E. J. HAMILTON.

STEAM ENGINE.

APPLICATION FILED JULY 14, 1909.

944,035.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

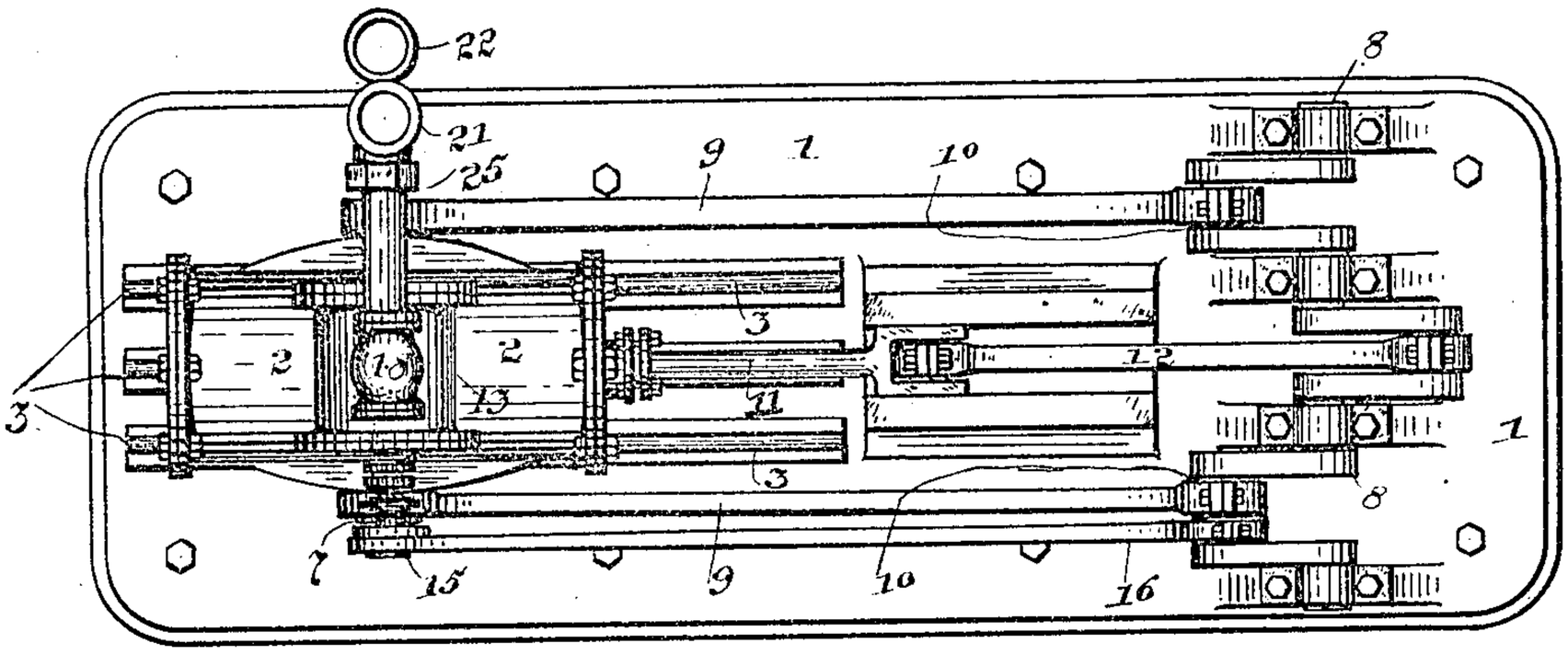

Fig. 1.

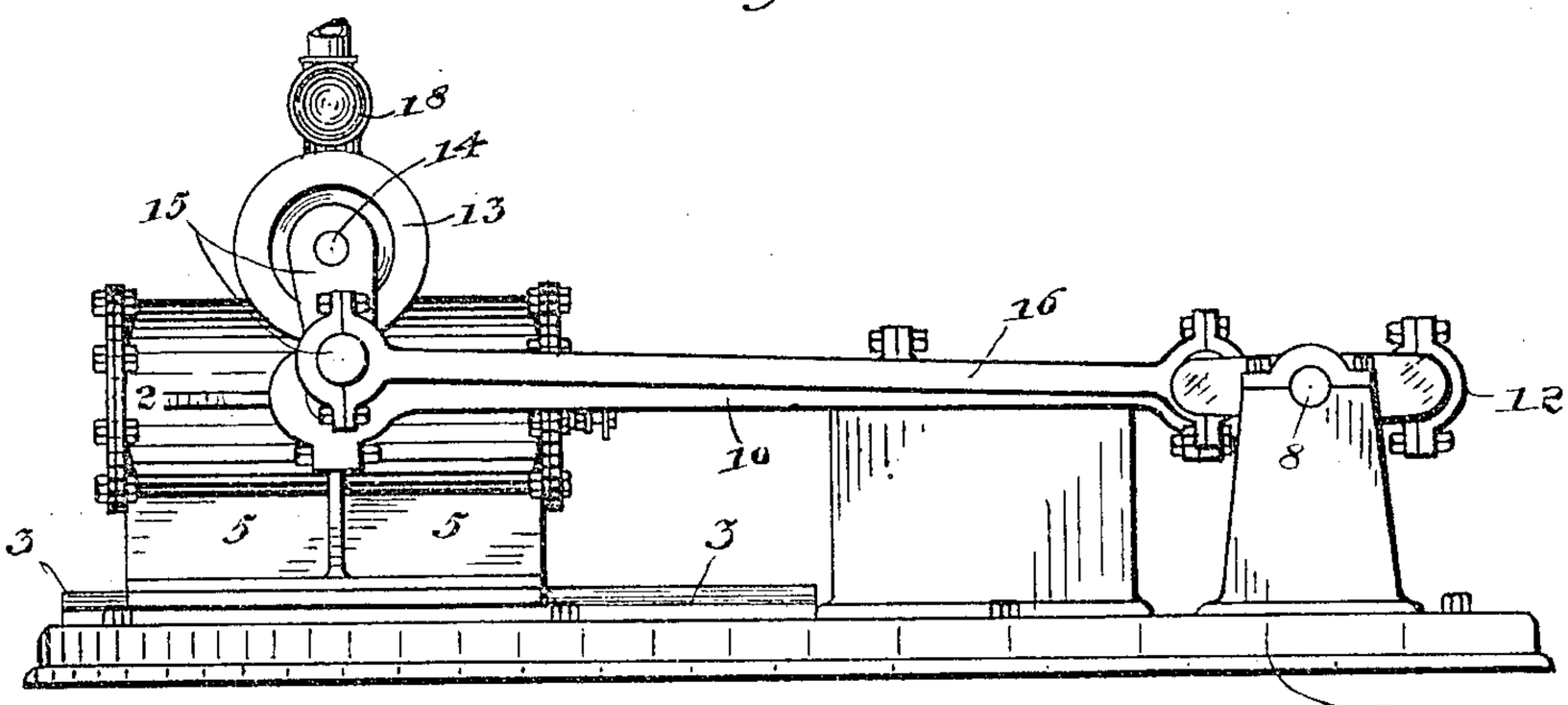

Fig. 2.

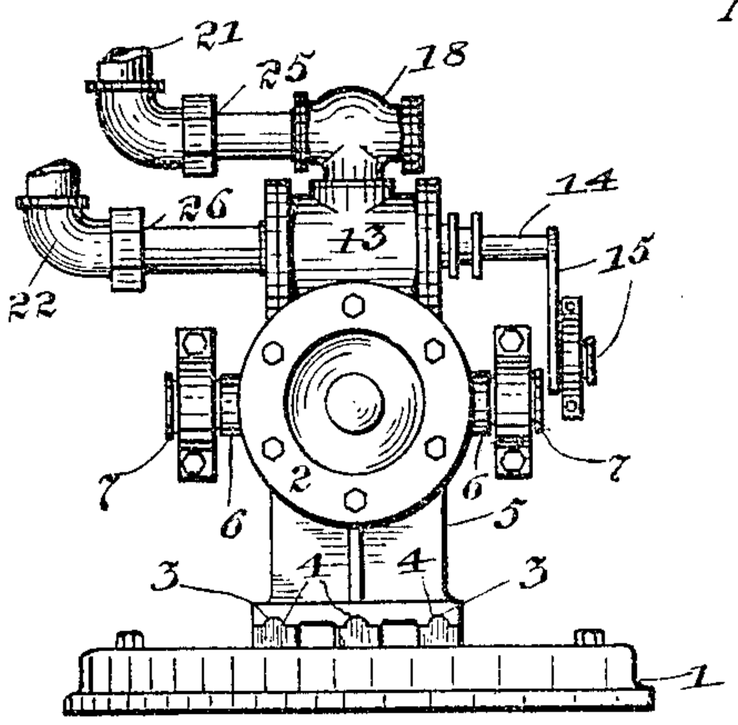

Fig. 3.

Witnesses:

F. J. Main

W. E. Smith

Inventor:

Elmer J. Hamilton,

By Joshua R. H. Potts

his Attorney.

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2 SHEETS—SHEET 2.

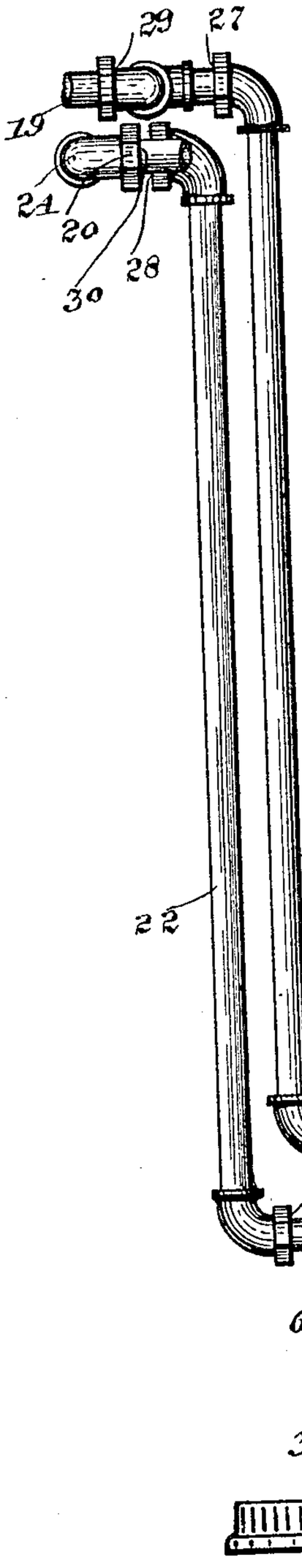

Fig. 5.

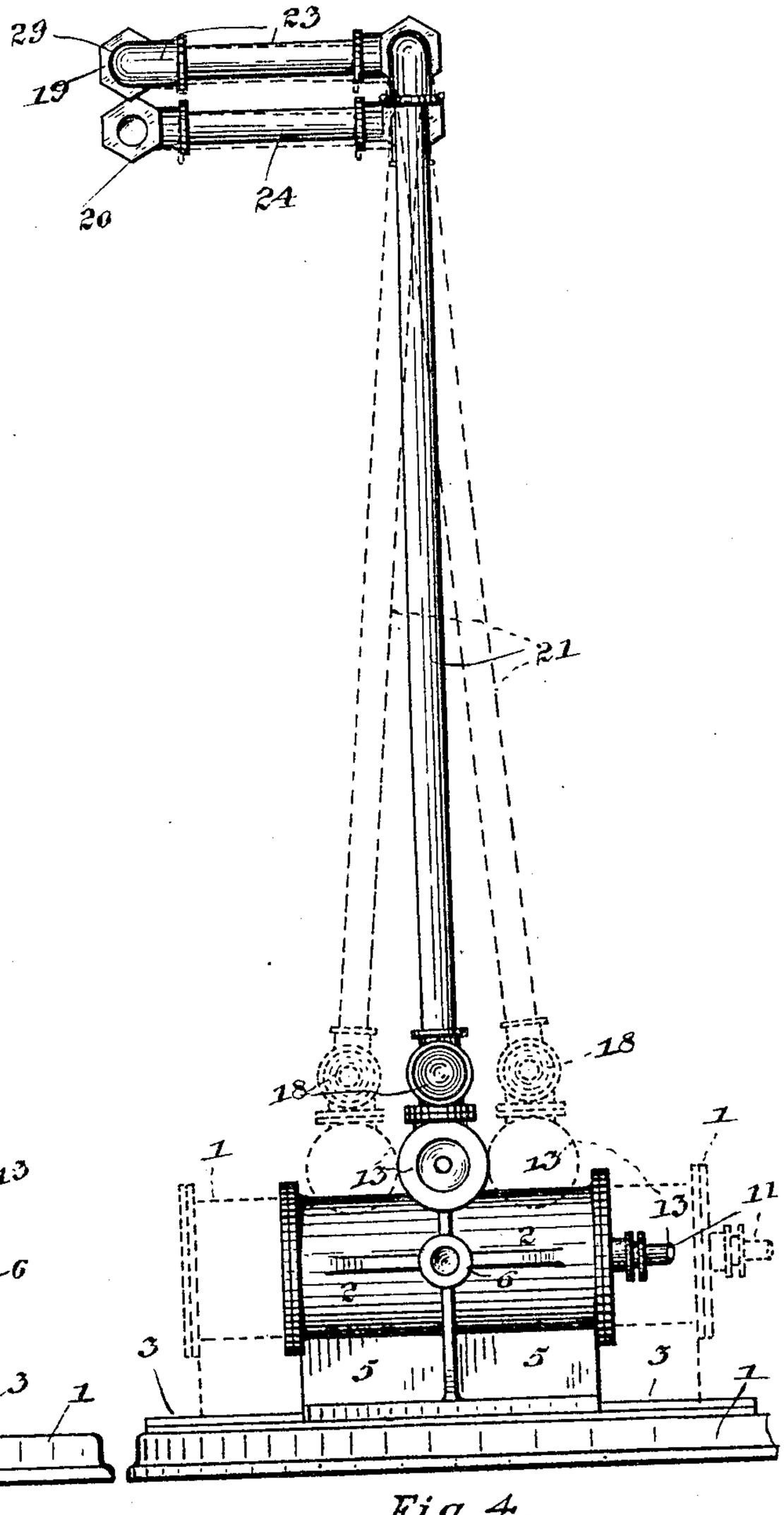

Fig. 4.

Witnesses:

J. J. Main

W. E. Smith

Inventor:

Elmer J. Hamilton,

By Joshua R. H. Potts

his Attorney.

UNITED STATES PATENT OFFICE.

ELMER J. HAMILTON, OF INDIANA HARBOR, INDIANA.

STEAM-ENGINE.

944,035. Specification of Letters Patent. **Patented Dec. 21, 1909.**

Application filed July 14, 1909. Serial No. 507,619.

To all whom it may concern:

Be it known that I, ELMER J. HAMILTON, a citizen of the United States, residing at Indiana Harbor, county of Lake, and State of Indiana, have invented certain new and useful Improvements in Steam-Engines, of which the following is a specification.

My invention relates to steam or other fluid pressure engines and has for its object the production of such an engine of improved construction and operation.

With these objects in view my invention consists in the novel construction and arrangement of parts which will be hereinafter fully described and more particularly pointed out in the appended claim.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a plan view of my improved steam engine in its preferred form, Fig. 2 is a side elevation thereof, Fig. 3 is an end elevation, Fig. 4 is a detail side elevation showing the movement of the intake and exhaust pipe connections, and Fig. 5 is an end view of the engine showing said connections.

Referring now to the drawings 1 designates the engine base and 2 the reciprocatory cylinder mounted thereon. The base 1 is provided with ways 3 adapted to fit grooves 4 of the cylinder base 5 and to guide said cylinder in its reciprocatory movement. Sockets 6 are provided on each side of the cylinder 2 to receive trunnions 7 which are securely pressed therein. The crank shaft 8 is suitably journaled in suitable standards on the engine base 1 and connecting rods 9 connect the crank pins 10 with the trunnions 7, an ordinary piston rod 11 and connecting rod 12 being provided.

A cylindrical steam chest 13 is formed integral with the cylinder 2, the same being preferably provided with rotary intake and exhaust valves (not shown). The valve shaft 14 journaled in the steam chest 13 in axial alinement therewith is provided with a depending rocker arm 15, the latter being actuated by the eccentric rod 16 which is reciprocated by means of an eccentric provided on the crank shaft 8 adjacent a crank pin 10. The L-connection 18 is arranged above the steam chest 13 as shown, and is in open communication with said steam chest.

Stationary supply and exhaust pipes 19 and 20 are provided and in order to connect the engine cylinder with said supply and exhaust pipes I connect pipes 21 and 22 with the supply and exhaust pipes of said cylinder by means of swiveled joints 25 and 26 respectively which secure said pipes 21 and 22 at substantially right angles to said cylinder supply and exhaust pipes. At their upper ends pipes 21 and 22 are connected with pipes 23 and 24 by means of swiveled joints 27 and 28 which connect said pipes 23 and 24 at substantially right angles to pipes 21 and 22. Pipes 23 and 24 are in turn swiveled to stationary exhaust pipes 19 and 20 by means of swiveled joints 29 and 30 respectively. By this construction steam may be supplied and exhausted to and from the engine cylinder while the same is in motion and without employing sliding joints.

From the foregoing description it is clear that the cylinder is free to reciprocate and that the steam may be readily admitted to and exhausted from the same through the intake and exhaust pipes respectively.

It will be noted that the crank is so formed that the cylinder and piston will always move in opposite directions, thus producing a well balanced engine.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not restrict myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claim.

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

In a steam engine, the combination of a base; a cylinder mounted to reciprocate on straight horizontal guides on said base; a piston mounted to reciprocate in said cylinder; a crank shaft; an operative connection between said cylinder and said piston and said crank shaft; stationary and substantially horizontal supply and exhaust pipes located above said cylinder; hori-

zontally disposed connecting pipes swiveled to said supply and exhaust pipes at substantially right angles thereto; vertically disposed connecting pipes swiveled to said first mentioned connecting pipes and adapted to swing in vertical planes at right angles thereto; and swiveled connections between the lower ends of said vertically disposed pipes and the supply and exhaust connections of said cylinder, substantially as described.

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

ELMER J. HAMILTON.

Witnesses:

WM. C. HILL,

CHAS. E. HODSOLL.