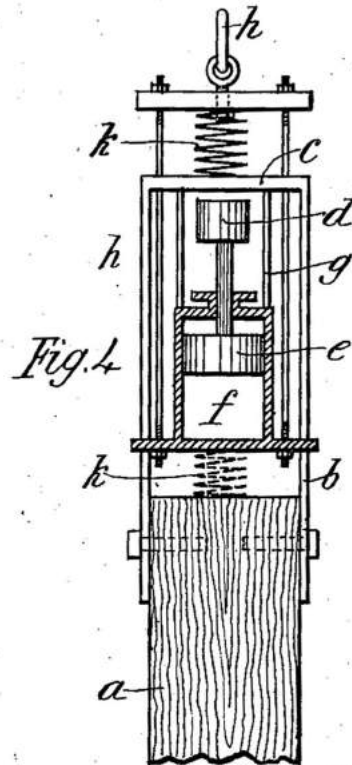
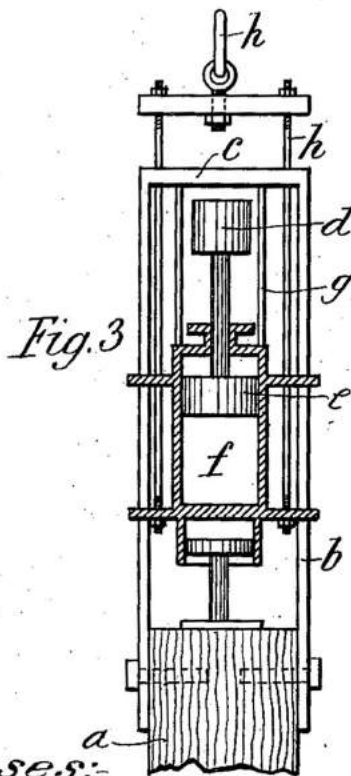
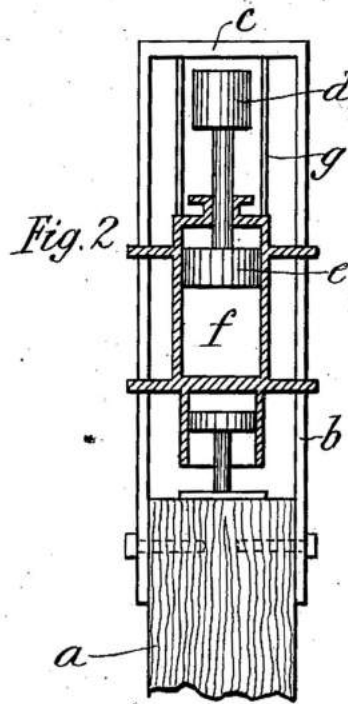
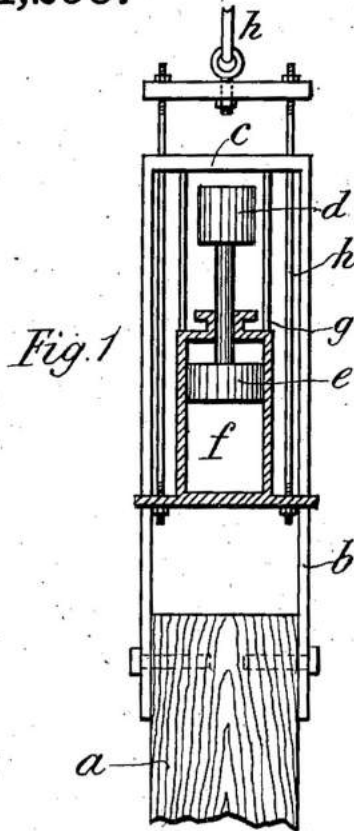


1,014,295.

Patented Jan. 9, 1912.

2 SHEETS-SHEET 1.



Witnesses:
Olaf W. Admgen.
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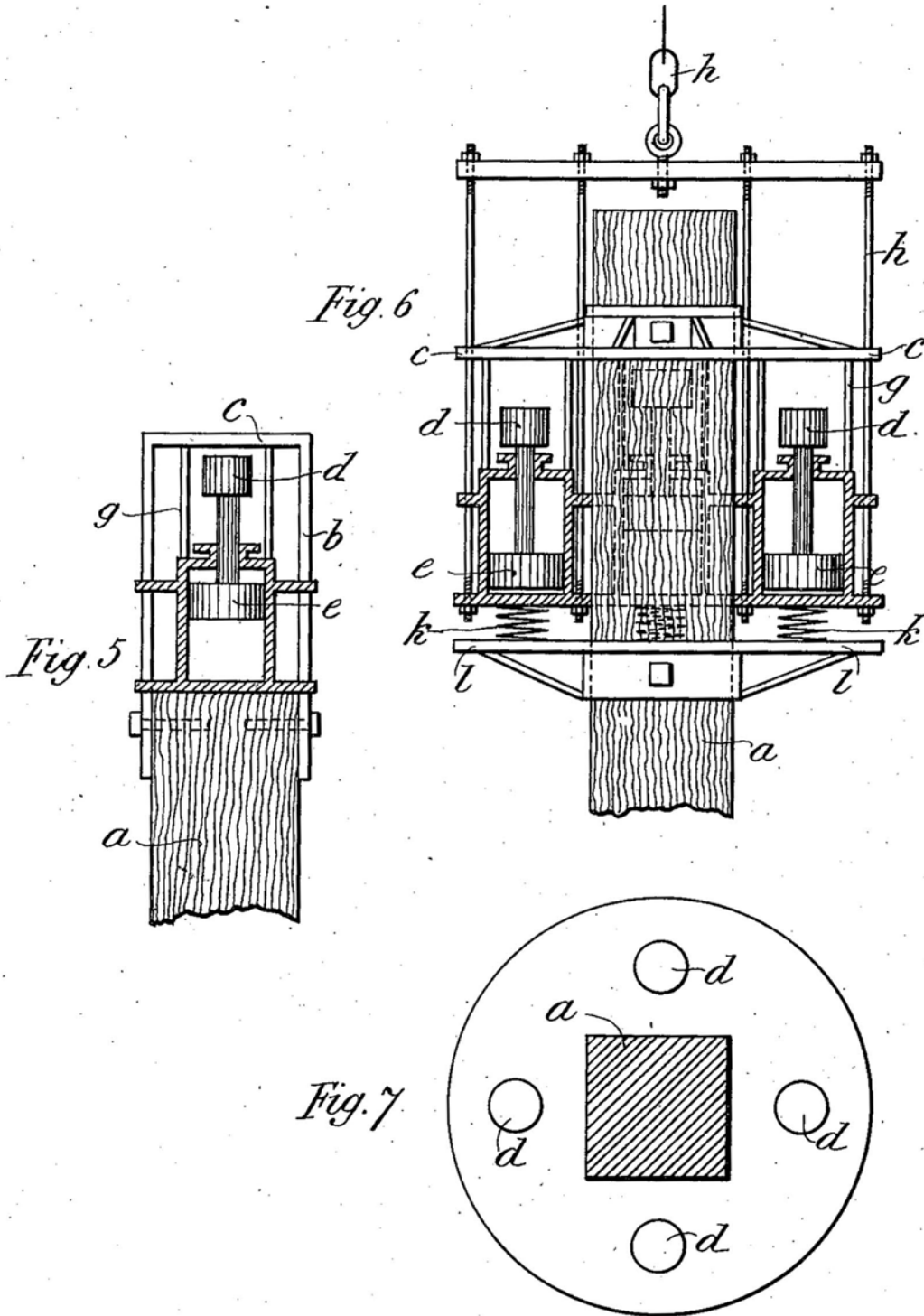
Inventors: {
Alexander Gibb
Thomas Graham Menzies
Robert Chalmers
 by their attorneys
Thomson & Howard

A. GIBB, T. G. MENZIES & R. CHALMERS.
 WITHDRAWING OF PILES, POSTS, AND THE LIKE.
 APPLICATION FILED AUG. 11, 1911.

1,014,295.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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WITHDRAWING OF PILES, POSTS, AND THE LIKE.

1,014,295.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed August 11, 1911. Serial No. 643,610.

To all whom it may concern:

Be it known that we, ALEXANDER GIBB, THOMAS GRAHAM MENZIES, and ROBERT CHALMERS, civil engineers, subjects of the King of Great Britain, and residents of St. Martin's Abbey, Perthshire, Ferry Craig, North Queensferry, Fifeshire, and Rhu-faada, Newport, Fifeshire, Scotland, respectively, have invented new and useful Improvements Relating to the Withdrawing of Piles, Posts, and the Like, of which the following is a specification.

The object of the present invention is to provide apparatus for withdrawing quickly and economically piles, posts, poles, and the like from the position into which they have been driven.

According to existing methods piles have to be pulled or prized from their position necessitating a resistance or fulcrum against which to apply the re-action from the force used. In some cases so great a force is necessary that owing to the absence of a suitable resistance or fulcrum against which to work, such force is incapable of practical application.

According to this invention an attachment is provided for fixing to the pile which is to be withdrawn, which attachment is adapted to receive the blows of a pneumatically or otherwise operated hammer. The hammer is by preference separately supported, but it may be carried on the pile itself, either directly or by means of an attachment for that purpose, or it may be carried on the same attachment which is adapted to receive the blows of the hammer or it may be supported by a combination of these means. Thus the only resistance or fulcrum required is that necessary to support the hammer and overcome the re-action from the blows, and the resistance necessary for this purpose is only a fraction of what is required according to existing methods as described above. It is for this reason that the hammer, supported directly or otherwise on the pile itself, and without any external support, will draw, or partly draw the pile. The blows of the hammer will preferably be delivered in

quick succession, and a plurality of hammers operating simultaneously may if desired be employed.

The accompanying drawings illustrate this apparatus in several of the methods in which it may be employed.

In Figure 1 the hammer is shown working entirely supported by the separate support. In Fig. 2 the hammer is supported from the pile itself by means of an auxiliary cylinder and piston. In Fig. 3 the hammer is shown supported by a combination of the external support and the auxiliary cylinder and piston resting on the pile. In Fig. 4 the hammer is shown supported partly by the external support and partly by a spring. This spring may be either in a position in which it supports the hammer from the piles itself, or in a position in which case it supports the hammer from the attachment adapted to receive its blows. With either position or both positions of the spring, the hammer may be used either with or without the external pull. Fig. 5 represents the hammer carried directly on the pile. This method may also be combined with the external support which may be applied to the casing of the hammer, or to the attachment or to the pile itself. In Fig. 6 a plurality of hammers, in this case four is shown. Fig. 7 is a sectional plan view indicating the positions of the hammers.

a represents the pile and *b* the attachment thereto adapted to receive the blows of the hammer on the anvil *c*. The hammer or hammers *d d* may be operated by the action of steam or compressed air on a piston *e* in a cylinder *f*. Distance pieces *g g* are shown keeping the cylinder at such a distance from the anvil *c* as will insure the hammer operating through its normal stroke. The separate support for the hammer is represented by the chain and rods *h h* on which a crane may be employed to give the necessary pull.

k k are the springs shown in Fig. 4; that in dotted lines supports the hammer *d* from the pile itself, that in full lines supports the hammer through the attachment *h*. In Fig.

6 the hammers are supported on springs
k k which in turn rest upon the attachment
l l to the pile *a*.

5 The hammer or hammers when used in
 conjunction with the withdrawing means
 usually employed will be found to greatly
 assist such means in withdrawing the pile.

What we claim and desire to secure by
 Letters Patent of the United States is:—

10 1. In apparatus for withdrawing piles
 and the like, an anvil, means for attaching
 the same to the pile, a hammer and means
 for operating the same to strike the anvil
 in the proper direction substantially as de-
 15 scribed.

2. In apparatus for withdrawing piles
 and the like the combination with the ordi-
 nary withdrawing means, of an anvil at-

tached to the pile and a vibrating hammer
 actuated to strike the anvil in the proper 20
 direction substantially as described.

3. In apparatus for withdrawing piles
 and the like, an anvil, means for attaching
 the same to the pile, a plurality of vibrat-
 ing hammers and means for operating them 25
 to strike the anvil in the proper direction
 substantially as described.

In testimony whereof we have signed our
 names to this specification in the presence
 of two subscribing witnesses.

ALEXANDER GIBB.

THOMAS GRAHAM MENZIES.

ROBERT CHALMERS.

Witnesses:

RONALD W. CURRIE,

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