

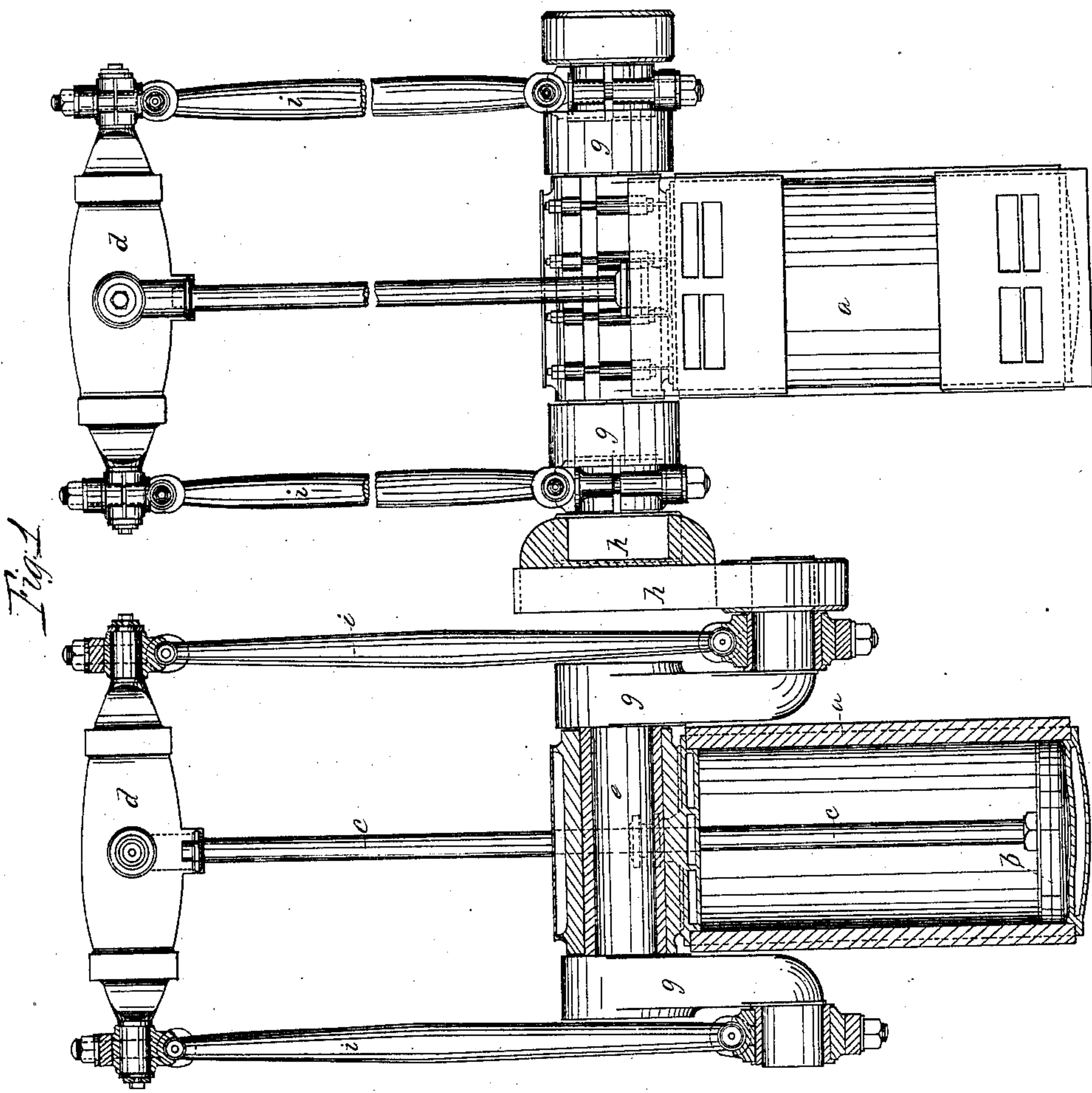
Sheet 1-2 Sheets.

W.L. & T. Winans,

Reciprocating Steam Engine.

Patented June 12, 1866.

N^o 55,516.



Witnesses:

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Sheet 2-2 Sheets.

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Fig. 2.

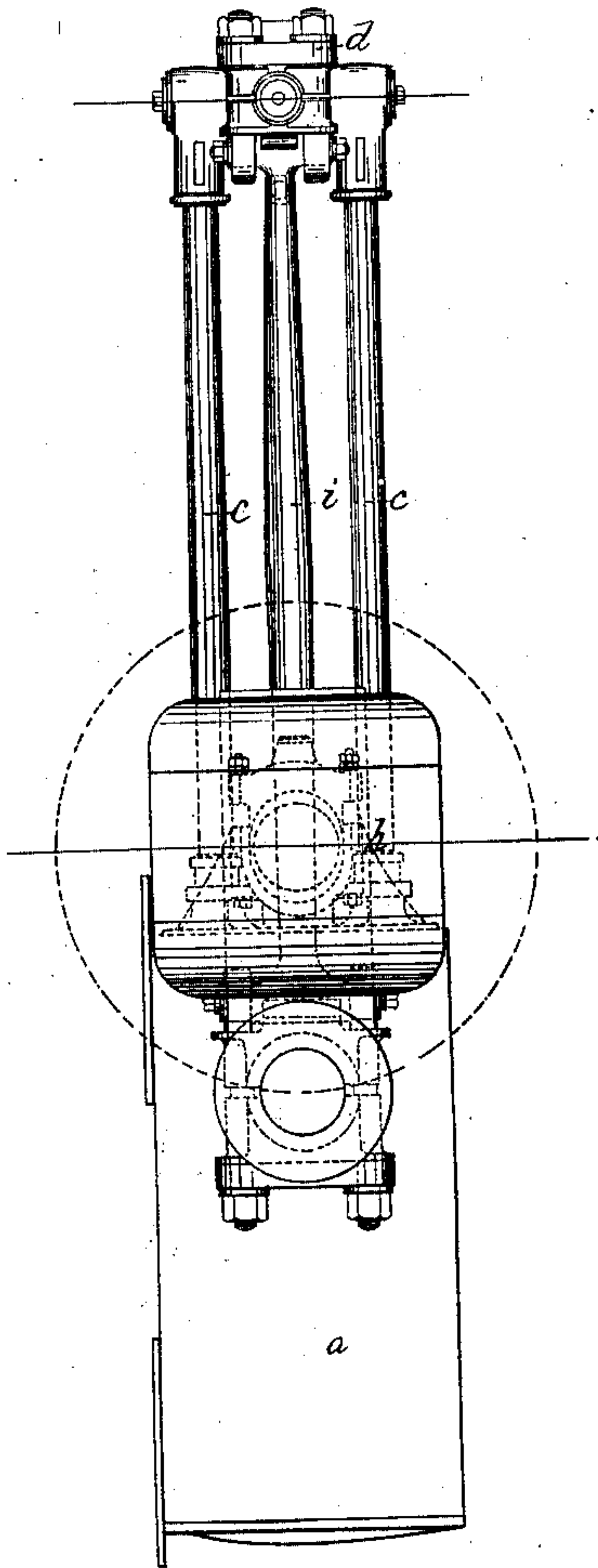
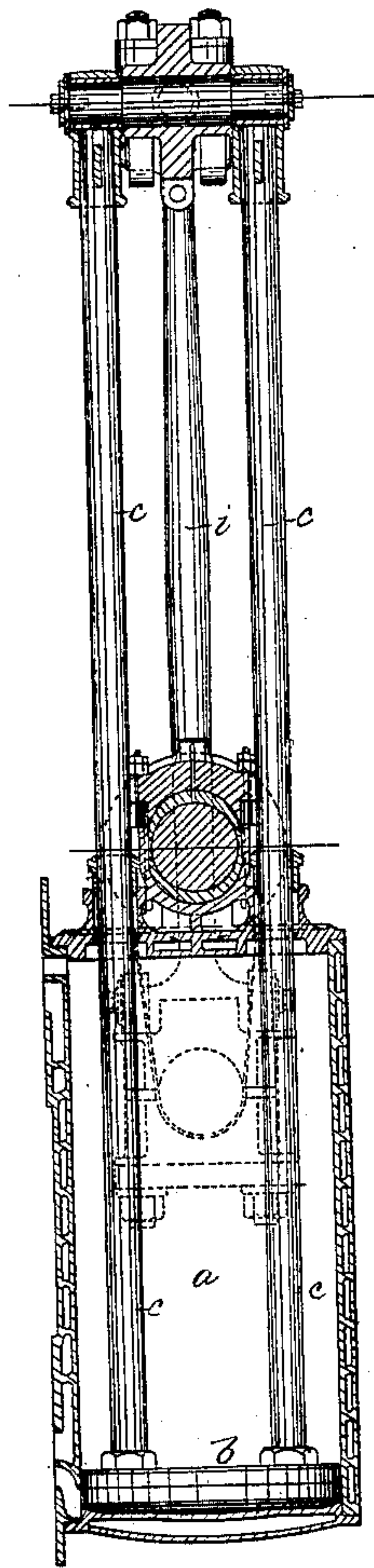


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM LOUIS WINANS AND THOS. WINANS, OF LONDON, ENGLAND.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 55,516, dated June 12, 1866.

To all whom it may concern:

Be it known that we, WILLIAM LOUIS WINANS and THOMAS WINANS, of London, England, have invented Improvements in the Construction or Arrangement of the Working Parts of Engines for Actuating the Propelling-Shafts of Steam-Vessels; and we do hereby declare that the following is a full and exact description of our said invention.

Our invention of improvements in the construction or arrangement of the working parts of engines for actuating the propelling-shafts of steam-vessels has for its object to arrange the cylinder or cylinders below the propelling-shaft and to place the propelling crank-shaft in a suitable bearing or bearings fixed on the cylinder head or covers or mounted on frames attached to the cylinders. The cranks are thus made to work down alongside the cylinders, so as to obtain a much longer stroke of piston within a given space than can be obtained in the ordinary construction or arrangement of marine steam-engines.

In carrying out our invention one, two, or more cylinders may be used, and each one of the cylinders is provided with two or more piston-rods, between which lies the propelling-shaft. The upper ends of the piston-rods are attached to a cross-head, and motion is communicated to the propelling-shaft by the engine through connecting-rods attached to the cross-head and to the crank of the propelling-shaft in the usual manner. When more than one cylinder is used we prefer to divide the propelling crank-shaft into short sections of convenient length and to connect them, in preference, by our improved form of coupling, for which we have applied for Letters Patent.

Having thus described the nature of our invention, we will proceed to describe the manner in which we carry the same into effect.

Figure 1, Sheet I, in the accompanying drawings, represents a vertical elevation of a pair of engines constructed and arranged according to our improvement. In this view one of the cylinders, together with the bearing for the propelling-shaft, is shown in section, while the other cylinder and bearings is shown in elevation, but with the covers of the steam-ports removed. Fig. 2, Sheet II, is an end view of one of the cylinders and its appendages. Fig. 3 is a transverse vertical section of the same.

In Fig. 1 *a a* are the steam-cylinders, *b* is the piston, *c c* are the piston-rods, of which there are two to each cylinder. These rods pass up through the cylinder-cover and work through suitable stuffing-boxes, and are attached to the cross-head *d* above. The guides in which the cross-head works are not shown in the drawings.

The propeller-shaft *e* carries at each end a crank, *g g*, which works down alongside of the cylinders. One of these cranks is connected to the neighboring propeller-shaft by means of our improved coupling *h h*, above referred to, and for which we have applied for Letters Patent, as aforesaid. Motion is communicated by the engine to the propeller-shaft by means of the connecting-rods *i i*, which are attached to the cranks *g g* and to the cross-head *d* above in the usual manner.

Figs. 2 and 3, Sheet II, represent the two piston-rods *c c*, attached to the cross-head *d* above, and the propeller-shaft *e* is placed on top of the cylinder, between the two piston-rods.

It will be seen that from the use of our improved coupling *h h* each section of the propeller-shaft will work comparatively independent of the other section, by reason of the coupling accommodating itself to any little inequalities caused by the propeller-shafts getting out of line, and which derangement might take place without putting any undue strain on the shafts. Moreover, as the bearing for the propeller-shaft *d* extends across the cylinder, there is ample bearing-surface, and there is, consequently, but little undue wear and tear of parts and also great simplicity and solidity, thereby diminishing the liability of accident to the machinery. It will also be seen that by the cranks working down by the sides of the cylinders a much longer stroke of piston within a given space may be obtained, and consequently less vertical space or head-room is required than is necessary for the ordinary construction of engines with the same stroke of piston.

Having now described our invention of improvements in the construction or arrangement of the working parts of engines for actuating the propelling-shafts of steam-vessels, and having explained the manner of carrying the same into effect, we wish it to be understood that we

do not mean or intend to confine ourselves to the precise details herein given ; but

What we do claim is—

The arrangement of the propelling-shafts *e* between the piston-rods *c c*, mounted in suitable bearings on the cylinders *a*, or frames attached to the cylinders, the cylinders being placed directly below the propelling-shafts, whose cranks work down alongside of the cylinder or cylinders, for the purpose herein set forth.

In witness whereof we, the said WILLIAM LOUIS WINANS and THOMAS WINANS, have hereunto set our hands and seals the 20th day of January, 1866.

THOMAS WINANS. [L. S.]

WM. L. WINANS. [L. S.]

Witnesses:

OSMAN LATROBE,

F. H. HAMBLETON,

Both of 45 Clarges Street, London.