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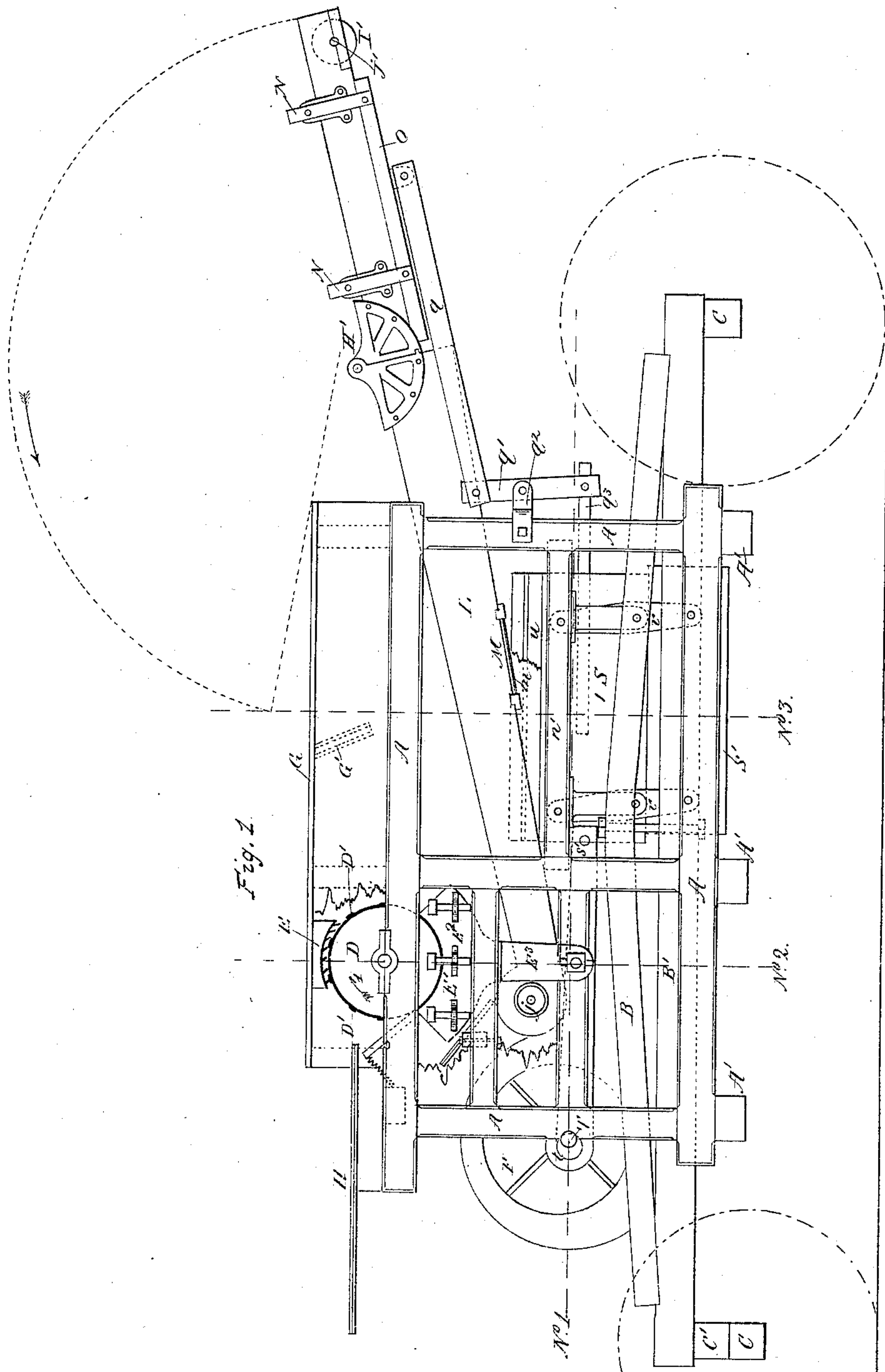
6 Sheets—Sheet 1.

J. H. MELICK.

THRASHING MACHINE.

No. 277,595.

Patented May 15, 1883.



Witnesses:
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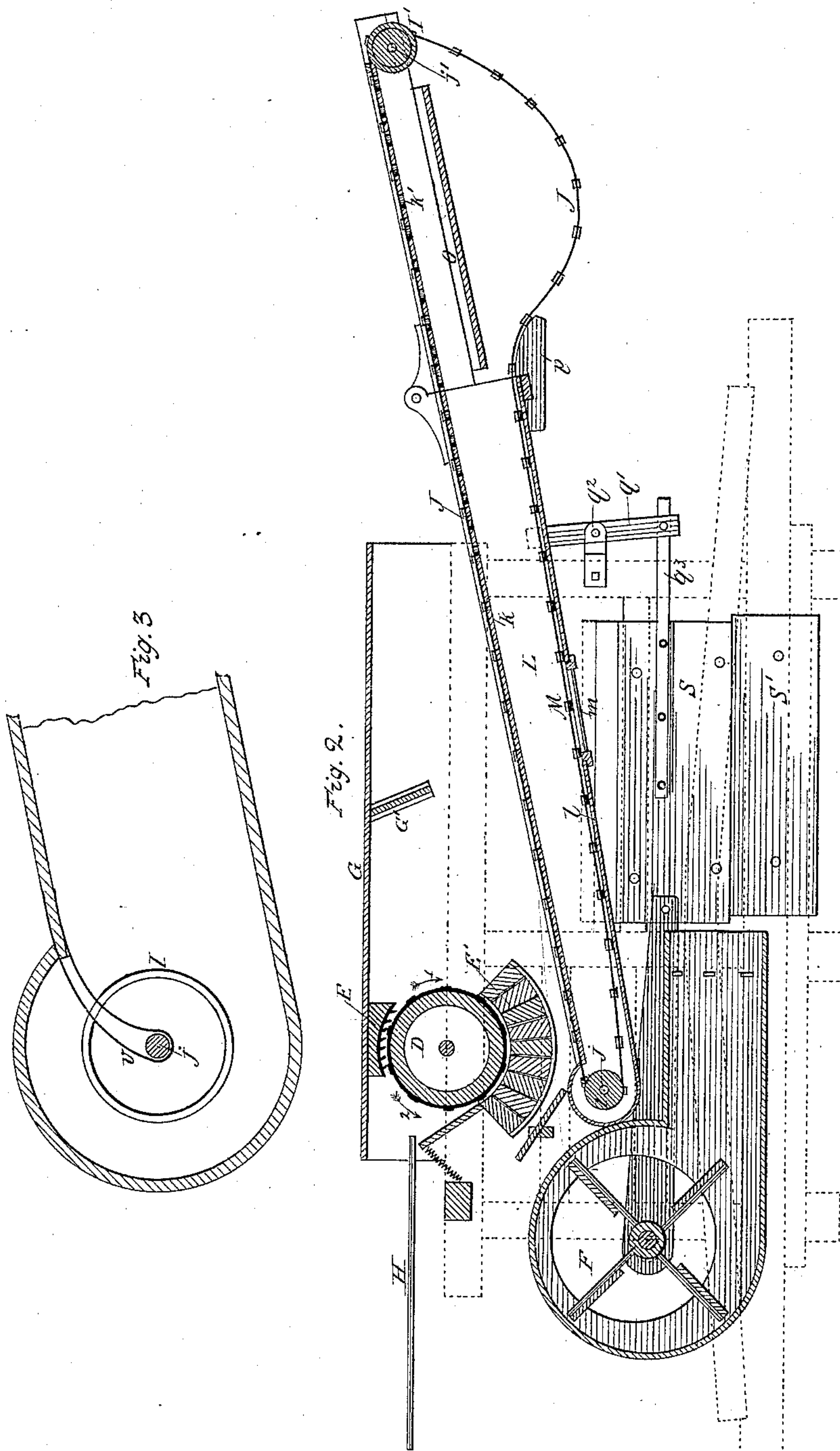
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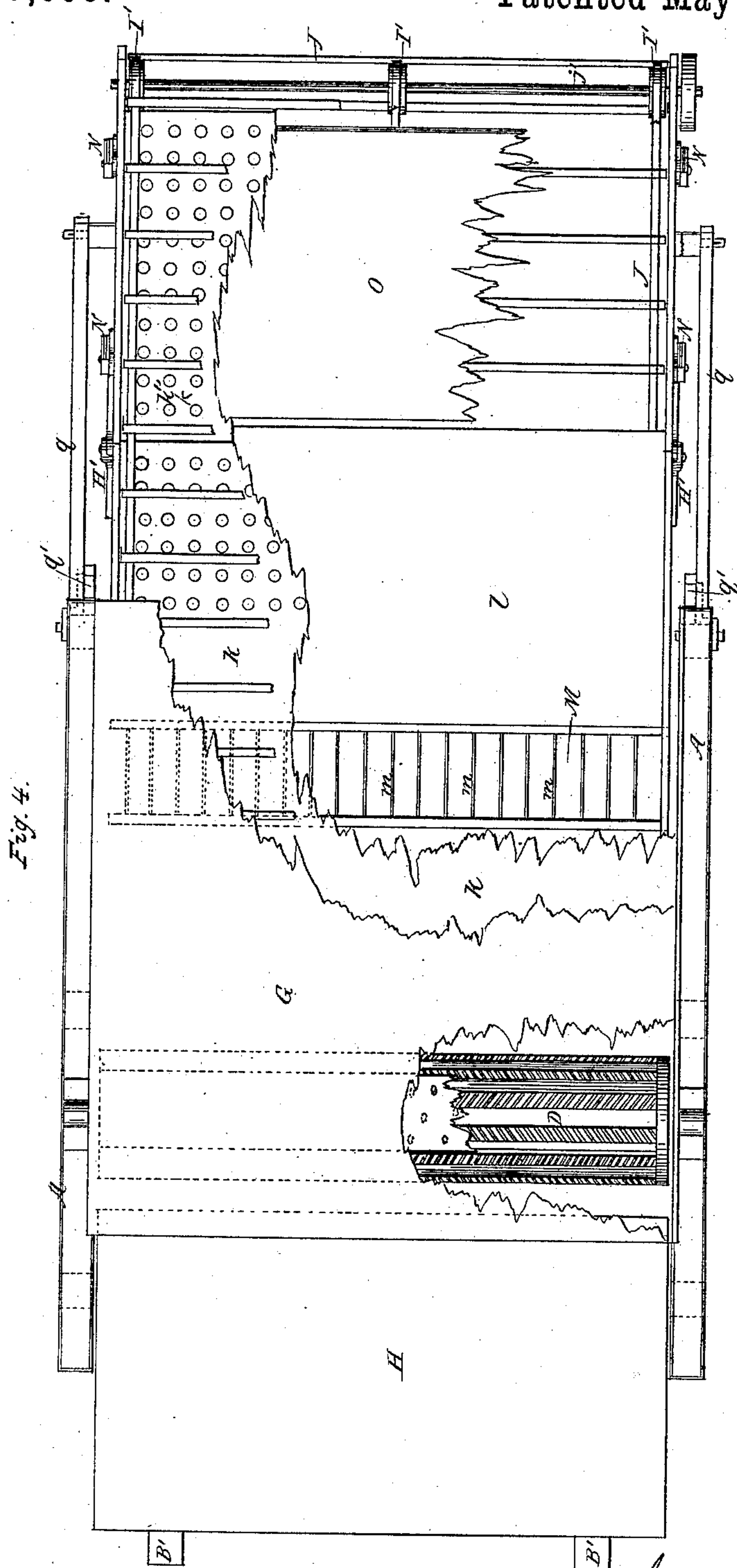
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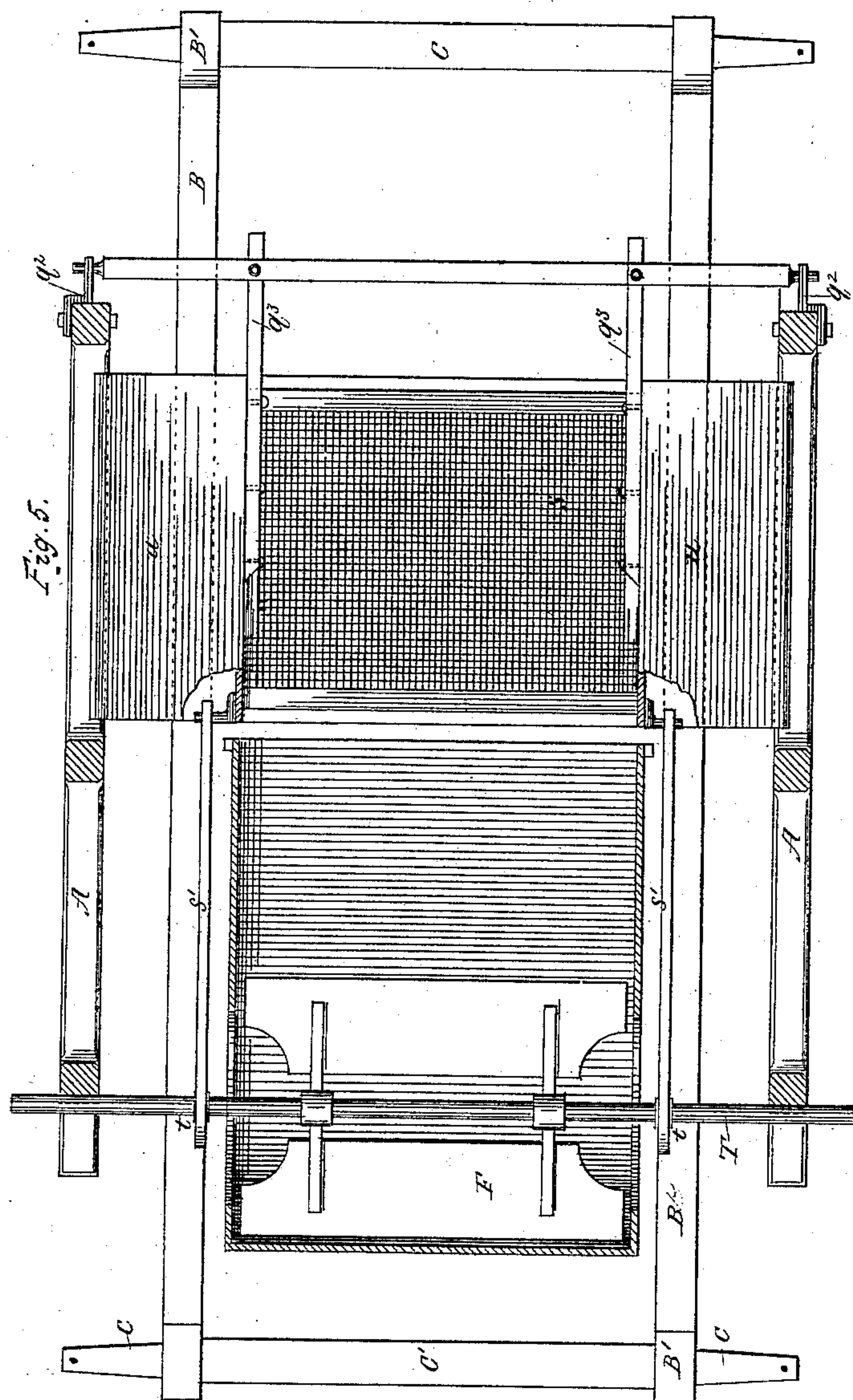
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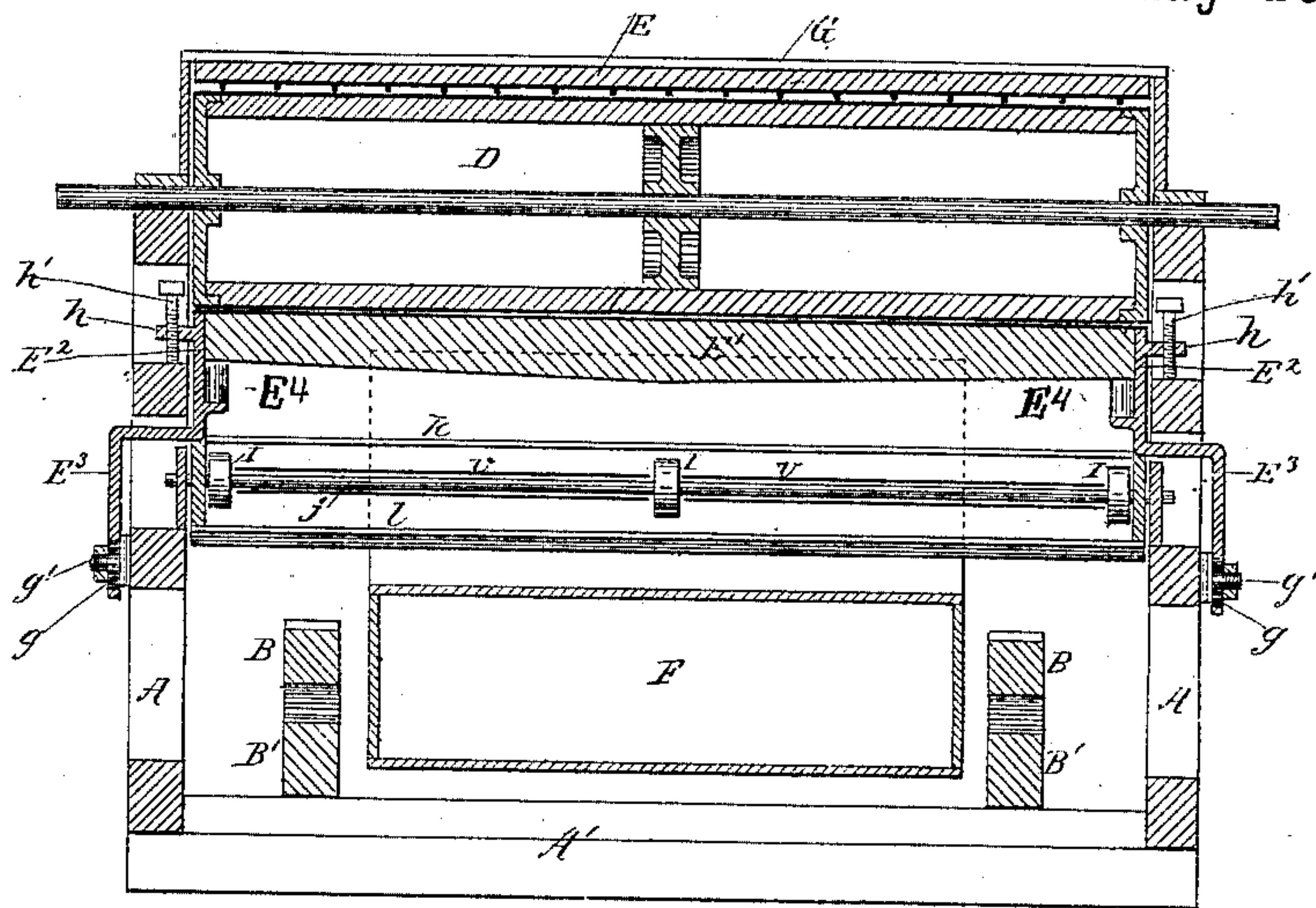


Fig. 6.

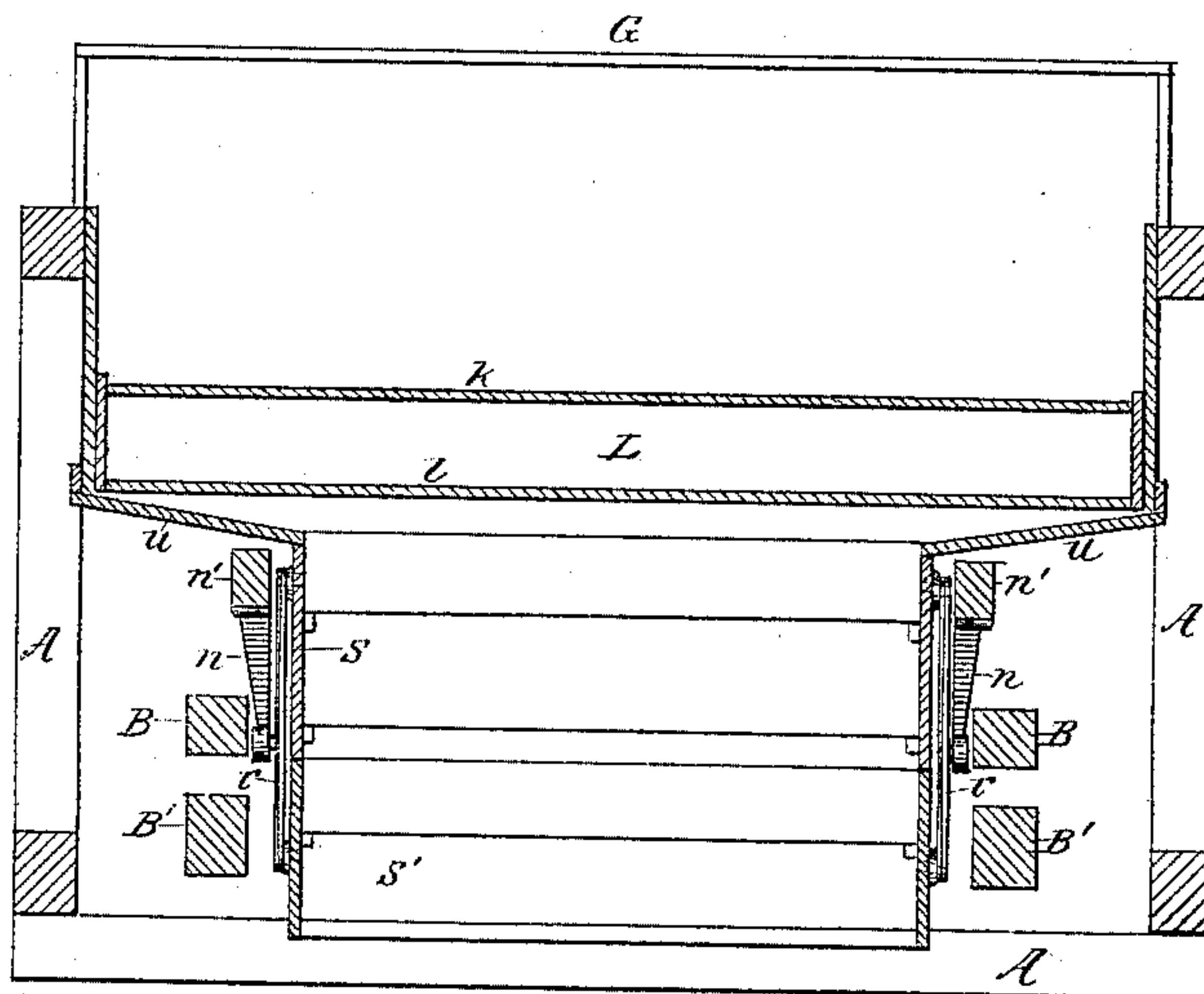


Fig. 7.

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6 Sheets—Sheet 6.

J. H. MELICK.
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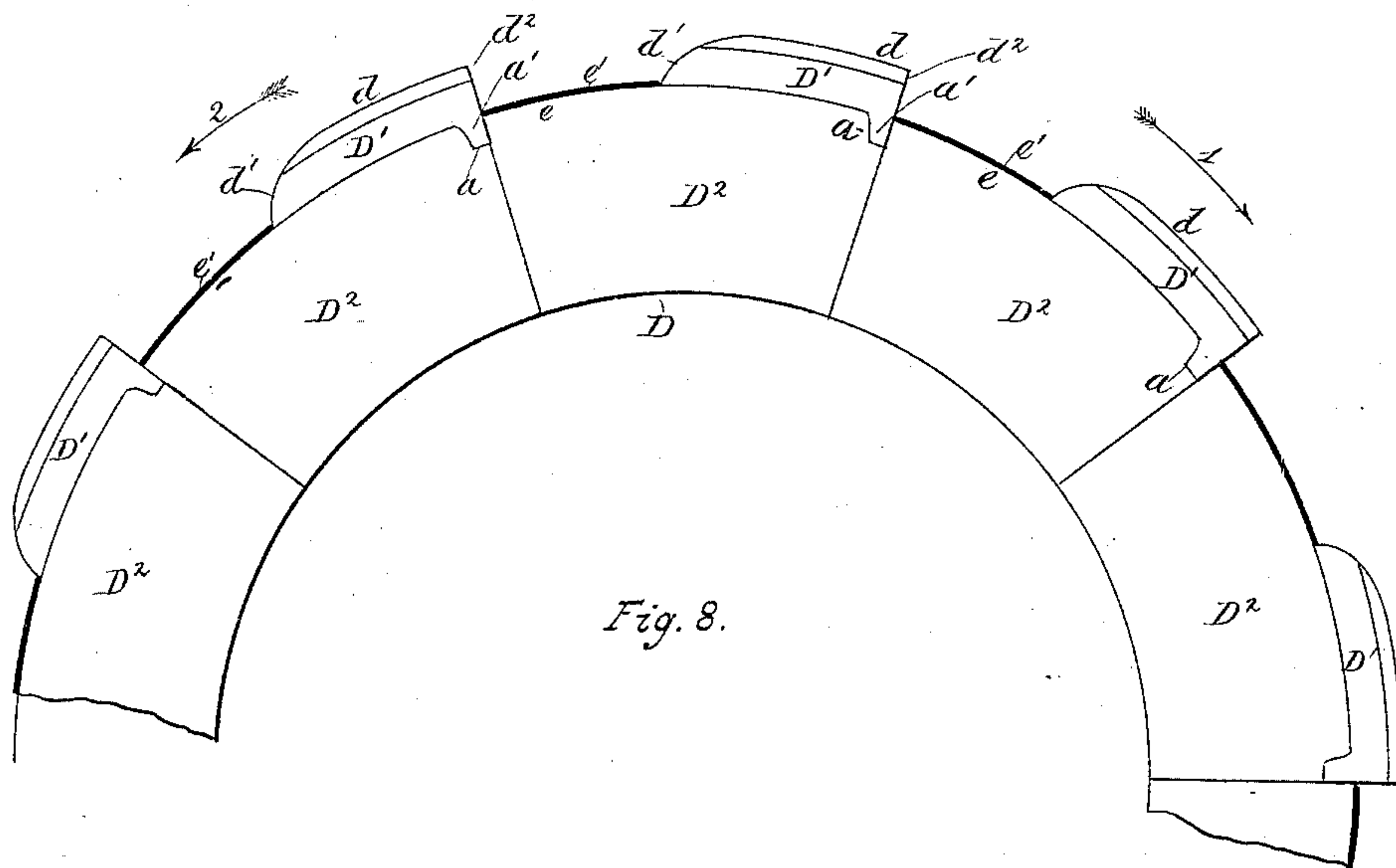


Fig. 8.

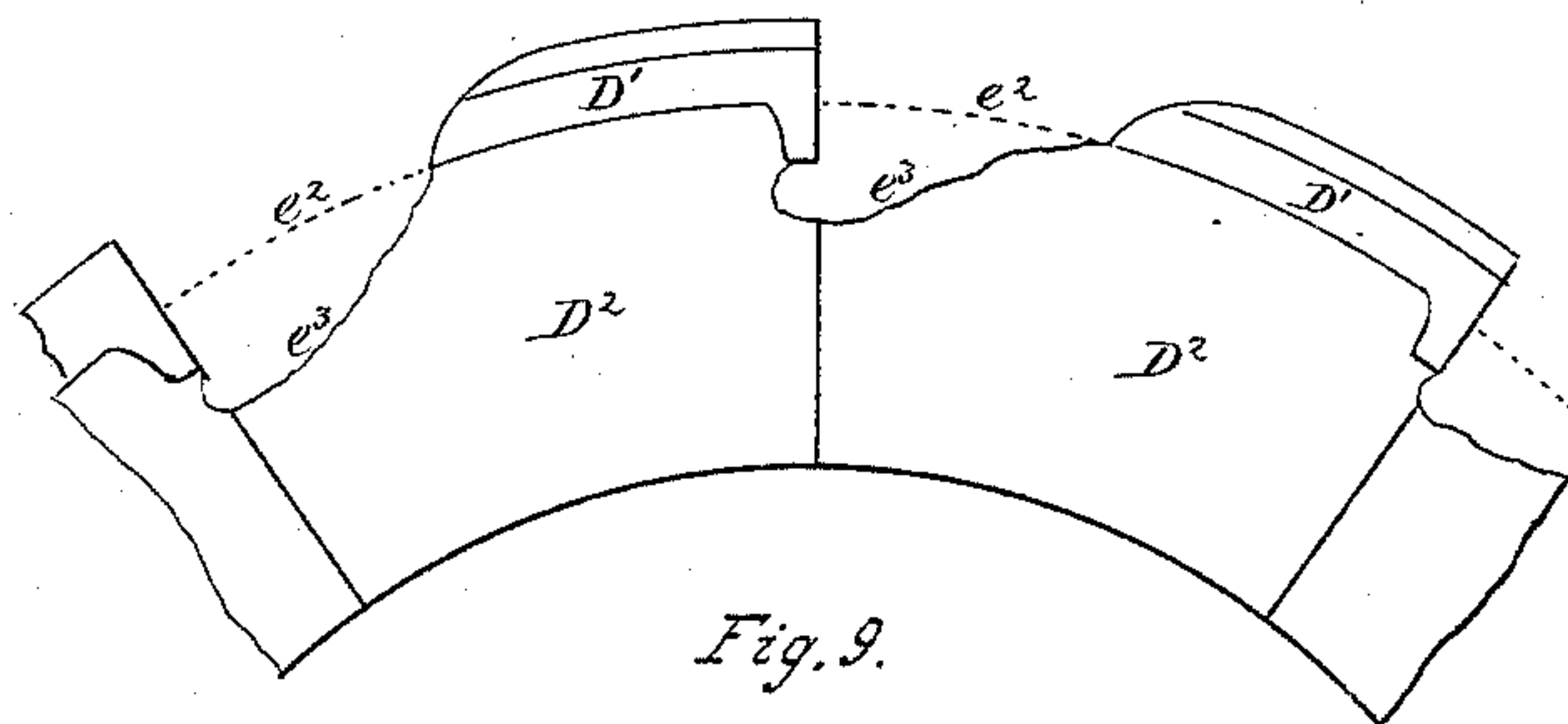


Fig. 9.

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UNITED STATES PATENT OFFICE.

JAMES H. MELICK, OF ALBANY, NEW YORK.

THRASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,595, dated May 15, 1883.

Application filed October 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MELICK, a citizen of the United States, and a resident of the city and county of Albany, in the State of New York, have invented a new and Improved Thrashing-Machine, of which the following is a full and clear description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a new and improved thrashing-machine in which is provided a single thrashing-cylinder which is capable of operation at will with either a spike-concave for short-straw thrashing or a rubbing-concave for long-straw thrashing, and mechanism for separating the thrashed grain from the straw and chaff when the thrashing-cylinder is operating with either of said concaves.

The object of my invention is to provide a machine having but a single thrashing-cylinder, and mechanism for separating and winnowing the grain, which will be capable, by the provision of two concaves, to operate either as a long or short straw thrasher and cleaner at will, and perform the different kinds of grain-thrashing now required to be done by two different machines. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which the same letters of reference indicate the same or corresponding parts throughout the several views.

Referring to the drawings, Figure 1 represents a side elevation of my new and improved thrashing-machine. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a sectional view, on an enlarged scale, of the guard of the conveyer pulley-shaft. Fig. 4 is a plan view from above of the machine with portions broken away to expose parts below. Fig. 5 is a horizontal sectional view taken at line No. 1 in Fig. 1. Fig. 6 is a cross-sectional view taken at line No. 2 in Fig. 1. Fig. 7 is a cross-sectional view taken at line No. 3 in Fig. 1. Fig. 8 is a cross-sectional view of part of the thrashing-cylinder, illustrating improvements in the same. Fig. 9 is a cross-sectional view of part of a thrashing-cylinder, illustrating a defect and result of wear in the old form of thrashing-cylinders, which is remedied by one of my improvements.

In the drawings, A A represent the framework of the machine. The said framework is stiffened by trusses B B', B B', each located

within the said frame-work at a short distance from the side posts of the frame, and arranged longitudinally with the same, and firmly secured to the bottom girts, A' A', by bolts or clips, or other equivalents. The said trusses have their ends extended outward past the ends of the frame, and operate to stiffen the whole structure, and also serve as supports or bearing-beams to the same, from the rear axle, C, at one end, and the bolster C' of the front axle at the other end. By reason of their situation within the side parts of the frame, the axles C C of the carriage are made shorter between their shoulders, so that the carrying-wheels will be set with a width of track corresponding with that of the road over which the machine will be drawn when being transported on its wheels from place to place.

D is the thrashing-cylinder, shown in Figs. 1 and 8, with its peripheral surface provided with metal strips D', so formed as to adapt said cylinder to be used for operating with a spiked or short-straw concave, E, or with a rubbing or long-straw concave, E'. The said cylinder is formed of staves D² in the manner practiced by the trade, and is provided with longitudinal grooves *a*, which receive flange *a'*, made with one of the marginal edges of metal strips D', as shown in Fig. 8. The said metal strips are preferably made in sections, and have their bodies extended outward from the peripheral surface of the stave-section of the cylinder about one-half of one inch, more or less, and are made in their cross-sectional form with the rubbing-surface *d* on a curved line about concentric with the line of curvature of the surface *e* of the body of cylinder D, and are then inclined downward from said surface-line *d* to one of their edges, *d'*, at line *e* of the cylinder, as shown in Fig. 8. The opposite edge, *d*², is made blunt or squared, and with an extent of surface equal to the projection of said curved rubbing-surface *d* from the curvature of the said cylinder, as shown in the same figure. These strips are securely fastened to the staves of the cylinder in the usual manner. When cylinder D is revolved in the direction of arrow 1 the thrashing-cylinder will operate with the spike-concave E, the teeth of which concave just clear surface *d* of the metal strips D' and serve as a short-straw cylinder. When revolved in the direction of arrow 2 said cylinder will operate with the rubbing-concave E'

as a rubbing or long-straw cylinder. The portions *e* of the surface of the wood of cylinder D between the metal strips D' are sheathed with strips of sheet-iron, *e'*, which sheathing operates to protect the said wood surface from being cut or worn away by the grain. I illustrate in Fig. 9 a section of a thrashing-cylinder as heretofore constructed without metal sheathing, (in a cross-sectional view,) in which is shown by dotted lines *e*² the original convex surface of the unprotected wood of the cylinder, and by full lines *e*³ the wearing of the surfaces and the undermining of strips D', which are gradually and invariably produced by use. By the sheathings *e'* between the metal thrashing-strips D' the surface of the cylinder between the metal thrashing-strips is protected from wear, and the cylinder will not get out of balance by the wood being unevenly worn away, as heretofore, and all undermining of the bed of the said thrashing-strips is prevented.

E is a spike or short-straw concave, made in the usual manner practiced by the trade. E' is a rubbing or long-straw concave, made of independently and elastically supported bars *f*, faced with metallic rubbing-strips, as is generally practiced by the trade. The said bars are supported from their outer ends from the concave end plates, E², one at each side of the machine. E⁴ are the elastic supports of the bars *f*. Cast solid with each concave end plate is a pendent bracket, E³, made with an offset from the plane of the vertical sides of said plate, as shown in Fig. 6. The lower end portions of said brackets are each provided with a short slot, *g*, through which works a set-bolt, *g'*, firmly secured to the frame-timber and provided with a screw-threaded nut, as shown. Cast solid also with said plates E² are ears *h*, which ears are each pierced with a screw-threaded hole and provided with adjusting-screws *h'*. The said adjusting-screws have their ends working into recesses made in the timbers of the frame of the machine, and when turned in one direction elevate the rubbing-concave E' and when turned in an opposite direction lower the same, and they operate as feet to support the said concave from rocking, and serve as a means for nicely adjusting the rubbing-concave in proper relation to the thrashing-cylinder D, or with one side edge nearer to it than the other, as the circumstances of the work may require. They also enable me to dispense with the stops heretofore employed and secured to the inner side surface of the frame in inconvenient situation for perfect adjustment. By offsetting the slotted bracket E³ of the end plates, E², of the rubbing-concave, I am enabled to use a wide separator with a narrower frame-work than heretofore.

Firmly secured and supported by posts or standards from the frame of the machine at the head ends of the thrashing-cylinder D is the spike-concave E, which spike-concave is arranged over the upper quarter of the said

cylinder, as shown. Arranged over said spike-concave E is a horizontal deflecting-board, G, and guard G', (shown in Figs. 1 and 2,) which board and guard operate to cast the grain and straw downward on the upper floor of the separator when the cylinder D is revolved in direction of arrow 1 and operating as a short-straw-thrashing cylinder.

H is a platform from which the grain-straw is fed to the thrashing-cylinder. When the thrashing-cylinder is to be used as a rubbing or long-straw-thrashing cylinder it will be revolved in direction of arrow 2 in Figs. 2 and 8, and when used as a short-straw-thrashing cylinder the cylinder will be revolved in direction of arrow 1 in Fig. 2. The reversing of the direction of revolution of the thrashing-cylinder is done by running the band giving motion to the drive-pulley straight in one instance and crossed in the other; or it may be done by any other well-known means.

I' is the fan-blower, constructed and operated as heretofore practiced by the trade.

L is an inclined separator, made with a width corresponding with the length of the thrashing-cylinder, and arranged with its forward end below the rubbing-concave E', as shown, and extending rearward and upward. At the front end, and below the rubbing-concave, is arranged on shaft *j* (which is free to be revolved) a series of three or more small pulleys, I. Arranged on shaft *j'*, at the rear end of said separator, is a corresponding number of pulleys, I'. Motion is communicated to pulleys I' by means of a band and pulley actuated from a pulley on the thrashing-cylinder shaft or the fan-shaft, as may be preferred. J is an endless slat-apron, which passes over pulleys I and I', with its uppermost portion moving over the inclined grain-board *k* *k'*, the plane of the upper surface of which board is on a line with the upper side of pulleys I and I', and is made in its portion *k* solid or imperforated and its portion *k'* perforated, as shown in Figs. 2 and 3. The endless slat-apron, after passing over the rear end pulley, I', is turned downward and forward, and is run over the surface of the lower inclined grain-board, *l*, which is made with a solid or tight surface in its major portion, excepting at the middle of its length, where there is arranged a grated opening, M, composed of a series of slats or strips, *m*, about one foot in length, arranged lengthwise in the said grain-board, as shown in Figs. 2 and 3.

Suspended by hangers N N from the sides of the rearward portion of the separator is a vibrating inclined grain-board, O, made with an imperforate or solid surface, as shown in Figs. 2 and 4. This vibrating grain-board is situated below the perforated portion *k'* of the upper grain-board of the separator and on a plane above that of the inclined grain-board *l*, as shown in the same figures. Secured at the rear end of grain-board *l*, and below the upper surface of the same, at each side, is a curved convex way, *p*, made with a short length for receiving and leading the slack of the endless

slatted apron J from pulley I' to the upper surface of said grain-board. The grain-board O is shown to be vibrated by means of pitman *q*, levers *q'*, pivoted to brackets *q²*, secured to the frame of the machine, and actuated by bars *q³*, attached to the upper sieve-shoe, S.

Sieve-shoes S and S' are arranged below the lower grain-board, *l*, and beneath the opening M, made in said board, and are supported one above the other by levers *r*, which levers have pivoted connection at their ends with said shoes, as shown in Figs. 1 and 7. The said levers are pivoted at a point between their ends to brackets or hangers *n n*, which are secured to timbers *n' n'*, as shown in Figs. 1 and 7. Being thus suspended, the shoes S and S' are adapted to be vibrated in the reverse directions. Motion is communicated to shoes S and S' by means of pitmen *s' s'*, actuated by eccentrics *t t*, secured to shaft T of the fan-wheel F. The shoes S S' are made of considerably less width than the grain-boards of the separator above, as is shown in Fig. 7. The upper shoe, S, has attached to its outer sides grain-boards *uu*, Figs. 1, 5, and 7, which grain-boards extend outward past the sides of the separator above, and are so arranged as to be beneath the grated opening M of the lower grain-board, *l*, as shown in Fig. 2, and they operate to receive the grain falling down from the end portions of the grated opening M and conduct the same to shoe S, and, being connected with said shoe, the said boards are vibrated longitudinally in the same direction as is said shoe.

The fan-wheel F and its drum and discharge are made with the same width as shoes S and S', into which it discharges the blast. By contracting the width of both the fan-wheel and the shoe to a width less than that of the separator and the length of the thrashing-cylinder, or by making the separator of greater width and the thrashing-cylinder of greater length than the width of the shoe and fan-wheel, the grain-straw will be more effectually operated with by the thrashing-cylinder, and will be more thinly distributed on the upper surfaces of the grain-boards of the separator, while the grain and chaff will be received in the shoes in a more compact form of measure for better operation for cleaning the chaff from the grain than it would be if the shoe were made with the same width as the separator.

If preferred, the vibrating grain-board O may be operated directly by an eccentric or crank and a connecting-rod independently of the mechanism before described.

The rear end or section of the inclined separator L is hinged by hinges H' to the front or main portion of the same, so as to adapt the said rear section and its attached grain-board O to be folded upward and over the body of the machine in direction as indicated by arrow and dotted lines in Fig. 1. Preliminary to the folding over of said rear portion the pitman *q* will be disconnected from the grain-board O. This adaptation of the rearward section of the

separator and the said grain-board to be folded over on the body of the machine enables the operator to reduce the length of the machine when being stored or transported.

The portions of the shaft *j* of pulleys I carrying the forward portions of the endless slat-apron J are protected by a thin sheet-metal guard, *v*, Figs. 3 and 6, which guard incloses said shaft and connects with the forward end of the upper grain-board *k*. This guard effectually prevents straw from being wound around the shaft of pulleys I.

The several parts of the machine for thrashing the grain, conveying the straw rearward, and separating the thrashed grain from the straw and the chaff are preferably speeded by means of band-wheels and pulleys secured to the shafts of the respective revolving parts, so that the several parts operating will operate in concert each with proper relative speed of movement.

By means of the mechanism shown and described as above I am enabled to produce a convertible machine for thrashing and cleaning all kinds of grain and delivering the thrashed straw in proper condition for either sheaving or baling, as may be preferred, and in doing this the machine is made lighter and more simple and economical in the construction of its parts.

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

1. The combination, with the spike-concave E and the rubbing-concave E', of the cylinder D, provided with ribbed metallic strips D', having rounded edge *d'* and squared edge *d²*, substantially as described, whereby when the cylinder is revolved in one direction it is adapted to operate as a toothed cylinder and when revolved in an opposite direction it operates as a grooved cylinder, as and for the purposes set forth.

2. The combination, with the grain-board *k* *k'*, of the shaker-board O, situated beneath the outer end, *k'*, of said board, and the stationary board *l*, situated beneath the inner end, *k*, of said board, and provided with slatted discharge-opening M, substantially as and for the purposes described.

3. The combination, with the folding section *k'* of the separator, of the reciprocating grain-board O, attached to said folding section, detachable pitman *q*, and means for operating the same, substantially as described.

4. In a thrashing-machine, the combination, with the thrashing mechanism, of the separator consisting of immovable section *k l*, the latter provided with slatted opening M, the folding section *k'*, provided with swinging grain-board O, the endless straw-carrier J, and means for operating the various parts, substantially as described, for the purposes set forth.

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