading out through openings made through both sides of the machine. This trough *M* has for its bottom a tilting-board, *N*, which is pivoted centrally to the sides of the trough, so that it can be tilted or inclined to either side of the machine.

This trough *M* receives all the cleaned grain and discharges it from the machine, and by having the bottom, *N*, made as described, the grain can be delivered from either side of the machine at pleasure.

By reference to fig. 4, it will be seen that I have arranged two fans in separate cases beneath the apron or belt *G*, so as to have two separate and independent currents of air impelled upward in a direction toward the rear or straw-discharging end of the machine.

The upper fan *K'* is arranged within a case, *K*, and directs currents of air upward through the space *Z*, between the upper end of belt *G* and lower end of carrier *D*, so as to throw nearly all the chaff toward and upon the straw-carrier.

The lower fan *L'* is applied within a case, *L*, which is arranged so as to direct strong currents of air upwardly through the screening-shoe *F*, and thereby completely separate the chaff and other impurities from the grain. The blasts of air which pass up through the shoe will effectually prevent the screens, which, in practice, will be applied in this shoe, from becoming clogged with foreign matters.

The unthreshed heads which fall from the straw-carrier into the rear part of the shoe are received into the trough *C'*, and conducted laterally out of the machine into the lower end of an elevator, *C*, which elevates and delivers them into the hopper in front of the threshing-drum to be rethreshed.

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

1. The combination of two fanning-devices with a screening-shoe, F, a grain-elevating belt, and a straw-carrier, said fanning-devices being arranged in the manner described, so as to operate substantially as and for the purposes specified.

2. In combination with a threshing-drum, an elevating-grain-belt and a straw-carrier, arranged as described, I claim the revolving beater I and the tossing and shaking-blades E, all being arranged over fanning-devices and a screening-shoe, substantially as described.

3. The reversible or tilting-bottom N to the laterally-discharging clean-grain trough M, substantially as and for the purposes described.

4. The arrangement of the pulley *j* with shaft *k* and gearing *l m*, beneath the feeding-board H², so that the cylinder is driven by a belt or other device, which runs parallel, or nearly so, with the cylinder, substantially as herein described.

5. The rolling drums *a¹ a¹*, for the upper part of the straw-carrier, applied to studs upon adjustable slides, *a a*, in combination with retaining-racks S' and pawls Y, substantially as and for the purposes described.

6. Providing for regulating the tension of the grain-belt G by means of adjustable bearing-blocks, *i*, of drum-shaft *h* and bolts *p'*, said blocks being constructed and applied to bars A³, substantially as described.

DANIEL KANE.

Witnesses:

W. C. CHAMBERLAIN,

JNO. J. KANE.