

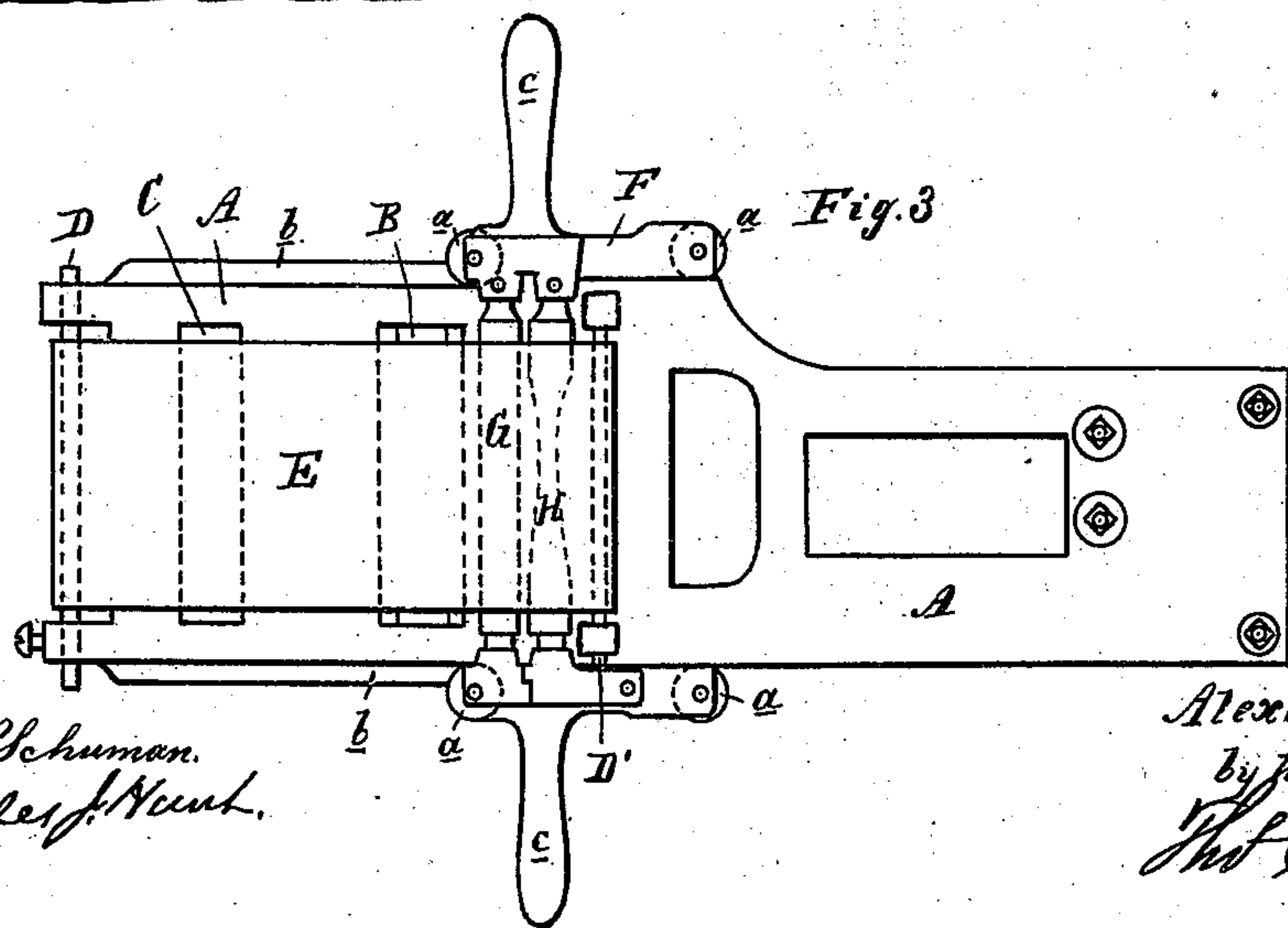
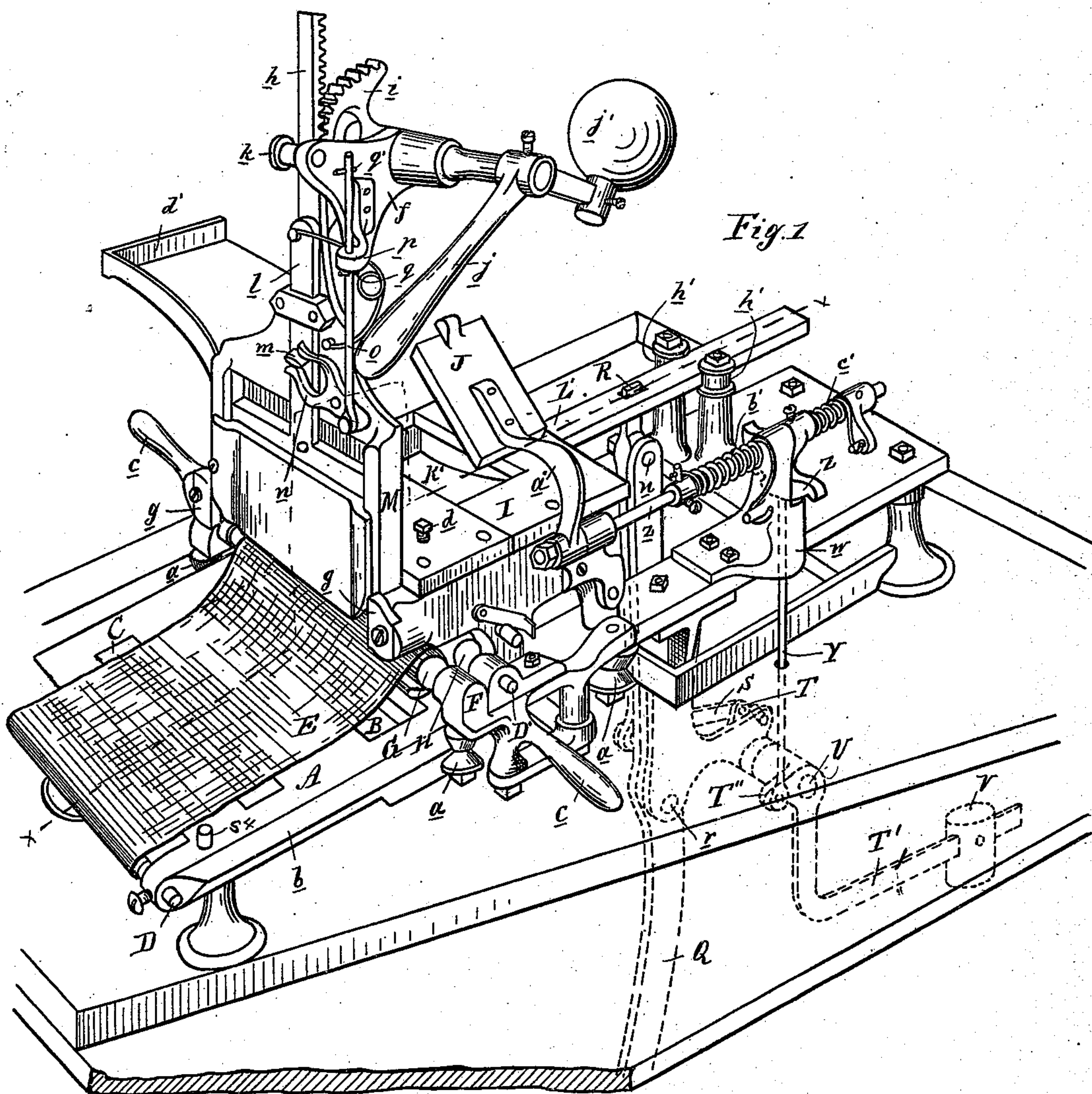
(No Model.)

3 Sheets—Sheet 1.

A. GORDON.
CIGAR BUNCHING MACHINE.

No. 377,748.

Patented Feb. 14, 1888.



Attest:
John Schuman.
Charles J. Hunt.

Inventor:
Alexander Gordon.
By his Att'y
Thos. S. Sprague.

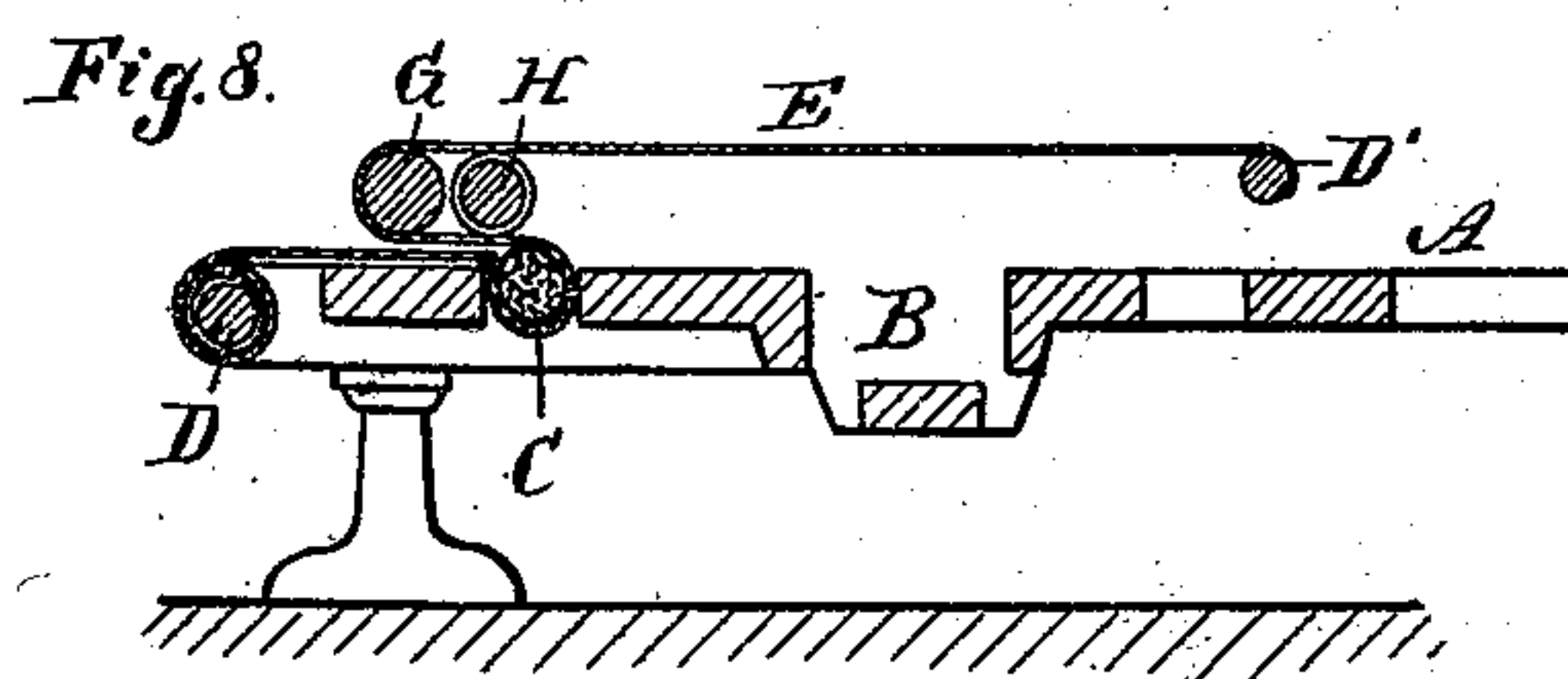
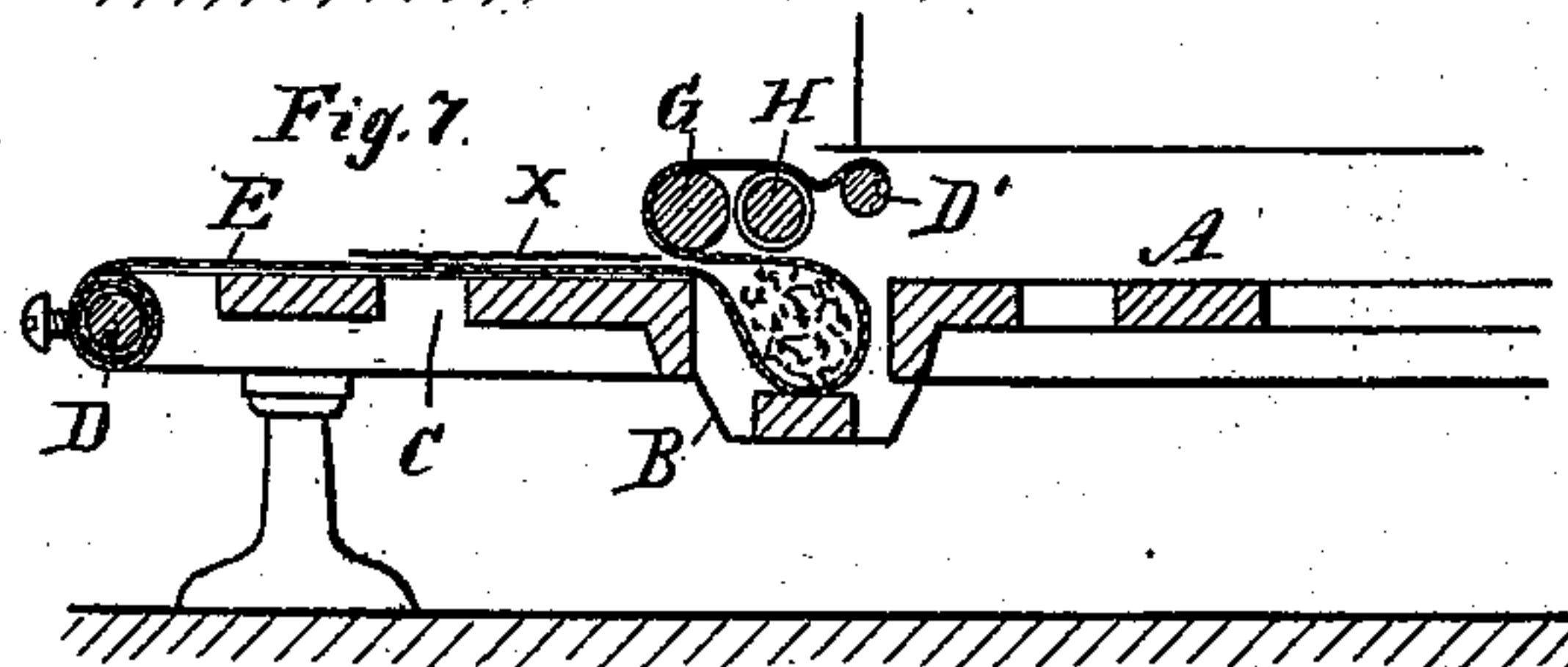
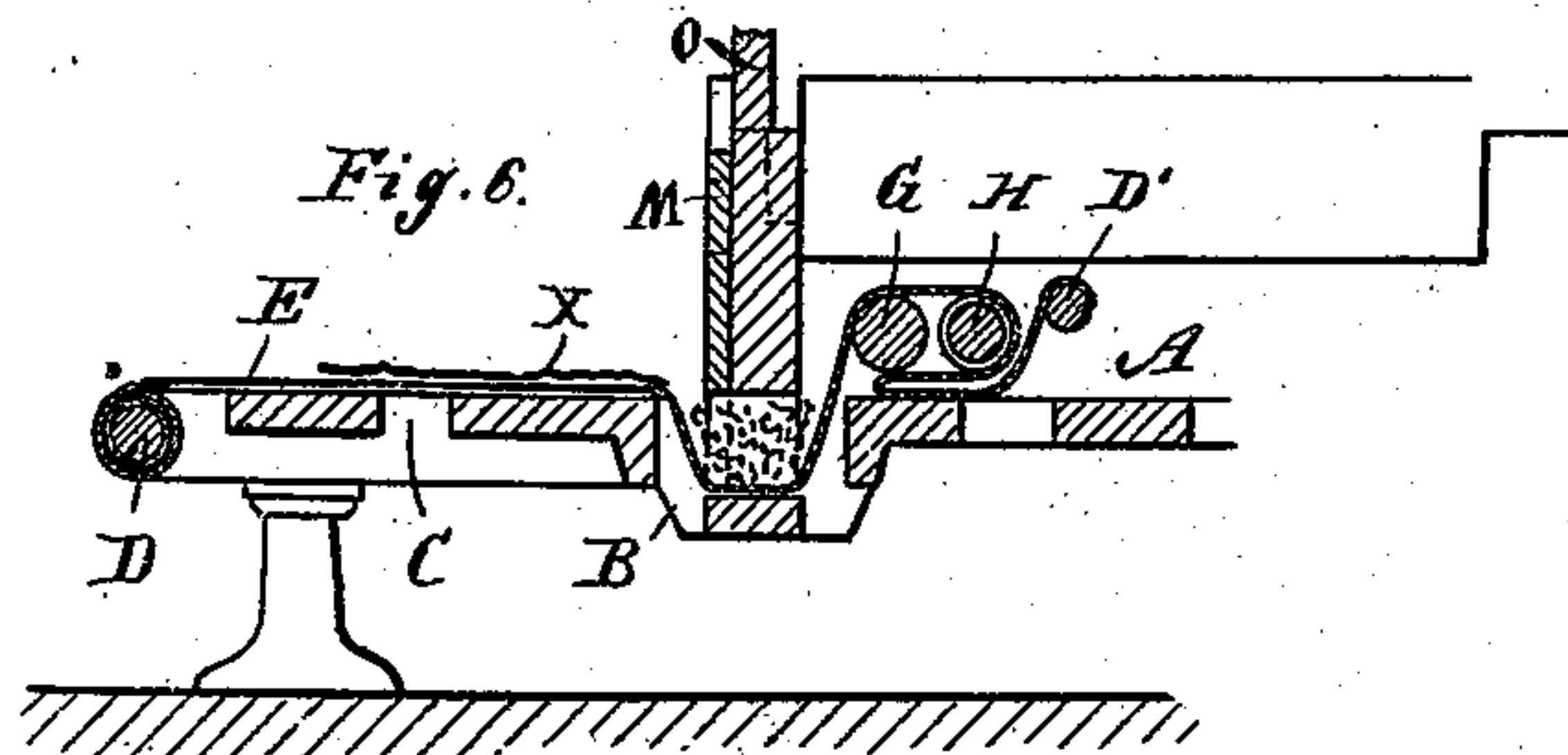
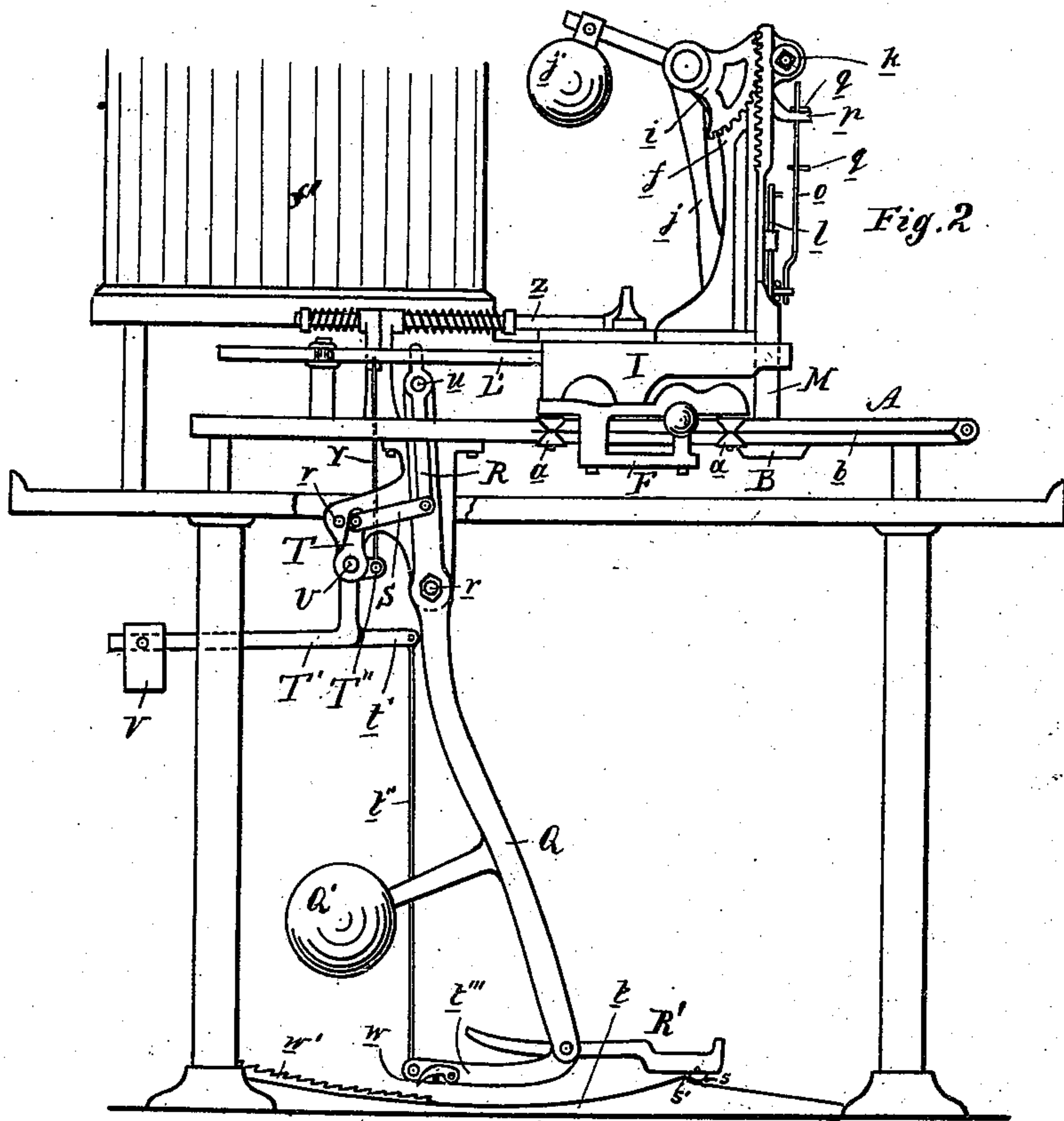
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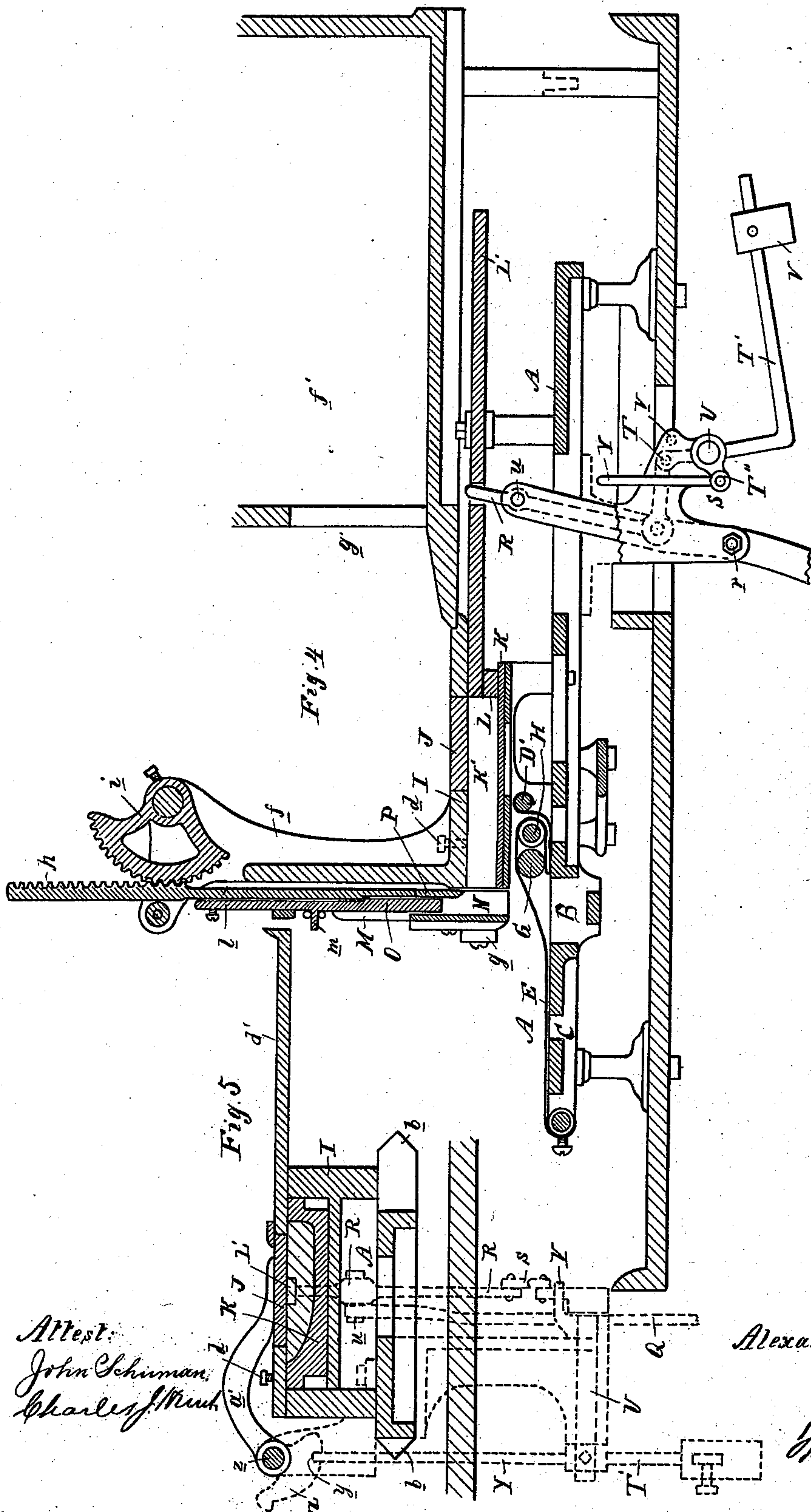
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3 Sheets—Sheet 3.

A. GORDON.
CIGAR BUNCHING MACHINE.

No. 377,748.

Patented Feb. 14, 1888.



UNITED STATES PATENT OFFICE.

ALEXANDER GORDON, OF DETROIT, MICHIGAN.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,748, dated February 14, 1888.

Application filed September 30, 1886. Renewed July 7, 1887. Serial No. 243,634. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER GORDON, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful

Improvements in Cigar-Bunching Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to new and useful improvements in cigar-bunching machines of that class in which the bunch is produced by rolling the wrapper and filler within a fold of the bunching-cloth, and wherein additional mechanical devices are provided for dropping or depositing a regulated amount of filler for each bunch onto the bunching-cloth; and my invention consists in the construction, arrangement, and combination of different parts, by means of which I obtain an improved operation of the machine, all as hereinafter described, and set forth specifically in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of my machine. Fig. 2 is a side elevation thereof. Fig. 3 is a plan of the bunching-table removed. Fig. 4 is a vertical central longitudinal section on the line $x x$ of Fig. 1. Fig. 5 is a cross-section through the compression-chamber. Figs. 6, 7, and 8 are diagram sections illustrating the different positions of parts in the operation of bunching.

A is the bunching-table, upon which the bunches are rolled. The forward end of this table is provided with the individual filler-pocket B, formed with closed or partially-closed ends, sides, and bottom. Farther forward the table is provided with the bunch-receiving opening C, and to the forward end of said table is secured the roller D, to which the forward end of the bunching-apron E is attached, the rear end of said apron being attached to a roller, D', secured above the bunching-table between the roller D and the compression-chamber. The rollers D D' are preferably removably secured, and one may be provided with suitable devices for adjusting the slack of the bunching-cloth.

F is the carriage which carries the bunching-rollers G H. It is supported on the bunching-table by anti-friction rollers a , which engage with the V-shaped edges b of the bunching-

table, and is provided with handles c , all so arranged that the operator by taking hold of the handles can reciprocatingly actuate the carriage between its rearmost position (shown in Figs. 1, 2, 3, 4, 6) and its foremost position, (shown in Fig. 8.) In the first of these positions the rollers G H are in rear of the filler-pocket B, while in the last position these rollers are in front of the bunch-receiving opening C, suitable stops being provided to arrest the travel of the carriage at these positions.

The bunching-roller H is the bunch-forming roller proper, and it is preferably cut away to correspond with the desired shape of the bunch, and may be removably secured in its journals in any well-known way, to permit of exchanging it for rollers of other desired shapes.

The bunching-roller G guides the bunching-apron, and, together with the roller H, produces the necessary slack and fold in the bunching-cloth, as more fully hereinafter explained.

Above the bunching-table is supported an open-ended box, I, which is provided in the top with a feed-door, J, and within said box is removably secured an open-ended filler-mold, as K, which forms the bottom and sides of the filler compression-chamber K'. The filler-mold is shown in cross-section in Fig. 5, where it is removably secured by the set-screw d , so that it may be readily exchanged for a mold of different form.

L is a reciprocating plunger in the compression-chamber K' and mold K, and is of a shape corresponding with the contour of the mold used. It is detachably secured to the plunger-rod L, for the purpose of exchanging it readily to fit different-shaped filler-molds.

A vertically-reciprocating gate, M, is held in guides g at the front end of the filler-box I, and this gate carries at its upper end a rack-bar, h , which engages with the segment-gear i , operated by the hand-lever j and supported on top of a suitable standard, f , to which is also secured a guide-roller, k , for the rack-bar h .

The gate M is formed with a recess, N, in which a vertical plunger, O, moves, and to the back of the gate is secured the knife P. The plunger O fills the recess N of the gate. It has a retract-

ing-spring secured to the plunger-rod *l*, which latter slides in a suitable guide on the gate, and has a projecting stud, *m*, engaging between the forked end of a lever, *n*. The lever *n* is fulcrumed to the gate *M*, and to its rear end is pivotally secured the rod *o*, which slides through a guide-hole in the stationary bracket *p*, and has the stop-pins *q* *q'* secured to it, to arrest its up-and-down travel when the gate *M* is moving, in order to produce a separate movement of the plunger *O* within the recess *N* of the gate *M*.

The plunger *L* in the mold *K* of the compression-chamber *K'* is operated by means of a foot-lever, *Q*, fulcrumed at *r*, and provided with a foot-rest, *R'*, pivotally secured to its lower end. A roller, *s*, is secured in the heel of this foot-rest, and travels on a guide-track, *t*, in which is an offset, *s'*, which holds the foot-rest in its forward position against accidental displacement.

To the upper end of the foot-lever *Q* is fulcrumed at *u* the lever *R*, the upper free end of which engages into a slot of the plunger-rod *L'*, while the lower end is connected by means of a link, *S*, to a rock-arm, *T*, secured on a rock-shaft, *U*. To another rock-arm, *T'*, on the same rock-shaft is adjustably secured the weight *V*. A stop, *v*, on the rear side of the rock-arm *T* arrests the rock-shaft *U* from turning farther backward under the action of the weight *V*, thereby holding the parts connected therewith in the normal position shown in the drawings.

The rock-shaft *U* is provided with a third rock-arm, *T''*, to which the lower end of the detent *Y* is pivotally secured. This detent passes through a guide-hole in the standard *w*, and is adapted to engage with its free end into a notch, *y*, of the segmental circular rock-arm *Z*, which latter is secured upon a rock-shaft, *z*. To the same rock-shaft *z* is secured another rock-arm, *a'*, which carries the feed-door *J*, and two coil-springs, *b'* *c'*, are placed upon the rock-shaft, so arranged that the tension of the spring *b'* keeps the feed-door open, while the spring *c'* acts as a check-spring to prevent the said door from opening too far.

The top of the box *I* is provided with a lateral extension, *d'*, which forms a small table in front of the filler-receptacle *f'*, secured in rear thereof and communicating therewith through a small opening, *g'*.

The whole machine is supported on a table, preferably on short legs, to raise it a short distance above the top of the table, to keep it free from the spilled tobacco and permit of its being cleaned readily. The supporting-table is provided with cleats around the edges, with the exception of the right-hand corner, where suitable room is left to place the molds convenient to the operator.

In practice the machine requires two operators, No. 1 sitting in front of the machine, whose work it is to drop the filler on the bunching-apron, roll the bunches, and place them into the molds, which at this time are removed

from the machine, while No. 2 operator, facing the left side of the machine, keeps the table *d'* supplied with filler material from the filler-receptacle and feeds the same into the compression-chamber *K'* when wanted. He also places a binder for each bunch on the bunching-apron from a pile of prepared binders, with which he has supplied himself previously.

The operation of bunching is carried on as follows: No. 2 operator fills the compression-chamber *K'* with filler, then closes the door *J*. The closing of this door actuates the rock-shaft, to which it is attached, and carries the notch *y* into engagement with the detent *Y*, which latter is raised up sufficiently by the weight *V* to engage into said notch. The feed-door being thus locked, the filler inclosed in the compression-chamber is now compressed by operator No. 1 actuating the foot-lever *Q* by placing his foot on the foot-rest *R'*, tipping it up to pass it over the offset *s'*, and pushing it ahead. By means of the connections described the free end of the lever *R* pushes the plunger into the compression-chamber until the compression obtained overcomes the resistance of the weight *V*, when the lever *R* will cease to further compress the filler and merely turn on its fulcrum *u* and lift up the weight *V*. By proper adjustment of the weight *V* on the rock-arm *T'* any desired compression of the filler may thus be obtained. The filler is now contained in a compressed body in the forward end of the compression-chamber *K'*, projecting into the recess *N* in the gate *M* and abutting against the face-plate of the gate *M*. Operator No. 1 now seizes the hand-lever *J*, and, pushing it backward, causes the gate *M* to descend. This movement first causes the knife *P* to cut off all that portion of the compressed filler contained in the recess *N*, and then causes the plunger *O* to expel that cut-off portion from the recess *N* and deposit it on the bunching-cloth, which by this time has been pressed by the descending gate into the bunch-pocket *B*, as shown in dotted lines in Fig. 6. The plunger *O* is moved up and down by the gate *M*, and is given an additional movement by the upper pin, *q'*, on the rod *o*, which, when arrested during the downward movement of the gate *M* by the guide-bracket *p*, causes the forked lever *n* to oscillate and push the plunger downwardly, while in the reverse movement of the gate *M* the lower pin, *q*, strikes the under side of the guide-bracket *p* and restores the plunger *O* again into normal position. The filler having been deposited on the bunching-apron, the operator reverses the movement of the hand-lever *J*, which operation is assisted by the counter-weight *j'*. Operator No. 2 places a suitable binder, *X*, on the bunching-apron as soon as he has attended to the feeding and closed the feed-door. The position of the bunching-apron before the filler is deposited is shown in Fig. 4, wherein the bunching-apron is shown to be folded under the two rollers *G* *H*. This fold is partially drawn out in forming the bight

for the filler, as shown in Fig. 7; and as operator No. 1 now proceeds to roll the bunch by drawing the carriage F toward him, this fold is entirely used up, but not before the filler is entirely inclosed in the bunching-apron, and the roller having passed over it, or nearly so, as shown in Fig. 8, when in the further movement of the carriage the bunch will be rolled in the bight of the bunching-apron. During this rolling of the bunch the binder is drawn around it, and the bunch is kept in contact with the bunching-roll H. The forward movement of the carriage is arrested by a suitable stop, S⁴, in the position shown in Fig. 1, wherein the perfected bunch is shown to have dropped into the opening C, being still held in the bight of the bunching-apron. After having drawn the carriage forward the operator immediately reverses it, which movement takes the bight out of the bunching-apron and carries the rollers G H back into the starting position and frees the bunch, which is removed by the operator and placed into a mold. (Not shown.) While operator No. 1 is rolling the bunch, operator No. 2 proceeds to again supply new filler into the compression-chamber. Although the chamber contains enough for several more bunches, it is preferable to feed after each compression, so as to avoid any great variation in the travel of the foot-lever. The door J opens automatically as soon as the compression of the filler in the chamber K' has attained the desired degree, on account of the withdrawal of the detent Y from the notch y as soon as the weight V rises. As soon as the operator, however, releases his pressure against the foot-lever Q, the weight V is free to drop and re-engage the detent as soon as operator No. 2 closes the feed-door after feeding the filler. The foot-lever Q will ease off automatically on account of the counter-weight Q'.

The use of two bunching-rollers, G H, constitutes an important improvement in the operation of the machine, as I am thereby enabled to use a much larger bight in the bunching-apron than with one roller. The advantage I gain thereby is that the filler becomes completely inclosed in the bight in the bunching-apron before there is any tendency to roll the bunch, as shown in Fig. 7.

A further advantage in the operation of the machine is afforded by the location of the bunch-receiving opening C, which does not alone require a shorter travel of the carriage than in the old way of placing the same at the front end of the table, but affords the advantage of bringing the slack in the bunching-apron in rear of the carriage. The filler is thus delivered into the pocket B against the bunching-apron, which only yields gradually to form a pocket as the gate depresses it, and the filler, in passing from the recess N in the gate onto the bunching-apron, is not disturbed at all. The use of two bunching-rollers, G H, also presents the advantage that the bunching-roll H may be made of any desired shape to

form the bunch without interfering with the proper movement of the bunching-apron, which is guided by the front roll.

The automatic opening of the feed-door J indicates to the operator that the required compression of the filler in the compression-chamber is obtained, and he therefore stops pushing the foot-lever Q any farther; but, if desired, an automatic stop may be added; and to this end I provide the rock-arm T', which swings the weight V, with a forward extension, t', and to this I attach a connecting-rod, t'', which holds one end of the plate t''', the other end of which is pivotally secured to the lower end of the foot-lever. This plate carries one or more dogs, w, so arranged in connection with a rack-bar, w', secured underneath, that when the plate t''' is lowered, by means of its connection with the rock-arm of the lever V, the dog or dogs engage into the rack-bar, and thereby automatically stop the further movement of the lever after it has accomplished its work.

What I claim as my invention is—

1. In a cigar-bunching machine, the combination of a bunching-table, a bunching-apron secured to said table, a reciprocating carriage carrying a roller for making a bight in the bunching-apron, a filler compression-chamber provided with a horizontally-reciprocating plunger, actuating mechanism for said plunger, the yielding connection, substantially as described, in said mechanism, a weight forming the yielding resistance of said connection, and a vertically-reciprocating gate at the front end of the compression-chamber for forming a pocket in the apron, said gate carrying a knife and having a recess communicating with the aforesaid compression-chamber, and a vertically-sliding plunger in said recess, all arranged to operate as set forth.

2. In a cigar-bunching machine, the combination of a filler compression-chamber, a vertically-reciprocating gate, a reciprocating plunger in said compression-chamber, an actuating lever for said plunger, the yielding connection, substantially as described, between said actuating lever and the plunger, and an adjustable weight forming the yielding resistance in said connection, as set forth.

3. In a cigar-bunching machine, the combination of a filler compression-chamber provided with a reciprocating plunger and a vertically-reciprocating gate, actuating mechanism for said plunger, the yielding connection, substantially as described, in said actuating mechanism, a weight forming the yielding resistance of said connection, a pivoted door to the filler compression-chamber, and interlocking mechanism between said door and said yielding connection for automatically unlocking said door, substantially as described.

4. In a cigar-bunching machine, the combination of a bunching-table, a bunching-apron secured to said table, a reciprocating carriage, rollers G H on said carriage, a filler compression-chamber provided with a feed-door and

a reciprocating plunger, an actuating foot-lever for said plunger, the yielding connection, substantially as described, between the foot-lever and plunger, a weight forming the yielding resistance in said connection, interlocking mechanism between said yielding connection and the feed-door, a vertically-reciprocating gate at the front end of the compression-chamber, a hand-lever and connection for reciprocating said gate, a knife secured to said gate, said gate having a recess communicating with the filler compression-chamber, a movable plunger in the said recess in the gate, and actuating-connection between said plunger and gate, substantially as described.

5. The combination of the open-ended box I, having door J, filler-mold K in said box, gate M, means for reciprocating said gate, and the reciprocating plunger L, substantially as described.

6. The combination of the reciprocating gate M, box I, standard *f*, rack-bar *h* on said gate, guides *g* and *k*, geared segment *i*, lever *j*, and counter-weight *j'*, supported by said standard, all arranged and operating substantially as described.

7. In combination with the reciprocating gate M, the plunger O, carried by said gate and moving in a recess of said gate, the lug *m* on the part *l* of the plunger, the forked lever *n*, fulcrumed to the gate, the rod *o*, connected with the forked lever, the fixed guide *p* on the standard *f*, the stops *q* *q'* on said rod, and means for reciprocating said gate, all arranged to operate substantially as described.

8. In combination with the box I, having the feed-door J, rock-arm *a'*, rock-shaft *z*, carrying said rock-arm, opening-spring *b'* on said rock-shaft, rock-arm Z, having notch *y*, detent Y, and means connected with said detent, all arranged to operate substantially as described.

9. In combination with the filler compression-chamber and its plunger, the actuating foot-lever Q, connected to the plunger, the lever R, connected to the foot-lever Q, the link S, connecting the lever R and arm T, the rock-shaft U, the rock-arms T T' on said rock-shaft,

the weight V on the rock-arm T', and the stop *v*, all arranged to operate substantially as described.

10. In combination with the filler compression-chamber and its reciprocating plunger, the actuating foot-lever Q, connected to the plunger, the foot-rest R', pivotally secured to the lower end of said lever, the guide-track *t*, the offset *s'*, and the heel-roller *s* in the foot-rest, all arranged to operate substantially as set forth.

11. The combination of the filler compression chamber K', plunger L in said chamber, plunger-rod L', foot-lever Q, lever R, link S, rock-shaft U, rock-arms T T' T'', weight V, stop *v*, detent Y, rock-shaft *z*, spring *b'*, rock-arm Z, having notch *y*, rock-arm *a'*, and feed-door J, all arranged to operate substantially as described.

12. The combination of the open-ended box I, filler-mold K, removably secured within said box, and the plunger L, operating in said mold and detachably secured to the plunger-rod L', the plunger-rod, guides *h'* *h''*, the lever Q, gate M, means for reciprocating the plunger, and the actuating-lever R, carried by the lever Q, and detachably engaging the plunger-rod, substantially as described.

13. In combination with the filler compression-chamber and its plunger, a vertically-reciprocating gate, an actuating-lever, a yielding connection in said actuating-lever, a weight forming the yielding resistance in said connection, and a stop actuated by said yielding connection and arranged to automatically stop the movement of the actuating-lever, all substantially as described.

14. In combination with the actuating-lever Q and its yielding connections, the rock-arm *t'*, connecting-rod *t''*, pivoted plate *t'''*, dog *w*, rack-bar *w'*, and the foot-lever R', connected with the said lever Q, all arranged and operating substantially as described.

ALEXANDER GORDON.

Witnesses:

H. S. SPRAGUE,
CHARLES J. HUNT.