

No. 641,649.

Patented Jan. 16, 1900.

V. ROYLE.
EDGING MACHINE.

(Application filed Aug. 21, 1897.)

(No Model.)

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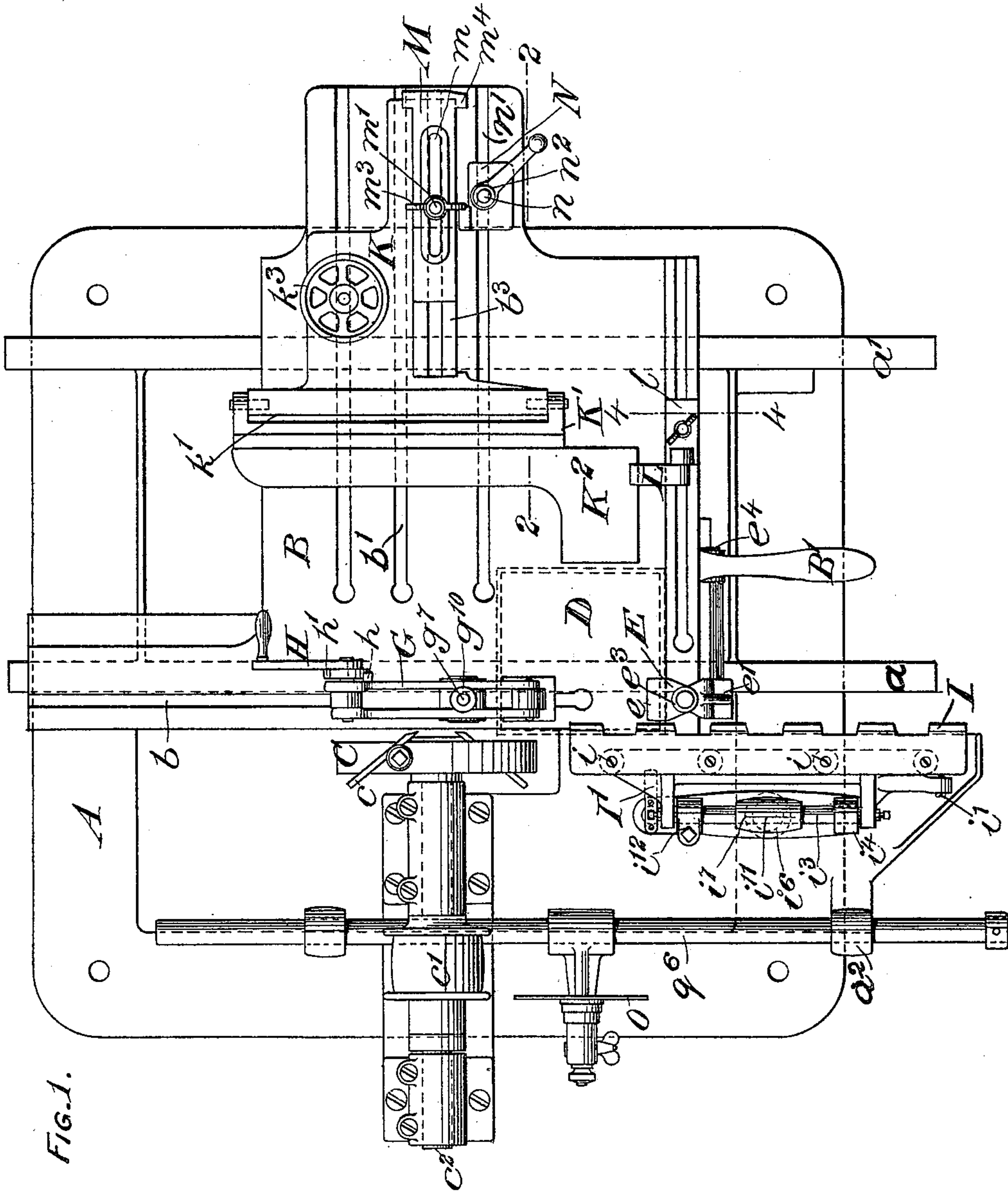


FIG. 1.

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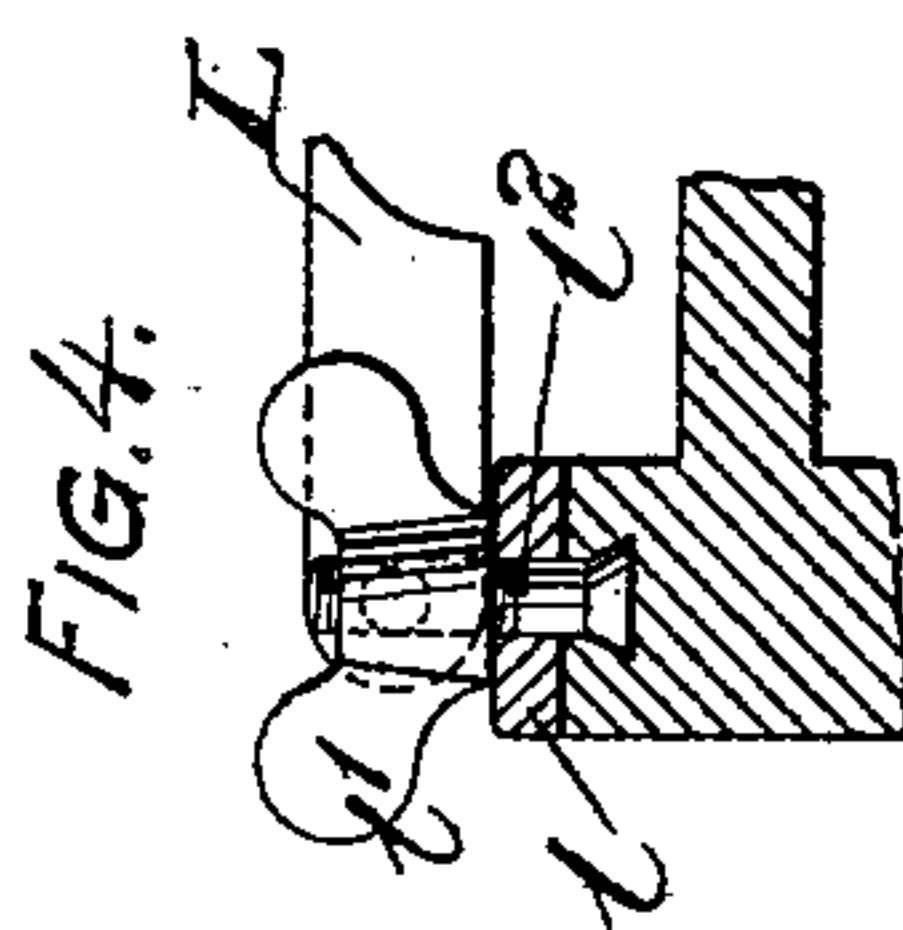
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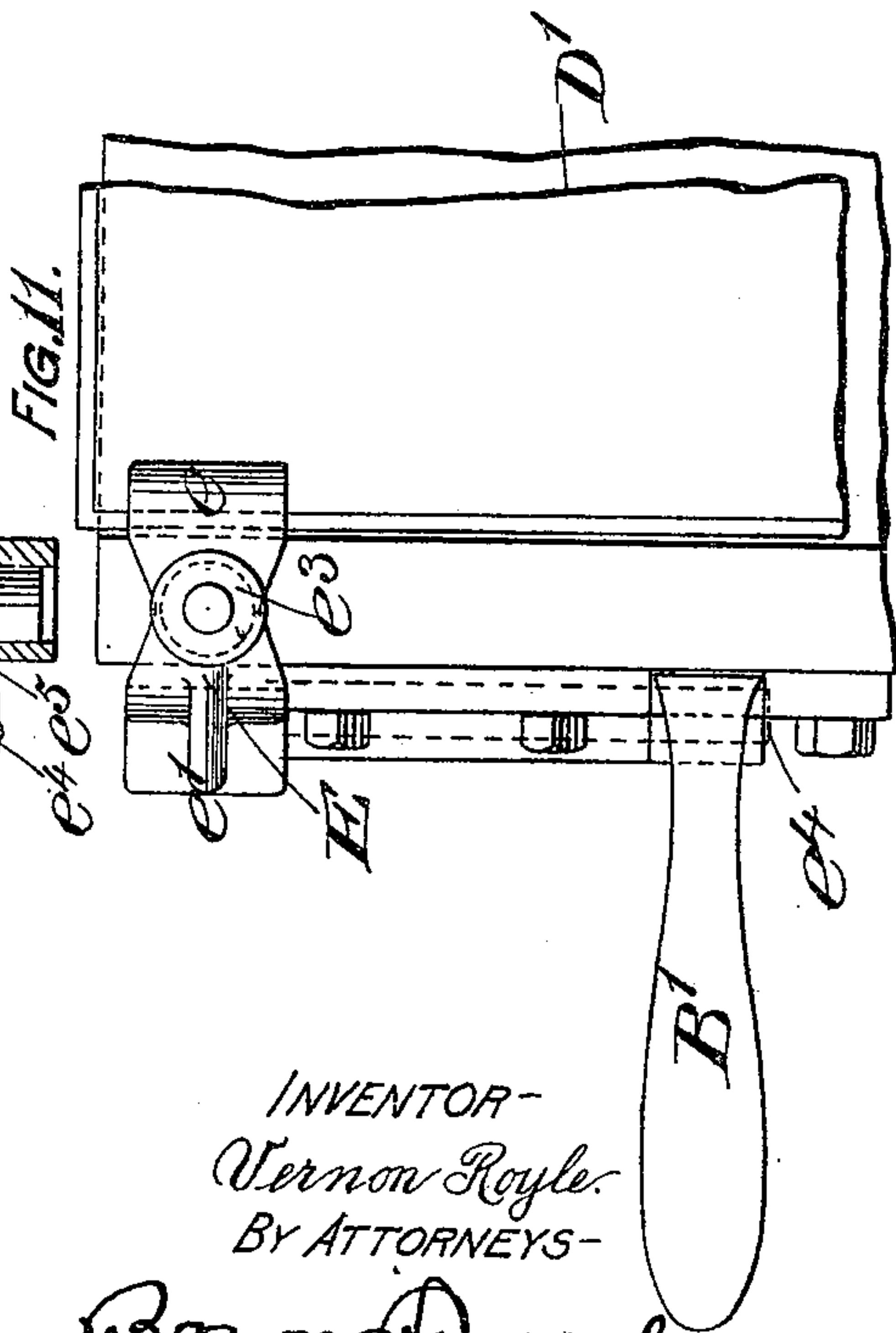
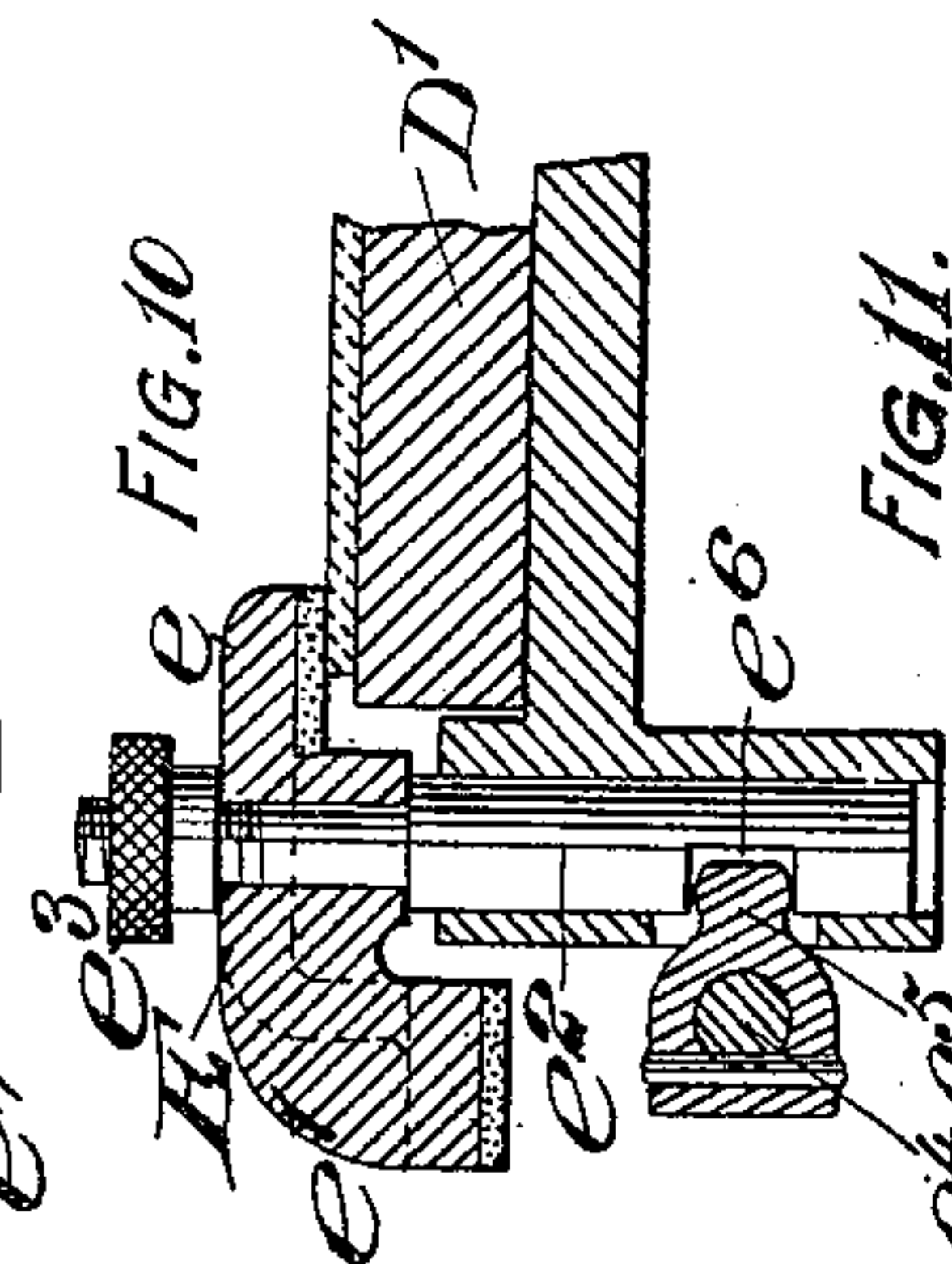
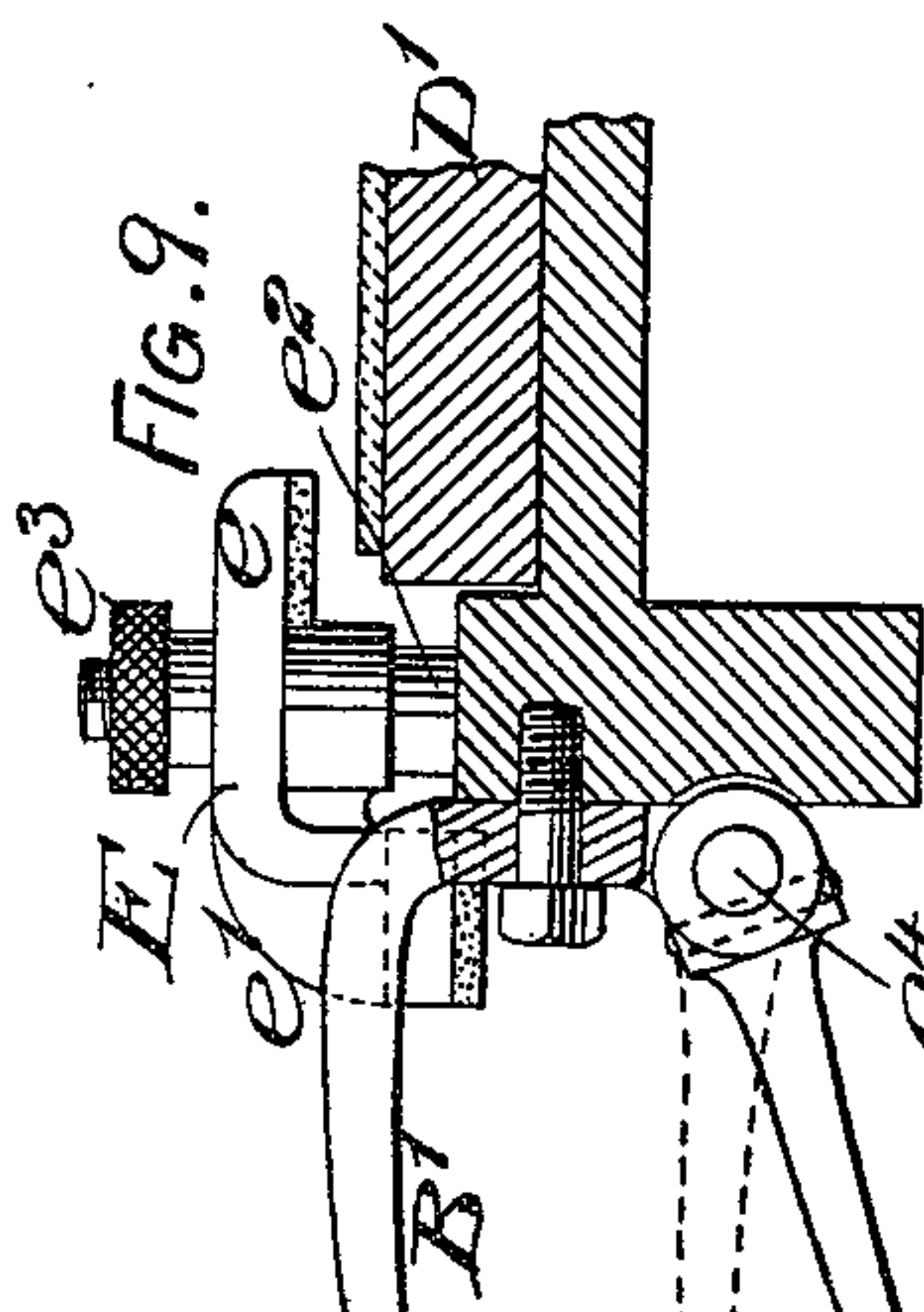
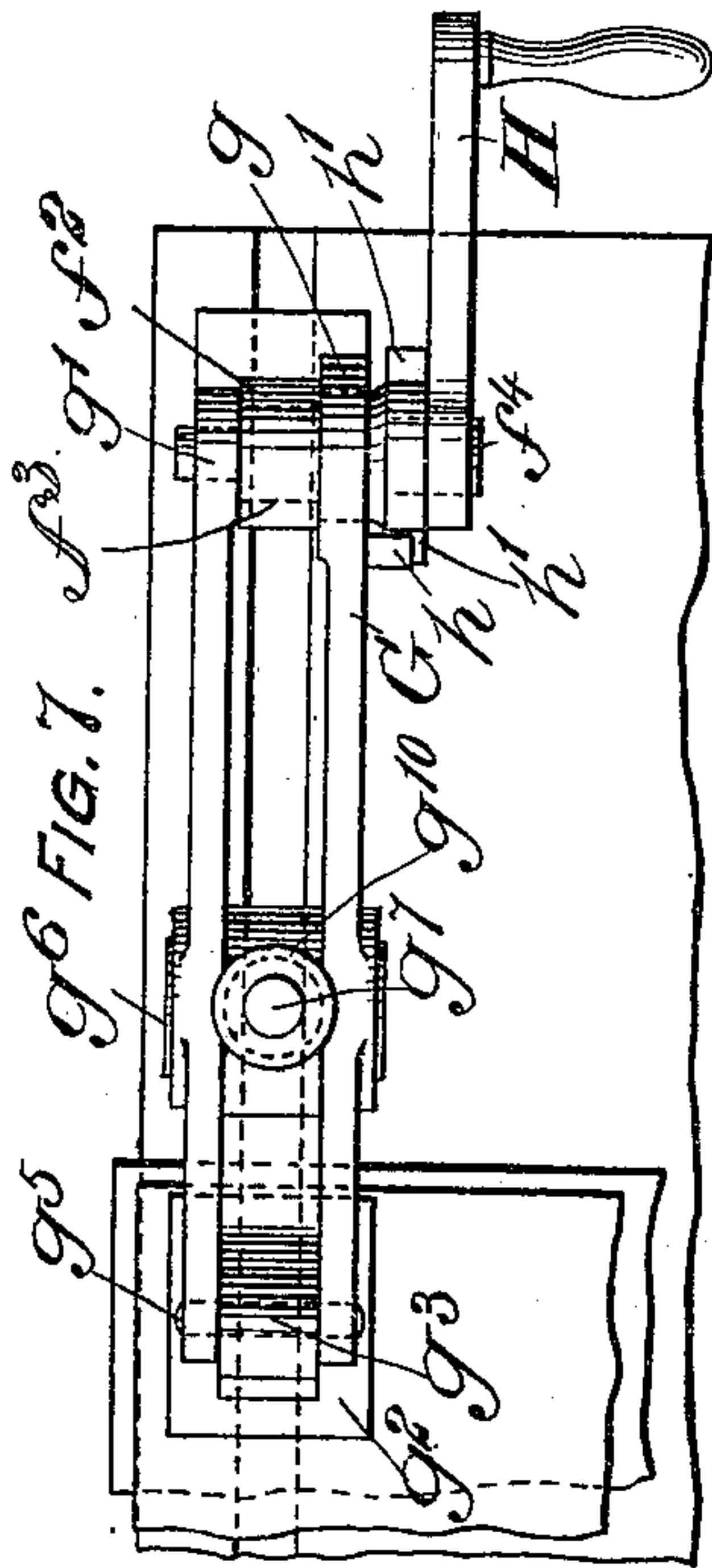
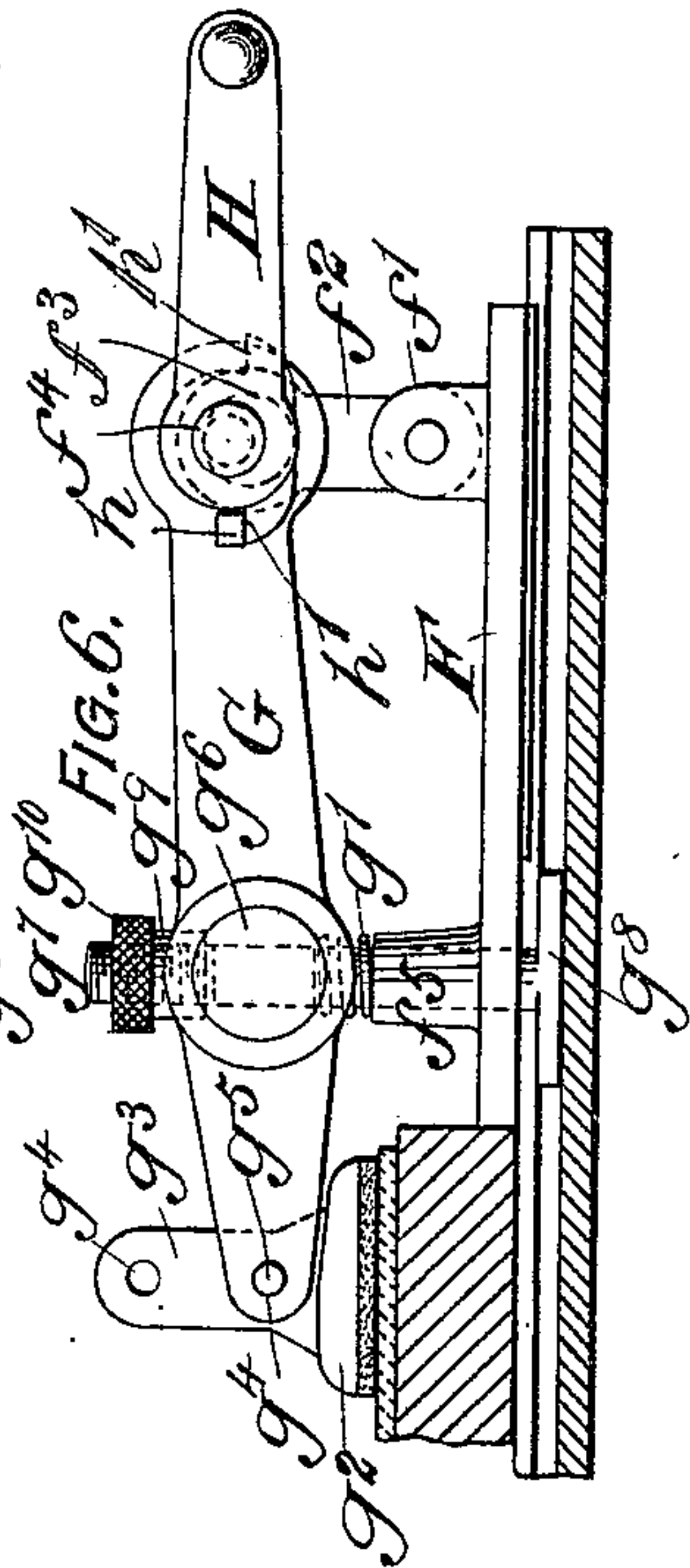
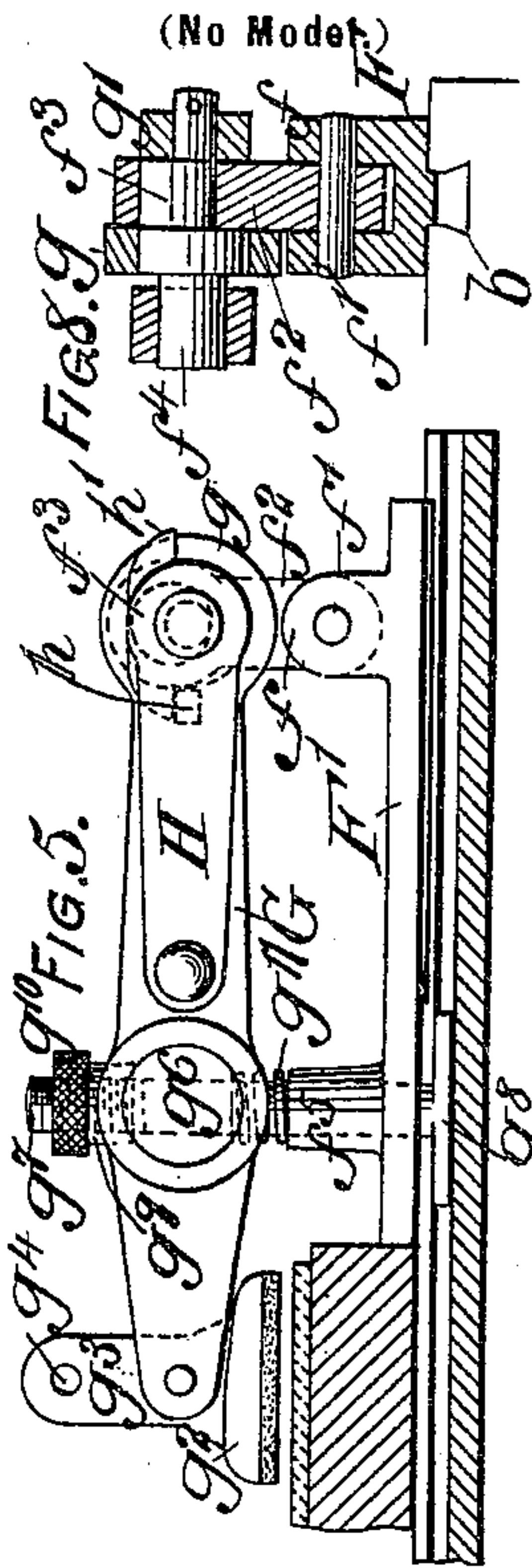
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5 Sheets—Sheet 3.



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FIG. 13.

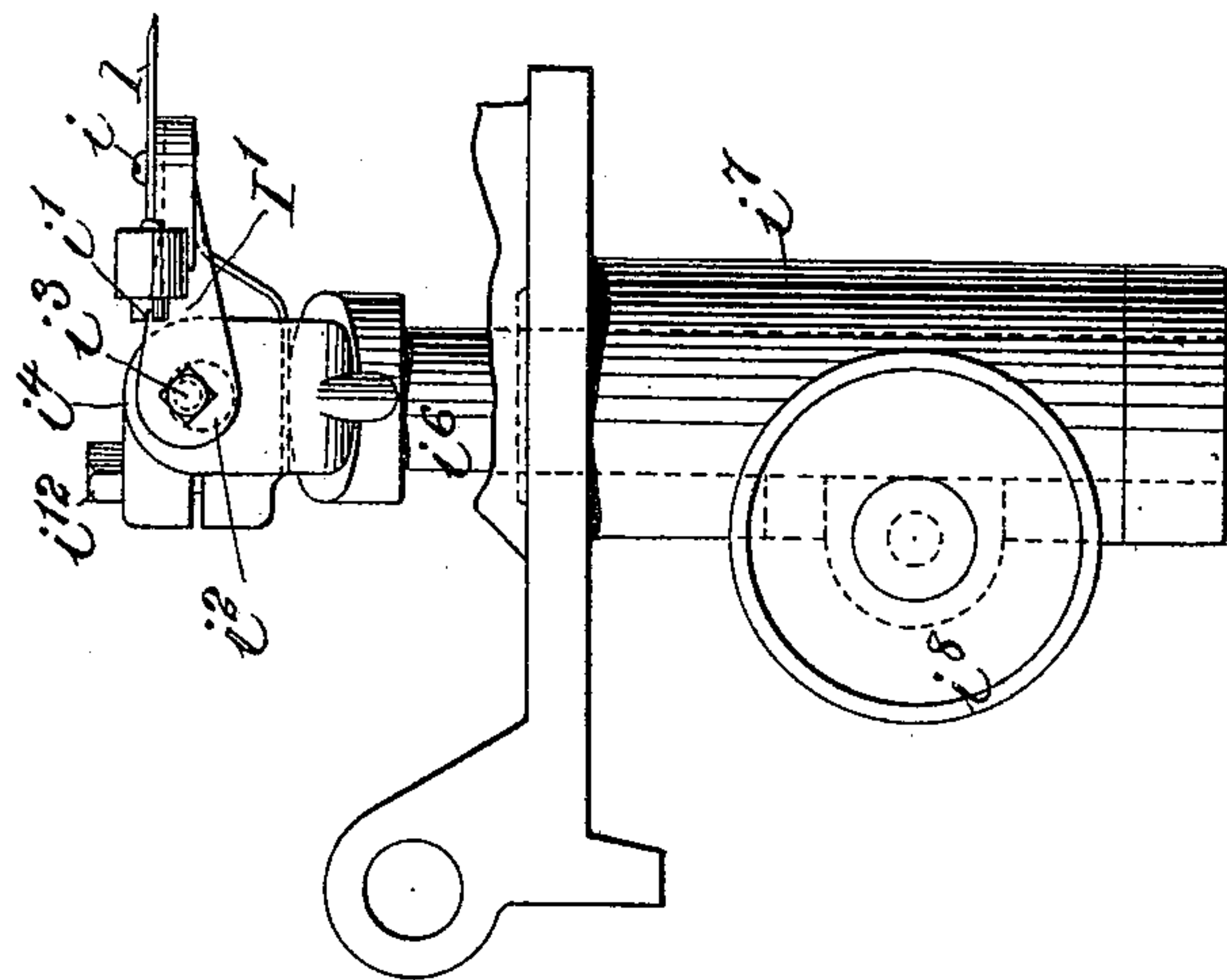
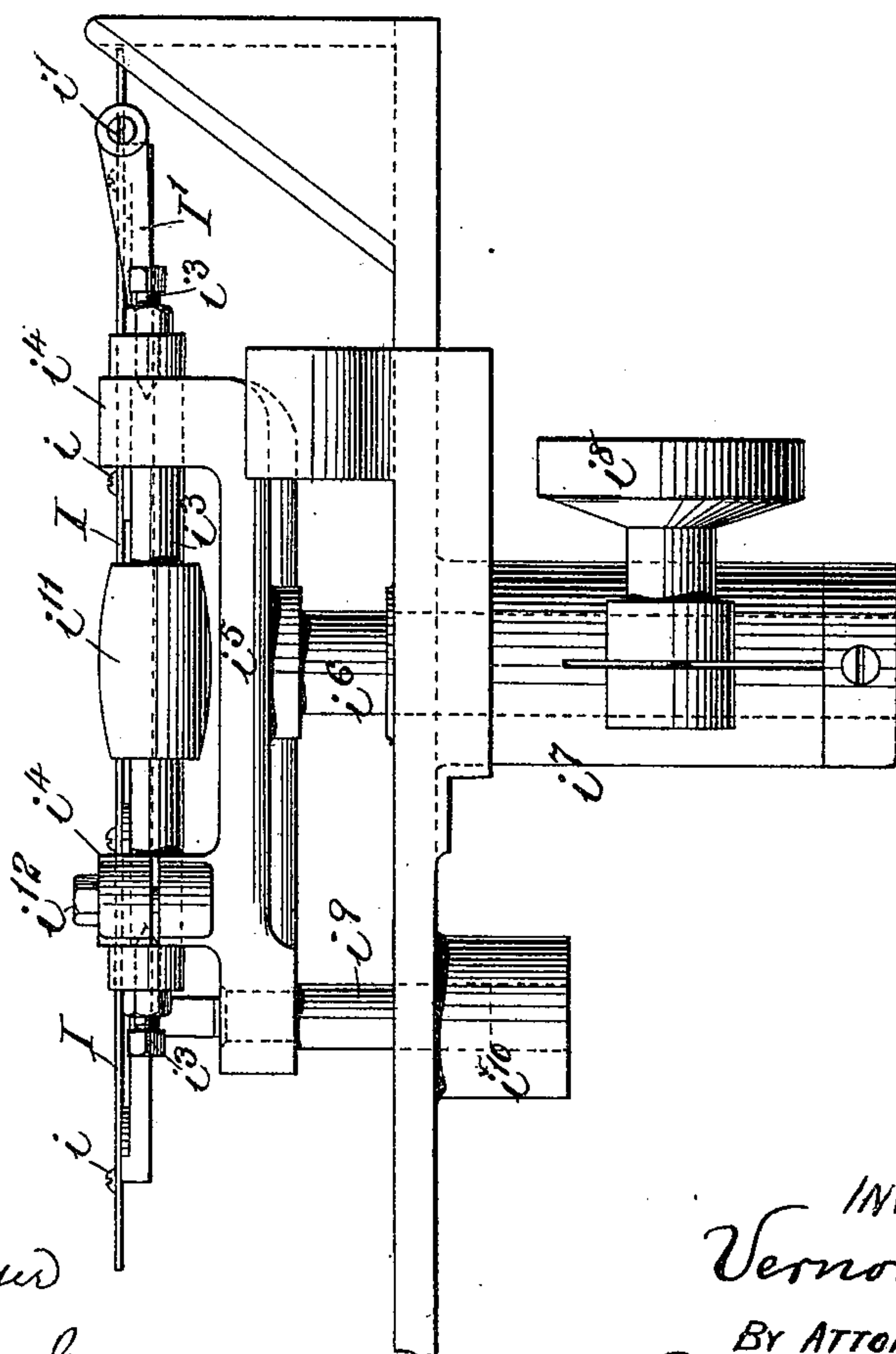


FIG. 12.



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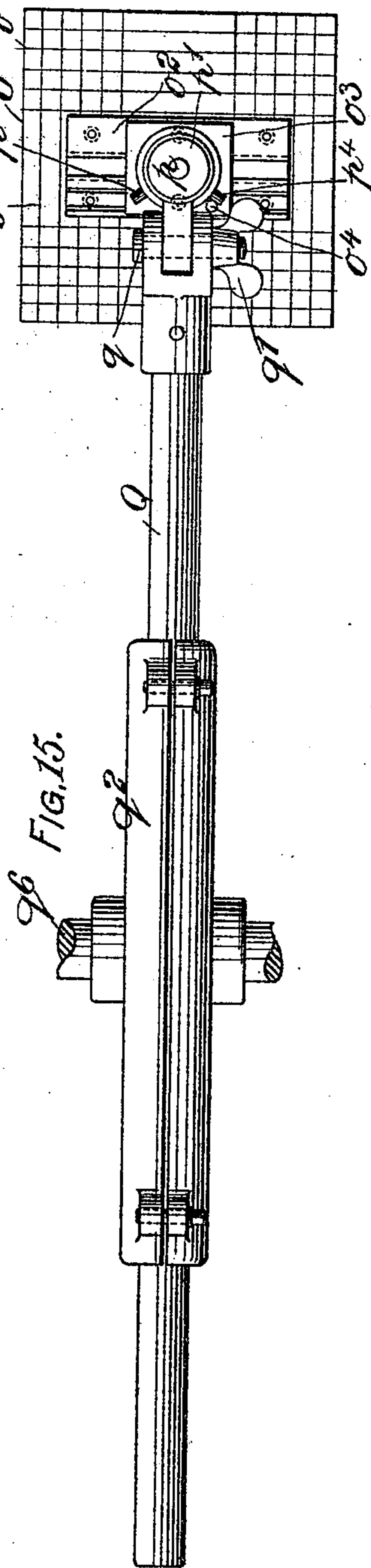
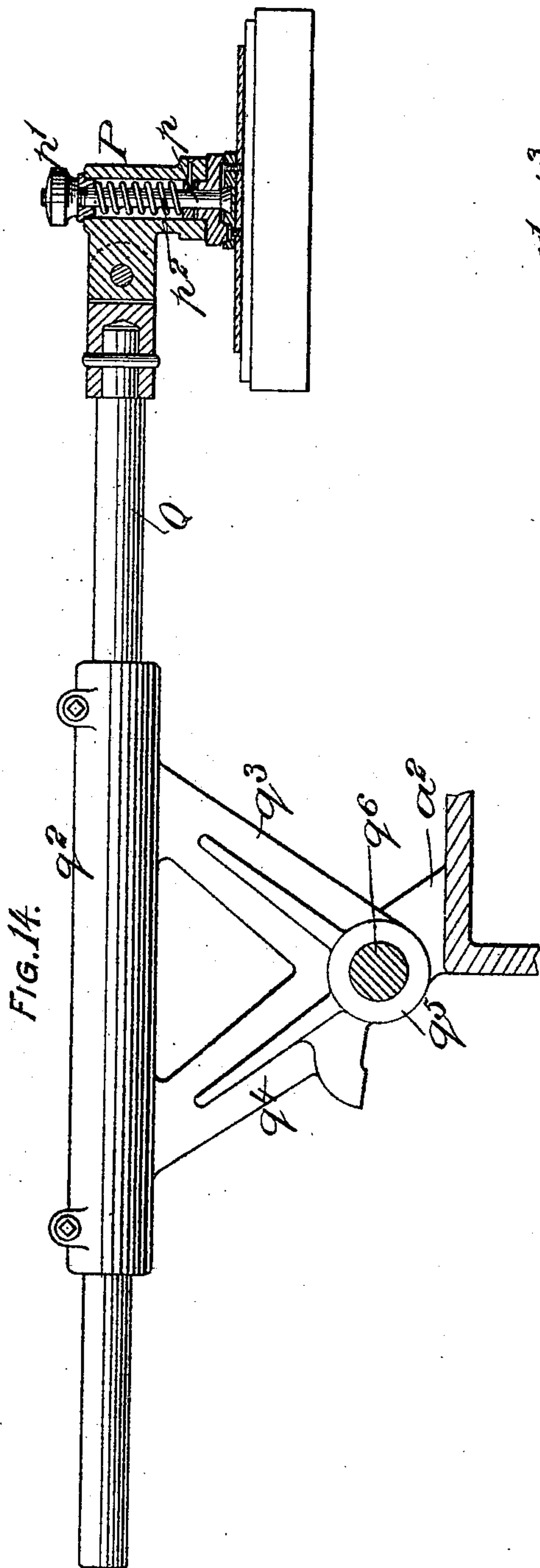
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5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

VERNON ROYLE, OF PATERSON, NEW JERSEY.

EDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 641,649, dated January 16, 1900.

Application filed August 21, 1897. Serial No. 649,041. (No model.)

To all whom it may concern:

Be it known that I, VERNON ROYLE, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Edging-Machines, of which the following is a specification.

My invention relates to an improvement in edging-machines, with the object in view of placing within the control of the operator such plate clamping and adjusting devices as shall render it feasible to adjust plates of varying size and thickness in the proper relations to the cutter in an expeditious and efficient manner.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a top plan view of the machine, showing the several parts in the positions which they may assume in relation to a plate to be operated upon. Fig. 2 is a view in detail, showing in vertical section along the line 2 2 of Fig. 1 the holder movable laterally of the machine toward and away from the cutter. Fig. 3 is an end view of the same. Fig. 4 is a view in detail of an auxiliary holder that works in conjunction with the holder represented in Fig. 2, the view being taken in vertical section through the line 4 4 of Fig. 1. Fig. 5 is a view in detail of the rear clamp, showing the same in elevation with the clamp released. Fig. 6 is a similar view showing the clamp in its closed position. Fig. 7 is a top plan view of the same. Fig. 8 is a transverse section through the same. Fig. 9 is a view in detail, showing the front clamp in side elevation and released from the plate. Fig. 10 is a vertical section through the clamp, showing the same in its clamping position. Fig. 11 is a top plan view of the same. Fig. 12 is a view in detail in side elevation of the gage for indicating the line of cut. Fig. 13 represents the same in end elevation looking from the front of the machine. Fig. 14 represents in detail in side elevation, partly in section, a gage adapted to be swung into and out of position over the table for determining the position of the plate to be operated upon. Fig. 15 is a top plan view of the same when swung into position for use. Figs. 16 and 17 represent views in detail of the cutter-head

and cutters, showing the same, respectively, in top plan and in side elevation; and Fig. 18 is a view in detail of the block for holding the cutter in the cutter-head.

In the top plan view represented in Fig. 1 the different parts of the machine to which my present invention is directed are represented in assembled adjustment, the front of the machine being toward the reader as the drawing is held for reading.

I have not shown the machine as a whole in elevation, as the parts below the table or below the frame on which the table is mounted form no part of my present invention and may consist of any suitable legs or pedestals of well-known or approved form.

The bed-frame of the machine is represented by A, and on the bed-frame are located ways $a a'$, on which the work-carrying table B is adapted to slide backward and forward to bring the work into engagement with the cutters c , mounted in the cutter-head C and rotated by power transmitted from a suitable source (not shown) to a band-pulley c' on the spindle c^2 , which carries the cutter-head C.

For holding the plate D to be operated upon both at its front and its rear ends while being presented to the cutters I provide a front and rear clamp, both of which are adjustable vertically to suit plates of different thicknesses and one of which—in the present instance the rear clamp—is adjustable toward and away from the front clamp to bring its holding-face into position to clamp the edges of plates of varying sizes.

The front clamp is denoted as a whole by E. It is provided with oppositely-extending arms or jaws, denoted, respectively, by $e e'$, the clamping-faces of which, faced with suitable material—such, for example, as leather—are located at different heights, the face of the jaw e being located at such a height as to adapt the clamp to hold a plate D, with a thick backing D' , in position to be operated upon, while the face of the jaw e' is sufficiently low to adapt the clamp to hold a thin metallic plate three-sixteenths of an inch or less in thickness. The clamp E is mounted in rotary adjustment on a vertically-sliding bar or rod e^2 , the clamp being held in position

on the rod, with its face e or its face e' in clamping position over the table, by means of a nut e^3 , having a screw-threaded engagement with the upper end of the bar or rod e^2 .

5 To the front of the table B there is fixed a handle B' for the purpose of moving the table forward and backward along the bed-frame A, and beneath the handle B' there is mounted a rocking handle B², fixed to a rock-shaft
10 e^4 , mounted in suitable bearings at the front of the table B. There is also fixed to rock with the shaft e^4 a short arm e^5 , the free end of which engages a socket e^6 in the rod or bar e^2 , so that as the shaft e^4 is rocked it will
15 raise and lower the rod e^2 and with it the clamp E. The adjustment is so made that when the rocking handle B² is drawn toward the handle B' into the position shown in dotted lines in Fig. 9 it will cause the clamp E
20 to be thrown into engagement with the plate, and while the hand of the operator grasps the two handles B' B², holding the front edge of the plate firmly in position on the table, the table as a whole, with the plate thereon,
25 may be moved backward and forward without releasing the grasp until the cut has been made. After the cut has been made the release of the operator's hand from the handle B² will permit it to fall, and this movement
30 will release the front clamp from the plate. The rear clamp is capable of being slid bodily toward and away from the rear edge of the plate along a groove b in the top of the table and comprises a base-piece F, provided at or
35 near its rear end with a pair of upwardly-extending lugs $f f'$, between which there is pivoted the lower end of a link f^2 . In the upper end of the link f^2 there is journaled, by means of an eccentric f^3 , a shaft f^4 , on which are
40 mounted branches g and g' of the bifurcated rear end of a lever G, carrying at its front end a clamp g^2 , provided with a stem g^3 , having a plurality of perforations g^4 located at different heights along the stem for the purpose of attaching the clamp g^2 to the forward
45 end of the lever G at different heights to accommodate the clamp to plates of varying thicknesses, as hereinabove described in referring to the front clamp. The clamp g^2
50 may be secured to the lever G by inserting a pin g^5 through the end of the lever G and through one or the other of the perforations g^4 in the stem of the clamp g^2 . The lever G is fulcrumed on a cylindrical pivot g^6 , which
55 extends through the two sides of the lever G and across the space intermediate of the sides, and through this pivot g^6 there extends a vertical bolt g^7 , having its head g^8 located beneath the base F in the dovetail groove b in the top of the table B, and carrying on its
60 upper or threaded end a bearing-washer g^9 and a nut g^{10} , by means of which the fulcrum of the lever G is varied up and down to give the lever a greater or lesser clamping effect, as may be desired. A spring g^{11} , resting its
65 lower end upon a boss f^5 , uprising from the

base F, and at its upper end against the under side of the pivot g^6 , serves to hold the lever G at all times in a raised position against the bearing-washer g^9 .

The rear end of the lever G is raised and lowered to throw the clamp g^2 into and out of clamping adjustment by means of a handle H, fixed to rock the shaft f^4 in its bearing in the end of the link f^2 , and the throw of the
75 handle H is limited by means of a stop h on the face of the lever G, which stop engages abutments h' and h^2 on the handle, as the latter reaches the limit of its forward and backward throw.

A gage for determining the line of cut or the position which the edge of the plate to be operated upon is to occupy with relation to the path of the cutters is denoted by I. It consists of a flat strip of suitable material
85 provided with a serrated edge at the front, and is secured to a swinging yoke-piece I' by several set-screws i . An adjusting-screw i' extends through an arm or lug on the yoke-piece I' and presses against the back edge of the
90 gage I for the purpose of truing it with respect to the path of the table to great exactness. The yoke-piece I' is mounted in swinging adjustment on eccentric bearings i^2 at or near the opposite ends of a rock-shaft i^3 , which is
95 mounted in the branches i^4 of the T supporting-frame i^5 , the stem i^6 of which is adapted to be locked in the desired vertical adjustment to suit different thicknesses of plates by means of a split socket i^7 , in which the
100 stem i^6 slides vertically. The socket i^7 is closed and opened by means of a screw i^8 , as is common, and the T supporting-frame i^5 is prevented from displacement in a rotary direction by means of a guide-pin i^9 , which
105 extends from its under side into a socket i^{10} on the frame A. The shaft i^3 is rocked by means of an operating-wheel i^{11} intermediate of its bearings and is held in its rocked adjustment to throw the edge of the gage I more or less
110 toward or over the edge of the table B by means of a set-screw i^{12} , arranged to close and open one of the bearings i^4 in the T-support.

The cutters are commonly set as close as may be to the edge of the table, and the gage
115 I may be made to determine the path of the cutter by setting it in the same relation to the edge of the table which the cutters occupy, or a trial-plate may be run into engagement with the cutters, and then while still
120 clamped the gage may be set up to the path which the cutters traveled along said plate, and thereafter during the operation on a succeeding number of plates the gage I will in each instance locate the path which the cut-
125 ter is to travel along the plate.

The serrated advanced edge of the gage I when the gage is made of opaque material admits of locating the advance edges of the teeth very accurately upon a controlling-line
130 of the plate, because the operator is able to observe the plate through the spaces between

the teeth for a short distance on the side of the controlling-line toward the gage, as well as upon the opposite side, and thereby is enabled to move the plate a hair's breadth in or out in order to get the advanced edge of the clamp exactly up to one edge of said line, as the shadow commonly cast by a continuous edge is thereby avoided and the operator is able to see whether the line is or is not partially hidden under the edge.

An adjustable holder for engaging the edges of plates of varying widths opposite the cutter and holding the work up positively against the action of the cutter is made to slide toward and away from the cutter along the table B. The body of this holder is denoted by K and is provided with a downwardly-projecting rib k , adapted to slide along a groove b' in the table B. The holder K is provided on its end toward the cutters with a swinging auxiliary holding-plate K' , which may be thrown down into the position shown in Fig. 2 or turned back onto the body of the holder K to bring the front edge k' of the body of the holder into engagement with the plate, as may be desired. For the purpose of introducing an auxiliary filling-piece K^2 (see Fig. 1) where it is necessary to push the holding-plate into proximity to the cutters for holding a very narrow plate, I provide the face of the auxiliary holder K' with dovetailed slots k^2 for receiving corresponding dovetailed studs on the back edge of the filling-piece K^2 , so that the latter may be adjusted to the face of the plate K' and then turned down into the position shown in Fig. 1, with its edge against the plate, leaving at the same time ample room between it and the back gage for manipulating the handle H of the latter and moving it forward and backward, as may be desired.

A swinging dog or stop L (see Figs. 1 and 4) is mounted on a slide l , arranged to be slid along the front edge of the table B to adjust it to the position of unusually long and narrow pieces of work and is intended for use in place of the holder K for holding the work endwise toward the cutter. When not in use, the dog L may be thrown over toward the front, out of the way. The slide l , which carries the dog, may be locked in its desired adjustment along the front of the table by means of a tail-nut l' on a bolt l^2 , the head of which slides in a groove in the table and the stem of which extends upwardly through the slide l .

The sliding holder K may be locked to the table B in the desired adjustment toward and away from the cutter by means of a hand-wheel k^3 , having a screw-threaded engagement with a bolt k^4 , the head of which is received in a dovetailed groove b^2 in the table B. I have also arranged to coact with the holder K, for the purpose of extending it to adapt itself to plates of varying widths and lengths without unduly extending the holder itself, a sliding plate M, seated in a recess b^3 in the holder and provided with an elongated

slot m , through which a connecting-bolt m' extends for clamping the sliding extension-plate M to the holder K. The head of the bolt m' is seated in a dovetailed groove m^2 in the holder K, and its threaded end is provided with a tail-nut m^3 . The outer end of the plate M is provided with an abutment m^4 , arranged to engage an adjustable stop N. The stop N is arranged to slide along the table B toward and away from the cutters and is clamped in the desired adjustment by means of a bolt n , the head of which is received in a dovetailed slot n' (see Fig. 3) in the table and the screw-threaded end of which is provided with a tail-nut n^2 . One of the important advantages of this arrangement is, it enables the operator to set the holder against the edge of the plate when placed widthwise between the cutter and the holder with the abutment m^4 against the stop N, then clamping the plate M and the stop N in position, and, finally, placing the plate lengthwise between the holder and the cutters and clamping the holder in position by the hand-wheel k^3 . When the plate is operated upon in this direction, it may be turned to operate upon the adjacent edge by simply sliding the holder K toward the cutter until the shoulder m^4 engages the stop N and then clamping it in position without taking the pains to again adjust it for the new cut. The stop and the holder having been adjusted for one plate of a series of smaller-sized plates, the whole series may be operated upon without further manipulation of the gage and stop.

For the purpose of placing the plate D in the proper position on the table for causing the cutter to follow a controlling-line on the plate, which may be the marginal line or an indicated line parallel with the marginal line which accompanies the etching or engraving upon the plate and which is often oblique to the edge of the plate proper, I provide the top gage O. The gage O may conveniently consist of a rectangular piece of transparent or translucent material—such, for example, as celluloid or horn—and provided with series of right lines $o o'$, arranged in sets, the members of a set being parallel to each other and those of one set being at right angles to those of the other set. The gage O is held in rotary adjustment in a swinging head P by means of a pivotal bolt p , provided with a clamping-nut p' on its threaded end and having around its stem a spring p^2 within the socket. The back of the gage O is provided with a grooved plate o^2 and is adapted to slide along the face of the head-piece o^3 at the lower end of the socket and to be clamped in position by the nut p' on the bolt p , the head of which works in the dovetailed groove in the back of the plate o^2 , while the head-piece o^3 , together with the plate o^2 and the gage O, is permitted a rotary movement through an arc of exactly ninety degrees and is arrested at the opposite ends of such quarter-revolution by means of a stop o^4 on the head-piece o^3 ,

which engages with stop-pins p^3 and p^4 on the socket-piece P. The tension of the spring p^2 tends to hold the gage O normally in position with its pin o^4 against the pin p^4 .

- 5 The socket-piece P is pivoted on a bolt q , extending through the branches of the bifurcated end of the rod Q, and provided on its threaded end with a tail-nut q' for holding it in position. The rod or stock Q is held in
- 10 longitudinal adjustment in a split sleeve q^2 , connected by arms q^3 and q^4 with a hub q^5 , mounted to rock on or together with a rod q^6 , supported in brackets a^2 on the frame A. The supporting-sleeve q^2 is permitted, either on or
- 15 together with the rod q^6 , an adjustment forward and backward to bring the gage-carrying rod Q in the desired position relatively to the plate to be adjusted, and the stock Q may be adjusted longitudinally in the sleeve q^2 to
- 20 bring the plate into its proper relation laterally of the table to rest upon the plate to be adjusted, while the gage itself when resting upon the plate may, if made transparent or translucent, as is preferable, be readily util-
- 25 ized to make one of its lines o or o' register with a marginal or other controlling line on the plate, thereby placing the plate on the table in such a position that when clamped and fed to the cutters they will cut a line parallel
- 30 with the marginal or controlling line on the plate. After the gage O has been utilized to adjust the plate in this manner it may be thrown back into the position shown in Fig. 1 out of the way of the operator, who may
- 35 then feed the plate to the cutter, as may be desired.

The particular advantage of the gage O lies in the fact that it may be made to rest on a controlling-line of the plate at the central part

- 40 of the plate or a considerable distance from the edge of the plate, such a line being frequently the line which is to control the squaring of the plate rather than a line nearer the margin.

- 45 The gage O, being readily removable from the head-piece o^3 , admits the substitution at pleasure of gages of different kinds and having lines or points at different intervals apart to suit the work of a coarser or finer grade,
- 50 as may be desired.

The several clamps, holders, and gages which have hereinabove been described place within reach of the operator standing at the front of the machine sufficient means to enable him with great facility to adjust plates

- 55 of varying sizes and thicknesses into proper position to receive the desired cut, while special care has been taken that the several devices do not in any serious manner obstruct
- 60 his movements in performing the cutting operation in an expeditious manner.

What I claim is—

1. The combination with a plate-support and cutter, of a gage mounted to be swung
- 65 into and out of position over the plate and means for adjusting the gage forward and backward and to the right and left along the

plate for locating the plate with respect to the cutter by means of one or more controlling-lines on the plate, substantially as set forth.

2. The herein-described top gage for adjusting plates comprising a gage proper, a swinging head-piece, means for removably securing the gage proper to the head-piece
- 75 and means for supporting the head-piece in swinging adjustment through space, substantially as set forth.

3. The herein-described gage comprising a translucent plate provided with one or more
- 80 right lines across it and means for supporting the said plate in swinging adjustment through space, substantially as set forth.

4. The herein-described gage comprising the gage-plate proper, the head-piece, means
- 85 for securing the gage proper to the head-piece in sliding adjustment, means for rotating the gage proper in its own plane, a jointed rod forming a support for the head-piece, means
- 90 for clamping the rod in longitudinal adjustment, a rocking support for the rod and means for adjusting the rocking support in a direction lateral with respect to said jointed rod,

5. The combination with a plate-supporting
- 95 table and cutter, of a front clamp provided with clamping-jaws located at different distances above the level of the table for adapting the clamp to different thicknesses of plates, means for swinging the one or other
- 100 of the jaws into operative position at pleasure and means for operating the clamp, substantially as set forth.

6. In combination, a plate-supporting table,
- 105 a cutter, a clamp-support adjustable along the table toward and away from the edge of the plate, a clamp-lever, means for fulcruming the lever on the clamp-support in different vertical adjustments, a clamping-jaw pivotally secured to one end of the lever and a
- 110 rocking eccentric engaged with the opposite end of the lever, substantially as set forth.

7. The rear clamp comprising a base-piece, a tilting lever, a transverse pin on which the lever is fulcrumed, a bolt extending through
- 115 the base and said transverse pin, a spring for sustaining the transverse pin and lever, an adjustable stop on the bolt for determining the height to which the fulcrum-pin shall rise,
- 120 means for tilting the lever and a clamping-jaw carried by the lever, substantially as set forth.

8. The combination with the plate-supporting table and cutter, of a plate-holder having a sliding movement toward and away
- 125 from the edge of the plate opposite the cutter, an auxiliary holder hinged to the advance edge of the holder in position to swing the advanced edge of the auxiliary holder
- 130 into holding position between the cutter and advanced edge of the main holder and means for securing the holder in the desired adjustment, substantially as set forth.

9. The combination with the plate-sup-

porting table and cutter, of a plate-holder arranged to slide toward and away from the edge of the plate opposite the cutters, an auxiliary holder having a swinging movement and attached to the advance edge of the holder, a filling-piece having a removable engagement with the auxiliary holder and means for clamping the holder in the desired adjustment, substantially as set forth.

10 10. The combination with the plate-supporting table and cutter, of a holder arranged to slide toward and away from the edge of the plate opposite the cutter, means for locking the holder in its desired adjustment, a sliding plate seated upon the holder and arranged to move relatively to the holder in the same general direction as the holder, means for clamping the sliding plate to the holder and an adjustable stop arranged to engage the sliding plate to limit the movement of the holder, substantially as set forth.

15 11. The combination with the plate-supporting table and cutter, of a dog or stop arranged to move along the front of the table toward and away from the edge of the plate opposite the cutter, the said dog or stop being mounted to swing toward and away from

the table into and out of position to hold the work up to the cutter, substantially as set forth.

12. The combination with a work-supporting table and cutter, of a gage for determining the line of cut, a vertically-adjustable gage-support and means for hinging the gage to the vertical support, substantially as set forth.

13. The combination with a work-supporting table and cutter, of a gage for determining the line of cut, said gage comprising a straight-edge, a yoke to which the straight-edge is secured, a screw seated in the yoke and bearing against the back of the straight-edge for adjusting it, a rocking support for the yoke provided with eccentrics for throwing the gage bodily toward and away from the edge of the table and means for adjusting the said support vertically to suit plates of different thicknesses, substantially as set forth.

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Witnesses:

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