

No. 800,910.

PATENTED OCT. 3, 1905.

B. FLOOD.
HYDRAULIC ELEVATOR FOR DREDGING PURPOSES.
APPLICATION FILED APR. 21, 1904. RENEWED MAR. 13, 1905.

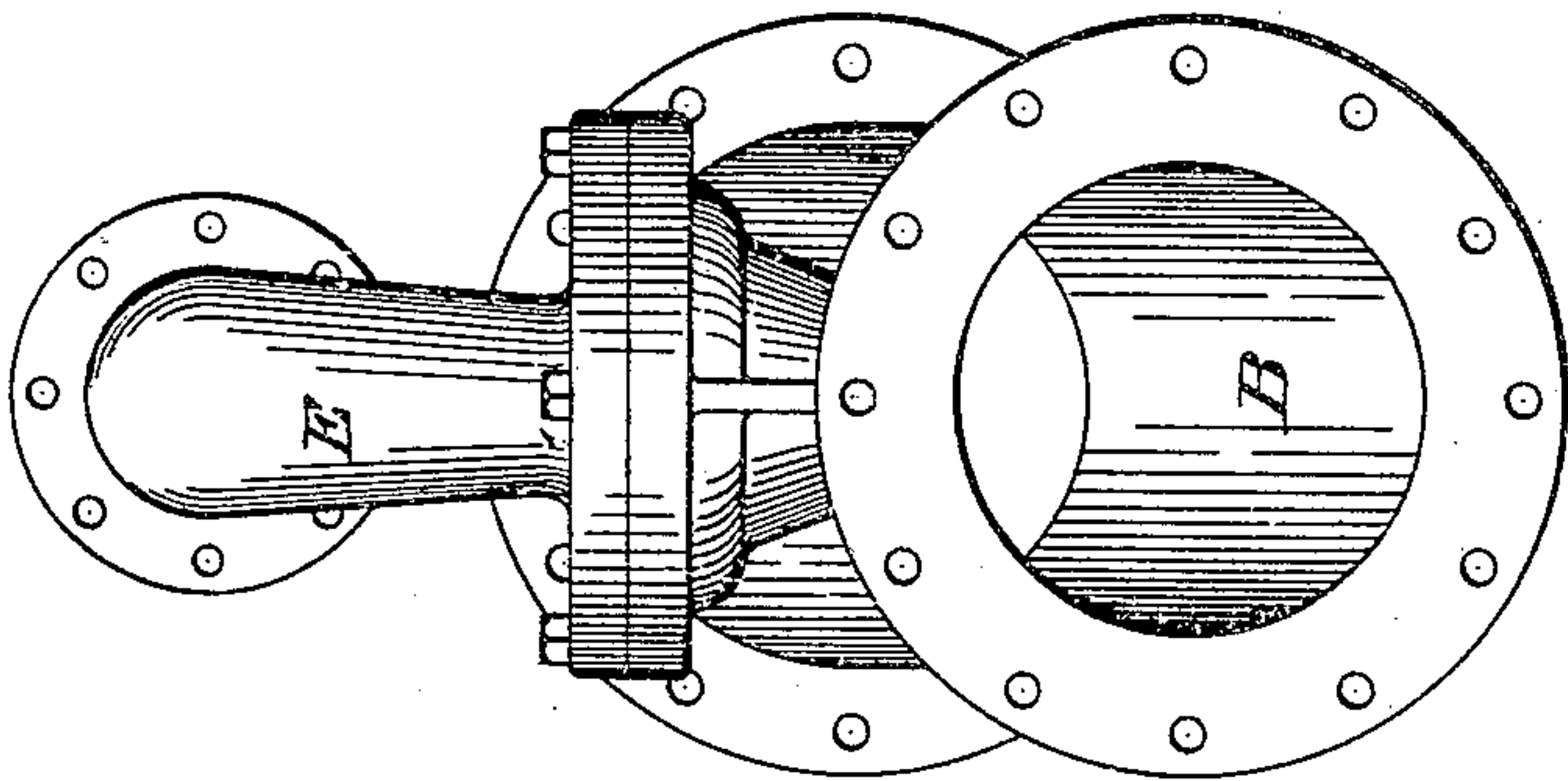


Fig. 2.

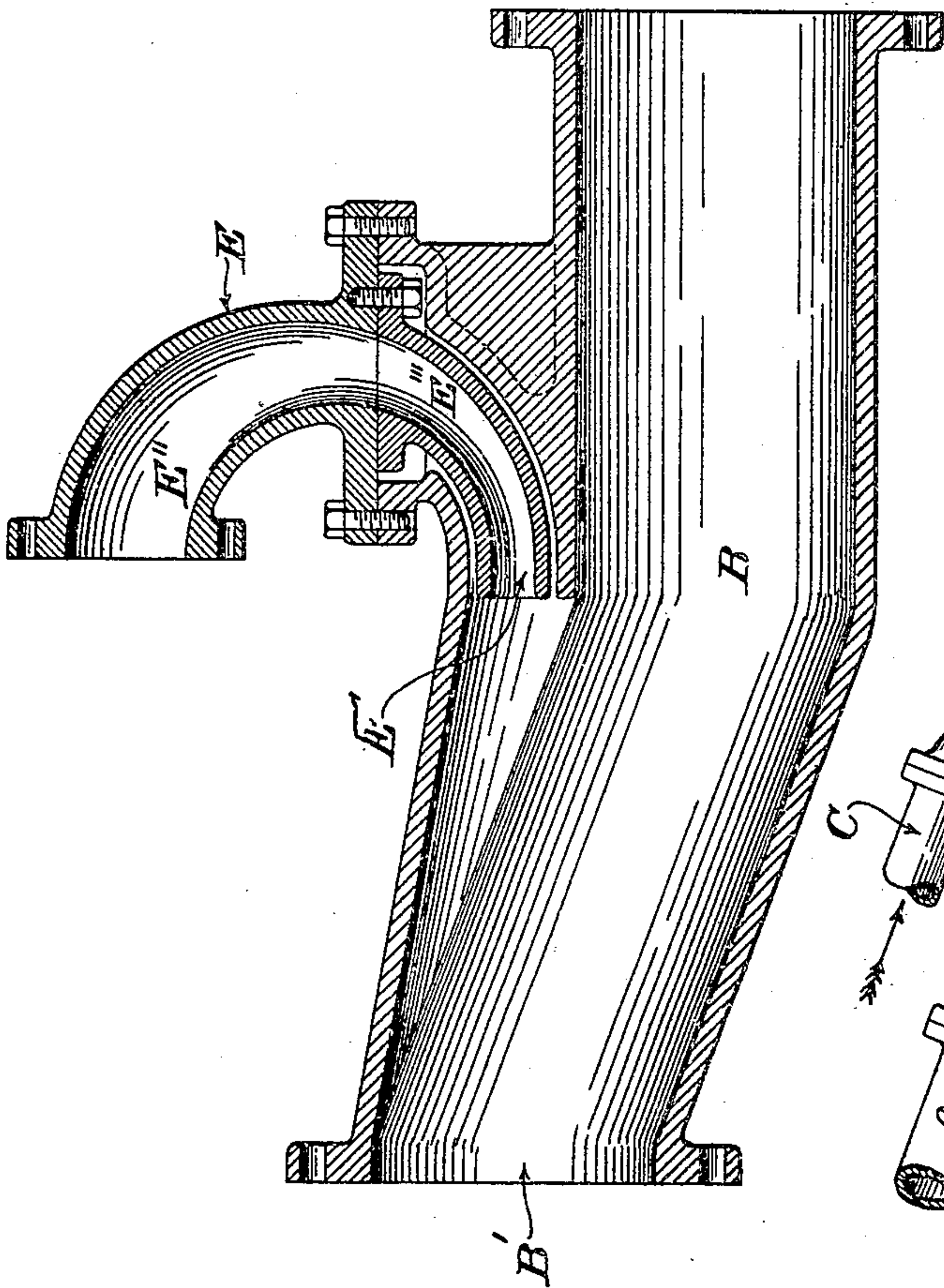


Fig. 1.

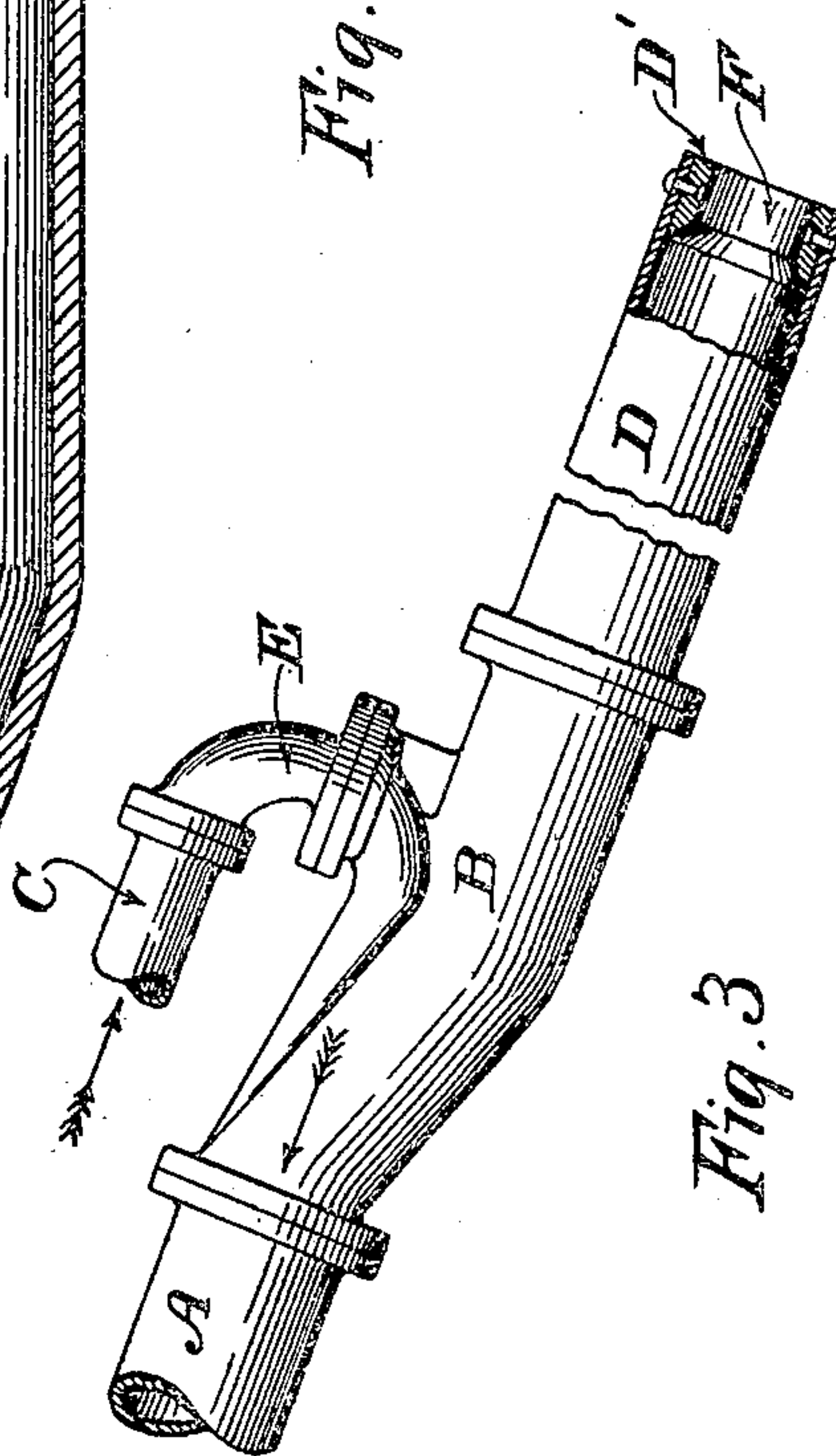


Fig. 3

WITNESSES

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HYDRAULIC ELEVATOR FOR DREDGING PURPOSES.

No. 800,910.

Specification of Letters Patent.

Patented Oct. 3, 1905.

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To all whom it may concern:

Be it known that I, BENTON FLOOD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hydraulic Elevators for Dredging Purposes, of which the following is a specification.

It is the object of my invention to provide a simple and reliable device for dredging in which the center line of the injected stream is in direct alinement with the center of the bore of the elevator-pipe, dispensing thereby with all unnecessary friction caused by the injector branch being so placed as to project the injected fluid against the walls of the discharge-pipe, as hereto done, and for the further purpose of providing means whereby solid particles of matter cannot enter the suction-pipe unless of a smaller diameter than the pipe through which they are compelled to pass, and also to provide means to reinforce the suction end of the pipe, giving it additional strength and providing an extra wearing-surface at this point by insertion in the inner walls of the suction-pipe of a removable annular wearing-ring. I accomplish these objects by means of the device described herein and shown in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of the return-bend, showing the manner in which the members thereof are secured together and secured between the suction and the elevator pipes. Fig. 2 is an end elevation of the parts shown in Fig. 1. Fig. 3 is an elevation of the return-bend secured to the suction end of a hydraulic elevator embodying my invention, the suction end thereof being shown in central longitudinal section and having the inclination to a horizontal plane which this end would assume when in operation.

In the drawings, A represents the elevator-pipe.

B represents the section connecting the elevator-pipe, the return-bend, and the suction-pipe; E, the injector branch or return-bend, and C the pipe through which the water under pressure is introduced into the connecting branch.

The peculiar construction of my elevator is more particularly shown in Figs. 1 and 3, the pipe C (shown in fragment in Fig. 3) being in communication with the water under pres-

sure, which passes thereinto in the direction indicated by the arrow and is projected into the lower end of the discharge-pipe A in a direct line with the center of the bore thereof, drawing thereinto the contents of the suction-pipe D. Thus it will be seen that the turn made in the water in passing from the suction-pipe into the elevator-pipe is made before it enters into the elevator-pipe and all the force exerted by the water passing under pressure through the return branch E is directed in line with the center of the elevator-pipe, relieving the walls thereof of undue wear by reason of the contact therewith of this water when injected under force and utilizing all the power expended thereby. In the lower end of the suction-pipe D, I have introduced a removable annular wearing-ring F, the purpose of which is to contract the opening in the suction end of the pipe D to give, first, additional strength at this point to the pipe; second, to provide an extra wearing-surface at this point, and, third, to reduce the diameter thereof. This annular ring may be detachably secured on the inner end of the suction-pipe by screws, bolts, rivets, or otherwise, and when by constant use the same becomes worn and unfitted for further use it can be replaced by a new one. It will be manifest by this construction that the water forced into this elevator-pipe through the return-bend E will move in a uniform curve and when ejected therefrom into the elevator-pipe will move in a straight line through the elevator-pipe. The water flowing thereinto through the suction will make the necessary turns before it enters the elevator-pipe, avoiding thereby any unnecessary loss or power.

Centrally disposed on the injector branch E is the injector-nozzle E'. This nozzle is so disposed in the side wall of the branch B that the water ejected therefrom in force is directed to the central point B' in the bore of the elevator-pipe A, and the water forced there-through has a relatively greater velocity at the point of discharge therefrom than at any other point, the purpose being to create a suction through the suction-pipe D and carry whatever water there may be therein up into and out of the elevator-pipe A. The return-bend E is made up of two members E' and E'', the upper member being bolted to the pipe C and the lower member thereof projected into and connected with the connect-

ing-section B and screwed together, as shown in Fig. 1. My elevator is operated by pumping water into and through the pipe C, passing the return-bend up and into the elevator-pipe with considerable velocity. It will carry with it the water and debris therein and discharge the same from the discharge end of the elevator-pipe where desired.

It will be manifest that the elevator-pipe A and the connecting member B being of a uniform width and larger than the suction end of the suction-pipe no solid substance can obtain access thereto which is large enough to clog at any point after entering the suction-pipe. The injector branch should be positioned above the elevator-pipe and discharge downwardly thereinto, so that any substance entering the suction-pipe may pass freely up and along the bottom of the pipe.

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

In a hydraulic elevator, means to introduce water under pressure between the elevator-pipe and the suction-pipe, comprising a return-bend E made up of an upper and lower member E' and E'' respectively secured to the connecting branch B and together as shown and having the curve substantially as shown and described.

In witness that I claim the foregoing I have hereunto subscribed my name this 13th day of April, 1904.

BENTON FLOOD.

Witnesses:

HENRY T. HAZARD,
MARGARETE C. NICKELESON.