H. G. PLUMMER.

APPARATUS FOR DRILLING IN ROUGH WATER.

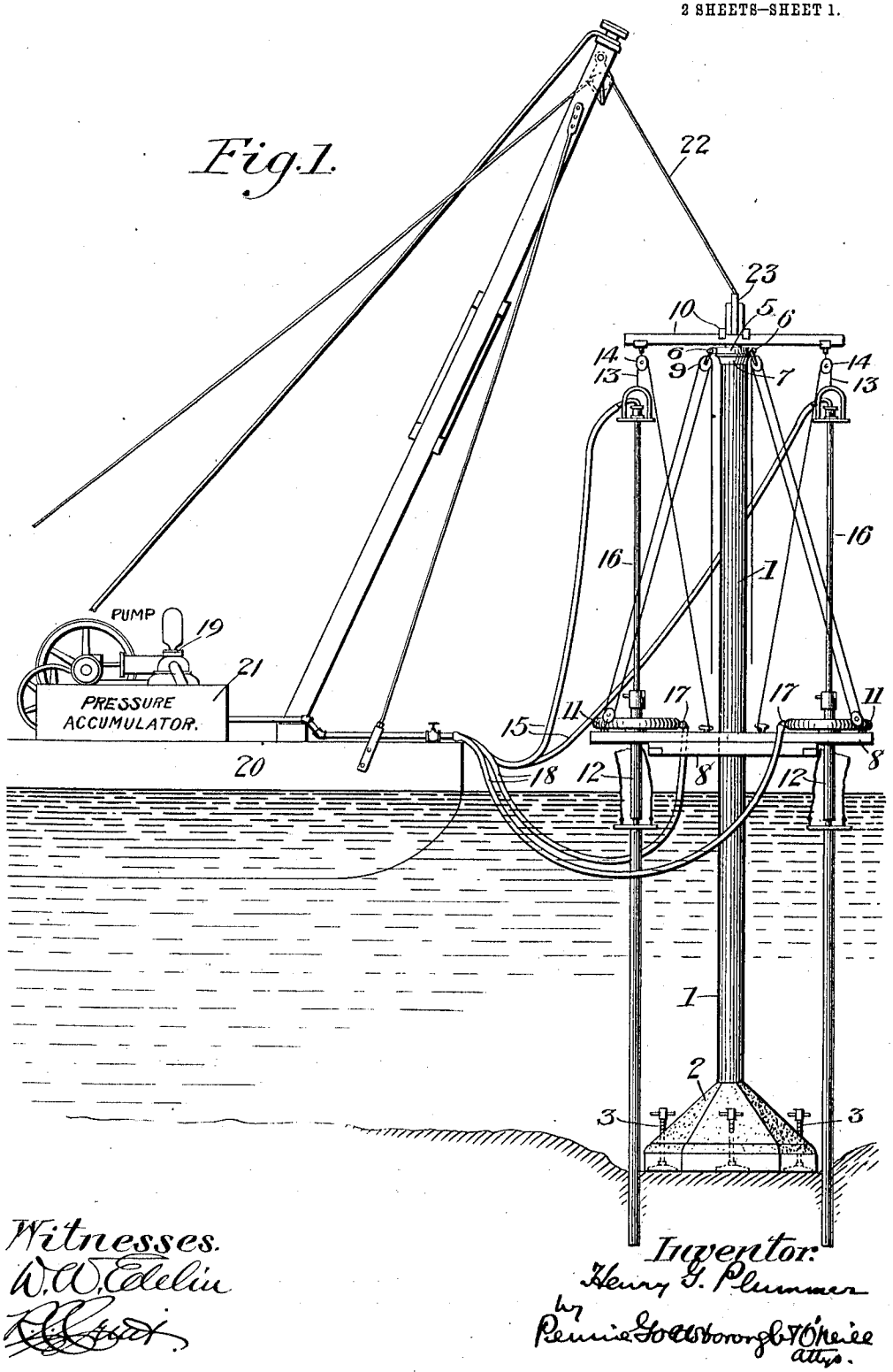
APPLICATION FILED AUG. 10, 1911.

1,041,158.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 3.

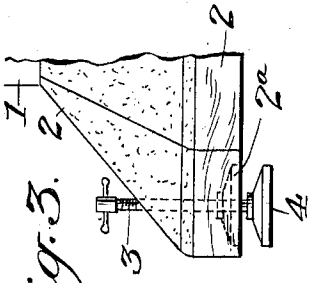

Fig. 2.

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UNITED STATES PATENT OFFICE.

HENRY GUION PLUMMER, OF HONOLULU, TERRITORY OF HAWAII.

APPARATUS FOR DRILLING IN ROUGH WATER.

1,041,158. Specification of Letters Patent. Patented Oct. 15, 1912.

Application filed August 10, 1911. Serial No. 643,300.

To all whom it may concern:

Be it known that I, HENRY G. PLUMMER, a citizen of the United States, residing at Honolulu, in the county of Honolulu, Territory of Hawaii, have invented certain new and useful Improvements in Apparatus for Drilling in Rough Water; and I do hereby 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.

This invention relates to apparatus for use in channel and harbor improvement for the drilling of holes for blasting in rock or other hard material where weather conditions and excessive wave action prevent the employment of the ordinary means of drilling, such as from a scow, tripod or stationary platform.

The invention contemplates a mast or upright provided with a heavy base, a platform surrounding this mast and adapted to be raised or lowered or to be turned about said mast, a cross-arm near the top of the mast and arranged to turn with the platform, and the usual drills, tackles etc. By means of a derrick scow, the mast is lowered so that its base rests upon the sea bottom at the location to be drilled. Means are also provided for leveling the base when resting upon a sloping bottom so that the mast may be approximately vertical. The base is made large and heavy so as to bring the center of gravity of the apparatus low enough to prevent the mast from falling and cause it to stand without appreciable movement while the drilling operations are being carried on. The platform which surrounds the mast may be raised or lowered in any suitable manner so as to be suspended above the water level, for example the platform may be hung by tackles from a collar near the upper end of the mast. Drills are operated from the suspended platform, and they may be rotated either by hand or by power. Those used by the inventor are driven by water-wheels, the water being led to the wheels by flexible hose from the derrick scow on which a pump is installed for this purpose. Sufficient slack is allowed in the hose to provide for any movement of the anchored scow due to the swells or heavy seas without affecting the stability of the mast. Preferably two drills are operated from opposite sides of the platform, the distance between the drills depending upon the desired spacing of the holes for effective blasting. The cross-arm is secured to the collar from which the platform is hung. This collar is arranged so that it may be turned about the mast, so that the cross-arm and platform may turn together at the same time. This cross-arm supports the pulleys or blocks for the ropes by which the drills, casings, loading sticks etc. may be raised or lowered as desired. When the two holes have been drilled, the drills are raised and the platform, collar, and cross-arm are turned a quarter turn or through 90° and two more holes are then drilled, the four holes forming the corners of a square. When the four holes are loaded, and the wires for shooting same have been made fast to a float, the apparatus is lifted by the derrick scow and is moved to a new location where it is again lowered and the drilling and loading of four more holes is effected. When sufficient holes have thus been drilled and loaded, the apparatus is removed to a safe distance and the charges are fired.

In the accompanying drawings, forming a part of this specification, Figure 1 represents an elevation of apparatus embodying my invention. Fig. 2 is a plan view of the platform. Fig. 3 is a detail of an adjusting screw and shoe and a portion of the base.

Referring to the drawings, the mast 1, of wood or metal and of sufficient height for the handling of the drills, is provided with the base 2 of any suitable heavy material such as iron or concrete. The base 2 is made of sufficient weight to lower the center of gravity of the apparatus so as to insure its stability. The area of the base 2 is made as large as possible without interfering with the operation of the drills. Adjusting screws 3 having shoes 4 at their lower ends are provided for leveling the apparatus so that the mast will be approximately vertical when the apparatus is in the desired position for operation with the shoes 4 resting upon the sea bottom. The screws 3 may be adjusted before lowering the mast into position so that the shoes 4 will be of the proper height to suit the surface of the sea bottom which has previously been determined by soundings. On level bottoms where adjustment is not required, the shoes 4 may be raised into the recesses 2^a in the bottom of the base 2.

The collar 5 provided with eyes C is adapted to turn on the upper end of the mast 1

against the shoulder 7. The platform 8 for operating the drills surrounds the mast 1 and is adjustably hung by the tackles 9 from the eyes 6. The cross-arm 10 is secured to the collar 5. The platform 8 supports the water-wheels 11 for revolving the drills 12 which are suspended in the usual manner by the ropes 13 over the pulleys 14 attached to the cross-arm 10. Water for each drill 12 is supplied through a flexible hose 15 connected in the usual manner to the pipe 16. Water is supplied to the nozzles 17 of the water wheels 11 through flexible hose 18. The hose 15 and 18 are connected to a pump 19 on the derrick scow 20. A pressure accumulator 21 may be interposed between the pump 19 and the hose 18 if desired. The hoisting rope 22 of the derrick scow 20 is attached to the head 23 of the mast 1.

I claim as my invention:

1. Apparatus for drilling in rough water comprising, a mast provided with a heavy base, and an adjustable platform suspended from the upper end of said mast, drills adapted to be operated from said platform, and means to support said drills.

2. Apparatus for drilling in rough water comprising, a mast provided with a heavy base, a platform surrounding said mast suspended therefrom, said platform adapted to be raised or lowered, drills operated from said platform, and means to support said drills.

3. Apparatus of the kind described comprising a mast provided with a heavy base, a platform surrounding said mast, a rotatable portion at the top of said mast from which the platform is suspended thereby permitting the platform to turn about said mast, means whereby said platform may be raised and lowered, and drills operated from said platform.

4. Apparatus of the kind described comprising, a mast provided with a heavy base, a platform from which one or more drills are operated supported by said mast, means for adjusting the height of said platform, and means for leveling the base so that the mast will be approximately vertical when in the operating position.

5. Apparatus of the kind described comprising a mast provided with a heavy weight at its lower end, a platform from which one or more drills are operated, means for adjusting the height of the platform, and a cross arm near the top of said mast from which the drills are suspended, said cross arm being located above said platform.

6. Apparatus for drilling in rough water, comprising a mast with a heavy base, an adjustable platform on the mast from which the drills are operated, and a drill suspending cross-arm supported by the mast, above said platform.

7. Apparatus for drilling in rough water, comprising a mast with a heavy base, means to level said base, an adjustable platform intermediate of the height of the mast and from which the drills are operated, and a drill suspending cross-arm supported by the mast above said platform.

8. Apparatus for drilling in rough water, comprising a mast having a weighted base, a vertically adjustable platform on the mast, a cross-arm on the mast above the platform, and one or more drills suspended from said cross-arm, said platform and cross-arm being adapted to turn together about said mast.

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

HENRY GUION PLUMMER.

Witnesses:
A. F. EWART,
ROBT. J. PRATT.