

(No Model.)

W. J. HAMMOND
LOCOMOTIVE STEAM ENGINE.

No. 328,215.

Patented Oct. 13, 1885.

FIG. 1.

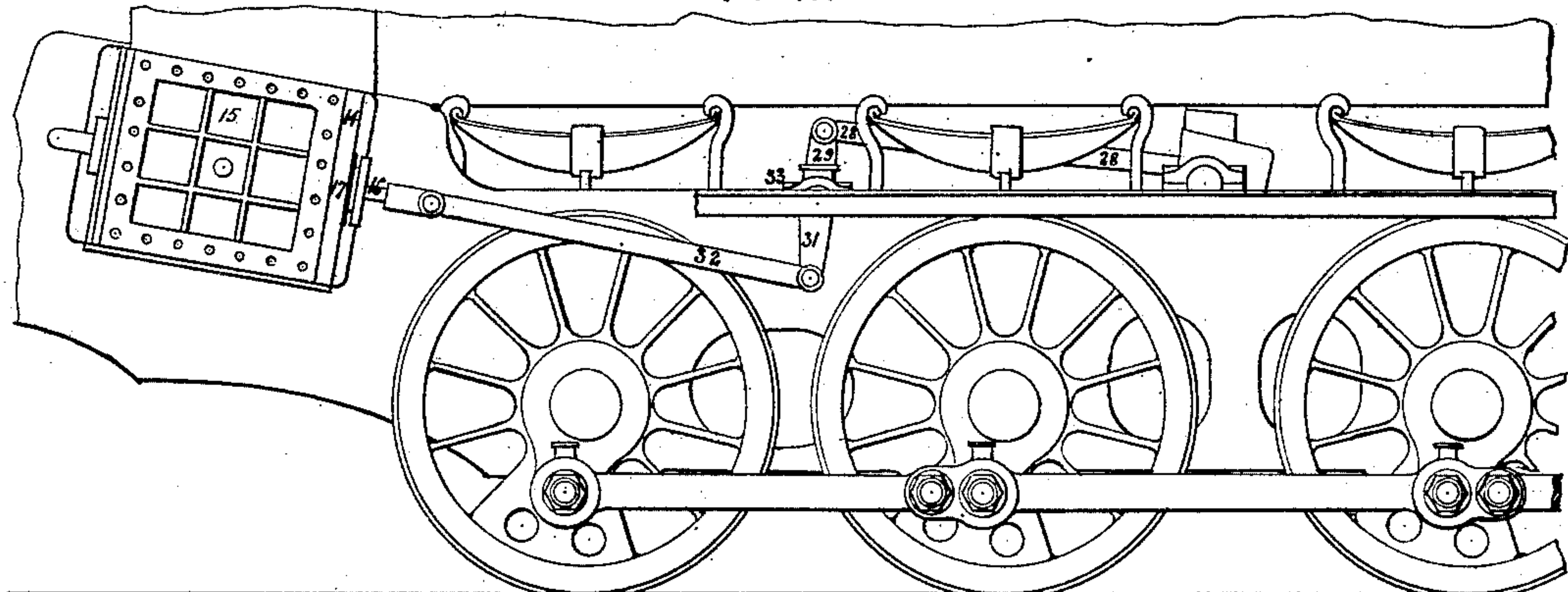


FIG. 2.

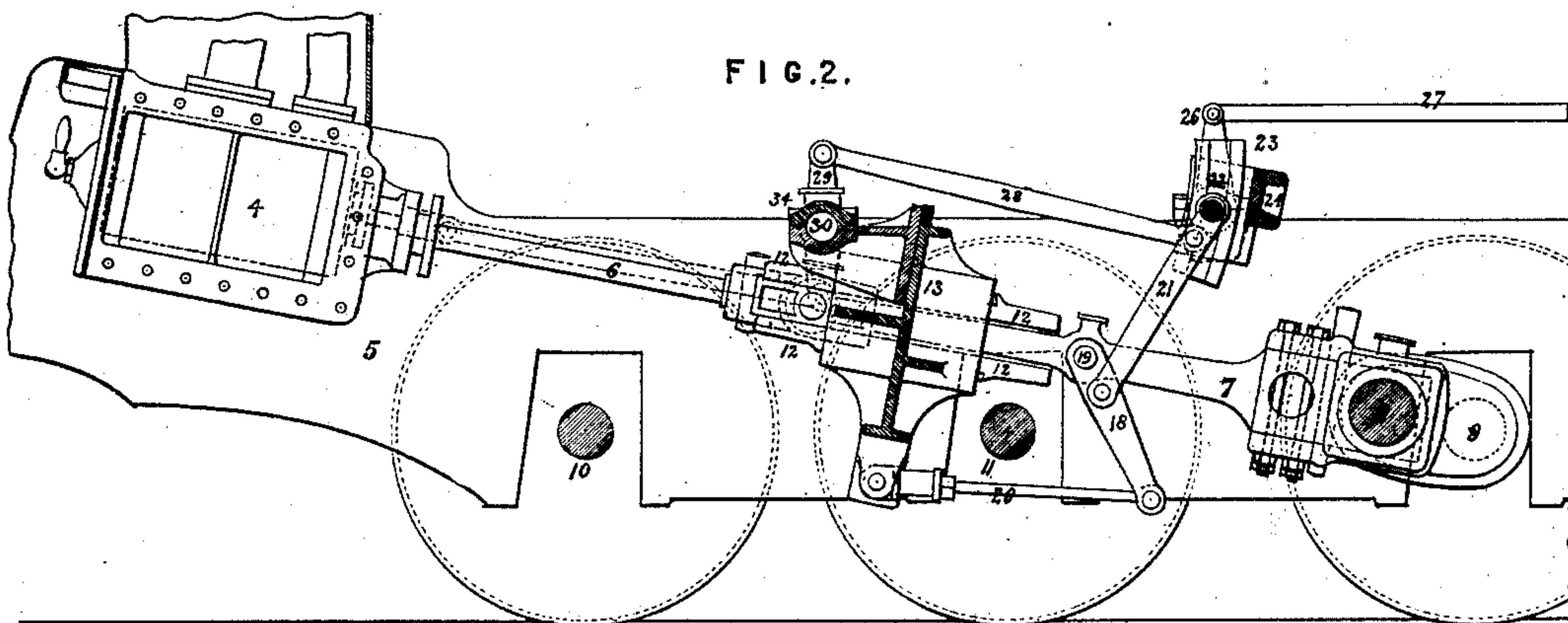
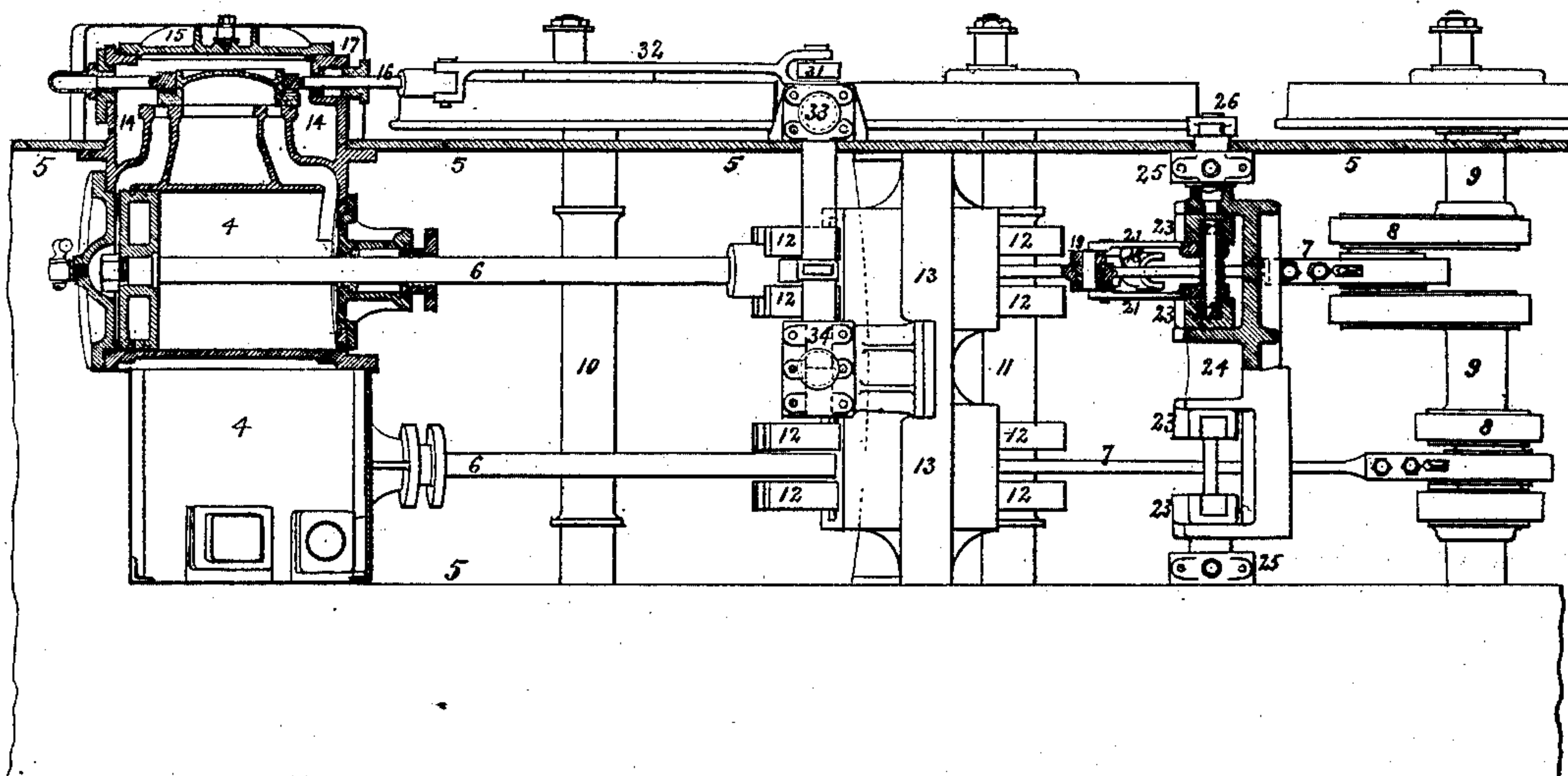


FIG. 3.



Witnesses:

Henry Bossert.
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Inventor:

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UNITED STATES PATENT OFFICE.

WALTER J. HAMMOND, OF JUNDIAHY, SAN PAULO, BRAZIL.

LOCOMOTIVE STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 328,215, dated October 13, 1885.

Application filed March 6, 1885. Serial No. 157,910. (No model.) Patented in England November 10, 1884, No. 14,786, and in France November 13, 1884, No. 152,750.

To all whom it may concern:

Be it known that I, WALTER JOHN HAMMOND, a subject of the Queen of Great Britain and Ireland, and a resident of Jundiahy, San Paulo, Brazil, have invented certain Improvements in Locomotive Steam - Engines, (for which I have obtained patents in Great Britain, dated November 10, 1884, No. 14,786, and in France dated November 13, 1884, No. 152,750,) of which the following is a specification.

My said invention has for its object to combine certain parts of locomotive steam-engines in an improved manner, and so that while what are known as "inside cylinders" are used these can be made of a comparatively large size, and a very powerful locomotive can be constructed suitable for heavy loads and for steep gradients.

In carrying out my invention, the two cylinders are placed close together, and instead of the valve-casings occupying space between the cylinders, as in ordinary arrangements with inside cylinders, these casings are placed on the outer sides of the cylinders. The longitudinal vertical side plates of the frame of the locomotive are made of extra depth at the forward end where the cylinders are placed, and the valve-casings project through openings made in these plates, the valve-rods being outside of the plates. The valve motions are of a kind deriving their movements from the combined swinging and longitudinal movements of the connecting-rods, but are modified from ordinary arrangements of such valve motions to adapt them to the improved arrangement of cylinders and framing used in carrying out the present invention.

In order that my said invention, and the manner of performing the same may be properly understood, there is hereunto appended a sheet of explanatory drawings, to be hereinafter referred to, and representing a part of a locomotive steam-engine as constructed with the improvements.

Figure 1 is a side elevation. Fig. 2 is a longitudinal vertical section, and Fig. 3 is a sectional plan.

In these drawings the same reference-numerals are used to mark the same or like parts wherever they are repeated.

The locomotive, of which part is shown in the drawings, is one having eight coupled wheels, and is designed for drawing heavy loads on steep gradients. The two cylinders 4, placed between the deep side frame-plates, 5, have their piston-rods 6 connected by rods 7 to cranks 8 on the axle 9 of the third pair of coupled wheels, the cylinders and other parts being sufficiently raised to work over the axles 10 11 of the first and second pairs of coupled wheels, while the piston-rod slide-blocks work between guide-bars 12, which are fixed to a transverse frame-piece, 13. Each cylinder 4 is made with its valve-casing 14 on its outer side, and the valve-casing projects through an opening made for it in the side frame-plate, 5, which arrangement, while it allows of larger cylinders being got in within a frame of given width, has also the advantage that the valves are very conveniently accessible. The valve-casing cover 15 is on the outside, and the valve-rod 16, working through the usual stuffing box 17, is also on the outside.

The valve motion for each cylinder comprises a forked lever, 18, jointed by a pin, 19, to the connecting-rod 7, and having its other end jointed to a radius-rod, 20, which is jointed to the transverse frame-piece 13. The lever 18 is connected by a pair of links, 21, to a pair of blocks, 22, fitted to slide in arc-shaped guide-grooves in a pair of blocks, 23, fixed in a rocking frame, 24, which carries similar blocks for the valve motions of both cylinders. This rocking frame 24 extends transversely between the side frame-plates, 5, and is carried in bearings 25, fixed to those plates, while on one end of it there is fixed a lever, 26, connected by a rod, 27, to the valve motion or reversing hand-lever at the foot-plate. At a point to the inner side of the blocks 22, (instead of the outer side, as in ordinary arrangements of the valve motion,) the links 21 have jointed to them a rod, 28, the other end of which is jointed to a lever, 29, on a transverse rocking shaft, 30. There are separate rocking shafts 30 for the two cylinders, and each extends from the middle to a point outside of the side frame-plates, 5, and has a lever, 31, fixed on its outer end and connected by a rod, 32, to the respective valve-

rod 16. The two rocking shafts 30 are carried in bearings 33 34, the outer ones fixed on the side frame-plates, 5, and the inner ones fixed on the transverse frame-piece 13.

5 What I claim as my invention is—

The combination, in a locomotive steam-engine, of inside cylinders having their valve-casings projecting through the side frame-plates, with valve motions of the kind deriving
10 their movements from the swinging and longitudinal movements of the connecting-rods,

and with rocking shafts for transferring the valve-motion movements to the outside of the frame, substantially as hereinbefore described.

In testimony whereof I have signed my name 15 to this specification in the presence of two subscribing witnesses.

WALTER J. HAMMOND.

Witnesses:

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