

No. 641,392.

Patented Jan. 16, 1900.

H. INMAN.  
STAYING MACHINE.

(Application filed Nov. 21, 1898.)

(No Model.)

4 Sheets—Sheet 1.

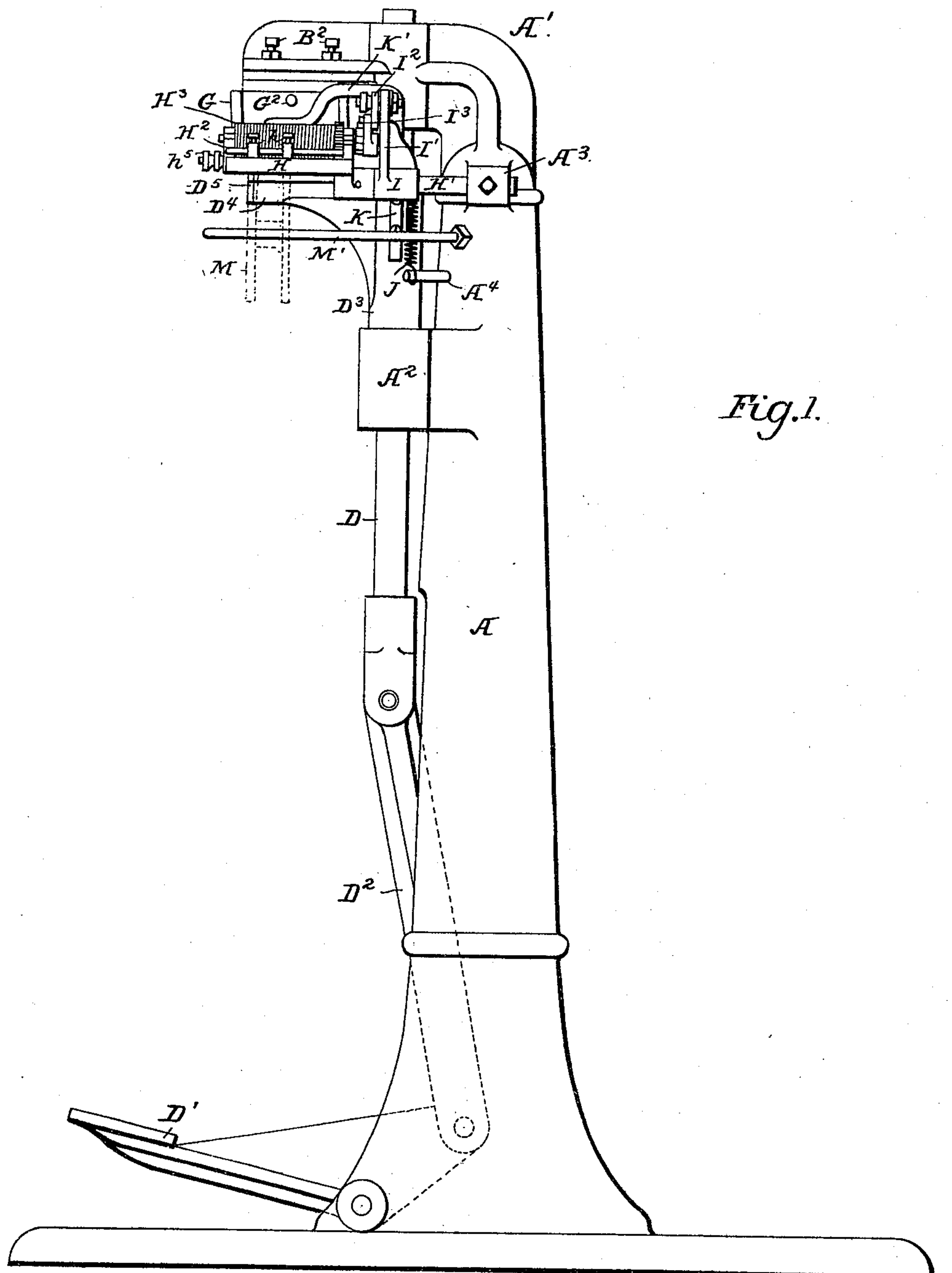


Fig. 1.

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Fig. 2.

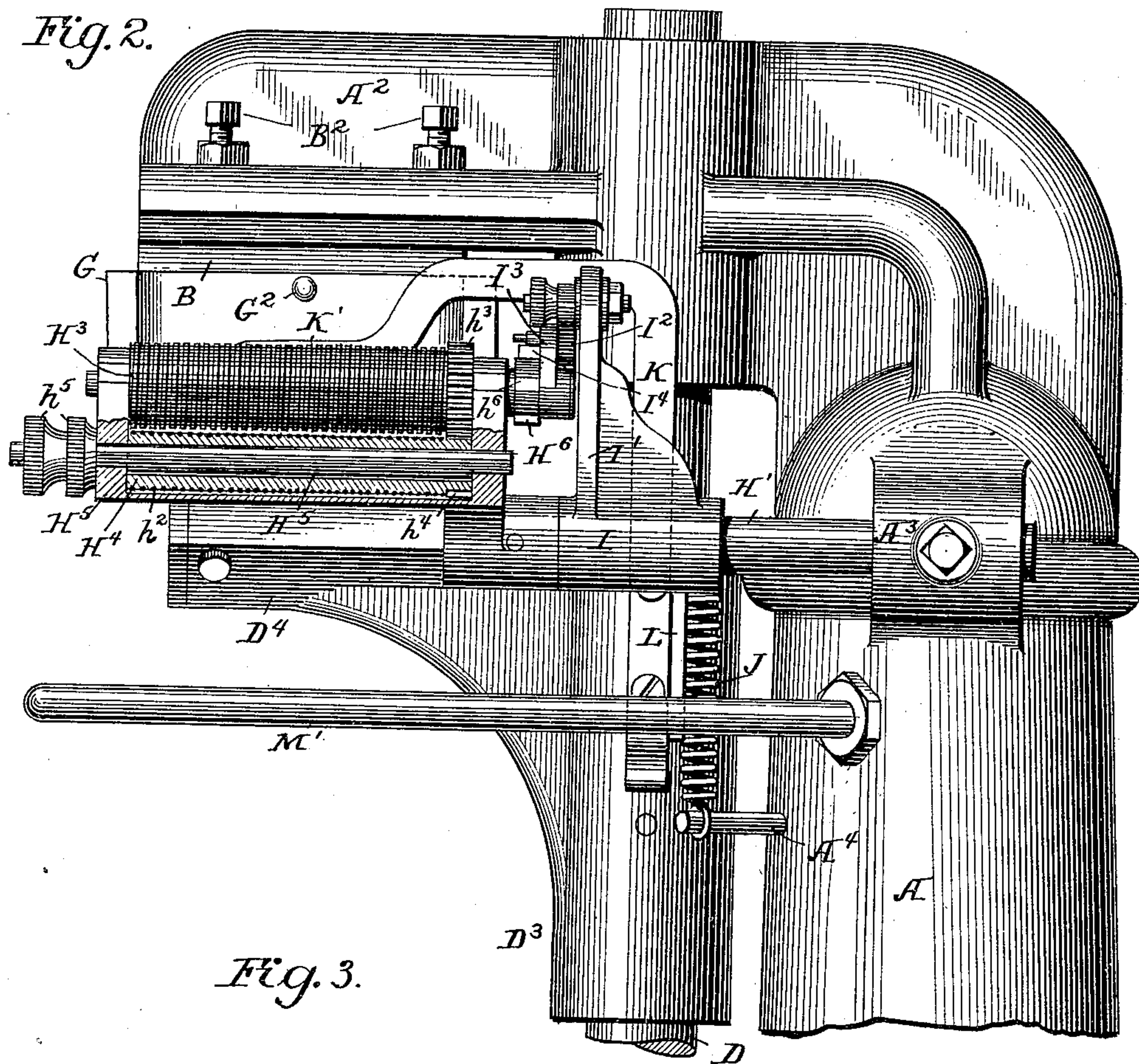
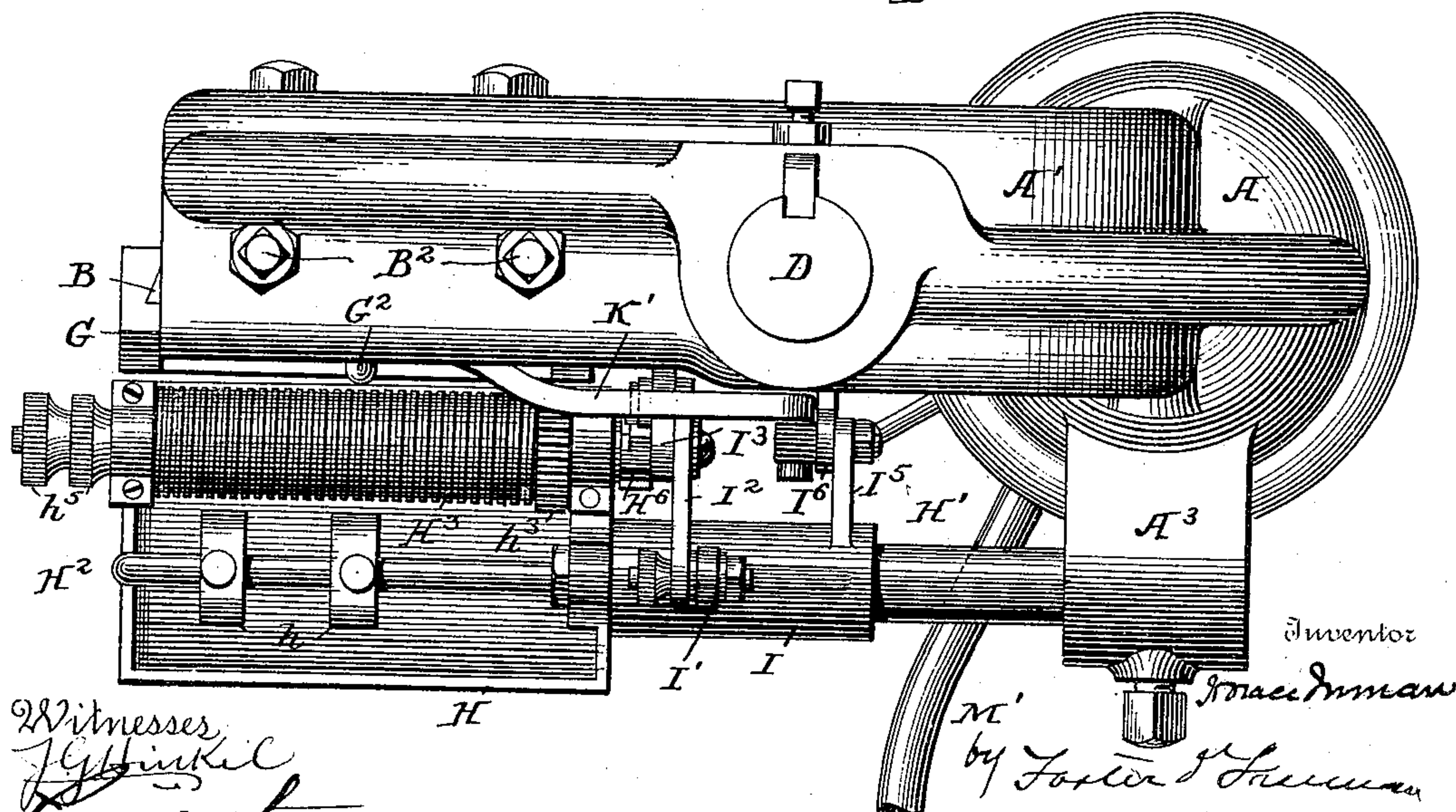


Fig. 3.



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**No. 641,392.**

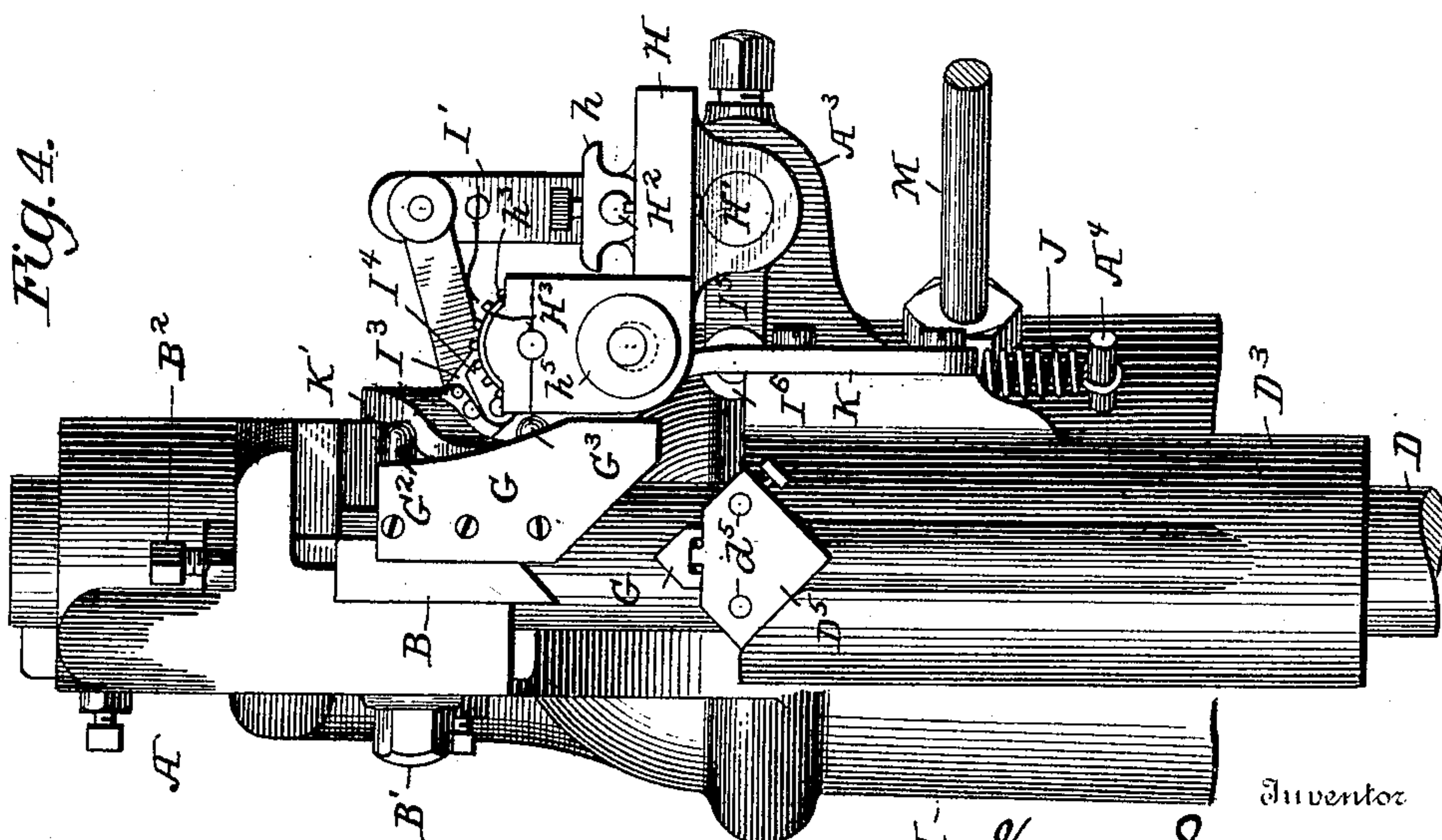
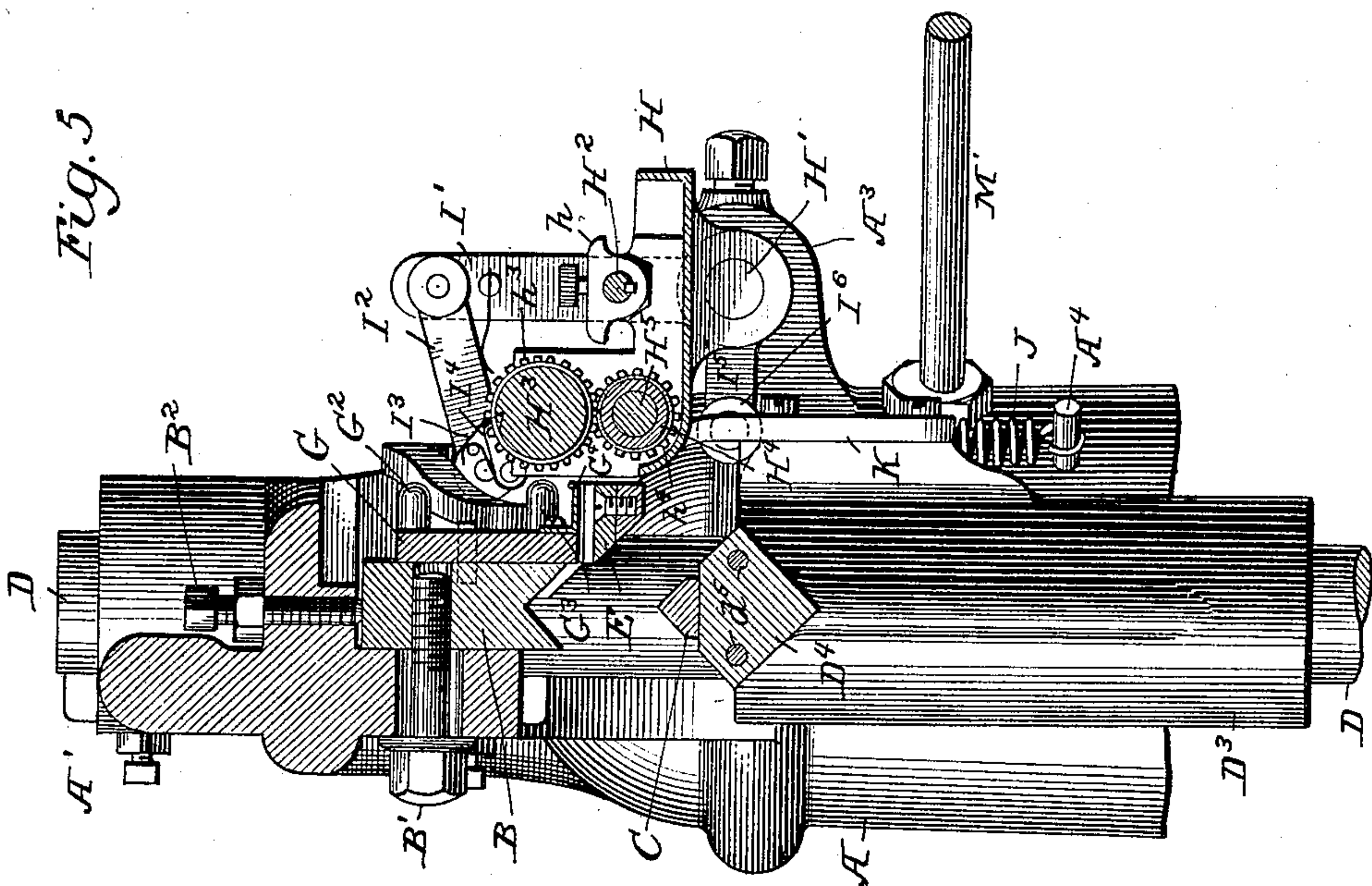
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4 Sheets—Sheet 3.



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Fig. 7.

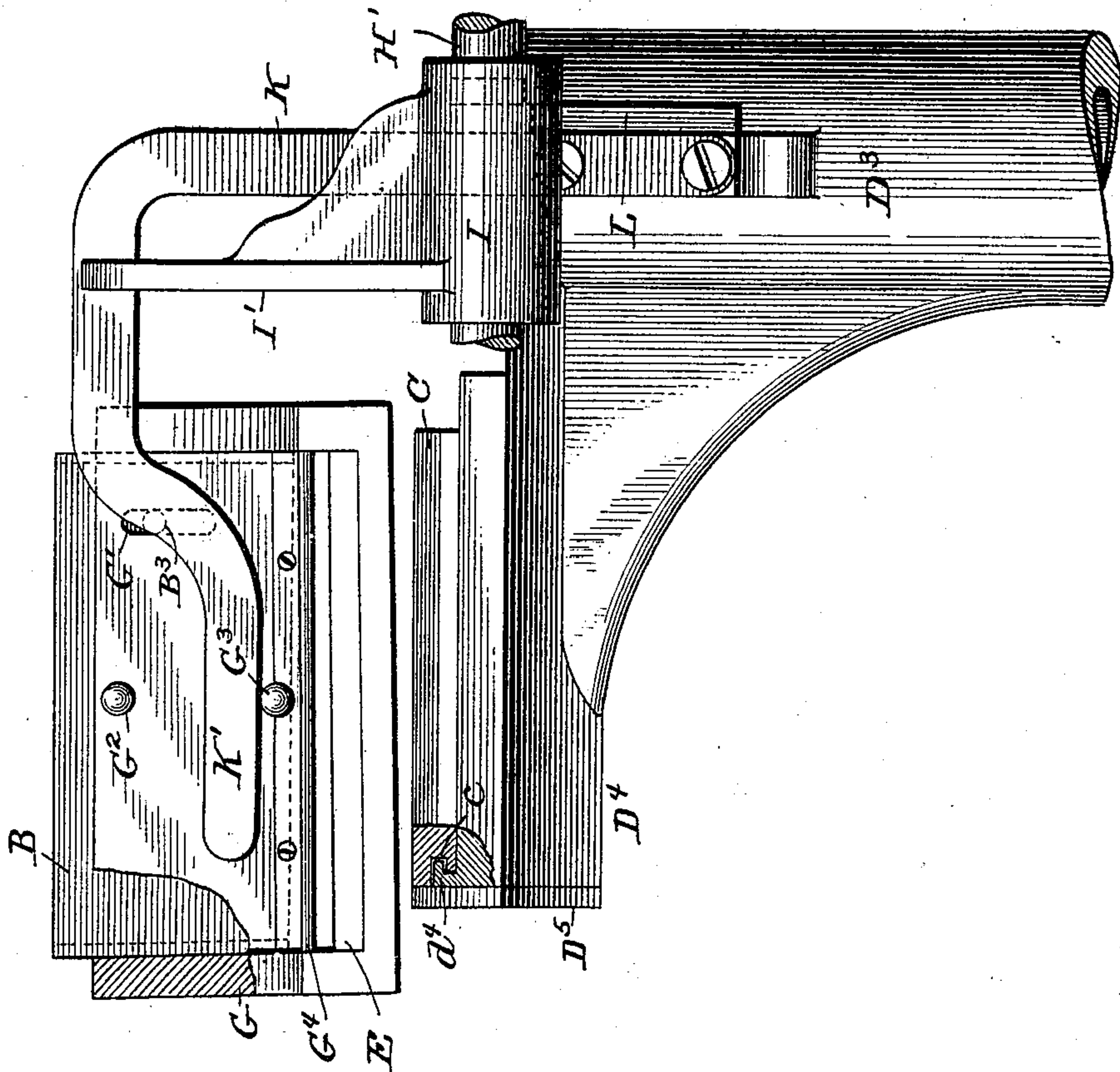
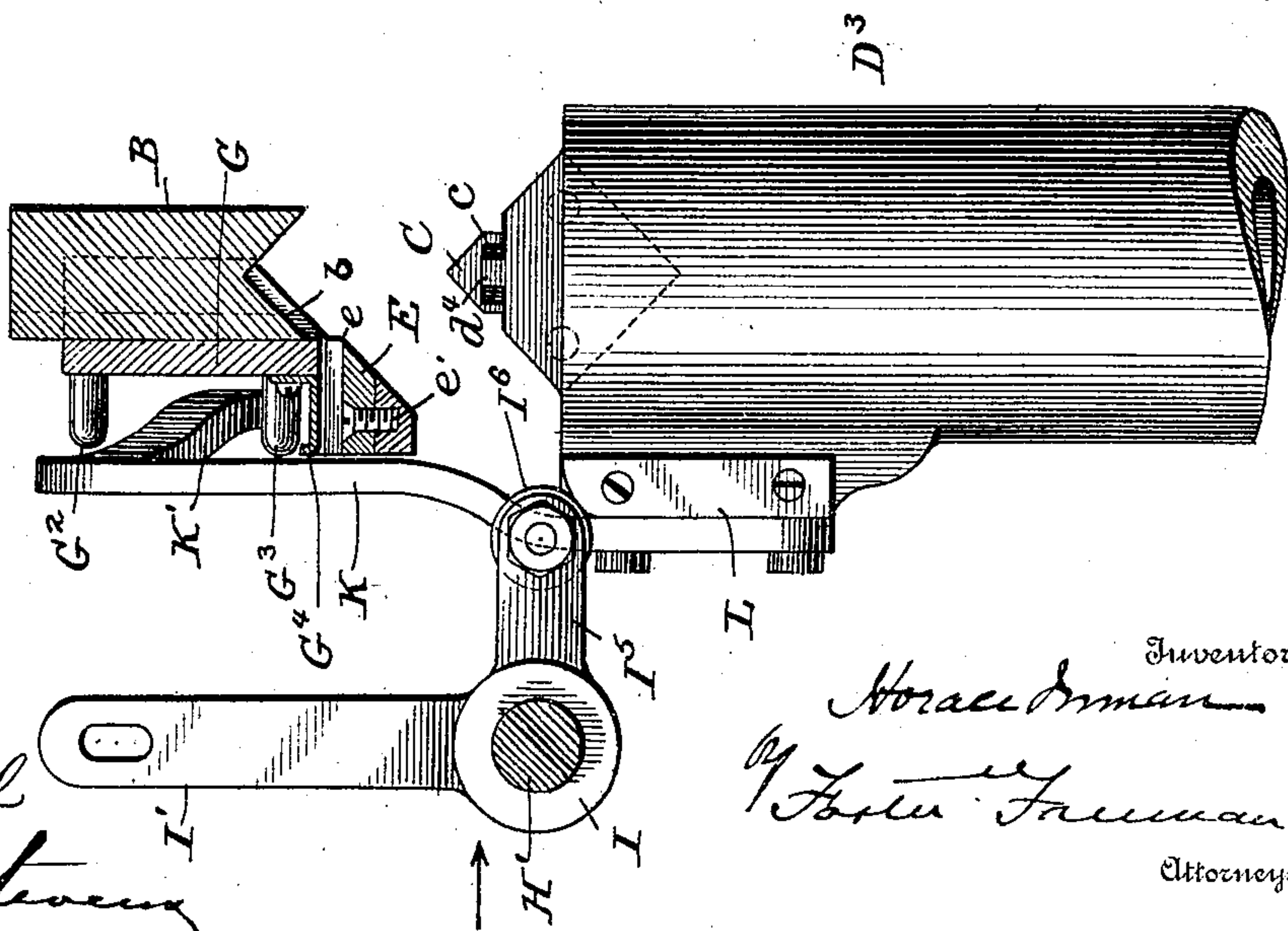


Fig. 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

HORACE INMAN, OF AMSTERDAM, NEW YORK.

## STAYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 641,392, dated January 16, 1900.

Application filed November 21, 1898. Serial No. 697,061. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE INMAN, a citizen of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Staying-Machines, of which the following is a specification.

My invention relates to staying-machines adapted for attaching stays to the corners of boxes and other articles; and it has for its object to improve and simplify such machines; and to these ends it consists in the various features of construction and arrangement of parts, substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, wherein I have illustrated a preferred embodiment of my invention, Figure 1 is a side view of the machine. Fig. 2 is an enlarged side view of a portion of the machine, some parts being in section. Fig. 3 is a plan view of the parts shown in Fig. 2. Fig. 4 is a front view of the same. Fig. 5 is a vertical sectional view of the same. Fig. 6 is a still further enlarged detail view, partly in section, showing more particularly the cutting apparatus; and Fig. 7 is a side view, partly in section, of the parts shown in Fig. 6.

One of the principal objects of my invention is to provide an exceedingly simple, cheap, and effective stay-machine—such, for instance, as can be readily operated by hand-power, although, of course, it may be otherwise operated—and I have set forth the construction and arrangement of the parts in the machine illustrated in the accompanying drawings as an exemplification of my invention, it being understood, however, that my invention is not limited to the precise details and that these may be varied in construction and arrangement and used together in the manner shown or in connection with other equivalent devices without departing from the spirit of my invention.

In the drawings, A represents a suitable standard, having a curved head portion A', which is adapted to support the upper stationary, but adjustable, die B, while the lower and movable die C is mounted on a rod D, sliding in a hollow bearing A<sup>2</sup> on the frame and shown as connected to be operated by the treadle D' through the medium of the

connecting-link D<sup>2</sup>, the frame being preferably recessed on its front side to receive a portion of the treadle and link and they being so shaped as to form a sort of toggle-joint well adapted for raising the rod D and parts carried thereby and producing the desired and necessary pressure.

The upper die B, which may be of any desired shape, according to the work being done, and shown in the present instance with a V-shaped recess to receive the corners or edges of a box or similar article, is mounted on the bent head portion A' of the standard in any suitable way; but, as shown more particularly in Fig. 5, it is adjustably mounted thereon, being held in position by screws B' passing through enlarged openings in the die B, and adjusting-nuts B<sup>2</sup> are adapted to assist in holding the die in its proper adjusted position, being provided with set-nuts or other similar devices, as indicated. One edge of this die B, as b, forms a cutting edge coöperating with the movable cutter E, the cutting edge e of which is shown as tapering slightly, so as to give a shear cut to the stay material as it is moved to coöperate with the stationary cutter or knife in the manner hereinafter described. This knife or cutter E is mounted on a sliding gate G, being secured thereto in the present instance by screws e', and this gate is arranged to slide vertically with relation to the upper die B in any suitable way, in the present instance it being dovetailed to slide on the edges of the die B, as indicated in Figs. 3, 6, and 7, the vertical movement of the gate being preferably limited in some suitable way, as by means of the slot G' therein sliding on a pin B<sup>3</sup> on the face of the upper die. The gate G is further provided with some sort of means to allow it to be raised or lowered at proper times and preferably, as in the present instance, to permit of a certain lost motion of the operating device, so that it will be moved upward and downward at proper periods, and in the present instance I have shown pins G<sup>2</sup> G<sup>3</sup> on the face of the gate, between which pins plays the operating device hereinafter described. Also attached to the gate G is a guide-plate G<sup>4</sup>, arranged above the knife and forming a passage-way for the stay-strip.

The stay-strip feeding and pasting or damp-



ing device H is mounted on a rod H', adjust-  
ably mounted in a bracket A<sup>3</sup> on the side of  
the standard, and while any desired form of  
pasting or damping device may be used I  
5 have shown in the present instance a damp-  
ing device to be used in connection with ad-  
hesive stay-strips and comprising, essentially,  
a liquid-containing box having extending over  
its upper surface an arm H<sup>2</sup>, on which are ad-  
10 justably mounted the guides h h for the strip,  
and provided also with the feeding and damp-  
ing rolls H<sup>3</sup> and H<sup>4</sup>, mounted in bearings ex-  
tending upward from the sides of the box. The  
upper feeding-roll H<sup>3</sup> is preferably grooved on  
15 its face, as best shown in Fig. 2, and is pro-  
vided with a spur-gear h<sup>3</sup>, engaging a similar  
spur-gear h<sup>4</sup> on the damping-roll H<sup>4</sup>. This  
latter damping-roll is also preferably provided  
with a spiral groove on its surface, in which  
20 is placed an absorbing cord or thread h<sup>2</sup>, op-  
erating in a well-known manner, and this roll  
is further mounted on an eccentric shaft H<sup>5</sup>,  
having adjusting thumb-nuts h<sup>5</sup> for securing  
the shaft in position after it has been adjust-  
25 ed in the proper relation to its companion  
feeding-roll H<sup>3</sup>, according to the thickness of  
the stay-strip. It will be seen that by turn-  
ing the eccentric shaft H<sup>5</sup> the feeding and  
damping roll H<sup>4</sup>, mounted thereon, will be ad-  
30 justed in proper relation to the companion  
feeding-roll H<sup>3</sup>. These feeding-rolls are op-  
erated at proper intervals by suitable mech-  
anism, and I have shown in the present in-  
stance a ratchet-wheel H<sup>6</sup> on the end of the  
35 shaft of the feeding-roll H<sup>3</sup>, having four  
ratchet-teeth h<sup>6</sup>, they being shown in the form  
of notches, with which a suitable pawl en-  
gages at the proper time, as hereinafter de-  
scribed.

40 Mounted to rock loosely on the rod H' is a  
sleeve I, carrying an arm I', to which is piv-  
otally connected a link I<sup>2</sup>, the other end of  
which is connected to a rocking arm I<sup>3</sup>, car-  
rying a pawl I<sup>4</sup>, adapted to engage the notches  
45 of the ratchet-wheel H<sup>6</sup>, and while this is a  
convenient means for intermittently operat-  
ing the feeding and damping rolls any other  
equivalent connections may be used. Con-  
nected to the sleeve I is an arm I<sup>5</sup>, preferably  
50 having a friction-roller I<sup>6</sup> on its end adapted  
to come in contact with a portion of the mov-  
able die carrier or rod D, by means of which  
the sleeve is rocked, as indicated in Fig. 6,  
and a spring J or equivalent device is con-  
55 nected to a pin A<sup>4</sup>, extending from the stand-  
ard at one end and at the other end to the  
arm I<sup>5</sup> to restore the sleeve I and its con-  
nected mechanism to their normal positions  
when the movable die-carrying rod returns to  
60 its normal position.

The die-carrying rod D in the present in-  
stance is shown as enlarged at its upper por-  
tion D<sup>3</sup> and as having a lateral extension or  
anvil D<sup>4</sup> for supporting the lower die C, and  
65 this die is mounted on the anvil D<sup>4</sup>, so as to  
have a sufficient lateral movement to insure  
its proper coöperation with the upper die,

and in the present instance the anvil D<sup>4</sup> is  
provided with a projection d<sup>4</sup>, while the die C  
is recessed at c, into which recess the projec- 70  
tion d<sup>4</sup> extends, allowing free play on either  
side, so that the lower die C can move to a  
greater or less extent laterally. Connected  
to the projection d<sup>4</sup> is a plate D<sup>5</sup>, mounted on  
rods d<sup>5</sup>, which can be drawn in or out of the 75  
projection d<sup>4</sup>, as indicated in Fig. 7, to aid in  
supporting the box or other article being op-  
erated on.

Mounted on the die-moving rod D and pref-  
erably on the enlarged portion D<sup>3</sup> thereof is 80  
a bent arm K, the free end K' of which plays  
between the pins G<sup>2</sup> G<sup>3</sup> on the gate G, and it  
will be readily seen that when the movable  
die is moved upward the arm K also moves  
upward, and the portion K' thereof coming in 85  
contact with the pin G<sup>2</sup> the gate will be moved  
upward at the proper time, and when the arm  
K is moved downward the portion K' will  
come in contact with the pin G<sup>3</sup>, forcing the  
gate downward if it has not already fallen by 90  
gravity. As the rod moves upward, a cam L  
comes in contact with the roll I<sup>6</sup> on the arm  
I<sup>5</sup>, operating sleeve I to feed the stay-strip.

The stay-strip may be conveniently mount-  
ed on a reel M, supported on an arm M', se- 95  
cured to the standard; but any other sup-  
port for the source of supply of the stay-strip  
may be used.

From the above description of the machine  
shown in the drawings its operation will be 100  
readily understood and may be briefly stated  
as follows: The stay-strip passes from the reel  
M, between the guides h h on the arm H<sup>2</sup>,  
between the rolls H<sup>3</sup> H<sup>4</sup>, where paste is applied,  
or if an adhesive strip is used the adhesive 105  
material moistened by passing over the mois-  
tening-roll H<sup>4</sup>, the two rolls operating as a  
feed. The end of the strip passes over the  
knife E, beneath the guide G<sup>4</sup>, and the parts  
are now in condition for operation. The parts 110  
to be united—as, for instance, the edges of  
the sides of a paper box—are placed over the  
die C, and the box may be supported by the  
plate D<sup>5</sup>, and is held in the position in which  
the edges are to be united by the operator. 115  
The treadle D' is then operated and the lower  
die moved upward, carrying the box against  
the stationary die B. As the anvil and rod D  
move upward, the cam L, through the medium  
of the arm I<sup>5</sup>, operates the sleeve I and through 120  
its connecting mechanism operates the feed-  
rolls H<sup>3</sup> H<sup>4</sup> to feed the stay-strip a proper  
distance under the upper die. As the lower  
die proceeds in its movement the movable  
knife remains stationary owing to the lost 125  
motion of the bent arm K and extension K'  
between the pins G<sup>2</sup> G<sup>3</sup>; but when the lower die  
reaches the proper position the extension K'  
strikes the pin G<sup>2</sup>, raising the gate G and  
severing the stay-strip between the movable 130  
knife E and the knife-edge b of the stationary  
die B. At this moment the movable die C,  
with the parts to be united, reaches the stay-  
strip and bends it into the stationary die and



able die, and a pawl-and-ratchet mechanism connected to the sleeve and operating the feeding and damping rolls, substantially as described.

- 5 13. In a staying-machine, the combination with the stationary and movable dies, of a feeding and damping device, a movable cutter mounted on the stationary die and arranged between the feeding and damping device and the stationary die, and means connected with the movable die to operate the feeding and damping device at the beginning of the movement of the movable lower die toward the stationary upper die and the cutter  
10 near the end of such movement, substantially as described.

14. In a staying-machine, the combination with the stationary and movable dies, of a sta-

tionary feeding and damping device, a movable cutter arranged between the feeding and damping device and stationary die, a gate supporting said cutter and having a guide for the stay-strip, and connections between the cutter and feeding and damping rolls and movable die whereby the feeding and damping rolls are operated at the beginning of the movement of the die and the movable cutter near the end of the upward movement of the die, substantially as described. 20 25

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 30

HORACE INMAN.

Witnesses:

H. B. WALDRON,

H. A. INMAN.



a further movement presses it onto the parts to be united. As before intimated, the movable die C is capable of a slight lateral movement, so that equal pressure will be given to all parts of the stay-strip.

It will be noticed that the arrangement of the treadle connections is such that the lower die moves rapidly at the first movement of the treadle and more slowly toward the latter movement, but with greater compressing power, so that the stay is easily and at the same time firmly attached to the parts to be united. On releasing the treadle the parts assume their normal position, and as the extension K' moves away from the pin G<sup>2</sup> there is a certain lost motion; but before the lower die reaches its normal position the extension K' impinges on the pin G<sup>3</sup>, insuring the gate's movement ready for another operation. The spring J aids in restoring the parts to position when necessary.

It will be seen that the above-described construction is exceedingly simple, compact, and it has proved very efficient. It has been found exceedingly advantageous to have the upper die adjustable, but stationary, and to move the lower die, carrying the article to be operated upon, upward against the stationary die, and it will further be seen that the stay-strip is fed forward at the beginning of the upward movement of the lower die, and the gate carrying the cutter is operated during the latter part of the movement of the lower die after it has reached a position to impinge upon and hold the stay in the position desired as it is severed from the strip, and there is no liability of its slipping or getting out of place. The arrangement of the treadle and connections is such that any requisite or desired pressure may be given to the parts and the machine can be rapidly operated and is not liable to get out of order.

What I claim is—

1. In a staying-machine, the combination with a stationary upper die, of a movable lower die, a stay-strip-feeding device, connections between the same and the movable die whereby the feeding device is operated at the beginning of the movement of the movable die, a stay-cutting device, and connections for operating the same having a lost motion so that the cutting device will be operated as the movable die reaches nearly its final upward movement, substantially as described.

2. In a staying-machine, the combination with an adjustable stationary upper die having a cutting edge, of a gate carrying a cutter and arranged to cooperate with the cutting edge of the die, substantially as described.

3. In a staying-machine, the combination with a stationary upper die having a cutting edge, of a gate sliding thereon, a cutter mounted on the gate and cooperating with the cutting edge of the die, and means for moving the gate and cutter to sever the stay, substantially as described.

4. In a staying-machine, the combination

with a stationary upper die having a cutting edge, of a gate sliding thereon, a cutter carried thereby and arranged to cooperate with the cutting edge of the die, a movable lower die, an arm connected to move with the lower die, and devices providing lost motion between the arm and the gate whereby the gate is moved at a predetermined time, substantially as described.

5. In a staying-machine, the combination with a stationary upper die having a cutting edge, of a gate sliding thereon, a cutter carried by the gate and arranged to cooperate with the cutting edge of the die, stop-pins on the gate, a movable lower die, and an arm connected to move with the lower die and arranged to engage the stop-pins at different points of its movement whereby there is lost motion between the movement of the lower die and the gate, substantially as described.

6. In a staying-machine, the combination with a stationary upper die, of a gate sliding thereon, a cutter secured to the gate, and a guide-plate secured to the gate above the cutter, substantially as described.

7. In a staying-machine, the combination with the stationary and movable dies, of a combined feeding and damping device, one of the rollers of which is eccentrically mounted, substantially as described.

8. In a staying-machine, the combination with the stationary and movable dies, of a combined feeding and damping device comprising a box and feeding and damping rollers mounted in bearings therein one of the rollers being mounted on an eccentric shaft having means for securing and adjusting the same, substantially as described.

9. In a staying-machine, the combination with the stationary and movable dies, of a feeding and damping device comprising a box, feeding and damping rollers mounted in bearings therein one of which is eccentrically mounted with relation to the other, and means for intermittently operating them to feed the strip, substantially as described.

10. In a staying-machine, the combination with the stationary and movable dies, of a feeding and damping device, and connections between the movable die and feeding device whereby the latter is operated at the beginning of the movement of the movable die upward toward the stationary die, substantially as described.

11. In a staying-machine, the combination with the stationary and movable dies, of a feeding and damping device, a pawl-and-ratchet mechanism for operating the feeding and damping device, and an arm connected thereto and operated by the movable die at the beginning of the movement of the movable lower die toward the stationary upper die, substantially as described.

12. In a staying-machine, the combination with the stationary and movable dies, of a feeding and damping device, a sleeve carrying an arm adapted to be engaged by the mov-