

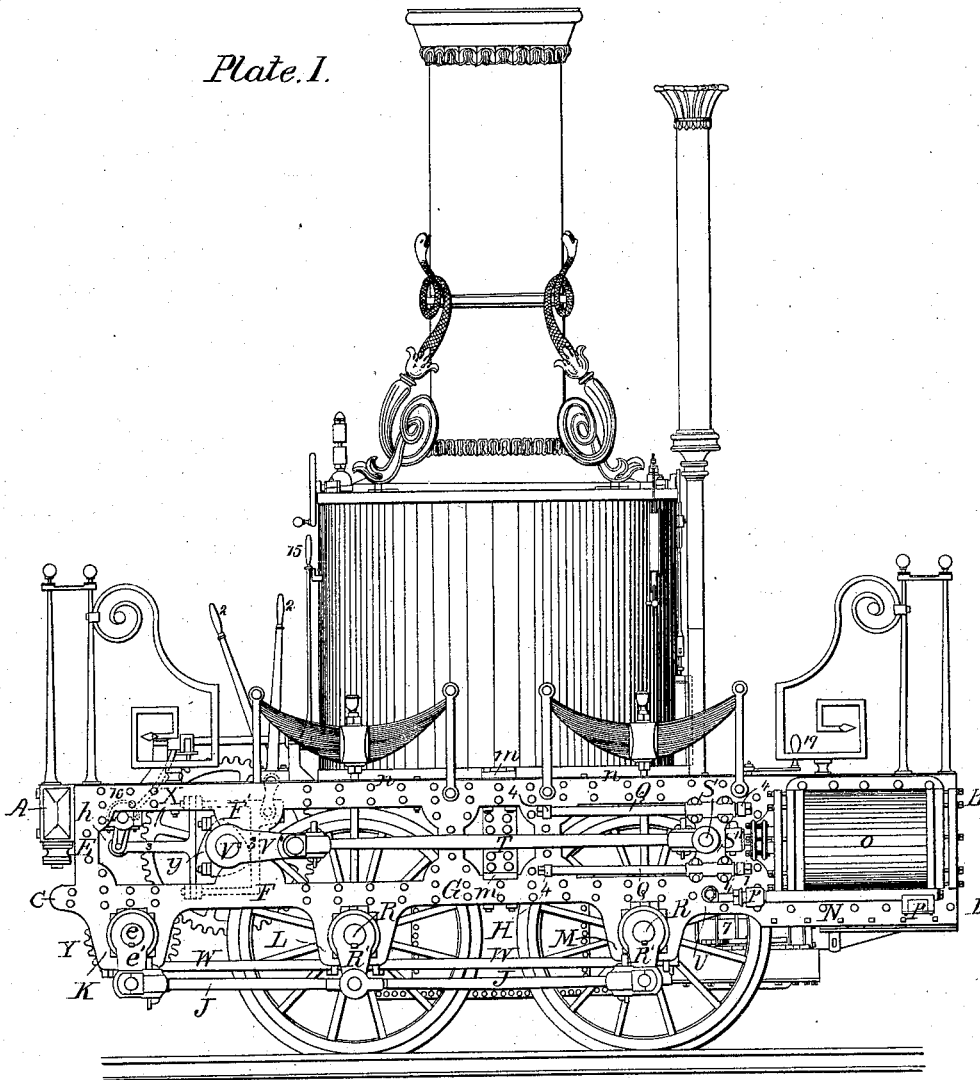
R. WINANS.

Locomotive Steam Engine.

No. 305.

Patented July 29, 1837.

*Plate I.*



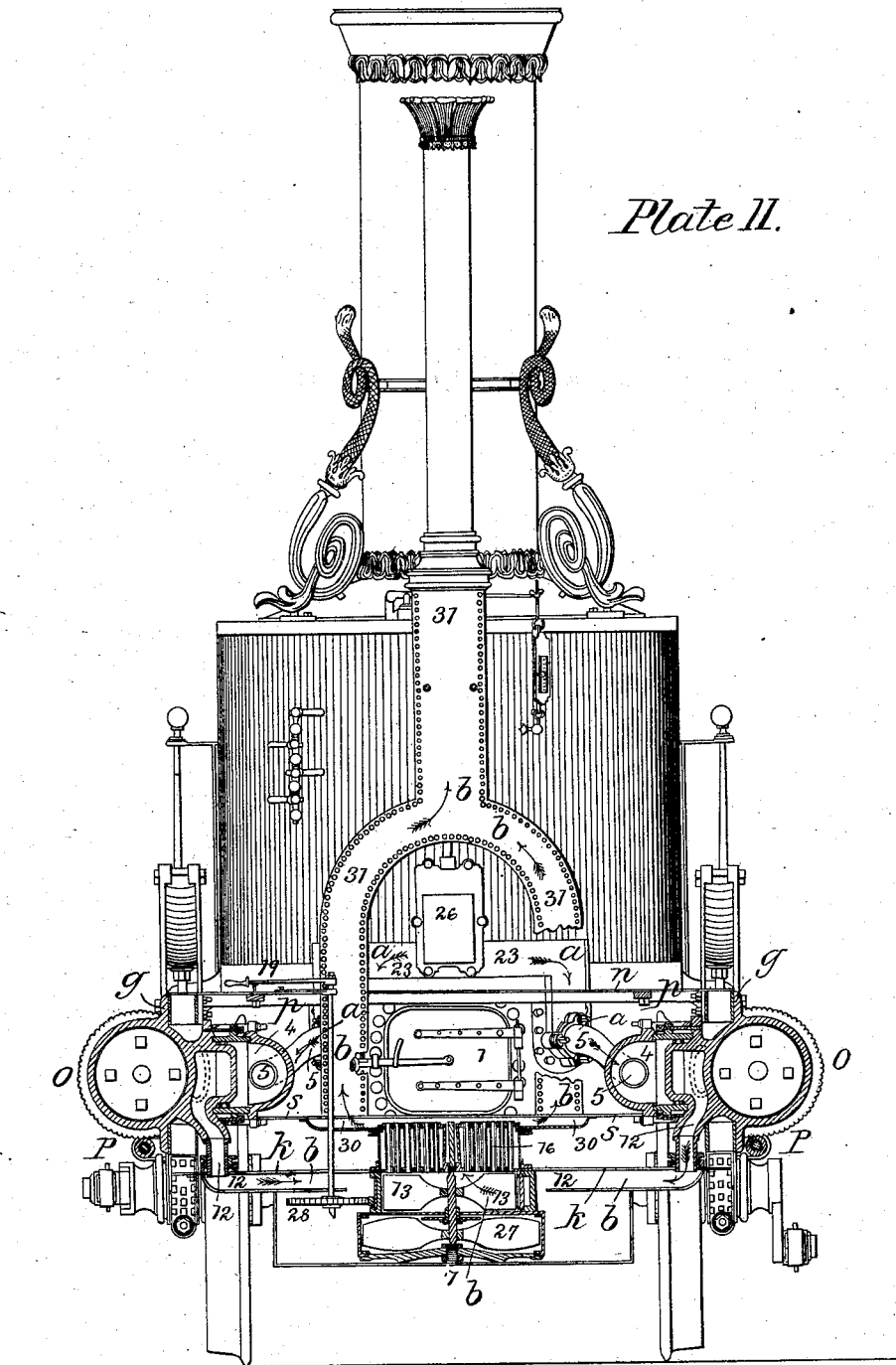
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*Plate II.*



# UNITED STATES PATENT OFFICE.

ROSS WINANS, OF BALTIMORE, MARYLAND.

## FRAMING OF LOCOMOTIVE STEAM-ENGINES.

Specification of Letters Patent No. 305, dated July 29, 1837.

*To all whom it may concern:*

Be it known that I, ROSS WINANS, of the city of Baltimore, in the State of Maryland, have invented a new and useful Improvement in the Mode of Constructing the Side Pieces or Lateral Framing of Carriages of Locomotive-Engines; and I do hereby declare that the following is a full and exact description thereof.

10 In the locomotive engines generally in use, the side pieces consist of a horizontal rail of wood, plated with iron; or of iron, either cast in a single piece, or composed of several pieces of cast or wrought iron, or both, united so as to answer the purpose, and produce the effect of a single horizontal rail, from which depend iron slides, consisting, where a combined iron and wood rail is used, of an extension downward of the iron plating properly stiffened, or, where the iron side piece is used, of suitably constructed fixtures of iron, in which the boxes of the journals of the road wheels play up and down, conforming thereby to the action of the springs that support the carriage on the wheels.

25 In my improvement the side pieces consist each of a wooden frame work of two horizontal pieces, or rails, usually about thirteen feet in length, four inches wide and four inches deep, represented in drawing Figure 1, between the letters A and B, and C and D, and united by vertical pieces of four inches in breadth at E, F, G, H and I in the same drawing, which vertical pieces are in such number and are placed at such distances apart, as to suit the form and position of those parts of the machinery, that are attached to the side pieces. Each side piece is plated on both faces with a strong sheet of iron, in which openings are cut to correspond with the openings of the frame work, so that the iron on each face, with the exception of these openings is one unbroken piece, the opposite sheets of iron being fastened together, through the wooden frame by rivets, as represented in the drawing; where it will be seen that the side piece is further strengthened by leaving a part of the iron plates in the angles at the connection of the vertical with the horizontal rails. The iron plating is made out of what is termed boiler plates, cut into the proper shapes, and welded to gether so as to obtain an unbroken plating on each face. On the lower edge of the side pieces, the sheet iron projects down-

ward as in the common side piece of a proper form, and properly stiffened in the common manner, to receive the boxes for the axles of the bearing wheels and pinion shaft, and foot board for the fireman, at K, L, M and N. It will be seen at once, that the side piece, thus formed, must be much more capable to resist a springing or yielding vertically, than the side piece that consists of but a single rail; and although I am well aware that this mode of framing wood is in common use to obtain strength without too great a use of material, or too great weight; yet I am not aware that, in constructing the side-pieces of locomotive engines, such a frame has ever been plated with a continuous and unbroken sheet of iron cut out to fit it, thus giving to the wood work far greater strength than it would have by itself, or which the framing would have, were each rail and each upright separately plated with pieces of iron and then put together, the iron not being united in one piece at the joints in the wood work.

80 The side piece here represented, is adapted to an engine, where the power is communicated first from the piston to the spur wheel shaft V; thence to the pinion shaft E, and thence to the axles of the road wheels R, R, as in Fig. 1. But it will be perceived, that, by giving the cylinder an oblique position between the upper and lower rail of the side piece, (which may easily be done,) so that the axis of the cylinder shall point to the axle R of the road wheels, the pitman T may be connected immediately to the crank pin of the propelling road wheels, without the intervention of the spur and pinion wheels and their respective shafts.

95 The side piece, as improved by me, has the important advantage of permitting the cylinders of the engine, the slide rods of the piston, the pumps and other parts of the machinery to be attached to it. It will be seen by reference to the drawing, and having reference also to the kind of engine there exhibited for illustration, that there is a vertical connection between the ends of the horizontal rails A and C, but between the ends B and D of the same rails, there is no such vertical connection, because the cylinder being made to fit between the horizontal rails here, and being secured to them by a suitable flange cast upon it, acts as a connection between them; and, while it uses them for its own support, adds greatly to

their strength. The absence too of a vertical connection between B and D, permits the head of the cylinder to be taken off, and put on with great ease, for the purpose of packing the piston.

In drawing Figs. 1 and 2, O represents the cylinder, and P the pump immediately below it. Q Q are the slide rods. S is the crosshead, to which is attached, not only the connecting rod or pitman T, but also the plunger of the pump at the projection and bolt U. V represents the end of the spur wheel shaft with the crank V V' attached to it, that is worked by the main connecting rod T. The spur wheel shaft is supported in a heavy and strong box that is bolted fast to the upright F F'; the nuts of the bolts are exhibited in the drawing. Now it will be at once perceived, that those parts of the engine, that are the most difficult of adjustment, may here be fitted together with the greatest ease, while the side piece rests upon trestles, and before it is either put upon wheels, or receives the boiler. The convenience thus afforded, will be fully appreciated by all practical men, who have felt how difficult it was, to work with accuracy and rapidity in the cramped position attending the construction of an ordinary engine; and it will also be seen, that while the parts of the engine are thus made

fast to the side piece, and work close up to it, there can be but little of the straining and tendency to tear asunder, that is constantly exhibited in a locomotive engine of ordinary form. It is here to be observed, that, for the purpose, still further, of strengthening the side piece, the slides are connected with each other by iron bars below the boxes of the axles represented at W and W'.

The leading difference between the side piece here described, and that heretofore used, and which constitutes the novelty and ground of claim for a patent in this case, is—

The use of a double rail of wood, (instead of a single one,) as herein particularly set forth, framed together by cross—or upright pieces and plated on each side with iron in continuous sheets, so formed as to receive the cylinder, by which a most convenient and permanent attachment is furnished for the cylinder and slide rods, and at the same time much greater strength and stiffness are obtained in the side piece in proportion to the material used, than in the ordinary mode of constructing the side piece with a single rail.

ROSS WINANS.

Witnesses:

THOS. P. JONES,  
CLEMENT T. COOTE.