

(No Model.)

W. P. HUMPHREYS.
JOINT FOR SUCTION PIPES OF DREDGERS.

No. 444,098.

Patented Jan. 6, 1891.

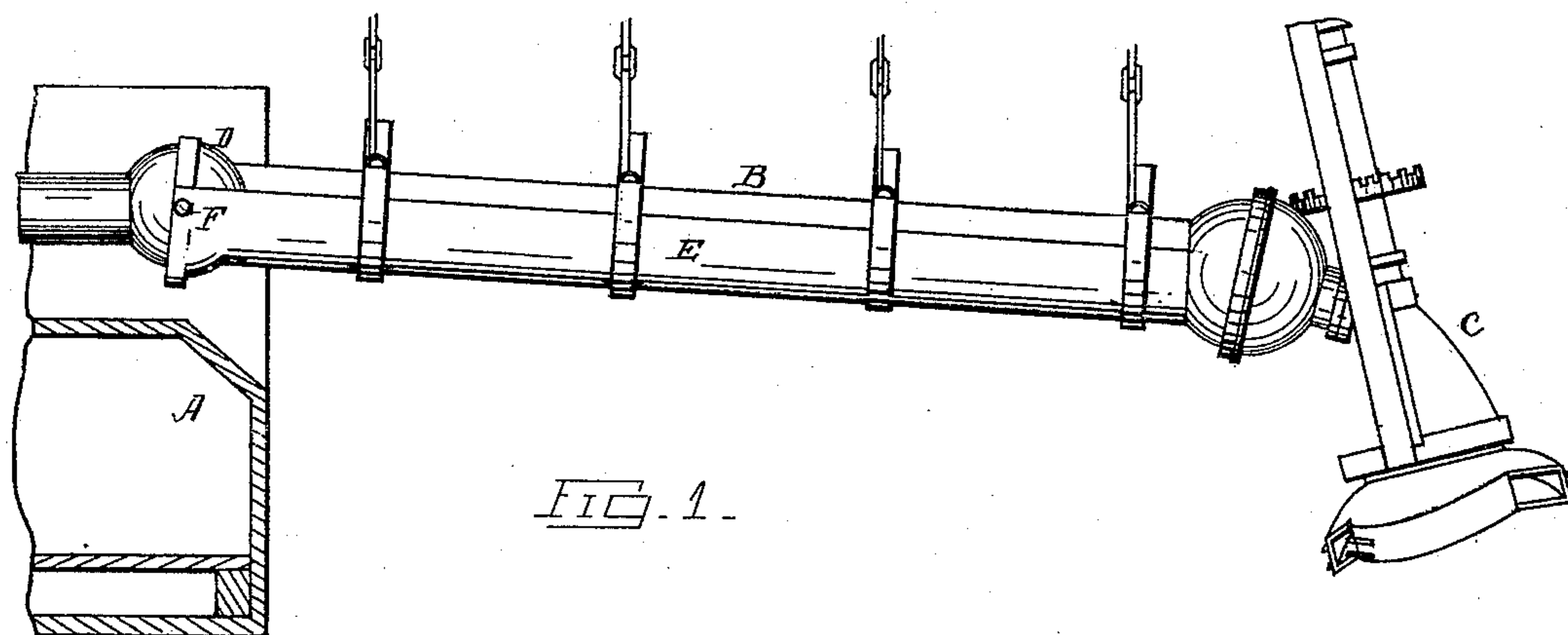


FIG. 1.

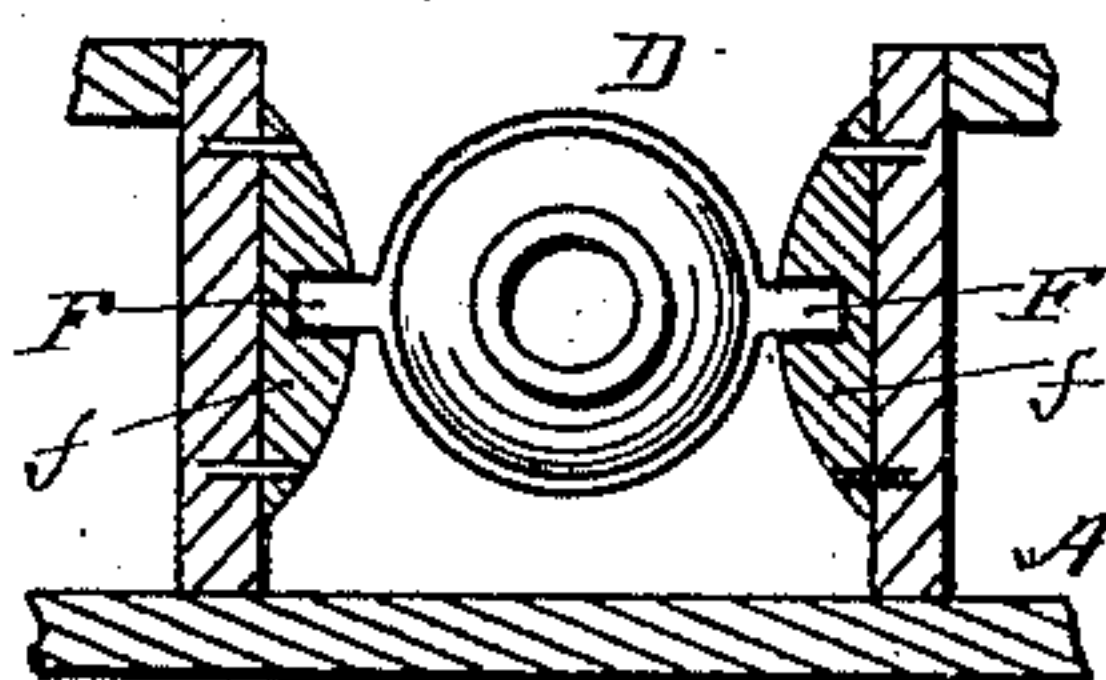


FIG. 2.

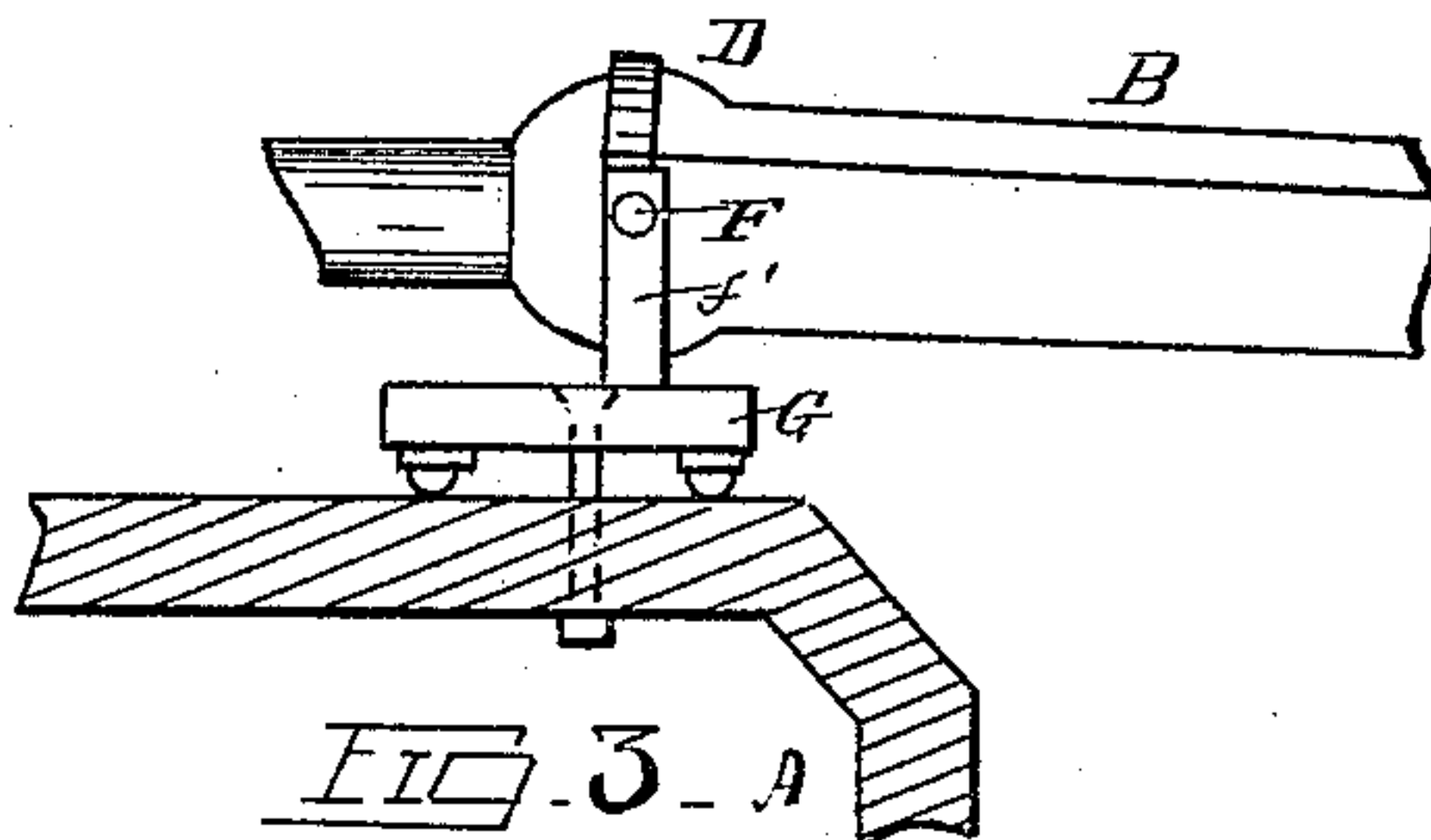


FIG. 3. A

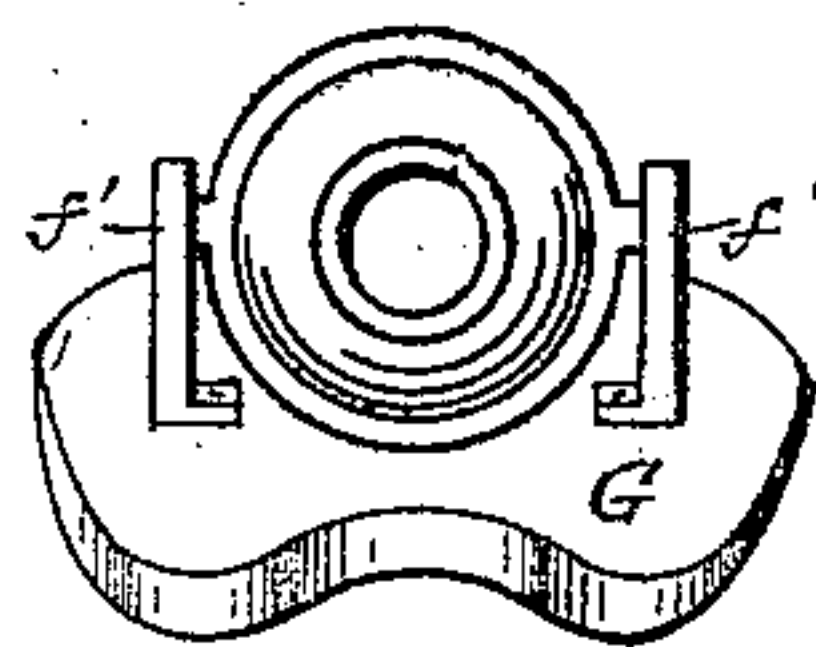


FIG. 4.

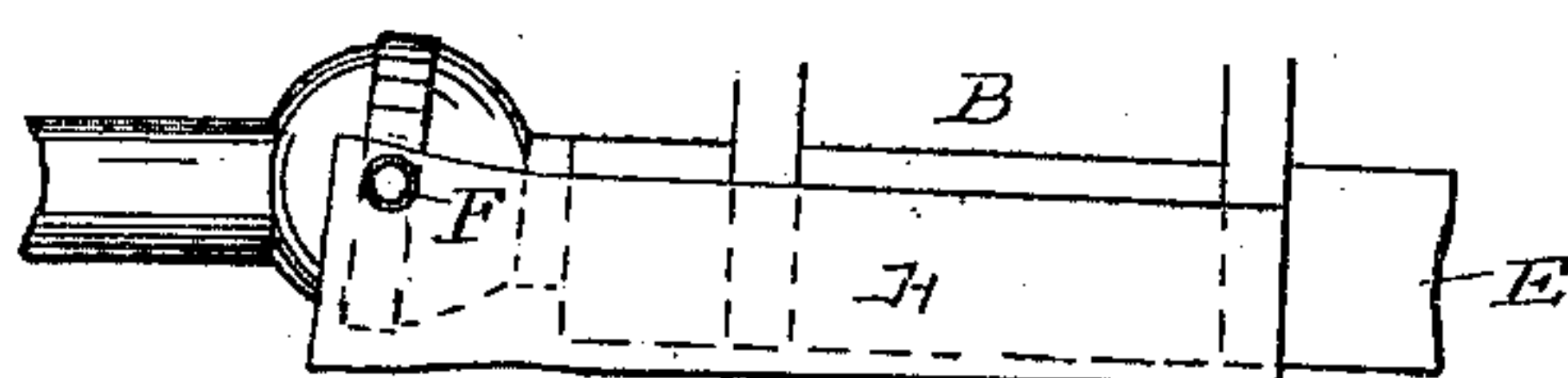


FIG. 5.

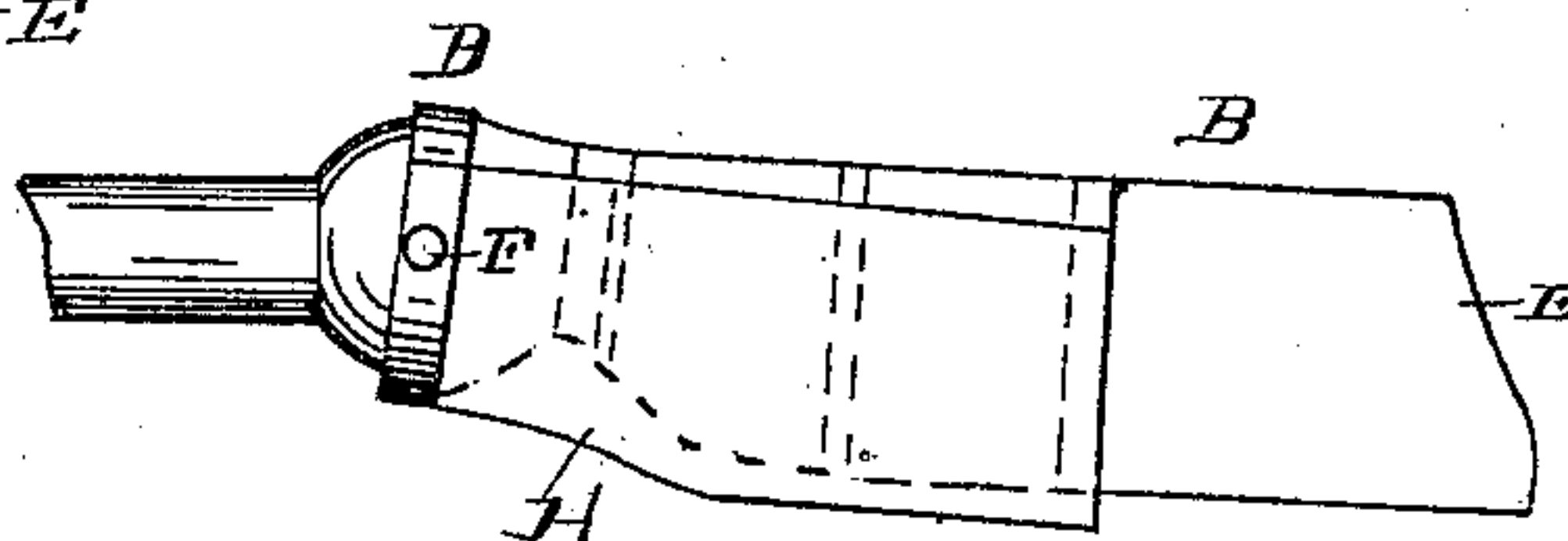


FIG. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM PENN HUMPHREYS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR,
BY MESNE ASSIGNMENTS, TO A. M. STINCEN, OF SAME PLACE.

JOINT FOR SUCTION-PIPES OF DREDGERS.

SPECIFICATION forming part of Letters Patent No. 444,098, dated January 6, 1891.

Application filed December 5, 1889. Serial No. 332,622. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PENN HUMPHREYS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Joints and Connections for Suction-Pipes of Dredgers; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to dredging apparatus, and has for its primary object the provision of an improved means for mounting the suction-pipe of hydraulic dredgers and for connecting the protector to the boat, so that both the pipe and protector shall have a common center of movement, and thus work without friction or strain upon each other.

A further object is the provision of means whereby the suction-pipe and protector are made to swing in either vertical or horizontal arcs.

Further improvements will be disclosed in the details of construction hereinafter described, wherein the entire invention is fully set up.

The accompanying drawings illustrate my invention.

Figure 1 is a section of one end of the dredge-boat and side elevation of the suction-pipe mounted in the manner proposed in this invention.

In Fig. 1, as well as in the succeeding figures, only so much of the connected mechanism is shown as is necessary to illustrate my present improvements.

For the manner of transmitting power to the cutter, as well as of manipulating the suction-pipe, I refer to my patents granted on the 10th day of December, 1889. It will be understood that a shaft is operated in connection with the suction-pipe for operating the cutter.

Fig. 2 is a transverse sectional view taken across the boat and through the pipe on the boat and through the ball-and-socket joint.

Fig. 3 is a side elevation of the means adopted for giving both a vertical and horizontal sweep to the suction-pipe. Fig. 4 is a perspective view taken from the rear of and above the same. Figs. 5 and 6 are side elevations of means for connecting the protectors with the ball-and-socket joint and the trunnions.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the barge or dredge-boat; B, the suction-pipe, and C the cutter carried on the end thereof and operated by a shafting in the manner set forth in my patents above referred to or in any other convenient or suitable manner.

D is the universal joint by which the suction-pipe is connected to the piping on the boat, so as to give it freedom of motion in any direction.

E is the protector, which is covered in my patent above referred to and may be in either the form of a jacket or a re-enforce. It is connected to the standing part of the ball-and-socket joint by being extended thereover, as shown in Figs. 1 and 3, or by having an auxiliary connecting-piece H, as shown in Figs. 5 and 6.

F F are trunnions, which are in line with the axis of motion of the ball-and-socket joint, and are preferably formed with or attached to the moving part thereof. These trunnions have bearings on the boat or in parts connected to or supported upon the boat and serve to aid in supporting the suction-pipe at this point. As shown and claimed in my patent above referred to, the trunnions were on a different line from the axis of the ball-and-socket joint and had a center of motion separate and independent thereof; but in the present invention the trunnions are always in line with or, indeed, themselves constitute the axis of said joint.

The trunnions described and claimed in this application are employed for supporting both the suction-pipe and the protector, and may be set in bearings *f f* in the walls of the boat, as shown in Figs. 1 and 2, in which case the suction-pipe can have a vertical sweep only independent of the boat. I provide means, however, whereby both vertical and

horizontal motion is allowed to the suction-pipe and protector. To accomplish this the trunnions have bearings in standards $f' f'$, which are fixed upon a turn-table G, which
 5 can be turned horizontally and will carry the suction-pipe and protector with it, the universal joint in the suction-pipe permitting this movement. By the use of such turn-table with the ball-and-socket joint and trunnions
 10 the pipe and protector are allowed both a vertical movement upon the joint and trunnions and a horizontal movement with the turn-table, and this horizontal movement can be accomplished with the suction-pipe and protector at any vertical elevation.

Other forms of turn-table or circular traveler may be adopted in lieu of the one shown.

It will be understood that a suitable crane capable of horizontal movement is employed
 20 for manipulating the pipe and protector.

The protector, whether of the re-enforce or jacket form, may be connected with the ball-and-socket joint by means of supplemental aprons or jackets H. (Shown in Figs. 5 and
 25 6.) Such jacket will be bolted both to the protector and to the ball-and-socket joint and will embrace the trunnions, as shown. It may be made to extend as far out under the protector as may be desired.

30 It will be understood that I do not desire to confine myself to the use of the trunnions in line with the axis of the ball-and-socket joint in connection with the protector alone. Nor do I desire to be understood as limiting myself
 35 to the use of the turn-table having the suction-pipe mounted upon it in combination with any protector or ladder, as it will be apparent that in either situation a suction-pipe without any protector whatever may be employed with good effect, or it may be used
 40 with any form of ladder whatever. It will also be apparent that the trunnions may be placed upon the protector in line with the axis

of the ball-and-socket joint, but not connected therewith.

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

1. A suction-pipe for dredgers having a ball-and-socket joint connecting it with the pipe
 50 upon the boat, provided with trunnions, as described, in combination with a turn-table mounted upon the boat and having bearings for said trunnions, as set forth.

2. A suction-pipe for dredgers having a protector and a ball-and-socket joint connecting
 55 it with the pipe upon the boat and provided with trunnions, in combination with a turn-table mounted upon the boat and having bearings for said trunnions, as set forth.

3. A suction-pipe for dredgers provided with a ball-and-socket joint connecting it with a pipe upon the boat and a protector for said suction-pipe, in combination with a jacket or apron connecting said protector and the ball-
 60 and-socket joint and trunnions in line with the axis of said joint, as set forth.

4. The combination of a suction-pipe for dredgers provided with a ball-and-socket joint connecting it to the pipe on the boat and
 70 with a jacket surrounding the under side of said suction-pipe and of the moving part of said joint, and trunnions upon the sides in line with the axis of said joint, as set forth.

5. A suction-pipe for dredgers provided with
 75 a ball-and-socket joint connecting it to the pipe on the boat and having trunnions upon the flange of the moving part of said joint, in combination with a turn-table having bearings for said trunnions, as set forth.

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

WILLIAM PENN HUMPHREYS.

Witnesses:

EDWARD T. RUSSELL,
 JNO. F. LYONS.