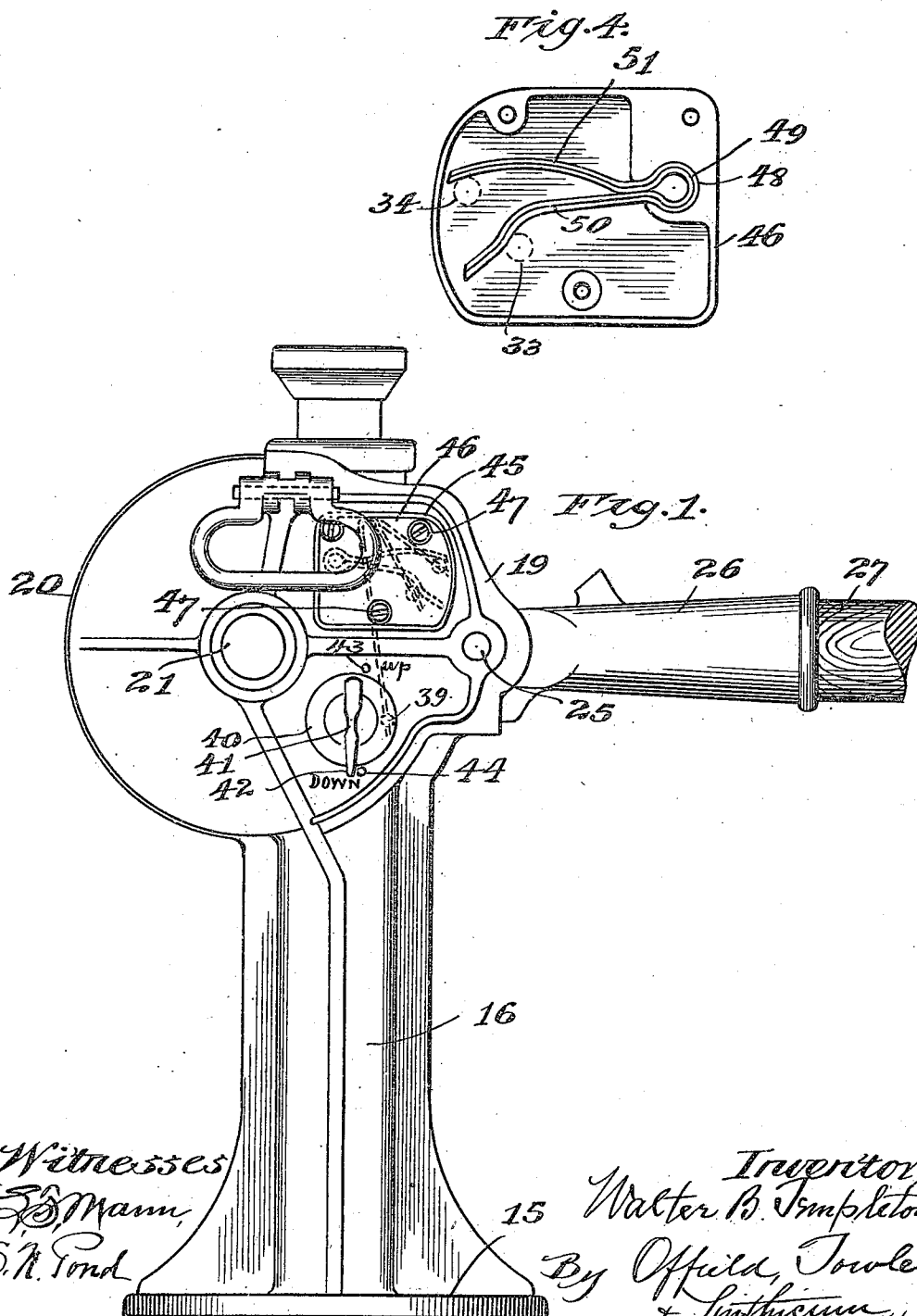


W. B. TEMPLETON.
JACK.
APPLICATION FILED JULY 24, 1907.

961,910.

Patented June 21, 1910.

2 SHEETS—SHEET 1.



Witnesses
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15 Walter B. Templeton
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W. B. TEMPLETON.

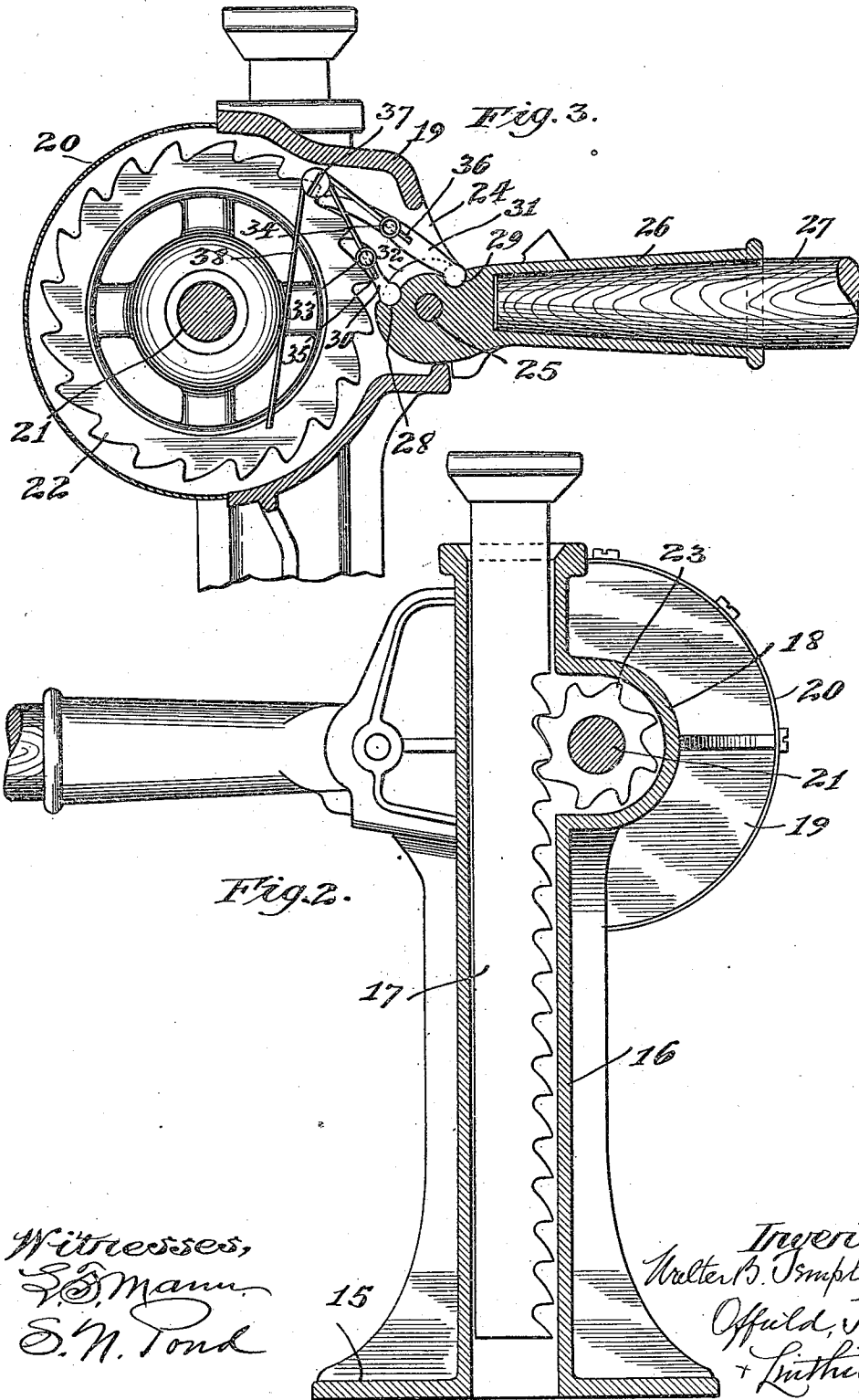
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UNITED STATES PATENT OFFICE.

WALTER B. TEMPLETON, OF CHICAGO, ILLINOIS.

JACK.

961,910.

Specification of Letters Patent. Patented June 21, 1910.

Application filed July 24, 1907. Serial No. 385,349.

To all whom it may concern:

Be it known that I, WALTER B. TEMPLETON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Jacks, of which the following is a specification.

This invention relates to improvements in that class of lifting jacks designed for raising and lowering heavy bodies through the medium of a leverage mechanism; and more specifically it relates to that type of jack which is double-acting; that is, in which a lifting or lowering movement is effected by both the upward and downward movements of the lever, accordingly as the pawls are set to effect a raising or lowering of the lifting bar on the actuation of the lever arm or handle.

My present invention is in the nature of an improvement upon a jack of the above-mentioned type forming the subject-matter of Letters Patent No. 916,502, granted to me March 30, 1909; and I will first briefly describe such features and parts as are common to the subject-matter of that patent and the present application, and will then more particularly point out the subject-matter of my present improvements.

Referring to the accompanying drawings,—Figure 1 is a side elevational view of the complete jack. Fig. 2 is a vertical section in the plane of the lifting bar. Fig. 3 is a vertical section through the casing of the ratchet-disk. Fig. 4 is an inside view of the cover plate for the opening in the side of the casing, showing also the leading novel feature of the present invention consisting of a yielding or resilient guide for the pawl-controlling pins or lugs.

Referring to the drawings, 15 designates a base-plate from which arises a hollow upright 16 containing the usual lifting bar 17, and having formed on one side thereof a casing 18, and to one side of the latter a larger approximately circular casing 19, all of these parts being preferably formed integral or in a single casting. For convenience in assembling the parts the rear half of the edge wall of the casing 19 is formed by a sheet metal strip 20 secured in place by screws or bolts.

Journaled in suitable bearings in the outer side walls of the casings 18 and 19 and coaxially with the latter, is a shaft 21, fast on which within the casing 19, is a large

ratchet disk 22, to one side of which, fast on the shaft 21 and engaging the teeth of the lifting bar 17, is a smaller ratchet disk 23.

In one edge of the casing 19 is an opening 24, in which is mounted on the pivot-pin 25, the inner end of the metal socket member 26 of the usual lever arm or handle 27 of the jack. On opposite sides of the pivot 25 are formed in the upper edge of the socket-piece inner and outer seats 28 and 29 for a pair of pawls 30 and 31, respectively. A central rib 32 on the upper edge of the socket-piece between the seats 28 and 29 serves to confine at its ends the pawls to their seats, permitting the pawls to be inserted edgewise, the pawls being socketed or apertured sufficiently above their pivots opposite the ends of the rib 32 to accommodate the latter. As will be seen by reference to Fig. 3, the pawls are so positioned as to normally tend by gravity to fall toward and into engagement with the periphery of the large ratchet wheel 22, which they are designed to engage. In order, however, to insure such engagement of the pawls with the ratchet-disk during the lifting operation, as well as to render the same pawls capable of effecting the lowering of the lifting bar under a step by step movement, I employ a pair of controlling springs with means for so tensioning said springs as to cause them to urge the pawls toward or from the ratchet disk accordingly as the lifting bar is to be raised or lowered. To this end the pawls are provided with laterally projecting pins or studs 33 and 34 which are apertured to receive the free ends 35 and 36 of a bent wire spring, which latter is fulcrumed on a pivot-bolt 37 secured to the casing 19, and has its looped or doubled body portion 38 extended downwardly on the opposite side of the fulcrum and passed through a stud 39 (Fig. 1) rotatably and eccentrically mounted in a disk 40, which latter in turn is rotatably mounted in a circular opening in the outer side wall of the casing 19. The disk 40 is provided with a thumb-piece 41 for manipulating the same, one end of which is pointed, as indicated at 42, said pointed end being adapted to engage either of a pair of oppositely disposed stop-pins 43 and 44, the former indicating the "up" position, and the latter the "down" position of the pawls. From this it will be seen that when the disk 40 is turned so as to throw the member 38 of the spring in-

wardly, or toward the shaft 21, the ends 35 and 36 of the spring which engage the pawls are likewise flexed inwardly and therefore tend to urge the pawls toward the ratchet-disk 22. On the other hand, when the section 38 of the spring has been swung to the opposite side of the center of the disk 40 by turning the latter through a half revolution to the position indicated in Fig. 1, the members 35 and 36 of the spring are flexed outwardly, and tend to throw the pawls outwardly or away from the ratchet disk 22. When the spring has been set to the "up" position, the mechanism as thus far described is complete for effecting the raising of the lifting bar. It will be seen that since the pawls 30 and 31 are both pivoted on the lever arm but on opposite sides of the pivotal axis thereof, the upward or downward swing of said lever arm tends to raise one of said pawls at the same time that it lowers the other for a fresh hold on the ratchet disk; the pawls engaging the teeth of the ratchet disk as soon as permitted by virtue both of gravity and the springs, and on their return movements sliding off the backs of the ratchet teeth, which they tend to hug closely.

For controlling the pawls during the lowering operation of the lifting bar, at which time the springs are flexed in a direction to urge the pawls away from the ratchet disk 22, as indicated in Fig. 1, I have disclosed in my Letters Patent above referred to a removable plate covering an opening in the side wall of the casing 19, which plate has apertures formed therethrough through which the pins or studs 33 and 34 project, which apertures have cam-shaped edges that serve to positively direct and guide the pawls (through the pins) alternately into engagement with the ratchet disk in opposition to the outward thrust of the springs; such positive inward direction of the pawls producing the requisite alternate dogging action of the pawls during the lowering operation. I have found in practice that, while this construction gives satisfactory results in most instances, yet occasionally the nose of the pawl member misses its proper notch in the ratchet disk, or collides with the point or nose of one of the teeth of the ratchet disk, and in such a case the strain thereby produced on the pawl-controlling pin or stud, being resisted by the rigid and unyielding cam edge of the aperture through which the stud projects, is liable to break the stud. My present improvement is designed to and does obviate this possible source of injury to the mechanism, and consists broadly in providing a sufficiently yielding or resilient guiding and controlling member for the stud to prevent such injury to the latter in the event of imperfect registration of the dogs with the ratchet

disk. A simple and approved form of this mechanism is shown herein, more particularly in Figs. 1 and 4, in which 45 designates an opening in the side wall of the casing 19 that is closed by a cover-plate 46 detachably secured thereto as by means of screws 47. In a socket 48 formed in the inner side of the plate 46 is snugly seated the shank 49 of a bent spring, herein shown as two-ply throughout and having lower and upper limbs 50 and 51 that are suitably bent or curved to form guiding and controlling surfaces for the pins or studs 33 and 34, respectively, the ends of said pins or studs underlying and engaging the lower edge of the limbs of said spring.

In operation, remembering that during the lowering of the lifting bar the springs 35 and 36 are constantly tending to throw the pawls outwardly or away from the ratchet disk, the action of the yielding guides 50 and 51 upon the studs is such as to alternately positively direct the noses of the pawls into engagement with the notches of the ratchet disk just prior to the extreme limits of the up and down movements of the lever; the spring 35 or 36 operating to throw out the pawl controlled thereby just after the other pawl has been directed into dogging engagement with the ratchet disk by its guides 50 or 51, as the case may be. In the event that either pawl, upon being forced into engagement with the ratchet disk, fails to engage the latter properly through collision with a tooth of the ratchet disk, the guide 50 or 51, as the case may be, will yield sufficiently to allow the pawl to find its proper engagement, and thus prevent a breaking strain from being brought upon the pin or stud.

While I have herein shown a simple bent spring with its two limbs properly curved to effect the requisite guiding action upon the pawls, yet it will be understood that, within the invention, any other suitable guiding means may be employed, provided it have the yielding character to obviate injurious strain upon the pins or studs; and hence the invention is not limited to the particular form of guide shown, except to the extent clearly indicated in specific claims.

I claim:

1. In a jack, the combination with a casing, and a lifting bar slidably mounted therein, of an operating lever pivoted in said casing, a pawl carried by said lever, a ratchet-member adapted to be engaged by said pawl and operatively connected to said lifting bar, a lateral projection on said pawl, and a leaf spring secured at one end to a side wall of said casing and slidably engaged by said lateral projection during the movement of said pawl toward said ratchet-member whereby said pawl is forced into

engagement with said ratchet-member upon the actuation of said operating lever, substantially as described.

2. In a jack, the combination with a casing having an opening in its side wall and a removable cover plate covering said opening, of a lifting bar slidably mounted in said casing, an operating lever pivoted in said casing, a pawl carried by said lever, a laterally projecting pin carried by said pawl, a ratchet-member adapted to be engaged by said pawl and operatively connected to said lifting bar, and a leaf spring secured at its inner end to the inner side of said removable cover plate and slidably engaged at its free outer end portion by said pin during the movement of said pawl toward said ratchet-member whereby said pawl is forced into engagement with said ratchet-member upon the actuation of said operating lever, substantially as described.

3. In a jack, the combination with a casing and a lifting bar slidably mounted therein, of an operating lever pivoted in said casing, a pair of alternately acting pawls carried by said lever, laterally projecting pins carried by said pawls, a ratchet member adapted to be engaged by both of said pawls and operatively connected to said lifting bar, spring means for normally urging said pawls out of engagement with said ratchet member during the descending movement of the lifting bar, and yieldable resilient guides slidably engaged by said pins during the movement of said pawls toward said ratchet member whereby said pawls are alternately forced into engagement with said ratchet member upon the actuation of said operating lever, substantially as described.

4. In a jack, the combination with a casing and a lifting bar slidably mounted therein, of an operating lever pivoted in said casing, a pair of alternately acting pawls pivoted to said lever on opposite sides of the

pivot of the latter, laterally projecting pins carried by said pawls, a ratchet member adapted to be engaged by both of said pawls and operatively connected to said lifting bar, spring means for normally urging said pawls out of engagement with said ratchet member during the descending movement of the lifting bar, and a pair of yieldable spring guides secured at one end in said casing, said spring guides having cam surfaces engaged by said pins, respectively, during the movement of said pawls toward said ratchet member whereby said pawls are alternately forced into engagement with said ratchet member upon the actuation of said operating lever, substantially as described.

5. In a jack, the combination with a casing having an opening in a side wall thereof, and a removable plate covering said opening, of a lifting bar slidably mounted in said casing, an operating lever pivoted in said casing, a pair of alternately acting pawls pivoted on said lever on opposite sides of the pivot of the latter, laterally projecting pins carried by said pawls, a ratchet member adapted to be engaged by both of said pawls and operatively connected to said lifting bar, spring means for normally urging said pawls out of engagement with said ratchet member during the descending movement of the lifting bar, and a bent spring removably secured at its shank in said removable plate and having a pair of limbs provided with cam surfaces slidably engaged by said pins and operating to alternately force said pawls into engagement with said ratchet member upon the actuation of said operating lever, substantially as described.

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Witnesses:

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