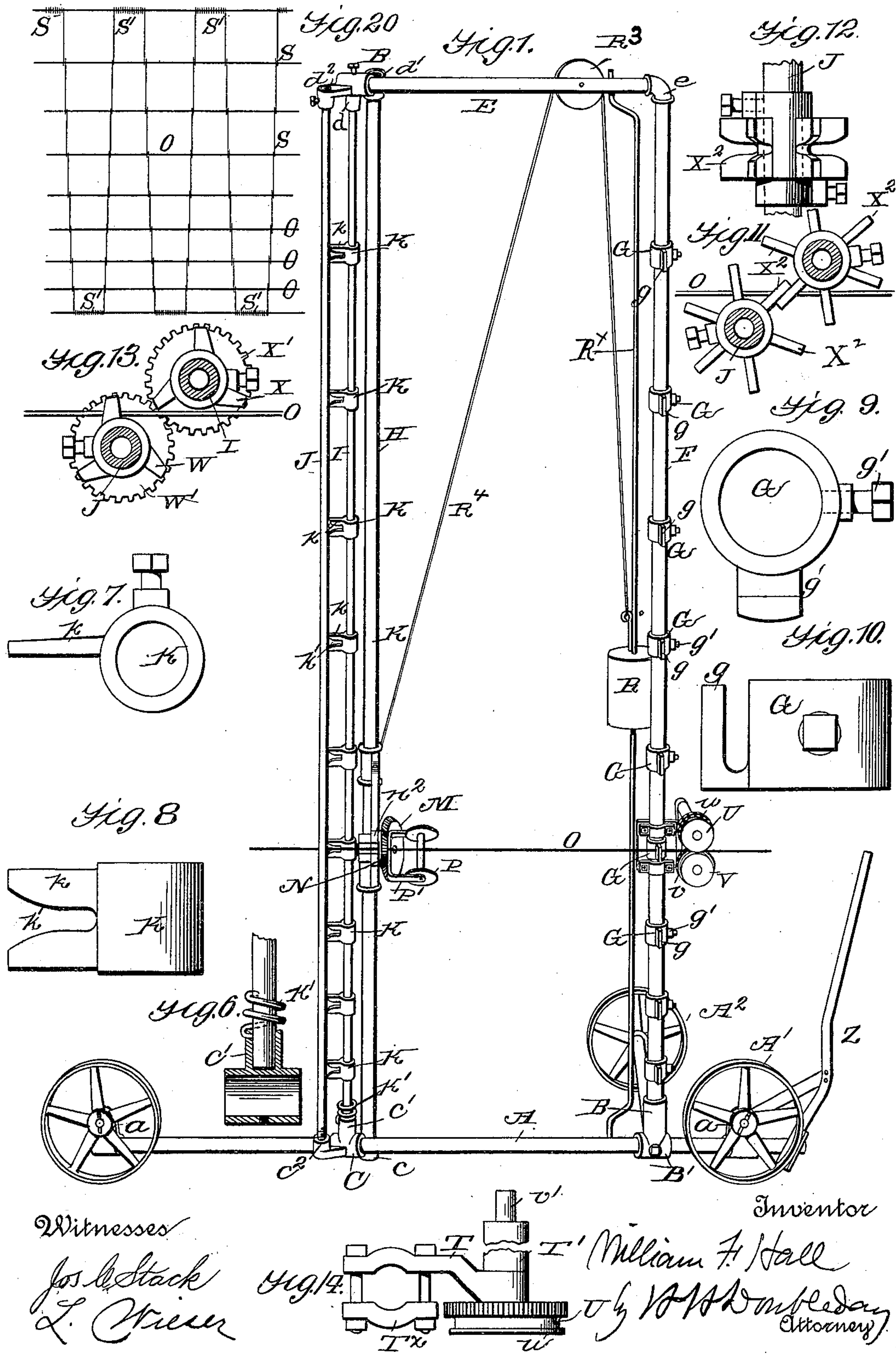


4 Sheets—Sheet 1.

No. 583,434.

Patented May 25, 1897.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

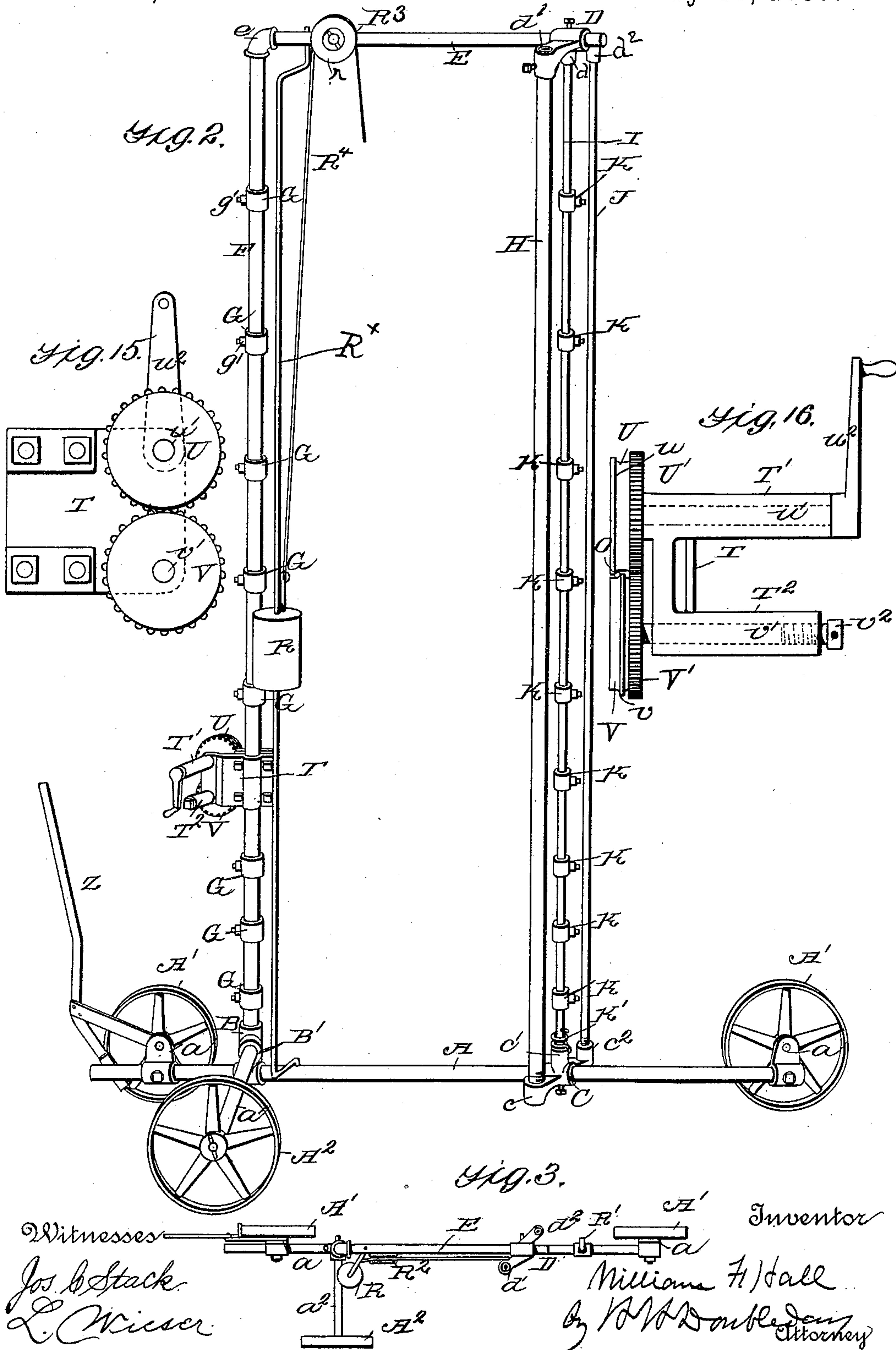
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4 Sheets—Sheet 2.

W. F. HALL.  
MACHINE FOR MAKING WIRE FENCES.

No. 583,434.

Patented May 25, 1897.





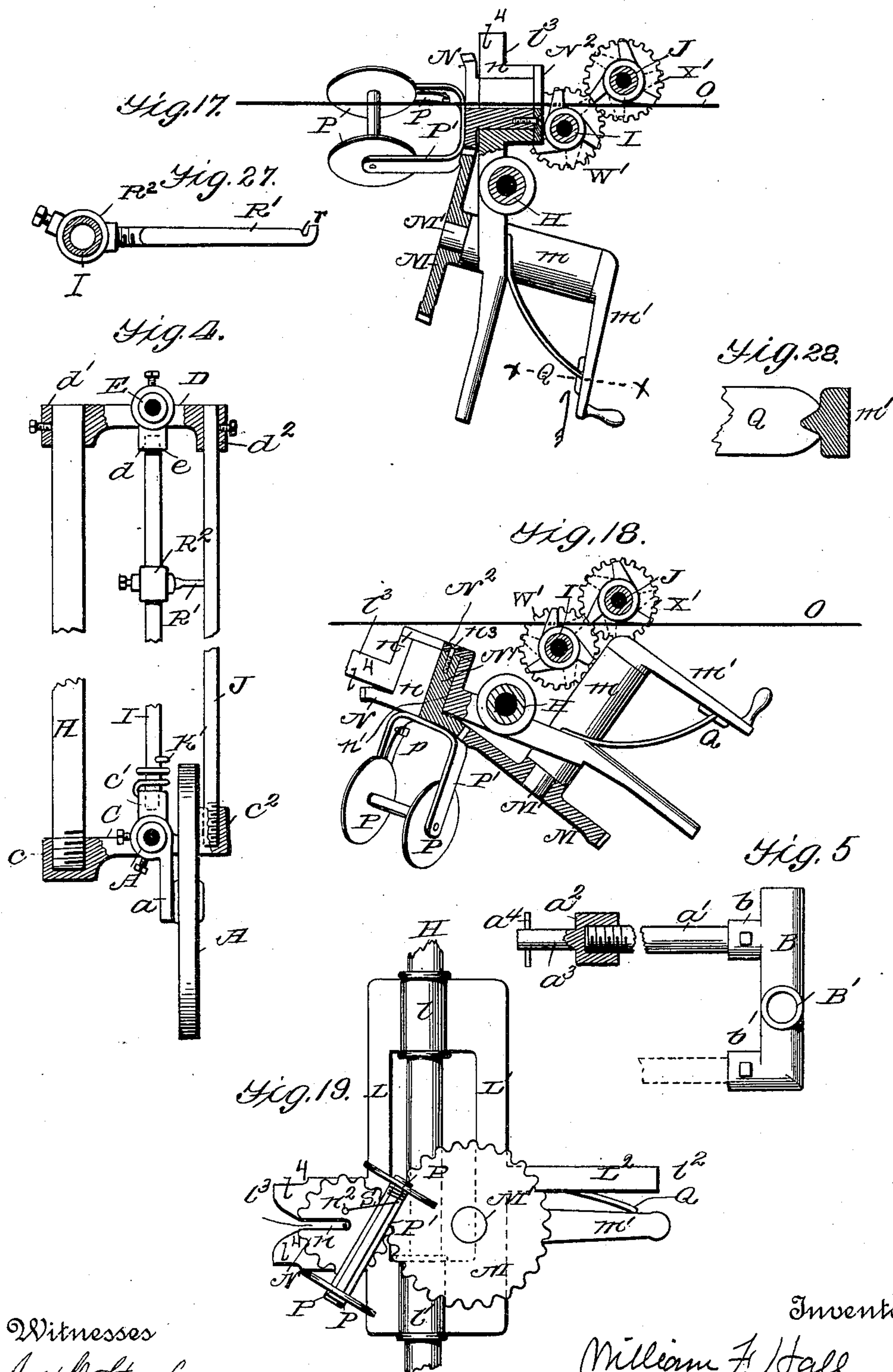
(No Model.)

4 Sheets—Sheet 3.

W. F. HALL.  
MACHINE FOR MAKING WIRE FENCES.

No. 583,434.

Patented May 25, 1897.



Witnesses  
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(No Model.)

4 Sheets—Sheet 4.

W. F. HALL.  
MACHINE FOR MAKING WIRE FENCES.

No. 583,434.

Patented May 25, 1897.

Fig. 21.

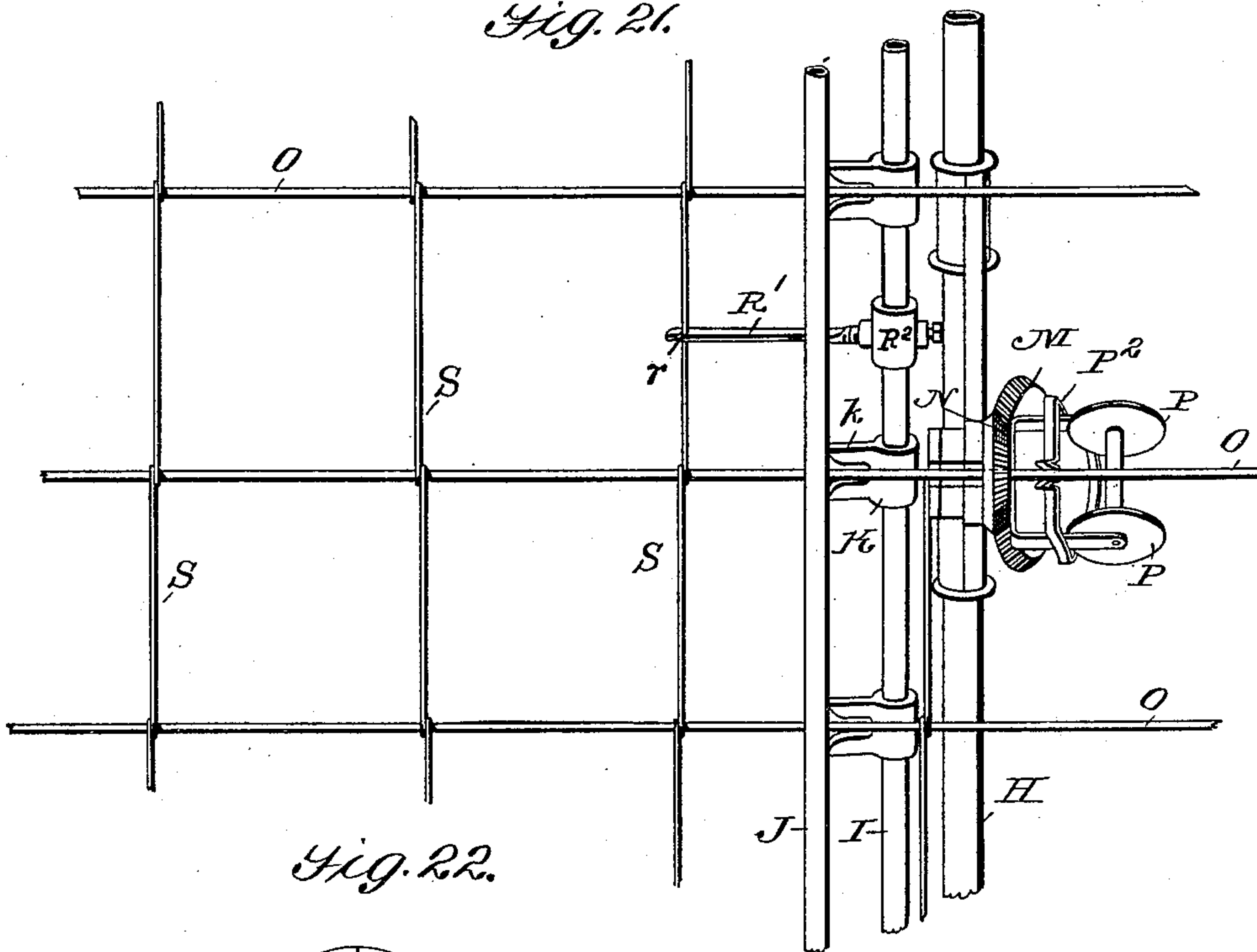


Fig. 22.

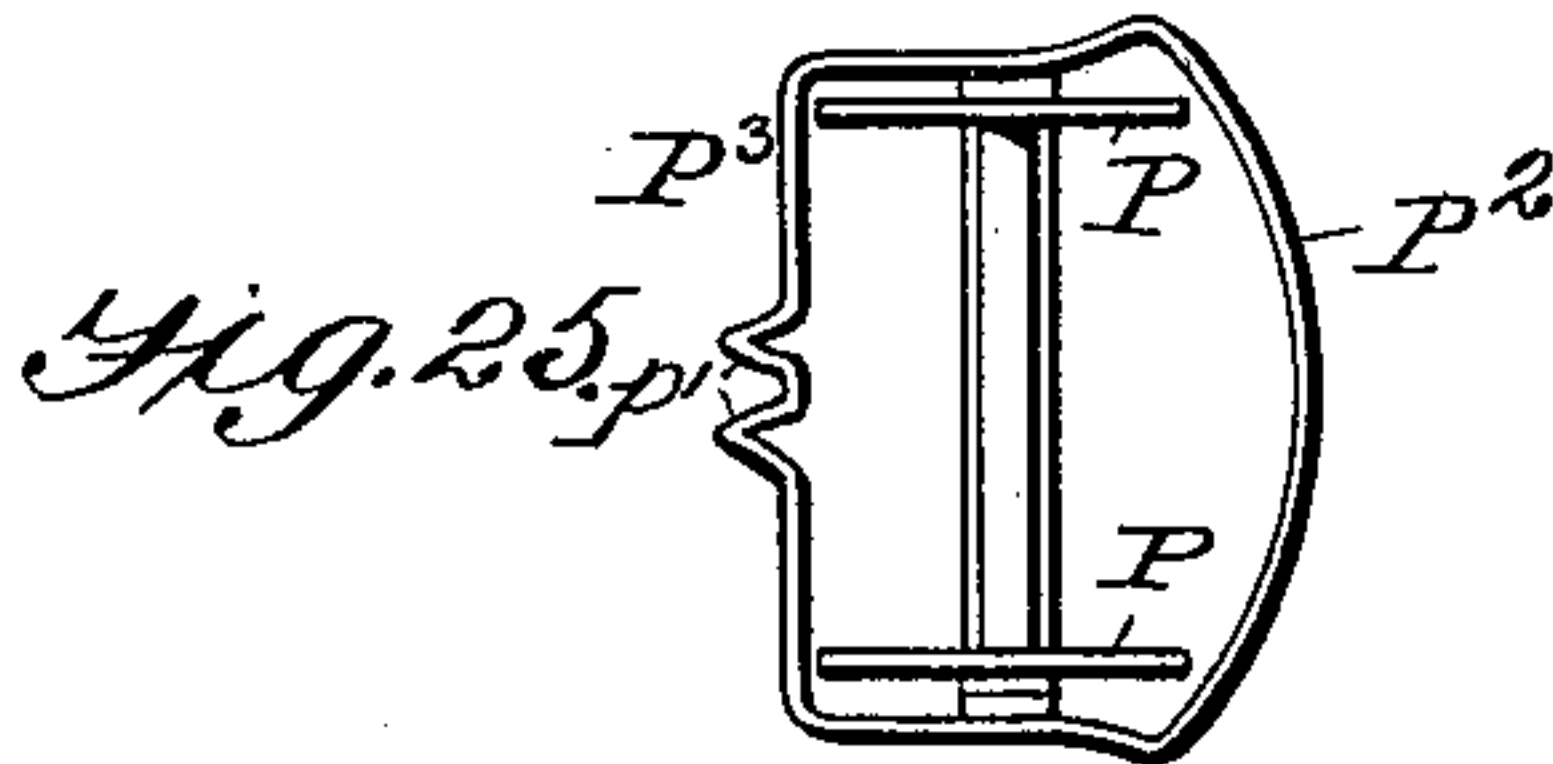
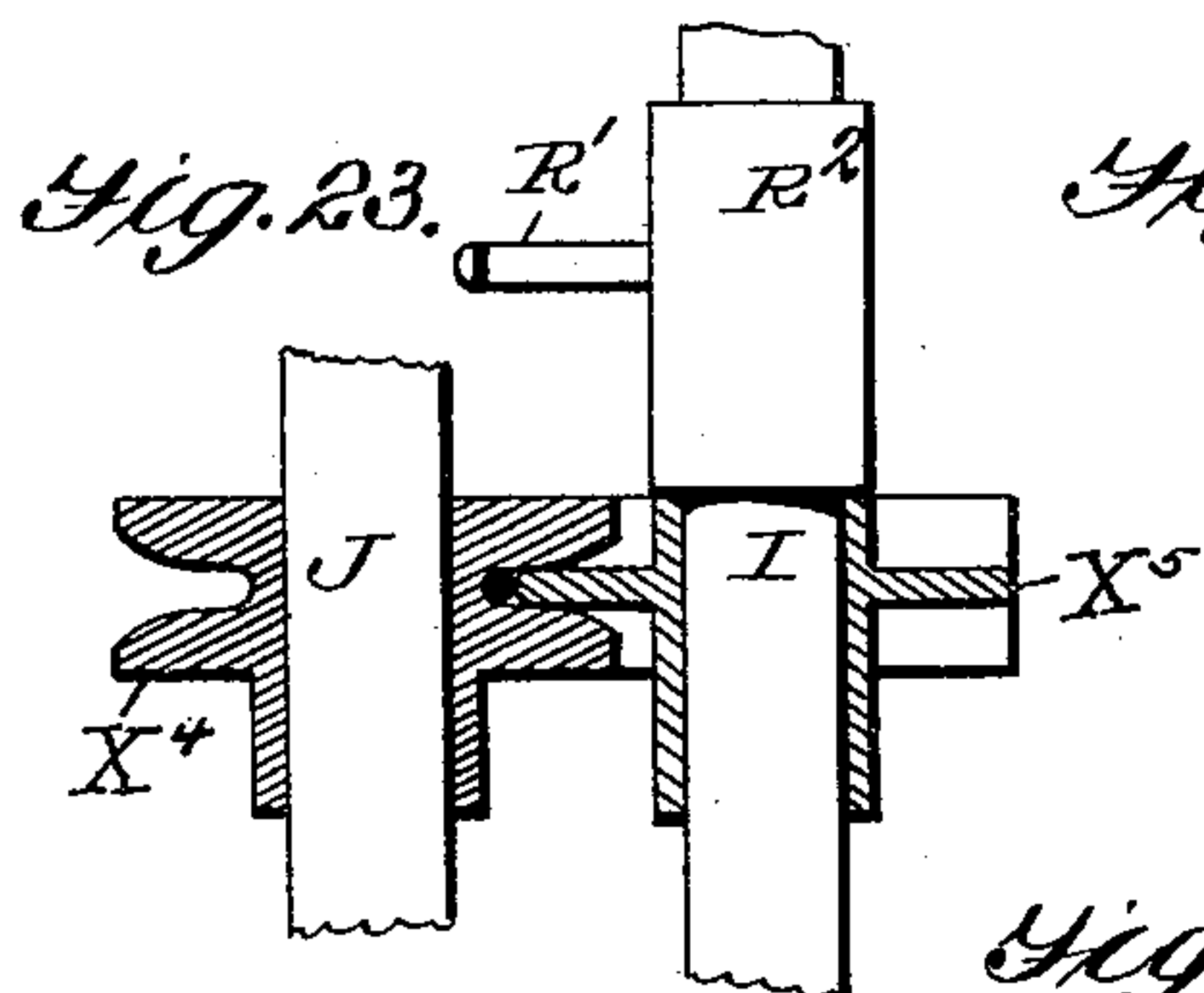
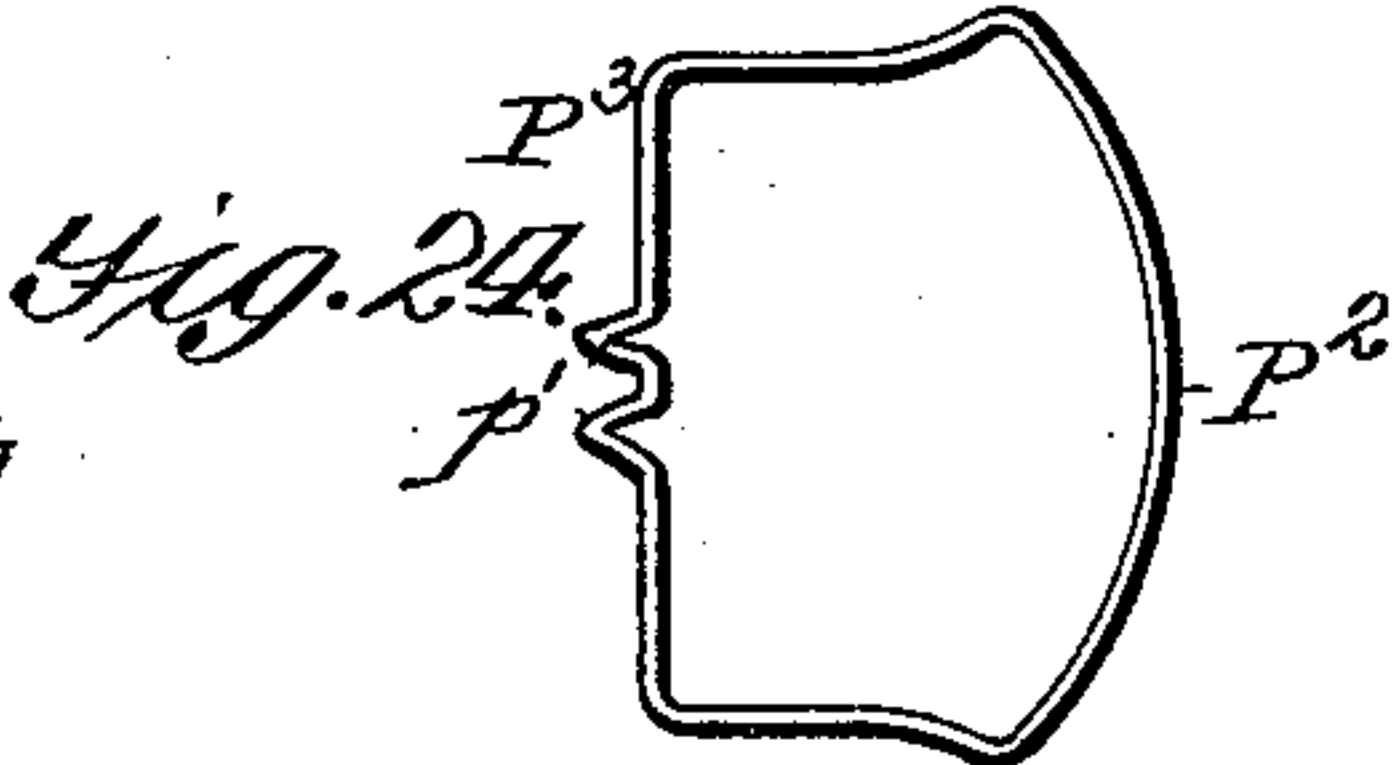
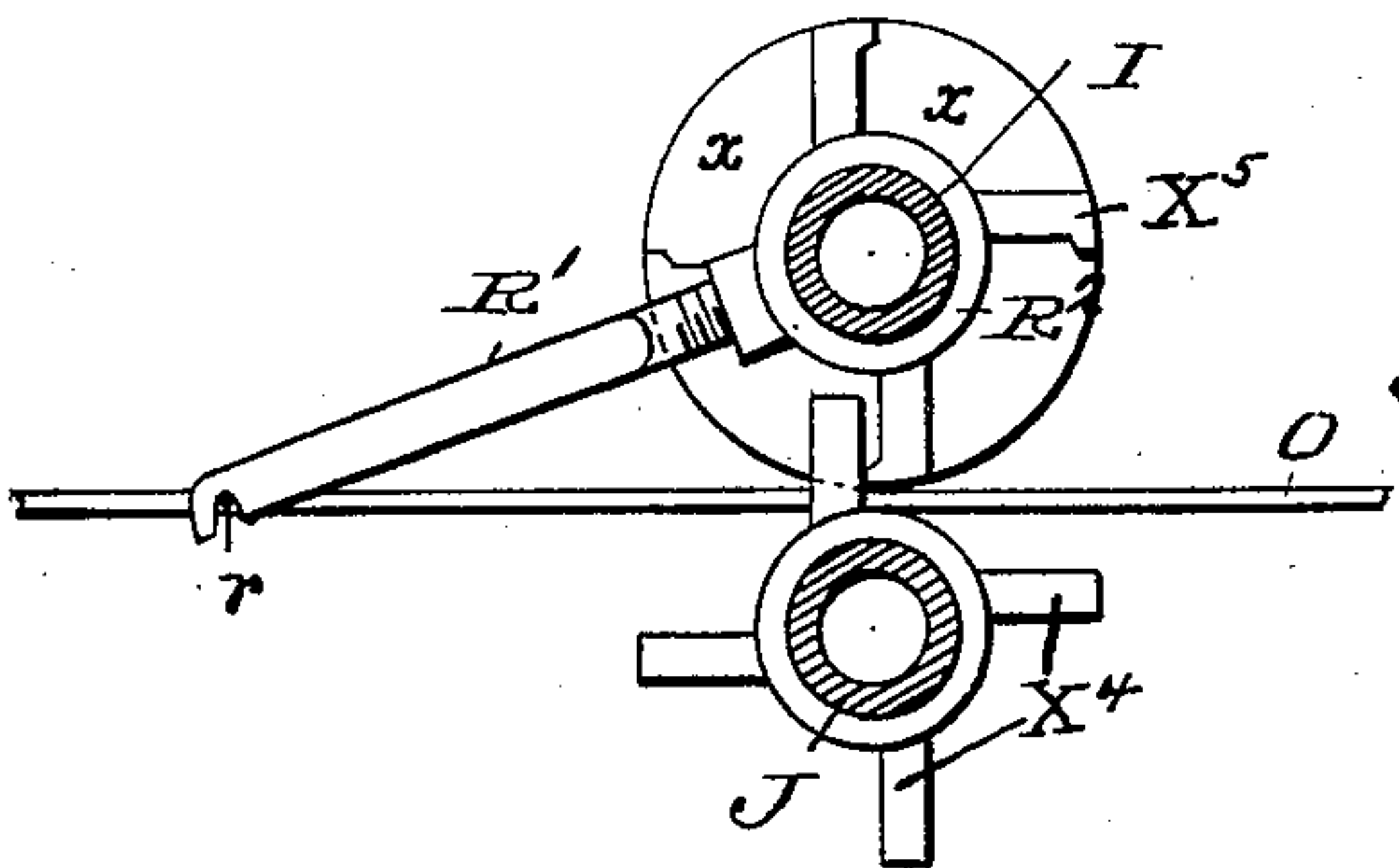
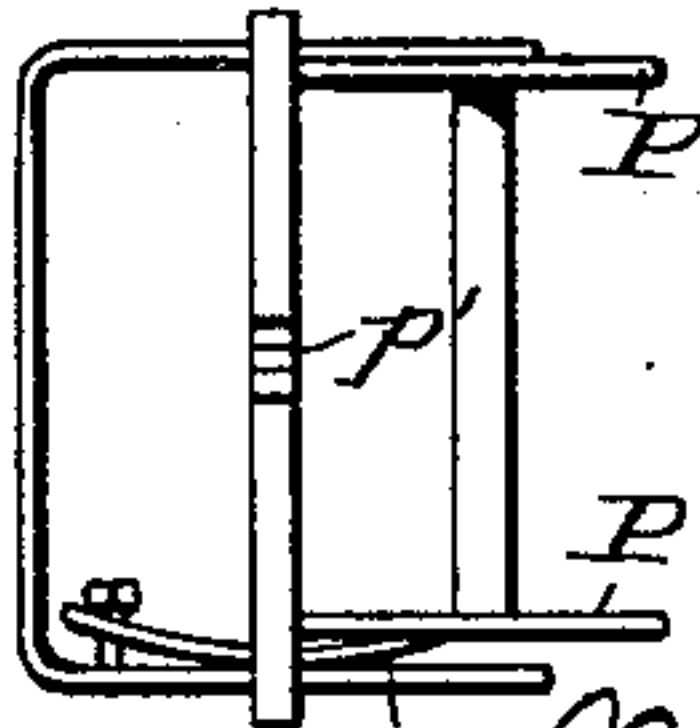


Fig. 26.



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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR MAKING WIRE FENCES.

SPECIFICATION forming part of Letters Patent No. 583,434, dated May 25, 1897.

Application filed April 3, 1895. Serial No. 544,292. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. HALL, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Machines for Making Wire Fences, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side view in perspective of my invention. Fig. 2 is a similar view of the opposite side of the machine. Fig. 3 is a top plan view, reduced, parts being omitted. Fig. 4 is an end elevation illustrating the construction of part of the frame. Fig. 5 is a detached view, enlarged, illustrating another part of the frame. Fig. 6 is another part of the frame. Figs. 7, 8, 9, 10, 11, 12, and 13 are details of devices for supporting and guiding the horizontal wires of the fence. Figs. 14, 15, and 16 are respectively plan and opposite side elevations of devices for advancing the machine along the fence during the operation of weaving or winding. Figs. 17 and 18 are plan views, partly in section, showing the weaver or winder in different positions relative to the horizontal wires and part of the devices for supporting and guiding said wires. Fig. 19 is a side elevation of the weaver or winder. Figs. 4 to 19 are enlarged. Figs. 20 and 21 are elevations illustrating the structure of the fence and the mode of weaving it. Figs. 22 and 23 are respectively plan and side elevations of supporting devices for the horizontal wires and a gage for spacing the up-and-down wires as they are being woven to the horizontal wires. Figs. 24, 25, and 26 illustrate a guard applied to the weaver or winder for preventing any interference of the horizontal wires with said weaver. Fig. 27 is a detail top view, enlarged, of a gage. Fig. 28 is a detail, enlarged, on line  $xx$  of Fig. 17, looking in the direction of the arrow.

Like reference-letters indicate similar parts in all the figures.

The invention relates to a machine for making or weaving that class of fences in which there is combined a series of horizontal wires one above another and a connecting wire or wires woven, wound, or entwined with the

horizontal wires and connecting them together, said entwined or woven wires occupying vertical or practically upright planes.

One part of my invention relates to a machine for connecting the horizontal wires with each other and properly spacing them to produce the desired width of mesh by means of a continuous wire, which is not only wound around or interwoven with the intermediate horizontal wires and also the top and bottom wires, but is also wound around said top and bottom wires alternately such distances that the convolutions around said top and bottom wires serve to space the up-and-down wires thereon.

Having thus set forth the object and nature of that part of my invention, I will proceed to describe one construction of apparatus and mode of operating it which I have adopted for carrying out that part of my invention.

Referring particularly to Figs. 1 to 6, A is a base bar, pipe, or rod supported at or near its ends by carrying-wheels A' by means of interposed brackets  $a$ , which are tubular at their lower ends to receive the base-bar A with stud shafts or spurs near their upper ends on which the carrying-wheels are mounted. It is obvious that the positions of these brackets may be reversed upon the base-bar, so that the carrying-wheels may stand upon the opposite side of said bar, or the bracket may project downward instead of upward, (see particularly Fig. 4,) thus supporting the base-bar at a greater distance from the ground than it is shown in Figs. 1 and 2.

B B'  $b b$  is a socket-piece or coupling (see particularly Fig. 5) mounted on the base-bar, with an arm or bar  $a'$  inserted in the upper lateral socket, with a third carrying-wheel A<sup>2</sup> at its outer end, and a convenient way of mounting that wheel is by means of a spindle and socket  $a^2 a^3$ , Fig. 5, screwed onto the outer end of the bar  $a'$  with a cross-pin  $a^4$  to hold the wheel on.

C  $c c'$   $c^2$  represent a base or bed piece, preferably of cast metal and of which the central upwardly-projecting socket  $c'$  is not screw-threaded, the two end sockets  $c$  and  $c^2$  being preferably provided with internal threads. (See Fig. 4.)



At the top of the frame there is a cap-piece D, having a central socket  $d$ , not screw-threaded, with two end sockets  $d'$   $d^2$ , which may be internally threaded.

5 E is a top girth passing through a tubular seat in the cap-piece, where it is secured by a set-screw and connected at its opposite end with an upright post F preferably by means of a screw-threaded elbow  $e$ , the lower end of  
10 the post F being seated in and preferably screwed into one of the sockets B of the coupling at that point. I provide this frame with wire-guides mounted thereon and arranged thereon in pairs at suitable distances apart,  
15 one above another, to correspond with the desired spacing of the horizontal wires in any particular instance, as contradistinguished from mere notches cut in one or more posts of the frame and which can neither be ar-  
20 ranged to receive differently-spaced wires nor moved out of the plane of the up-and-down wires, for a purpose to be hereinafter explained. As I mount a series of wire-guides, preferably in the form of hooks, upon this  
25 post F, I prefer to designate it as the "hook-post," and Figs. 9 and 10 are respectively plan and side views of one of the hooks, G being a ring-eye or collar to fit the post, with a hook  $g$  projecting therefrom and a set-screw  
30  $g'$  to secure it to the post in proper position—that is to say, with the hooks projecting toward the horizontal wires of the fence and at such distances apart as it is desired to have the wires when the fence is completed.

35 H is a vertical post which I prefer to designate as the "weaver-post" or "winder-post," supported at top and bottom in the sockets  $c$   $d'$ , and as it is sometimes found convenient to place the binder or weaver upon  
40 this post or remove it therefrom without disturbing other parts of the machine I usually screw the lower end of the post into the socket  $c$  and secure its upper end in a smooth-surfaced socket  $d'$  with a set-screw. (See Fig. 4.)

45 In order to assist in properly spacing and supporting the horizontal wires during the weaving or winding, I employ a series of forks or horizontally-slotted fingers, spurs, or teeth, of which one form is shown in Figs. 1, 7, and  
50 8 and are mounted upon what I call a "fork-post" I. This fork-post is connected at top and bottom with the cap-piece and base-piece, so as to oscillate or rotate alternately in opposite directions therein, the post being connected  
55 with those parts by either sockets or pivots, sockets being indicated in the drawings. In Figs. 7 and 8 one of the forks is shown as having a sleeve or collar K, with a laterally-projecting blade or wing  $k$ , with a horizontal slot  
60  $k'$  to receive one of the wires. In Fig. 1 I have shown a series of these forks arranged in horizontal planes corresponding to the planes of the hooks and one of the horizontal wires mounted therein.

65 In my invention the main frame upon which the operative devices are mounted is supported in practically a uniform relation to the

vertical plane of the fence while building, but it is moved along as the up-and-down wires are woven in, one series of wire-guides being  
70 in a vertical plane in advance of the last-attached wire and remaining in engagement with the horizontal wires, thus keeping them properly spaced to engage with the series of  
75 movable wire-guides, which is disposed in a vertical plane in rear of the said last woven-in wire, and which series is withdrawn from contact with horizontal wires to pass by that up-and-down wire as the machine is being moved  
80 along the proper distance to weave in another wire.

As will be explained, in the ordinary operation of the machine it is necessary to move the forks out of engagement with the horizontal wires at intervals, and to facilitate doing so and automatically returning the forks to their normal position I have shown in Fig. 1 a coiled returning-spring  $K'$ , and to prevent  
85 accidental escape of the wires from the forks when the machine is at work I employ a guide-post J, disposed in close proximity to the outer ends of the forks when the latter are in their normal position, so that at such times the open slots of the forks are practically closed and confined between the inner walls of the forks  
90 and the adjacent surface of the guide-post J.

In carrying out my invention I propose to weave, wind, or entwine about the horizontal wires a cross-wire of such length as to traverse the space between the top and bottom  
100 wires a number of times without splicing, and for this purpose I have invented a weaver which carries as an integral part thereof a spool or bobbin having capacity for wire enough to form a number of up-and-down  
105 lines. I propose to make this weaver adjustable vertically upon the frame of the machine, and by preference I make the winding or weaving part proper adjustable in a direction other than that of up and down to facilitate  
110 its removal from each wire after winding or weaving the up-and-down wire around it, so as to move the weaver as a whole to another wire above or below or at either side, as the case may be.

Referring particularly to Figs. 1, 17, 18, and 19,  $L$   $L'$  are upright bars connected by sleeves  $l$   $l'$  to surround and slide upon the weaver-post H.  $L^2$  is a cross bar or plate attached to or cast in one piece with the side bars  $L$   $L'$   
120 with, preferably, one end thereof finished to constitute a sort of handle  $l^2$ . M is a spur-gear having a crank-shaft  $M'$ , which is mounted in a sleeve-bearing  $m$ , cast with or attached to the part  $L^2$  of the carrier, with a crank  $m'$   
125 for rotating the spur-gear. N is another spur-gear having a hub or boss  $N'$  seated in a socket or recess  $n'$ , formed for its reception in the carrier, so that said gear can rotate therein. This gear and its hub have a throat  $n$  on  
130 preferably a radial line from their periphery to their center to receive the horizontal wires O successively when being wound, and the side or end of the cross bar or plate  $L$  which



1. In a machine for making wire fence, the combination with a main frame, of a post carrying a series of wire-guides which are movable relatively to the frame, and a second post carrying a series of wire-guides disposed in horizontal planes corresponding to the planes of the first-named guides, substantially as set forth.

2. In a machine for making wire fence, the combination with a main frame, of a fixed post and a movable post, the posts being provided with two series of wire-guides arranged one above another and in different vertical planes, and a winder or weaver between the two series of guides, substantially as set forth.

3. In a machine for making wire fence, the combination with the main frame, of a series of wire-guides mounted on a post which is movable relative to said main frame, the guides being adapted to engage with the horizontal wires and movable to and from the vertical plane of said wires, substantially as set forth.

4. In a machine for making wire fence, the combination with the main frame, of a weaver, and a series of rotatable forked wire-guides, and a series of non-rotatable wire-guides for supporting the horizontal wires during weaving, substantially as set forth.

5. In a machine for making wire fence, the combination of the main frame, the weaver, and a series of wire-guides mounted upon a vertical shaft which is movable relatively to said main frame and weaver, substantially as set forth.

6. In a machine for making wire fence, the combination with the main frame, of two series of wire-guides adapted to engage simultaneously with opposite sides of the series of horizontal wires, and to move in horizontal planes into and out of engagement with said wires, substantially as set forth.

7. In a machine for making wire fence, the combination with means for continuously holding a series of wires, means for alternately holding and releasing the wires and means for interweaving therewith a series of other wires, of a supporting-frame, and vertical pivots connecting the weaver with the frame, whereby the said weaver may move in horizontal planes into and out of engagement with the horizontal wires, substantially as set forth.

8. In a machine for making wire fence, the combination of a main frame adapted to be moved forward in a practically uniform relation to the horizontal wires, a weaver mounted on the main frame and movable toward and from the vertical plane of said wires, a series of wire-guides in front of the weaver adapted to engage continuously with the horizontal wires, and a series of movable wire-guides in rear of the weaver adapted to be alternately engaged with and disengaged from said horizontal wires, substantially as set forth.

9. In a machine for making wire fence, the combination of a main frame provided with

a base adapted to rest on the ground and support the frame in an upright position independently of the fence, a stationary post, a series of wire-guides on said post, and a rotatory post having a series of wire-guides mounted thereon, substantially as set forth.

10. In a machine for making wire fence, the combination with a main frame, of a winder mounted on the frame and adapted to be moved up and down and into and out of the plane of the horizontal wires, a series of horizontally-slotted and horizontally-movable wire-guides adapted to be moved into and out of the vertical plane of the horizontal wires, and means disposed in a vertical plane a short distance from the plane of the closed ends of the slots in the guides, and adapted to confine the horizontal wires in the guides during weaving, the movement of the guides horizontally out of the vertical plane of the horizontal wires permitting the guides to be moved forward past the last woven-in up-and-down wire, substantially as set forth.

11. In a machine for making wire fence, a frame comprising a series of movable wire-guides, a series of fixed wire-guides, and a weaver mounted on and carried by the frame, and arranged in close proximity to the guides and adapted to be moved up and down from one wire to the other wires, substantially as set forth.

12. The combination with the frame, of wheels for taking hold of one of the wires and a crank for turning said wheels and advancing the machine along the fence, substantially as set forth.

13. The combination with the frame, of means which are adjustable up and down on the frame for taking hold of one of the wires and advancing the machine along the fence, substantially as set forth.

14. In a machine for making wire fences, the combination with the frame, of the base-plate attached to the frame, the flanged gripping-wheels, the crank connected to one of said wheels, and means for thrusting the flange on one wheel toward the flange of the other wheel, substantially as set forth.

15. In a machine for making wire fences, the combination with the wheel N having a throat to receive the horizontal wires, of a stop disposed in close proximity to the throat and adapted to limit the movement of the weaver into the vertical plane of the horizontal wires, and to support the wires against the pull of the up-and-down wire while the latter is being wound upon such supported wire, substantially as set forth.

16. In a machine for making wire fence, the combination with means for weaving the up-and-down wires, of a guard mounted in close proximity to the wire-reel to prevent contact of the reel with the fence, substantially as set forth.

17. In a machine for making wire fence, the combination with means for weaving the up-and-down wires, of a guard mounted in close



proximity to the wire-reel to prevent contact of the reel with the fence and provided with a seat adapted to engage with one of the horizontal wires and limit the movement of the  
5 weaver into the vertical plane of the horizontal wires, substantially as set forth.

18. In a machine for making wire fence, the combination with the legs of the wire-carrier yoke, of the U-shaped guard, and a bar across  
10 the ends of its legs to engage with the horizontal wires and serve as a stop to limit the forward movement of the weaver into the vertical plane of said horizontal wires, substantially as set forth.

15 19. In a machine for making wire fence, the combination with the main frame, of a rising-and-falling weaver, a counterbalancing-weight, a pulley at the upper end of the frame, and a cord connecting the counterbalance  
20 with the weaver for supporting the weight of

the weaver in its adjusted positions, substantially as set forth.

20. In a machine for making wire fence, the combination with the main frame, of a rising-and-falling weaver, a counterbalancing- 25 weight, and a guide for maintaining the weight in a vertical plane during its up and down movements, substantially as set forth.

21. In a machine for making wire fence, the combination with the main frame, of a ris- 30 ing-and-falling weaver, a counterbalancing-weight provided with a hole through it, and a guide disposed within the said hole, substantially as set forth.

In testimony whereof I affix my signature 35 in presence of two witnesses.

WILLIAM F. HALL.

Witnesses:

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J. A. SANFORD.