

No. 678,342.

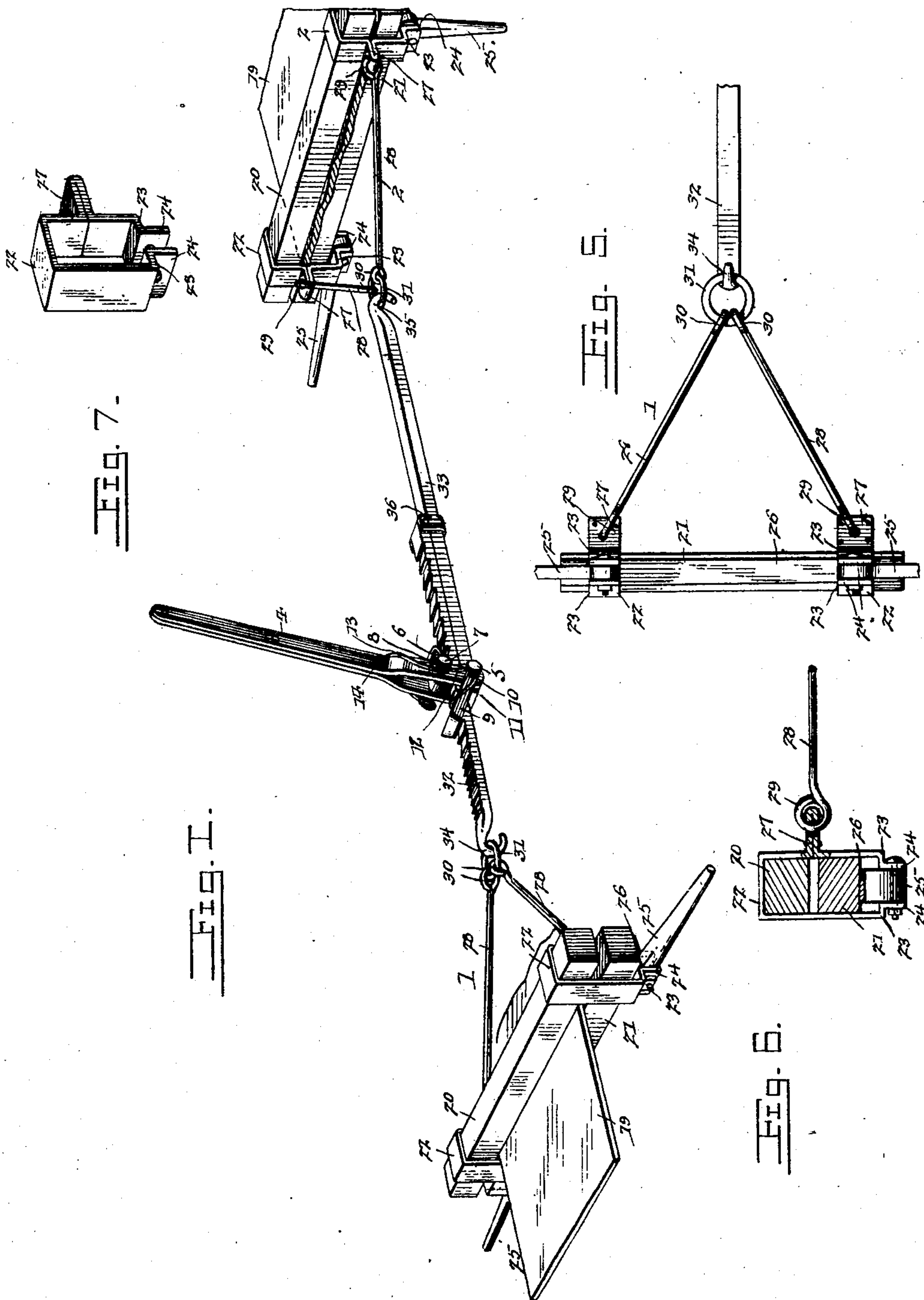
Patented July 9, 1901.

W. H. JOHNSON.
BELT TIGHTENER.

(Application filed Jan. 2, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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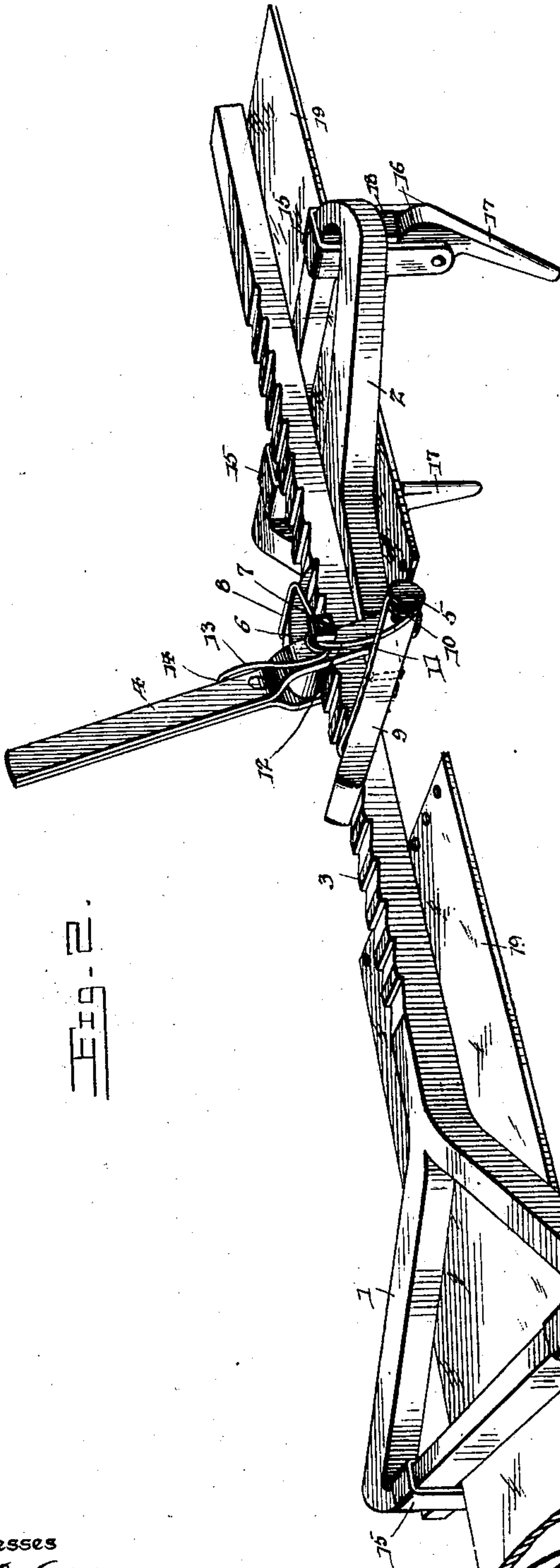


Fig. 2.

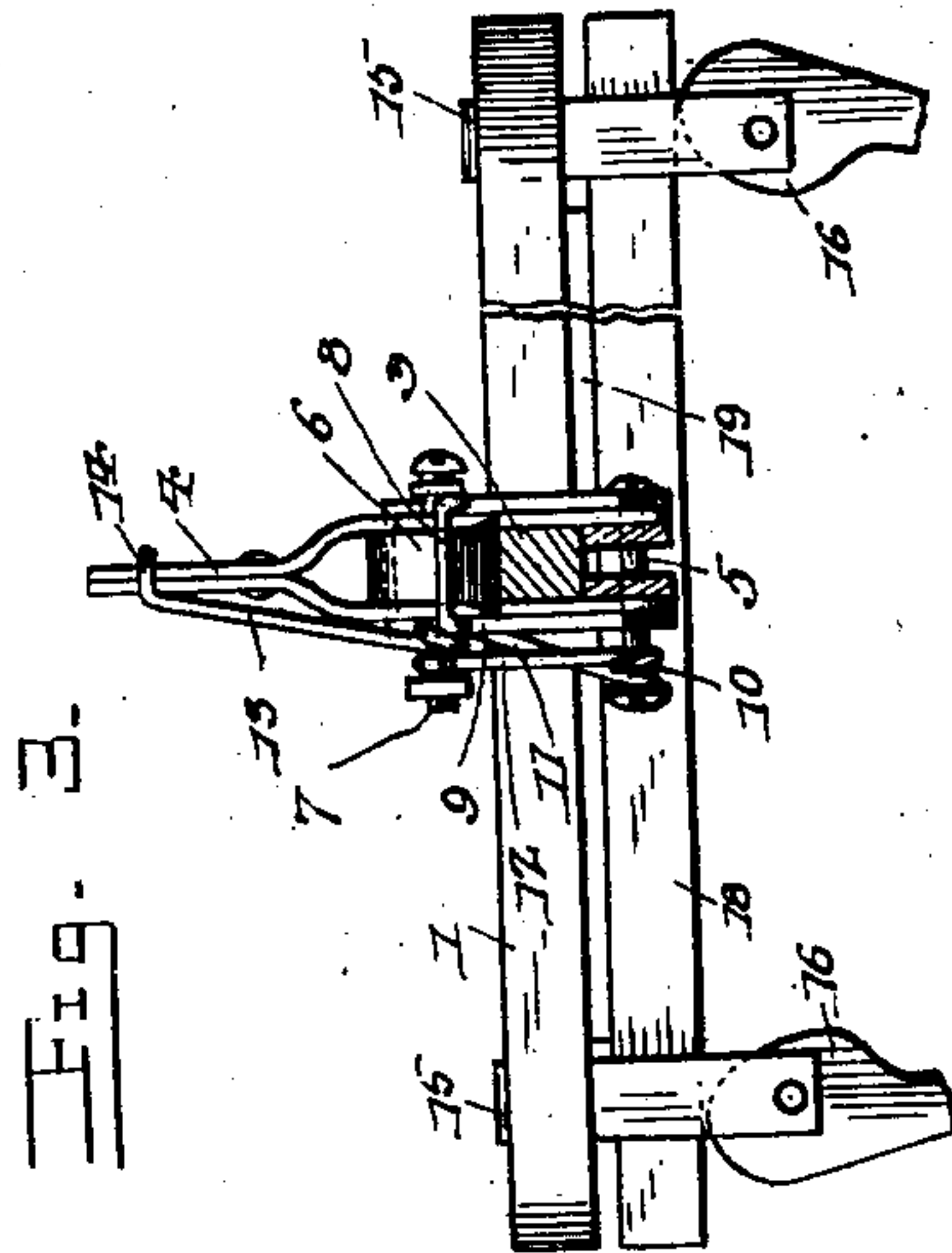


Fig. 3.

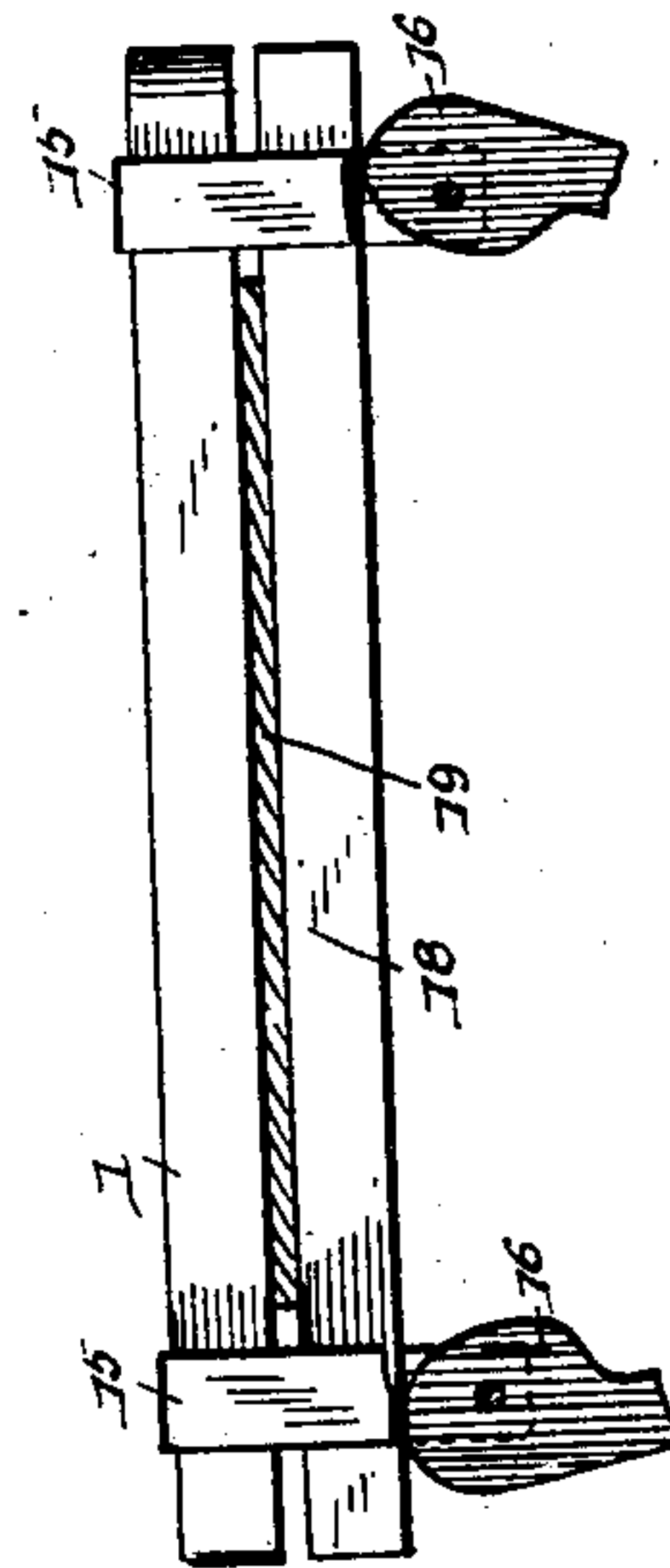


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM H. JOHNSON, OF CARTHAGE, MISSOURI, ASSIGNOR TO W. W. CALHOON, J. A. MITCHELL, J. F. HARRISON, AND C. A. BLAIR, OF SAME PLACE.

BELT-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 678,342, dated July 9, 1901.

Application filed January 2, 1901. Serial No. 41,844. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. JOHNSON, a citizen of the United States, residing at Carthage, in the county of Jasper and State of Missouri, have invented a new and useful Belt-Tightener, of which the following is a specification.

This invention relates to belt-tighteners, and has for its object to facilitate the engagement of such a device with the opposite ends of a belt and to provide for conveniently drawing together said ends of a belt, so that they may be laced or otherwise connected. It is furthermore designed to have the device adjustable, so as to accommodate the same to belts of different widths, and also to provide improved means for operating the device, so as to render the stretching and tightening operation easy and effective.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figures 1 and 2 are perspective views, respectively, of the preferred and modified forms of a belt-tightener constructed in accordance with the present invention. Fig. 3 is a transverse sectional view of Fig. 2, taken in advance of and looking at the operating-lever. Fig. 4 is an end elevation, parts being broken away to show the mounting of the belt-clamp. Fig. 5 is a reverse plan view of one of the members of the preferred form of the device. Fig. 6 is a detail transverse sectional view taken through one of the clamps. Fig. 7 is a detail perspective view of one of the adjustable links of the clamp.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

Referring more particularly to Figs. 2, 3, and 4 of the drawings, it will be seen that the present device comprises two members 1 and

2, which have substantially triangular frames arranged in opposite relation, with their bases at the opposite outer ends of the device. One of the members—as, for instance, 1—has a ratchet-bar 3, projected forwardly from its inner apex and extended across the top of the other member, the latter being designed to travel in opposite directions upon the ratchet-bar. An operating-lever 4 has its lower end forked, so as to straddle the ratchet-bar and the adjacent end of the member 2, to which it is pivotally connected by means of a transverse pivot-pin 5. A ratchet-dog 6 is mounted between the sides of the forked portion of the lever and above the ratchet-bar upon a transverse pivot-pin 7 and projects forwardly from the lever. To hold the dog in yieldable engagement with the ratchet-bar, there is provided a loop-shaped spring 8, which has its intermediate portion bearing downwardly upon the top of the outer free end of the dog and its opposite ends coiled about or otherwise connected to the projecting ends of the pivot-pin 7. In rear of the lever there is a substantially U-shaped ratchet-dog 9, which straddles the ratchet-bar and has its lower opposite ends pivoted to the projecting ends of the pivot-pin 5, which connects the operating-lever to the member 2. The lower edge of the transverse portion of this dog is designed to engage the ratchet-teeth of the bar, so that the pivot-pin 5 may form the fulcrum of the lever when it is being thrown backward for a new engagement with the ratchet-bar. In the forward movement the pivotal connection between the upper dog and the lever forms the fulcrum for the latter. The dog 9 is yieldingly held in engagement with the ratchet-bar by means of a spring 10, which has its intermediate portion twisted about one projecting end of the pivot-pin 5 and its opposite end portions 11 and 12 connected to the dog 9 and the adjacent end of the upper pivot-pin 7. It will also be noted that one end of the loop-shaped spring 8 is extended upwardly, as at 13, and provided with a terminal hook 14, which embraces the front edge of the lever, so as to give a downward tension upon the looped portion of the spring.

For connecting the ends of a belt to the opposite ends of the device each end bar is pro-

vided with a clamp consisting of a pair of substantially U-shaped and inverted links 15, which slidably embrace the bar, so as to be adjusted longitudinally upon the end bar, and between the opposite pendent ends of each link there is pivoted a cam 16, having a suitable handle 17 for the convenient manipulation thereof. A loose clamping-bar 18 is thrust endwise through the opposite links and rests upon the upper peripheral edges of the opposite cams, the shortest radius of each cam being normally toward the bar, the normal position of the cam being that which it occupies when the clamp is open, so that there may be a space between the fixed and movable bars for the reception of the end portion of the belt 19, which is thrust longitudinally inward and transversely between the two bars, after which the cams are turned to force the movable bar toward the fixed bar, whereby the end of the belt is fixedly connected to the device. Both ends of the belt being thus connected to the opposite ends of the tightener, the lever is manipulated so as to draw the two members 1 and 2 together, consequently drawing together the ends of the belt until they are in position for being laced or otherwise connected, such connection being made while the tightener holds the ends of the belt, after which the end clamps are released from the belt and the loose bars 18 removed endwise from the links, so that the stretcher or tightener may be taken from the belt.

The preferred form of the device, which has been shown in Figs. 1, 5, 6, and 7, has the oppositely-disposed substantially triangular members 1 and 2, which are slidably connected and also provided with precisely the same form of operating mechanism as hereinbefore described for the modified form of the device, the difference between the two forms being principally in the structure thereof, while their general features remain the same. Each member of the preferred form comprises a pair of loose and entirely separate superposed clamp-bars 20 and 21, which are preferably formed of wood and are substantially rectangular in shape. These bars are also of substantially the same length and are connected by a pair of loops or links 22, which slidably embrace the bars, so as to be conveniently adjusted longitudinally thereon to accommodate the device to belts of different widths, as hereinbefore described. Moreover, the length of each link is somewhat greater than the combined thicknesses of the two bars, so as to permit of the separation thereof to receive a belt between the same, and the shape of each link is rectangular or oblong to fit the bars and prevent lateral looseness thereof. As best shown in Fig. 7, each link is formed from a single strap of metal which is bent into the form of an oblong loop or link having its end portions bent laterally inward in opposite directions, so as to form the shoulders 23, which constitute the lower end of the

link. These shoulders terminate short of each other, so as to form a slot or opening in the lower end of the link, and have their ends bent or extended outwardly, so as to form the opposite bearing-ears 24, between which is pivotally mounted a handled cam 25, that projects through the slot or opening in the end of the link and bears against the bottom of the lower clamp-bar 21, whereby the latter may be forced upwardly against the upper clamp-bar. A wear-plate or strip of metal 26 is secured longitudinally to the bottom of the lower clamp-bar, so as to receive the wear of the respective cams, and thereby protect the wooden bar. Projecting laterally outward from the inner side of the link and located substantially midway between the opposite ends thereof is a perforate ear 27, which is formed by a folded portion of said inner side of the link and is designed for the connection of the adjacent rod 28, which has a terminal hook or eye 29, that is loosely engaged with the perforation of the ear to provide a loose or hinged connection between the rod and the clamp. It will of course be understood that the clamps may be cast as well as formed from single straps of metal.

The rods 28 of each member of the device converge inwardly from the clamp and are provided with the outer terminal hooks or eyes 30, which receive a single ring or link 31, whereby the rods are mutually connected and a substantially triangular member is formed.

For the adjustable connection of the opposite clamp members there are provided the two substantially rectangular, longitudinally-overlapped, and slidably-connected bars 32 and 33, which are provided at their respective outer ends with the hooks 34 and 35 for detachable connection with the rings or links 31 of the adjacent clamp members. One of these bars—as, for instance, the bar 32—is provided with ratchet-teeth and has a looped guide 36 slidably embracing the other bar and located at the inner terminal of the ratchet-bar, so as to slidably connect the two bars.

As hereinbefore set forth, the operating mechanism is the same in both forms of the device, and, as shown in Fig. 1, the operating-lever 4 straddles the intermediate portion of the ratchet-bar 32 and is pivotally connected to the inner end of the other bar 33, so that the ratchet-dogs may cooperate with the ratchet-bar in precisely the same relation as in the modified form of the device.

The advantage of the preferred form of the tightener resides in the loose and detachable connections of the several parts thereof, whereby the clamps may be engaged separately with the opposite ends of a belt and then the connecting-bars hooked into the respective rings thereof, so as to facilitate the application of the device. Moreover, the parts may be separated, so as to be packed or stored in compact form when not in use,

and the loose or flexible connections will permit the device to accommodate itself to any particular application thereof.

What is claimed is—

5 A belt-tightener, comprising opposite members having belt-clamps, a ratchet-bar carried by one member and overlapping the other member, an operating-lever having a forked end which straddles the ratchet-bar, a pivot-
10 pin connecting the forked end of the lever with said other member and projecting at opposite ends beyond the lever, a ratchet-dog located between the fork members of the lever, a pivot-pin connecting the dog to the lever and projected at opposite sides of the lat-
15 ter, a loop-shaped spring straddling the dog and having its opposite sides coiled upon the projecting ends of the last-named pivot-pin, one end of the spring being extended and con-

nected to the lever, an oppositely-projecting 20 substantially U-shaped dog straddling the ratchet-bar and having its opposite ends mounted upon the projected ends of the pivot-pin which connects the lever to said other member, and a spring having its intermediate 25 portion connected to one end of the latter pivot-pin, one end of the spring being connected to the U-shaped dog, and the opposite end connected to the adjacent projecting end of the second-mentioned pivot-pin. 30

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM H. JOHNSON.

Witnesses:

ARTHUR F. SMITH,
J. F. HARRISON.