

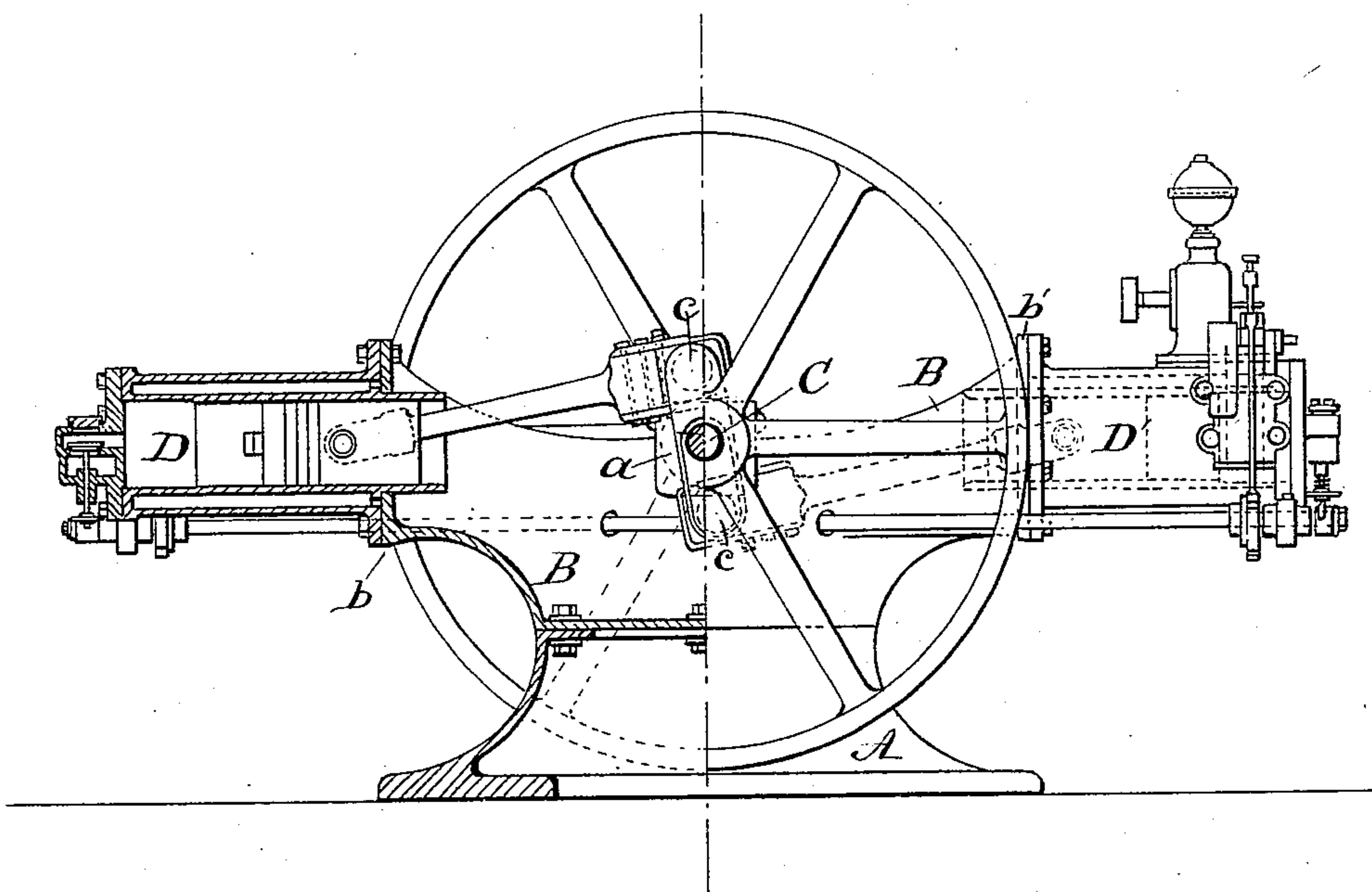
(No Model.)

T. ASHBURY, H. SUMNER, W. LEES. &  
R. W. B. SANDERSON.

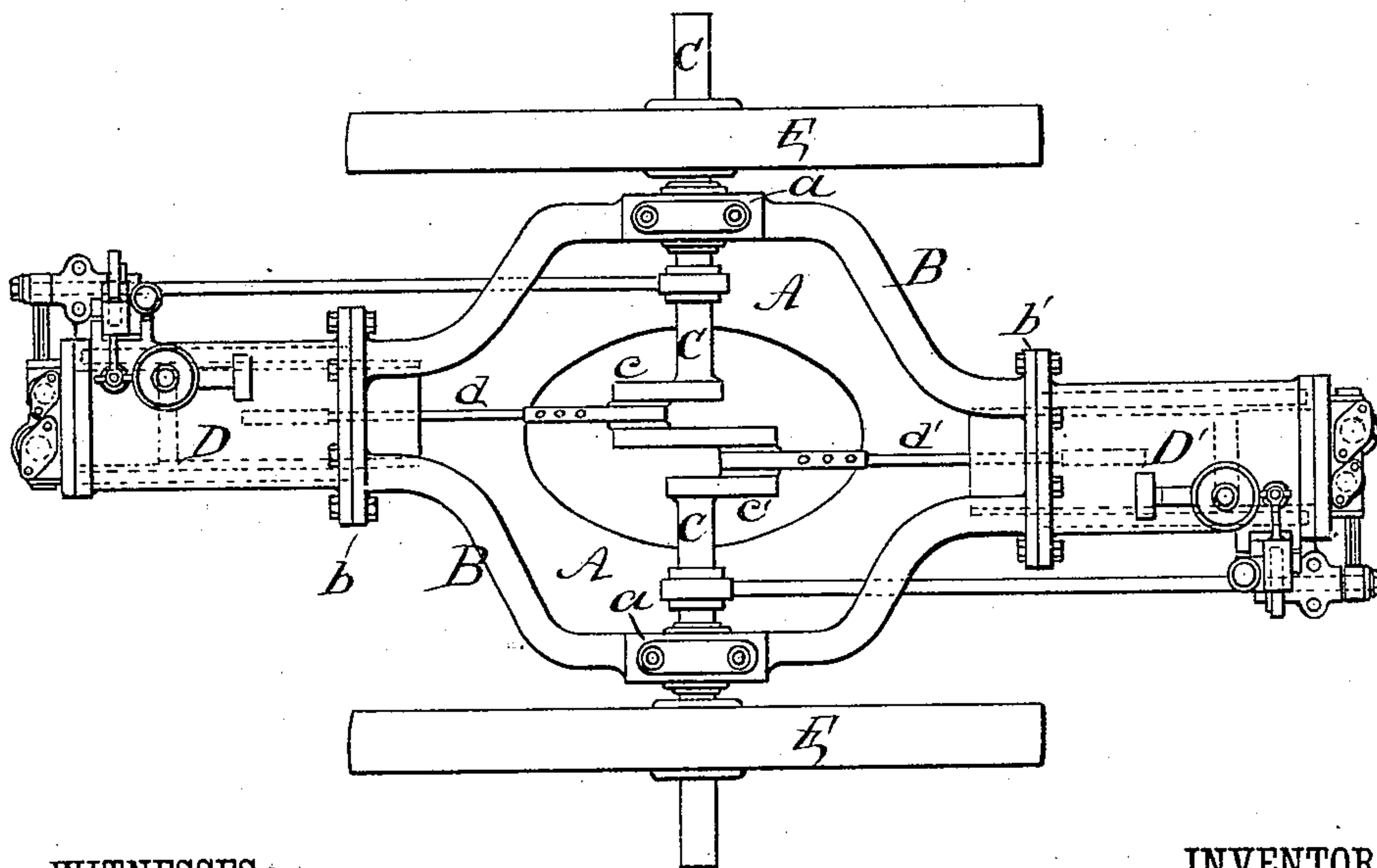
GAS MOTOR ENGINE.

No. 282,832.

*Fig. 1.* Patented Aug. 7, 1883.



*Fig. 2.*



WITNESSES:

*Donn Twitchell.*  
*C. Sedgwick*

INVENTOR:

*T. Ashbury,*  
*H. Sumner,*  
*W. Lees,*  
*R. W. B. Sanderson*  
*Mum & Co*  
ATTORNEYS.

BY

# UNITED STATES PATENT OFFICE.

THOMAS ASHBURY, HERBERT SUMNER, WILLIAM LEES, AND RICHARD W. B. SANDERSON, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

## GAS-MOTOR ENGINE.

SPECIFICATION forming part of Letters Patent No. 282,832, dated August 7, 1883.

Application filed December 13, 1882. (No model.) Patented in England March 21, 1882, No. 1,360.

*To all whom it may concern:*

Be it known that we, THOMAS ASHBURY, HERBERT SUMNER, WILLIAM LEES, and RICHARD WITHINGTON BROMLEY SANDERSON, subjects of the British Crown, residing at Manchester, in the county Lancaster, England, have invented new and useful Improvements in Gas-Motor Engines, of which the following is a specification.

On the 21st day of March, 1882, Herbert Sumner, of the firm of Ashbury, Sumner & Co., of Manchester, England, (the said firm being constituted by the present applicants for these Letters Patent,) obtained Letters Patent in England for an improved gas-motor engine, No. 1,360. The present invention is for further improvements, not in any detail of that engine, but for a combination of two of these engines, as and for the purpose herein-after set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal side elevation, partly in section; and Fig. 2 is a plan of our invention.

A represents the base, and B the body or main frame, on which the different parts of this machine are mounted, and its construction forms a main element in this invention. *a* represents two bearings, in which the main shaft C is journaled to revolve in the frame B. The shaft C is provided with two cranks, *c c'*, projecting from opposite, or nearly opposite, sides thereof.

D D' are the two engine-cylinders, firmly secured to the frame B, with the arcs of their bores in the horizontal plane of the axis of the shaft C, their vertical planes being parallel to each other and at right angles to said shaft, the cylinder D being opposite to crank *c* and the cylinder D' opposite to crank *c'*. *d d'* are the piston-rods connecting the pistons, which are single-acting directly with the cranks.

E represents the balance-wheels upon the shaft C. The frame B is provided with two flanges, *b b'*, cast integral with it and faced off true as bases, to which one end of each of the

respective cylinders D D' is firmly bolted. The flanges *b b'* are annular, their interior being symmetrical continuations of the interior of the frame B, to permit the passage of the piston and piston-rod. By this construction we mount the engine-cylinders in a mechanical and effective manner for the performance of their duty, and we locate the two engines relative to each other, to the bearings of the main shaft, and to its two cranks, all mounted on one frame, rigidly fixing the parts in the relation stated, so that the running parts will be perfectly balanced at any speed, and will equally distribute the strain caused by the explosion of the gas used to run the combined engine.

Having thus fully described our invention, what we claim, and wish to secure by Letters Patent, is—

1. The frame B, provided with two annular flanges, *b b'*, and with two bearings, *a a*, in combination with the double-cranked shaft C, journaled in said bearings, and the two engine-cylinders D D', secured to said flanges to the right and left of a central line through the engine, as and for the purpose specified.

2. The shaft C, journaled in the bearings *a a*, and provided with two oppositely-projecting or nearly oppositely-projecting cranks, *c c'*, in combination with the frame B, having the bearings *a a'* and flanges *b b'*, the engines D D', secured to said flanges opposite to said cranks, and the connecting-rods *d d'* in direct line with the centers of the pistons to prevent torsional strain thereon, substantially as described.

THOMAS ASHBURY.  
HERBERT SUMNER.  
WILLIAM LEES.  
R. W. B. SANDERSON.

Witnesses:

CHARLES P. SOUDER,  
*Solicitor.*

FRED. WM. MORTON,  
*Clerks to Messrs. Weston, Groves & Lees, Solicitors, Manchester.*