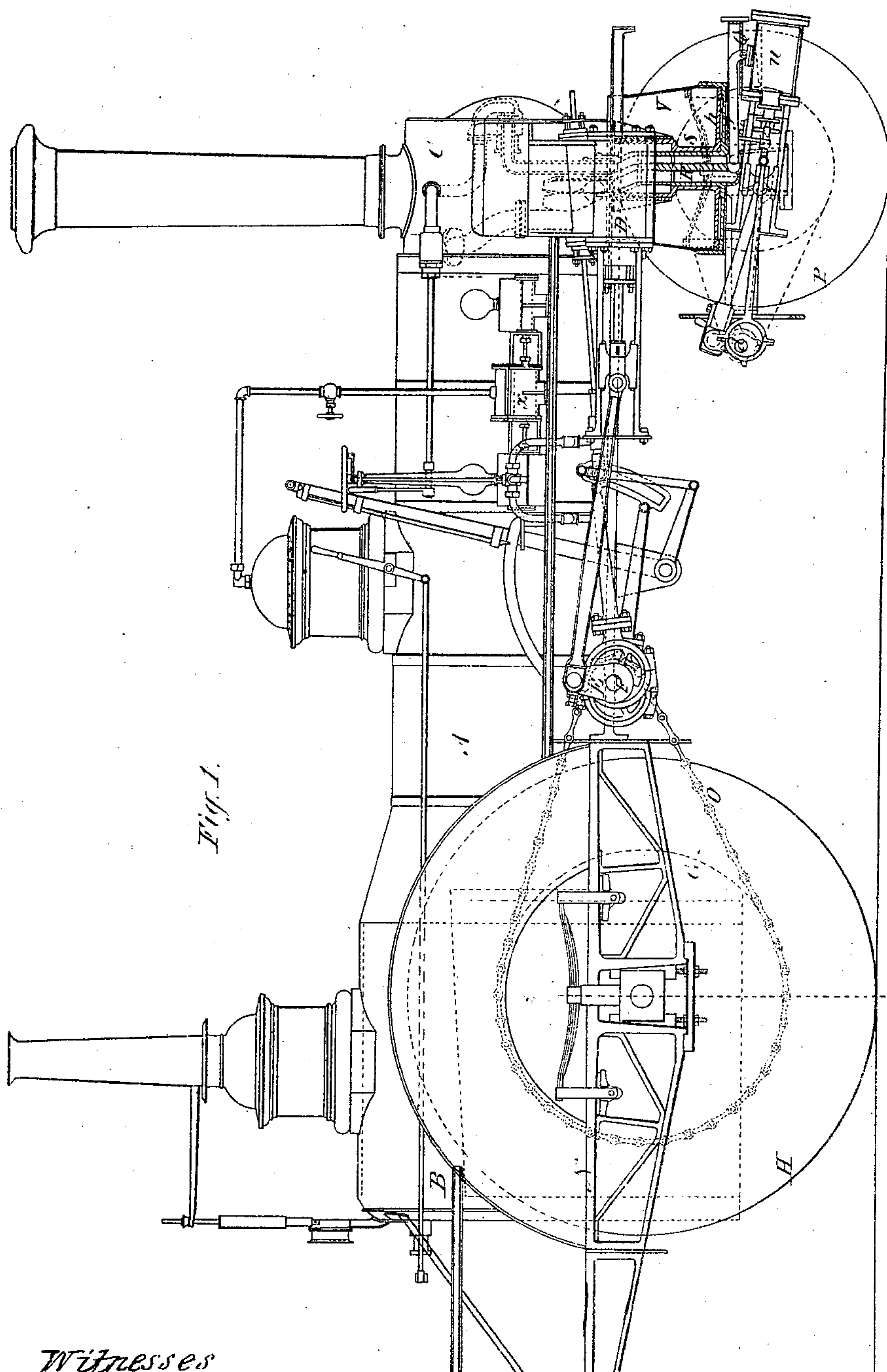


Schettler & Morrison. Traction-Engine.

N^o 73051

Patented Jan. 7, 1868.



Witnesses

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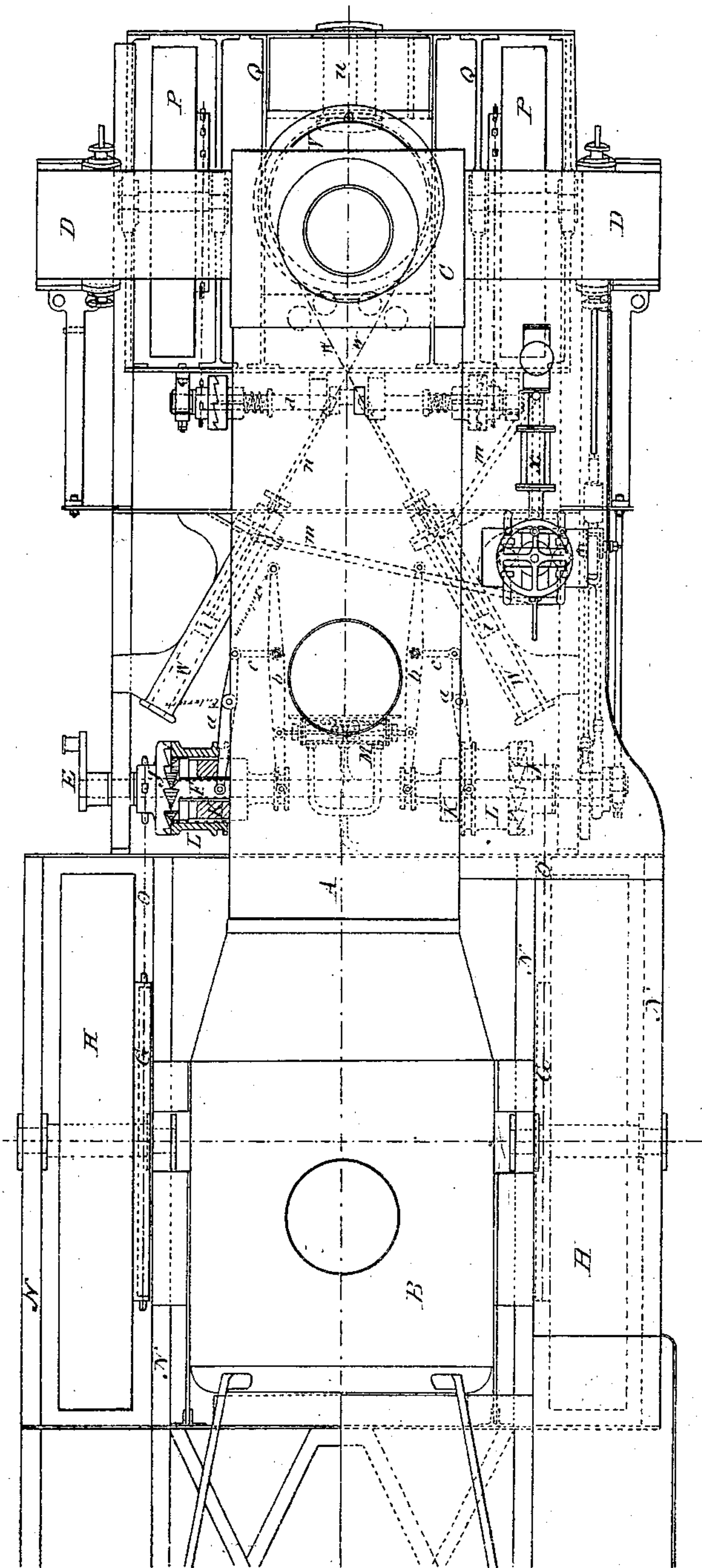
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Fig. 2



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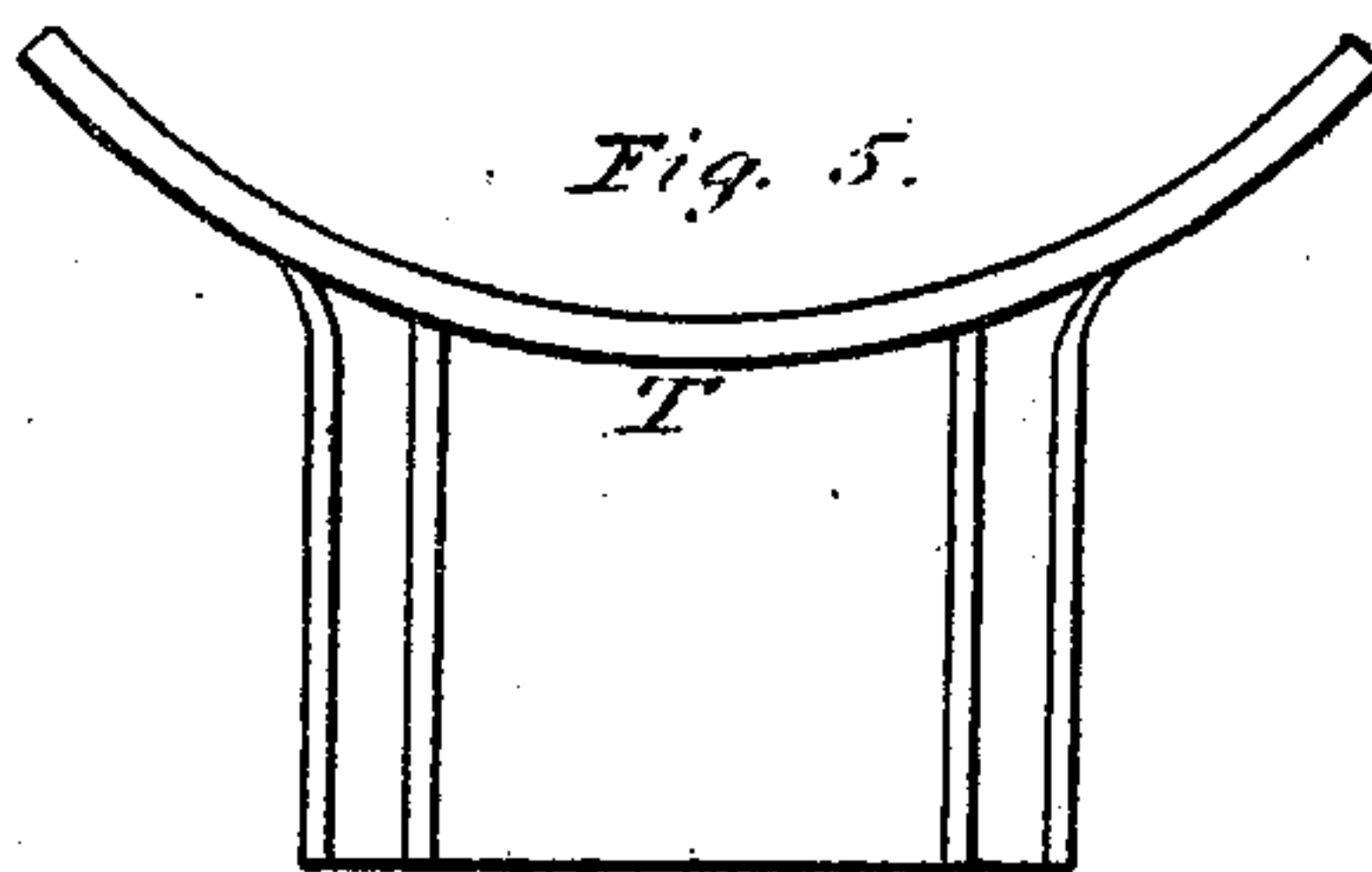
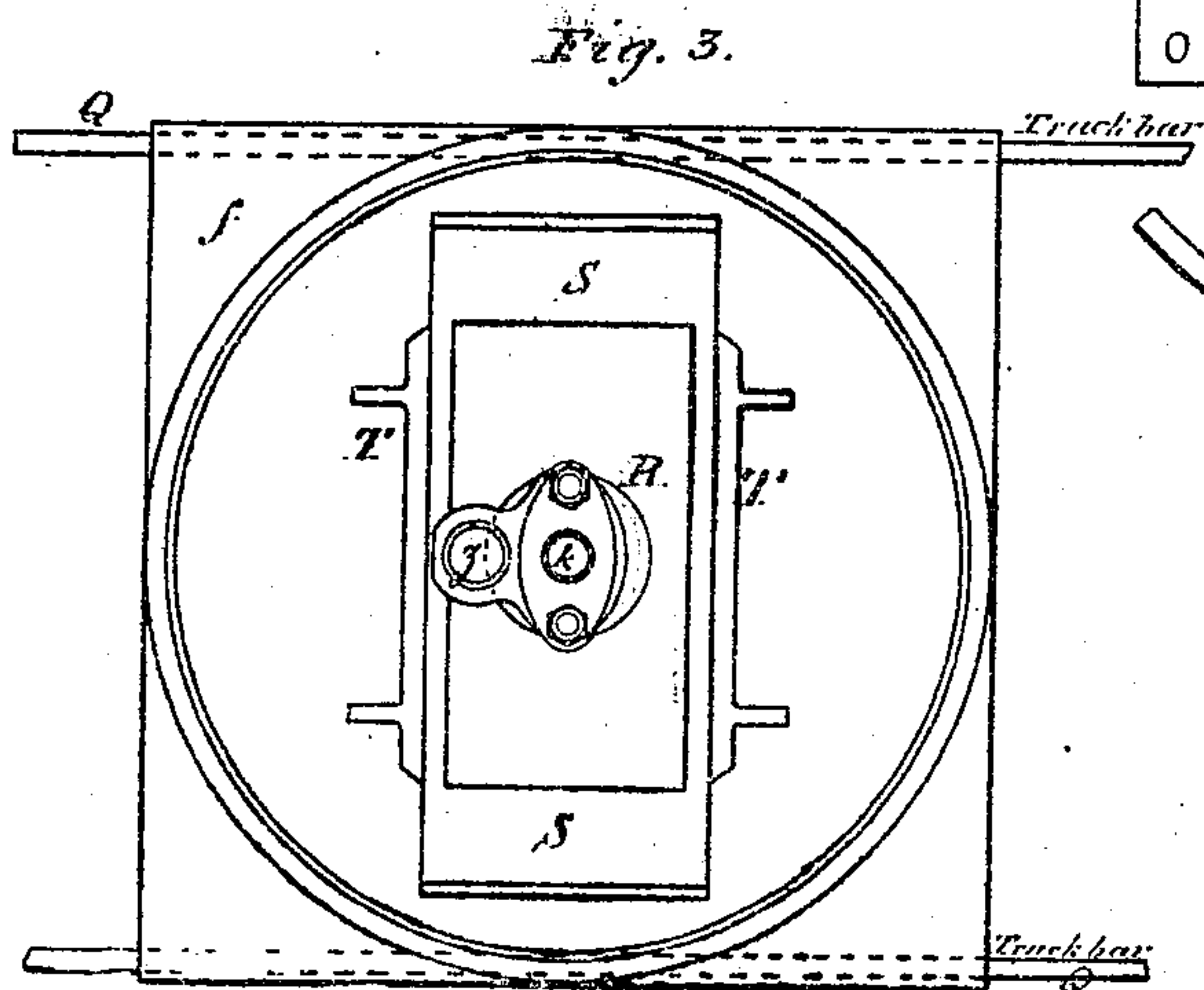
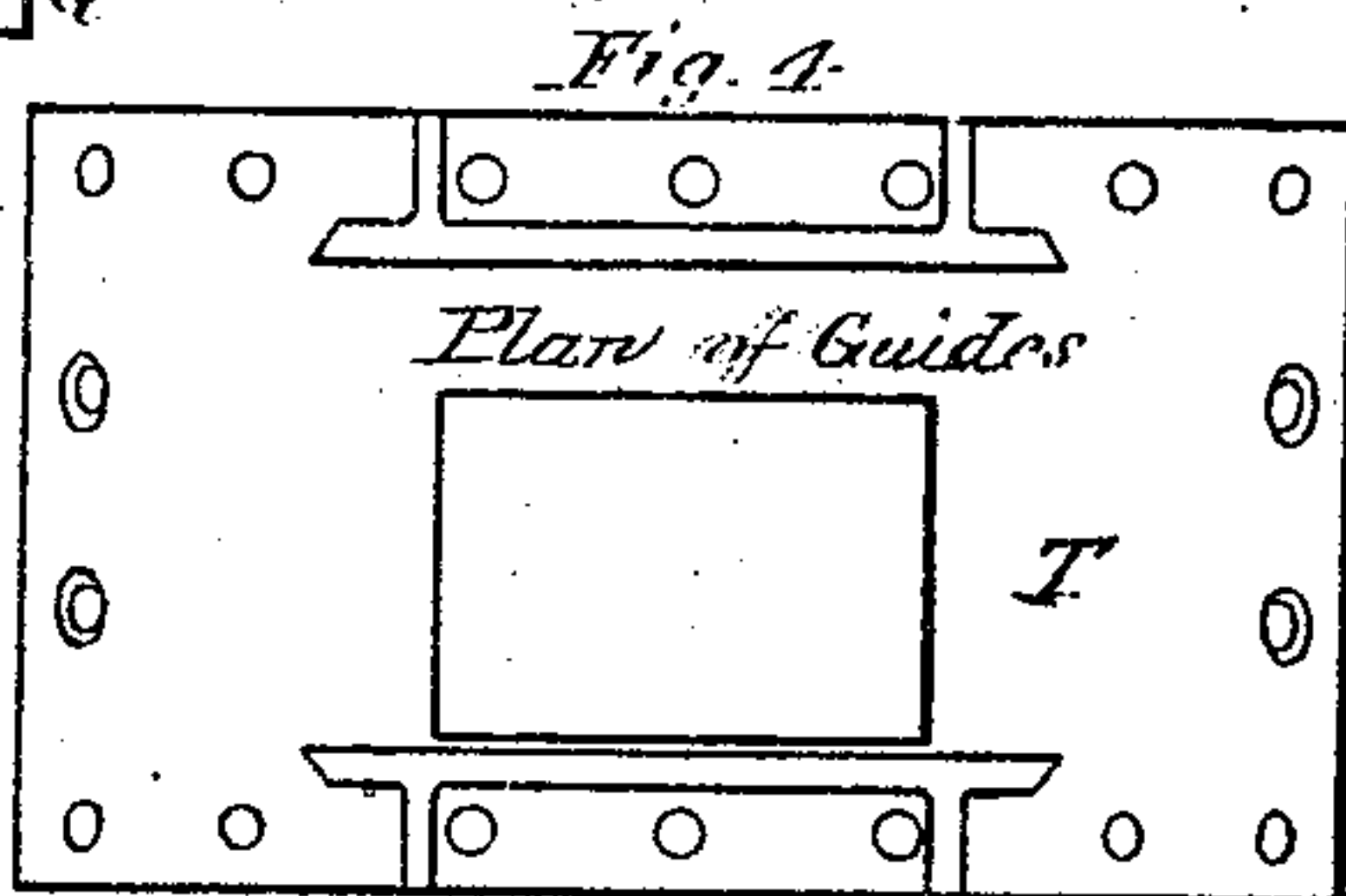
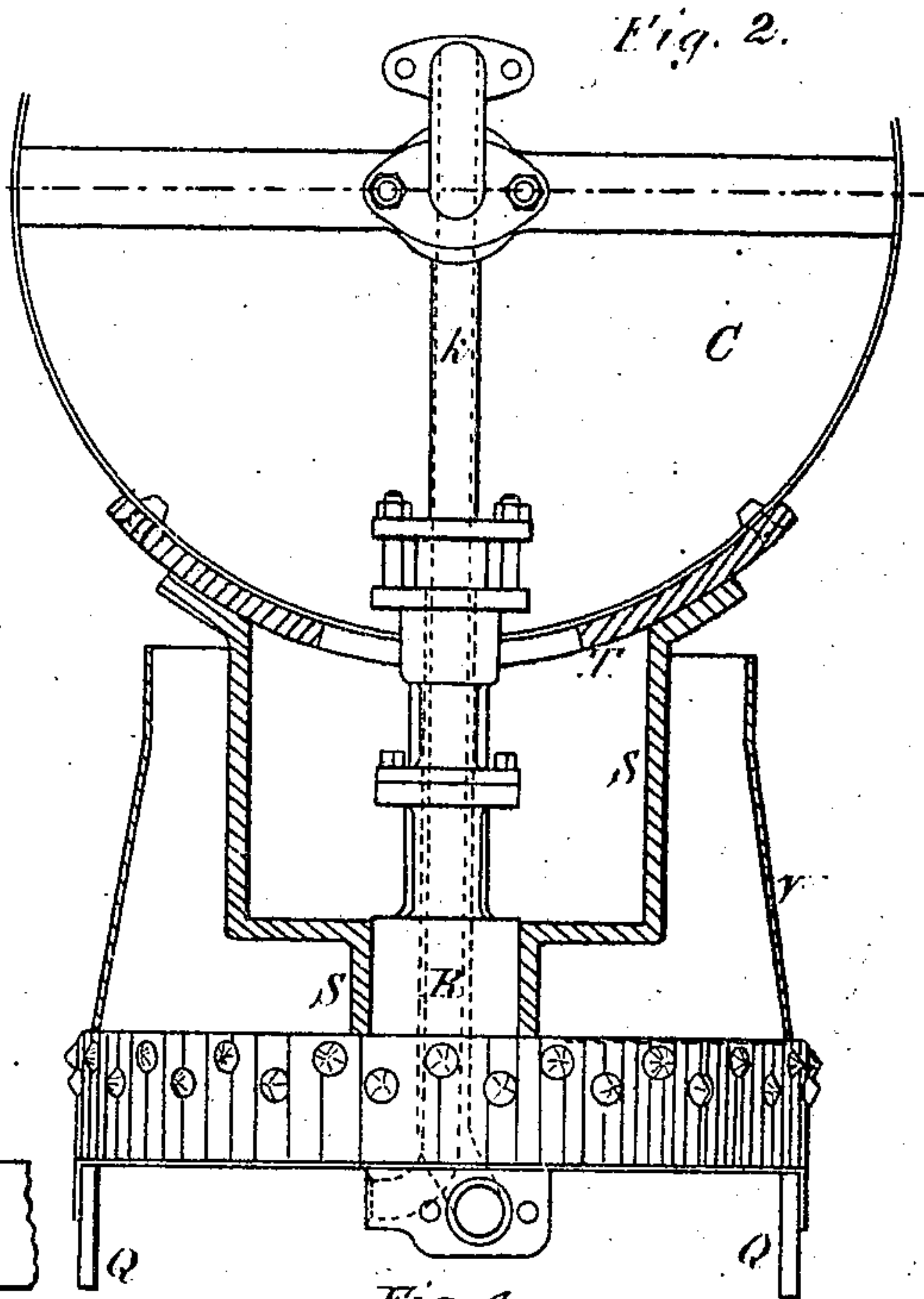
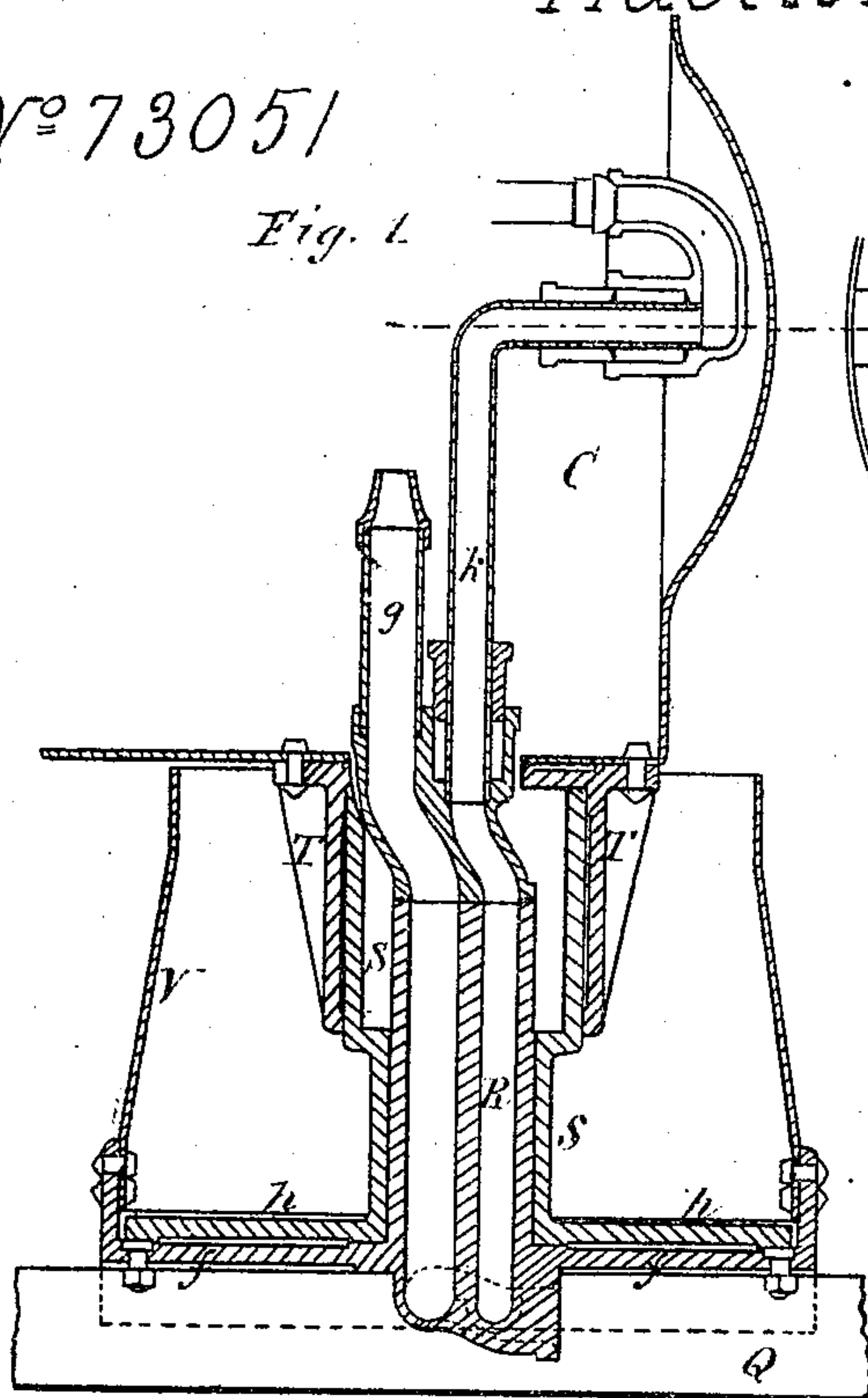
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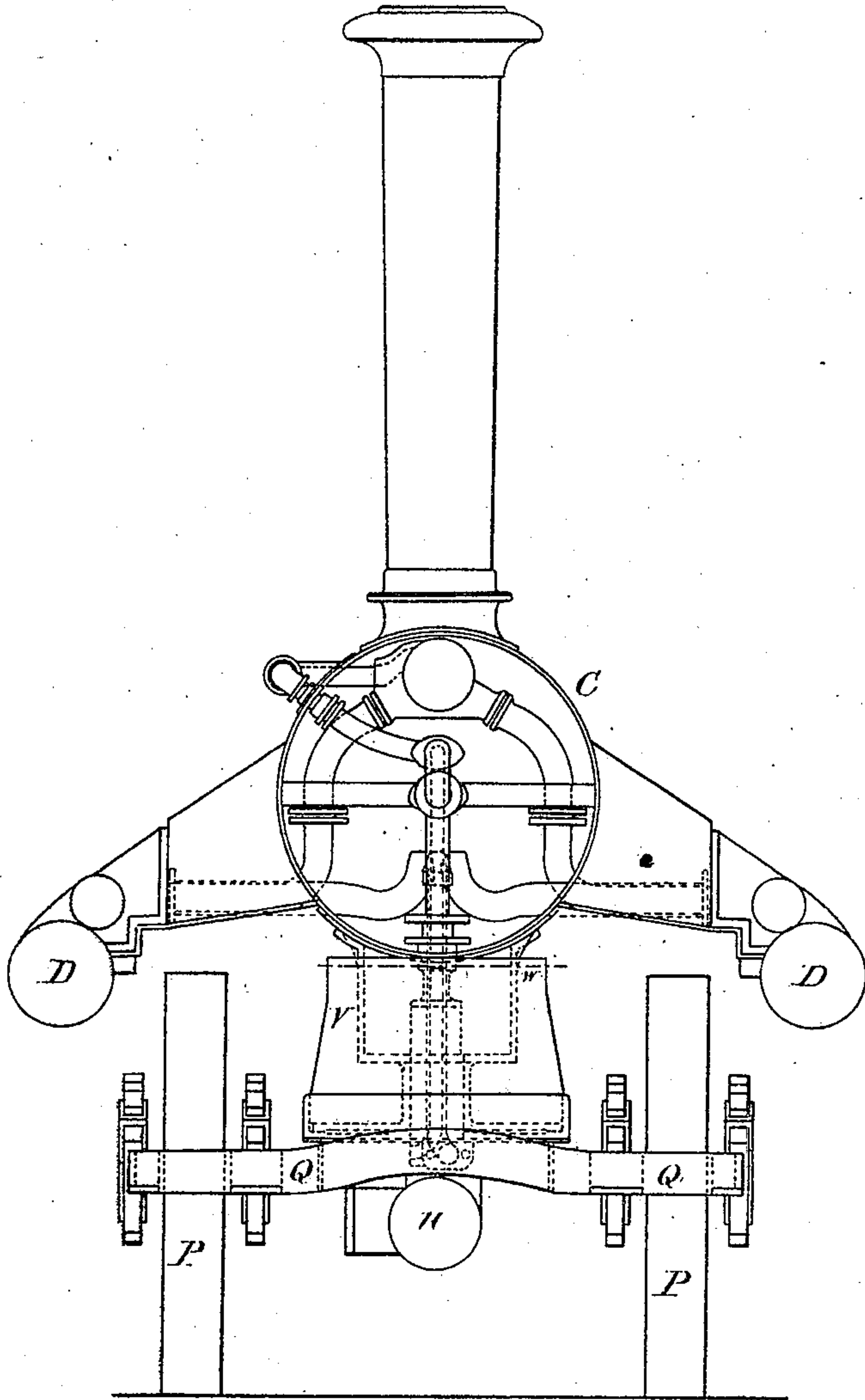
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THEODORE SCHEFFLER AND HENRY MORRISON, OF PATERSON, NEW JERSEY

Letters Patent No. 73,051, dated January 7, 1868.

IMPROVEMENT IN TRACTION-ENGINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, THEODORE SCHEFFLER and HENRY MORRISON, both of the city of Paterson, in the county of Passaic, in the State of New Jersey, have invented a new and useful Improvement in "Traction-Engines;" and we do hereby declare that the following is a full and clear description of the construction and operation of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure I, sheet I, represents a longitudinal elevation of the complete engine.

Figure II, sheet I, is a plan of the same.

Figure 1, sheet II, shows a longitudinal section through the smoke-box and centre-pin of truck and guides.

Figure 2, sheet II, is an end view of smoke-box and transverse section through guides and centre-pin.

Figure 3, sheet II, shows a plan of centre-pin.

Figure 4, sheet II, is a plan of guides.

Figure 5, sheet II, is an end view of guides.

Sheet III represents an end view of the engine.

Similar letters represent similar parts in all the figures.

The nature of this invention consists in the arrangement of double clutches attached to the driving-shaft, in connection with levers acted on by a steam-piston, and operating as springs to keep the clutches in gear, said clutches being connected through suitable chains with the driving-wheels, hung upon independent axles on each side of the boiler. Further, in the arrangement and combination of the driving-engine and truck for the forward wheels, turning together on a suitable frame or pin, and through which the steam and exhaust-pipes of the cylinder pass. And further, in the arrangement of hydraulic pressure, to operate the chains of the steering-wheel or drum, for the purpose of turning thereby the forward truck with its wheels and motive-power.

In the accompanying drawings, A represents the steam-boiler, B the fire-box, and C the smoke-box. D D are the steam-cylinders, arranged on each side of the smoke-box, and acting on the cranks E, fast on the ends of the driving-shaft F. On each side of the shaft F, (in a line with the wheels G, fast to the driving-wheels H,) the loose part of the clutch J is fixed, turning freely on said shaft between suitable collars. This loose part J of the clutch is arranged with two sets of teeth, acting in opposite directions. On the shaft F a clutch, K, is fixed, working or sliding upon a feather, fast to said shaft F, and provided with teeth corresponding with the inner set of teeth on the loose clutch J. Upon this clutch K, another clutch, L, is fixed, sliding upon a feather or key, fast to the outer circumference of this inner clutch K, and provided with teeth corresponding with the outer set of teeth on the loose clutch J. To the outer circumference of the clutch L a lever of the first order, *a*, is arranged, and to the circumference of a projecting part of the clutch K a lever, *b*, of the third order is applied. The opposite end of the lever *a* is connected through a link, *c*, with the lever *b*. Between these two sets of clutches and their respective levers a steam-cylinder, M, is arranged, provided with two pistons, one of which is connected to the lever *b*, operating the clutches on one end of the driving-shaft, and the other piston is connected with the lever *b* operating the clutches on the opposite end of the driving-shaft. The cylinder M is provided with steam-pipes, to introduce the steam either into both ends of the cylinder, on opposite sides of the pistons, or to introduce the steam between the pistons, so as to force the same apart towards each end, said pistons operating thereby the levers *b* in such a manner as to move the clutches L against the clutches J, and their teeth in connection with the corresponding teeth on the clutches J, and at the same time move the clutches K away from the clutches J, or *vice versa*, as may be desired. The steam acting against these pistons in either position acts at the same time as a cushion or spring, and allows any extreme strain or great obstruction upon either of the driving-wheels to cause its clutch J to disengage itself from its corresponding fast clutch until this strain or obstruction is removed, when the two parts of the clutch will move into gear again without having disturbed thereby the other clutch.

On each side of the fire-box B two frames, N N, are arranged, between which the driving-wheels H are placed, their axles being supported in suitable bearings in said frames. By this arrangement of placing the wheels on separate and independent axles, we obtain not only the advantage of one wheel being capable of

running faster or slower than the other wheel, but the position of said wheels may likewise be better adapted to the general arrangement of the engine and the more equal distribution of the weight; besides which, the axle of each wheel being supported on each side of the wheel, the journals of the same can be made considerably smaller, reducing thereby the friction.

On the sides of these driving-wheels H, suitable wheels, G, are attached, which are connected, through straps, bands, or chains, O, with their loose clutches J, communicating thereby, when these clutches J are in gear, either with the clutch K or with the clutch L, the desired motion to the driving-wheels H.

The forward wheels P P are arranged on a suitable truck, Q, to the under side of which the steam-cylinder U, with its necessary gearing, is affixed, acting on a shaft, *d*, from which the motion is communicated to the wheels P by means of straps or chains. On this truck Q a plate, *f*, is affixed, provided with a centre-pin, R, containing suitable passage-ways for the steam and exhaust.

This centre-pin R fits in a socket, S, having at its lower end a plate, *h*, attached, resting on the plate *f*, fast to the top of the truck Q. The upper part of this socket S is made square, and fits against and between the sides of the guide-piece T, attached to the under side of the smoke-box C, said guide-piece T, and consequently the smoke-box C, or end of the boiler, being thereby supported on this socket S. The guides T steady the socket S crossways, while the lower or round part, into which the centre-pin R fits, and which is firmly attached to the truck Q, can turn around this centre in either direction. To the exhaust-passage in the centre-pin R a pipe, *g*, is attached, to lead the exhaust into the smoke-box C or into the chimney, in the usual manner, and to the steam-passage in said centre-pin R a pipe, *k*, is attached, to conduct the steam from the steam-boiler A to this steam-passage. From the lower end of these exhaust and steam-passages, in the centre-pin R, steam and exhaust-pipes are arranged, leading to the cylinder U or its valve-chamber. By this attachment of the cylinder, which operates the wheels P, to the truck Q, in the manner described, said wheels P can always be operated in whatever position the wheels or truck may be placed or moved for the purpose of steering the engine. Instead of communicating the motion of the cylinder U to an intermediate shaft, *d*, from which the same is transmitted through chains or gearing to the wheels P, as here represented, this cylinder or cylinders may be arranged to act upon the said wheels directly, if it should be desired.

To the plate *f* a cylinder or drum, V, is firmly attached, around which the steering-ropes or chains *w* (see Fig. II, sheet I) are attached. To the main frame of the engine two cylinders, W, are affixed, provided with suitable pistons, *i*, and piston-rods, *n*, which latter pass through suitable packed boxes in the heads of said cylinders. The ends of these piston-rods *n* are attached to the ends of the steering-cords or chains *w*. To the ends of these cylinders W, near the heads of the same, pipes, *m m*, are attached, connected with a steam or force-pump, X, and arranged in such a manner that through said pipes the cylinders W may either be filled with water or other fluids, or that the liquid may be drawn out of either cylinder and forced into the other cylinder, as may be desired.

The ropes or chains *w* being attached to the ends of the piston-rods *n*, water or other fluid is forced into these cylinders W, forcing the pistons *i* outwards until the ropes or chains *w*, wound around and attached to the wheel or drum V, are stretched perfectly tight. When the truck Q, with the wheels P, requires to be moved in either the one or the other direction, the water or fluid is then pumped out of one cylinder and forced into the other cylinder, whereby the chain around one side of the drum V is relieved, and the chain around the other side pulled upon, and by which operation the said drum, and consequently the truck Q, with its wheels P, and all other parts attached to the truck Q, are turned around the centre-pin R. By this arrangement these steering-ropes or chains are, through the pressure of the water or fluid in the cylinders W against the pistons *i*, kept perfectly tight in whatever position the truck may be placed, while at the same time a certain elasticity will be obtained in case either the one or the other of the wheels should meet with any sudden obstruction.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. We claim, in traction-engines for common roads, supporting each wheel on an independent short axle, running in suitable bearings, situated on each side, and close to the wheel, in the manner and for the purpose described.

2. We further claim the arrangement of the loose clutch J, and the internal and external clutches K and L, in combination with the levers *a* and *b*, or their equivalent, operated by the steam-cylinder M, the whole being arranged and combined in the manner and for the purpose substantially as set forth.

3. We further claim connecting the driving-wheels H with the driving-shaft F through chains, or their equivalents, passing over clutches, arranged and operating substantially as specified.

4. We further claim driving the forward wheels P P by a separate and independent cylinder or cylinders attached to the movable truck Q, and turning with said truck and wheels.

5. We also claim the centre-pin R, fast to the truck Q, with suitable passages for the steam and exhaust through said centre-pin, in combination with the socket S and guide-frame T, supporting the smoke-box C, or end of the boiler, the whole being constructed and arranged in the manner and for the purpose described.

6. We further claim operating the ropes or chains that turn the forward truck and wheels of the engine, to guide or direct its movements by means of hydraulic cylinders operated by a force or steam-pump, substantially in the manner and for the purpose set forth and described.

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Witnesses:

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