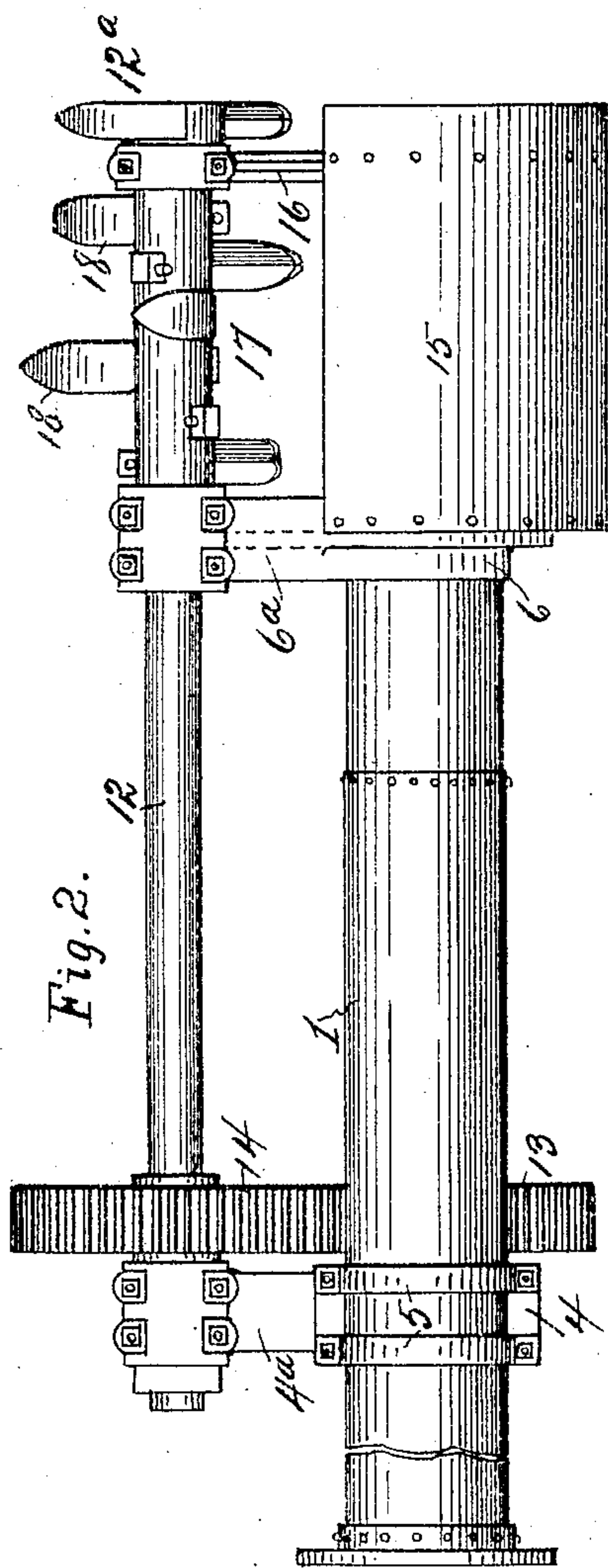
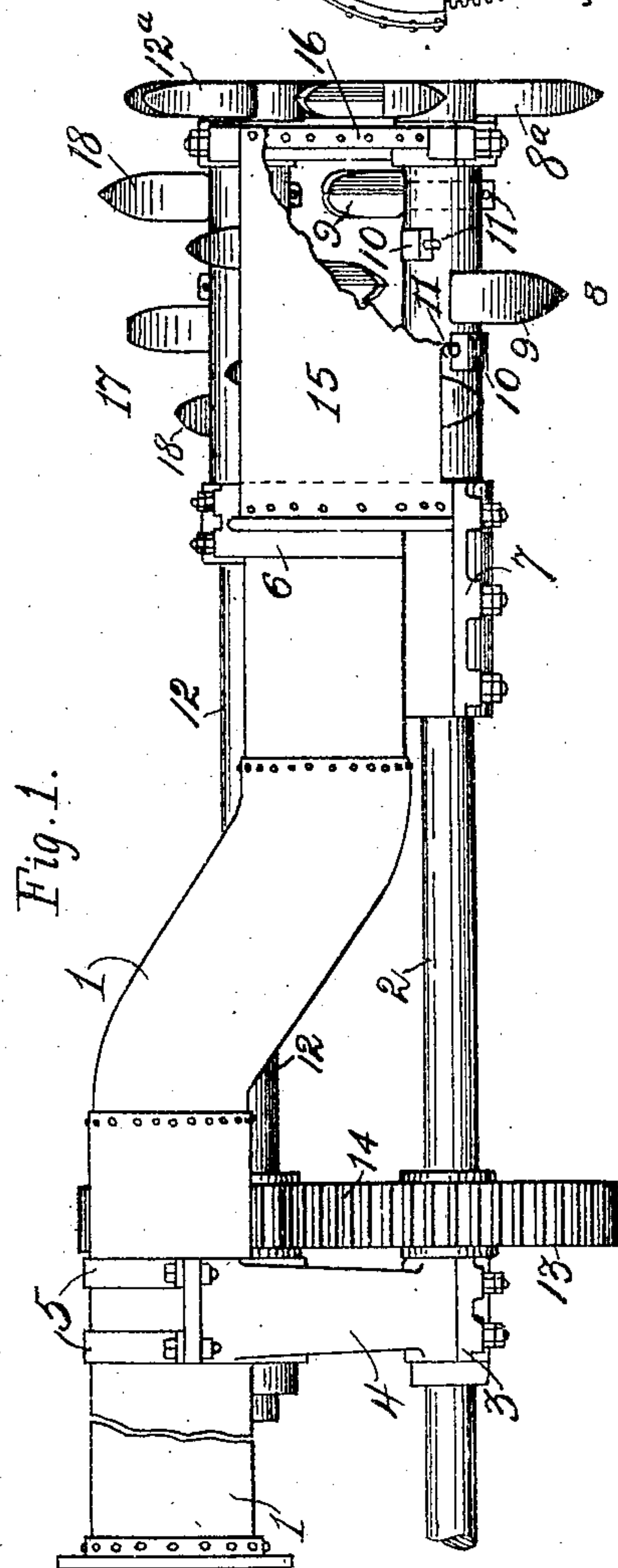
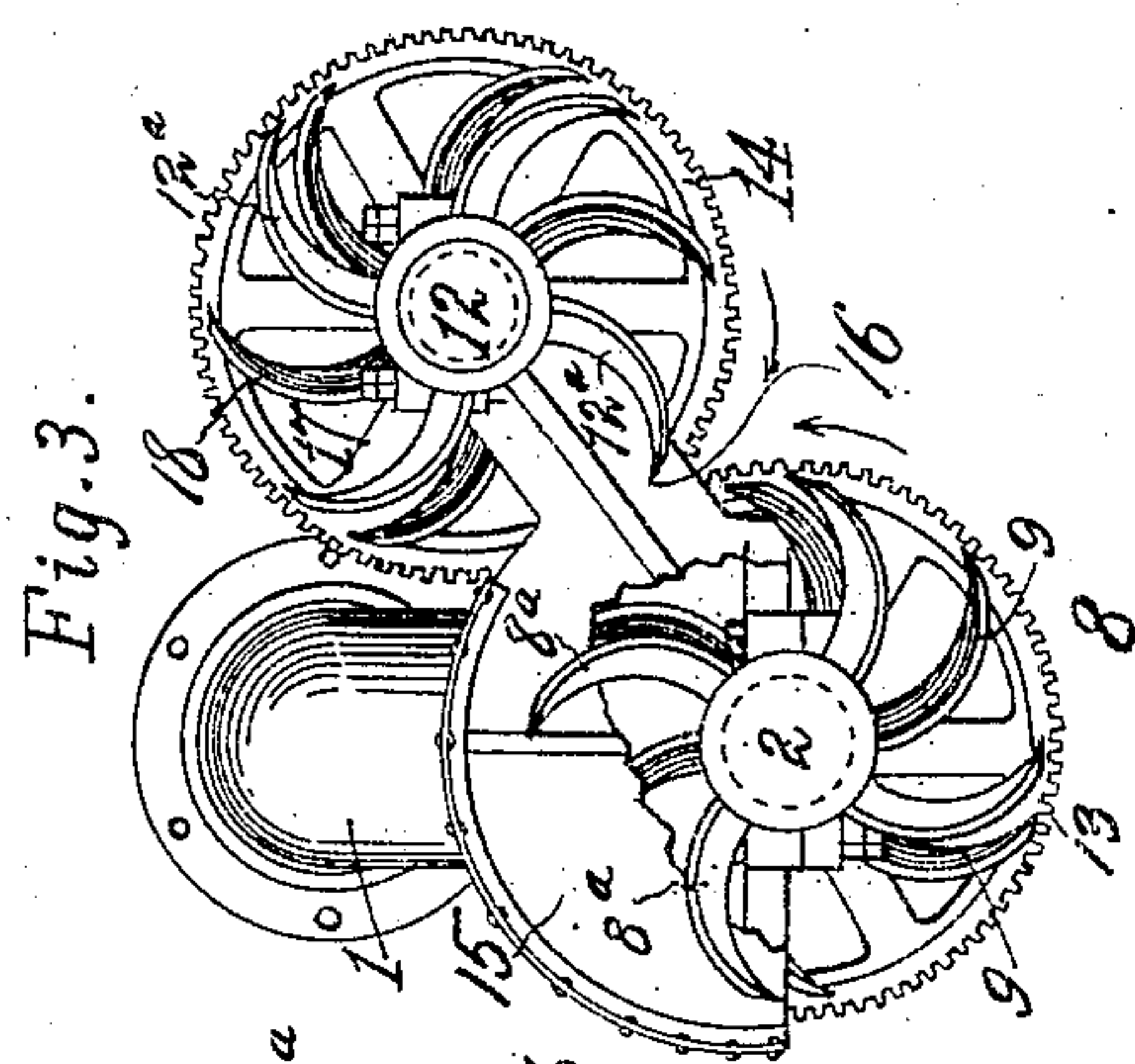


No. 786,253.

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I. G. GILLESPIE.
DREDGE.

APPLICATION FILED AUG. 6, 1904.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ISAAC G. GILLESPIE, OF OAKHARBOR, OHIO.

DREDGE.

SPECIFICATION forming part of Letters Patent No. 786,253, dated March 28, 1905.

Application filed August 6, 1904. Serial No. 219,719.

To all whom it may concern:

Be it known that I, ISAAC G. GILLESPIE, a citizen of the United States, residing at Oakharbor, in the county of Ottawa and State of Ohio, have invented certain new and useful Improvements in Dredges; 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 figures of reference marked thereon, which form a part of this specification.

In that class of hydraulic dredges in which earth, gravel, clay, and the like are excavated and removed from the bottom of a stream through a conduit connected with a pump an agitator or excavator is employed at the inlet of the conduit for loosening the material to be removed. Heretofore the agitator has usually consisted of a series of inclined knives or cutters arranged upon and integral with the periphery of a wheel or cylinder secured to the end of a shaft connected with driving power on the barge or other vessel. A serious difficulty attending the use of these dredges is that when the material to be excavated is hard or tenacious the blades or cutters at the outer end of the conduit and shaft engage this material and travel, causing the shaft, the conduit, and the boat to swing sidewise. To withstand this lateral strain, the conduit and other parts must be made exceedingly heavy and strong. The swing of the boat at its moorings caused by the travel of the excavator or agitator causes loss of time and waste of power and occasions faults in the regular progress of the excavation.

My invention relates to and its object is to provide means for overcoming the difficulty here indicated, and more particularly to furnish a dredge of the class referred to with an agitator consisting of two cutting or stirring wheels moving in opposite directions, whereby the tendency of one wheel to cause the undue lateral movement of the excavating apparatus is overcome by the other wheel cutting or pulling upon the earth in the opposite direction.

The advantages of the arrangement here referred to are that the capacity of the dredge is increased with the expenditure of considerably less power, that the tendency of the dredge to swerve from its proper position, due to the cutting only in one direction, is overcome, that the weight and cost of the apparatus are considerably lessened, and that in case the material to be excavated is light and easily handled—such, for instance, as loose sand—one of the excavating-wheels may be removed or thrown out of service, so that no more mechanical energy will be employed than is necessary for the work to be performed.

I attain these objects by means of the devices and arrangement of parts hereinafter described, and shown and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my device with a portion of the hood of one of the agitators broken away; Fig. 2, a top plan view of the same, and Fig. 3 a front end view of the same.

Like numerals of reference indicate like parts throughout the drawings.

In the drawings, 1 is a pipe or conduit leading from where the excavating is to take place to a pump of the usual or any preferred form and thence to the point of discharge. The pipe 1 is bent downwardly near its forward end, as shown.

2 is a shaft extending beneath the pipe 1, partly supported in bearings 3 on bracket 4, which is secured by means of clamps 5 to the pipe 1. 6 is another bracket, also secured to the pipe 1 and having bearings 7 for the shaft 2. Upon the forward end of the shaft 2 is an agitator 8, consisting of a series of digging implements or shovels 9, which may be of any desired form, depending upon the character of the material to be excavated. These shovels 9 have shanks 10, which pass through holes in the shaft 2, the extremity of the shaft being enlarged, as shown, for this purpose. Through the projecting ends of the shanks are holes for the reception of removable pins 11, which hold the shovels in place. The shovels or cutters are thus movable longitudinally in their sockets and are

readily removable, permitting renewals, repairs, and substitution of the parts..

Upon the bracket 4 is an arm 4^a, and upon the bracket 6 is an arm 6^a. At the extremity of these two arms are bearings in which is supported shaft 12, parallel with but above the horizontal plane of shaft 2. Upon shaft 2 is a driving gear-wheel 13, meshing with a corresponding wheel 14 upon shaft 12.

15 is a curved hood which covers the top of the agitator 8. This hood at its rear end is secured to the bracket 6 and at its forward end to the bracket or brace 16. This bracket or brace has bearings in which are journaled the shafts 2 12. Upon the shaft 12, between the brackets 6 16, is mounted another agitator, 17, having digging or cutting implements 18 secured to the shaft 12 in the manner above described. This agitator 17, as will be seen from Fig. 3, is disposed at the side of and above the agitator 8. The shafts 2 and 12 project forwardly beyond the bearings in the bracket or brace 16, and upon the projecting extremities of these shafts are secured cutting-wheels 8^a and 12^a, which are outside of and beyond the hood 15.

The operation of my device is as follows: The pipe 1 being connected with its pump, shaft 2 being connected with its driving mechanism, and the conduit, shafts, agitators, and their attached parts being supported and arranged to be lowered into the water to the point where the excavating is to be done, the pump is started and the shaft 2 is caused to revolve. Now the agitator 8 will loosen the earth immediately below the open mouth of the hood 15 and the loosened earth will be sucked in with the stream through the conduit 1 and discharged at the proper point. At the same time the agitator 17 will dig down the bank above the agitator 8, feeding the earth down to the agitator 8 and to the intruding stream beneath the hood. It will be seen that the two agitators revolve in opposite directions and that the lateral strain of each agitator upon its extended support is compensated for by the opposing strain of the other agitator, and that thus many annoying breakages are avoided and that the tendency of the parts to swerve from their proper course is overcome. It will also be seen that, owing to the short radius of the digging or cutting implements upon the two

agitators, a great saving of power is effected over that class of dredges in which a single agitator making the same depth of cut is employed.

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

1. In a hydraulic excavator, a conduit for the excavated material, a pair of rotary agitators at the inlet of said conduit, one of said agitators being disposed at the side of and above the other agitator, and means for rotating said agitators.

2. In a hydraulic excavator, a conduit having a downward bend near its forward end, a shaft journaled beneath the conduit, a rotary agitator on said shaft at the inlet of the conduit, a hood supported above the agitator, and a cutting-wheel on the extremity of the shaft outside the hood.

3. In a hydraulic excavator, a conduit for the excavated material, having a downward bend near its forward end, brackets supported by said conduit, a pair of shafts journaled in said brackets, an agitator on each of said shafts adjacent to the inlet of the conduit, a hood for the inlet of the conduit and one of said agitators, and a pair of gear-wheels on said shaft in engagement with each other.

4. In a hydraulic excavator, a conduit for the excavated material, a shaft having transverse holes therethrough near its outer extremity, an agitator on the shaft at the inlet of the conduit, digging implements for the agitator having elongated shanks which pass through said holes in said shaft and which have transverse holes therethrough, and removable pins in said latter holes which removably secure said digging implements in place.

5. In a hydraulic excavator, a conduit for the excavated material, a bracket secured to the end of the conduit, a hood for the mouth of the conduit, another bracket secured to the hood, a pair of shafts journaled on said brackets, and an agitator on each of said shafts adjacent to the mouth of the conduit.

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

ISAAC G. GILLESPIE.

Witnesses:

M. L. MARKS,
ALMON HALL.