

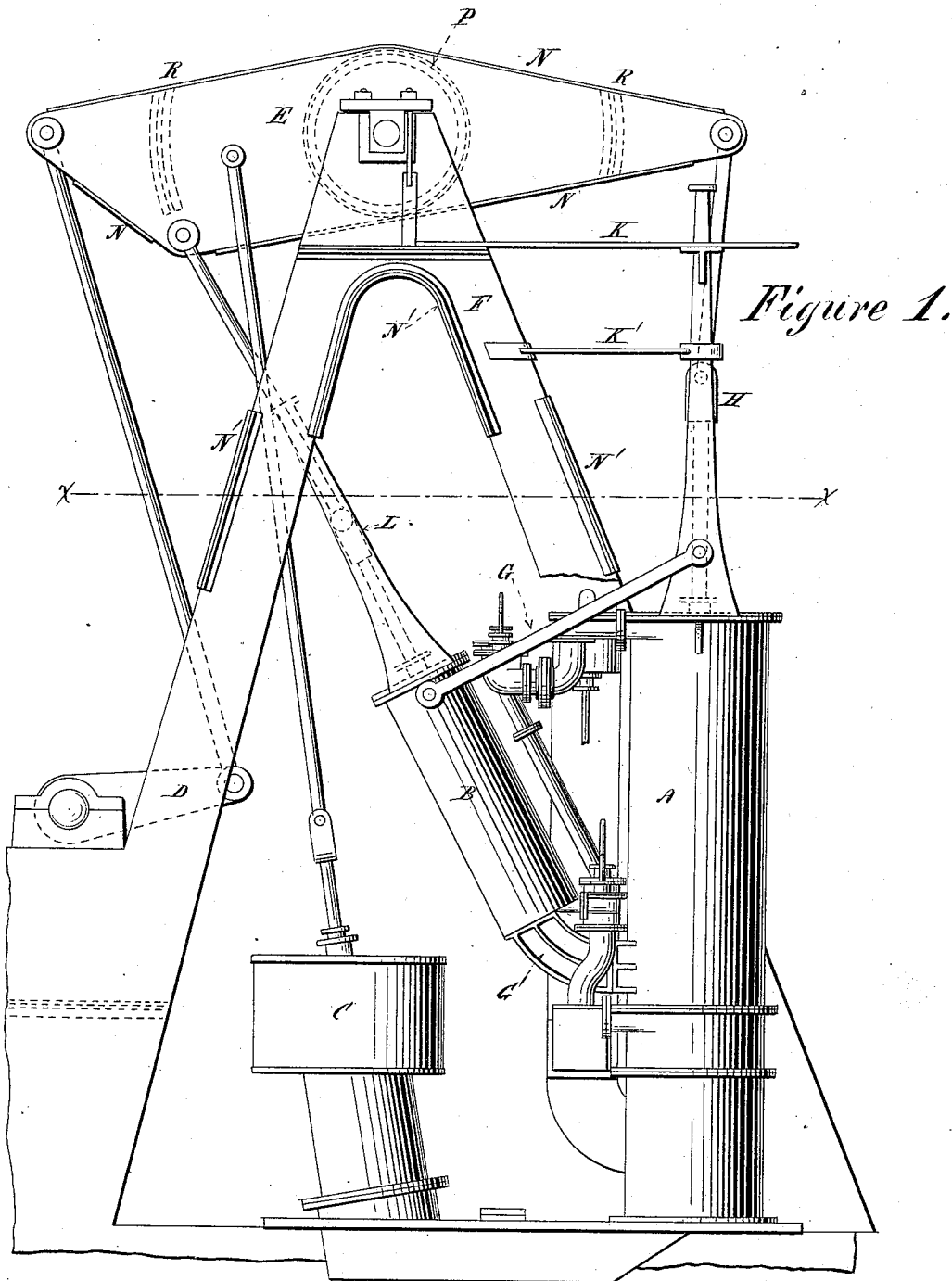
(No Model.)

3 Sheets—Sheet 1.

M. CORYELL.
COMPOUND ENGINE.

No. 304,297.

Patented Sept. 2, 1884..



Witnesses:
George Harry Evans
a. g. ref. j.

Inventor:
Miers Coryell
By his attorney
S. W. Dickerson &

(No Model.)

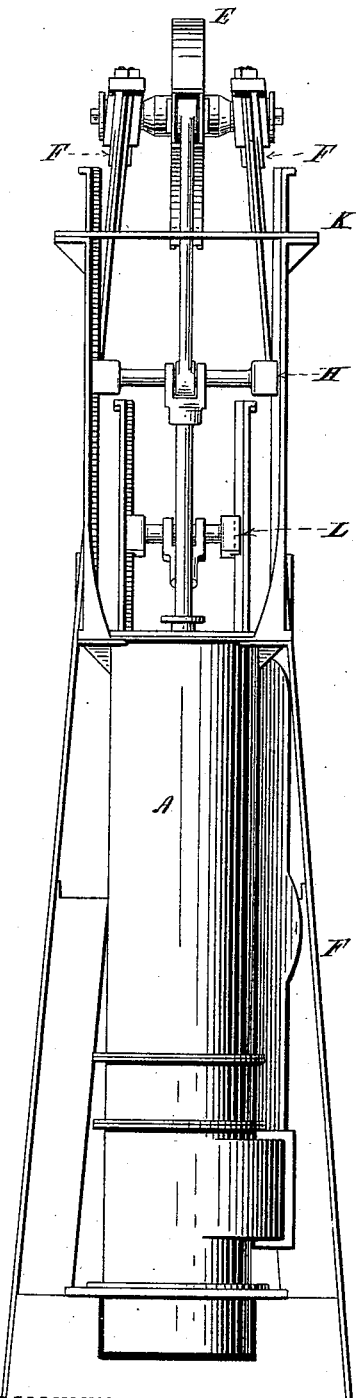
3 Sheets—Sheet 2.

M. CORYELL.
COMPOUND ENGINE.

No. 304,297.

Patented Sept. 2, 1884.

Figure 2.



Witnesses:
Geo. H. Evans
Alfred J. [Signature]

Inventor:
Miers Coryell
By his attorney,
E. N. Dickerson

(No Model.)

3 Sheets—Sheet 3.

M. CORYELL.
COMPOUND ENGINE.

No. 304,297.

Patented Sept. 2, 1884.

Figure 3.

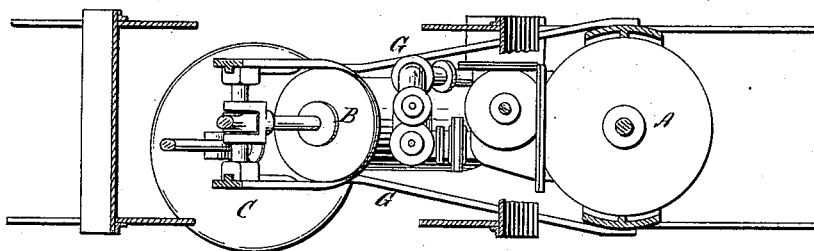
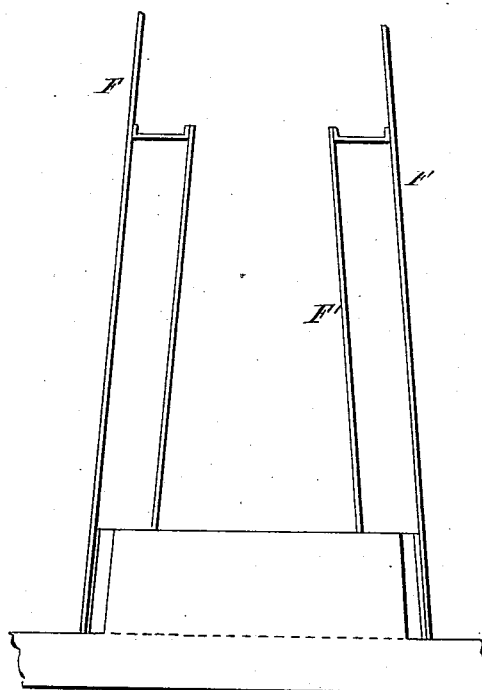


Figure 1.



Witnesses:
George H. Evans
Alfred J. [Signature]

Inventor:
Miers Coryell,
By his attorney,
E. N. Dickerson & Co.

UNITED STATES PATENT OFFICE.

MIERS CORYELL, OF NEW YORK, N. Y.

COMPOUND ENGINE.

SPECIFICATION forming part of Letters Patent No. 304,297, dated September 2, 1884.

Application filed April 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, MIERS CORYELL, of the city, county, and State of New York, have invented a new and useful Improvement in Compound Engines, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

My invention relates to improvements in the construction of compound engines, having for their object to better distribute and resist the strains that come upon the various parts, and that which I believe to be new in my invention is specified in the claims hereto annexed.

In my drawings, Figure 1 represents a vertical view showing the important parts of a compound engine arranged according to my plan; Fig. 2, a view of my large cylinder at right angles to Fig. 1; Fig. 3, a plan view, partly in section, on the line *x x*, Fig. 1; Fig. 4, a view of part of the gallows-frame, showing the means of supporting the crank supporting pillow-blocks.

In my drawings similar letters refer to similar parts.

A represents the main or low-pressure cylinder; B, the small or high-pressure cylinder; C, the air-pump; D, the main crank; F, the gallows-frame; E, the working-beam; G', the bracket by which the high-pressure cylinder is attached to the low-pressure cylinder; G G, links for supporting the upper end of the high-pressure cylinder; H, the cross-head of the main piston-rod; L, the cross-head of the high-pressure piston-rod; K K', braces for the slides of the cross-head H. F F', Fig. 4, show the means for supporting the crank pillow-blocks upon a double frame. As will be readily seen, the low-pressure cylinder is placed vertically under one end of the working-beam, and the smaller or high-pressure cylinder is placed radially to the low-pressure cylinder, and is connected to the working-beam at a point between the center pin and the end pin. By this arrangement the strains from the two pistons are nearly equilibrated upon the working-beam, and the cylinders have different lengths of stroke, and are brought close to each other, and the pistons will move in opposite directions, so that steam from each end of the small cylinder may be discharged into the contiguous end of the larger cylinder directly. By

the link arrangement shown and the bracket G', allowing of a certain amount of yield, I greatly lessen any danger of fracture from contraction or expansion, and I secure the necessary strength and stability.

In arranging my engine to drive a propeller-shaft, the condenser might be placed below the low-pressure cylinder; and the high-pressure cylinder would then be connected to and supported by the condenser instead of by the low-pressure cylinder; but its radial arrangement to said cylinder would be the same.

I have not, of course, shown in the present application the valve-motions; but they may be of any suitable character.

My working-beam is constructed of plates welded together instead of riveted. My beam, as shown in Fig. 1, is constructed of two plates, E, separated from each other by the intermediate wrought ring, P, and by the arc-plates R R, which are preferably properly strengthened by angle-irons upon the plates E. The outside of the beam-plates are strapped together by the plates N. I find that the ring P adds greatly to the strength and stiffness of the beam, and two of said rings might be applied to the opposite sides of a single plate, and thereby some of the advantages of my invention might be obtained. My gallows-frame I construct in a similar manner, connecting the two plates F, wherever practicable, to each other. As shown, they are connected by the plates N'. I thereby secure great strength.

I do not here claim the construction of the working-beam and gallows-frame, as these will constitute the subjects of a separate application for Letters Patent.

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

1. The combination of the vertical low-pressure cylinder, the high-pressure cylinder, the bracket projecting from the low-pressure cylinder and supporting the high-pressure cylinder, links connecting the upper ends of the two cylinders, the two cylinders being connected to opposite ends of the working-beam, and an inclined pump, also connected to the working-beam, substantially as set forth.

2. The combination of the low-pressure cylinder, the high-pressure cylinder, the bracket projecting from the low-pressure cylinder and supporting the high-pressure cylinder, and the

link or links supporting the upper end of the high-pressure cylinder, substantially as described.

3. The combination of a vertical low-pressure cylinder connected to one end of the working-beam; a bracket attached thereto, a smaller high-pressure cylinder connected to the working-beam at a point between the center pin and end pin, and supported on the bracket
5 radially to the low-pressure cylinder, and con-
10

nections between the ends of the two cylinders, so that steam from each end of the small cylinder may be discharged directly into the contiguous end of the large cylinder, substantially as described.

MIERS CORYELL.

Witnesses:

ANTHONY GREF, Jr.,
GEORGE H. EVANS.