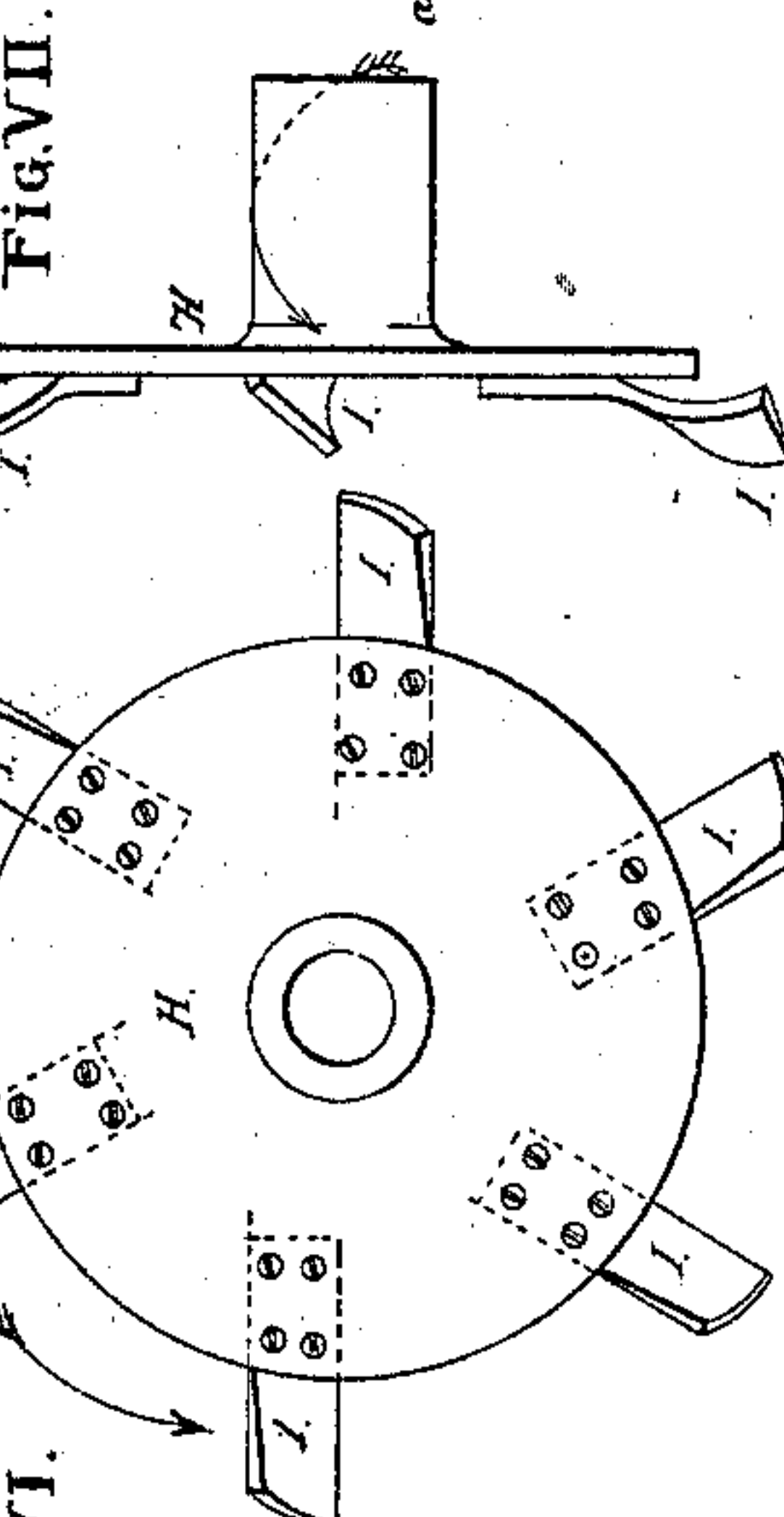
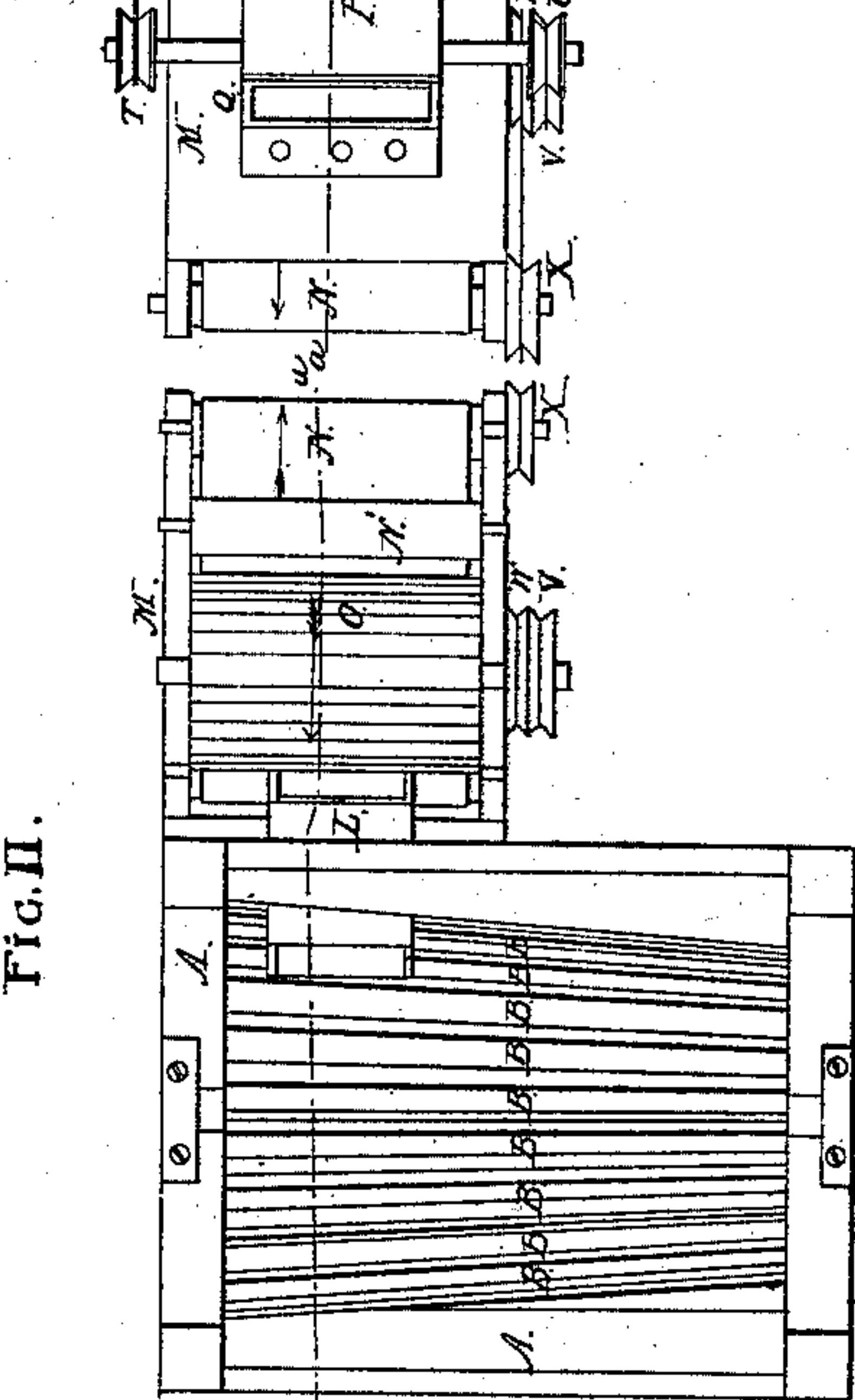
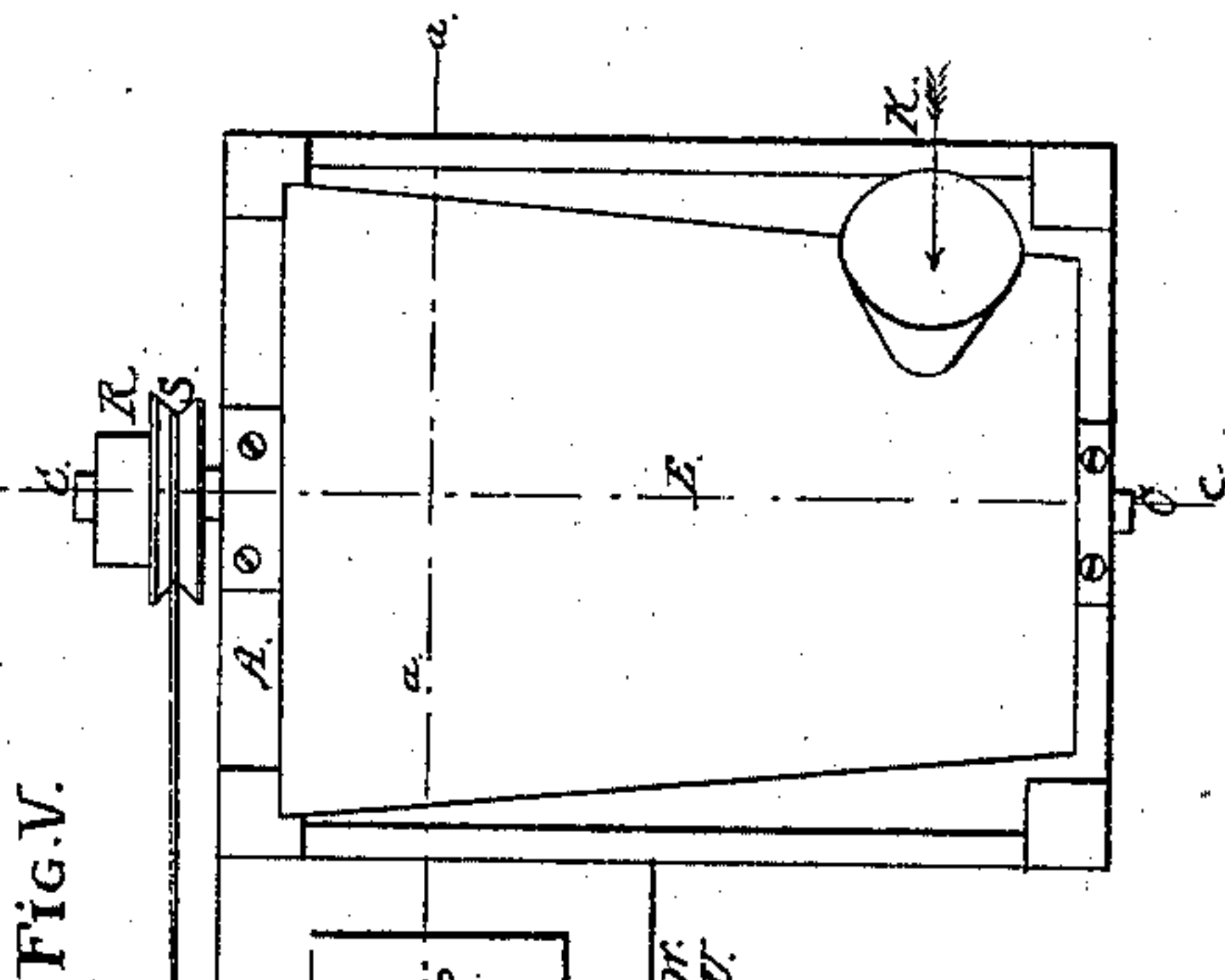
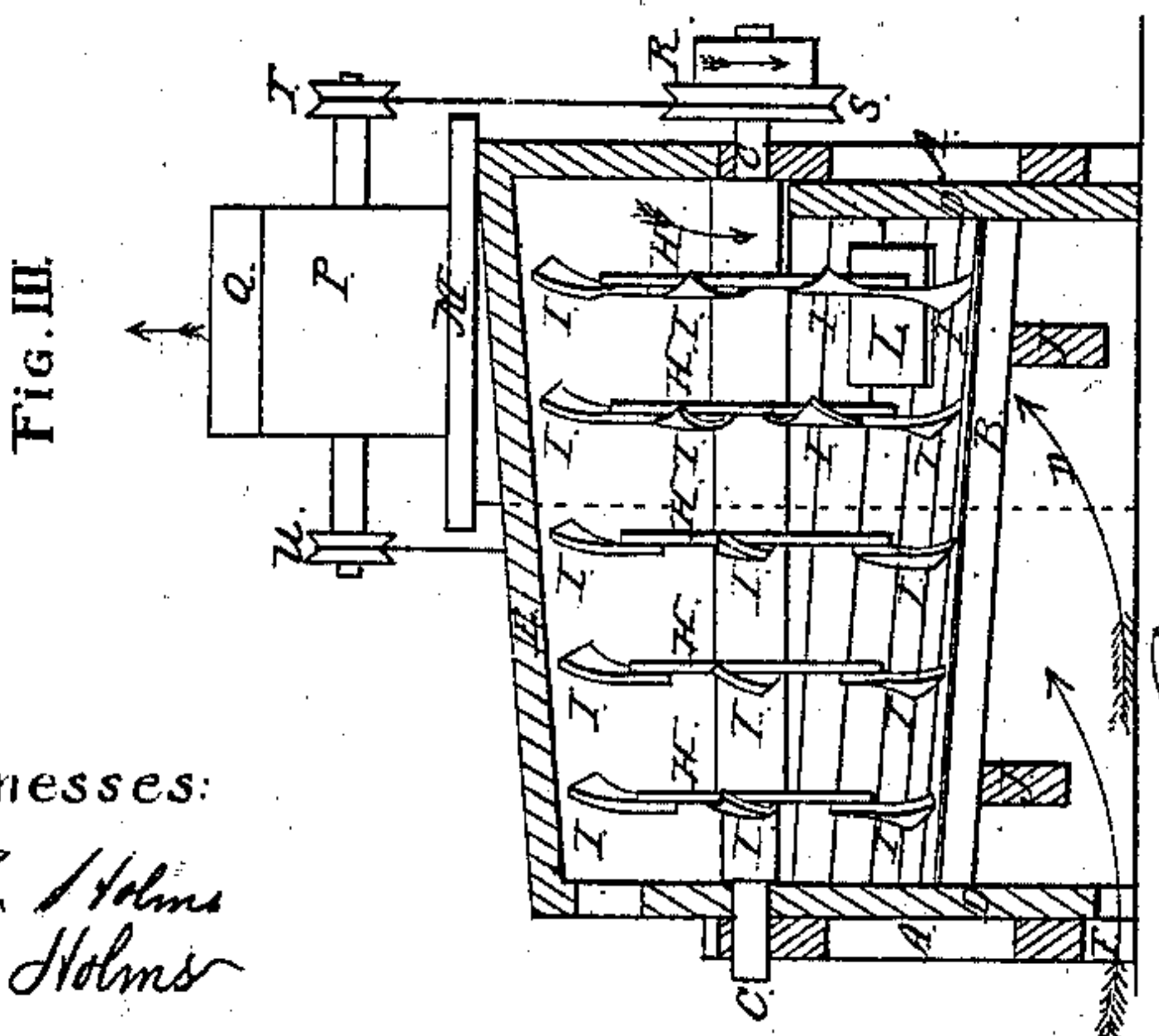
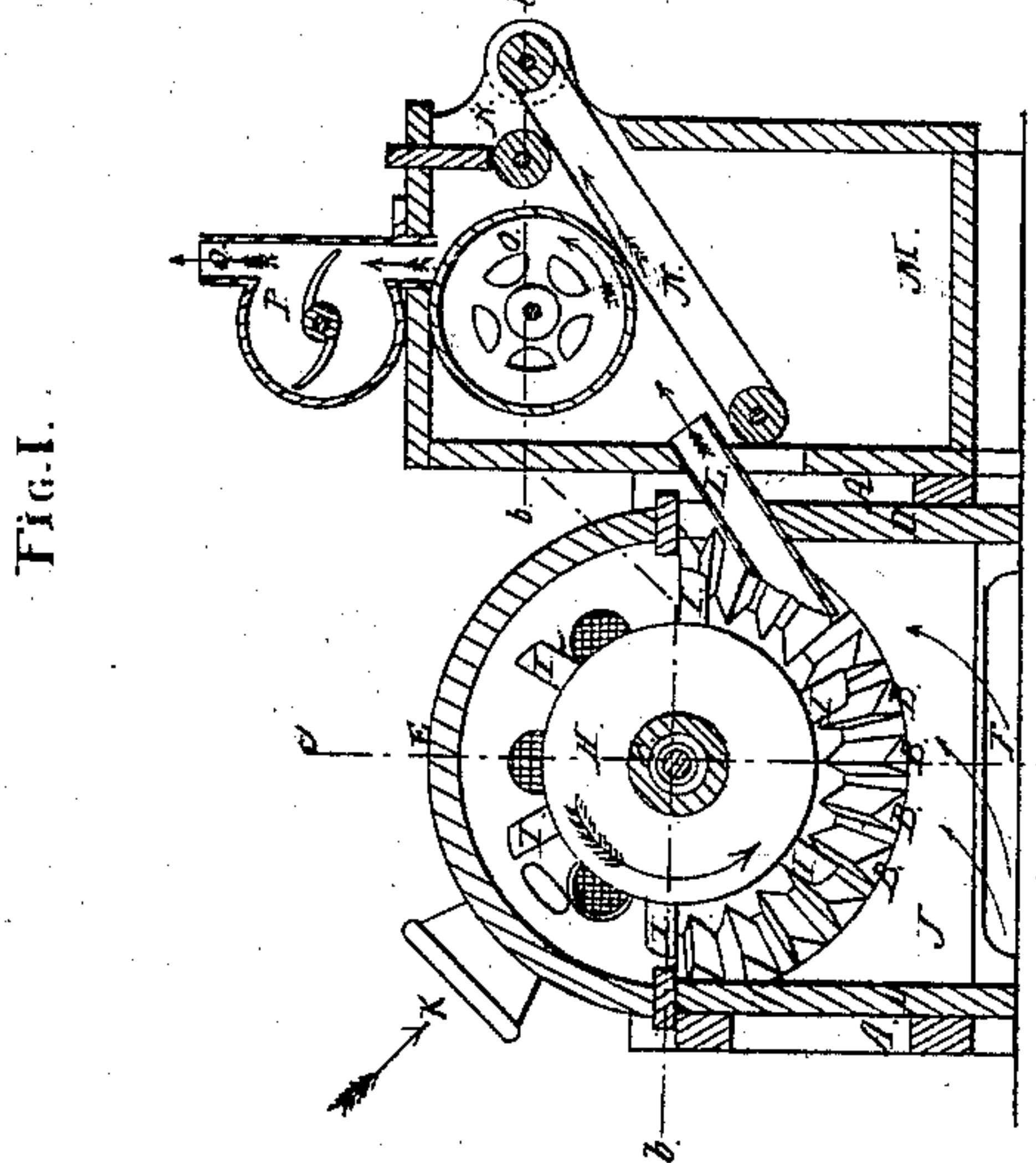
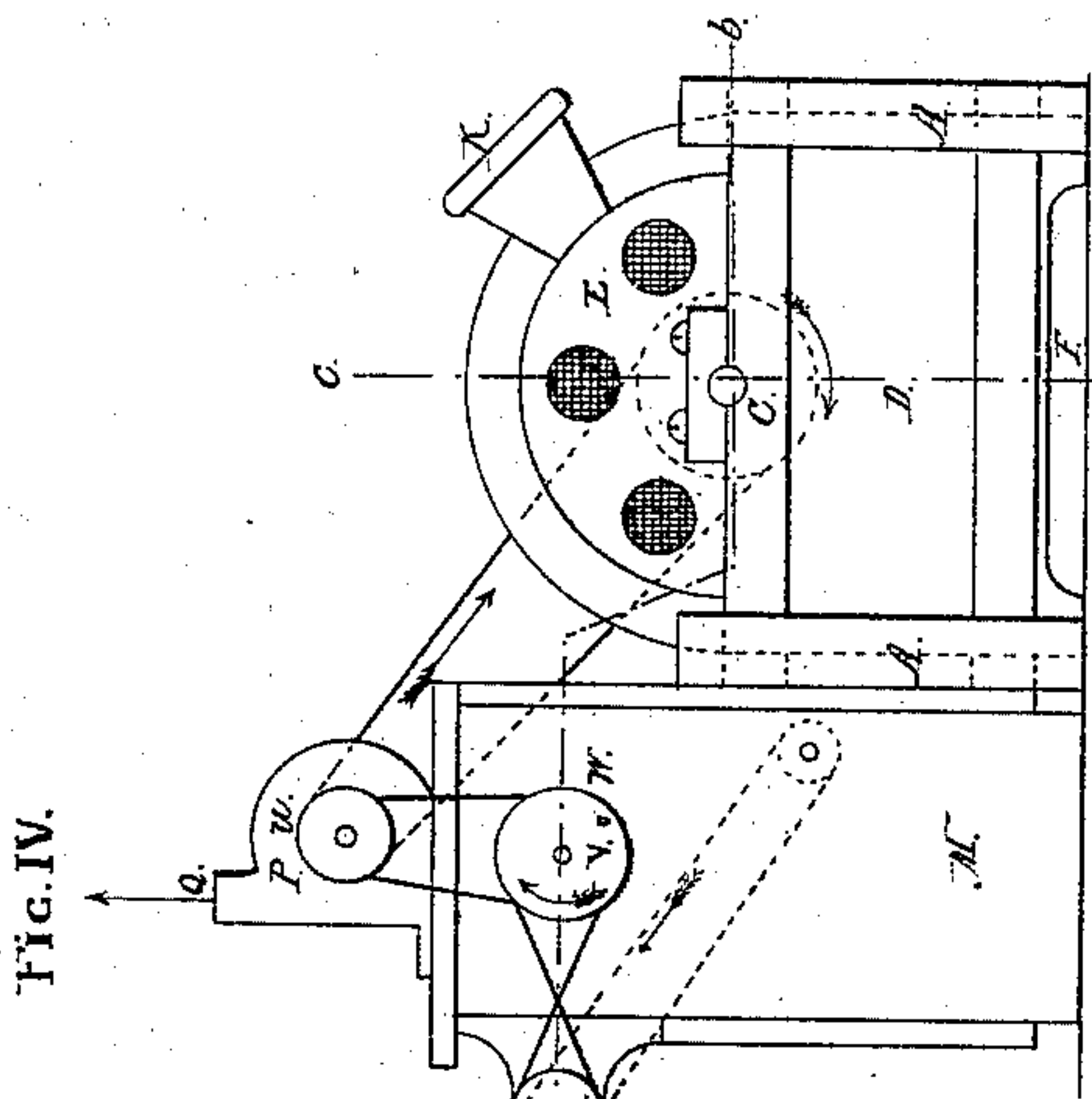


J. Hershaw.

Cotton Picker.

No 80,826.

Patented Aug. 11, 1868.



Witnesses:
R. Holmes
M. Holmes

Inventor:
John Hershaw

United States Patent Office.

JOHN KERSHAW, OF PATERSON, NEW JERSEY.

Letters Patent No. 80,826, dated August 11, 1868.

IMPROVEMENT IN MACHINE FOR CLEANING COTTON.

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, JOHN KERSHAW, of Paterson, in the county of Passaic, in the State of New Jersey, have invented certain new and useful Improvements in Machines known as Cotton-Openers or Cleaners; and I hereby declare the following to be a full and accurate description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, and to the figures and letters of reference marked thereon.

Figure I is a vertical transverse sectional view of the machine, taken through the line *a*, Figs. II and V.

Figure II is a horizontal sectional view, taken through the line *b*, Fig. I, and with the beater-shaft removed, to be further hereinafter described.

Figure III is a vertical longitudinal section of the case and screen, taken on the line *C*, Figs. IV and V, and showing the beaters in position.

Figure IV is an exterior end view of the machine.

Figure V is a top or horizontal view of the exterior of the machine.

Figures VI, VII, are views of a disk-plate and beater-blades, to be further hereinafter described.

I construct a strong framework, *A*, within which I place, with proper fastenings, a semi-conical grating, *B*, the centre of which is coincident with the axis of the rotating shaft *C*. I enclose this framework with the lining *D* and the semi-conical cover *E*, leaving only the space *F* for the admission of atmospheric air.

The beater-shaft *C* is mounted upon suitable bearings on the framework *A*, and forms the axis or centre of the cone formed by the grating and the cover before mentioned.

Upon the beater-shaft *C*, at proper distances, are fixed five disk-plates, *H*, of diameters proper for their various positions in the hollow cone formed by *B* and *E*. Upon these plates are securely fastened a series of blades, *I*, made of thin sheet steel, and curved in the manner shown by the enlarged views, Figs. VI and VII.

The advantages of placing such beater-blades upon flat disks, instead of horizontal bars, as in Wind's patent, November 13, 1847, are, a more convenient and substantial means of fastening the blades; a means of disposing of the blades in an intermediate or spiral manner, so that the resistance to the power applied may be nearly uniform; an avoidance of the tangling of the cotton around the parts, as takes place upon horizontal bars, and also of a cross-current, liable to be created by horizontal arms when in motion, to the detriment of the endwise current created by the spiral blades or suction-fan.

The grating, *B*, consists of a series of iron bars, of an angular section, presenting a serrated or saw-tooth profile, with thin spaces intervening between each pair. These bars *B* are properly fastened upon the inverted bridge-pieces *J*, upon which they rest.

Near the smaller end of the cover *E*, I place a funnel or hopper, *K*, opening into the interior of the machine, for the purpose of feeding in the cotton.

I place the outlet-pipe or discharge *L* near to the base or larger end of the grating *B*.

In connection with the outlet *L*, I construct a framework, *M*, for the purpose of carrying and enclosing the proper rollers of the travelling-apron of discharge *N*, and also the screen or rotating cage *O*, all of which have their bearings in the framework *M*. Outside and on top of *M*, I place a rotation suction-pan, *P*, which communicates, by means of the dust-pipe *Q*, with the screen *O*, beneath, and by appropriate pipes or conduits, with the atmosphere above, at any convenient distance.

The pulleys *R*, *S*, *T*, *U*, *V*, *W*, and *X* are for the respective uses shown, and further hereinafter described, in the operation of the machine.

The operation of my machine is as follows:

Rotary motion is imparted to the beater-shaft *C* by the pulley *R* and usual driving-belt, from any prime mover. Close by the pulley *R* is the pulley *S*, also fast on the shaft *C*, which gives motion, by means of a band, to the pulley *T* on the shaft of the fan *P*. Upon the opposite end of the fan-shaft is the pulley *U*, which, by a band, gives motion to the pulley *V*, which is fast on the shaft of the rotating screen *O*. The pulley *W*,

also fast on the shaft of the screen, gives motion, by a band or gearing, to the roller carrying the discharge-apron, through the pulley X, or by a gear equivalent thereto.

The arrows of direction show the course of motion in the several parts when in operation.

Cotton being fed in through the hopper K, the machine being in rapid motion, in the manner before described, the beater-blades will seize the flocks of fibre and scutch them against the acute-angular edges of the grate-bars B, thus loosening and triturating the matted cotton into a loose, feathery condition. The centrifugal action of the cotton from the beater-blades towards the grating, and also, at the same time, towards the outlet or base of the conical enclosure, tends to change its position from one series of beaters to the other, commencing at the smallest and ending at the largest disk of beater-blades. The helix-form of the outer edges of the beater-blades, when in motion, induces a rapid current or draught of atmospheric air in the direction of the passage of the cotton from its inlet at K to its outlet at L. The air is admitted at the smaller end, near the base of the machine, through the opening F, and ascending through the grating, is carried forward, and, together therewith, the light, fleecy cotton, which has undergone the separating and scutching action of the beater-blades.

In addition to the current of air induced by the motion of the helix-formed beater-blades, and the tendency of the coniform surfaces to direct the flying fibres towards their base, and towards the outlet L, I employ the suction-fan P, operating through the screen O, which gives a forward and upward direction to the loose cotton, as well as carries off, through the screen O, any light dust or other foreign matter which may not, through its gravity, have fallen through the grating B in its passage from the inlet K to the outlet L.

The travelling-apron N receives the opened cotton from the outlet-pipe L, and carries it forward under the rotating wire or perforated screen O, under the pressure-roller N', and thence discharges it on the floor, or into proper bins, at any convenient distance.

Having thus described the construction and operation of my improvements in cotton-openers and cleaners, I do not limit myself to the particular curvature of beater-blades shown, as more or less curvature in the beater-blades would produce, when in motion, an endwise current in a cotton-opener. Neither do I limit myself to blades having any curvature, so long as straight blades may be used in combination with the angular bars of the grating B, and the fan P, and opening F, for producing an endwise current in cotton-openers.

I do not wish it to be understood that I claim broadly, as my invention, a machine for opening and cleaning cotton, of a conical form; neither do I claim the combination with such of a discharge-apron, screen, and fan, for all such have been in use and combined together, as in Lillie's cotton-willow, described in Ure's "Manufactures of Great Britain." To those individual parts, features, or their combination, as they are represented, I therefore make no claim.

What I claim, in a cotton-opener and cleaner, is—

1. The shaft C, with its disk-plates H and beater-blades I, in combination with the conically-disposed grating B, covering E, openings K and F, and the outlet or discharge-pipe L, all constructed as and for the purposes herein set forth.

2. The fan P, screen O, and apron N, when combined together, and with the conically-disposed grating B, of angular section, the cover E, the feed-opening K, air-opening F, outlet-pipe L, shaft C, disks H, and beater-blades I, or their equivalents, all arranged and operating substantially as and for the purposes herein shown and set forth.

JOHN KERSHAW.

Witnesses:

K. HOLMS,

M. HOLMS.