

No. 610,407.

Patented Sept. 6, 1898.

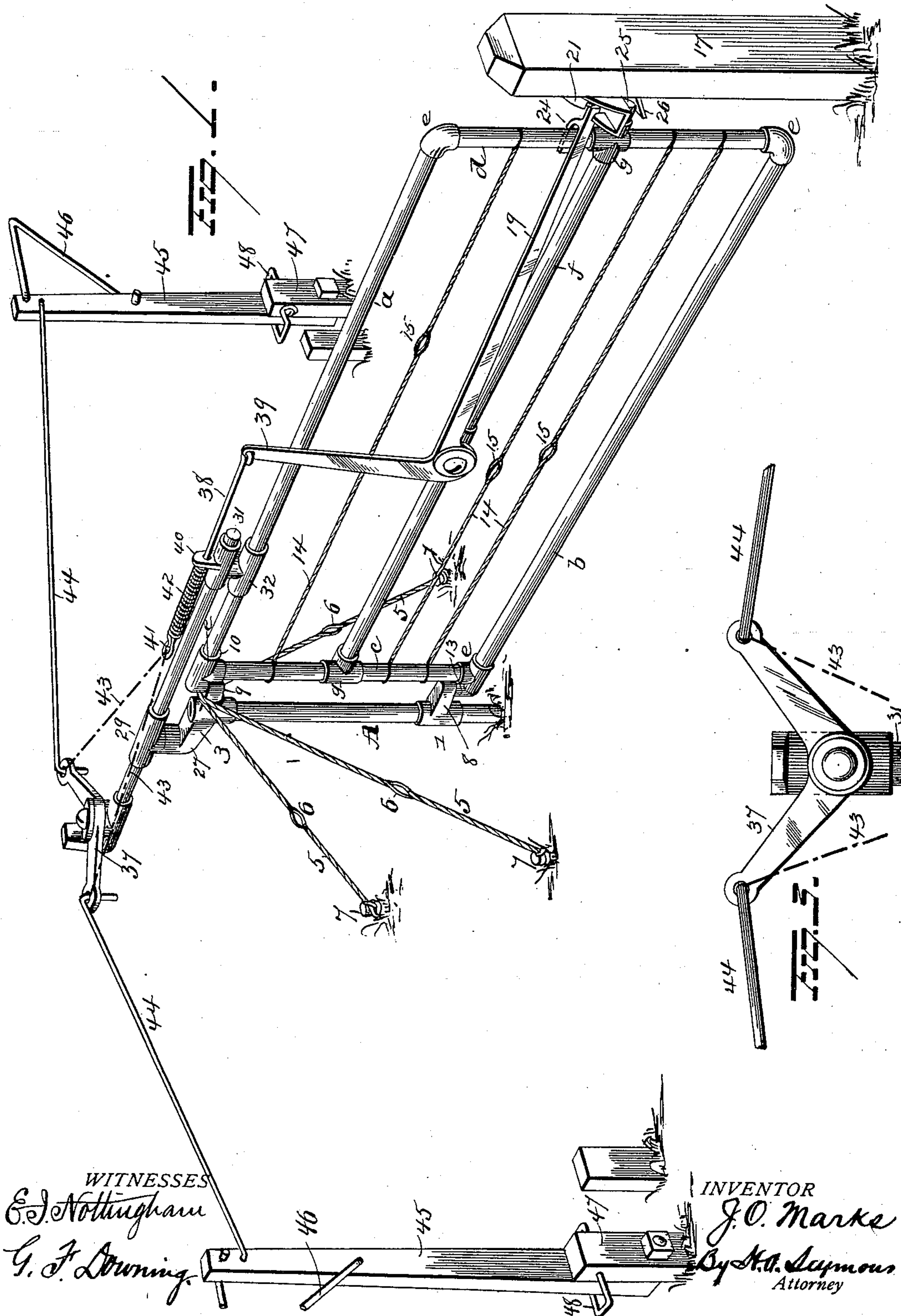
J. O. MARKS.

GATE.

(Application filed Feb. 15, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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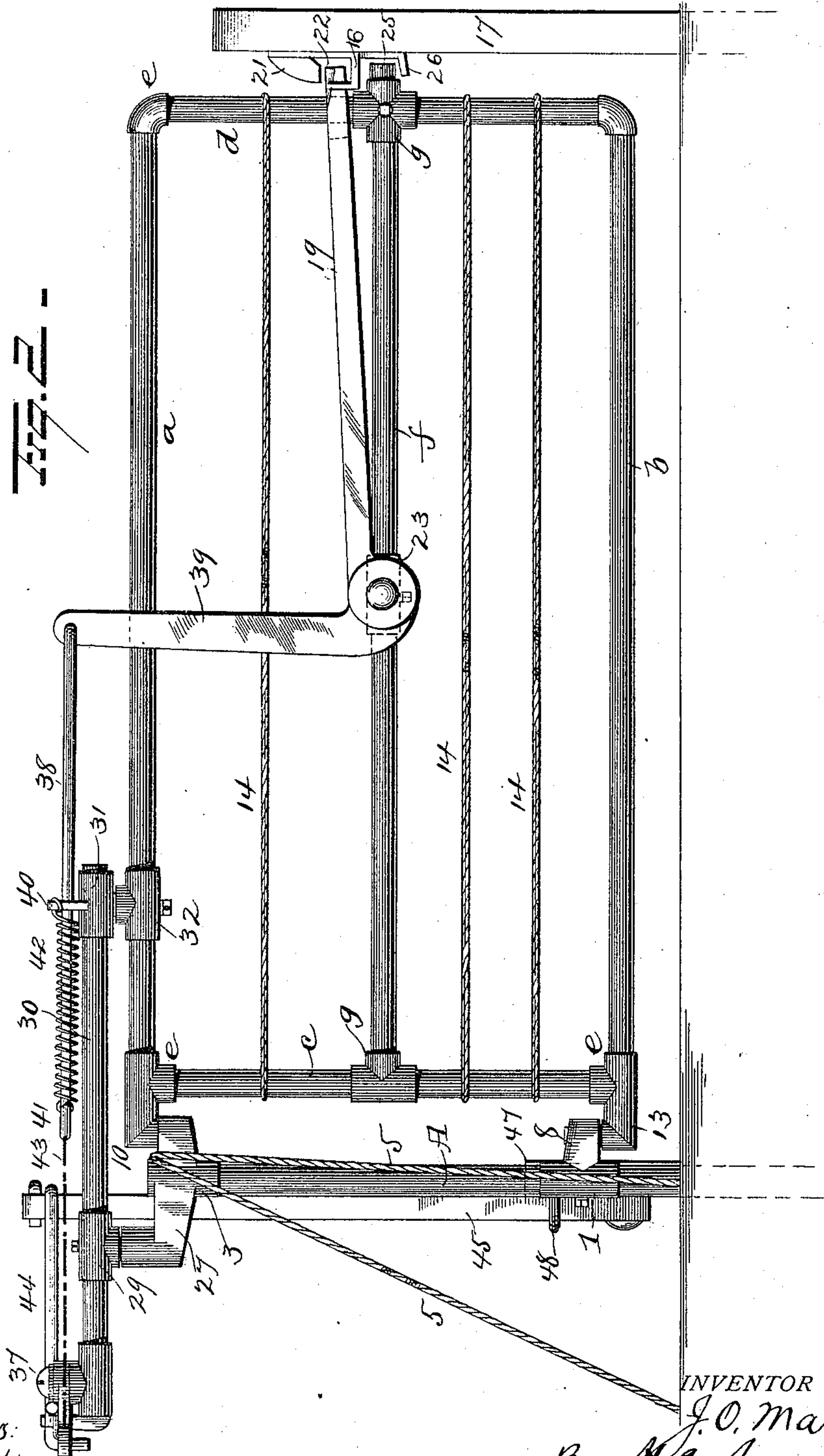
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3 Sheets—Sheet 2.



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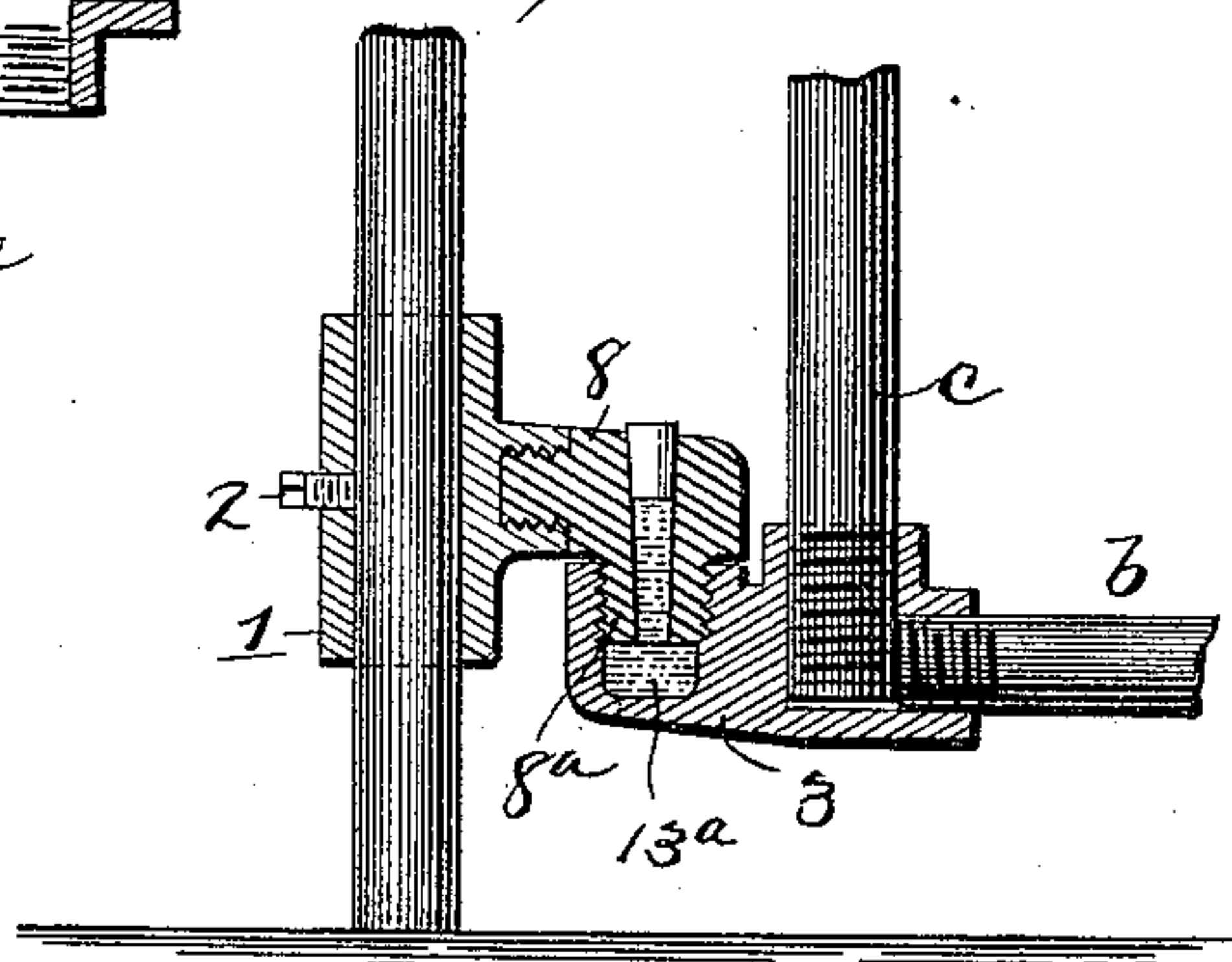
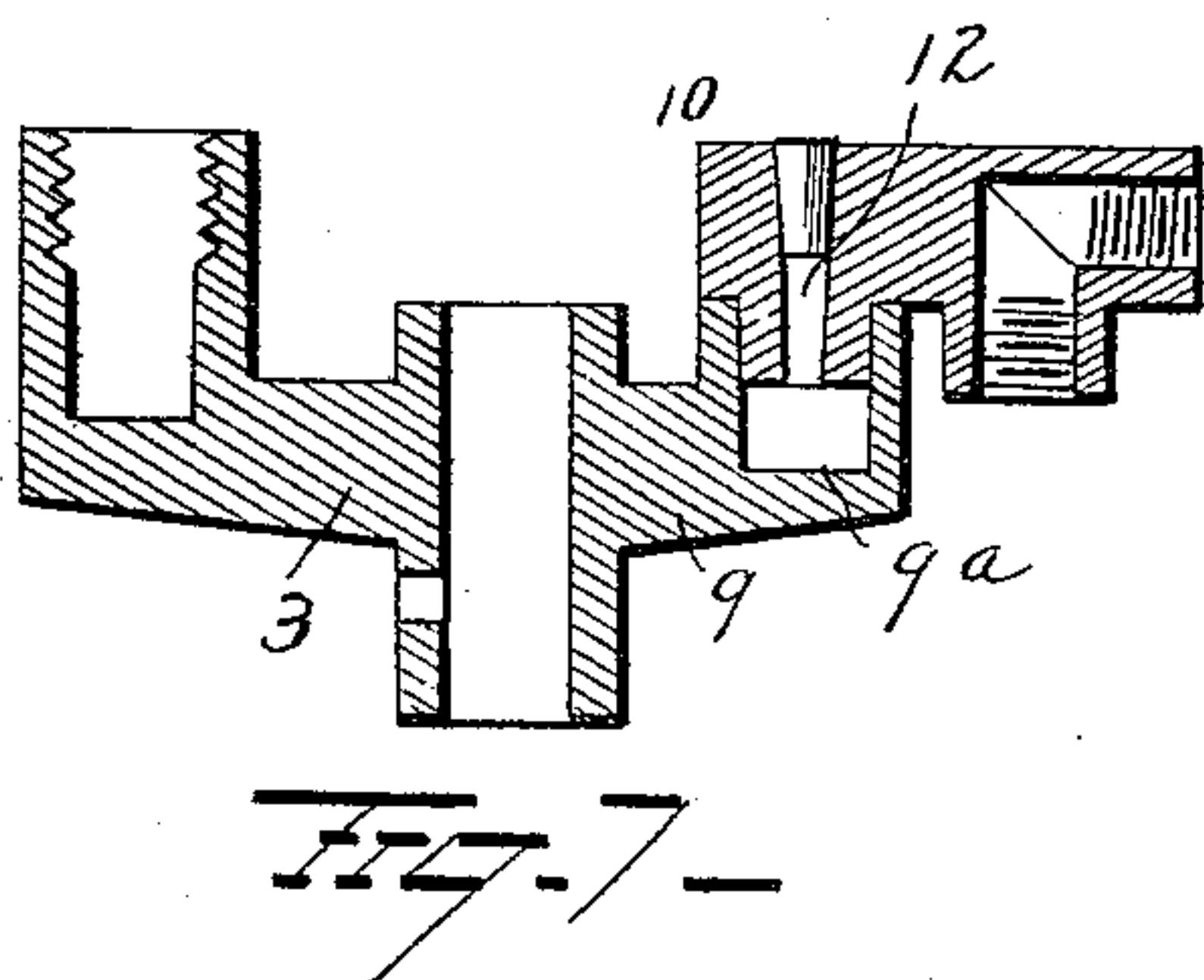
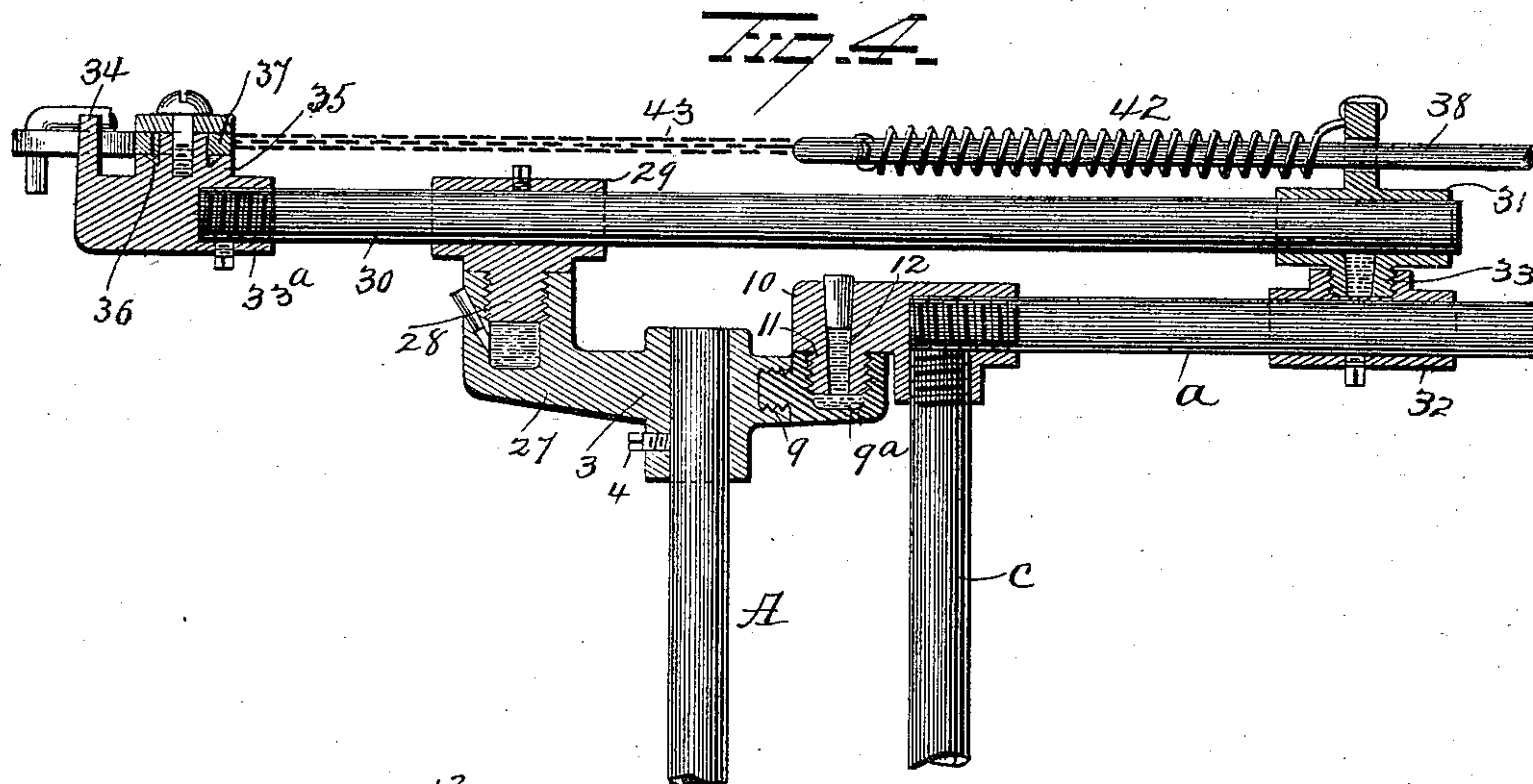
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JACOB O. MARKS, OF URBANA, ILLINOIS.

GATE.

SPECIFICATION forming part of Letters Patent No. 610,407, dated September 6, 1898.

Application filed February 15, 1898. Serial No. 670,423. (No model.)

To all whom it may concern:

Be it known that I, JACOB O. MARKS, of Urbana, in the county of Champaign and State of Illinois, have invented certain new and useful Improvements in Gates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in gates and in improved devices for operating the gate by hand from a distance, whereby to facilitate the opening and closing of the gate by persons riding in vehicles or on horseback, one object of the invention being to produce a gate which shall be strong and durable, which can be easily and quickly set up and adjusted, which shall swing easily and freely, and which cannot be raised and unlatched by the attempt of animals to crawl under it.

A further object is to provide hand operating devices for unlatching and swinging the gate which comprise comparatively few parts, which shall be so constructed and arranged as to avoid all dead-centers, by means of which the leverage shall be such as to insure the swinging of the gate with the expenditure of a comparatively small amount of power, and which shall be effectual in all respects in the performance of their functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view illustrating my improvements. Fig. 2 is a view in side elevation. Fig. 3 is a plan view showing the bell-crank lever 37 and connected parts. Fig. 4 is an enlarged view, in side elevation and partly in section, of the upper hinge and associated parts of the gate. Fig. 5 is an enlarged detail, partly in section, showing construction of hinge. Fig. 6 is a detached view of the keeper, and Fig. 7 is a modification.

A represents a post made, preferably, of gas-pipe and planted firmly in the ground in any suitable manner. A sleeve 1 is placed on the post A, and after being moved down on the post to a point in proximity to the ground is secured by means of a set-screw 2. A sleeve 3 is secured to the upper end of the

post by means of a set-screw 4. The post is then anchored by means of three stays 5 5 5. Each stay is composed of at least two strands of wire, which are twisted together, beginning at the center, so as to form a loop 6 between the ends of the stays. By means of this construction it is apparent that the stays can always be readily tightened should they become slackened by inserting a proper tool in the loop 6 and further twisting the strands of which the stay is composed. The upper end of each stay is secured in any suitable manner at the upper end of the post A, and the lower end of each stay is securely fastened to an anchor-pin 7, planted in the ground at a suitable distance from the post. A perforated nipple having a hollow externally-screw-threaded shank 8^a is screwed into the collar or sleeve 1, and the sleeve 3 is similarly provided with a nipple 9, having a screw-threaded hole or socket 9^a, the perforated lugs or arms 8 and 9 being thus adapted to form parts of the hinges for the gate B.

The gate B is composed of gas-pipe framework and may comprise upper and lower horizontal members *a b*, connected at their respective ends with upright members *c d* by means of unions *e*, and an intermediate horizontal member *f*, connected with the upright members by means of unions *g*. The union *e* at the inner end of the upper member *a* of the gate is provided at its inner end with a head 10, having a screw-threaded shank 11 to enter the screw-threaded hole or socket in the lug or arm 9, so as to form the upper hinge for the gate, and said head and shank are made with a hole 12 for the insertion of lubricant for said hinge. After the lubricating-oil shall have been thus poured into the opening 12 the latter will be closed by a suitable plug to exclude dust. The union *e* at the inner end of the lower member *b* of the gate is provided with a head 13, having a screw-threaded socket 13^a to receive the hollow shank on the lug 8, and thus form the lower hinge for the gate, lubricating-oil being also poured through the hole in the lug 8 for lubricating said lower hinge, after which said hole will be plugged up, the same as above explained in describing the upper hinge. Thus it will be seen that the sockets in the lugs or arms 8 and 9 form oil-cups.

It will be observed that the parts *e* at the inner end of the gate perform the double pur-

pose of unions for the frame of the gate and also portions of the gate-hinges.

In order to maintain the gate-framework tight and strong, I prefer to tie the ends thereof together by means of stays 14, each of which is composed of two strands of wire twisted together, so as to form a loop 15 between the ends for the reception of a suitable tool by means of which to twist the strands of the stays and thus tighten the framework of the gate should it become loosened from any cause. By means of these adjustable stays expansion and contraction of the frame of the gate may be compensated for.

A keeper 16 is secured to the outer gate-post 17 and is provided with beveled flanges 18, adapted to guide a latch 19 into the notch or recess 20 between the inner ends of said beveled flanges. An inwardly-projecting arm or stop 21 is disposed over the keeper in line with the notch or recess 20, and against this arm or stop the latch of the gate will strike and be thus made to enter the notch or recess 20 and prevented from riding past the keeper when the gate is being closed. In order to permit the latch to be readily raised when the gate is to be opened, the upper edge of the free end of said latch is beveled at both sides thereof, as at 22. The latch is made in the form of a bell-crank or L-shaped lever, pivotally connected at the juncture of its two members to a sleeve 23, secured to the intermediate horizontal member *f* of the gate, and in order to properly guide the free end of the latch in its movements and prevent it from straining or bending the pivot-pin by any lateral pressure which may be brought against it the free end of the latch is provided with a hook-shaped arm 24, adapted to loosely embrace the outer vertical post or upright of the gate. The intermediate member *f* of the gate is projected beyond the outer upright of the gate, so as to form a stop 25, disposed immediately under the keeper, and immediately below said stop a lug or arm 26 is secured to the outer gate-post 17. From this construction it will be seen that if animals should attempt to crawl under the gate the engagement of the stop 25 with the under face of the keeper will prevent the gate from being raised, and thus prevent the animal from passing under the gate. It will also be observed that should any pressure be put upon the top of the gate—such, for instance, as animals attempting to jump over the same—the framework and hinges of the gate will not be strained, because the stop 25 will bear upon the arm or lug 26, which will support the gate in its proper position and prevent its free end from descending sufficiently to injure the hinges or other part of the gate.

From the sleeve 3 at the upper end of the gate-post A an elbow 27 projects, the upwardly-projecting member of said elbow terminating above the plane of the top of the gate and having its interior screw-threaded for the reception of a screw-threaded shank 28 on a

union 29, whereby said union is pivotally supported on the elbow. If desired, the shank of the union may be made plain and adapted to be loosely seated in the smooth upper end of the elbow; but in either case a hole will be provided to permit the insertion of lubricant. It may also be here stated that the shanks or pintles of the gate-hinges may be plain, as shown in Fig. 7, instead of screw-threaded, as above described; but in either case the provision for the insertion of lubricant, as above explained, will be employed.

A lever 30 passes through and is adjustably secured to the union 29, and the pivotal connection of said union with the elbow 27 forms the fulcrum of said lever on the gate-post A, said fulcrum of the lever being thus disposed at a point rearwardly of the hinges of the gate. The forward end of the lever 30 passes loosely through a sleeve 31, and said sleeve is pivotally connected with a union 32, secured to the upper member *a* of the gate at a point in proximity to its rear or hinged end. The pivotal connection between the sleeve 31 and the union 32 may be made by providing said sleeve with a screw-threaded shank 33 to enter a similarly-threaded portion of the union, or, if desired, the shank 33 may be made plain or smooth and entering a similar socket in the union; but in either case the pivotal connection between the sleeve 31 and the union 32 will be provided with lubricant inserted through a suitable hole, which hole will be kept plugged. The rear end of the lever 30 is provided with a sleeve or casting 33^a, which is secured adjustably thereto and is provided at its rear end with an upwardly-projecting arm 34. The sleeve or casting 33^a is provided between its ends with a boss 35, to which a bell-crank lever 37 is pivotally connected at the juncture of its two arms. The boss 35 is made with an oil-cup 36, whereby lubricant can be supplied to the pivotal connection of the bell-crank lever with the sleeve or casting 33^a. A rod 38 is attached at its forward end to the upwardly-projecting arm 39 of the latch and after passing through a perforated lug 40 on the sleeve 31 extends some distance rearwardly therefrom, and at its rear extremity it is bent to form a loop or eye 41. A spring 42 encircles the rear portion of the rod 38 and is connected at its respective ends to the lug or ear 40 on the sleeve 31 and to the eye or loop 41 at the rear end of said rod 38. The forward ends of two chains 43 43 are secured to the eye or loop 41, and at their rear ends said chains are connected to the free ends of the respective arms of the bell-crank lever 37. To said free ends of the arms of the bell-crank lever 37 rods 44 44 are pivotally connected and are adapted to extend some distance along the road in opposite directions from the gate, their outer ends being pivotally attached to levers 45, and each lever is provided with an arm 46 by means of which to operate it. Each lever 45 is pivotally attached to a post 47, anchored in any

suitable manner in the ground, and to each post 47 a yoke 48 is secured and adapted to embrace the lever, so as to limit its movements in both directions. The arms 46 of the levers 45 may be conveniently made by bending a metal rod in the form of a triangle and then bending the free ends of the members of the arm, so as to permit them to be inserted in opposite directions through holes in the lever.

From the construction and arrangement of parts above described it will be seen that when it is desired to open the gate the operator will move one of the levers 45, the first result of which will be to turn the bell-crank lever 37 until one of its arms engages the arm 34 on sleeve 33^a, during which movement the latch will be raised against the resistance of the coiled spring 42. One arm of the bell-crank lever having now engaged the arm 34 at the rear end of the lever 30 and the latch having been raised, the further movement of the operating-lever 45 will cause the lever 30 to turn on its fulcrum, and its free end being connected with the gate will cause the gate to swing open, during which time the free forward end of the lever will pass freely through the sleeve 31, and said sleeve will turn on its pivotal connection with the gate. No dead-centers will be encountered during the operation of the gate and the leverage is such as to require the expenditure of a minimum amount of power in manipulating the gate. After having passed through the gate the operator will manipulate the other lever 45 in the opposite direction from the first and cause the gate to be closed, during which time the latch will be raised in the path of the arm or stop 21 on the outer gate-post 17, and upon engaging said arm the gate will be stopped, and when the operator releases the lever 45 the latch will fall into the keeper.

My improvements are simple in construction, comprise comparatively few parts, and are effectual in all respects in the performance of their functions.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a hinged gate and a keeper, of a pivoted latch to engage the keeper, having an arm connected with the gate-operating mechanism and a guide-arm embracing an upright of the gate, substantially as set forth.

2. The combination with a support and a gate, of a socket-piece projecting from one of said parts and a hollow shank projecting from the other part, said socket-piece having a lubricant-chamber therein below the hollow shank and adapted to communicate with said

hollow shank said lubricant-chamber having a permanently-closed lower end, substantially as set forth.

3. The combination with a support and a gate, of an internally-screw-threaded socket on one part, a hollow externally-screw-threaded shank on the other part adapted to enter the socket and to receive lubricating material, substantially as set forth.

4. The combination with a gate-post and a gate hinged thereto, of a lever pivotally supported by the post and adapted to move horizontally, a bell-crank lever pivotally attached to said first-mentioned lever, an arm on the latter to limit the movements of the bell-crank lever, operating-levers and rods connecting said operating-levers and the respective arms of the bell-crank levers, substantially as set forth.

5. The combination with a gate-post and a gate hinged thereto, of a horizontal lever pivotally supported by the post, a sleeve pivotally attached to the gate and adapted to loosely receive the end of the horizontal lever, an arm at the rear end of the horizontal lever, a bell-crank lever pivotally supported by the horizontal lever in proximity to said arm, an L-shaped latch-lever for the gate, a rod attached to said latch-lever, a guide for said rod, a spring encircling said rod and attached to said guide and to the rod, flexible connections between the rear end of said rod and the respective arms of the bell-crank lever, vertically-disposed operating-levers, and rods connecting said operating-levers with the respective arms of the bell-crank lever, substantially as set forth.

6. The combination with a gate-post and a gate hinged thereto, of a horizontal lever pivotally supported between its ends by said post and having a pivotal sliding connection with the gate, an upwardly-projecting arm at the rear end of said horizontal lever, a boss on said horizontal lever near said upwardly-projecting arm, a bell-crank lever pivotally attached at the juncture of its two arms, to said boss, an oil-chamber in said boss, for the bell-crank lever, operating-levers and connections between said operating-levers and the respective arms of the bell-crank lever, substantially as set forth.

7. The combination with a gate-post and portions of hinges secured thereto, of a gate comprising a series of rods, unions securing said rods together, the unions at the inner end of the gate having the other parts of the hinges made integral therewith, and oil-chambers in said hinges having closed lower ends, substantially as set forth.

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

JACOB O. MARKS.

Witnesses.

R. S. FERGUSON,
GEORGE F. DOWNING.