

No. 708,588.

Patented Sept. 9, 1902.

A. W. ROBINSON.

BOOM FOR DREDGES, EXCAVATORS, &c.

(Application filed May 20, 1902.)

(No Model.)

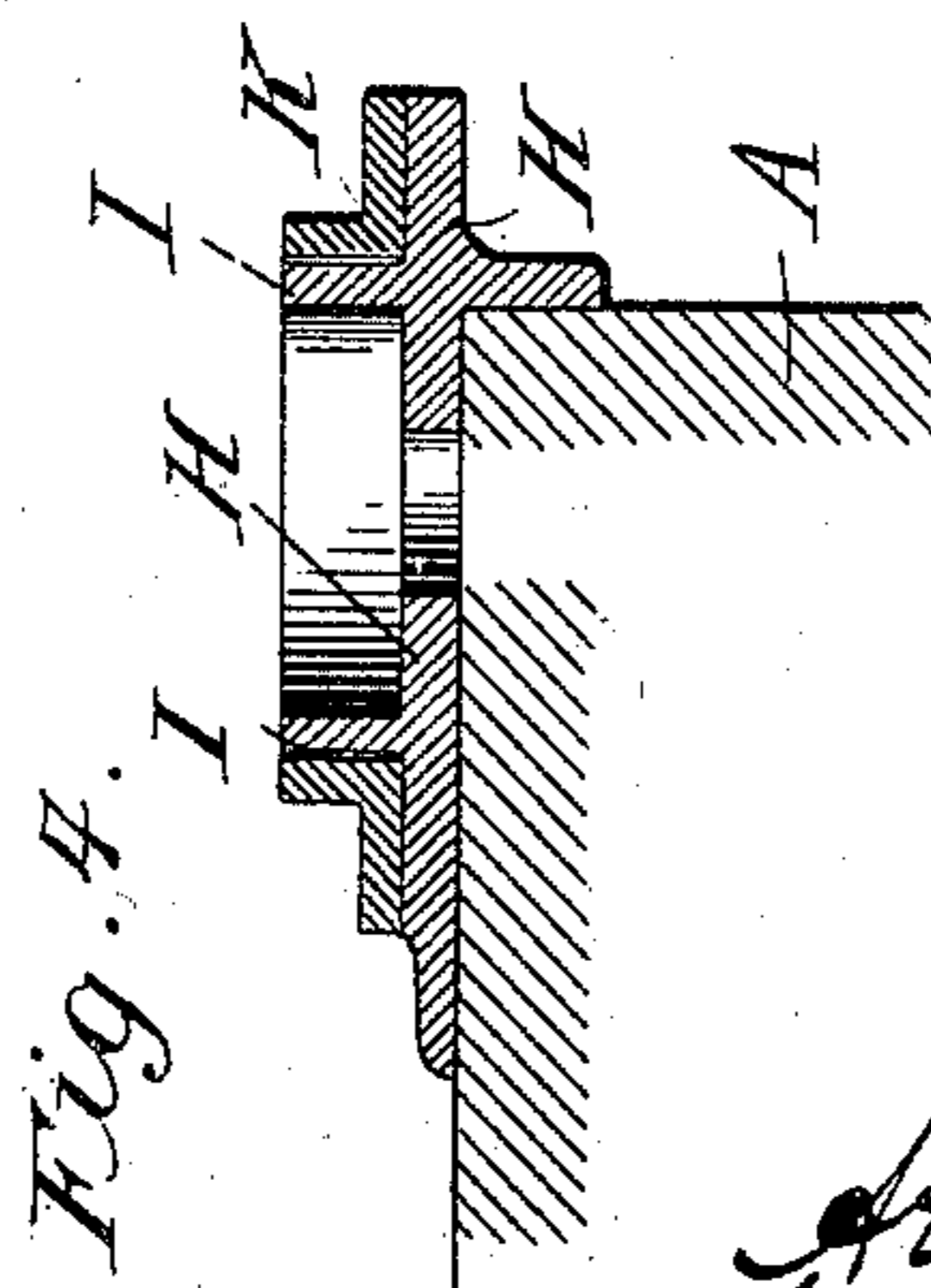
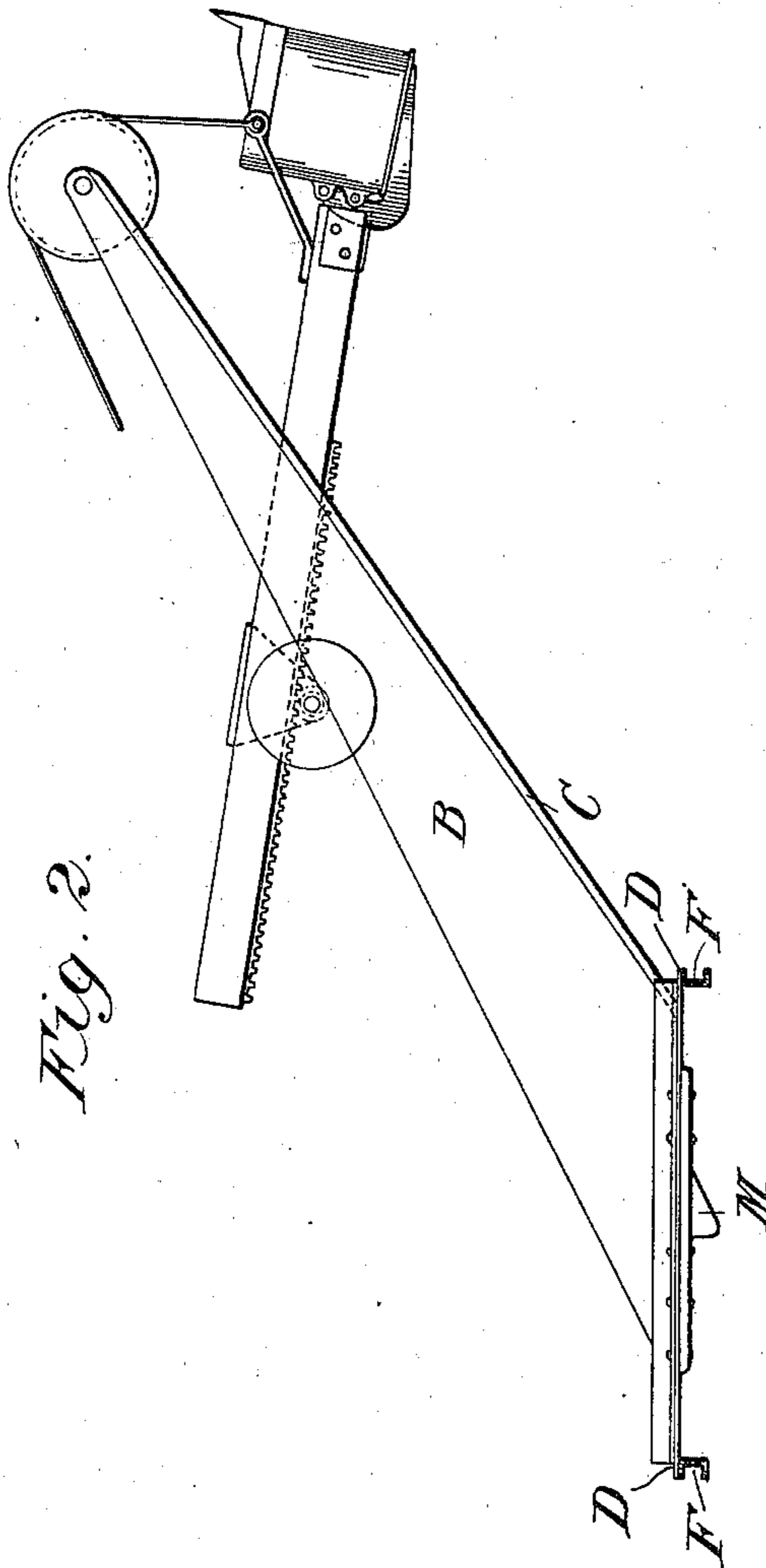
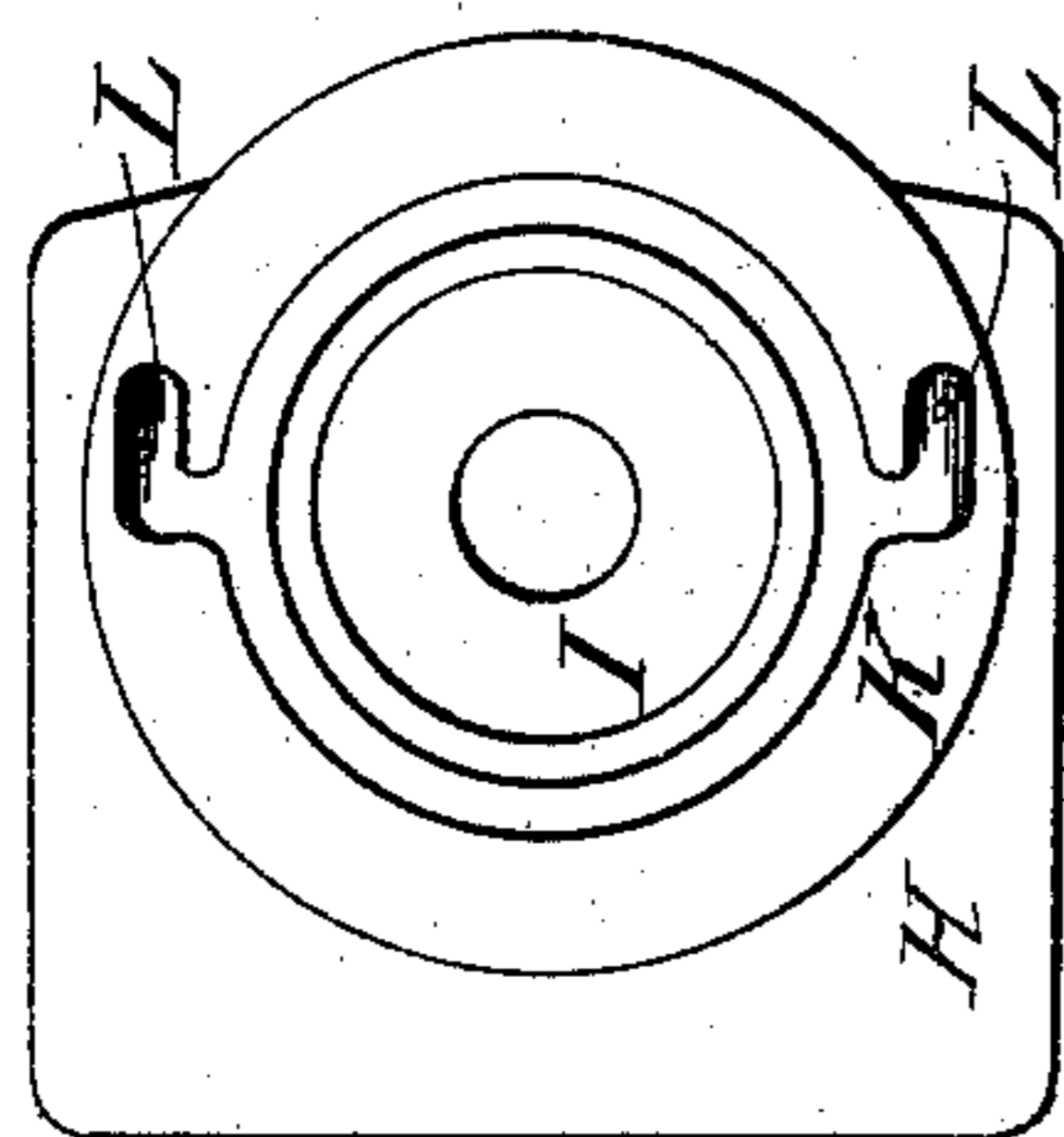
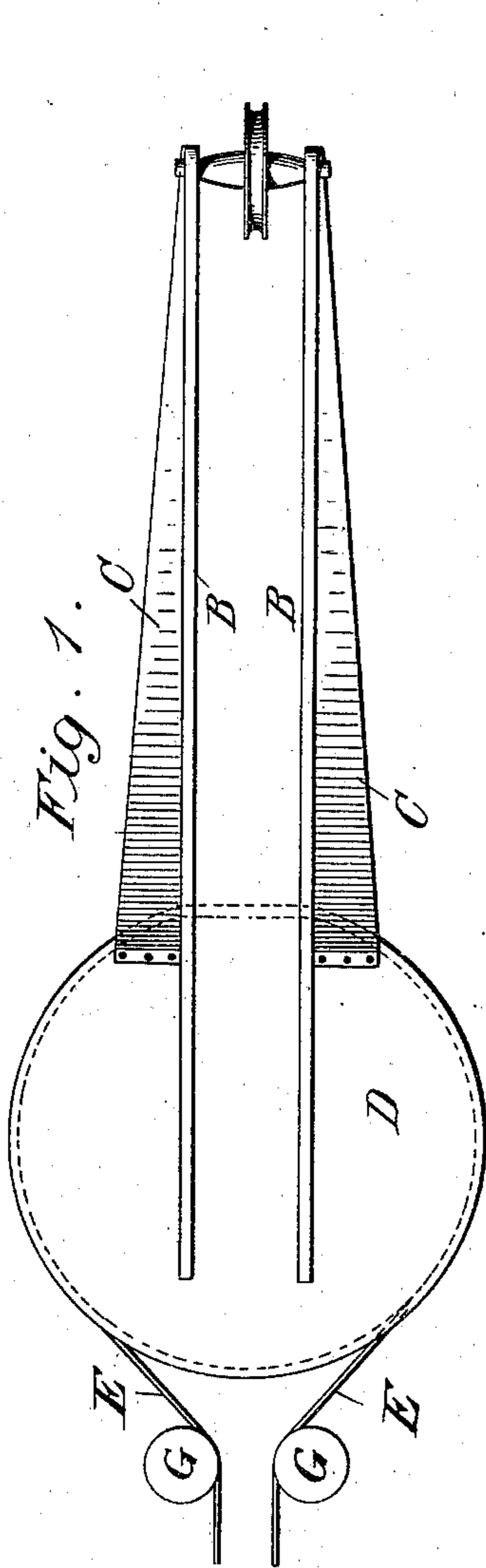


Fig. 5.

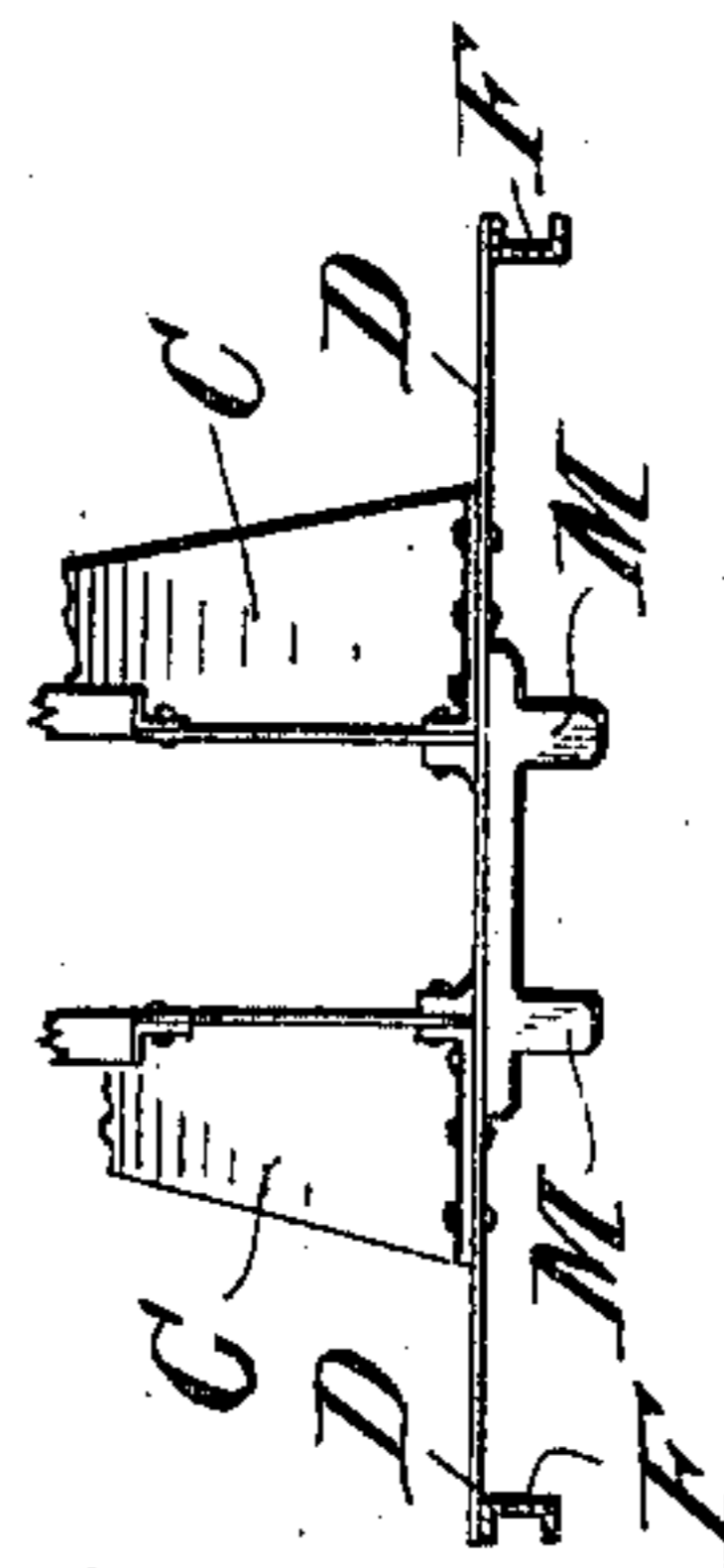


Fig. 3.

Witnesses
Edward Bowland.
F. M. Donahue

Inventor
Arthur W. Robinson
By his Attorney Phillips Abbott.

UNITED STATES PATENT OFFICE.

ARTHUR W. ROBINSON, OF MONTREAL, CANADA.

BOOM FOR DREDGES, EXCAVATORS, &c.

SPECIFICATION forming part of Letters Patent No. 708,588, dated September 9, 1902.

Application filed May 20, 1902. Serial No. 108,270. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. ROBINSON, a citizen of the Dominion of Canada, and a resident of the city of Montreal, Province of Quebec, Dominion of Canada, have invented a new and useful Improvement in Booms for Dredges, Excavators, and the Like, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings.

The invention relates to that class of dredges or excavators in which a boom is employed to carry a single dipper and dipper-arm, which is operated by hoisting-tackle; and the invention has for its object the simplification of the boom, turn-table, and connecting parts, and to provide a suitable and substantial manner of swinging or rotating the boom upon its axis.

In the drawings, Figure 1 is a plan view of the boom and turn-table attached. Fig. 2 is a side elevation of the same, showing the turn-table frame in section. Fig. 3 is a rear view, likewise showing the turn-table in section. Fig. 4 is a plan view of the base-plate and center-bearing on which the boom and turn-table rotate. Fig. 5 is a vertical section of the parts shown in Fig. 4.

A (see Fig. 5) illustrates the hull of the vessel or other suitable support on which the mechanism is supported.

B is the boom itself. It is suitably supported by an A-frame or its equivalent with guy-ropes or stays, as usual. They are not shown because they are well understood. It is made in two identical parts, as shown, each part being provided with a laterally-extending flange C, whereby it is stiffened.

D is the turn-table, located at the base of and permanently bolted to the boom, as illustrated in Fig. 2, for the purpose of rotating it upon its axis. This rotary movement is produced by wire ropes or chains E E, (see Fig. 1,) which enter a groove F in the edge of the turn-table, (see Fig. 2,) the chains being duly guided by idlers G G, as usual, whereby they are carried inboard to suitable engines.

H is a base-plate attached at or near the end of the dredge, having a turn-table seat and vertical trunnion I upon it, and it is provided also with a revolving collar K. This

collar has formed upon it two sockets L L, one on either side and about opposite to each other. They are constructed and arranged so as to receive the feet M, (see Figs. 2 and 3,) which form part of the base of the boom proper, one of them forming part of each of the main side pieces or bars of the boom. These two feet may be formed in a single casting, as shown in Fig. 3, and connected by flanges to the turn-table D and to the webs of the boom B B. These flanges should preferably extend to an ample distance in both directions, so as to firmly unite the boom and turn-table. The rim of the turn-table F may be made of channel-iron or grooved in any other preferred way, or it may be toothed to receive a sprocket chain or gear. The feet M are situated in direct line with the compression strains down the center of the boom, and the boom is tapered in form, being considerably wider at the inner end and reduced at the free end. This form gives the greatest strength where it is needed and reduces the weight where safely possible. The boom is reinforced laterally, as previously stated, by horizontal flanges C C. They are also of tapering form when viewed in plan and are designed to more effectively transmit the turning movement of the boom into the entire body of the boom. For this purpose they are very firmly attached to the turn-table. In fact, they are bolted to it, so as to be integral therewith.

It will be seen that the invention is equally applicable to the booms of cranes, steam-shovels, and, in fact, to any machine in which a boom or its equivalent is required to be rotated about an axis. In dredges and excavators of this description it is necessary to apply a very great swinging power, so as to rotate the boom with the greatest possible speed from the position in which the dipper digs its load to the position in which it dumps the load, and thence back again, and the application of great power for this purpose to the turn-table and the boom near its center of rotation causes severe strains to be exerted upon the parts in order to overcome the inertia of the bucket and its load, particularly since the power has to be exerted through parts which are at a distance from the bucket and its load. It will be particularly noted

that a boom of this kind, owing to the stresses which it inevitably encounters, will frequently at least vibrate and yield slightly from its true position, and that therefore it would be undesirable to connect the boom and turn-table rigidly with the revolving collar K, because the collar should rotate truly and without jamming upon the turn-table seat and have proper provision for lubrication, &c. It will also be noted that by the form of construction adopted by me there is the greatest possible freedom of the boom to accommodate itself to the stresses upon it, due to the fact that the feet M merely rest in the sockets L and are not attached to them in any way. They are held in place merely by the thrust of the boom. This experience shows is perfectly reliable, and thereby the boom is permitted such independent movement as occasion necessitates without injuriously affecting any other part of the mechanism. It will be obvious to those who are familiar with this art that modifications may be made in the details of construction of my invention without departing from the essentials thereof. I therefore do not limit myself to such details.

Having described my invention, I claim—

1. The combination in a dredge or like machine of a boom having a tapering form and rigidly attached at its larger end to a turn-table, the turn-table itself, feet on the under side of the turn-table and a rotatable collar supported about a fixed center and provided with sockets adapted to receive said feet, for the purpose set forth.

2. The combination in a dredge or like machine of a boom having lateral flanges there-

on whereby it is stiffened against lateral strains, said flanges tapering from the base of the boom toward its free end, and a turn-table to which the larger end of the boom is rigidly attached and an axis about which the turn-table may turn, for the purpose set forth.

3. The combination in a dredge or like machine of a boom having a tapering form from a turn-table toward its free end and provided with lateral flanges likewise tapering in form from the turn-table toward the free end of the boom, for the purpose set forth.

4. The combination in a dredge or like machine of a boom composed of two similar parts, each having an outwardly-extending horizontal flange, the boom as a whole being rigidly attached at its larger end to a turn-table, the turn-table itself and means whereby the boom and turn-table may be rotated as a unit, for the purpose set forth.

5. The combination in a dredge or like machine of a boom having a tapering form and provided with lateral flanges, the larger end of the boom being rigidly attached to a turn-table, the turn-table itself, feet beneath the turn-table integral with or rigidly attached to the base of the boom, a rotatable collar provided with a suitable fixed center and sockets located upon the collar adapted to receive said feet, for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of April, 1902.

ARTHUR W. ROBINSON.

Witnesses:

J. B. ROBINSON,
E. M. CORBET.