

No. 614,783.

Patented Nov. 22, 1898.

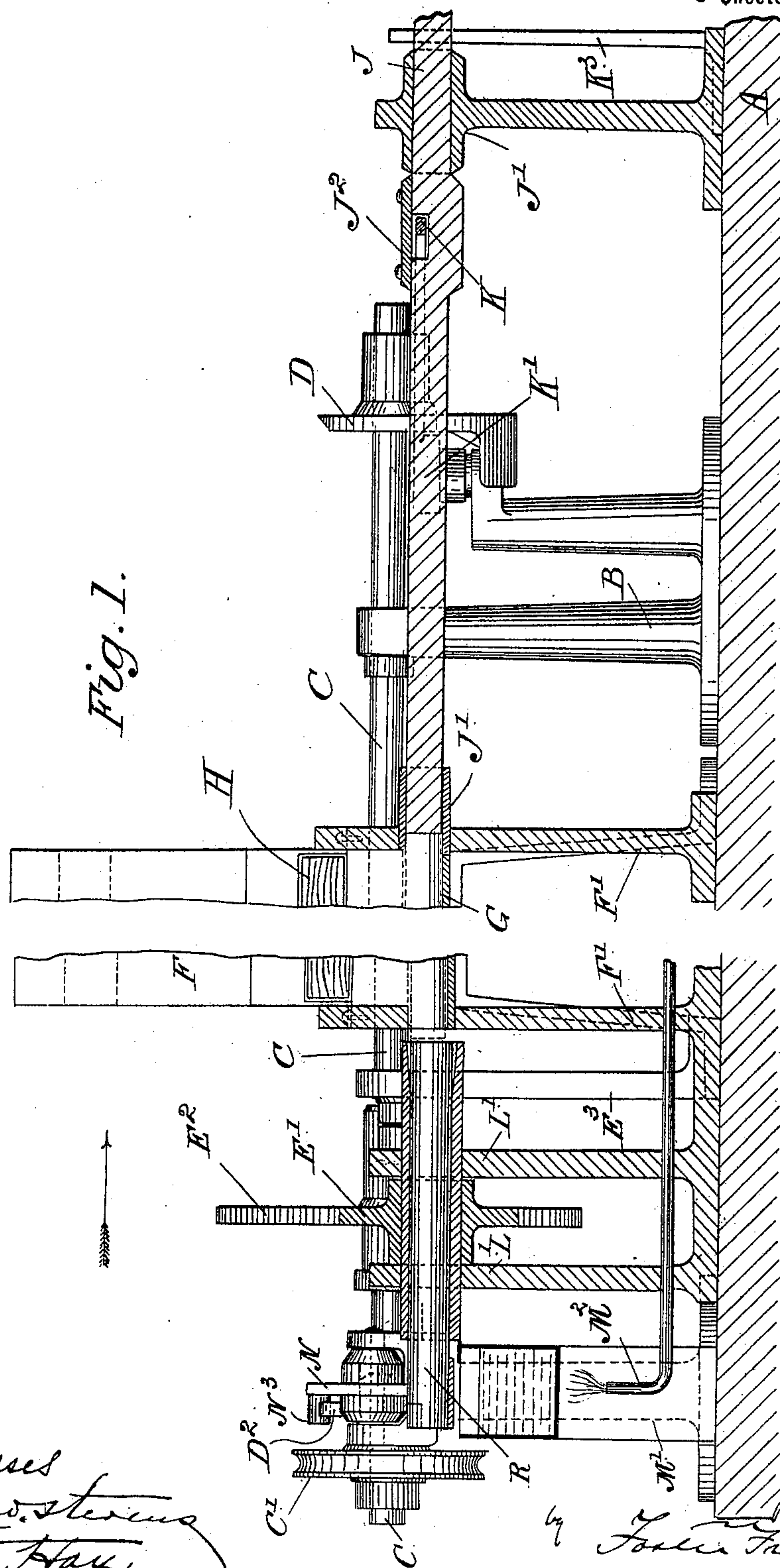
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.


(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 1.



Witnesses
James Sterling
H. E. Fay.



 M²

 by *Forster & Freeman*

attorneys

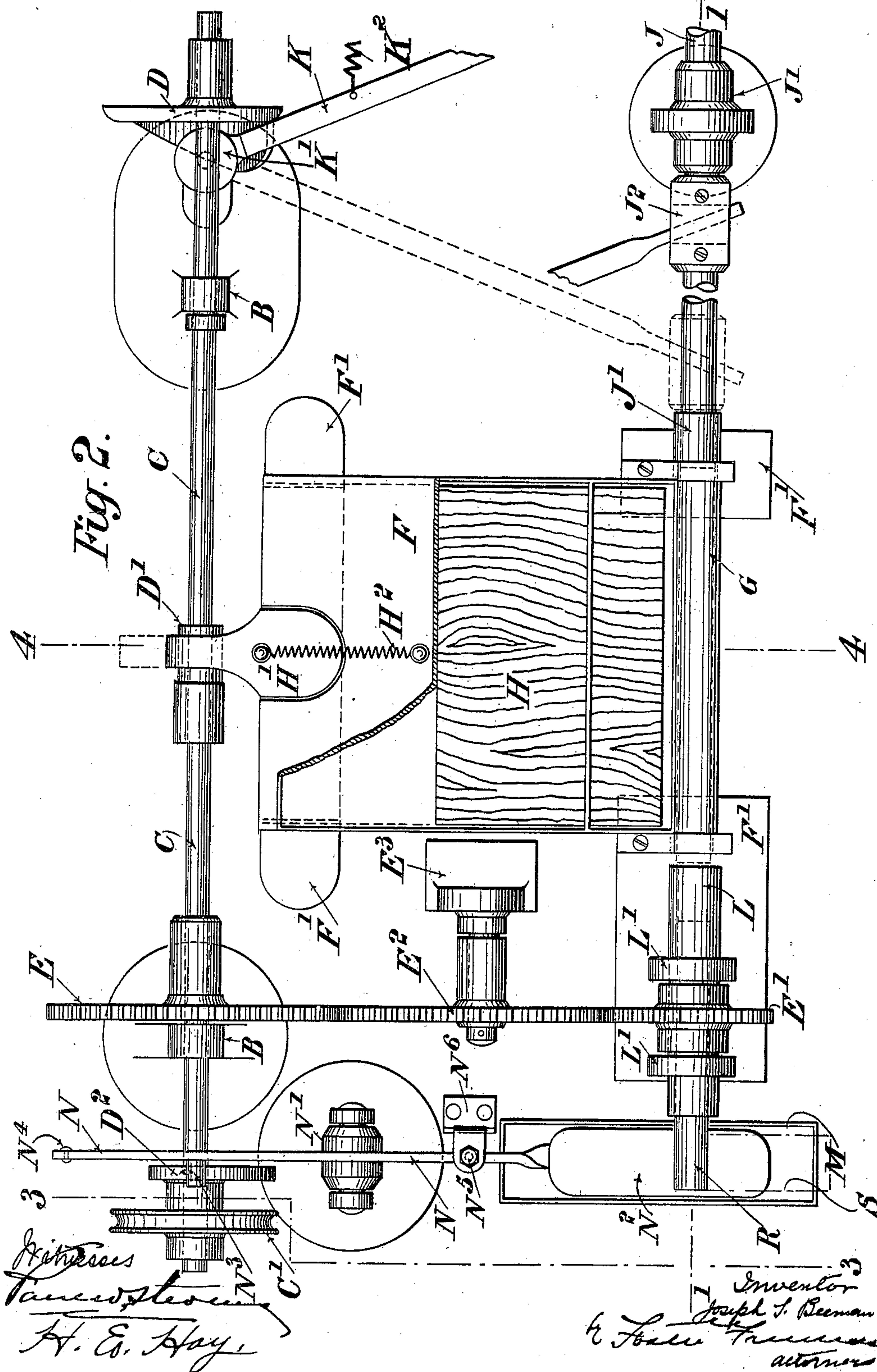
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 2.



No. 614,783.

Patented Nov. 22, 1898.

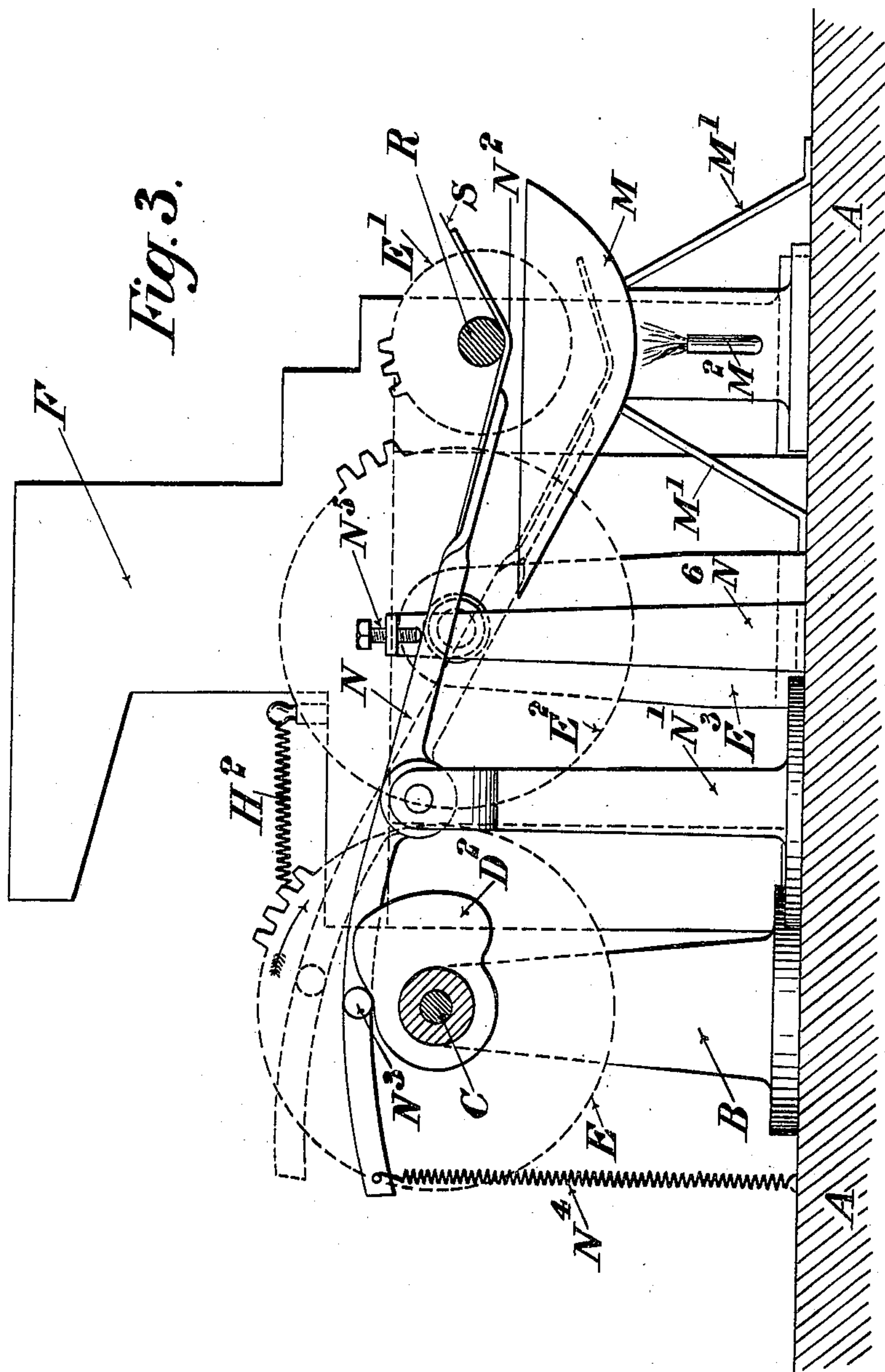
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 3.



Witnesses
James S. Stearns
H. E. Hay.

Inventor
Joseph Samuel Beeman
by
Jesse Freeman
attorneys

No. 614,783.

Patented Nov. 22, 1898.

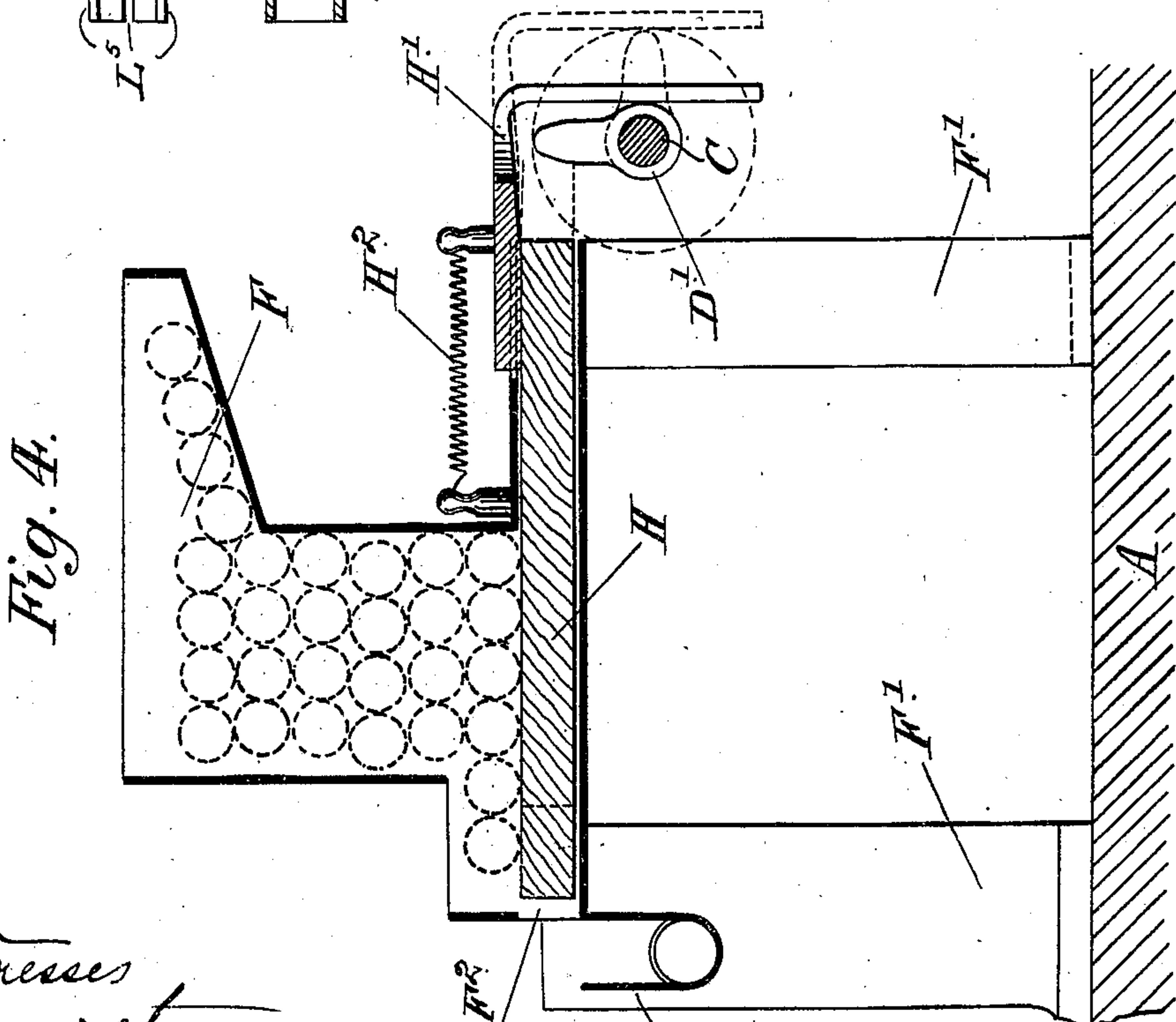
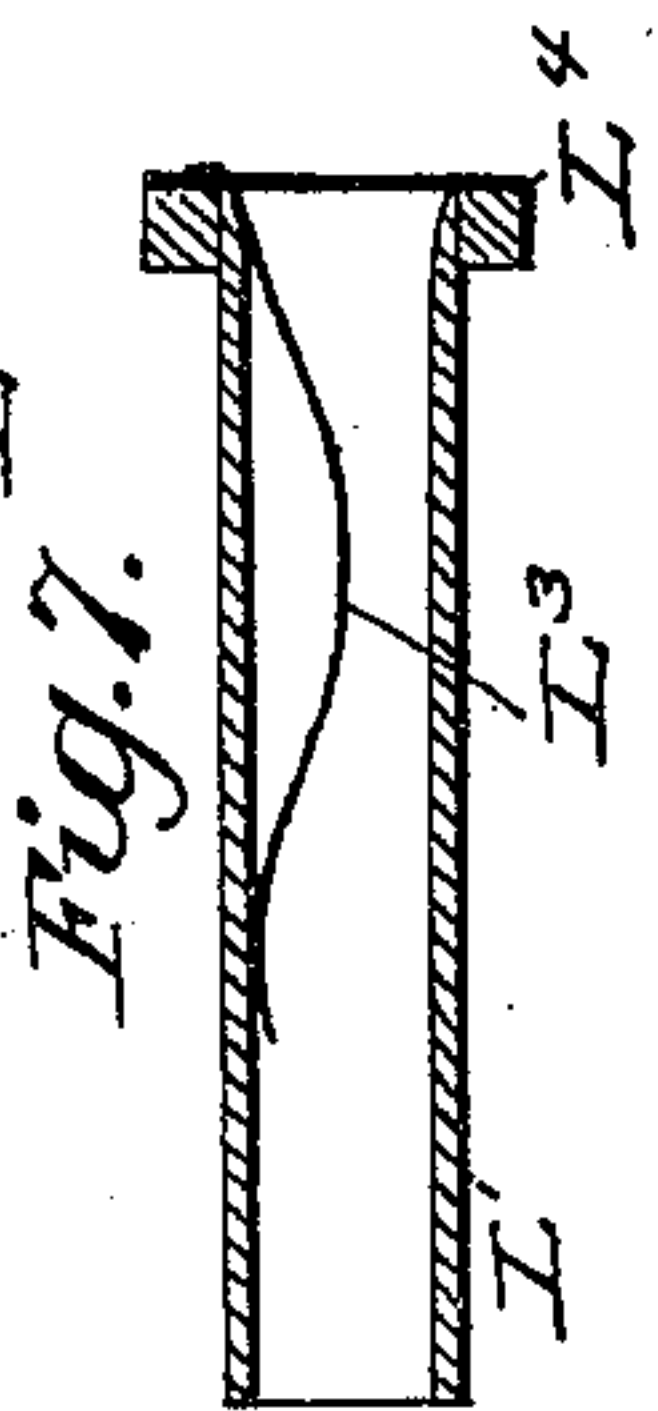
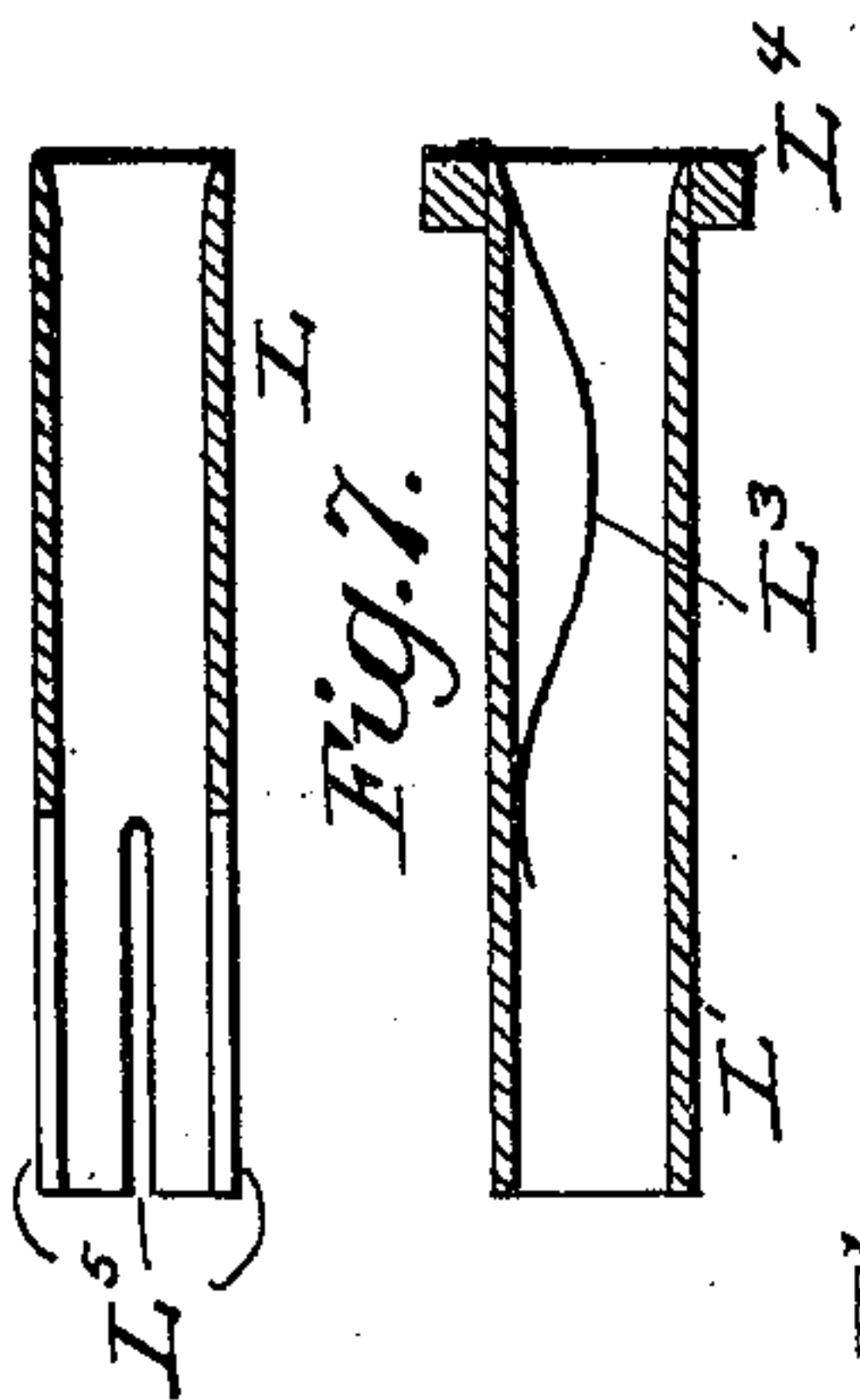
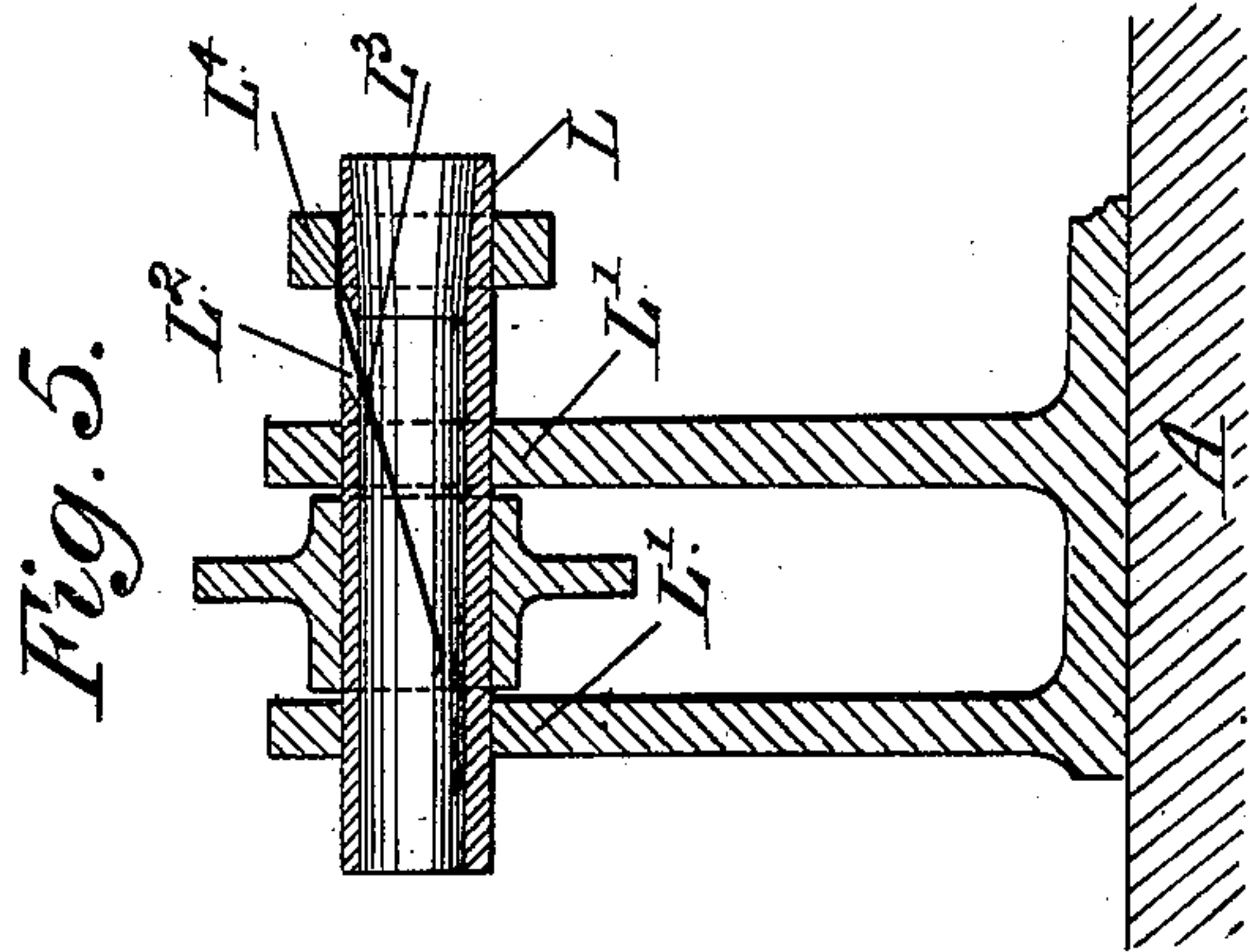
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 4.



Witnesses
James Thompson
H. E. Fay

Inventor
Joseph Samuel Beeman
By Foster Lawrence
Attorney

No. 614,783.

Patented Nov. 22, 1898.

J. S. BEEMAN.

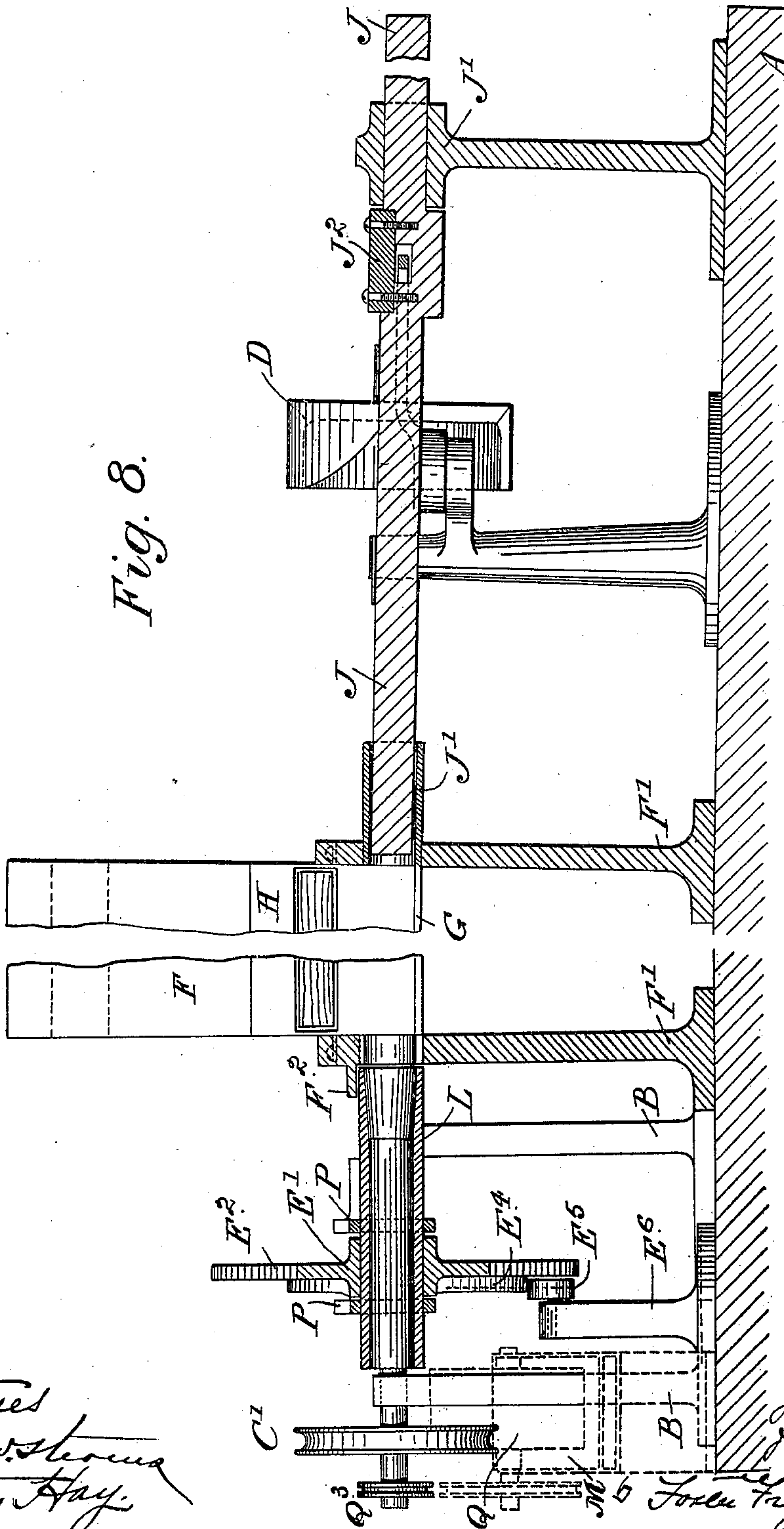
MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 5.

Fig. 8.



Witnesses
James W. Stearns
H. E. Hay

Inventor
J. S. Beeman
Forbes Freeman
Attorneys

No. 614,783.

Patented Nov. 22, 1898.

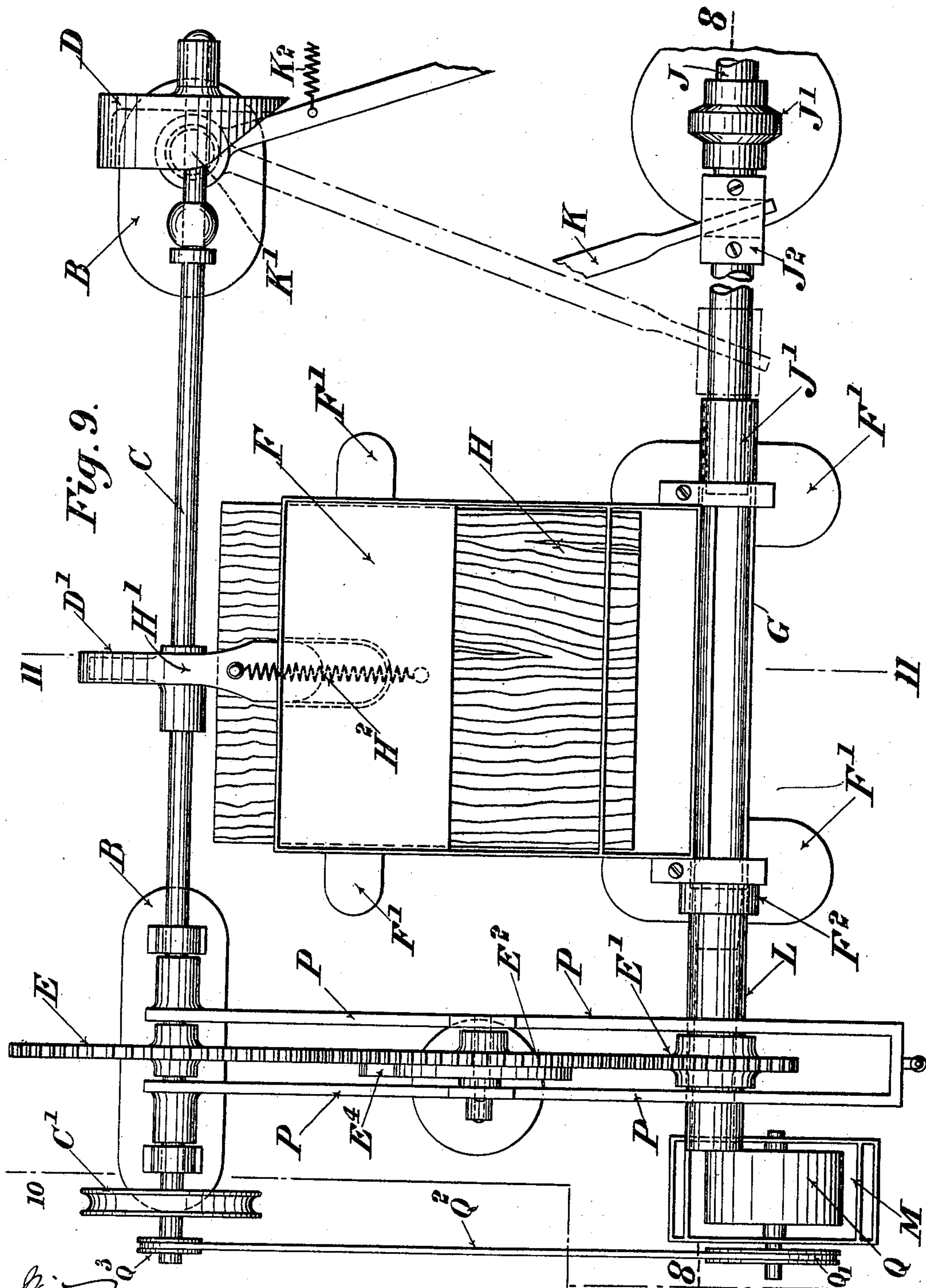
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 6.



30
 1871
 J. J. Jones
 Tanc. Stevens
 A. E. Fay.

Inventor
Joseph Samuel Beeman
by Foster Freeman
Attorneys

No. 614,783.

Patented Nov. 22, 1898.

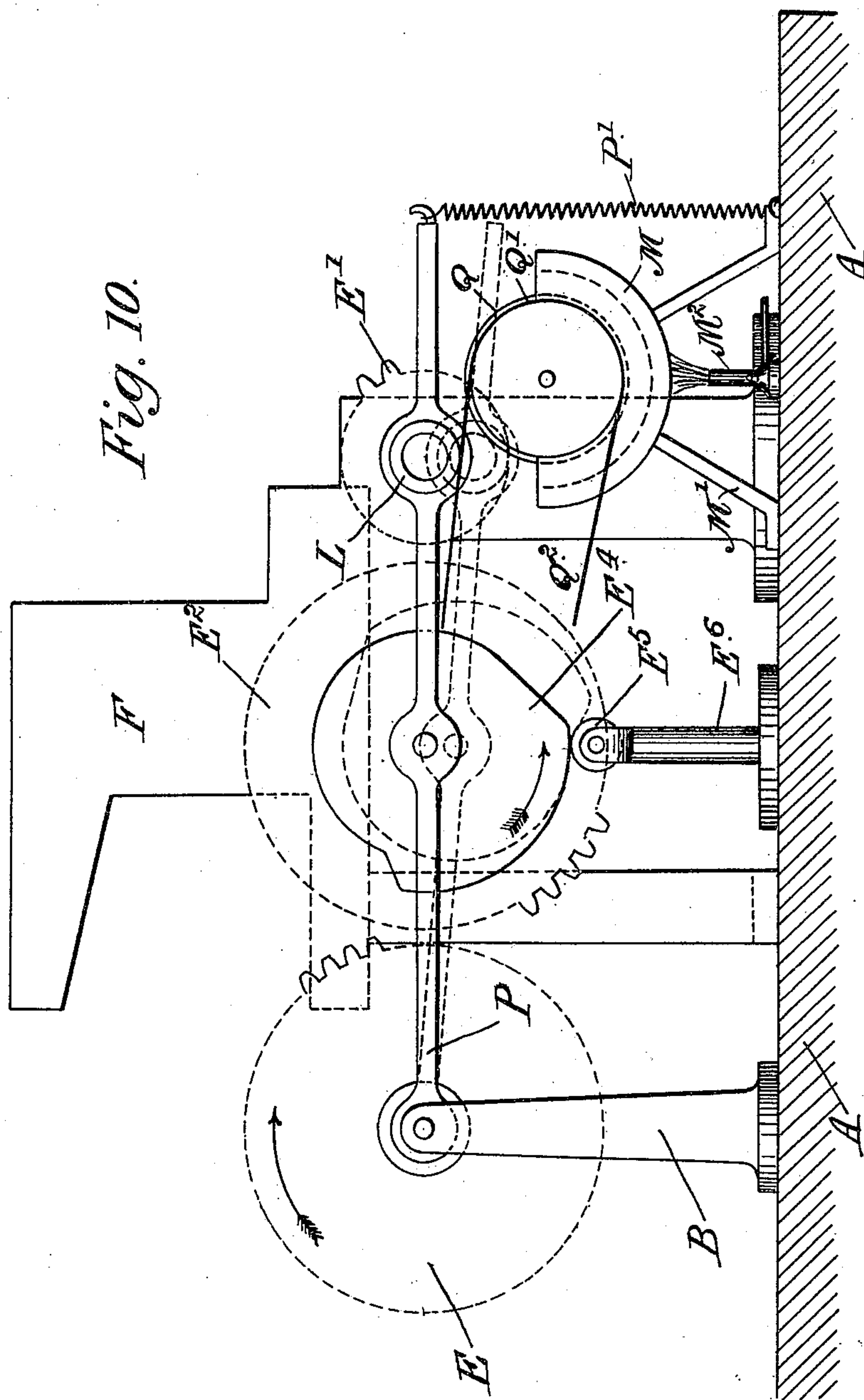
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 7.



Witnesses
James Stewart
H. E. Hay.

Inventor
by Joseph Samuel Beeman
his
Forster Treasurer
Attorneys

No. 614,783.

Patented Nov. 22, 1898.

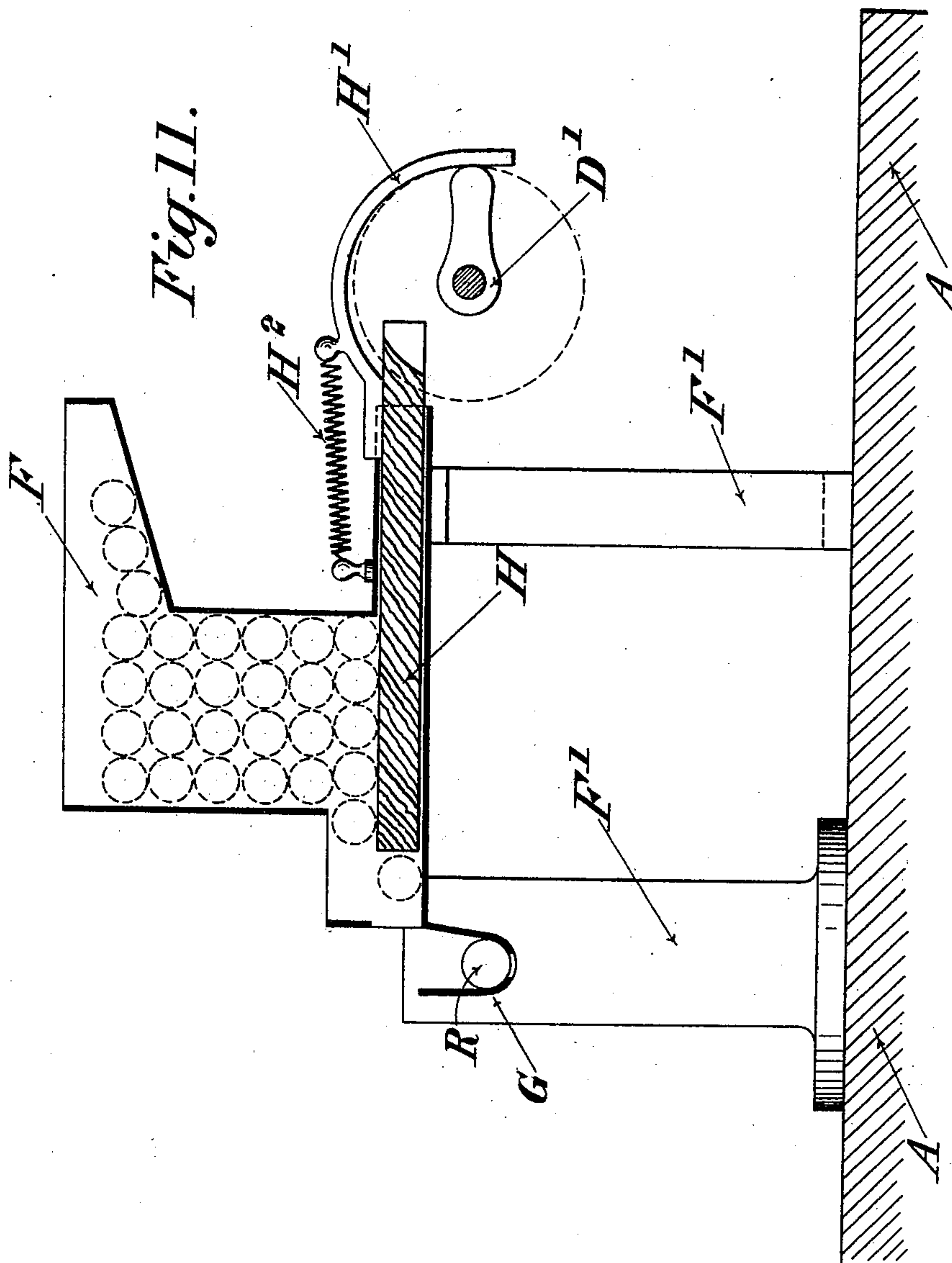
J. S. BEEMAN.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

(Application filed June 7, 1898.)

(No Model.)

8 Sheets—Sheet 8.



Witnesses
James S. Beeman
H. E. Hay.

Inventor
Joseph Samuel Beeman
Forster Freeman
Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH SAMUEL BEEMAN, OF LONDON, ENGLAND.

MACHINERY FOR FINISHING ENDS OF CIGARETTES.

SPECIFICATION forming part of Letters Patent No. 614,783, dated November 22, 1898.

Application filed June 7, 1898. Serial No. 682,851. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SAMUEL BEEMAN, a subject of the Queen of England, residing at London, England, have invented certain new and useful Improvements in Machinery for Finishing the Ends of Cigarettes, (for which I have obtained Letters Patent in England, No. 15,424, dated June 29, 1897, and in France, No. 265,810, dated May 17, 1898,) of which the following is a specification.

This invention relates to machinery for the formation on one end of cigarettes of a protective coating or covering, adherent to or absorbed by the cigarette-paper and not adherent to the lips of the smoker, thus forming what is known as a "tipped" cigarette, requiring no separate mouthpiece or holder.

The object of this invention is the construction of a machine by means of which the mouth ends of cigarettes made by machinery may be covered, coated, impregnated, or otherwise tipped with a strip of paper, paraffin, other wax, or any other suitable material.

Machines made according to this invention comprise an axially-rotatable holder through which a cigarette can be forced and by which the cigarette is axially rotated. The end of the cigarette projects from the holder and is tipped by coming into contact with the material supplied to a "depositor" or equivalent device.

The depositor may be supplied with the material to be deposited in any convenient manner. It may be of any shape, form, or material, and, if necessary, may be heated.

When one cigarette has been tipped, another is introduced into the rotatable holder and ejects the one previously tipped.

The depositor may move and come into contact with the cigarette as it rotates with the holder, or the holder may carry the cigarette into contact with the depositor.

All the necessary movements in the machine are preferably caused by the rotation of one shaft, upon which are mounted cams or equivalents or other gearing so arranged that the various operations of the machine shall take place in their proper sequence.

In the accompanying drawings, Figures 1, 2, 3, and 4 illustrate one construction of a machine according to this invention. Fig. 1

is a side elevation, partly in section, on the line 1 1 of Fig. 2. Fig. 2 is a plan of the same. Fig. 3 is an end elevation looking in the direction of the arrow in Fig. 1 and partly in section on the line 3 3 of Fig. 2. Fig. 4 is a vertical section on the line 4 4 of Fig. 2. Figs. 5, 6, and 7 show details of modifications in certain parts of the machine. Figs. 8, 9, 10, and 11 illustrate another construction of machine, also according to this invention. Fig. 8 is a side elevation, partly in section, on the line 8 8 of Fig. 9. Fig. 9 is a plan of the same. Fig. 10 is an end elevation, partly in section, on the line 10 10 of Fig. 9. Fig. 11 is a vertical section on the line 11 11 of Fig. 9.

Like letters indicate like parts throughout the drawings.

With reference first to Figs. 1, 2, 3, and 4, A is a bed-plate, upon which all stationary parts of the machine are rigidly mounted. B are standards supporting a shaft C, from which the various parts of the apparatus are operated. The shaft C can be rotated by means of a pulley C' or by a handle and carries upon it three cams D, D', and D² and also a gear-wheel E.

F is a hopper or receptacle into which the cigarettes to be tipped are placed. It is carried by standards F' and is provided with an opening F², through which the cigarettes may pass one at a time to a trough G, situated below the opening. A slide H is provided at the bottom of the hopper and is reciprocated from the cam D' upon the operating-shaft, this cam engaging with an angle-piece H', fixed to the slide H. The return of the slide is brought about by the action of a spring H², the ends of which are fixed to the angle-piece H' and to a fixed portion of the hopper, respectively.

J is a plunger or shaft which slides freely in bearings J', fixed to the bed-plate A. The plunger J is in line with the trough G, and it serves when reciprocated to eject the cigarettes from said trough. The plunger J is reciprocated by means of a lever K, pivoted at one end, as at K', and having its other end free to slide in a guide J², which is fixed upon the plunger J. This lever K is moved by the cam D, carried upon the operating-shaft C, and is brought back into its original position

by means of a spring K^2 , one end of which is fastened to the lever K and the other end to a support K^3 , fixed to the bed-plate A .

L is a tube mounted upon bearings L' in such a manner that it is in line with the trough G and the plunger J . At the end of the tube L adjacent to the trough G it is slightly bell-mouthed in order that a cigarette passing into it from the trough may readily enter. Upon the tube L is mounted a gear-wheel E' , which is driven from the gear-wheel E , carried by the shaft C , by means of an intermediate gear-wheel E^2 , carried by a standard E^3 . The diameters of the gear-wheels E E' E^2 are preferably such that the cigarette-holding tube L shall make about two complete revolutions for every single revolution of the operating-shaft C .

M is a vessel or bath which contains paraffin-wax or other material with which the ends of the cigarettes are to be tipped. It is supported by standards M' and may be heated by a gas-flame, as shown diagrammatically at M^2 .

N is a lever pivoted on a standard N' and having at one end a spoon, spatula, or equivalent depositor N^2 , by means of which the melted wax may be applied to the end of the cigarette. The lever N is so placed that the depositor N^2 may dip into the bath M . This dipping occurs when a stud N^3 upon the lever N is lifted by the cam D^2 , carried by the operating-shaft C . The return of the lever N is caused by the action of a spring N^4 , one end of which is fixed to the end of the lever N , remote from the depositor N^2 , and the other end to the bed-plate A . The upward movement of the depositor N^2 can be regulated by means of an adjustable stop N^5 , carried upon a standard N^6 . A cigarette R is shown in the holder L ready for tipping.

The operation of the machine is as follows: Motion being given to the shaft C , the cam D' moves the slide H and allows a cigarette to fall, which is pushed by the slide H on its return into the trough G . The end of the plunger J now enters the trough G and ejects the cigarette, which is thus caused to enter the rotatable holder L . The plunger J moves sufficiently far to cause the end of the cigarette to project from the holder L and over the depositor N^2 for a distance equal to the length which the tip is required to have. The cam D^2 now allows the depositor N^2 , actuated by the spring N^4 , to rise and come gently into contact with the end of the cigarette, which is thus tipped with the compound brought by the depositor from the bath M . The cam D^2 is so shaped that the depositor N^2 remains in contact with the end of the cigarette while the latter makes slightly more than one complete revolution, and thus insures that the tip shall extend right round the cigarette. Figs. 1, 2, 3, and 4 show the machine at the point at which the depositor has just risen into contact with the end of the cigarette, which had previously been pushed into the

holder L by the plunger J . On the return of the plunger another cigarette is inserted in the trough G by the action of the slide H . The depositor N^2 is now withdrawn from the cigarette by the action of the cam D^2 , and the plunger J , again moving forward, pushes a fresh cigarette out of the trough G into the holder L and in so doing ejects the cigarette which has just been tipped from the holder. The second cigarette is now ready for tipping in the manner above described.

The cigarette-holding tube L , as illustrated in Figs. 1, 2, 3, and 4, is of such a bore that the cigarettes fit it sufficiently tight to be rotated and tipped. It may, however, be desired to provide more positive means for holding the cigarette in the tube. Figs. 5, 6, and 7 illustrate convenient methods by which this may be accomplished. In Fig. 5 the tube L is shown having a slot L^2 in it, and through this slot a light spring L^3 is passed into the interior of the tube L , its outer end being secured to the exterior of the tube by a collar L^4 . The tube shown in Fig. 6 has one of its ends slotted, as at L^5 , and the slight spring thus given to the tube is sufficient to grip the cigarette and cause it to be rotated with the tube L . In Fig. 7 a spring L^3 is shown, which presses out of the tube L at one end and is secured to a collar L^4 .

Figs. 8, 9, 10, and 11 illustrate a machine similar to that previously described, in which, however, the depositing device does not reciprocate, the necessary intermittent contact between the cigarette and the depositor being caused by the reciprocating movement of the rotating holder L . This is accomplished in the following manner: The cigarette-holding tube L , with its gear-wheel E' and the intermediate gear-wheel E^2 , are carried by a frame P , the back end of which is pivoted round the operating-shaft C , its opposite end being controlled by a spring P' . Upon the intermediate gear-wheel E^2 is carried a cam E^4 , which, by acting in conjunction with a friction-roller E^5 , carried by a standard E^6 , causes the frame P to reciprocate and to bring the end of the cigarette carried in the holder L into contact with a rolling depositor Q , which revolves in a bath M , containing the tipping material. The rolling depositor Q is driven by a pulley Q' and band Q^2 from a smaller pulley Q^3 upon the operating-shaft C . The cam E^4 is so shaped that the holder L rises into line with the trough G at the right time to receive a fresh cigarette and stays there long enough for that action to take place. In order to avoid the holder L traveling too far in an upward direction during quick working, a stop F^2 is provided which may conveniently form part of one of the bearings F' , which support the hopper F . The other details of construction in this machine are substantially as hereinbefore described with reference to Figs. 1, 2, 3, and 4.

It is desirable wherever metal is brought

into contact with paraffin-wax or other material used for tipping the cigarette that such metal should be tinned or electroplated with some metal upon which the material has no chemical action.

Although in the foregoing description the material used for the covering of the end of the cigarette has generally been stated to be paraffin-wax, the apparatus can be modified to suit other material, such as paper or cork. This may be effected by removing the bath M and gas-jet M² (illustrated in Figs. 2 and 3) and by placing strips of paper or cork previously provided with adhesive material upon the depositor N², as indicated by chain lines at S in Figs. 2 and 3. It is evident that the end of the strip S adjacent to the cigarette R will come into contact with and adhere to it and be wound round it as it rotates.

It is obvious that various alterations may be made in the construction of this apparatus without departing in any way from the spirit of the invention. For instance, the springs may be replaced in some cases by counterweights and the material used for tipping the cigarettes may be melted by gas, steam, or any other suitable means. Again, the depositor may be fed with the tipping material by means of a wick, one end of which dips in a bath containing the material.

Although the machines herein described are for use in tipping cigarettes after they have been made, it is obvious that those portions of the machine which perform the tipping operation can be readily adapted to and combined with a cigarette-making machine.

The cigarettes treated in apparatus of the kind described can be of a section other than circular.

Having now particularly described and ascertained the nature of this said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a machine for finishing the ends of cigarettes, the combination of a holder having a central opening, means for rotating said

holder axially, means for forcing a cigarette longitudinally through the opening of the holder, and means for applying a coating to the end of the cigarette during the rotation thereof, substantially as described.

2. In a machine for finishing the ends of cigarettes, the combination of a hopper for containing cigarettes, means for discharging cigarettes from the hopper intermittently one at a time, a holder having a central opening, means for rotating said holder axially, means for transferring the cigarettes into the holder as they are discharged from the hopper, and means for applying a coating to the end of the cigarette during the rotation thereof, substantially as described.

3. In a machine for finishing the ends of cigarettes, the combination of a hopper having an opening in its side, a receiving-trough beneath said opening, a slide adapted to reciprocate through the hopper to discharge cigarettes therefrom into the trough, an open-ended holder having a central opening, means for rotating the holder axially, a reciprocating plunger for transferring a cigarette longitudinally from the receiving-trough into the holder, and means for applying a coating to one end of the cigarette during the rotation thereof, substantially as described.

4. In a machine for finishing the ends of cigarettes, the combination of a holder having a central open-ended opening, means for rotating the holder axially, devices for inserting a cigarette into the holder, means for applying a coating to one end of the cigarette during the rotation thereof, the said holder and coating means being one movable toward and from the other, substantially as described.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

JOSEPH SAMUEL BEEMAN.

Witnesses:

CHAS. ROSE,
A. P. HOAG.