

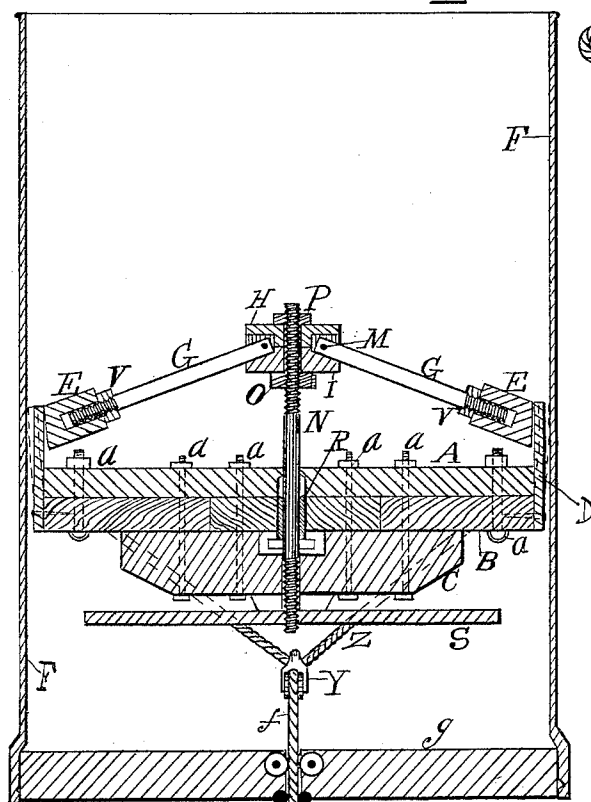
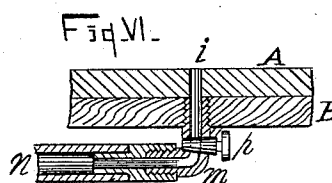
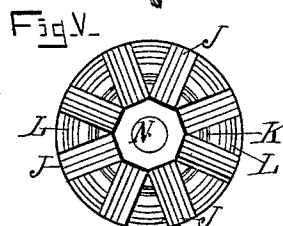
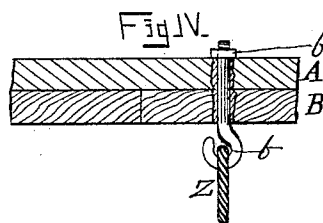
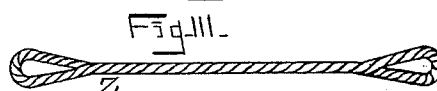
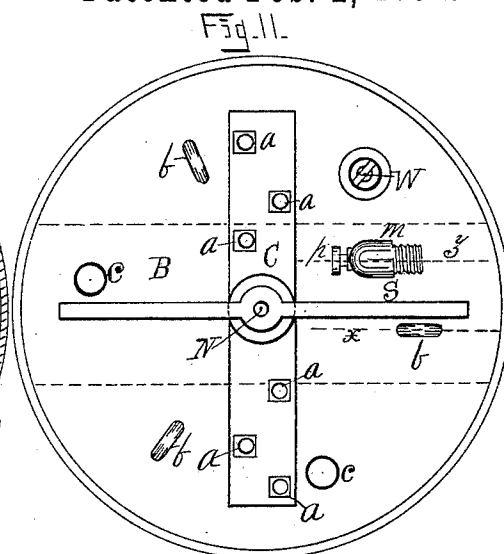
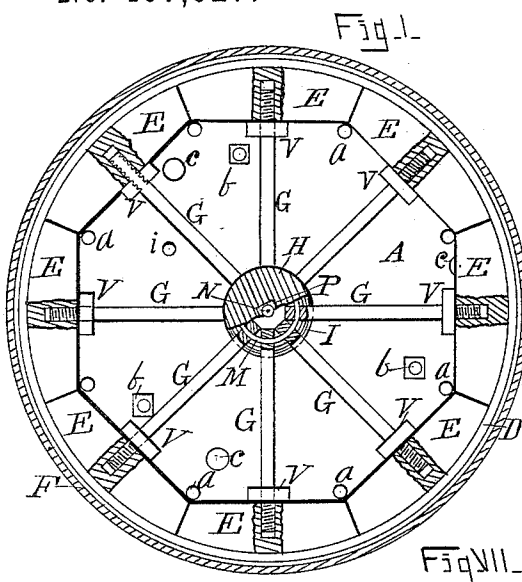
(No Model.)

J. G. FALCON.

APPARATUS FOR LAYING IRON PIPE UNDER WATER.

No. 467,927.

Patented Feb. 2, 1892.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH G. FALCON, OF EVANSTON, ILLINOIS.

APPARATUS FOR LAYING IRON PIPE UNDER WATER.

SPECIFICATION forming part of Letters Patent No. 467,927, dated February 2, 1892.

Application filed July 16, 1891. Serial No. 399,729. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH G. FALCON, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented new and useful Improvements in Apparatus for Laying Iron Pipe under Water, of which the following is a specification, reference being had to the accompanying drawings, illustrating the invention, in which—

Figure I is an elevation and section of one head which is to be inserted in a section of water-pipe to form an air-chamber therein; Fig. II, the opposite end of the head from that shown at Fig. I. Fig. III represents one of the double-looped ropes by which the heads are to be removed after each section of pipe is laid; Fig. IV, a section through the head on line *x*, Fig. II, showing one eyebolt, to which the rope is to be attached. Fig. V is an enlarged face view of one part of the two-part central head to which the expanding struts are pivoted. Fig. VI is a section of the main head on line *z*, Fig. II; Fig. VII, a central section of one head in a section of pipe and a view of the devices by which the heads are to be removed from the pipe.

The purpose of this invention is to provide suitable means for floating heavy iron pipe out to the place where the same is to be laid under water. The special means employed consists of two expansion-heads, which are tightly inserted in the pipe near to its ends to form a chamber between them which will hold so much compressed air as will nearly float the pipe.

The detail construction is as follows:

A B C are the parts which compose the frame of the main head, and to obtain strength the grains of the parts A are made to run across those of B, as the custom is to form strong wood-work, and all the parts are securely bolted together, as shown at *aaa*. The edges of the parts A B are circular in form, and to them, by suitably-headed nails, is secured a strong rubber band D, which projects above the part A, and its upper edge is secured to a series of segments E, whose outer edges form a circle and whose ends are separated from each other. These segments are made of wood, and they are held in position and thrust outward

by struts G, one to each segment, which are secured by nuts and screws V at their outer ends, and at their inner ends are pivoted to a central head H I. For convenience this head is formed of two separate castings with semi-seats J, Fig. V, in each part and partitions L between them, and in the face of each partition portion is formed a semicircular groove K, whereby when the parts H I are together, as at Fig. VII, holes are formed to receive a ring M or pins, Figs. I and VII, to pivot the struts to the central head. A shaft N passes through both heads, and its upper end portion has a screw-thread formed thereon to receive the jam-nuts O P, which clamp the parts H I together. The middle portion has a reciprocating movement in a suitable stuffing-box R, Fig. VII, and the lower end portion is provided with a screw-thread, on which is turned a lever S to bring the head H I more closely to the main head, and thus cause the segments E to force the rubber band D out closely against the iron pipe, a section of which is shown at F. Through the head portions A B are formed two or more holes *c c*, and in them are to be inserted rotary valves, which by being turned permit the air to escape. One such rotary valve of ordinary construction is shown at Fig. II. These valves, when in place in the main head, are situated at the angles of a triangle, whereby if the pipe should become partially filled with water one air-valve will be above the water, so that what air there is in the pipe may be liberated. One or more two-looped ropes Z are to be attached to eyebolts *b* to be used in connection with a rope *f* or pulley-block Y to remove the head from the pipe F. A wood cross-piece *g* is placed in the large end of the iron pipe to secure one end of the rope *f* to and to support rollers which guide the rope *f*, also to serve as a resistance in the removal of the head.

At Fig. VI are shown in section the devices by which a hose from an air-pump is connected with the head for supplying air to the chamber to be formed in the pipe F.

m is a bent faucet-pipe screwed into the main head.

p is the rotary stop-cock passing through the pipe *m*, which serves as an air-induction

and check valve, and *n* is a section of strong hose to be extended to a powerful air-pump of any suitable construction.

When two main heads similar to the one shown are properly secured within the iron pipe to be laid, the chamber between the heads is to be filled with so many volumes of air as will make the pipe and contents have a greater specific gravity than the water, whereby the pipe will sink when the power to float it is released. Then the cock *p* is to be shut and the hose uncoupled, and by means of easily-handled boats or scows the section of pipe is taken to the place to where the pipe is to be laid. The section is then sunk and the connection is made by the diver, after which the air is allowed to escape by means of the valves *W*, and then ropes *f* *Z* are to be connected, and the rope *f* is supposed to extend up to a drum or capstan on the boat and is drawn upon to take the head and cross-piece *g* out of the pipe. The diver must enter the pipe *F* to attach the looped rope *Z* to the head farther up in the pipe.

It is proper to state that this apparatus has been worked practically and it is found to meet all the requirements herein named.

I claim and desire to secure by Letters Patent of the United States—

1. In an apparatus for laying iron water-pipe under water, two main heads with expansive peripheries inserted in the section of pipe to be laid, one of the heads provided with an induction faucet and cock to be used in connection with a hose and air-pump for supplying air to the chamber between the heads and with valves for the escape of air, as and for the purpose specified.

2. In an apparatus for laying iron pipe, two expansion-heads forming an air-chamber between them and within the pipe to be laid, and one head provided with means for supplying the chamber with air by means of a suitable air-pump and with valves for the escape of air, and ropes connected with eyebolts on the head and a pulley and rope, in combination with a timber placed in the large end of the pipe for removing the heads from the pipe, as and for the purpose specified.

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Witnesses:

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