No. 859,532 PATENTED JULY 9, 1907.

G. F. SWORTFIGER.

EXPANSION ROCK ANCHORAGE.

APPLICATION FILED MAY 1, 1905.

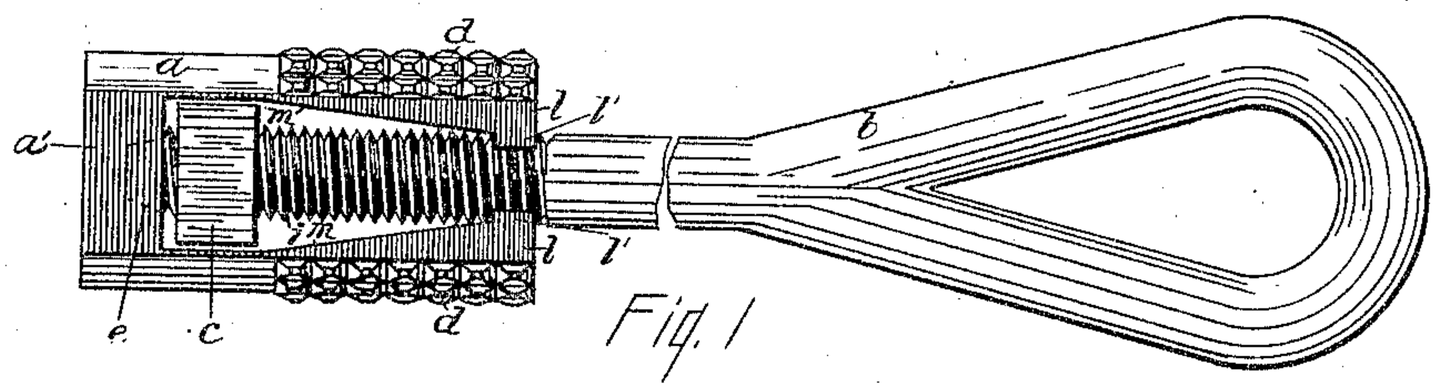

Fig. I

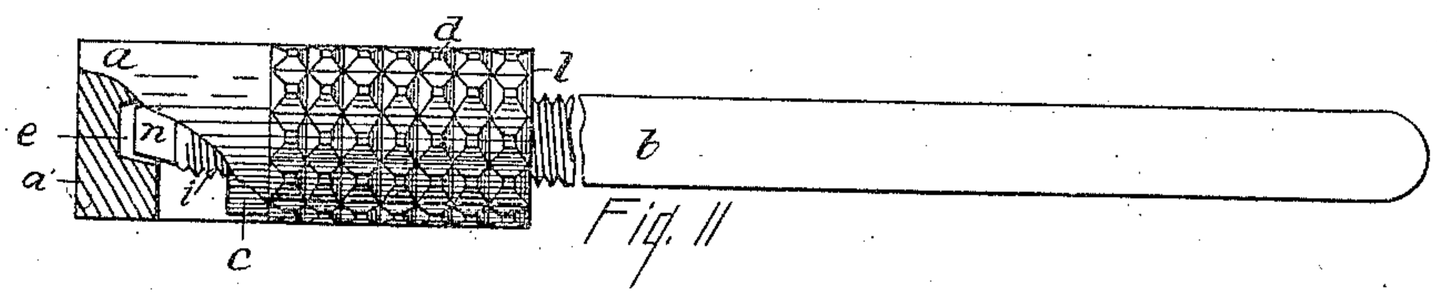

Fig. II

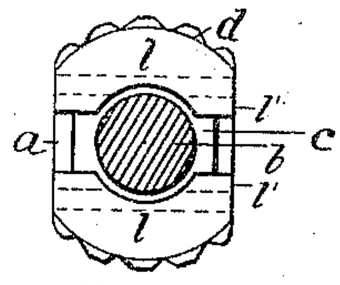

Fig. III

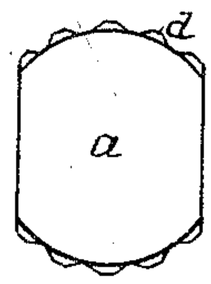

Fig. IV

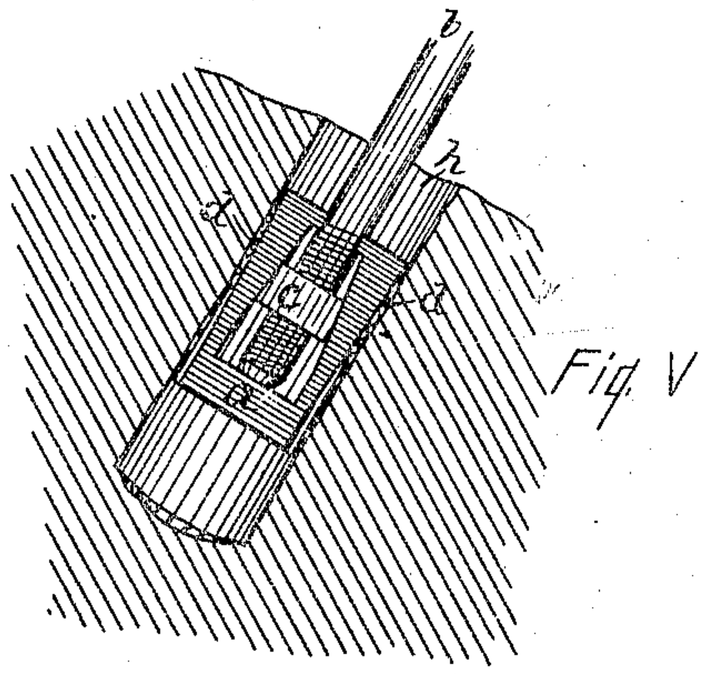

Fig. V

Witnesses
F. R. Mauser Jr.
Allen Bagger

Inventor
George F. Swortfiger
By Attorney Henderson

UNITED STATES PATENT OFFICE.

GEORGE F. SWORTFIGER, OF NEWARK, NEW JERSEY.

EXPANSION ROCK-ANCHORAGE.

No. 859,532. Specification of Letters Patent. Patented July 9, 1907.

Application filed May 1, 1905. Serial No. 258,403.

To all whom it may concern:

Be it known that I, GEORGE F. SWORTFIGER, a citizen of the United States, and resident of Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Expansion Rock-Anchorage, of which the following is a specification.

This invention relates to the securing of stays, guys, &c., to solid bodies, and has for its object an anchorage that can be easily applied and secured in holes in brick work, timbers, rock, &c. and one that may also be easily released from their hold.

The objects are attained by the means set forth in these specifications and the accompanying drawings, in which like letters refer to similar parts throughout the several views.

Figure I is a side view of the anchor. Fig. II is an edge view of the same. Fig. III is a view of the bolt end of the anchor, with the eye removed from the bolt. Fig. IV is a view of the butt-end of the anchor. Fig. V represents the anchor in use.

The anchor consists of a pronged piece *a* made of malleable iron or steel, its outer shape conforming to that of a cylinder with opposite sides cut away, as in Figs. IV and V. The prongs are solidly united at one end. The ends of the prongs are of larger diameter than the butt-end *a'*, and the enlargement is cross-scored to afford projecting points *d*, *d*, that will fall into irregularities in rocks or press into the fiber of wood.

When an anchor has been set for temporary use, or as often happens, an anchor is to be abandoned the extreme ends of the prongs *l*, *l*, are provided with inwardly projecting flanges *l'*, *l'*, Figs. I and III. and they partly surround the bolt *b*, as shown in Fig. III. At the butt end of the anchor is a space to receive a nut *c* through which the bolt *b* is secured. From a point just forward of the nut, extending to the flanges *l'*, *l'*, the inner surfaces of the prongs are flat, and constitute inclined planes *m*, *m*, gradually sloping towards the bolt and to the flanges *l'*, *l'*. The flanges prevent the nut from being entirely drawn out of the anchor, and when the bolt is in place with its point in the recess *e*, Fig. I, the bolt encircling flanges retain the anchors so that it cannot become separated from the bolt in handling it, singly or in bolt. When the bolt *b* is screwed into the nut *c*, the nut will not move until the point of the screw impinges against the bottom of the countersink *e*. Then as the bolt continues to be turned the nut will move upon the inclined surfaces *m*, *m*, causing the prongs *l*, *l*, to expand against the surrounding material.

In Fig. V the operation is illustrated. A bolt *n* is bored in the rock *r* large enough to admit the anchor *a*. As the bolt is turned the anchor is expanded against the rock, the points *d*, *d*, taking hold upon the surrounding stone. The harder the bolt is turned, or the greater the strain put upon the anchor the tighter will the anchor become by reason of the action of the nut on the inclined planes.

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

1. A rock anchor comprising two prongs integrally connected at their bases, a space between the prongs at the base adapted for a square nut for a bolt, the prongs open at the sides the same area as the space between them for elasticity and to admit the nut to the nut-space, the prongs tapering inwardly from the nut-space to their outer ends, their outer ends provided with flanges to partly encircle the bolt, and having curved and serrated outer faces for engagement with the walls of a hole in the rock.

2. In a rock anchor, the combination with an anchor-bolt having a square nut on its threaded end, of a member comprising two prongs integrally connected at their bases, a space between the prongs at the base to receive the nut of the bolt, the prongs open at their sides the same area as the space between them for elasticity and to admit the nut of the bolt, the prongs tapering from the nut-space to their outer ends, the said ends having flanges to partly encircle the bolt, and outer faces curved and serrated to adapt them to the walls of a hole in the rock.

Signed at Newark in the county of Essex and State of New Jersey this twenty fifth day of March A. D. 1905.

GEORGE F. SWORTFIGER.

Witnesses:
ARTHUR S. DE VOE,
GEO. A. TALBOT.