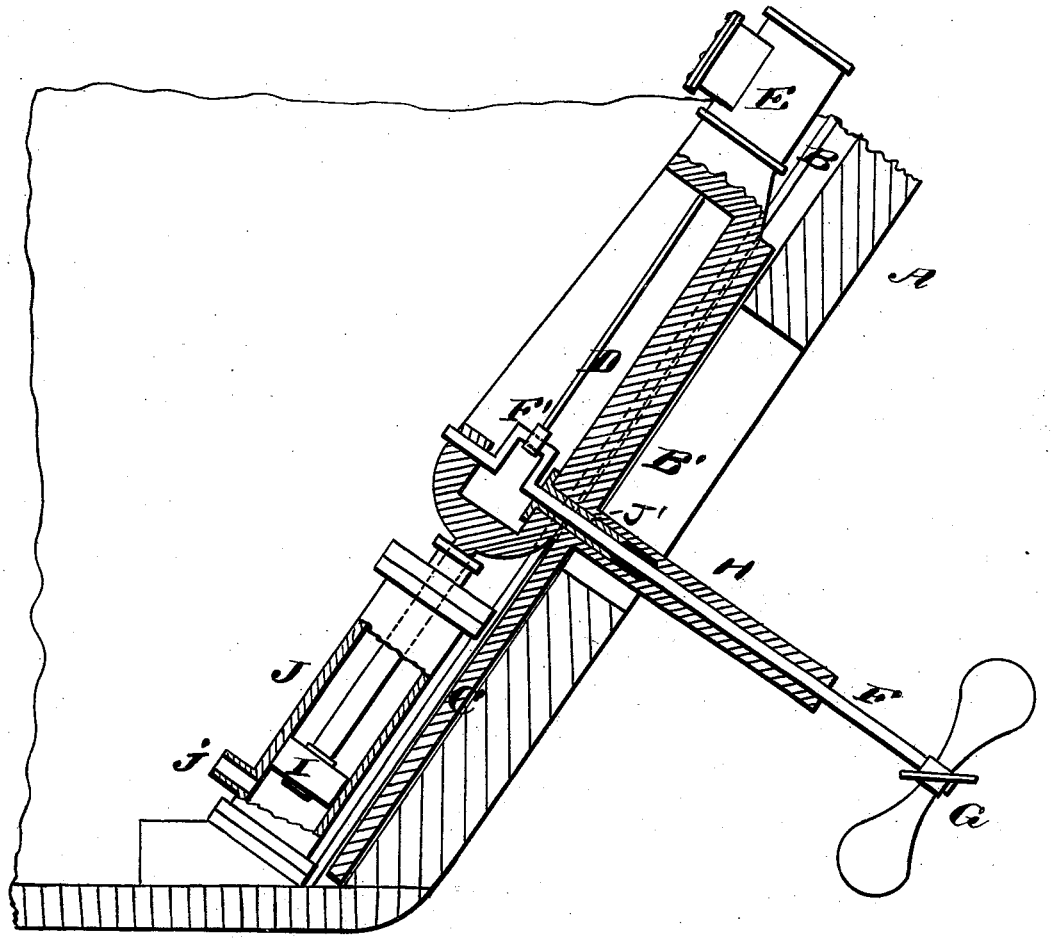
G. E. NOYES.

COMBINED ADJUSTABLE ENGINE AND SCREW PROPELLER.

No. 190,355. Patented May 1, 1877.




WITNESSES

E. H. Bates

George E. Upham

INVENTOR.

George E. Noyes.

Gilmore, Dewitt & Co

ATTORNEYS

# UNITED STATES PATENT OFFICE.

GEORGE E. NOYES, OF WASHINGTON, D. C., ASSIGNOR TO HIMSELF AND EDWIN N. GRAY, OF SAME PLACE.

## IMPROVEMENT IN COMBINED ADJUSTABLE ENGINE AND SCREW-PROPELLER.

Specification forming part of Letters Patent No. **190,355**, dated May 1, 1877; application filed March 31, 1877.

*To all whom it may concern:*

Be it known that I, GEORGE E. NOYES, of Washington, in the county of Washington and District of Columbia, have invented a new and valuable Improvement in Variable Propeller-Shafts; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

The figure of the drawings is a representation of a central vertical section of my variable propeller-shaft applied.

This invention relates to the propulsion of boats in canals or other shoal-water navigation.

It is well known that canal-boat propulsion by steam requires ready means for raising and lowering the propeller, because, when loaded, the boat will barely clear the bottom, and said propeller must then be entirely above the line of the keel, and, when unloaded, she draws but a few inches of water, and the propulsion-screw, if unchanged in position, would not then be sufficiently submerged.

The purpose of my invention is to simplify the structure of the devices heretofore used for raising and lowering the propeller; and to enable the engine to apply its force directly to the rotating shaft of the propeller at all times, because their relative positions are always unchanged, as will be hereinafter more fully set forth.

In the accompanying drawings, A designates the inclined stern of a canal-boat, which is provided on the inside with an upwardly and rearwardly inclined guideway, B, made water-tight, in which works a slide, C, carrying an engine-frame, D. Upon the top of the engine-frame is mounted a steam-cylinder, E, having the necessary connections with a steam-boiler, and this operates, through a pitman or equivalent device, a double crank, F′, on the propeller-shaft F, which is journaled in the lower part of said casing, and carries on its outer end propeller-blades G. Said propeller-shaft passes through a sleeve, H, which is rigidly attached at its inner end to slide C; or it may be rigidly attached to the engine-frame, and said sleeve and shaft extend through a vertical slot, B′, in the stern of the boat and guideway B. Said sleeve H affords a strong and rigid support to the propeller-shaft, and is provided with a stuffing-box, J′, at its inner end, surrounding shaft F, so as to prevent the ingress of water to the boat along said shaft F.

Engine-frame D is provided at its lower end with a plunger or piston, I, which works in a hydraulic cylinder, J, that has an induction-tube, *j*, near its bottom, whereby water is admitted below said plunger from the boiler of the steam-engine, or, if preferred, from a pump.

The pressure of said water raises said plunger, engine-frame, and propeller-shaft.

Any suitable devices may be employed for cutting off the water at will from said cylinder J, and allowing it to escape from the same.

It will be observed that the engine-frame and steam-cylinder are arranged in a vertical plane, and secured to the rear of the inner wall of the boat-stern, and the engine and propeller-shaft have such a fixed relation to each other that the axis of rotation of the propeller-shaft is always coincident with the axis of the crank and its pitman. Therefore there is no loss of power due to a change of elevation, or lowering of the engine. Also, the propeller-shaft and its screw has a second movement vertically through slot B′ in the stern, whereby the propeller may be raised or lowered, the engine-frame and steam-cylinder partaking of this movement.

By using water under pressure, I have practically an incompressible body, and can hold the vertical engine and propeller positively wherever desired.

It is found that the best results are obtained when the propeller is deeply immersed. My devices allow such immersion whatever may be the weight and depth of the vessel, and irrespective of all variations therein.

The location of the engine with its operating mechanism at the stern of the boat is a material advantage when economy of space is to be considered.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a slide carrying the

propeller-shaft, and engine-frame, with a slotted guideway, a water-cylinder, and a plunger working therein, substantially as and for the purpose set forth.

2. The combination of engine-frame and its steam-cylinder, slide C, guideway B, plunger I, sleeve H, and propeller-shaft F, substantially as and for the purpose set forth.

3. The combination of slide C, or engine-frame D, with sleeve H, rigidly attached thereto, and propeller-shaft F, substantially as and for the purpose set forth.

4. A vertical engine-frame, steam-cylinder, and propeller, raised and lowered bodily by hydraulic pressure, the engine-frame, steam-cylinder, and hydraulic engine being arranged in the same vertical plane, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GEORGE E. NOYES.

Witnesses:
C. H. McEwen,
J. F. Acker, Jr.