

(No Model.)

T. ENGLISH.

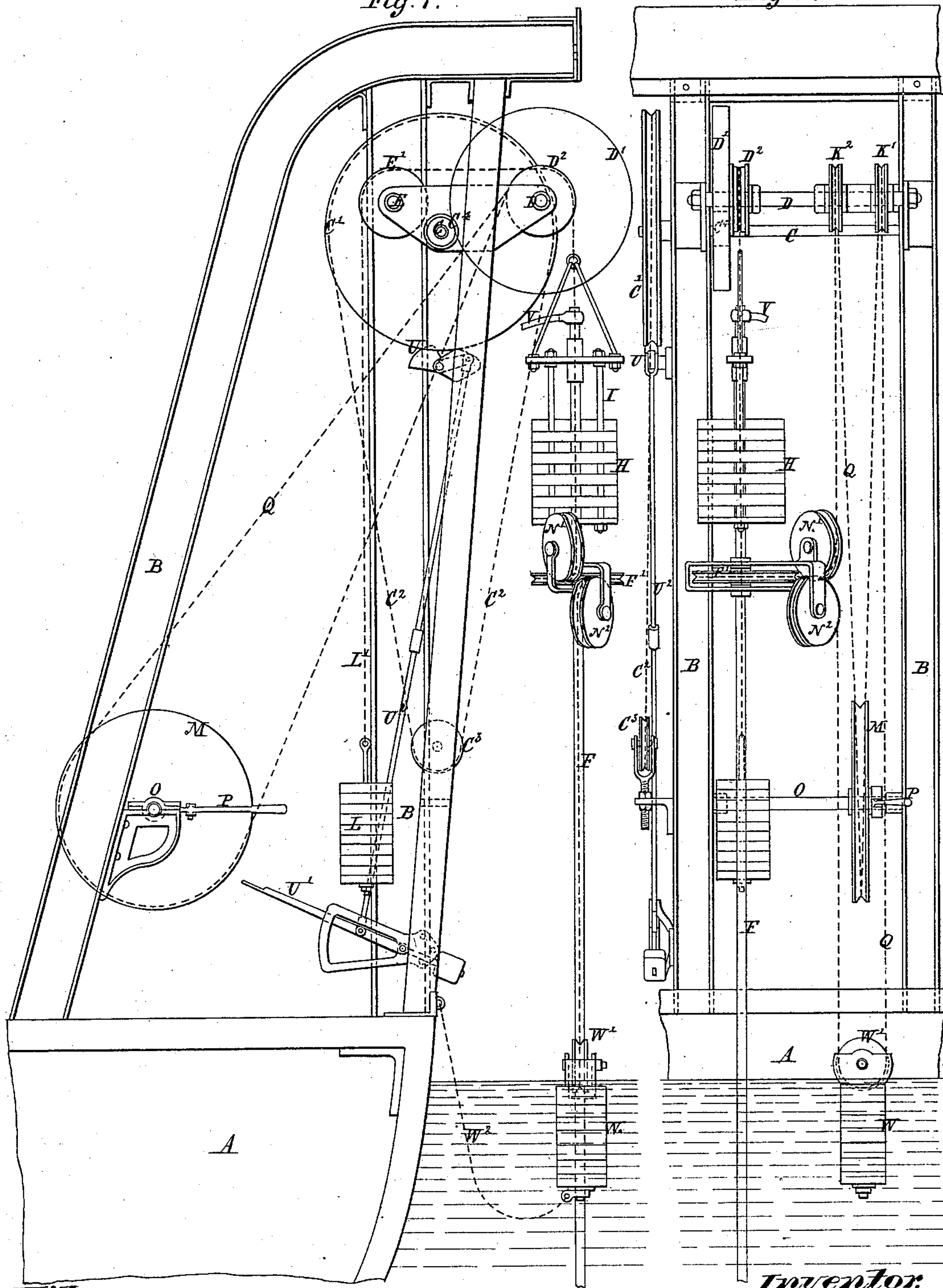
APPARATUS FOR SUBAQUEOUS BORING.

No. 286,797.

Patented Oct. 16, 1883.

Fig. 1.

Fig. 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

THOMAS ENGLISH, OF HAWLEY, DARTFORD, COUNTY OF KENT, ENGLAND.

APPARATUS FOR SUBAQUEOUS BORING.

SPECIFICATION forming part of Letters Patent No. 286,797, dated October 16, 1883.

Application filed June 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS ENGLISH, a citizen of England, and resident of Hawley, Dartford, county of Kent, England, have invented a new and useful Apparatus for Subaqueous Boring, of which the following is a specification.

In the specification of Letters Patent No. 256,658, dated April 18, 1882, I described apparatus for subaqueous boring wherein a boring-tube loaded with adjustable weights and suspended from a framing on a barge or vessel is caused to revolve by gearing worked by a flexible or jointed shaft from a driving-shaft worked by an engine or other motor on board of the vessel.

My present invention relates to improved means of driving such a boring-tube as I will describe, referring to the accompanying drawings.

Figure 1 is a side view, and Fig. 2 is a front view, of one set of the apparatus mounted on board a barge, part of which is shown at A.

On board the barge is the revolving shaft O, which is driven by an engine or other motor. On this shaft for each boring apparatus there is a rope-pulley, M, which can be thrown into or out of action by a clutch worked by a lever, P. The framing B carries at its upper part three shafts, C, D, and E. On the shaft C is fixed a rope-wheel, C', round which and round a pulley, C³, below, passes a rope, C², which can be pulled by hand, so as to turn the wheel C' in either direction. Also, on the shaft C is fixed a pinion, C⁴, gearing with a toothed wheel, D', which is fixed on the shaft D. On this shaft D is also fixed a chain-pulley, D², over which and also over a chain-pulley, E', on the shaft E, passes a chain, L', attached at its one end to weights L, that can be varied, and attached at its other end to a cage, I, in the upper and lower plates of which are formed bearings for the vertical boring-tube F. On the cage I are placed weights H, which aid in pressing down the boring-tube, but which can be more or less relieved by the counter-weights L. On pulling the rope C² and so turning the wheel C', shaft C, and pinion C⁴, and so causing the wheel D', shaft D, and chain-pulley D² to revolve, the cage I, with the boring-tube, can be raised or lowered, as desired. The wheel C' can be re-

tarded or arrested by a brake, U, worked by a treadle-lever, U', to which the brake is connected by rod U². Loose on the shaft D are mounted two guide-pulleys, K' K², and to the lower part of the cage I are attached brackets carrying two guide-pulleys, N' N². On the boring-tube F is fixed a pulley, F', and at the side of the boring-tube hangs a tightening-weight, W, having at its upper part a trough, in which is mounted a pulley, W'. An endless rope, Q, passes round the driving-pulley M, the guide-pulleys K' K² and N' N², the weighted pulley W', and the pulley F', and thus, as the shaft O and pulley M revolve this rope Q, subject to the tension due to the weight W, causes the pulley F' and the boring-tube F to revolve; and the arrangement of the pulley F' and the pulleys N' N² is such as to admit of the cage I and the boring-tube F being raised or lowered without changing the position of the weight W. This weight is attached to the vessel or framing by a loose piece of chain, W², to prevent it from being lost in case of the driving-rope Q giving way.

The barge or vessel, which may have several sets of the boring apparatus arranged along its side, is moored over the place where the boring is to be effected. Each boring-tube F is lowered, and has its weight H and counter-weight L adjusted according to the nature of the material to be bored. It is then, by means of the motor-shaft O and driving rope Q, caused to revolve, while water, supplied from a pump through a flexible hose, V, attached by a swivel-joint to the top of the boring-tube, is forced through it to scour out the borings. When the tube, deepening the hole bored by it, has descended a certain distance, the rope-pulley M is unclutched by moving the clutch-lever P, and by means of the hand-rope C² the cage I is raised a sufficient height to introduce an additional length of boring-tube, whereupon the boring is continued.

Having thus described the nature of my invention and the best way I know of carrying it into practical operation, I claim—

The combination, in an apparatus for subaqueous boring, of a floating vessel, a flexibly-suspended boring-tube loaded with adjustable weights, and provided with a guide-pulley and a driven pulley, a framing on the vessel pro-

vided with guide-pulleys, a driving-shaft on
the framing having a driving-pulley, a weight
arranged beside the boring-tube, and an endless
rope passing from the driving-pulley around
5 the guide-pulleys on the framing, and the guide
and driven pulleys carried by the boring-tube
and connected with the weight beside the bor-
ing-tube, whereby the boring-tube can be raised
or lowered without changing the position of
10 the weight at the side of said tube, substan-
tially as and for the purpose described.

In testimony whereof I have signed my name
to this specification, in the presence of two
subscribing witnesses, this 11th day of May,
A. D. 1883.

THOS. ENGLISH.

Witnesses:

OLIVER IMRAY,
JNO. P. M. MILLARD.