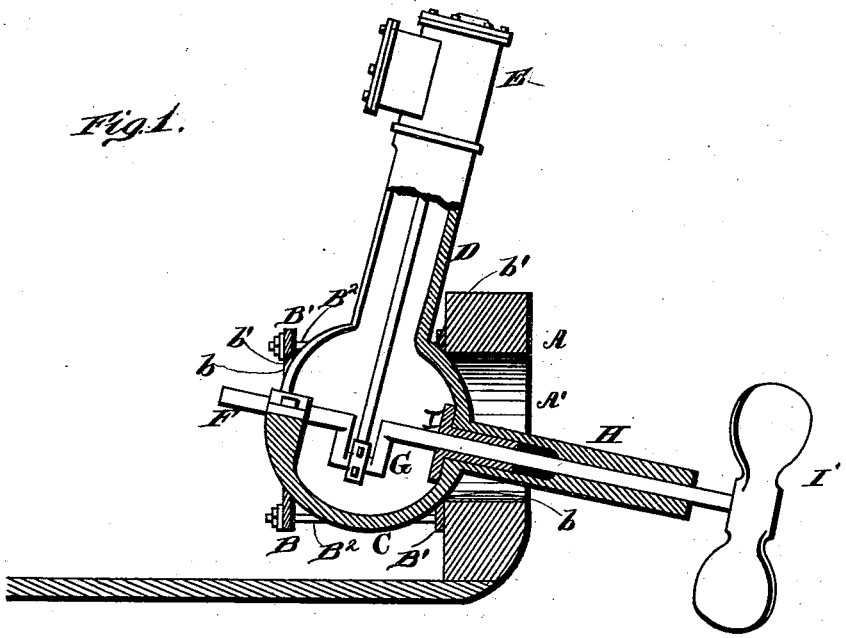
E. N. GRAY & G. E. NOYES.

COMBINED ADJUSTABLE ENGINE AND SCREW PROPELLER.

No. 190,312. Patented May 1, 1877.

Fig. 1.



WITNESSES

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IMPROVEMENT IN COMBINED ADJUSTABLE ENGINE AND SCREW-PROPELLER.

Specification forming part of Letters Patent No. **190,312**, dated May 1, 1877; application filed March 31, 1877.

To all whom it may concern:

Be it known that we, EDWIN N. GRAY and GEORGE E. NOYES, of Washington, in the county of Washington and District of Columbia, have invented a new and valuable Improvement in Variable Propeller-Shaft; and we 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.

Figure 1 of the drawings is a representation of a central vertical sectional view of our variable propeller-shaft.

The object of this invention is to provide mechanism capable of adjusting a propeller upward or downward, so as to suit the depth of the steamboat or canal-boat, or laterally, so as to guide the same. This object is effected by means of the devices hereinafter set forth and claimed.

In the accompanying drawings, A designates the stern of a steamboat, and B designates a metallic frame secured to the inside thereof. Said frame consists of two vertical plates, B^1 B^1, and screw-threaded cross-rods B^2 B^2, whereby said plates are secured to one another and to said stern.

Said plates have central openings *b b*, which are beveled at *b' b'* on their inner opposite faces, so as to form together a suitable socket for a ball, C, on the lower part of the engine-frame D, that supports engine-cylinder E. Within and across said hollow ball C is journaled a propeller-shaft, F, that carries inside of said ball a double crank, G. Said double crank is operated by said engine-cylinder through a pitman or any equivalent device.

H designates a sleeve, which extends outward from said hollow ball C through a large opening, A', in stern A, and surrounds propeller-shaft F. Said sleeve supports and braces said shaft. I designates a stuffing-box, set into said sleeve and around said propeller-shaft.

The construction of the foregoing parts prevents the ingress of water to the machinery or the interior of the vessel. Said shaft F carries propeller I'. The ball-and-socket joint above described allows said propeller to be turned laterally to guide the boat, and also to be raised or lowered at will.

The raising and lowering of the propeller, which is attached to the vertical engine-frame, is accomplished by any well-known mechanism attached at the upper end of the engine-cylinder, or to the engine-frame, that will give the necessary vertical motion, as well as lateral movement, to the propeller.

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

1. A propeller-shaft and propelling mechanism attached directly to a ball-and-socket joint, whereby water is excluded, but both vertical and lateral motion of the propeller allowed, substantially as and for the purpose set forth.

2. The combination of metal socket-frame B, ball C, engine-frame D, cylinder E, propeller-shaft F, and sleeve H, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

EDWIN N. GRAY.
GEORGE E. NOYES.

Witnesses:
C. H. MCEWEN,
J. FRED. ACKER, Jr.