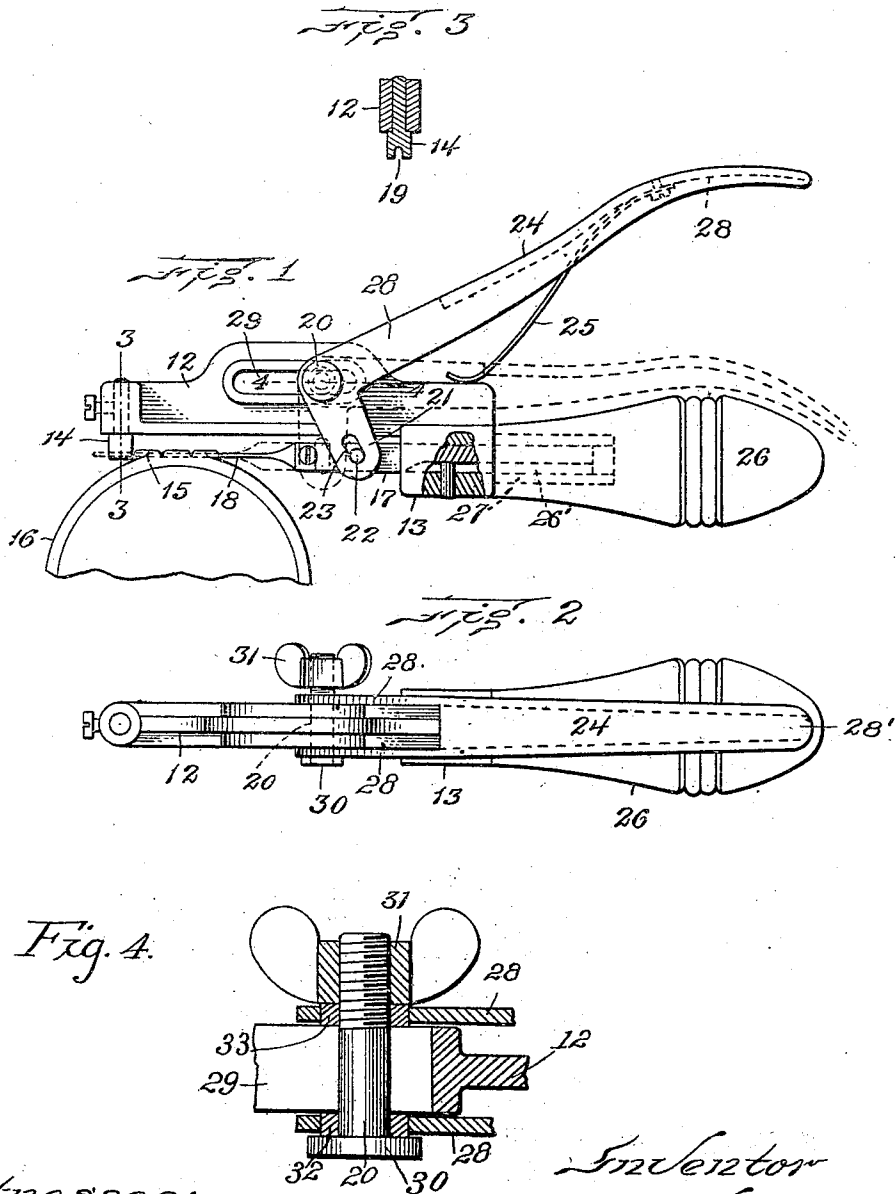


G. W. BOWERS.
HINGE PIN REMOVER.
APPLICATION FILED JAN. 22, 1909.

945,442.

Patented Jan. 4, 1910.



Witnesses:
W. P. Abell
F. R. Roulstone

Inventor
George W. Bowers
by *Wm. Brown* Clerk
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. BOWERS, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HAMMEL, RIGLANDER & CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

HINGE-PIN REMOVER.

945,442.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed January 22, 1909. Serial No. 473,728.

To all whom it may concern:

Be it known that I, GEORGE W. BOWERS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Hinge-Pin Removers, of which the following is a specification.

This invention relates to devices for removing the pin or pintle member from the socket members of a hinge such as is used in connecting parts of watch cases, brooches, etc.

The invention has for its object to provide a simple and efficient pin removing tool adapted to exert endwise pressure in a rectilinear direction upon one end of a hinge pin, and eject the same wholly or partially from the socket members of the hinge.

Another object of the invention is to provide a hinge removing tool which is adjustable to hinges of different lengths.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a side elevation of a hinge pin remover embodying my invention. Fig. 2 represents a back view of the same. Fig. 3 represents a section on line 3—3 of Fig. 1. Fig. 4 represents a section on an enlarged scale on line 4—4 of Fig. 1.

The same reference characters indicate the same parts in all the figures.

In the drawings, 12 represents a shank having at one end portion a guide 13, and at the opposite end portion an abutment 14, said guide and abutment being offset or projecting laterally from the shank, as shown in Fig. 1. The abutment is adapted to bear against one end of a hinge socket member 15, said socket member being shown in Fig. 1 as a part of the hinge which connects parts of a watch case 16, such parts being, for example, the case center and a cap or a bezel.

17 represents a plunger which is movable in a socket formed for its reception in the guide 13, the plunger being movable endwise in a rectilinear path toward and from the abutment 14. The outer end of the plunger is provided with a pin ejector 18 adapted to bear on one end of a hinge pin, and to enter the socket member of the hinge at the end thereof opposite the socket member against which the abutment 14 bears. When the plunger is projected, the ejector

18 presses against one end of the hinge pin and enters the adjacent socket member of the hinge, forcing the hinge pin endwise into an opening 19 formed for its reception in the abutment 14. The rectilinear movement of the plunger and ejector insures the dislodgment and entire or partial removal of the hinge pin without strain on any of the parts, such as would be caused if the movement of the ejector were in the arc of a circle.

Means are provided for projecting and retracting the plunger, the preferred means being as follows:—20 represents a fulcrum pin secured to the shank 12, and projecting from opposite sides thereof. Mounted to swing on the fulcrum pin 20 is an operating lever, preferably of bell crank form, and having a shorter arm 21 which is loosely engaged with the plunger 17 by means of a stud 22 on the plunger, and a slot 23 in the arm, said slot receiving the stud. The operating lever has a longer arm 24 adapted to be manipulated by the user of the tool. The lever is normally held in the position shown in full lines in Fig. 1 by a spring 25 attached to the longer arm 24 and bearing on the inner end portion of the shank. A movement of the lever to the position shown by dotted lines in Fig. 1 causes the projection of the plunger, while a release of the lever permits the spring 25 to return to the full line position, thus retracting the plunger. 26 represents a handle or hand grip which may be of wood, and is provided with a longitudinal socket 26'. The inner end of the handle is mounted on a sleeve extension 27 formed on or attached to the guide 13. The longer arm of the bell crank lever is located beside the hand grip 26, and in such relation thereto that the said longer arm and handle may both be grasped by one hand, the closing of which around the hand grip and lever arm forces the latter into the position shown by dotted lines, and thus projects the plunger.

The operating lever is preferably made from a single piece of relatively thick sheet metal, the longitudinal edges of which are bent downwardly to form side flanges which are connected by a back. The shorter arm of the lever is preferably composed of two parts formed by ears on the blank from which the operating lever is formed, said ears being bent downwardly at

opposite sides of the shank, each ear having a slot 23 which receives the end of the stud 22.

The operating lever is preferably connected 5 adjustably with the shank so that it may be adjusted to accommodate hinges of different lengths. To this end, the shank is provided with a longitudinal slot 29 through which the fulcrum pin passes, the pin being provided 10 with means whereby it may be loosened to permit its adjustment in the slot and secured to hold it at any desired adjustment.

As here shown, the fulcrum pin is provided 15 at one end with a head 30 bearing against a washer 32 inserted in an orifice in one of the flanges 28 of the operating lever, and a thumb nut 31 engaged with a threaded portion of the fulcrum pin, and 20 bearing against a washer 33 inserted in an orifice in the opposite flange 28 of the operating lever. When the thumb nut is loosened the fulcrum pin, the operating lever, 25 and the plunger may be adjusted lengthwise of the shank, the tightening of the thumb nut confining the fulcrum pin at any point to which it may be adjusted. The washers 32 and 33 are somewhat thicker than the 30 flanges 28, so that the head 30 and nut 31 do not exert a binding pressure on said flanges, and therefore do not prevent the free movements of the lever. The diameter of the washers is greater than the width of the slot 29, so that they bear on the edges 35 of the shank 12 at opposite sides of the slot.

I claim:

1. A hinge-pin remover comprising a shank having at one end a hinge abutment

and at the other end a guide, a plunger having a rectilinear endwise movement in said 40 guide toward and from the abutment, and provided with a pin ejector, and a lever fulcrumed on the shank and provided with a shorter arm loosely engaged with the plunger 45 and with a longer operating arm, the fulcrum of said lever being adjustably connected with the shank to adapt the plunger to hinges of different lengths.

2. A hinge-pin remover comprising a shank having at one end a hinge abutment 50 and at the other end a guide, a plunger having a rectilinear endwise movement in said guide toward and from the abutment, and provided with a pin ejector, a fulcrum pin 55 adjustably connected with the shank, and a lever mounted on said pin and having a shorter arm loosely engaged with the plunger, and a longer operating arm.

3. A hinge-pin remover comprising a shank having at one end a hinge abutment 60 and at the other end a guide, said shank having also a longitudinal slot, a fulcrum pin adjustable in said slot and provided with means whereby it may be secured to the 65 shank in different positions, a plunger movable in said guide toward and from the abutment and provided with a pin ejector, and a lever mounted on said fulcrum pin and having a shorter arm loosely engaged with the plunger, and a longer operating arm. 70

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE W. BOWERS.

Witnesses:

C. F. BROWN,

P. W. PEZZETTI.