

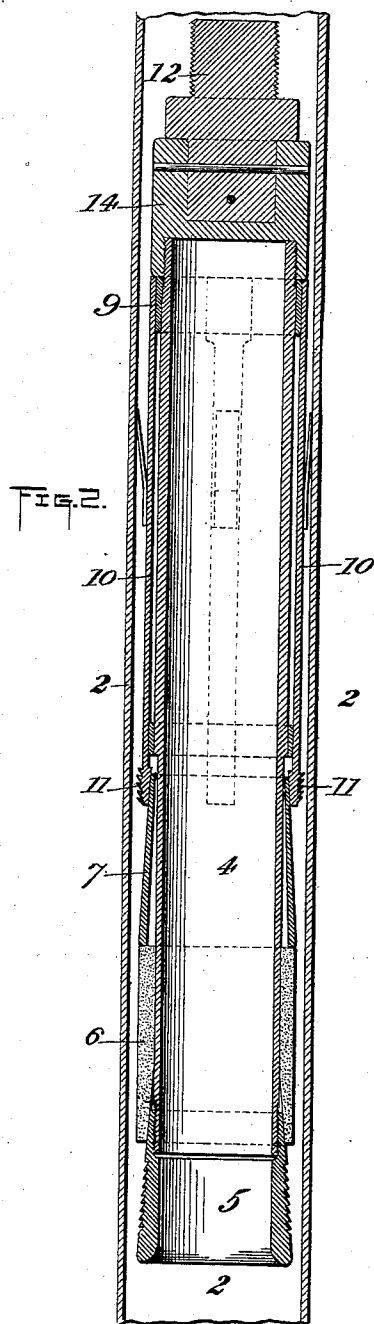
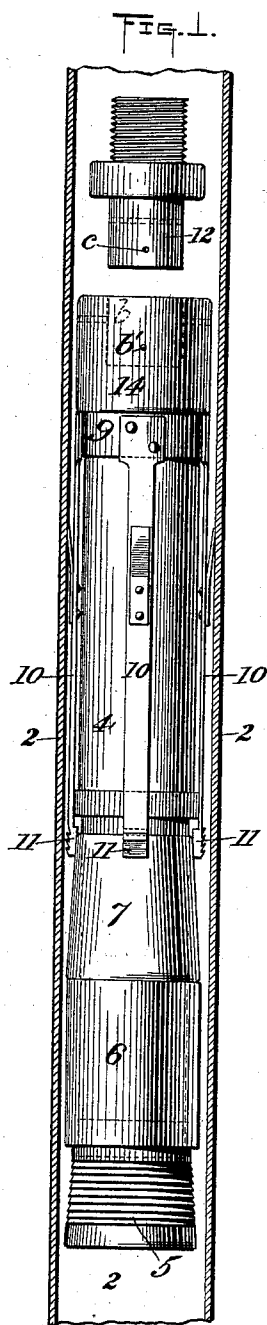
(No Model.)

B. MASSETH.

DEVICE FOR REMOVING CASING FROM OIL WELLS.

No. 367,822.

Patented Aug. 9, 1887.



Witnesses:

W. B. Corwin
H. L. Gill.

Inventor:

Benjamin Masseth
by Baxwell & Kern
his Attorneys

UNITED STATES PATENT OFFICE.

BENJAMIN MASSETH, OF KARNS CITY, PENNSYLVANIA.

DEVICE FOR REMOVING CASING FROM OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 367,822, dated August 9, 1887.

Application filed January 19, 1887. Serial No. 224,771. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN MASSETH, of Karns City, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Devices for Removing Casing from Oil-Wells; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a device for removing casing from oil and gas wells or deep Artesian wells.

In drilling oil-wells it is the practice to insert within them long lines of casing consisting of pipe sections screwed together. This casing extends below the water-veins, and is fixed at its base or packed, so as to exclude the water from the hole below. The casing is often very long—from six hundred to two thousand feet—and when it has to be removed, either for the purpose of repacking or readjustment, or because the well has been abandoned, there is a very considerable difficulty in lifting it on account of its great weight. The derrick must generally be strengthened to stand the strain, and the lifting-tools must be of great size and strength. Besides this, the labor of handling such heavy tools and materials extends the time and cost of the work.

My invention has for its object to facilitate the raising of casing, and thereby to reduce the cost and labor of the operation. In addition to the power of the lifting mechanism, I employ the buoyant force of the water in the hole to assist in the work. I do this by plugging up the lower end of the casing, thereby converting it into a hollow vessel open at the top, and after pumping out the water inside the casing and above the plug the external water tends to raise the thus lightened casing, and so reduces the power necessary to be employed to a very great degree. This is a general description of the practice of my invention. I shall now describe it in detail, and shall refer to the accompanying drawings, which illustrate the apparatus which I prefer to employ.

In the drawings, Figure 1 is a side view of the apparatus shown in an oil-well casing, but not packed therein. Fig. 2 is an enlarged longitudinal axial section of the apparatus, differing from Fig. 1 in that the lifting-tool 12 is shown

attached in this figure, and in Fig. 1 it is disconnected.

Like symbols of reference indicate like parts in each.

In the drawings, 2 represents the well-casing, which is placed in the well and packed in the usual way. Inside the casing I show the device which I employ for plugging the lower end of the casing. It consists of a short tube, 4, of smaller diameter than the casing, so as to be easily insertible therein, and it is provided with a suitable packing device, by means of which, when the tube is put in the casing at the proper point, the space between its outside and the inside of the casing may be tightly sealed. Any suitable form of packer proper for this purpose may be used. I show in the drawings the packer known as the "Gordon" packer, which was patented to J. P. Gordon on October 16, 1877. This packer is constructed and operates as follows: At the base of the tube 4 is screwed a hollow cone, 5, whose external surface is corrugated and whose base is lowermost. On this cone is placed the annular packer-ring 6, made of rubber or leather, and above this, loosely encircling the tube 4, is a metal ring, 7, conical on its outer surface and with its base resting on the rubber packer.

Above the ring 7 on the tube 4 is a loose ring or collar, 9, from the lower end of which extend vertical elastic metal arms 10, which carry at their bases barbed wedges 11, which normally lie in contact with the outer surface of the ring 7. To apply this packing device to a casing, it is lowered therein by suitable tools to the proper position, and while it is being lowered the friction of the sides of the casing upon the barbs 11 sustains the collar 9 considerably above the packer. When the proper position has been reached, the tube 4 is drawn upward. This causes the barbs 11 to catch on the sides of the casing and causes the arms 10 to slip down over the ring 7 and to become wedged between it and the inside of the casing, thus exerting a downward pressure thereon. This downward pressure is also exerted on the packer 6 at the base of the ring, whereby the packer is forced down over the corrugated cone 5 and is expanded outwardly against the casing, so as to completely close

the space between the casing and the tube. The upper end of the tube 4 is closed by a cap, 14, screwed thereto and having on its upper surface a concavity, *b*, for receiving the tool 12, whereby the tube is let down into the casing. The lower end of the tool is shown in Fig. 1. Its end is shaped to fit within the cavity *b*, and has holes *c*, into which fit pins inserted through holes *b'* of the cap 14.

These pins are made of frangible material, preferably hickory wood, and are strong enough to sustain the weight of the tube 4 when it is being lowered into the casing, but are capable of being broken when it is desired to disconnect the tube from the tool. When the tube is placed in the casing and packed, as above described, the pins may be easily broken and the tool disconnected by jarring, in the usual way. By the presence of the cap sealing the tube 4, all communication from one side of the packing to the other in the casing is shut off completely when the packer is set.

Having now described in detail the construction and operation of the parts of the apparatus which I employ, I shall now set forth the manner in which they are used in the practice of my invention.

When it is desired to withdraw a casing from a well, the first step in the process is to loosen the casing by cutting or jarring. This admits water into the well and the interior of the casing from the upper water-veins. The tube 4 is then let down to the bottom of the casing by the tool 12, and is packed there, as before described. After it has been packed the connection of the tool 12 with the cap at the top of the tube 4 is broken by jarring, and the tool is withdrawn. The casing is now a vessel open at the top and closed tightly at the bottom, so that when the water is pumped out of it, which is the next step in the process, the external water surrounding the casing raises it or tends to raise it from the well, so that when the lifting mechanism is applied to it the labor is very much lessened and the casing is easily drawn out.

The advantages which are derived from the practice of my invention are very great. The

cost and labor of removing casings is lessened, and the tools used are much less liable to break than when the casing is lifted in the manner heretofore practiced.

I do not limit myself strictly to the precise form of device for plugging the casing hereinbefore described, since other forms will suggest themselves to those skilled in the art.

I claim—

1. The method hereinbefore described of removing casing from deep wells, which consists in plugging the lower part of the casing, whereby water is excluded therefrom, and subjecting the casing when empty to external hydrostatic pressure, whereby an upward force is exerted on the casing, substantially as and for the purposes described.

2. The method hereinbefore described of removing casing from deep wells, consisting in plugging the lower part of the casing after water has been admitted within and exterior to the casing and then removing the water from the casing above the plug, substantially as and for the purposes described.

3. The method hereinbefore described of removing casing from deep wells, consisting in inserting into the casing a plug provided with an expansible packer, expanding the packer to plug the casing, and subjecting the casing to external hydrostatic pressure, substantially as and for the purposes described.

4. As a device for plugging a deep-well casing, the combination, with the casing, of the tube 4, closed and having an external packer, substantially as and for the purposes described.

5. The tube 4, having a socket at its upper end and having an external packer, in combination with a tool insertible into the socket, and a frangible connection between the tube and the tool, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 12th day of January, A. D. 1887.

BENJAMIN MASSETH.

Witnesses:

THOMAS W. BAKEWELL,
W. B. CORWIN.