

No. 704,852.

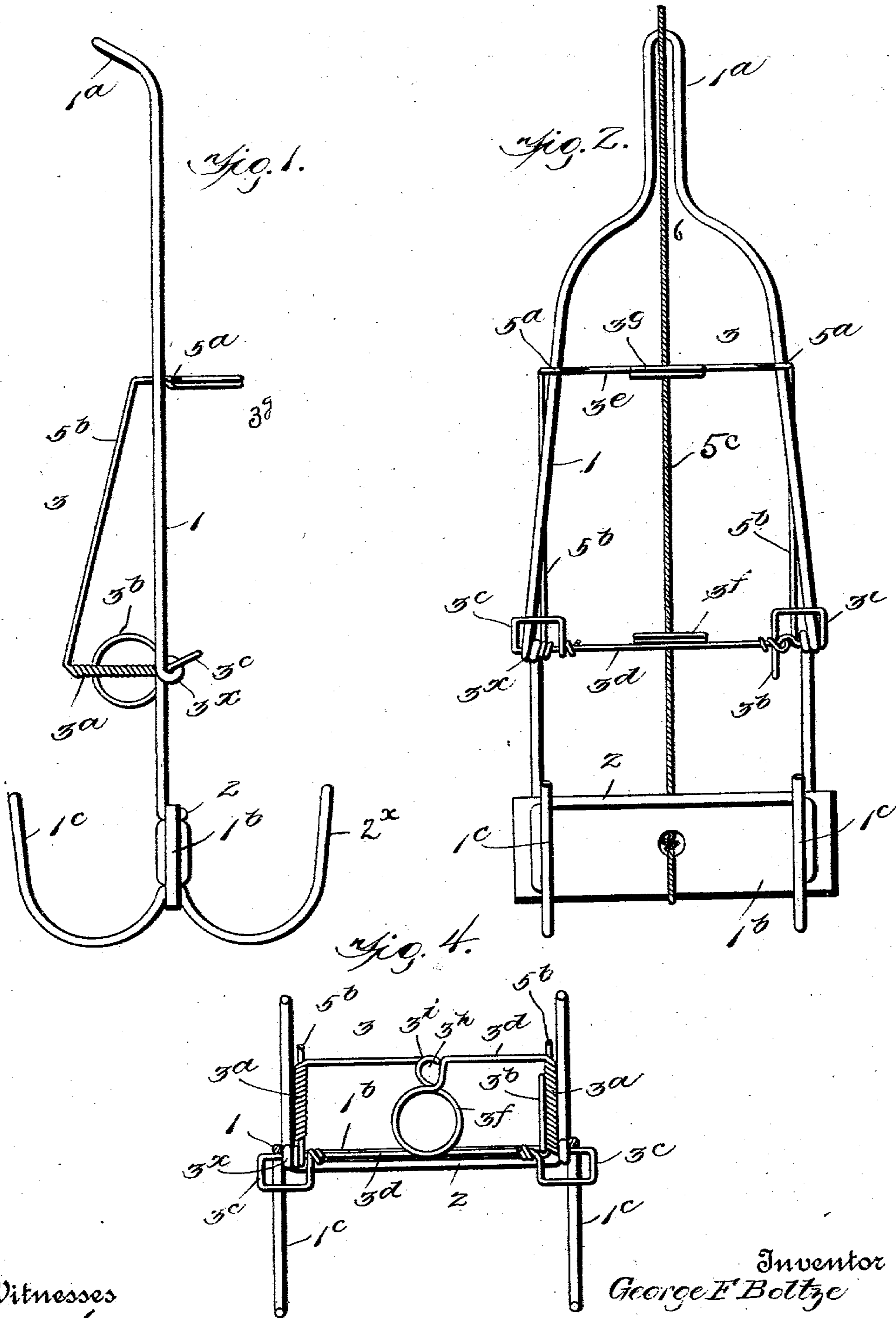
Patented July 15, 1902.

G. F. BOLTZE.
GRAPPLING DEVICE.

(Application filed Sept. 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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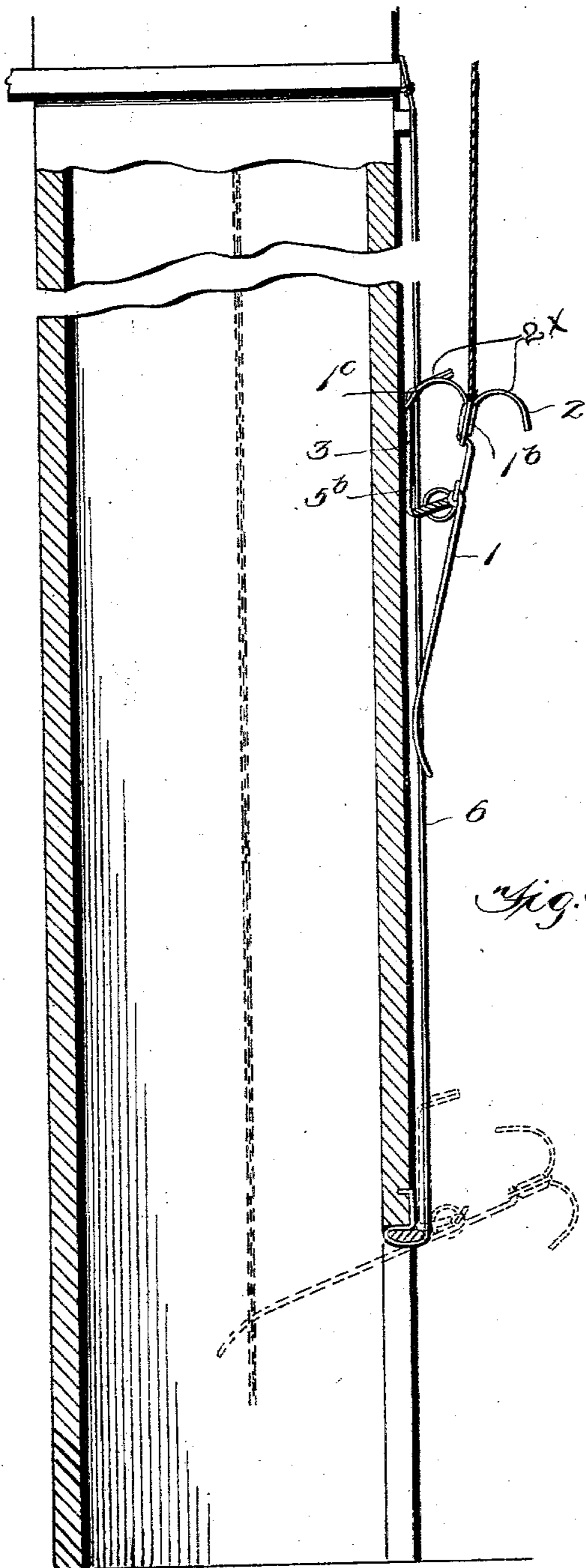


Fig. 3.

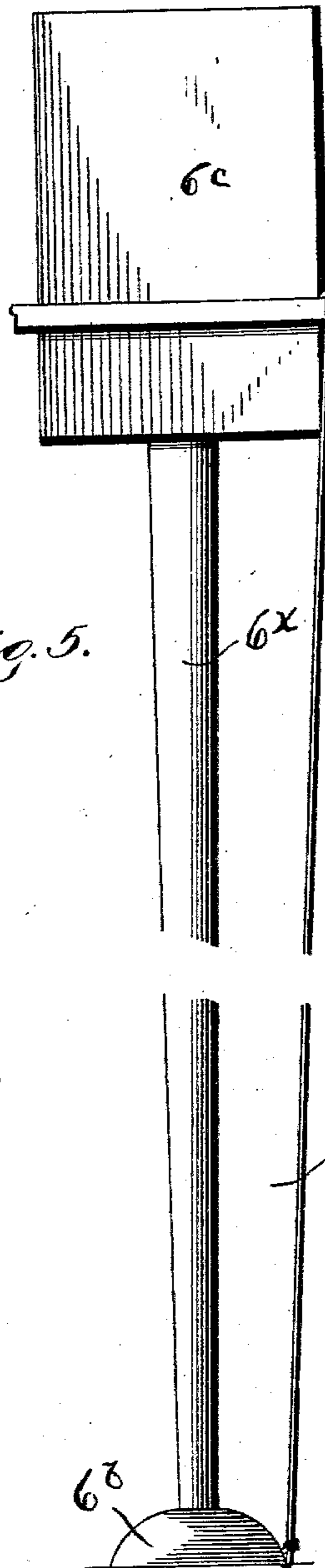


Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE F. BOLTZE, OF FORT MADISON, IOWA.

GRAPPLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 704,852, dated July 15, 1902.

Application filed September 20, 1901. Serial No. 75,879. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. BOLTZE, a citizen of the United States, residing at Fort Madison, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Grappling Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in grappling devices, and is designed more especially for use in connection with that form of water-elevators known as "chain-pumps." In this class of pumps there is generally employed a pump-stock having at the top a sprocket-wheel, over which passes an endless belt or chain provided with a series of transverse pistons, the upward run of said chain passing through the pump-stock. Whenever a chain has been broken, it has been found almost absolutely necessary to remove the entire pump-stock in order to pass the chain therethrough and to join the disconnected ends exteriorly of the pump-stock.

The object of my invention is to provide a device by which the end of a broken chain which is let down through the pump-stock may be grasped and drawn up on the outside, so that the broken ends may be joined at the top of the well, and thus obviate the inconvenience necessitated by the removal of the pump-stock to repair a broken chain.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a side elevation of my grappling device. Fig. 2 is a front elevation thereof. Fig. 3 is a view of my device in use, showing in dotted lines the position the grapple assumes at the bottom of the pump-stock when it is ready to grasp the end of the chain. Fig. 4 is a horizontal section taken through either Fig. 1 or Fig. 2. Fig. 5 shows a modification of securing the guide-wire to a different style of pump-stock.

The details of construction herein described may be changed and varied without in any

degree departing from the spirit of my invention.

In carrying out my invention I preferably construct the grapple of a main member 1, a second member 2, and a third member 3. Member 1 is in the form of an elongated loop contracted at one end into a narrow subloop or loop extension 1^a for a purpose presently seen, while near the opposite end its side portions are preferably threaded, as it were, through a connecting plate or bar 1^b, near its ends, thus holding the same apart. The elongated loop extension is principally designed to receive or catch the chain and is curved or bent. The member 1 has its side portions, after having been thus connected, extended into hooks 1^c, and the member 2, which is also threaded or passed through said plate or bar 1^b, also has hook terminals 2^x, arranged upon the opposite side of said bar or plate. Said member 3 comprises, preferably, a wire frame, with its lower end-portion standing at about a right angle to the member 1, constituted of twisted lateral arms 3^a to stiffen and strengthen the same, the parts fulcruming at that point. One arm has one wire or strand of the twisted-together strands curved back into a circle or spring 3^b about parallel with said arms. It is next carried over itself through one of two eyes or hooks 3^x, formed with the lateral portions of the frame 1 and bent into a preferably angular loop 3^c, standing at a right angle to said arm and spring. It is thence extended transversely to the frame or member 1, as at 3^d, and passed through eyes or loops formed at one end of the opposite lateral arm of the member 3 and through the other of the loops or eyes 3^x, thus pivoting said member 3 upon the member 1, and again bent into a second, preferably angular, loop 3^e, it being finally twisted upon itself. Said angular loops or stops being possessed of spring action from the spring 3^b are designed to hold off the hooks, &c., of the grapple when in the inverted position as it is raised and lowered from contact with the pump tubing or stock, and retains the contracted loop portion or extension 1^a of the

member 1 in position upon a cable or wire 6, suitably stretched in place upon the pump-stock, with the end of said loop extension pressed against said cable or wire, said cable or wire being applied under stress to the pump-stock after the fashion of the application of the strings of certain stringed instruments, as will be readily appreciated from the drawings. Said member or frame 3 has its top and bottom connecting or transverse wires or portions 3^a 3^e each looped or formed into a central or spiral spring 3^f 3^g, respectively, the same also serving as finger-loops when applying the device to the wire or cable 6, in which case the member 3 is inverted, together with the member 1. Said wires are also additionally rebent or recurved, as at 3^h, where they are looped into spiral springs to form snap-hooks 3^h to enable them to engage the wire or cable 6 in applying or connecting the device to said wire. Said member 3 has at its upper corners bent projections or clasps 5^a, adapted to engage the lateral portions of the frame or member 1 to aid its retention in the proper position upon the member or frame 1. Said member also has its lateral wires or runners adapted or bowed toward the pump-stock, as at 5^b, to remove or retain its connecting or transverse portion out of contact with said pump-stock, as it otherwise would be liable to catch upon said pump-stock at the joints or sections thereof.

In using my device to repair a broken chain the clasps 5^a are released from the member 1, and then the snap-hooks 3^h are caught upon the wire 6. The curved subloop is presented downward and passes over said wire 6, so as to guide the member 1 in substantially an upright position. The device is then lowered by a cord connected to the plate 1^b, and when it reaches the bottom of the pump-stock it will be seen that the subloop 1^a has run off its guide-wire 6, and by the spring action of the angular loops 3^e the member 1 will be swung into a horizontal position, as shown in dotted lines in Fig. 3, so as to present the loop within the pump-stock at its lower end. One end of a chain is then let down through the pump-stock until it has passed through the loop. The chain then either by swinging or the raising of the apparatus catches in the subloop 1^a. After the chain is caught it may be drawn up, and then the disconnected ends of the chain are readily joined together. Thus it is obvious how readily a broken chain may be repaired by using my device.

It often happens that when a chain breaks it falls to the bottom of the well, and it is therefore necessary that it be recovered in order that it may be repaired. In such instances the snap-hooks 3^h are released from the wire 6, the clasps 5^a of the member 3 of my grapple are caught upon the member 1, the cord attached to the plate 1^b is passed

through the spiral springs 3^f 3^g and the subloop, and then the device is adapted for use as an ordinary grappling-hook. The lost chain may be dragged for in the usual manner until it is caught by one or more of the hooks 1^c 2^x.

In Fig. 5 is shown a modified manner of stretching the guide-wire 6 in position upon a different style or type of pump-stock. One end is connected to a band or strap passed around the pump-box 6^c and the other end to a flange 6^b at the bottom of the pump-stock 6^x.

The following, among other advantages, are derived from the use of my invention: A broken chain can be repaired in about one-fourth the time necessary by the old way, the latter requiring the lifting out of the tubing. The well-box, usually nailed at the bottom to the platform, is not required to be loosened in order to repair such broken chain, nor does the pump-stock or tubing require to be loosened from the well-box and lifted out of the well for that purpose, as has heretofore been the case, which tubing, being of wood and water-soaked, is, as is apparent, very heavy or weighty.

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

1. The grapple having a loop member having hook terminals and a second member also having hook terminals fixed together, and means for lowering and raising the said grapple, substantially as set forth.
2. The grapple comprising a loop member having hook terminals and a second member having also hook terminals fixed together, a frame or third member pivoted to the first member, and means for the lowering and raising of the grapple, substantially as set forth.
3. The grapple comprising a loop member having hook terminals and a second member also having hook terminals fixed together, a member or frame having coincident springs, and means for lowering and raising the grapple, substantially as set forth.
4. The grapple comprising a loop member having hook terminals and a second member also having hook terminals fixed together, a pivoted right-angled member or frame having bent projections adapted to engage the first member, and coincident coiled springs with their forming-wires adapted to form snaps, and means for lowering and raising said grapple, substantially as set forth.
5. The grapple comprising a loop member having hook terminals and a pivoted member having at its lower end, at the corners, loops adapted to serve as stops to hold off the hooks from the pump-stock and to retain the first-referred-to member in proper position in the movement upon the wire or cable applied to the pump-stock, substantially as set forth.

6. The grapple comprising a loop member having hook terminals and a pivoted member having at its lower end, at the corners, loops or stops, and a spring connected with, and possessing said stops with spring action, substantially as set forth.

7. The grapple comprising a loop member having hook terminals, and a pivoted member having lateral wires or portions bowed

or extended beyond their connecting-wires toward the pump-stock, substantially as set forth.

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

GEORGE F. BOLTZE.

Witnesses:

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WM. SCHLEDE.