

S. ARCHBOLD.  
Compound-Engines.

No. 158,666.

Patented Jan. 12, 1875.

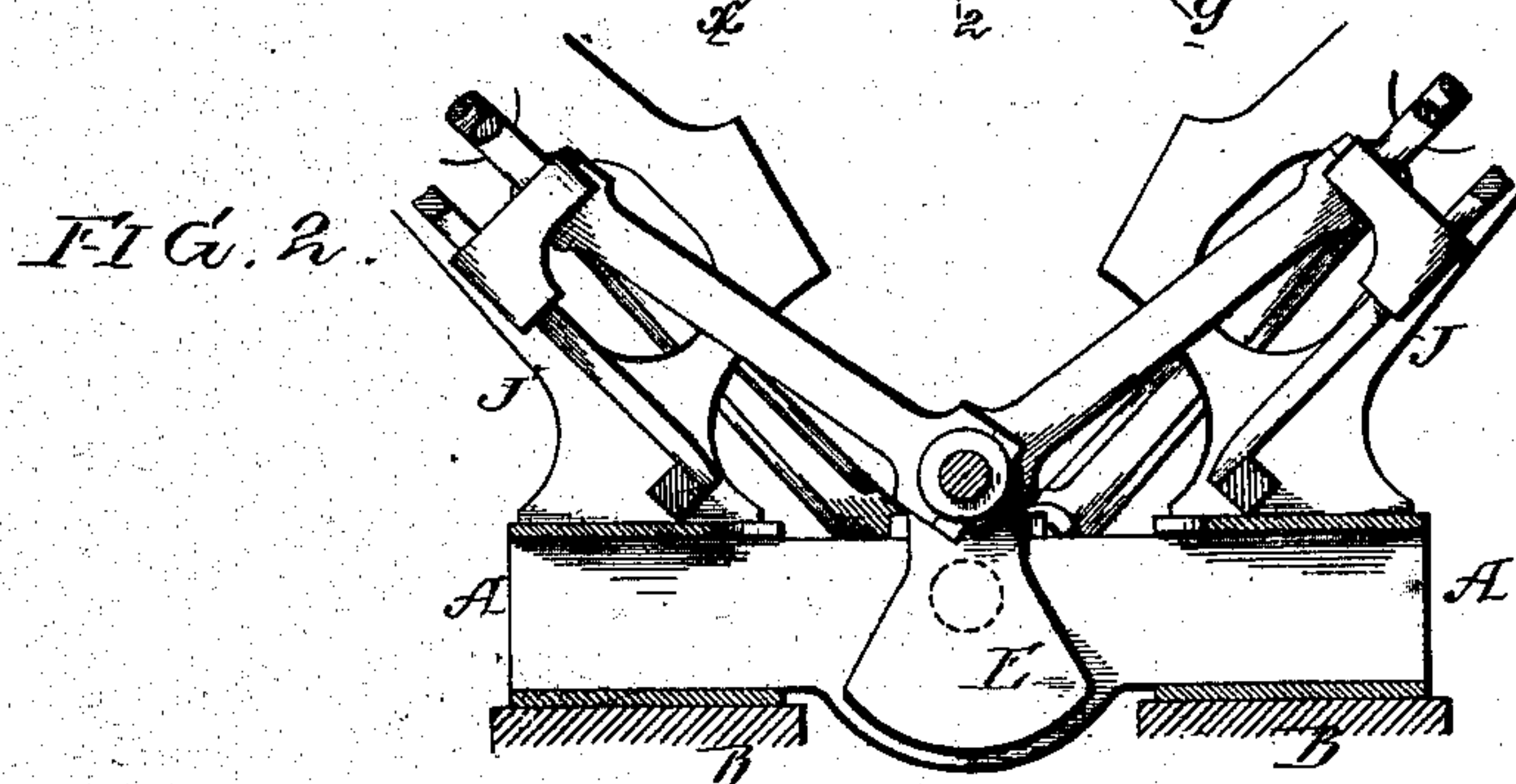
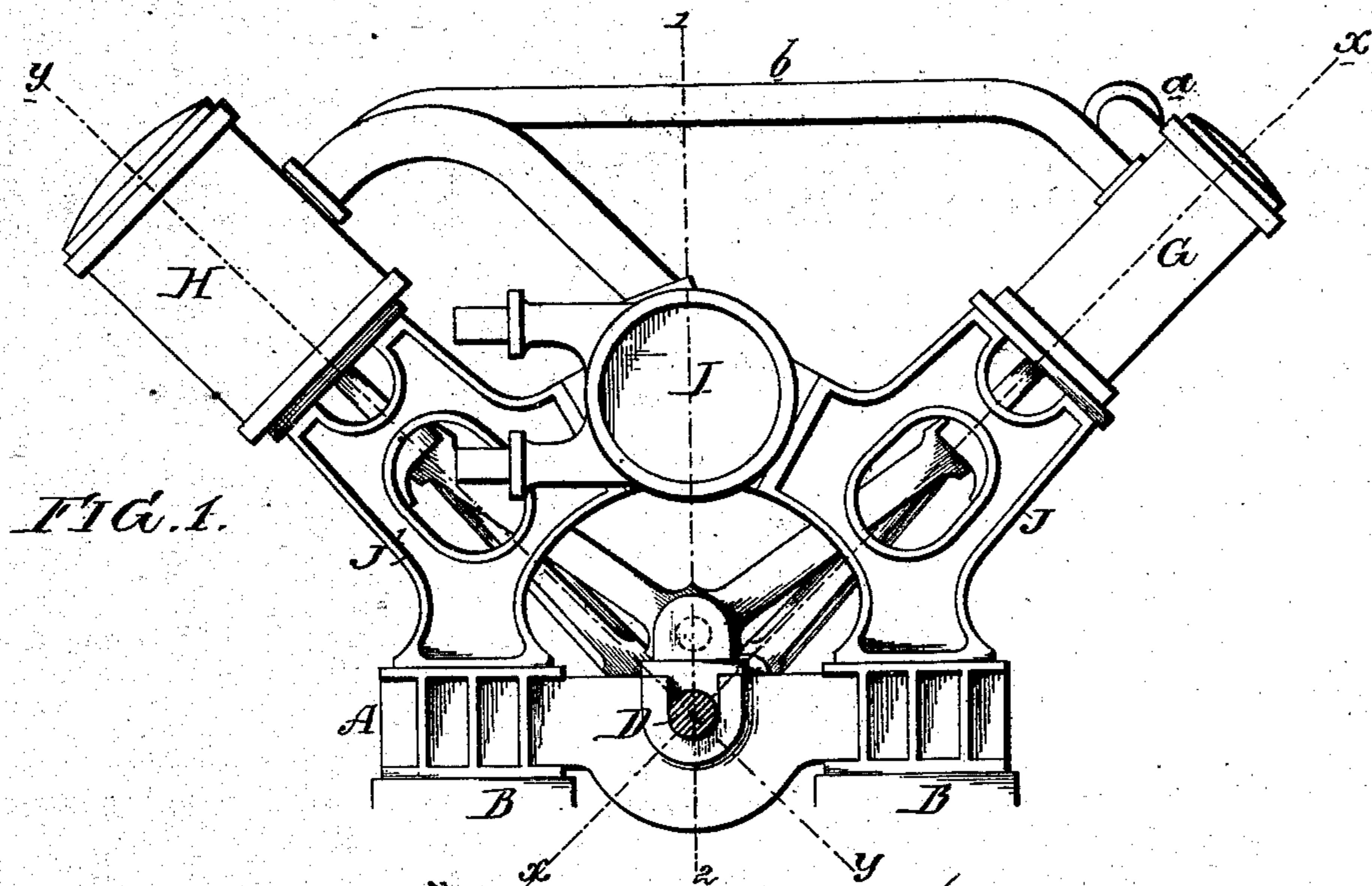


FIG. 3.

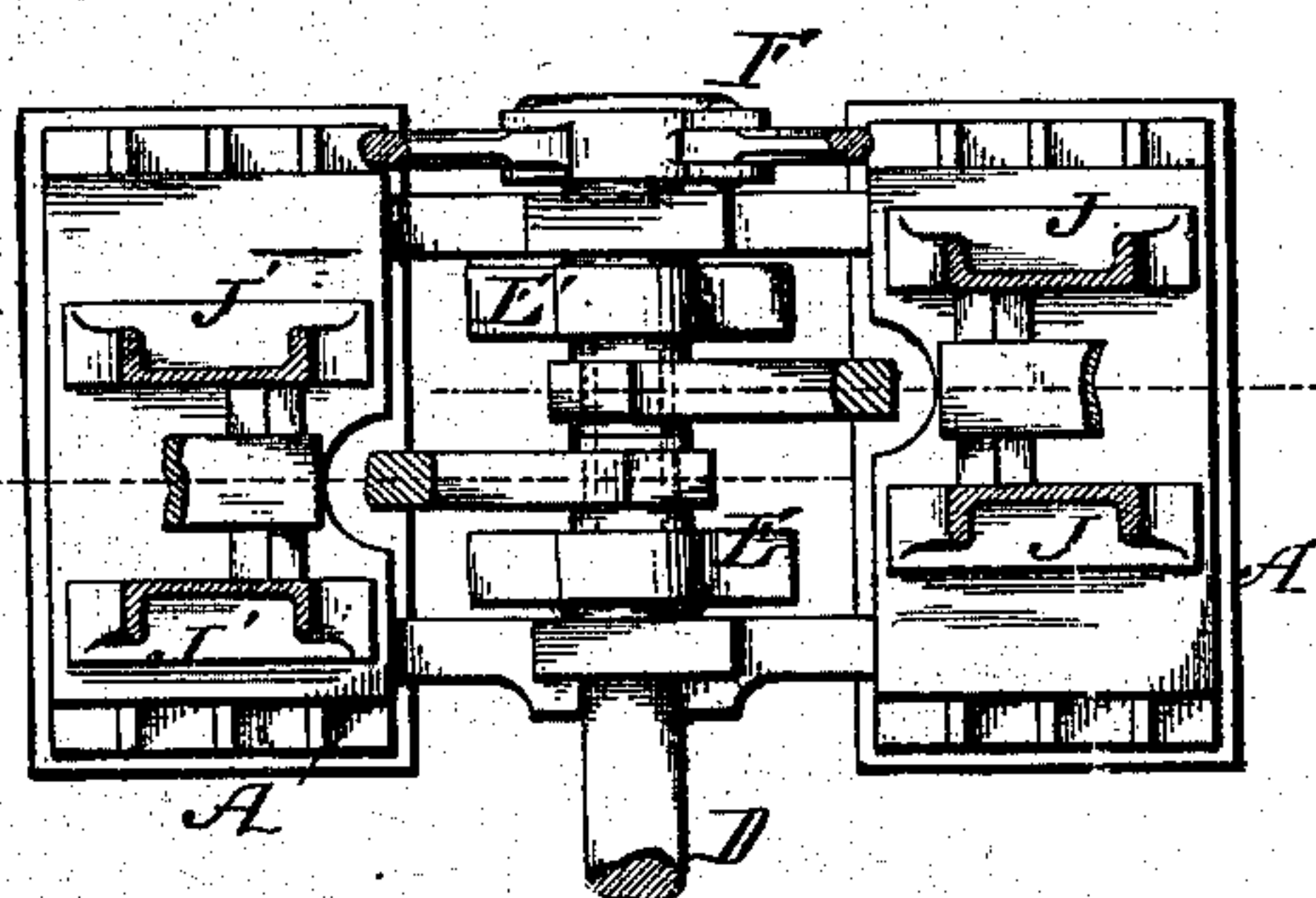
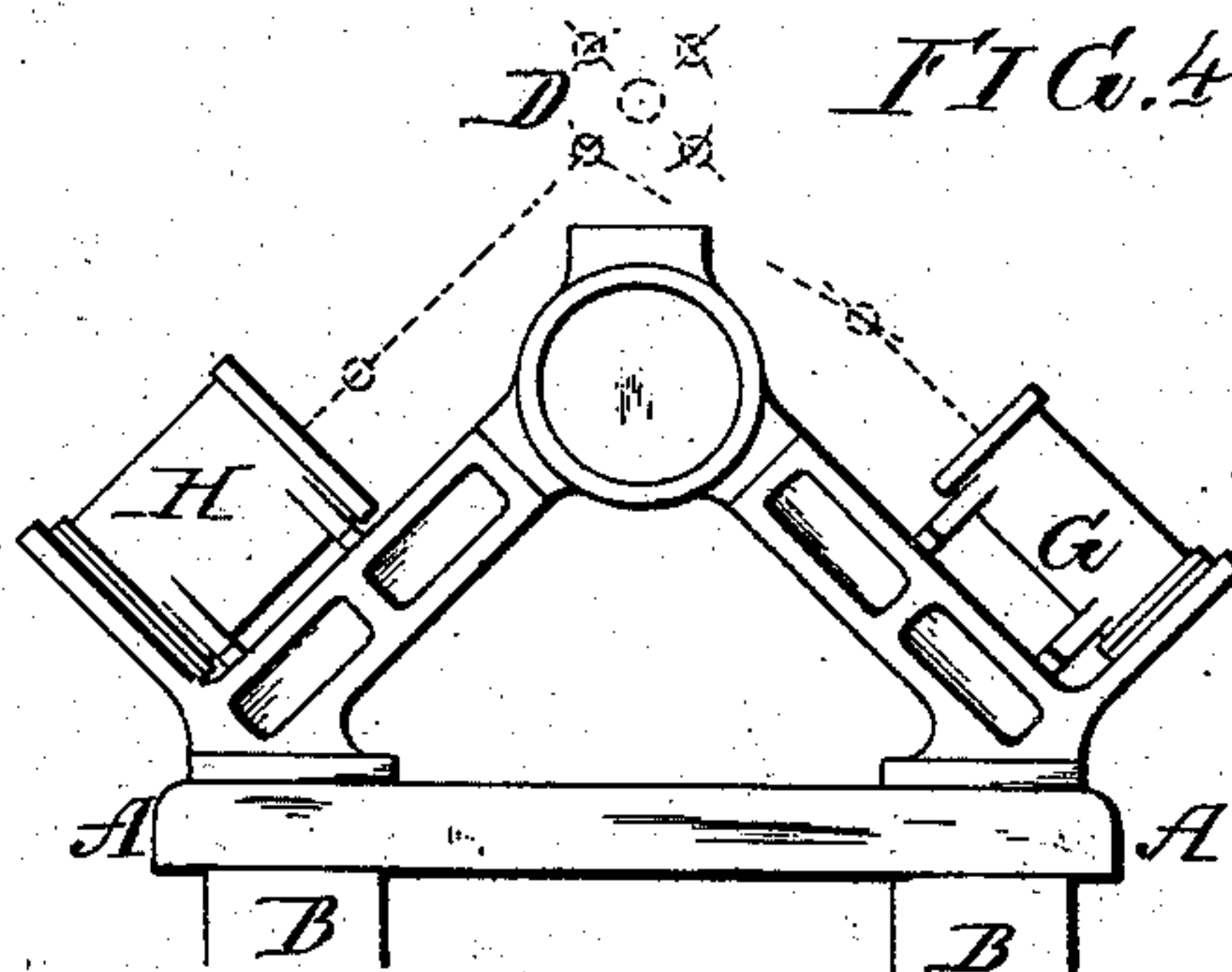


FIG. 4.



Witnesses, Hubert H. H. H.  
H. H. H.

Samuel Archbold  
by his Attor.  
H. H. H.



# UNITED STATES PATENT OFFICE.

SAMUEL ARCHBOLD, OF CHESTER, PENNSYLVANIA.

## IMPROVEMENT IN COMPOUND ENGINES.

Specification forming part of Letters Patent No. **158,666**, dated January 12, 1875; application filed September 1, 1874.

*To all whom it may concern:*

Be it known that I, SAMUEL ARCHBOLD, of Chester, Delaware county, Pennsylvania, have invented certain Improvements in Compound Marine Engines, of which the following is a specification:

The main objects of my invention are simplicity and economy in the construction of compound propeller-engines; and these objects I attain by the peculiar manner of arranging the large and small cylinders in respect to each other, and by so arranging the condenser that it shall form a part of the frame-work.

Figure 1 of the accompanying drawing is a side view of my improved compound engine, to be used in connection with a screw-propeller. Fig. 2 is a sectional view of part of Fig. 1; Fig. 3, a plan view of Fig. 1, and Fig. 4 a diagram illustrating the application of my invention to side-wheel marine engines.

In Figs. 1, 2, and 3, A is the base-plate, secured to the keelsons B, and having suitable bearings for the propeller-shaft D, on which is a balance-crank, E, a single pin extending from this crank to a second crank, E', on a short shaft, which carries the eccentric F for operating the valves of the engine. The central line *xx* of the small cylinder G is arranged at right angles, or thereabout, to the central line *yy* of the large cylinder H, and *a* is the pipe through which live steam is admitted to the valve-chest of the small cylinder, and the exhaust steam from the latter is conducted

through a pipe, *b*, to the valve-chest of the large cylinder.

By this arrangement of the cylinders a vacant space is presented between them, and this space I utilize by making it the location of the condenser I, the disposal of which in a marine engine is always a source of trouble to the designer. By placing the condenser in this position it becomes available as part of the supporting frame-work for the cylinders, the small cylinder being connected to the base-plate by two frames, J J, and the large cylinder by two similar, but larger, frames, J' J', and the two pairs of frames being connected together by the condenser, in a manner rendered apparent by the drawing to engineers, who will readily understand the simplicity and economy of this frame-work.

I claim as my invention—

The combination of the high-pressure cylinder G and its frames J, the low-pressure cylinder H and its frames J', and the condenser I, secured to the said frames, with the base A and propeller-shaft D, all being arranged as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL ARCHBOLD.

Witnesses:

HUBERT HOWSON,  
HARRY SMITH.