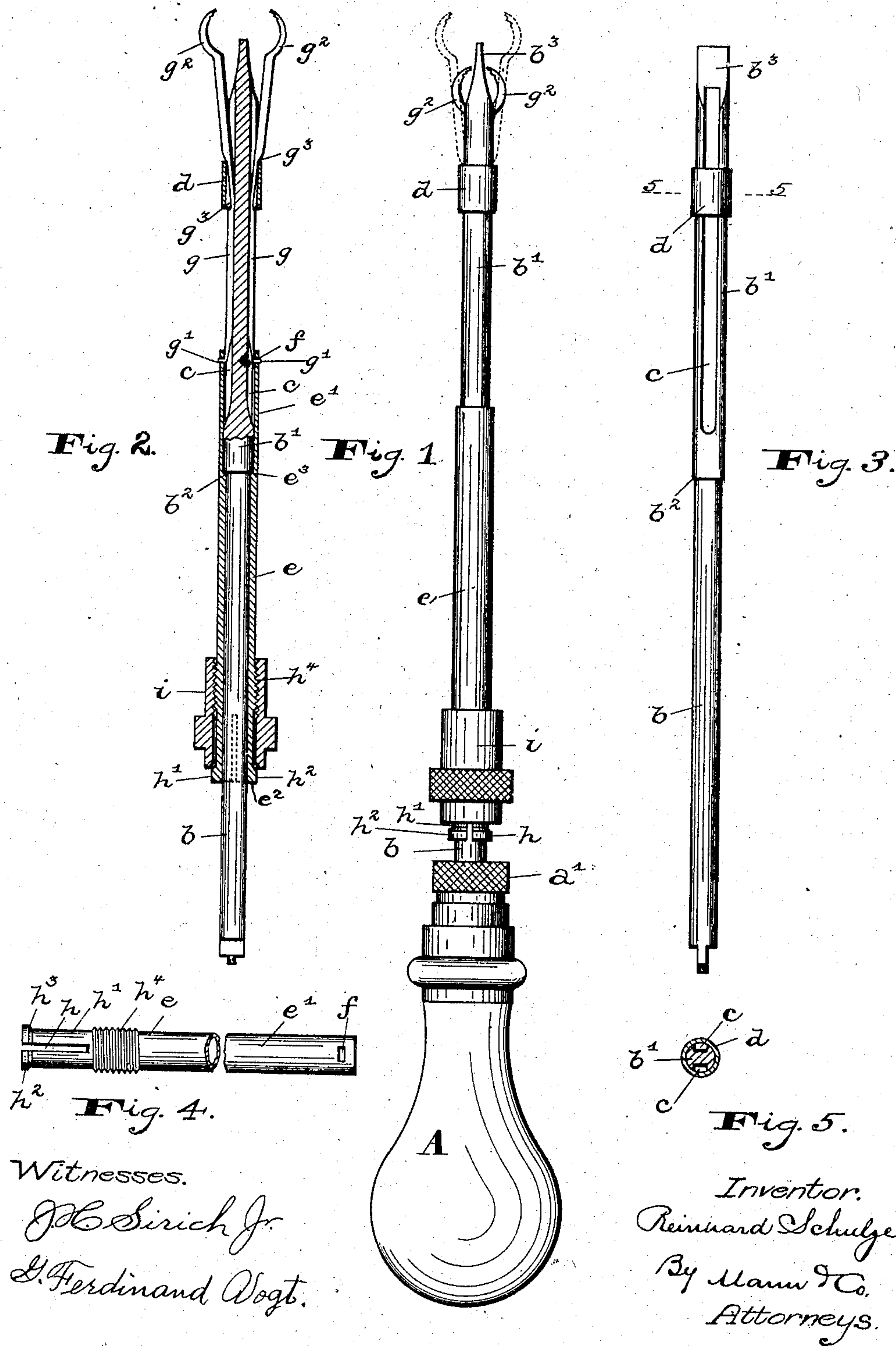


No. 796,154.

PATENTED AUG. 1, 1905.

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SCREW DRIVER.  
APPLICATION FILED MAY 16, 1904.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

REINHARD SCHULZE, OF BALTIMORE, MARYLAND.

## SCREW-DRIVER.

No. 796,154.

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed May 16, 1904. Serial No. 208,069.

*To all whom it may concern:*

Be it known that I, REINHARD SCHULZE, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Screw-Drivers, of which the following is a specification.

This invention relates to improvements in screw-drivers, and has for its object to provide an improved construction of clamp device for grasping the head of a screw and holding same in engagement with the driver during the operation of driving the screw.

Another object of the invention is to provide a construction whereby the clamp device may be operated near the handle end of the driver, thereby enabling the device to be used in contracted spaces and places where the hand of the operator cannot be inserted.

With these and other objects in view the invention is illustrated in the accompanying drawings, in which—

Figure 1 illustrates a side elevation of my improved device. Fig. 2 illustrates a sectional elevation of the driver and clamp device, the handle being omitted. Fig. 3 illustrates a side elevation of the driver. Fig. 4 illustrates a side elevation of the tubular sleeve, and Fig. 5 is a sectional view through the end of the driver on the line 5 5 of Fig. 3.

In the drawings, A designates a handle of any suitable construction, but in the present instance is of the removable type, in which the shank of the driver is inserted and secured by a suitable clamp device *a'*.

The driver-rod has two diameters—the smaller handle end *b* and the larger operating end *b'*, with a shoulder *b<sup>2</sup>* intervening between the said two ends. The larger end *b'* of the driver is provided with the usual beveled end *b<sup>3</sup>* for insertion into the slot of the ordinary screw. This larger end is also provided at opposite sides with parallel longitudinal grooves *c*, which extend from the beveled end *b<sup>3</sup>* toward the shoulder *b<sup>2</sup>*. A stationary collar *d* surrounds the larger end of the driver and bridges or extends over the said grooves *c*.

A sleeve *e* surrounds the driver, and one end *e'* of same has a larger interior diameter than the other end *e<sup>2</sup>*, and thereby forms an interior shoulder *e<sup>3</sup>*. The end *e'* of said sleeve fits over the larger end *b'* of the driver, while the other end *e<sup>2</sup>* of said sleeve surrounds the smaller end *b* of said driver. The larger end of the sleeve is provided at diametrically op-

posite sides with cross-slots *f*, which have position over the longitudinal grooves *c* in the larger end of the driver.

A spring-arm *g* is fitted into each of the grooves *c*, and each of said arms is provided at its inner end with an outturned hook *g'*, which enters one of the cross-slots *f* in the end of the sleeve *e*. These hooks are kept in engagement with the slots *f* by the tendency of the metal to spring outwardly. The spring-arms *g* are each provided with an outer curved or hook end *g<sup>2</sup>*, which have positions at opposite sides of the beveled end *b<sup>3</sup>* of the driver, and said arms are also provided between their ends with a notch *g<sup>3</sup>* for a purpose now to be described.

When in position within the grooves *c*, the arms are confined therein by passing beneath the stationary collar or band *d*, and as the sleeve *e* is moved longitudinally on the driver toward the handle the outer curved ends *g<sup>2</sup>* of the spring-arms will be contracted or drawn toward each other, and when moved in the opposite direction, or away from the handle, the arms *g* will slide beneath the stationary collar and gradually expand until the notch *g<sup>3</sup>* registers or has position beneath the collar, at which time they have been expanded as far as they can go. By providing the notch *g<sup>3</sup>* the spring-arms have a greater expansion or movement away from each other.

The inner end of the sleeve *e* is provided with a series of longitudinal slots *h*, which form a plurality of spring-arms *h'*. Each of these spring-arms *h'* is provided with a segment-flange *h<sup>2</sup>*, the inner edges *h<sup>3</sup>* of which are beveled or inclined. The sleeve is also provided adjacent the spring-arms with circumferential screw-threads *h<sup>4</sup>*. An internally-threaded collar *i* surrounds the inner end of the sleeve, and said collar when screwed onto the sleeve contracts the spring-arms *h'* and clamps them about the end *b* of the driver and holds the sleeve and spring-arms *g* in the adjusted position.

The operation is simple and as follows: The beveled end *b<sup>3</sup>* of the driver is inserted in the slot of the screw and the collar *i* is drawn toward the handle, so as to contract the arms *g* and clamp them about the head of the screw by drawing them beneath the stationary collar *d*. This operation of contracting the arms *g* can be easily accomplished by one hand, as the collar *i*, which indirectly operates them, is near the handle. The operation



of putting the screw in place is as usual, and just before it is driven entirely in place the arms *g* may be withdrawn to release the head.

The shoulder on the interior of the sleeve is arranged to contact with the shoulder on the exterior of the driver, as seen in Fig. 2, and limit the forward movement of the sleeve and spring-arms.

The construction herein shown enables the clamp ends of the spring-arms to be adjusted with respect to the point end of the driver in two directions simultaneously—that is, laterally and longitudinally.

When about to withdraw a screw from a contracted place where the fingers of the hand cannot have access, the spring clamp-arms should first be retracted to expose the point end of the driver, then the screw should be started or turned back until its head is relieved, then the spring clamp-arms should be moved forward and caused to grip the head, and, finally, the screw may be turned until wholly released and then lifted out by the clamp-arms.

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

1. The combination with a driver having a plurality of longitudinal grooves, of a stationary collar near the end of the driver and bridging over said grooves; a spring-arm fitting into each of the grooves in said driver and held therein by said stationary collar; a sleeve movable longitudinally on the driver and connected to said spring-arms, and a clamp moving with and surrounding said

sleeve at its inner end to clamp the same to said driver.

2. The combination with a driver having a plurality of longitudinal grooves, of a stationary collar near the end of the driver and bridging over said grooves; a spring-arm in each of said grooves and held therein by said stationary collar; a sleeve surrounding said driver and connected at one end with the spring-arms in said grooves, said sleeve also having a plurality of spring-arms at its opposite end which surround the driver, and means for clamping said latter arms around the driver.

3. The combination with a driver having a plurality of longitudinal grooves at one end, of a stationary collar surrounding the driver and bridging said grooves; a spring-arm in each of said grooves and extending beneath the stationary collar and having outturned hooks at their inner ends; a sleeve surrounding said driver and provided at its outer end with a plurality of cross-slots which receive the hooks on said spring-arms and the inner end of said sleeve having a plurality of spring-arms which surround the driver, and a collar surrounding the spring-arms at the inner end of said sleeve and arranged to clamp the same about the driver.

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

REINHARD SCHULZE.

Witnesses:

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