

No. 632,896.

Patented Sept. 12, 1899.

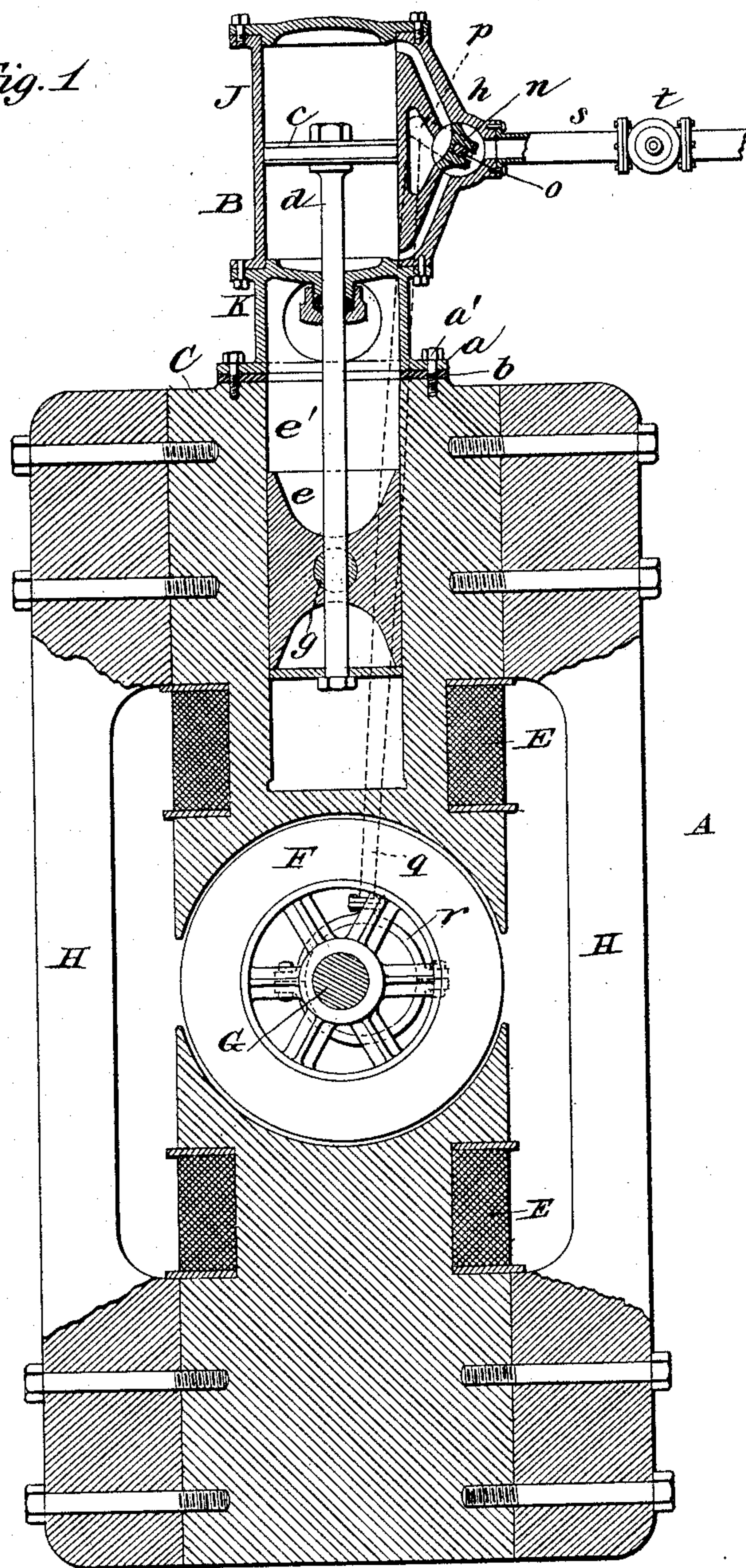
C. C. COWAN.
COMBINED ENGINE AND DYNAMO.

(Application filed Jan. 6, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1



Witnesses:

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 Jno. R. Taylor.*

Inventor

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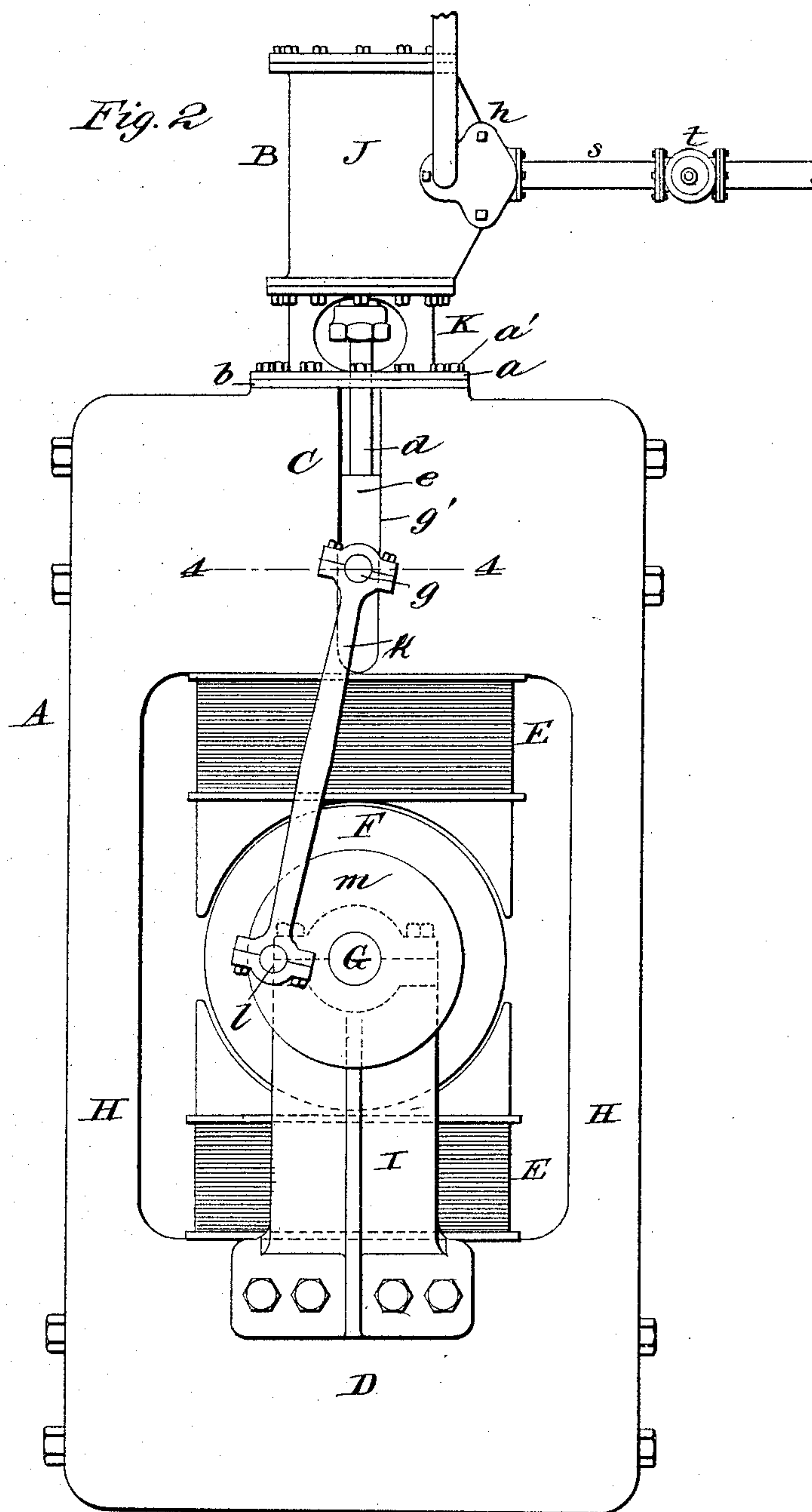
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(No Model.)

3 Sheets—Sheet 2.



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Fig. 3

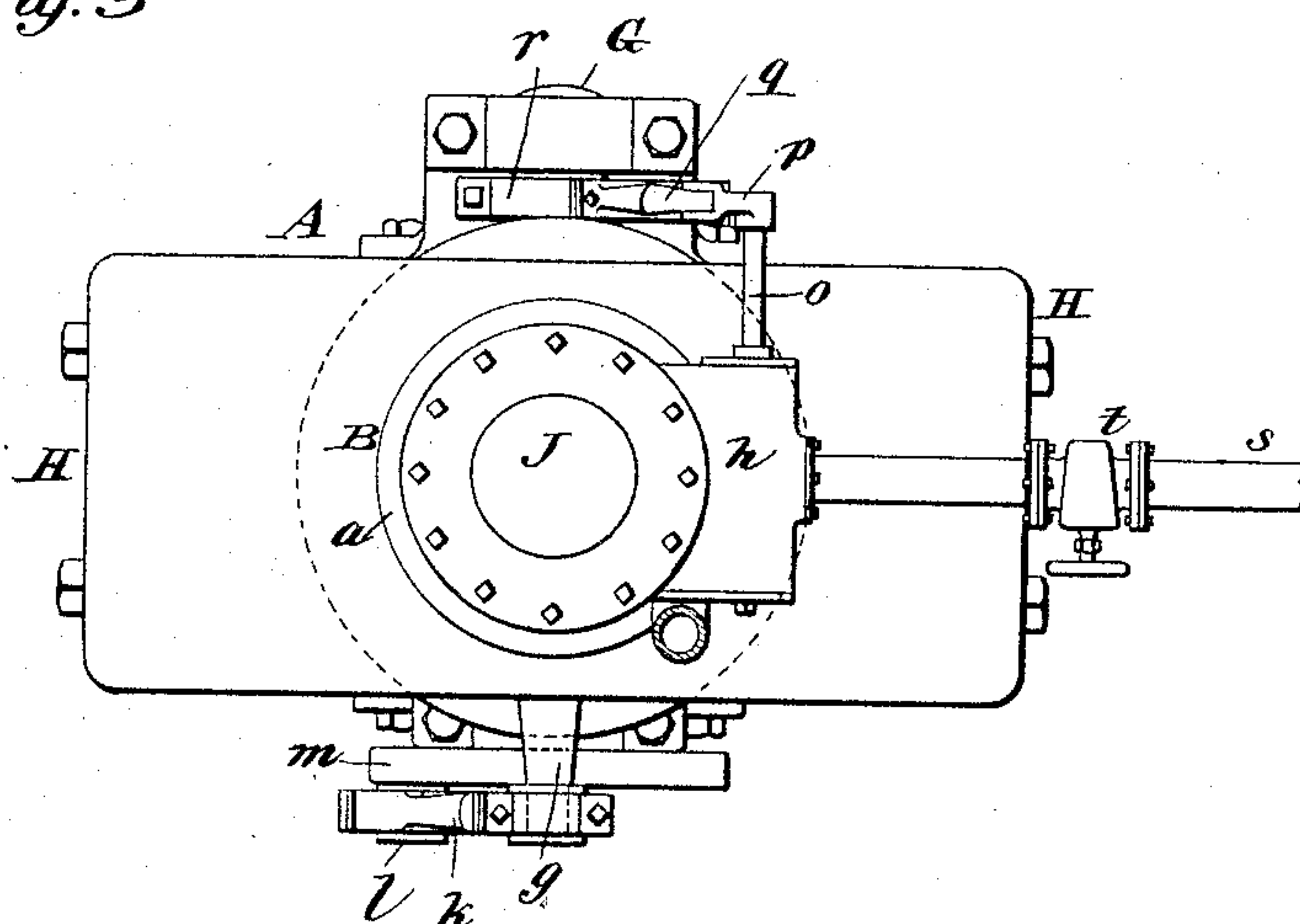
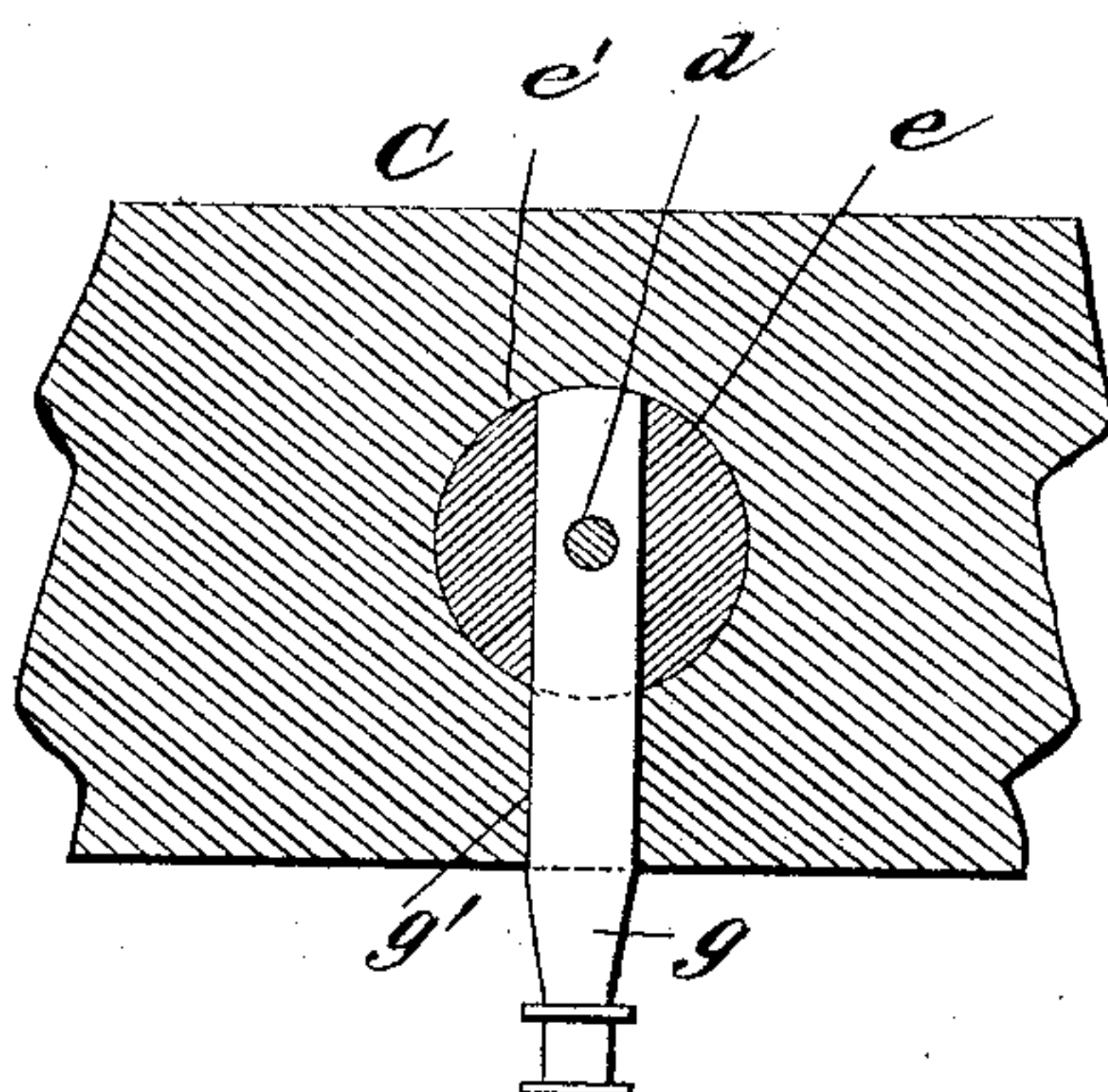


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES C. COWAN, OF MEMPHIS, TENNESSEE, ASSIGNOR TO THE WHITFIELD COMPANY, OF SAME PLACE.

COMBINED ENGINE AND DYNAMO.

SPECIFICATION forming part of Letters Patent No. 632,896, dated September 12, 1899.

Original application filed September 14, 1898, Serial No. 690,900. Divided and this application filed January 6, 1899. Serial No. 701,345. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. COWAN, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a certain new and useful Improvement in a Combined Engine and Dynamo, of which the following is a specification.

This is a division of an application for Letters Patent filed September 14, 1898, and numbered serially 690,900.

My invention relates to an improved combined engine and dynamo; and the object of the invention is to simplify the construction and improve the operation of such devices.

In carrying out my invention I first construct a dynamo of any suitable variety or type and mount directly thereon, either on one or more of the pole-pieces thereof or on a yoke or yokes connecting the pole-pieces, an engine-cylinder containing an ordinary reciprocating piston, together with the proper valve mechanism, which piston is suitably guided in its reciprocations by means of a guide or guides formed directly either in said pole-piece or in said yoke and being connected with the rotating armature of the dynamo, preferably by a reciprocating driving-rod operated from a wrist-pin working in a slot formed in the pole-piece or yoke, and the valve of the cylinder being operated, preferably, from the armature-shaft by an ordinary eccentric connection. Such a device will be very compact in its construction, will occupy no greater floor-space than is needed for a dynamo alone, and will be relatively short in its longitudinal dimensions.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a sectional view of a combined engine and dynamo embodying my present improvements, the dynamo illustrated in this figure being of the well-known bipolar type and the engine-cylinder being carried on one of the pole-pieces thereof; Fig. 2, a side view of the same; Fig. 3, a plan view, and Fig. 4 a section on the line 4-4 of Fig. 2.

In all of the above views corresponding

parts are represented by the same letters of reference.

A represents a dynamo, and B a steam or other pressure engine. The dynamo illustrated is provided with two oppositely-placed pole-pieces C and D, having coils E E thereon. An armature F rotates between the two pole-pieces and is mounted on a shaft G. The pole-pieces are connected together by two yokes H H. The armature-shaft G is supported in any suitable way—as, for example, by means of standards I, secured to one of the pole-pieces. The engine B comprises an ordinary engine-cylinder J, having an extension K at its lower end, provided with a flange *a*, secured to the pole-piece C by means of machine-bolts *a'*. In order to magnetically separate the engine from the dynamo, whereby the mass of iron or steel of which the engine is constructed may not affect the magnetism of the pole-piece C, I prefer to interpose between the flange *a* and the pole-piece a layer of non-magnetic material *b*, which is composed, preferably, of zinc. Mounted to reciprocate in the cylinder is a piston *c*, connected directly with the piston-rod *d*, the outer end of which is connected to a slide-head *e*, which works in a cylindrical guide-chamber *e'*, formed in the element of the dynamo to which the cylinder is connected. This guide-chamber constitutes the guide for the slide-head *e*. A wrist-pin *g* extends outward from the slide-head *e* and works in a slot *g'*, extending parallel with the guide-chamber and formed in the pole-piece. This wrist-pin is connected by a connecting-rod *k* to a wrist-pin *l* on a disk *m*, keyed to one end of the armature-shaft. The cylinder J is provided with a valve-chest *h* of any suitable type. Mounted in the valve-chest *h* is a valve *n*, which controls the admission of steam to the cylinder. Preferably this valve is of the rotary type and is mounted on a valve-stem *o*, to which an operating-lever *p* is connected. The lever *p* is partially rotated in an arc of the desired extent by a connecting-rod *q*, having an eccentric-strap *r* at its rear end. The eccentric-strap *r* works on an eccentric keyed to the end of the armature-shaft opposite to the disk M. It will be observed that by admitting steam to the cylinder

der through the main steam-pipe *s*, controlled by a throttle-valve *t*, the piston *c* will reciprocate in the cylinder *J*, driving the dynamo-armature through the connecting-rod *k*, the wrist-pin *g* reciprocating in the slot *g'*. In thus reciprocating the armature-shaft will operate the eccentric to control the proper admission of steam to the cylinder by means of the valve *n*.

It will of course be understood that the connections between the engine and armature may differ materially from those which I have described without departing from the spirit of my invention, which, obviously, is independent of the specific details of construction; that any type or variety of dynamo may be used; that instead of mounting the engine-cylinder on the pole-piece, as explained, it may be secured to the yoke or to any other stationary element of the dynamo, and that a plurality of cylinders may be used, connected with the armature in any suitable way and mounted on any desired stationary element of the dynamo.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a combined engine and dynamo, the combination of a dynamo, a separate engine bolted to a stationary element of the dynamo so as to be entirely removable therefrom, and a guide for the engine formed in said stationary element, substantially as set forth.

2. In a combined engine and dynamo, the combination of a dynamo, a separate engine bolted to the pole-piece of said dynamo so as to be entirely removable therefrom, and an engine guide or guides formed directly in said pole-piece, substantially as set forth.

3. In a combined engine and dynamo, the combination of a dynamo, an engine-cylinder bolted to the pole-piece of said dynamo so as to be entirely removable therefrom, a guide-chamber in said pole-piece, a slide working in said guide-chamber, connections between said slide and the engine-piston, and connections between the slide and the dynamo-armature, substantially as set forth.

4. In a combined engine and dynamo, the combination of a dynamo, an engine-cylinder bolted directly to the pole-piece of said dynamo so as to be entirely removable therefrom, a guide-chamber formed in said pole-piece in line with the said engine-cylinder, a slide working in said guide-chamber, connections between said slide and the engine-piston, a wrist-pin carried by said slide and working in a slot in the pole-piece, and connections between said wrist-pin and the dynamo-armature, substantially as set forth.

5. In a combined engine and dynamo, the combination of a dynamo, an engine-cylinder bolted directly to the pole-piece of said dynamo so as to be entirely removable therefrom, a guide-chamber formed in said pole-piece in line with said engine-cylinder, a slide working in said guide-chamber, connections between said slide and the engine-piston, a wrist-pin carried by said slide and working in a slot in the pole-piece, and a connecting-rod connecting said wrist-pin and the dynamo-armature, substantially as set forth.

This specification signed and witnessed this 7th day of November, 1898.

CHARLES C. COWAN.

Witnesses:

J. S. WILLIAMS,
B. H. FINLEY.