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1,552,087

A. J. SMITH

PIN REMOVING TOOL

Filed Feb. 14, 1924

Fig. 1.

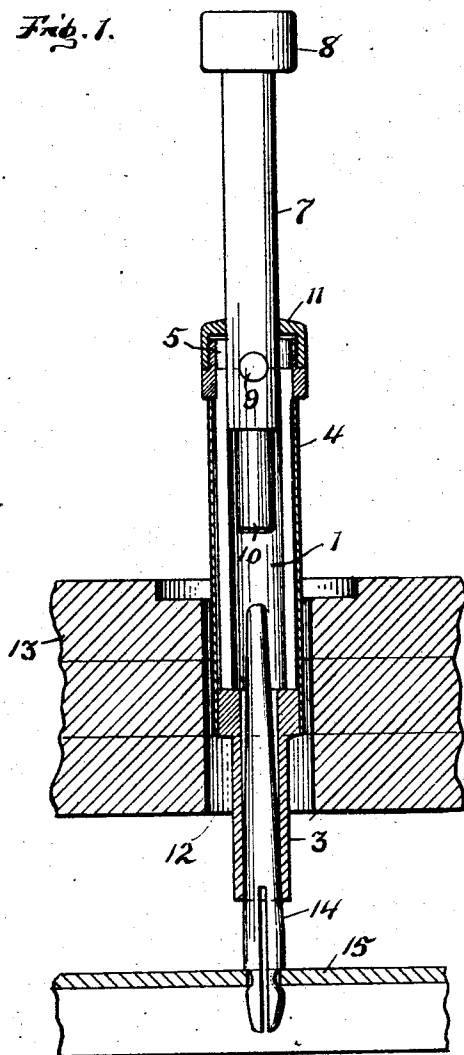


Fig. 2.

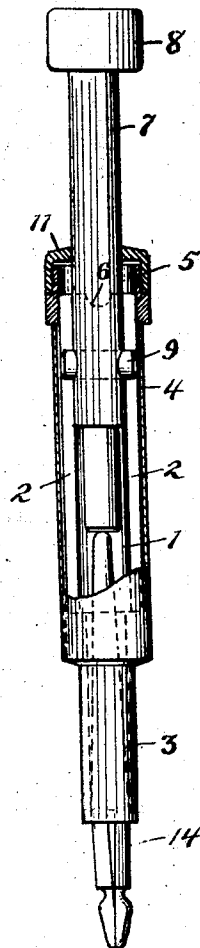
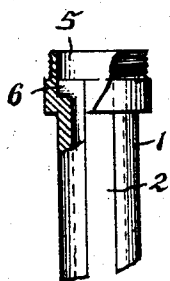


Fig. 3.



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PIN-REMOVING TOOL.

Application filed February 14, 1924. Serial No. 692,929.

To all whom it may concern:

Be it known that I, ADAM J. SMITH, a citizen of the United States of America, and resident of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Pin-Removing Tools, of which the following is a specification.

This invention relates to improvements in tools applicable for the removal of "spotting" pins from their rack when their replacement by new pins is required, reference being had to that bowling alley equipment wherein a vertically movable rack is provided with a group of pins that are projected up through corresponding openings in the floor of the alley and serve as guides for the ten pins as they are positioned on the floor. In such structures the pins are collectively elevated by movement of the rack so that they project above the floor while the pins are being "spotted" and are subsequently withdrawn by lowering the rack in order that the pins be not injured when the ten pins are struck. It frequently occurs through inadvertence that the pins become bent or broken and their removal from the rack and replacement becomes necessary, and as the rack is located more or less inaccessibly beneath the floor, it is desirable that the pins be removable from the rack through the corresponding openings in the floor through which the pins operate, and frequently such operations are attended with difficulty. The object of the present invention therefore, is to provide an instrument applicable for the removal of "spotting" pins from their rack through the corresponding openings in the floor of the alley and which will disconnect the pins from the rack and secure them in the tool for their removal. Another object of the invention is to provide in the construction of the tool means for ejecting the pin secured therein after its withdrawal from the rack.

These objects are accomplished by the construction illustrated in the accompanying drawings, in which:

Fig. 1 is a vertical section showing the invention as it is applied to a "spotting" pin prior to the removing operation;

Fig. 2 is a vertical elevation partly broken away shown in readiness for the ejecting operation; and

Fig. 3 is a fragmentary elevation of the upper end of the tool handle shown in a plane at right angles to the other views, partly broken away.

The characters appearing in the description refer to parts shown in the drawings and designated thereon by corresponding characters.

The invention comprises a handle formed of a tubular member 1 having diametrically opposite longitudinal slots 2 and an extension 3 of reduced diameter at its lower end. The upper portion of the member is provided with a tubular casing 4 by which said slots are concealed. The upper end of the member 1 has an annular chamber 5 made therein and diametrically opposite recesses 6 at the base of the chamber for the purpose hereinafter described, the said longitudinal slots extending into said chamber.

A plunger 7 extends into the tubular member 1 through the top thereof and is provided with a transversely positioned pin 9, the ends of which project respectively from the corresponding sides of the plunger so as to extend into the corresponding slots 2 of the member 1, or into the corresponding recesses 6, accordingly as the plunger is positioned. The upper end of the plunger has an enlarged head 8 and the lower end has an extension 10 of reduced diameter. The plunger is held in connection with the tubular member by a cap 11 through which the plunger extends and which is screwed onto the top of the member 1, so that the cap limits the upward movement of the plunger because of the engagement of the ends of the pin 9 therewith.

In utilizing the invention, the plunger is raised in the handle so that the ends of the pins 9 extend within the recess 5, and the plunger is then turned to permit the ends of the pin to become seated in the recesses 6 and the downward relative movement of the plunger in the handle is thus arrested. The extension 3 is then introduced through the opening 12 of the floor 13 and over the "spotting" pin 14 which is slotted at its lower end to admit of its being compressed during removal from the rack 15. The extension 3 is then driven down onto the pin by striking the head 8 of the plunger downwardly with a hammer so that the pin is thereby compressed and held frictionally in the extension. The tool is then withdrawn

with the pin held in its extension. The plunger is then turned in the handle so that the projecting ends of the pin 9 are alined with the slots 2, thus permitting the plunger to be moved downwardly onto the top of the pin. Then, by applying force downwardly to the plunger, the pin may be readily ejected from the extension 3 in which it is frictionally held. Thus, it will be understood that the plunger in its relation with the handle has two distinct operating positions, viz one for securing the "spotting" pin in the extension prior to the removal of the pin from its rack, and the other for ejecting the pin from the tool subsequent to its removal from the rack.

What I claim is:—

1. A tool for the removal of "spotting" pins from their rack comprising a tubular member with opposite longitudinal slots therein and an extension of reduced diameter at its lower end, there being an annular chamber in its upper end and oppositely disposed recesses at the base of said chamber; a casing for said member concealing said slots; a plunger longitudinally movable in the tubular member; a pin extending transversely in the plunger with its ends projecting from the corresponding sides of the plunger and having selective engagement in said slots or recesses accordingly

as the plunger is positioned; and a cap at the top of the tubular member operable to limit upward movement of the plunger by engagement with the ends of said pin.

2. A tool for the removal of "spotting" pins from their rack comprising a tubular handle having internally disposed longitudinal slots therein and oppositely disposed recesses at the upper end of the handle and spaced respectively between the slots; and a plunger member including means selectively engageable in said recesses and operable to limit the plunger to its uppermost position, and in said longitudinal slots to admit of longitudinal movement of the plunger in said handle.

3. In a tool for removing "spotting" pins from their rack, a handle having a tubular end for the reception of a "spotting" pin and operable to compress the pin when driven thereon; a plunger member in the handle; and means in connection with the plunger and the handle operable selectively to sustain driving relation of the plunger with the handle while the handle is being forced onto the pin, and to admit of movement of the plunger in the handle to eject the pin therefrom.

In testimony whereof I affix my signature.

ADAM J. SMITH.