

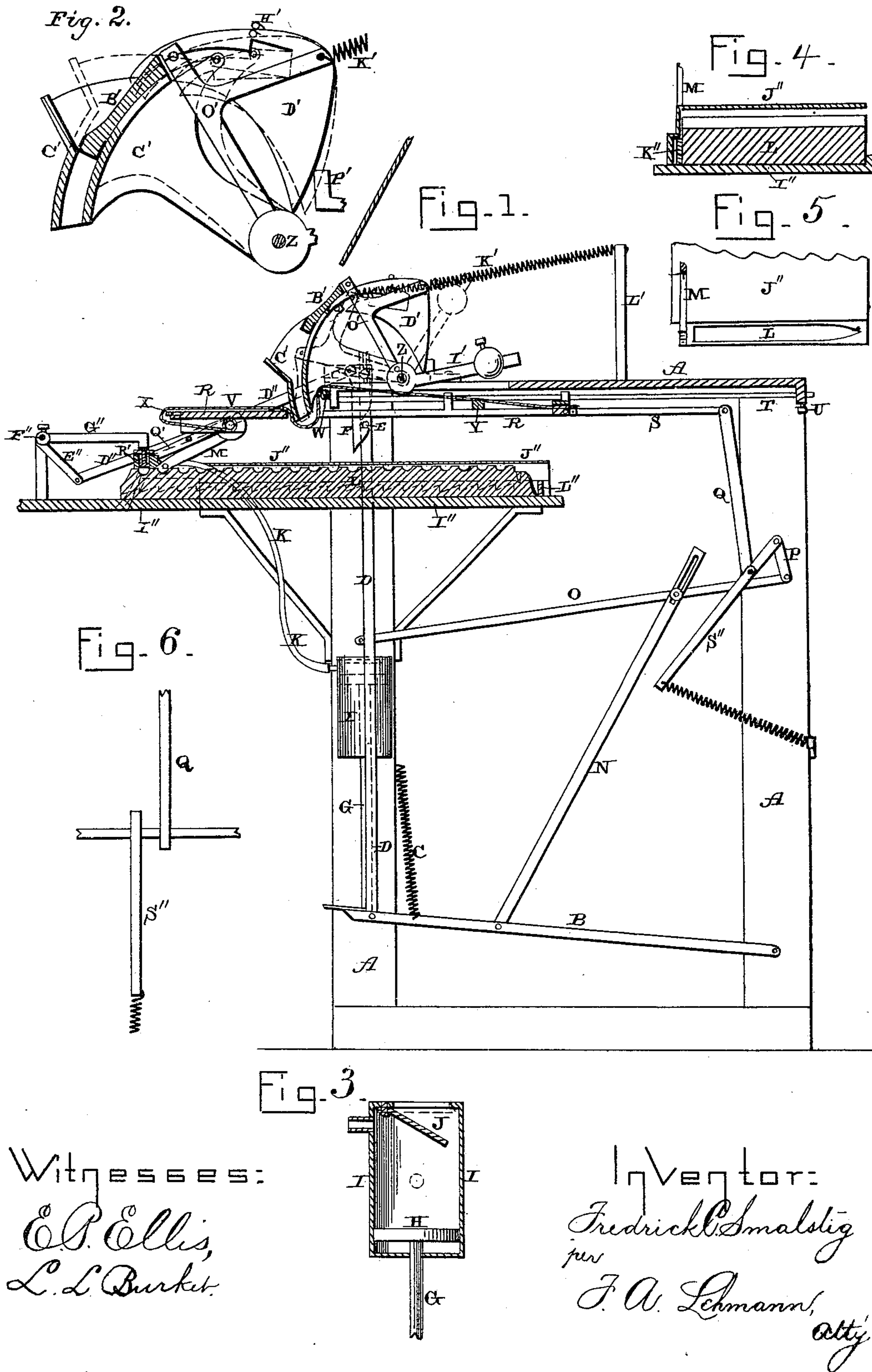
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4 Sheets—Sheet 1.

F. C. SMALSTIG.
CIGAR BUNCHING MACHINE.

No. 405,918.

Patented June 25, 1889.



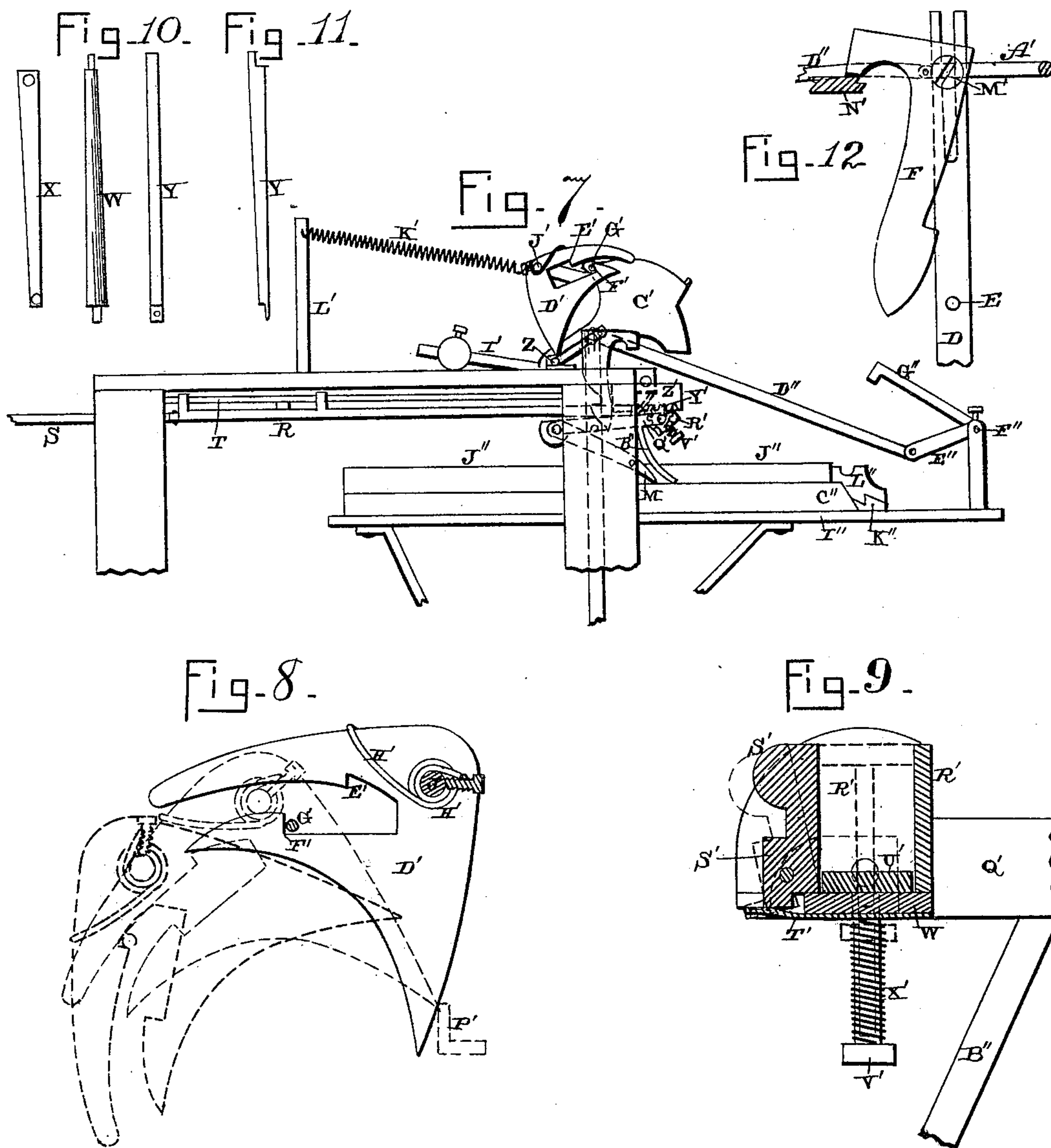
(No Model.)

4 Sheets—Sheet 2.

F. C. SMALSTIG.
CIGAR BUNCHING MACHINE.

No. 405,918.

Patented June 25, 1889.



Witnesses:

E. P. Ellis,
L. L. Burkett.

Inventor:

Fredrick C. Smalstig
per
J. A. Lehmann,
att'y.

(No Model.)

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F. C. SMALSTIG.
CIGAR BUNCHING MACHINE.

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Fig 13.

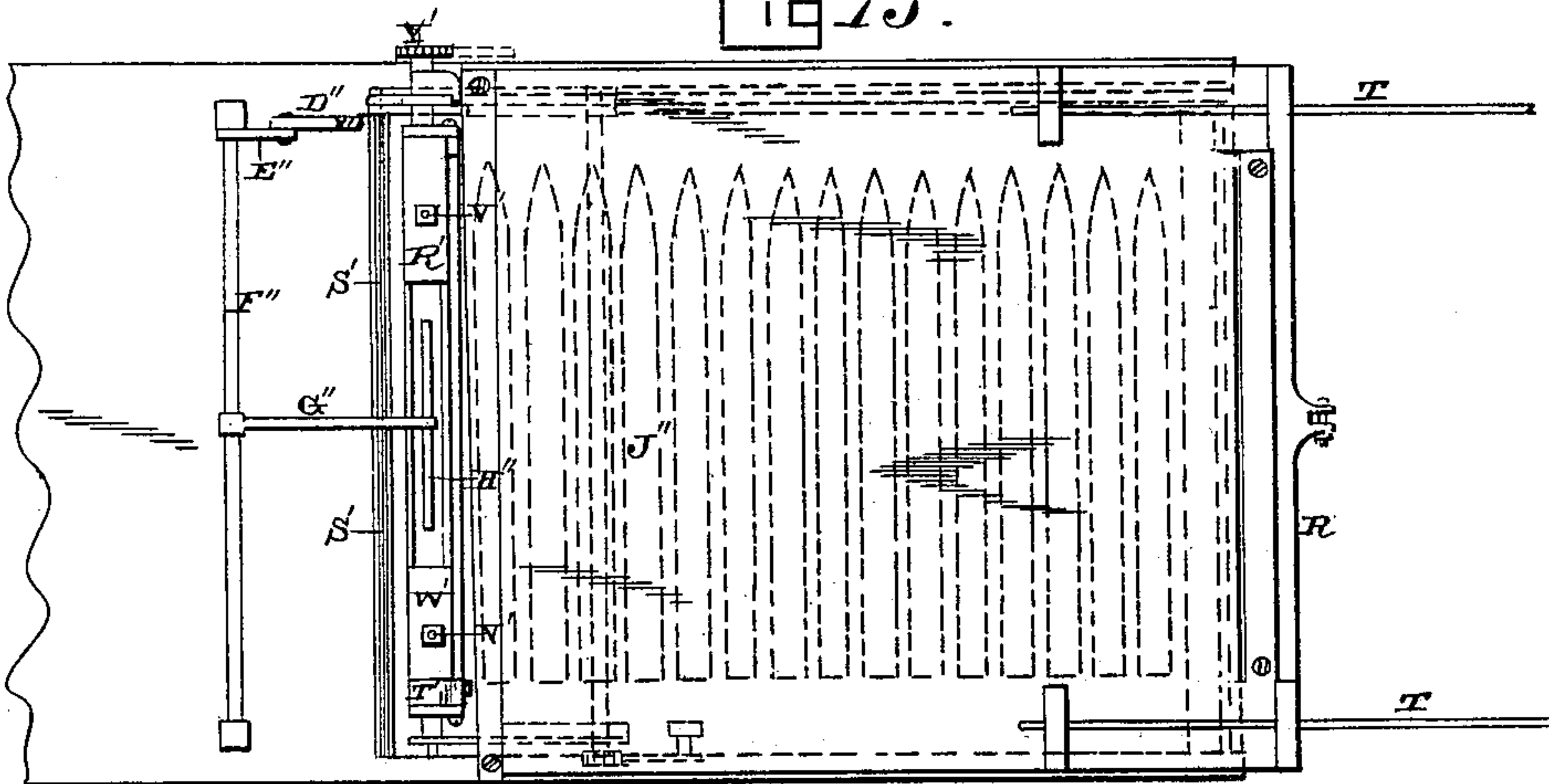
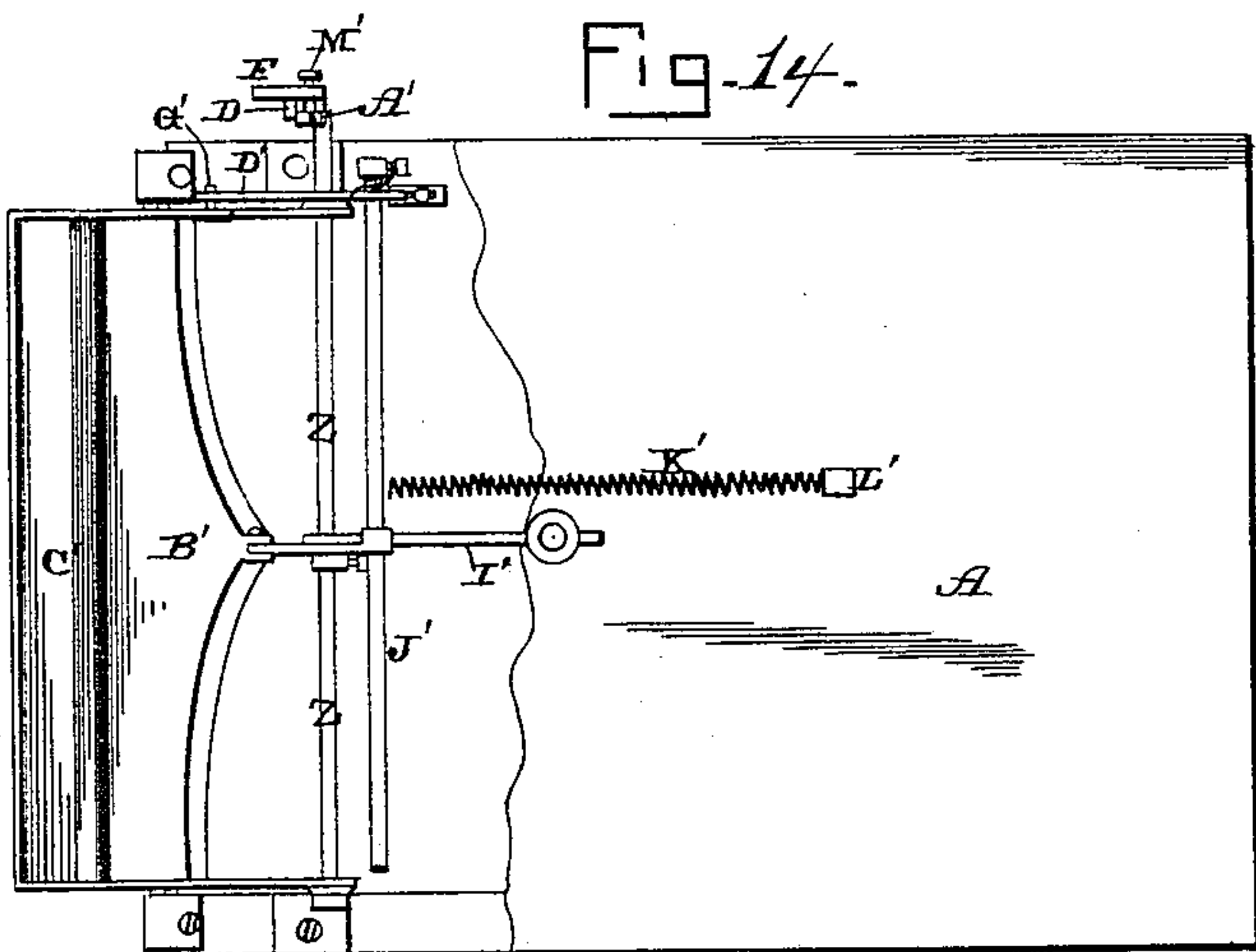


Fig 14.



Witnesses:

E. P. Ellis,
L. L. Burket.

Inventor:

Fredrick C. Smalstig
per
J. A. Lehmann, atty

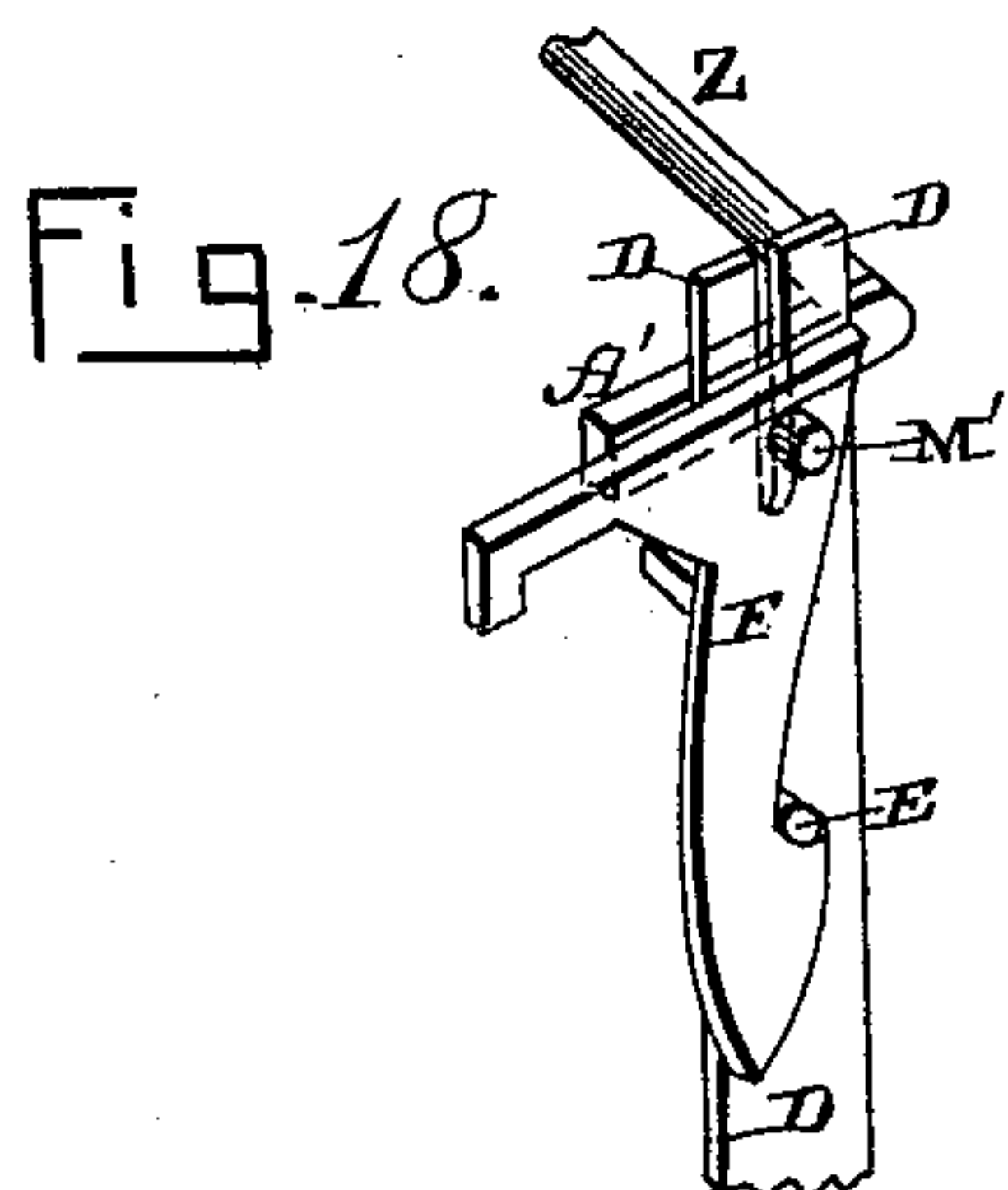
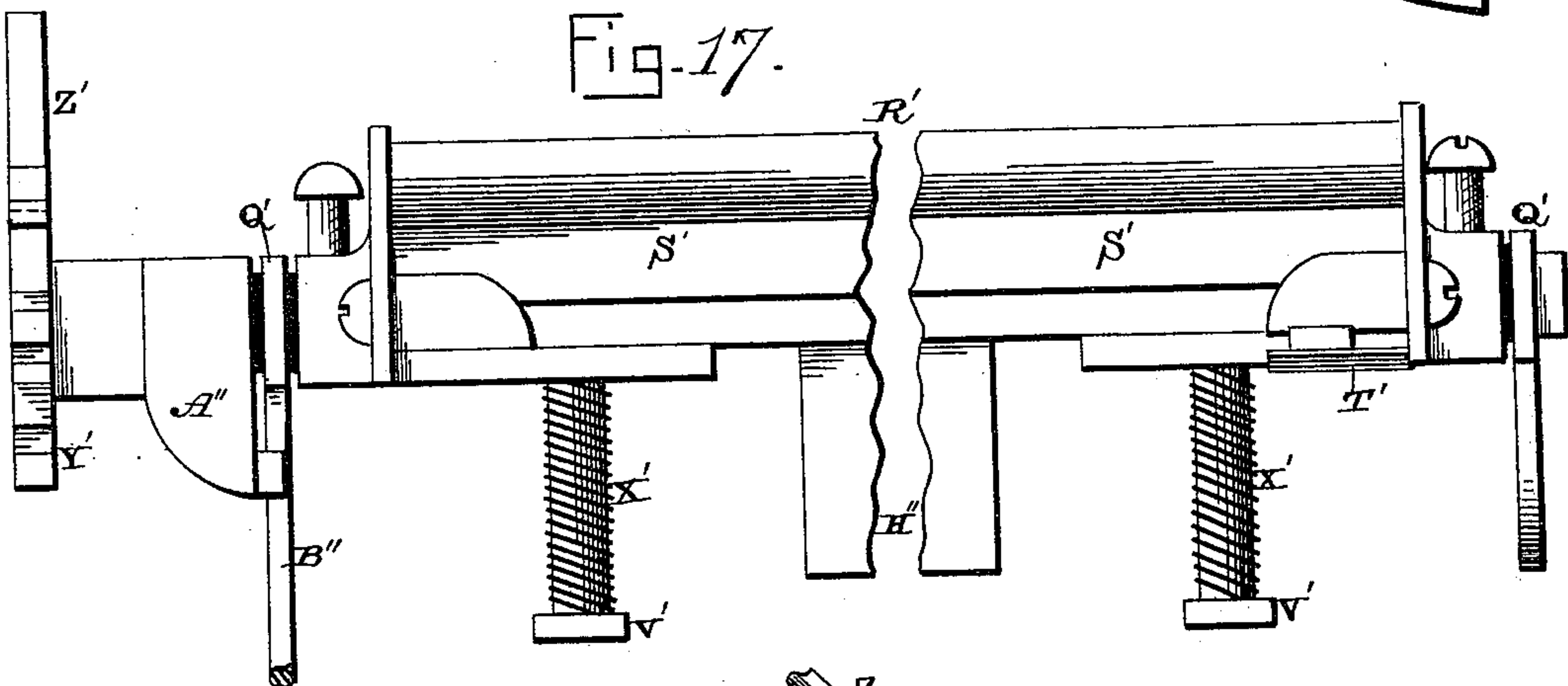
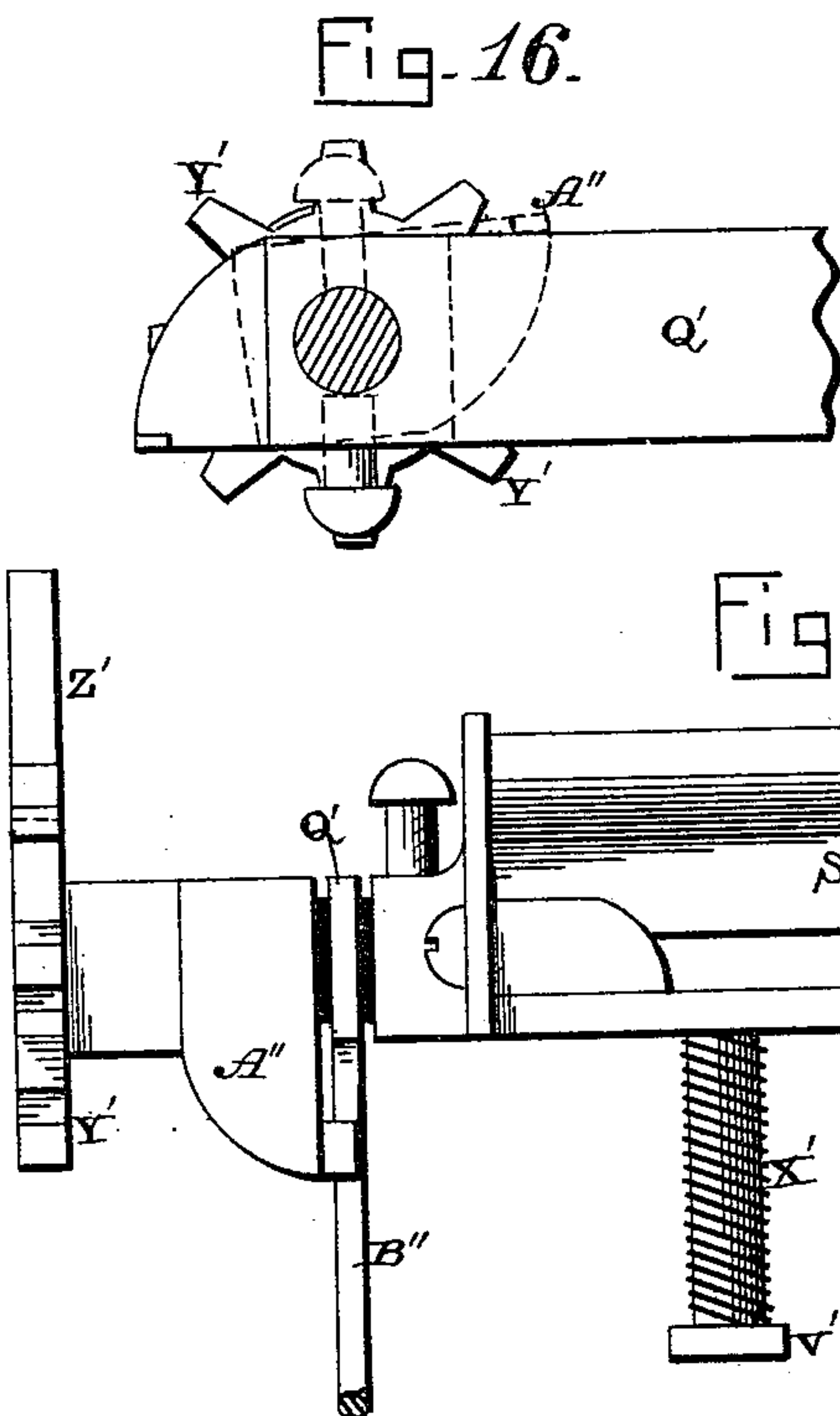
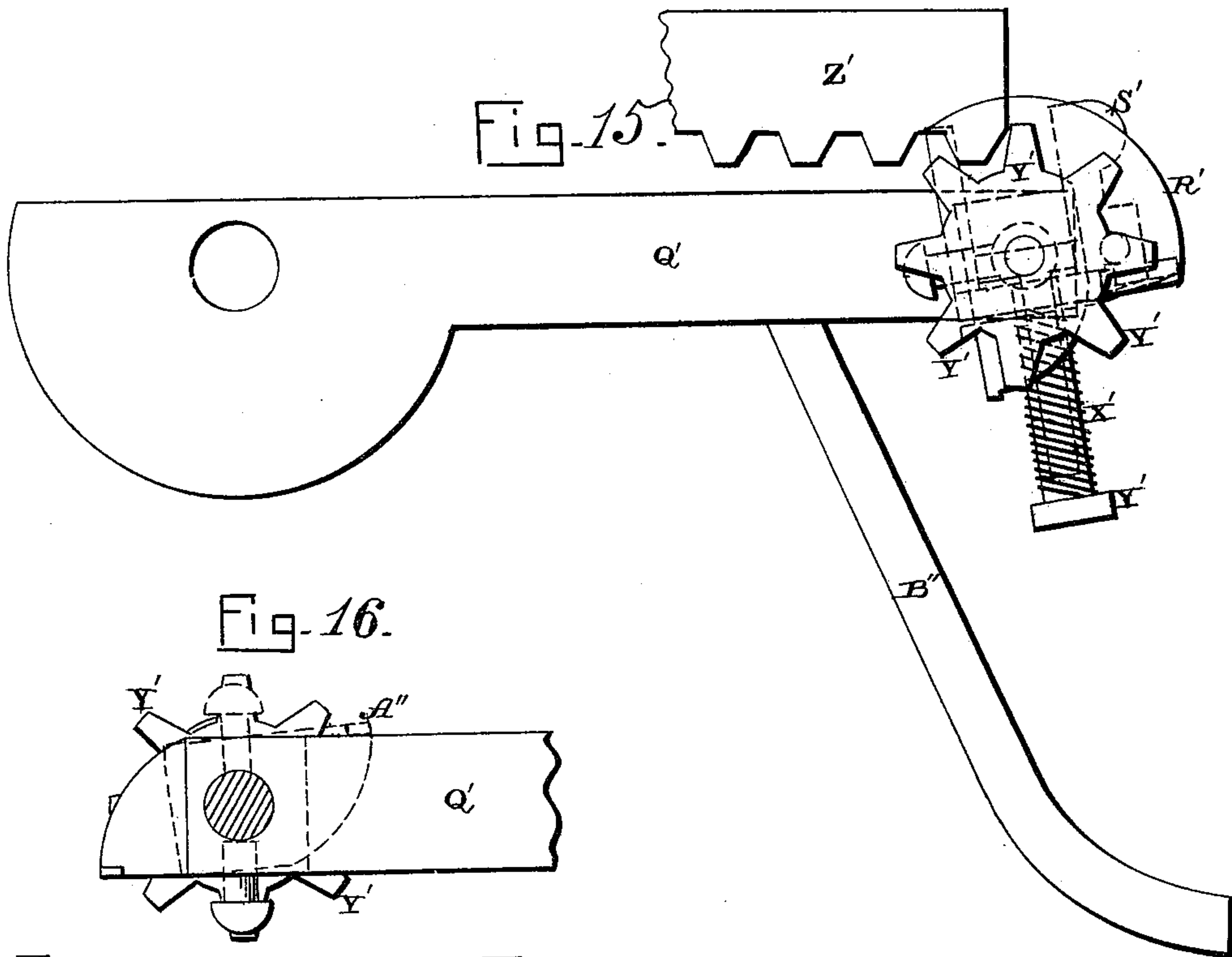
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L. L. Burket,

Inventor:
Fredrick C. Smalstig,
per
J. A. Lehmann,
att'y.

UNITED STATES PATENT OFFICE.

FREDRICK C. SMALSTIG, OF ALLEGHENY, PENNSYLVANIA.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 405,918, dated June 25, 1889.

Application filed January 12, 1889. Serial No. 296,185. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK C. SMALSTIG, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain
5 new and useful Improvements in Cigar-Bunch-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable
10 others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in cigar-bunching machines; and the objects of
15 my invention are to provide a machine which is operated entirely by a treadle, and which is provided with an automatic conductor into which the tobacco falls from the measuring
20 devices, and which holds the tobacco, forms the pocket in the apron under the roller, and deposits the tobacco therein when the cleansing device forces the tobacco from the conductor into the pocket, and which parts are
25 then automatically returned to position by a spring at the same time that the treadle-rod is released; to attach to the cleanser a spring-actuated slotted dog or tumbler, provided with
30 internal shoulders which extend in opposite directions and which engage with a projection or pin upon the conductor both for raising the conductor and for holding it in a partially-raised position to admit of the binder
35 being placed upon the apron, and which dog drops, automatically releases the pin or projection of the conductor from its second shoulder, allowing the conductor to descend upon the apron; to provide removable guides for the carriage, so that they can be removed at
40 any time and be replaced by others; to use in connection with the formation-roller two compensating devices placed upon opposite sides of the roller and which take up the slack of the apron according to the amount of surplus of the apron upon the roller, caused
45 by the shape of the roller, and thus enable bunches to be made which are thicker at one end than the other; to provide a revolving receiver which is provided with a plunger to receive the bunch from the apron and to de-
50 posit it in the mold automatically, a mechan-

ism for revolving the receiver, and a second mechanism for forcing the bunch from the receiver into the mold; to provide an air-forcing mechanism for blowing out any dust or dirt from the pockets of the mold before the
55 bunches are deposited therein; to provide a cover for the unfilled pockets of the mold and the ratchet which is used in connection therewith, so that no dirt or dust can get into the pockets, and so that the dog, as it is carried
60 back and forth by the carriage, will only act upon the ratchet at that point where it is exposed, and thus prevent any unnecessary wear of the parts, and to attach the end of the air-tube to an opening through the pawl, so that
65 the air is always conducted directly into the pocket of the mold which is to be filled.

Figure 1 is a vertical section of a machine which embodies my invention. Fig. 2 is an enlarged vertical section of the conductor and
70 cleanser, showing them in position to receive the tobacco. Fig. 3 is an enlarged vertical section of the air-forcing mechanism. Fig. 4 is a vertical cross-section of the mold, its cover, and ratchet. Fig. 5 is a plan view of
75 one end of the mold. Fig. 6 is a detail view of the operating-rods. Fig. 7 is a side elevation of the machine, the treadle mechanism and its attachments being omitted. Fig. 8 is an enlarged detail view of the dog, showing the
80 different positions it assumes in dotted lines. Fig. 9 is a vertical cross-section of the receiver. Fig. 10 is a plan view of the formation-roller and the two compensators. Fig. 11 is a side elevation of the rear equalizer.
85 Fig. 12 is an enlarged view of the tripping-latch and treadle-rod. Fig. 13 is a plan view of the mold, showing the receiver in position to deposit the bunch. Fig. 14 is a plan view of the conductor and cleanser and their at-
90 tachments. Fig. 15 is a side elevation of the receiver and its attachments. Fig. 16 is a detached view of the parts attached to one end of the receiver. Fig. 17 is a side elevation of the receiver. Fig. 18 is a detached view of
95 the crank and its attachments.

A represents a suitable frame-work, and B the treadle, which is pivoted therein. Secured to this treadle near its outer end is the
100 spring C, for returning the treadle to position

after it has been depressed. Pivoted to the outer end of this treadle is the operating-rod D, which has its upper end slotted, and which is provided with the pin or projection E to engage with the latch F. Also secured to the outer end of this treadle B is the piston-rod G, which has the piston H secured to its upper end, and which operates in the pivoted cylinder I, which is journaled upon the frame A, so that it can accommodate itself to the movement of the treadle B without the necessity of a jointed connecting-rod. In the upper end of this cylinder is placed a valve J, which opens inwardly when the piston is depressed by the action of the treadle B for the purpose of admitting air. When the piston is forced upward by the upward movement of the treadle B the valve J automatically closes and the air in the cylinder I is forced through its side port and the flexible pipe K, so as to blow away any dust or dirt which may get into the pockets of the mold L. The upper end of this tube K connects with a hole made through the dog M, by which the mold L is fed forward, and the air is discharged directly into the pockets before the bunch is deposited therein for the purpose of blowing away any dust or dirt which may have accidentally gotten therein. Also connected to the treadle B is a slotted operating-rod N, which is connected at its upper end to the lever O, which is pivoted at its front end upon the frame of the machine. The slot in the upper end of this connecting-rod N allows the treadle to be depressed to a certain point before the movement of the treadle is transferred to the free end of the lever O. The rear free end of the lever O is connected by the link P with the lower end of the crank-lever Q, which operates the carriage R in one direction, and which is returned to position by the spring-actuated rod S'', the crank-lever being connected to the carriage at its upper end by the connecting-rod S. This carriage slides back and forth upon the removable guide-rods T, which extend horizontally through the frame just under its top, and are secured in position by means of the set-screws U. When these rods become worn, or it is desired to remove them for any cause, it is only necessary to loosen the screws U, when the rods can be removed and replaced by others. These rods T are placed under the top of the table in contradistinction to being placed above, as has been done heretofore, so as to protect them from the sand and grit in the tobacco, and which interferes with the free working of the carriage. There are two of these rods T upon which the carriage moves, and hence the amount of friction upon the carriage is but very slight. This carriage is provided with an apron V, as usual, and which passes over the top of the formation-roller W upon the frame A and around the front compensator X and over the top of the rear one Y. The formation-roller W is made tapering, as shown,

and each one of the compensators is also made tapering, so as to take up any slack in the apron V caused by the shaping of the roller W. The formation-roller and these compensators X Y are made tapering, so that bunches which are larger at one end than the other can be formed by the apron. These compensators may be made either stationary or adjustable, as may be preferred, though they are here shown as stationary.

Heretofore where a tapering formation-roller has been used, the apron would slacken at the smaller part or parts of the roller, and this slack either tears the bunch or causes tears in the apron, or both. In order to overcome this difficulty and to use a tapering formation-roller, the two compensators X Y are made tapering in the opposite direction from the roller, and the wide part of these compensators takes up all of the slack in the apron which is caused by the small end of the roller W. By this construction I am enabled to make bunches having any desired amount of taper without the slightest injury to the apron in any respect.

Mounted upon the top of the frame A in suitable bearings is the shaft Z, provided with the crank A' at one end, and to which the cleanser B' is rigidly attached by means of an arm o'. Journaled loosely upon this shaft Z is the conductor C', into which the tobacco falls from the feeding mechanism located above the machine, but which is not here shown. The feeding mechanism which I propose to use in this connection is fully shown and described in the patent granted to me March 15, 1887, and bearing No. 359,473, and hence need not be more fully described in this connection. The conductor is shaped as shown in Figs. 1 and 2, being made widest at its upper part, so as to receive the tobacco as it falls from the feeding devices, and has its lower portion formed into a conducting tube or pipe, which is as long as the apron is wide. This conductor C' is pivoted upon the shaft Z, and hence moves through a portion of a circle. When raised, as shown in Fig. 2, it is in position to receive the tobacco, and when depressed, as shown in Fig. 1, it has its lower portion bearing upon the apron, so as to form the pocket therein and to deliver the charge of tobacco into the pocket under the formation-roller W. The cleanser B' is faced with any soft suitable material, and serves both to clean out the conductor C' and to force the tobacco from the conductor into the pocket, as shown in dotted lines in Fig. 1. When the conductor is raised ready to receive the charge of tobacco, the cleanser B' closes its lower end and prevents the charge of tobacco from dropping through upon the apron until the conductor has been allowed to drop by the dog D'.

The cleanser and conductor are made to operate in unison with each other by means of the slotted spring-actuated partially-turning dog D', which is pivoted upon the cross-rod J' near

one end. In the slotted portion of this dog or tumbler D' are formed the two shoulders E' F', and which alternately engage with the stud or projection G' upon one corner of the conductor C'. The spring H', which is wrapped around the rod J', catches over the top of the dog and serves to disengage the shoulder F' thereon from projection G', when the downward movement of the treadle B and rod D causes sufficient pressure upon the crank A' to operate the cleanser. When this dog or tumbler is left free to move, the spring H' causes it to turn partially upon the rod J', as shown in dotted lines in Fig. 2.

To the shaft Z is secured the weighted arm I', which serves as a counter-balance to the conductor and cleanser, and to the cross-rod J', which extends across between the arms connected to the cleanser B', is secured a spring K', which is fastened at its rear end to an upright L'. As soon as the conductor and the cleanser B' are left free of the operating-rod D and the crank A', this spring K' instantly draws the cleanser B' and the conductor C' through the dog B' back into the position shown in Fig. 2.

As shown in Fig. 12, the upper end of the rod D is slotted, and is provided with the pin or projection E. The slotted portion of the rod receives a pivotal stud or bolt M', projecting out from the crank A', which passes through it, and upon this pivotal stud or bolt is pivoted the latch F. When the rod D is raised by the treadle B, the latch F, hanging vertically, is at once engaged by the projection E, and when the treadle B is depressed the rod D, through the latch F and projection E, transfers this downward pull directly upon the crank A' for the purpose of causing the shaft Z to partially revolve, and thus operate the cleanser B'. The downward pressure of the treadle through the rod D causes the crank A' to descend until the upper end of the latch F, as shown in Fig. 12, strikes against a stop N', and then its lower end is forced backward from under the projection E, when the crank A' is released, and the spring K' at once draws back the cleanser B' and the conductor C' by means of the dog D'. After the conductor C' has been allowed to descend upon the apron, so as to form the pocket therein and deliver the charge of the tobacco in the pocket, the downward movement of the treadle B through the rod D causes the cleanser to descend, and as the cleanser descends the rod J', upon which the dog D' is pivoted, forces the dog D' forward over the projection G' until the projection G' catches behind the shoulder E', and then the crank A', being released from the rod D through the latch F, the spring K' at once draws both the cleanser B' and the conductor C' back into their highest position, the dog D' causing the conductor C' to move with the cleanser B' by catching over the stud or projection G'.

When the conductor C' is drawn back into

its highest position, as shown by dotted lines in Fig. 2, the lower end of the dog D' strikes against the stop P', which causes the dog to turn slightly upon the rod J' and releases the stud G' from the shoulder E'. The weight of the conductor at once causes it to drop downward until the stud G' catches against the second shoulder F', where it is supported, as shown in Figs. 2, 7, and 8. The cleanser, being supported in position by the spring K', remains in the position into which it was raised, but the conductor, as just described, is first raised into one position and then allowed to drop into another position, as shown by Fig. 2. When the treadle is again depressed the turning of the crank A' and shaft Z moves the conductor and the cleanser forward just sufficiently far to free the dog D' from the stop P', when the spring H' causes the dog D' to turn upon the rod J' just sufficiently far to withdraw the shoulder F' from behind the stud G', when the conductor drops from its own weight into the position shown in Fig. 1. While the cleanser B' is operated positively by the rod D from the treadle B, the conductor is operated entirely by the dog D', which first raises it, allows it to drop partially, and then to descend upon the apron.

While the conductor is in the raised position shown in Fig. 2, the binder is placed upon the apron, and the conductor then descends upon the binder, forms the pocket in the apron, and delivers the charge of tobacco in the pocket upon the binder, and then the carriage is moved by the treadle mechanism above described, when the bunch is rolled in the usual manner and made larger at one end than the other, owing to the shape of the formation-roller W and the compensators X Y. Pivoted to the carriage near its front end by means of the arms, journals, or supports Q' is the revolving receiver R', shown in Figs. 1, 9, 15, 16, and 17, into which the bunch is delivered, and which receiver is provided with a spring-actuated side S', so as to allow the bunch to be forced freely into the receiver and as freely discharged therefrom. This side S' is operated by a spring T', which is secured to the under side of the receiver, and which allows the side S' just sufficient play at its outer edge to prevent the bunch from sticking or being injured while being forced into or from the receiver. In this receiver is placed the plunger U', which forms the bottom of the receiver and which is provided with guides V', which project through the cross-piece W' on the bottom of the receiver, and around which guides are placed the springs X', for the purpose of returning the plunger to position after it has been used to force the bunch from the receiver into the mold, and the plunger is left free to move. Upon one end of the receiver is placed a pinion Y', which meshes with a stationary rack Z', secured to the front end of the frame, and which pinion and rack cause the receiver to revolve when the carriage is moved. Also secured to

the end of this receiver is a stop A'', which can be adjusted into any position for the purpose of regulating the extent to which the receiver shall be made to revolve for the purpose of
 5 regulating the discharging-point for the bunch. As the receiver revolves, the stop A'' strikes against the frame or discharger Q', which thus stops the revolving motion of the receiver just in position to deliver the
 10 bunch into one of the pockets into the mold. This stop A'' is made adjustable, and so that if the mold is placed at an angle instead of upon a level the receiver can be made to deliver the bunch to it just as well as when the
 15 mold is in a horizontal position. The frame, supports, or discharger Q' are loosely pivoted upon the carriage, so as to allow the receiver at their outer ends to have a free rising and falling movement, and for the purpose of
 20 raising and lowering this receiver to the frame, support, or discharger Q' at one end is secured a bent rod B'', which strikes against the cam-surface C'', secured to the frame for this purpose. When the carriage is moved
 25 backward, this bent rod B'' strikes the cam-surface C'' and raises the receiver into contact with the rack Z', so as to cause the receiver to revolve. As the carriage is moved forward, the cam-rod B'' slips off the top of
 30 the cam-surface C'' and allows the receiver to descend from the level of the apron, where it receives the bunch down to the top of the mold L, as shown in Fig. 1.

In Fig. 15 the receiver is shown in a raised position, where it is ready to receive the bunch directly from the apron, and in Figs. 1 and 13 this receiver is shown resting upon the top of the mold L, discharging the bunch directly into one of the pockets of the mold.

40 Extending from the crank A' is the rod D'', which is connected at its outer end to the arm E'', which is secured to the shaft F'', journaled upon the extreme front end of the frame. To this shaft is secured the hammer
 45 G'', which strikes against the projection H'', formed on the bottom of the plunger U', for the purpose of forcing the bunch out of the receiver. This projection H'' extends from the center of the bottom of the plunger, as
 50 shown in Fig. 17, and when the shaft F'' is operated, the hammer G'' descends upon the plunger and forces the bunch from the receiver.

The mold L is placed upon a horizontal support I'', and over the top of this mold is placed a cover J'', as shown in Figs. 1, 4, 5, 7, and 13, so as to prevent any dust or dirt from falling upon it. The mold projects beyond
 60 one end of the cover just far enough to expose the matrix which is to receive a bunch from the receiver, and before this bunch is deposited in the matrix a current of air is sent from the cylinder I through the tube K for the purpose of cleaning the matrix
 65 out. Applied loosely to one side of this mold L is a ratchet-plate K'', as shown in Fig. 4, and which ratchet-plate is provided

with a bent end L'', which catches behind the end of the mold and serves to push the mold forward upon its support I'' as the
 70 ratchet is fed forward by the dog M. This dog M is pivoted to the front end of the carriage R and comes in contact with the only ratchet which is exposed just beyond the end of the cover J'', for the purpose of feeding the mold
 75 forward just one matrix. As the carriage has a much greater amount of movement than the mold, it becomes necessary to protect the ratchet K'' from the dog M, so that the dog will engage with only one ratchet at a time.
 80 The cover J'', placed over the mold, also covers the ratchet K'', and when the carriage is moved backward this dog M moves upon the top of the frame, as shown in Fig. 4, and only comes in contact with the ratchet just before
 85 the carriage completes its full forward movement, as shown in Figs. 1 and 5. The movement of the mold and the movement of the receiver are so timed that one pocket of the mold is moved into position just in time to
 90 receive a bunch from the receiver. When all of the matrices have been filled, the mold is removed and a new one is put in its place.

Having thus described my invention, I claim—

95 1. In a cigar-bunching machine, the combination of the spring-actuated treadle, an air-forcing mechanism connected thereto, a movable mold, a table for supporting the mold, and an operating mechanism for moving the
 100 mold forward, whereby each pocket of the mold is cleansed before the bunch is deposited therein, substantially as shown.

2. The combination of the spring-actuated treadle, a piston-rod connected thereto, an oscillating valved cylinder, a tube extending therefrom, a movable mold, and a mechanism for moving it and carrying the outer end of said tube, substantially as described.

3. The combination of the spring-actuated treadle, an air-forcing mechanism connected thereto, and a tube or pipe for conducting the air therefrom, with the carriage and its mechanism, a dog connected to the carriage and provided with an opening through which the
 115 air is forced by the tube into the pockets of the mold, and the movable mold, which is moved forward by the dog, substantially as set forth.

4. The combination of the movable mold, a ratchet connected therewith, a dog for engaging with the ratchet and moving the mold, the reciprocating carriage, to which the dog is connected, and a cover for the mold, substantially as specified.

5. The combination of a movable mold, a ratchet connected thereto, a dog for feeding the mold forward, the reciprocating carriage, to which the dog is secured, and a cover which extends over both ratchet and mold and protects the ratchet from the pawl, substantially as shown.

6. The combination of the reciprocating carriage, the apron, and the tapering forma-

tion-roller, with the two tapering compensators X Y, placed upon opposite sides of the roller, substantially as described.

7. The combination of the reciprocating carriage having pivoted arms connected thereto, a vertically-moving receiver journaled in the arms, a stationary rack, and a pinion on the journal of the receiver for causing the receiver to partially revolve, a reciprocating plunger or discharger in the receiver for forcing out the bunch, a hammer and its operating mechanism for striking the discharger, and a movable mold operated by a dog on the carriage for receiving the bunch from the receiver, substantially as set forth.

8. The combination of the reciprocating carriage, pivoted arms connected thereto, a partially-revolving receiver pivoted in the arms, a pinion secured to the receiver, a stationary rack engaging the pinion, a bent rod carried by one of the pivoted arms for raising the receiver, and a stationary cam-surface against which the bent rod engages, substantially as specified.

9. The combination of the partially-revolving receiver, a pinion secured thereto, an adjustable stop, pivoted arms attached to the carriage, a stationary rack, a bent rod for raising the receiver, and a cam for the bent rod to strike against, substantially as shown.

10. The combination of the reciprocating carriage, pivoted arms connected thereto, a partially-revolving receiver journaled in the arms, a pinion on the end of the receiver, a stationary rack, a bent rod for raising the receiver, a cam-surface against which the bent rod strikes, a plunger placed in the receiver, a hammer for operating the plunger, the shaft to which the hammer is secured, the arm E'',

the rod D'', and the crank which is operated in one direction by the spring K' and in the other by the treadle, substantially as described.

11. The combination of a reciprocating carriage, a vertically-moving and partially-revolving receiver, means for causing the receiver to partially revolve, a plunger placed in the receiver, a hammer for operating the plunger, and a movable mold operated by the movement of the carriage, substantially as set forth.

12. The combination of the treadle mechanism, the cranked shaft, the cleanser connected to and operated thereby, a retracting-spring, the pivoted conductor, a spring-actuated dog for operating the conductor, and a stop for operating the dog, substantially as described.

13. The combination of the treadle, the slotted operating-rod D, the shaft Z, provided with a crank, a latch for engaging with the projection on the rod D, a stop for operating the latch, the conductor, the cleanser, the spring-actuated dog for operating the conductor, and the retracting-spring K', substantially as set forth.

14. The combination of the shaft Z, provided with a crank, and a treadle-operating mechanism, with the conductor provided with a projection G', the cleanser secured to the shaft, the spring-actuated dog D', provided with the shoulders E' F', and the retracting-spring, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

FREDRICK C. SMALSTIG.

Witnesses:

F. A. LEHMANN,
OCTAVIUS KNIGHT.