

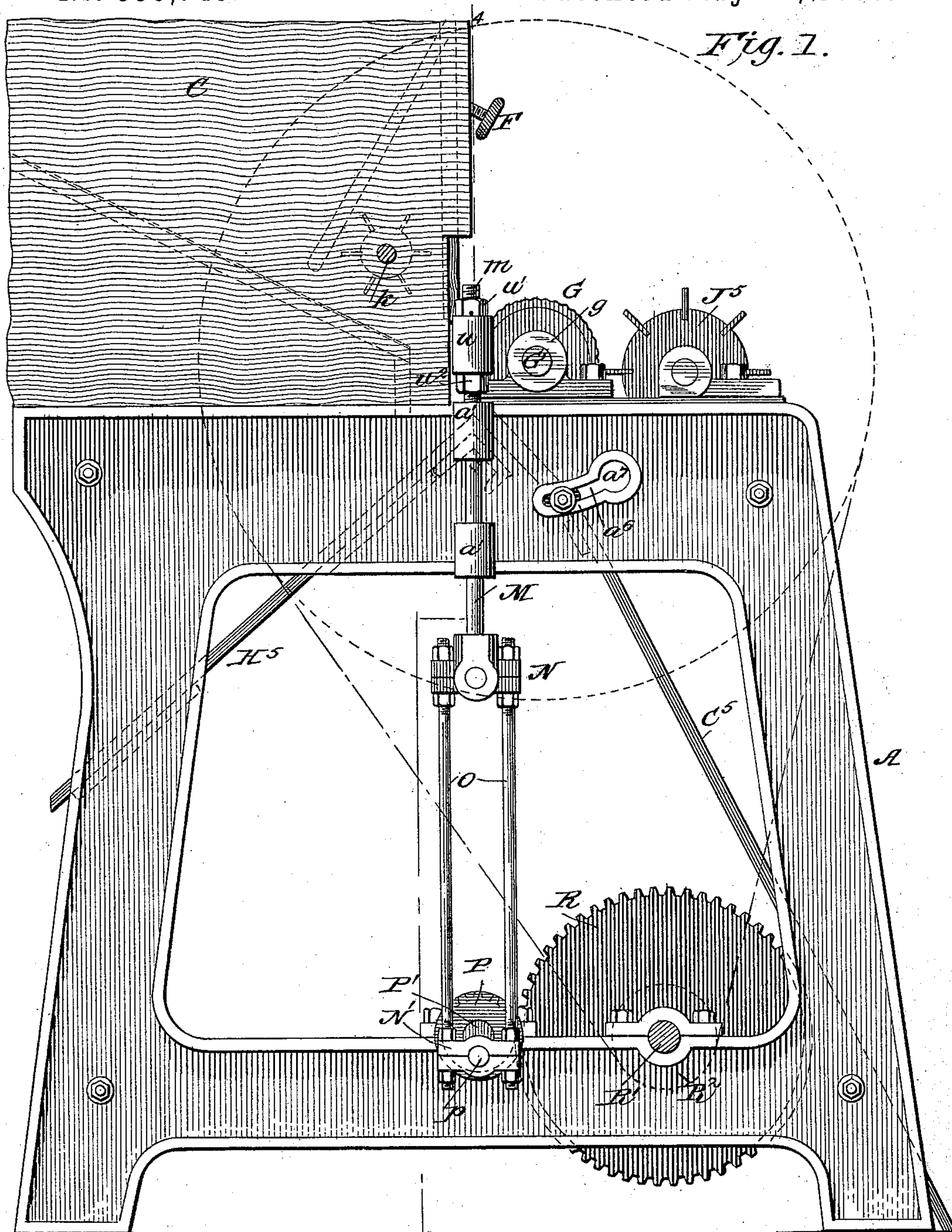
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S. L. JOHNSTON.
COTTON GIN AND WOOL BURRER.

No. 539,743.

Patented May 21, 1895.



WITNESSES:

Fred G. Dietrich
A. D. Bloude

INVENTOR

Samuel L. Johnston.

BY

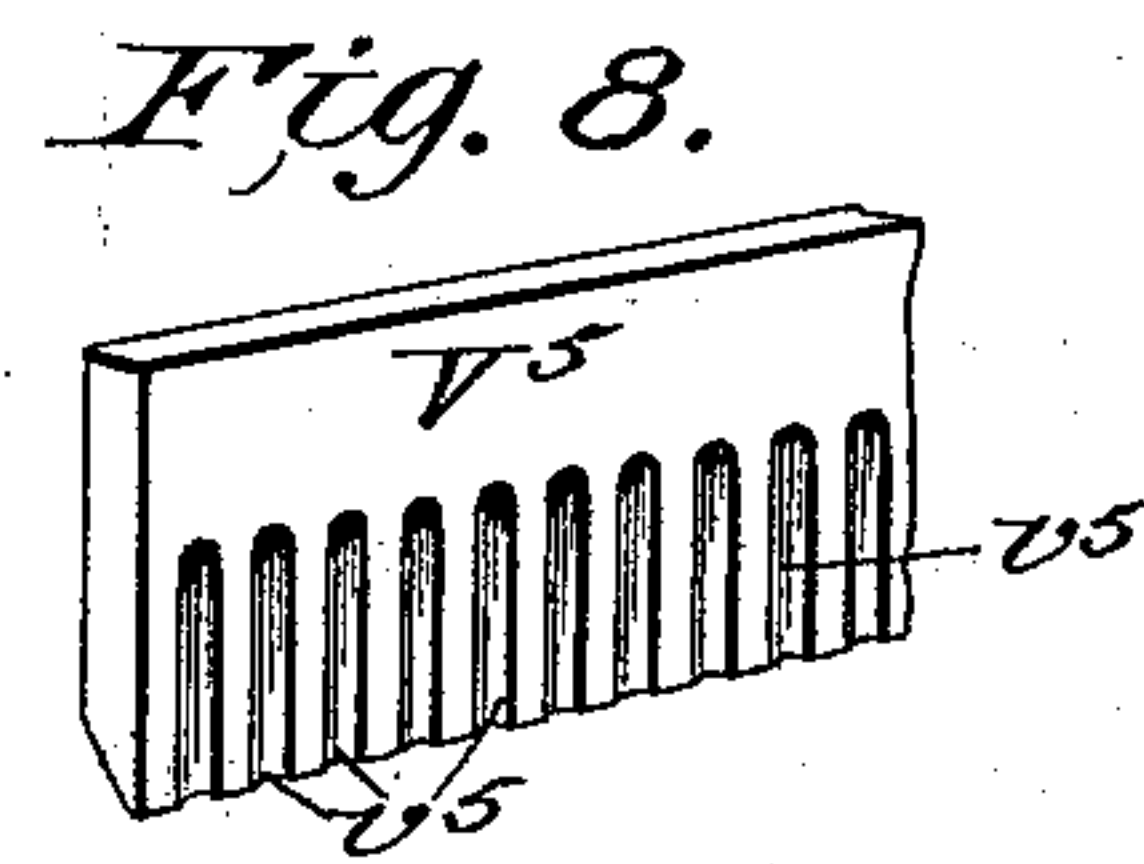
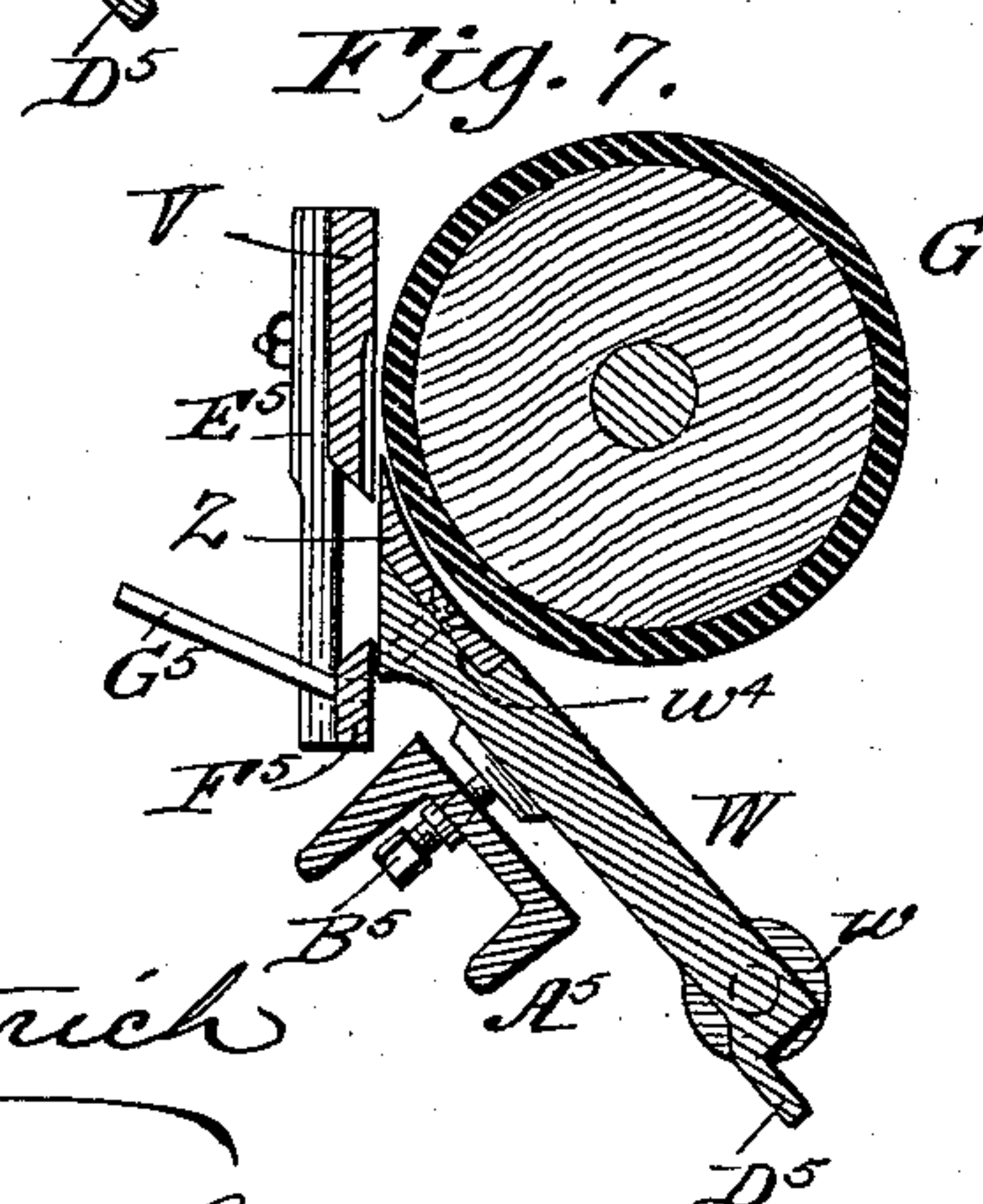
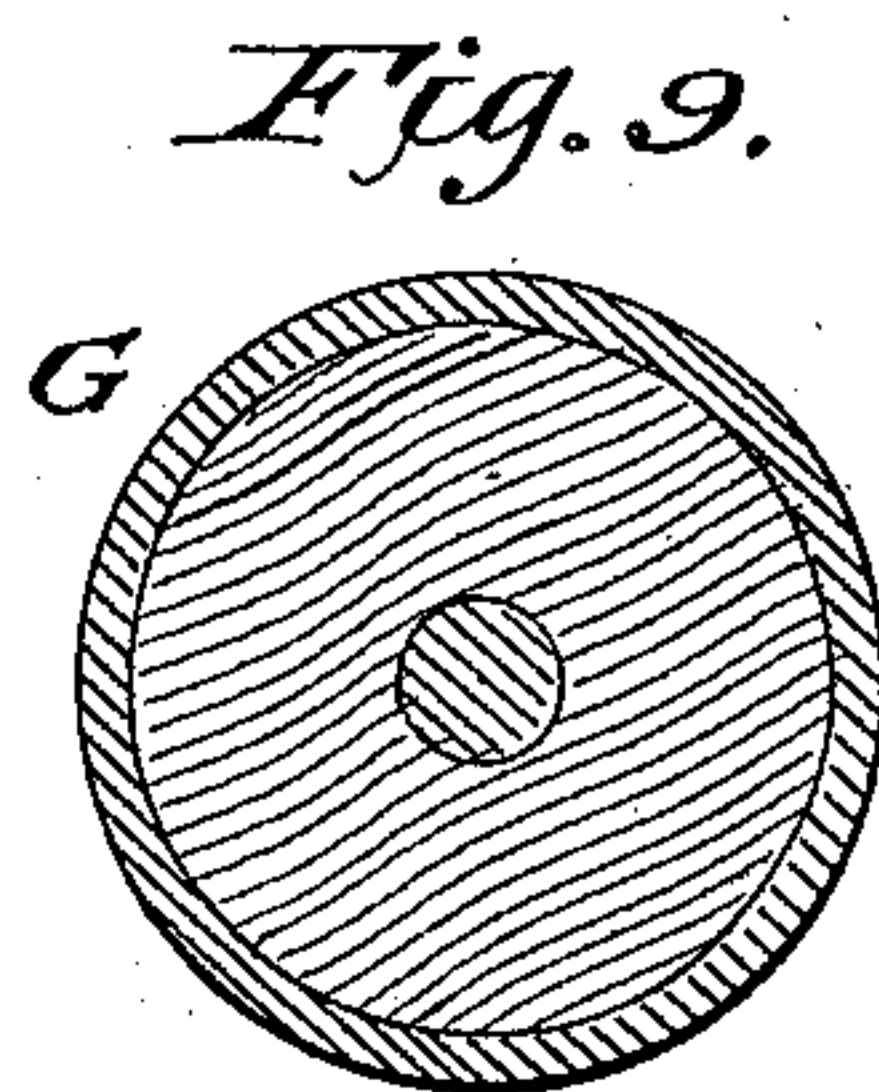
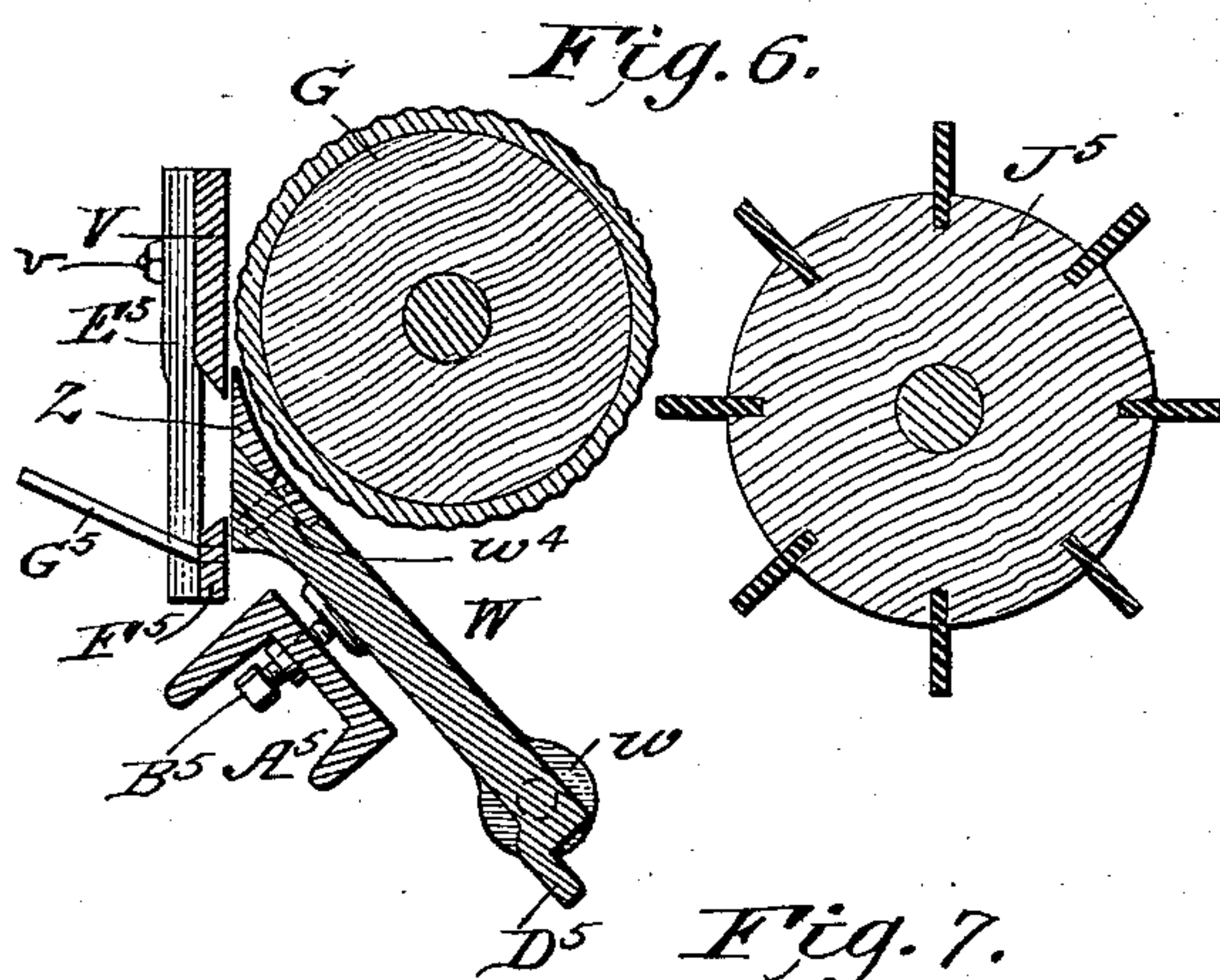
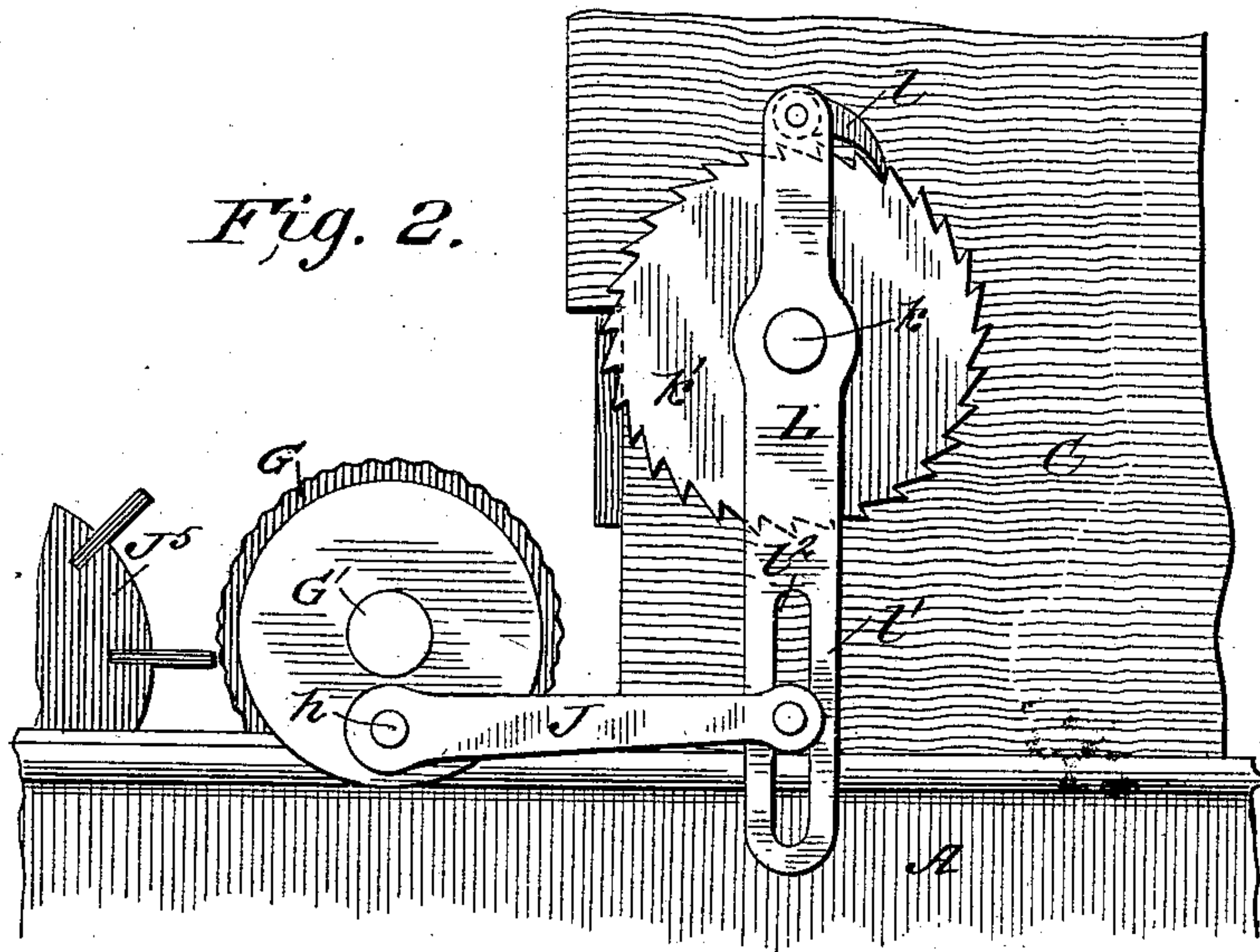
Munn & Co.

ATTORNEYS.

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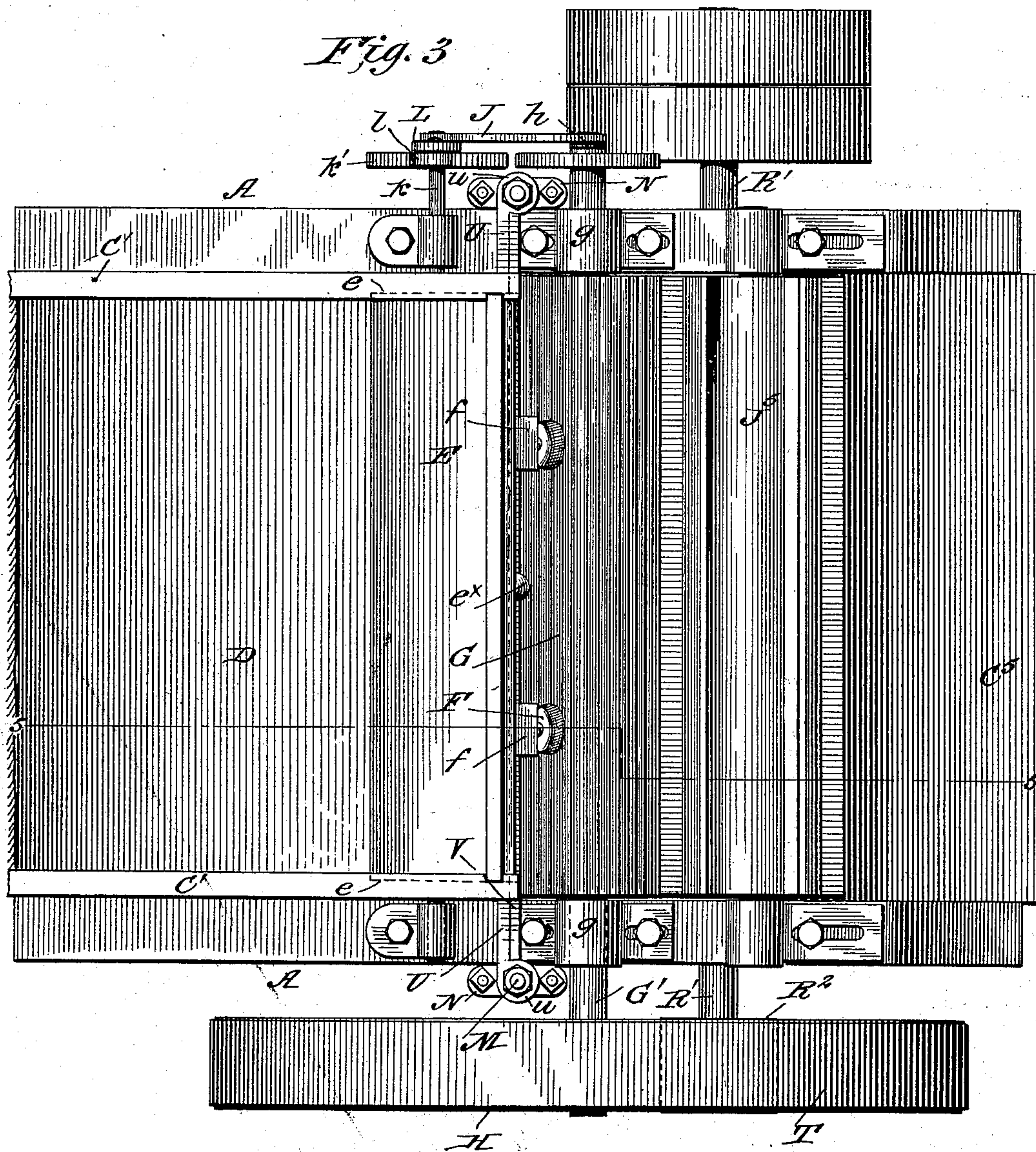
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S. L. JOHNSTON.
COTTON GIN AND WOOL BURRER.

No. 539,743.

Patented May 21, 1895.



WITNESSES:

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(No Model.)

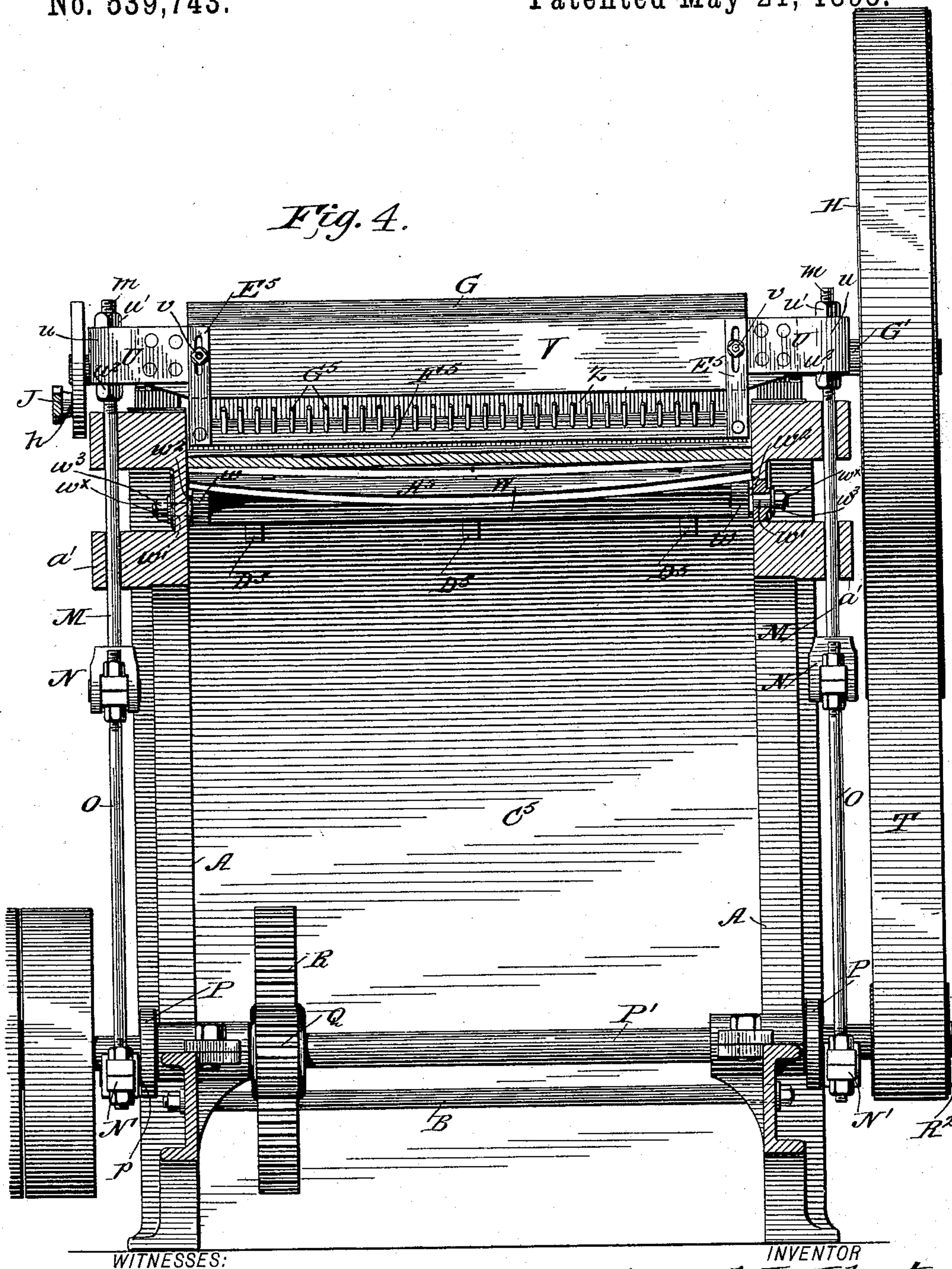
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S. L. JOHNSTON.
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Fig. 4.



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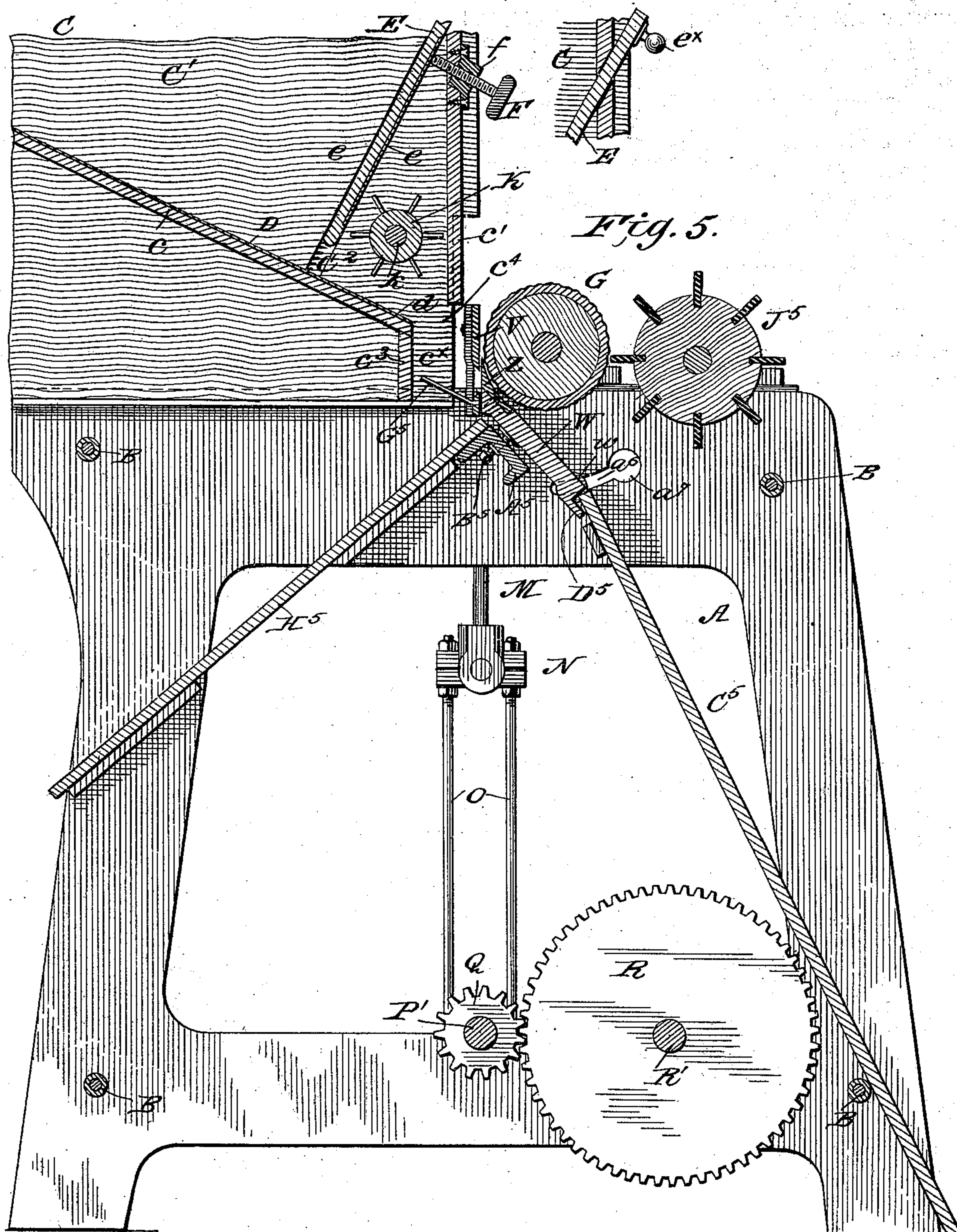
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INVENTOR

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UNITED STATES PATENT OFFICE.

SAMUEL L. JOHNSTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNIVERSAL COTTON GIN AND WOOL BURRER COMPANY, OF SAME PLACE.

COTTON-GIN AND WOOL-BURRER.

SPECIFICATION forming part of Letters Patent No. 539,743, dated May 21, 1895.

Application filed January 20, 1894. Serial No. 497,524. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. JOHNSTON, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Cotton-Gin and Wool-Burrer, of which the following is a specification.

My invention, which relates to that class of gins known as "roller" gins, primarily has for its object, to provide a machine of this kind, which is adapted for use for ginning cotton or burring wool, in an economical, and effective manner without injury to the fiber of the material while passing through the machine.

My invention also has for its object to provide a machine, having a reciprocating stripper mechanism, supported, secured, and held to operate, in such a manner as to secure a more effective, rapid, and uniform operation.

Furthermore, my invention has for its object, to provide a vibrating receiver and separator mechanism, which receives the material from the hopper and delivers it to the roller and stripper, and also serves to clear the seed and dirt therefrom as it feeds it to such stripping devices.

My invention also comprehends other features which will hereinafter be specifically referred to, and which will serve to increase the capacity of the machine and improve the quality of the cotton or wool treated.

My invention, therefore consists, in the novel combination and peculiar arrangement of parts, such as will be first described in detail, and then pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of my improved machine, the main drive and band pulley being shown in dotted lines. Fig. 2 is a detail view taken from the opposite end of the machine, illustrating the automatic feed mechanism. Fig. 3 is a top plan view of the complete machine. Fig. 4 is a longitudinal section of the same, taken on the line 4 4, Fig. 1, looking in the direction indicated by the arrow. Fig. 5 is a transverse section of the machine, taken on the line 5 5, Fig. 3. Fig. 6 is an enlarged section of the long staple-roll, the adjustable seed-resistance member, the strip-

per-knife, and the vibrating feeder and separator. Fig. 7 is a transverse section of the wool-burring roll and doffer-knife, the resistance member, and the combined vibrator and separator. Fig. 8 is a detail view of a portion of the wool doffer-knife, and Fig. 9 is a cross-section of a short-staple-operating roll.

Referring to the accompanying drawings by letter, A A indicate the end frames which are connected and braced by the longitudinal stay bars B B, bolted thereto as shown, and on such frames, at the rear end is mounted the hopper box C, which extends longitudinally from end to end of the machine, the peculiar construction of the discharge mouth of which also forms an important feature of this invention.

Referring now more particularly to Fig. 5, it will be noticed such hopper has its bottom c, inclined downward from the rear to the front wall, and such bottom terminates at a point short of the front wall c', from which point a short vertical portion is provided which forms the rear wall c³, of a longitudinal chamber c^x, for a purpose presently described. The front wall c' also stops short of the lower end of the hopper, whereby to form a discharge mouth c⁴, the bottom of which is formed by the lower end d of a sheet metal plate D, which projects beyond the end of the bottom c, and entirely covers such bottom as shown.

E indicates a cut off or slide or gate, which extends entirely across the hopper at the front, and is held to slide in inwardly and downwardly inclined grooves e e in the ends C' of such hopper forming as it were a front inclined bottom member for guiding the cotton to the discharge opening or throat C². The upper end of such slide E projects beyond the front of the hopper and has a hand hold or knob e^x, and such slide is adapted to be held locked to any of its adjusted positions by the clamp screws F, which pass through threaded castings f in the front wall c', as clearly shown.

G indicates the roller, which extends longitudinally across the machine in front of and a little away from the discharge mouth c⁴ of the hopper, and such roller is journaled in

bearings $g g$ adjustably held on the end frames A A, see Fig. 3, whereby the roller can be adjusted to or from the said mouth c^4 as desired. At one end the roller shaft G' has mounted thereon a drive pulley H, and the main band wheel I, and on the opposite end such shaft has a wrist pin h , to which is connected a pitman arm J, to which is imparted an oscillating motion as such roller rotates, and which operates the feed devices, the construction of which is most clearly shown in Figs. 2 and 5. By referring now to such figures, it will be noticed, within the hopper body under the adjusting slide E, is journaled a toothed cylinder K, the shaft k , of which projects at one end, and carries a ratchet wheel k' , with which is adapted to engage a pawl l pivoted on the upper end of an oscillating lever L loosely journaled on the said shaft k , and formed with a long pendent arm l' , slotted as at l^2 , with which is adjustably connected the outer end of the pitman J.

By providing feed devices arranged as described, a continuous intermittent feed will be given the cotton as it passes through the throat toward the mouth c^4 , the throw or feed length of which can be increased or decreased, as the quality of the staple may require, by adjusting the outer end of the pitman arm to or from the fulcrum of the ratchet lever L.

The roller G, when the machine is used for treating long staple cotton, has its peripheral face formed of brass, fluted longitudinally as shown. Such facing I have found to be most effective in the desired operation and wearing much longer, than when formed of wood or other material. When however short staple cotton is being treated I prefer to form such face smooth and of a composition formed of lead and antimony, as such has been found most desirable for such kind of cotton in the practical use of the machine.

It should be stated, that I have found in practice that a more uniform, rapid and effective result is obtainable, by providing a vertically reciprocating stripper blade, and furthermore by constructing such device in the manner shown and presently described, I can utilize the same devices which reciprocate such blade for operating a vibrating mechanism, the construction and arrangement of which forms one of the essential features of my invention.

By reference to Figs. 1 and 3, it will be noticed, guide lugs $a' a'$, are formed on the outer face of the side frames A A, in which are held, for vertical reciprocation, guide rods M M, the lower ends of which are pivotally joined to cross heads N N, which have each a pair of pendent rods O O, connected at their lower ends with cross heads $N' N'$, in which are journaled the crank members $p p$ of crank disks P P, mounted on a longitudinal shaft P' , having a drive gear Q, which meshes with a larger drive gear R, on a parallelly disposed

shaft R' , provided at one end with a drive pulley R^2 , of a small diameter, which is driven by the belt T, which passes over the large drive pulley H, before referred to.

The upper ends of the rods M are projected above the bed face of the members A A, and are threaded as at $m m$, and on such ends are fitted the apertured ears $u u$, of castings U U, to which is secured the stripper blade V, as most clearly shown in Fig. 4, and such castings are capable of vertical adjustment on the rods M, they being held to their adjusted positions by the nuts $u' u^2$, the purpose of such adjustment being hereinafter set forth.

The blade V which consists of a longitudinal member having a flat shear face, and having a lower cutting edge, is held to reciprocate over the face of the roller G, between it and the discharge mouth of the hopper, and its cutting edge is adapted to pass in front of the stationary knife or seed resistance member. This seed resistance member, consists of a longitudinal bar W, held under the roller G, and inclined downwardly, the lower end of which at its outer edges has apertured ears or enlargements $w w$, which receive the inner ends of stud bolts w' having angular flanges w^2 and formed with their outer ends threaded as at w^x to receive the securing nuts w^5 . It will be noticed by reference to Fig. 6 that the bar W extends up under the front face of the roll and has a seat or socket portion w^4 , in which is secured the stationary knife blade Z, the outer edge of which is vertical while its upper face is concaved on an arc eccentric to the roll G. It should be stated, the object in pivotally connecting the bar W to the frame, is to allow the said bar to be adjusted up against the roller as the blade wears; and to keep its stripping edge substantially at the same point on the said roller, I arrange the stud bolts to travel in segmental slots a^6 in the main frame, curved on an arc with the axis of the roller as a center, and to facilitate the ready detaching of the bar W when desired, I form the base of such slots with circular enlargements a^7 , of a diameter sufficient to permit of the withdrawal of the stud bolts from the ears $w w$.

To form a support for the upper end of the bar W, and also as a means for regulating the pressure of the stationary knife on the roller, a longitudinal rest bar A^5 extends under such bar W, and has a series of adjusting screws B^5 which engage the under face of such bar W as shown, and to provide an upper rest or support for the lint board or incline C^5 , such bar W, has a series of lugs or ears D^5 on which the upper end of such board rests, the lower end resting on the floor. See Fig. 1.

At the opposite ends of the reciprocating stripper blade V are stud bolts $v v$, on which are secured for independent vertical adjustment, pendent arms E^5 , to the lower ends of which is rigidly connected a longitudinal bar

F⁵, on the front face of which are projecting fingers G⁵, which incline upward, as shown, such fingers, in practice being first formed of straight members, having their threaded ends fitted into the bar F⁵, after which they are bent up as shown, to guide the cotton toward the knife, as it is discharged thereon, as will presently be described.

It will be noticed by reference to Figs. 5 and 6 that the fingers project into the chamber c^x, under the discharge mouth of the hopper, and form a combined agitator, receiver and separating means, as well as a feeder, for lifting the cotton to the stripper.

It will be manifestly understood, that as the cotton falls onto the agitator, and the same is reciprocated with the stripper, the cotton will be thoroughly agitated, and the dirt, as well as the seed separated therefrom passes through the fingers onto the seed discharging board H⁵, suitably supported on the main frame as shown.

In ginning machines of this class, as the cotton is stripped from the seed, some of it frequently drops back with the seed and discharges with it, causing a great waste. By providing an agitating or receiver frame in front of the stripper blade, such cotton, as it falls back, is caught up by such receiver and again carried up to the blade, thereby effectually preventing the loss of such cotton. By supporting such receiver or agitating means on the stripper blade as stated, the same can be adjusted independent of such blade, vertically to or from the stationary stripper blade, and by adjustably supporting the same the blade V can be adjusted to make its stroke extend over a greater or less face surface of the stationary blade, as the length of the staple may require, it being obvious, that in such adjustment, the agitator or receiver may be moved in unison with the blade V or adjusted independently thereof.

J⁵ indicates a doffer roll or clearer, formed of a cylinder having longitudinal radially projected beaters formed preferably of leather, which are held to engage the rear face of the roller G, such doffer roll being in practice geared with and driven from the main drive shaft in any ordinary manner. This roll may however be dispensed with, when the cotton is in a dry condition, it being found useful only when the cotton is wet and inclined to adhere to the roll G. So far as described, it will be noticed that by my invention, I provide means whereby the feed of the cotton, as well as the speed at which it is fed, is regulated and rendered uniform, such cotton thoroughly agitated to be freed from dirt, before it reaches the strippers, and automatically and continuously carried by a reciprocating motion to the said strippers, at the same time that it is freed from the seed. Furthermore, by constructing and arranging the stripping and separating devices as shown and de-

scribed, I am enabled to run the machine at a very high speed, without the undue jarring, usually incident to machines of this class, and thereby greatly increase the operating capacity, without danger of injury to the fiber of the staple. It will also be observed the feed, agitating and stripping devices, are so connected and arranged relatively, that they can be quickly adjusted to treat different grades of cotton, thereby effecting a great saving in the ginning, and producing a more uniform and better grade of cotton.

When it is desired to use the machine for burring wool the several parts remain the same as they are when treating cotton, except, the roll G is removed, and a similar roll covered with hard rubber, to form substantially a yielding bearing to prevent injury to the fiber is used, and instead of employing a stripping knife V, with a flat shearing face, a blade V⁵ having a series of vertically disposed grooves v⁵ v⁵, as illustrated in Fig. 7, is employed, which forms a doffer or comb like stripper. The feeding and agitating operation is the same as before, as also the reciprocal motion of the blade V⁵. In this case however such blade has a combing action which removes the burrs out of the wool instead of the pulling or stripping action of the cotton blade V.

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

1. An improved roller cotton gin, comprising a feed hopper, a longitudinal chamber c^x at the discharge end thereof, a roller held parallel to such chamber, a bed knife having a vertical shear face disposed with its cutting edge at the front face of such roller, a vertically reciprocating stripper held above the bed knife, having a pendent arm provided with projecting fingers held at a point below the cutting edge of the bed knife and projected into the longitudinal chamber c^x, said fingers being adapted to receive the cotton from such hopper and to lift it upward toward the cutter or stripper blades as the stripper is moved upward, and means for reciprocating such stripper, all arranged substantially as shown and for the purposes described.

2. In a roller cotton gin, the combination with the main frame, the roller G, the upper vertically reciprocating knife V and means for feeding the material to the roller, of a bed or stationary knife having a vertical shear face, means for adjusting the lower end in an arc concentric with the axis of the roller, and adjustable supports held to engage the lower face of the upper end of the said bed knife, all arranged substantially as shown and described.

3. In a roller cotton gin essentially as described, the combination with the roller G, the fixed bed plate W held under the roller and the bed knife Z having a vertical shear face

disposed at the receiving point of the roller,
of the vertically reciprocating stripper and
blade V, held above the bed knife and adapted
to separate the seed from the lint on a down
5 thrust, whereby to force such seed downward
and receiving separating and agitating means
connected to such blade, and movable verti-

cally with it, whereby to carry the linty seed
up toward the stripping point of the roller as
such upper knife moves upward, as set forth.
SAMUEL L. JOHNSTON.

Witnesses:

SOLON C. KEMON,
FRED G. DIETERICH.