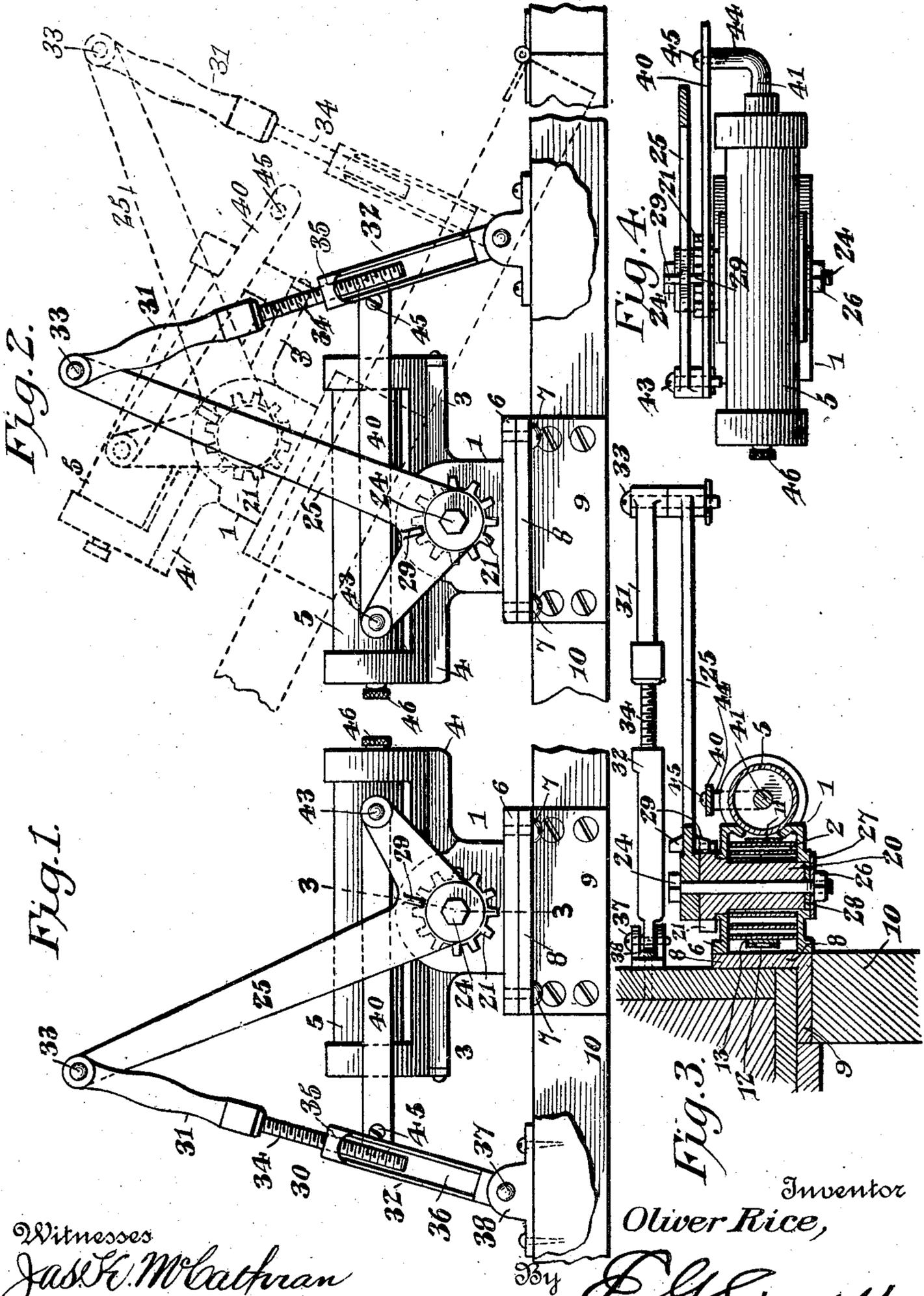


O. RICE.  
DOOR CHECK.

APPLICATION FILED OCT. 26, 1906.

2 SHEETS—SHEET 1.



Witnesses  
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No. 877,123.

PATENTED JAN. 21, 1908.

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DOOR CHECK.

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2 SHEETS—SHEET 2.

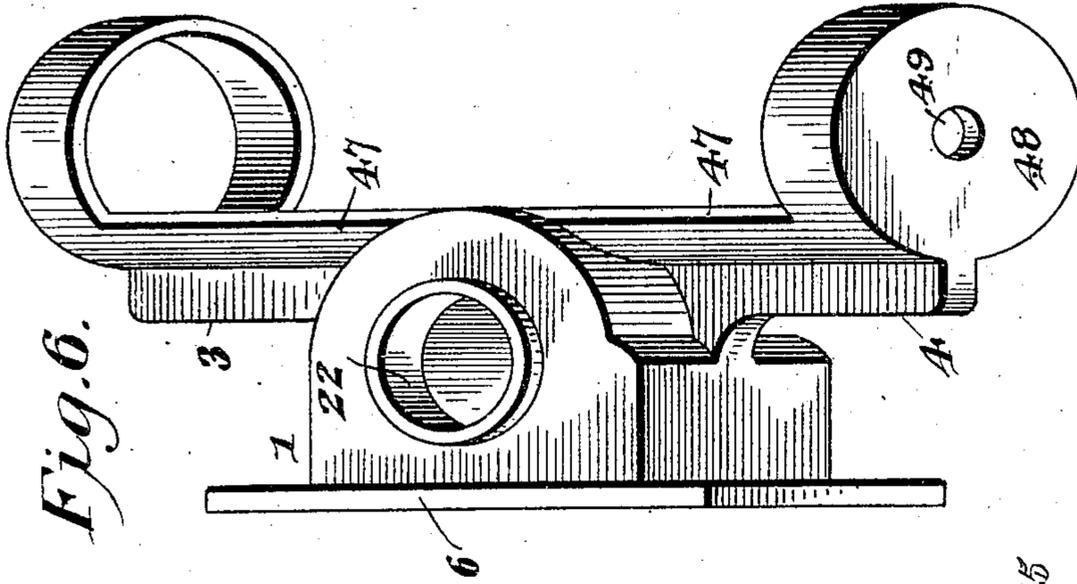


Fig. 6.

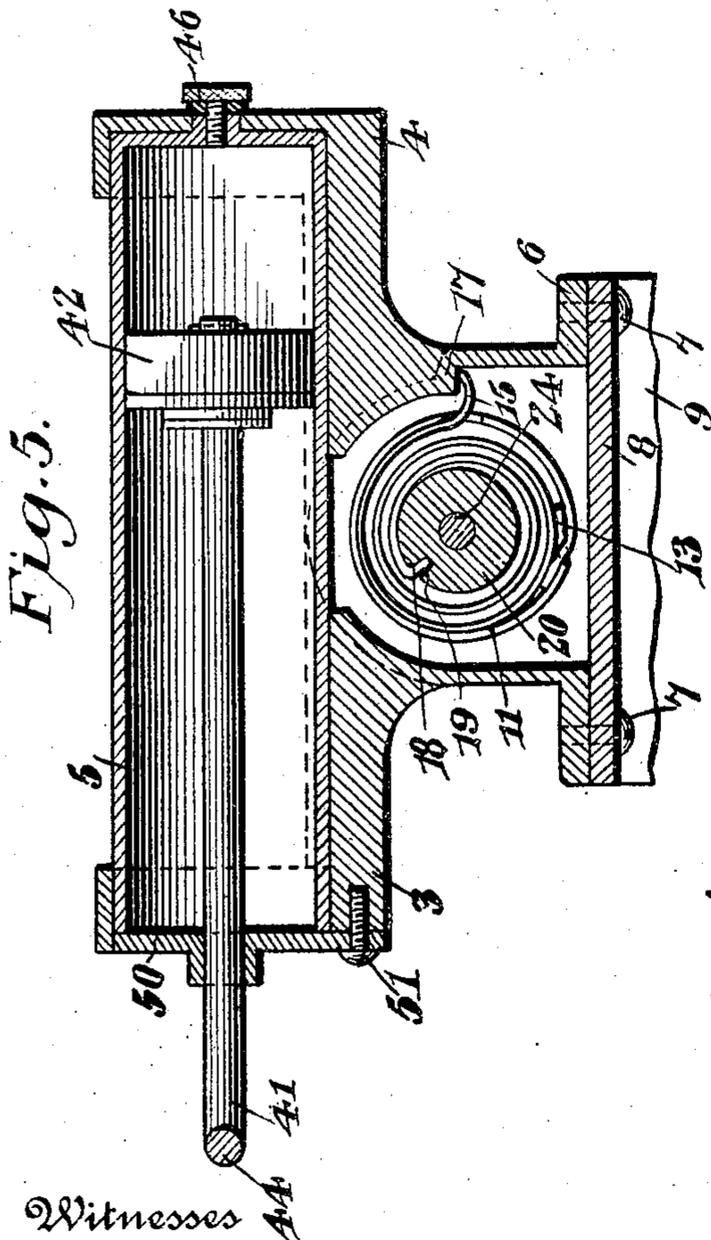


Fig. 5.

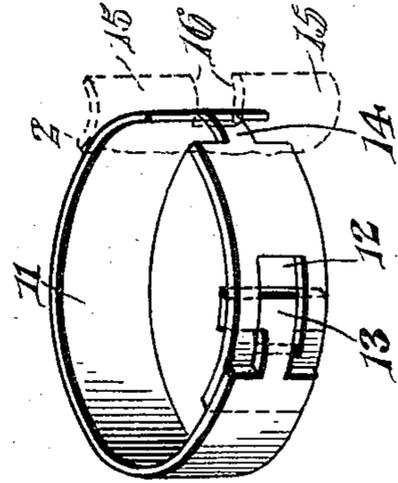


Fig. 8.

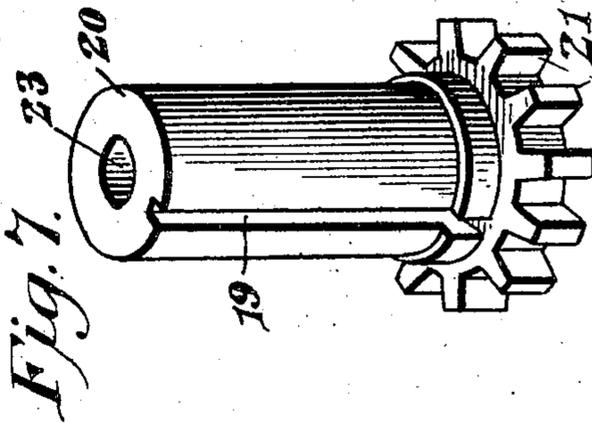


Fig. 7.

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# UNITED STATES PATENT OFFICE.

OLIVER RICE, OF SAN FRANCISCO, CALIFORNIA.

## DOOR-CHECK.

No. 877,123.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed October 26, 1905. Serial No. 284,522.

*To all whom it may concern:*

Be it known that OLIVER RICE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, has invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

The invention relates to improvements in door checks.

10 The object of the present invention is to improve the construction of pneumatic door checks, more especially that shown and described in Patent, No. 781,361, granted to me January 21, 1905, and to reduce the size and weight, and thereby lessen the cost of manufacturing and shipping the same.

15 A further object of the invention is to expose the mechanism of the door check, and to enable the same to present a neater appearance, and to dispense with the spring and with the pawl of the said patent.

20 Another object of the invention is to enable the device to be changed from right to left without changing the position of the cylinder within the supporting frame or casing. Also the invention has for its object to provide a door check of this character, capable of ready adjustment to position it properly with relation to a door and the frame or casing, and also to meet all requirements relative to speed and gentleness of operation.

25 With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims, hereto appended; it being understood that various changes in the form, proportion, size, and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

30 In the drawings:—Figure 1 is a plan view of a door check, constructed in accordance with this invention, and shown applied to a door. Fig. 2 is a similar view, the device being reversed and arranged on a door hinged at the opposite side from that shown in Fig. 1. Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 1. Fig. 4 is a front elevation partly in section. Fig. 5 is an enlarged sectional view taken longitudinally of the cylinder and casing. Fig. 6 is a detail perspective view of the frame or casing in which the cylinder is mounted. Fig. 7 is a

detail perspective view of the ratchet wheel and the integral shaft or core, which is connected with the barrel spring. Fig. 8 is a detail perspective view of the strip or band for confining the barrel spring.

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

65 1 designates a supporting frame, constructed to form a spring casing to receive a coiled barrel spring 2, and the said supporting frame is provided at its outer end with substantially L-shaped arms 3 and 4 for supporting a cylinder 5. The frame is provided at the inner end of the casing, which is open, with projecting flanges 6, having threaded perforations and adapted to be secured by screws 7, or other suitable fastening devices, to a vertically disposed flange or portion 8 of a substantially L-shaped bracket or piece 9. The bracket or piece 9, which closes the open end of the casing of the supporting frame, has a horizontal portion, which is also perforated for the reception of screws, or other suitable fastening devices for securing the supporting frame to the part on which it is to be mounted. The supporting frame is preferably arranged, as indicated in Fig. 1 of the drawing, at the top of a door 10, and the bracket or piece 9 enables the device to be readily applied to the same. The barrel spring, which operates to close the door, is designed to be confined within a limiting strap 11 to facilitate assembling the parts. The strap 11 is provided at one end with a slot 12, and its other end has a substantially T-shaped head 13, formed by recessing or cutting out the strap at opposite sides and passed through the slot 12, whereby the two ends of the strap are detachably interlocked. The strap 11 is also provided between its overlapped ends with a reduced portion 14, formed by recessing or cutting out the strap at opposite sides, and the outer end 15 of the spring is slotted at 16 to receive the reduced portion 14, the side portions of the end 15 extending through the recesses of the strap 11 at the reduced portion 14. The projecting outer end 15 of the spring engages an interior shoulder 17 of the casing of the supporting frame. The inner end 18 of the spring is intumed to form a projecting portion, which fits within a longitudinal groove 19 of a shaft or core 20. The shaft or core 20, which is provided with an integral ratchet head or wheel 21, is arranged in suitable

bearing openings 22 of the casing of the supporting frame, and it is provided with a central bore or opening 23. The ratchet head or wheel 21 is preferably provided with spur teeth and intervening notches, and it is arranged at the outer side of the casing of the supporting frame. The shaft or core is retained in the bearing openings of the said casing by a bolt 24, which passes through the bore or opening 23. The bell crank lever is fitted against the outer face of the ratchet wheel, and is secured to the same by the bolt 24, the head of the bolt engaging the exterior of the bell crank lever. The other end of the bolt is provided with a nut 26, which engages a plate 27. The plate 27 covers the adjacent bearing opening of the casing of the supporting frame, as clearly illustrated in Fig. 3 of the drawings, and a washer 28 is interposed between the plate 27 and the adjacent end of the shaft or core. The bell crank lever, which consists of a long arm and a short arm, is provided at its angle with a perforation to receive the bolt, and it has a pair of lugs 29, projecting from its opposite faces and spaced from the pivot bolt perforation. Either of the lugs is adapted to be engaged with the ratchet wheel by being placed between any two of the teeth thereof, and the lever is reversible to arrange it in either of the positions shown in Figs. 1 and 2 of the drawings, and when in either position, one of the lugs 29 will engage the ratchet wheel. The ratchet head or wheel 21 serves to operatively connect the bell crank lever 25 with the shaft or core, which is connected with the spring. After the spring, the ratchet wheel and the bell crank lever have been assembled, the lever may be readily adjusted to place the desired tension on the spring.

The long arm of the bell crank lever is connected with the door casing or other fixed portion by an adjustable link 30, composed of sections 31 and 32. The section 31 is pivoted at its outer end by a pin 33, or other suitable fastening device to the bell crank lever, and the inner portion of the outer section 31 is reduced and threaded to provide a screw 34, which engages a threaded opening 35 of the inner section 32. The inner section, which is provided with a longitudinal slot or opening 36 to receive the threaded shank or screw 34, is pivoted by a pin or bolt 37 to a bracket or plate 38, which is provided with a pair of perforated ears to receive the free end of the said inner section of the link 30. The pivot pins are preferably provided with keys to enable the parts to be readily separated and assembled, but any other suitable means may be employed, as will be readily understood. The bracket or plate 38 is secured by screws or other suitable fastening devices to the casing, wall, or other suitable fixed support.

The short arm of the bell crank lever is connected by a rod or bar 40 with the outer end of a piston rod 41, which is connected at its inner end with a piston 42. The connecting rod or bar 40 is pivoted to the short arm of the bell crank lever by means of a pin 43, having a key and adapted to be readily removed to permit the parts to be reversed. The outer end 44 of the piston rod is bent laterally and extended beyond the cylinder, and is suitably pivoted to the outer end of the connecting rod by means of a screw 45 or other suitable means. The connecting rod may be readily swung from one side of the cylinder to the other by simply rotating the piston rod, and it is not disconnected from the piston rod in reversing the device. The piston 42 may be constructed of glass, or any other suitable material, and it cooperates with the cylinder in the usual manner to form an air cushion to resist the closing action of the spring. The cylinder is provided at one end with a valve 46 of the ordinary construction.

The L-shaped arms have the outer faces 47 of their laterally extending portions concavely curved to conform to the configuration of the cylinder, and the outwardly projecting parallel portions of the arms are cylindrical to form seats for the cylinder, which may be readily rotated within the seats to thoroughly lubricate the same, and the lubricant may be applied from the exterior without taking down the device. The seat of the arm 4 is provided with an end wall 48, which has an opening 49, for the valve. The seat of the other arm 3 is open, and the cylinder is retained in the seats by means of a removable plate or head 50, secured to the laterally extending portion of the arm 3 by a screw 51, and provided with a central flanged opening through which passes the piston rod 41. The removable plate or head 50 fits within the open seat of the arm 3, and its inner face engages the adjacent edges of the cylinder.

When the door is opened, the bell crank lever is oscillated to swing its short arm outward for moving the piston outward. This movement also increases the tension of the spring, which operates to close the door when the same is free to move, the closing movement being resisted by the air cushion formed by the piston and the cylinder. The tension of the spring may be readily adjusted as before explained, and the valve also may be adjusted to control the escape of the air from the cylinder, and by these means the device is adapted to suit all requirements as to speed and gentleness of operation. Also the device is adapted to be readily reversed without changing the position of the cylinder on the frame or casing. In reversing the device, the bell crank lever is removed and reversed; the shaft or core 20 is then removed,

and the frame carrying the spring casing and the checking cylinder is removed and reversed. The arm 40 is reversed on its pivot, and the core or shaft 20 is replaced in the casing with the ratchet wheel at the outer side thereof. The bell crank lever is then interlocked with the ratchet wheel, and the pivot bolt 24 is placed in position. The connecting rod or bar 40 is brought to the top of the device by simply rotating the piston rod. The ratchet wheel and the bell crank lever are placed in position, and the latter is connected with the rod or bar 40. The device weighs less, occupies less space than the device of the patent, and is thereby adapted to be more cheaply manufactured, and the cost of shipping is correspondingly lessened. It presents a neater appearance than the afore-said device, and the spring casing and the pawl employed therein are dispensed with.

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

1. In a device of the class described, the combination of a supporting frame having a casing adapted to be secured to one of the parts to which the device is to be applied, a spring mounted within the casing, a bell crank lever fulcrumed at its angle, means for operatively connecting the bell crank lever with the spring, means for connecting one of the arms of the bell crank lever with the other part to which the device is to be applied, a cylinder, a piston operating within the cylinder, and means for connecting the piston with the other arm of the bell crank lever.

2. In a device of the class described, the combination of a supporting frame having a casing adapted to be secured to one of the parts to which the device is to be applied, a spring housed within the casing, a cylinder mounted on the supporting frame, a piston operating within the cylinder, an exteriorly arranged bell crank lever fulcrumed at its angle, means for operatively connecting the lever with the spring, said lever being provided with long and short arms, a rod or bar connecting the short arm with the piston, and means for connecting the long arm of the bell crank lever with the other part to which the device is to be applied.

3. In a device of the class described, the combination of a supporting frame having a casing adapted to be secured to one of the parts to which the device is to be applied, a coiled spring housed within the casing, a shaft or core provided with a ratchet wheel and extending into the casing and connected with the spring, an exteriorly arranged bell crank lever interlocked with the ratchet wheel, a cylinder mounted on the supporting frame, a piston operating in the cylinder, means for connecting the piston with one of the arms of the bell crank lever, and means for connecting the other arm of the bell

crank lever to the other part to which the device is to be applied.

4. In a device of the class described, the combination of a supporting frame having a casing adapted to be secured to one of the parts to which the device is to be applied, a spring housed within the casing, an exteriorly arranged ratchet wheel operatively connected with the spring, a reversible exteriorly arranged bell crank lever interlocked with the ratchet wheel and provided with long and short arms, cushioning means connected with one of the arms of the lever, and means for connecting the other arm of the lever with the other part to which the device is to be applied.

5. A device of the class described provided with a coiled spring having its outer end slotted, and a confining strap or band encircling the spring and cut away at opposite sides to form a reduced portion, whereby it is adapted to engage the outer end of the spring.

6. A device of the class described provided with a coiled spring having its outer end slotted, and a confining strap or band encircling the spring and cut away at opposite sides at an intermediate point to provide a reduced portion, whereby it is adapted to engage the slot at the outer end of the spring, said strap or band having its ends overlapped and detachably interlocked.

7. In a device of the class described, the combination of a supporting frame having a casing provided with projecting substantially L-shaped arms having cylindrical outer portions forming seats, a spring housed within the casing, a cylinder arranged in the seats, a lever operatively connected with the spring and a piston operating in the cylinder and connected with the lever.

8. In a device of the class described, the combination of a supporting frame having a casing having projecting substantially L-shaped arms, the outer portions of the arms being cylindrical to form seats, and one of the seats being open, and the other having an end wall, a spring housed within the casing, a cylinder arranged within the seats, a cylinder head located at the open seat and secured to the adjacent arm, said head retaining the cylinder in the said seats, a lever operatively connected with the spring, and a piston operating in the cylinder and connected with the lever.

9. In a device of the class described, the combination of a substantially L-shaped bracket, a reversible frame and casing detachably secured to the bracket and having an open end covered by the same, a cylinder mounted on the frame and casing and carried by the same, a spring housed within the casing, a lever operatively connected with the spring, and a piston operating within the cylinder and connected with the lever.

10. In a device of the class described, the

combination of a supporting frame adapted to be secured to one of the parts to which the device is to be applied, a spring mounted on the supporting frame, a bell crank lever provided with long and short arms and operatively connected with the spring, said bell crank lever being reversible, cushioning means connected with one of the arms of the lever, and means for connecting the other arm of the lever to the other of the parts to which the device is to be applied.

11. A device of the class described provided with a barrel spring, and a confining strap encircling the spring and detachably

interlocked with the same at an intermediate portion, said strap being provided at one end with a slot and having a T-shaped head at the other end, formed by cutting away the strap at opposite sides, and passed through the said slot, whereby the ends of the strap are detachably interlocked.

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

OLIVER RICE.

Witnesses:

A. H. MANNING,  
E. BUCKLEY.