

No. 671,159.

Patented Apr. 2, 1901.

O. M. CAMPBELL.
LOCOMOTIVE.

(Application filed Dec. 19, 1900.)

(No Model.)

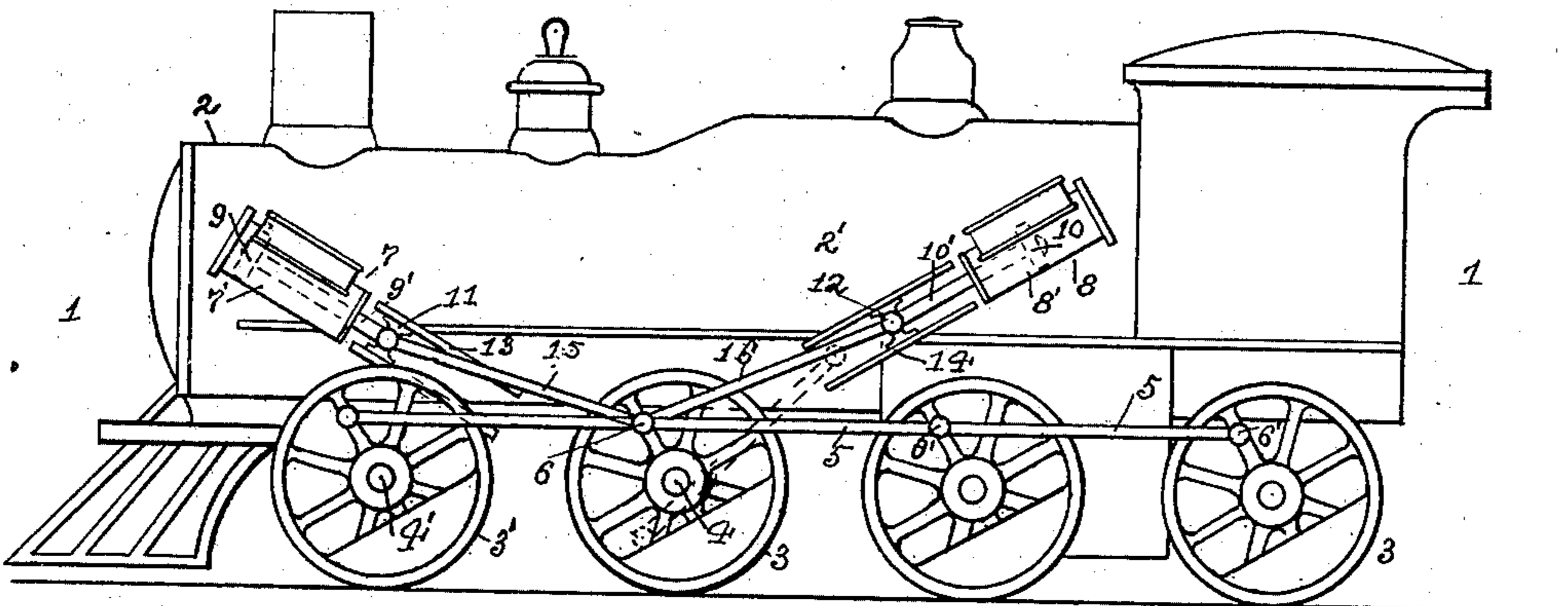


Fig. 1

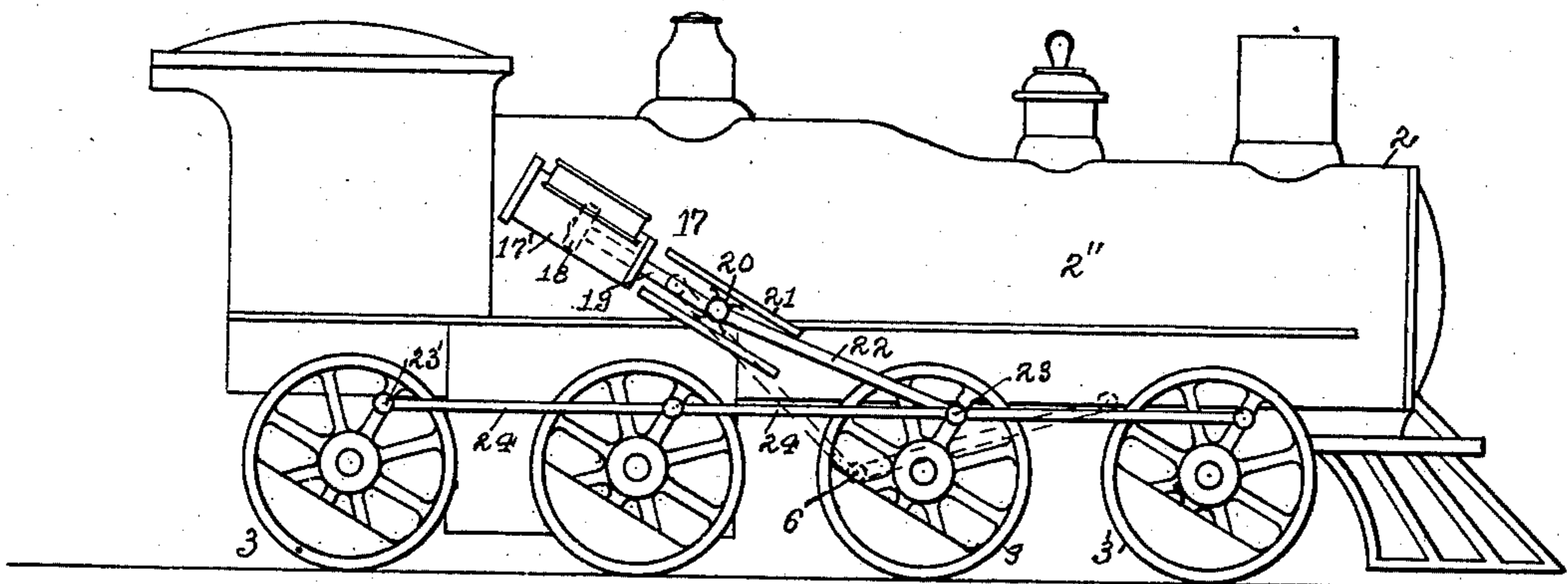


Fig. 2.

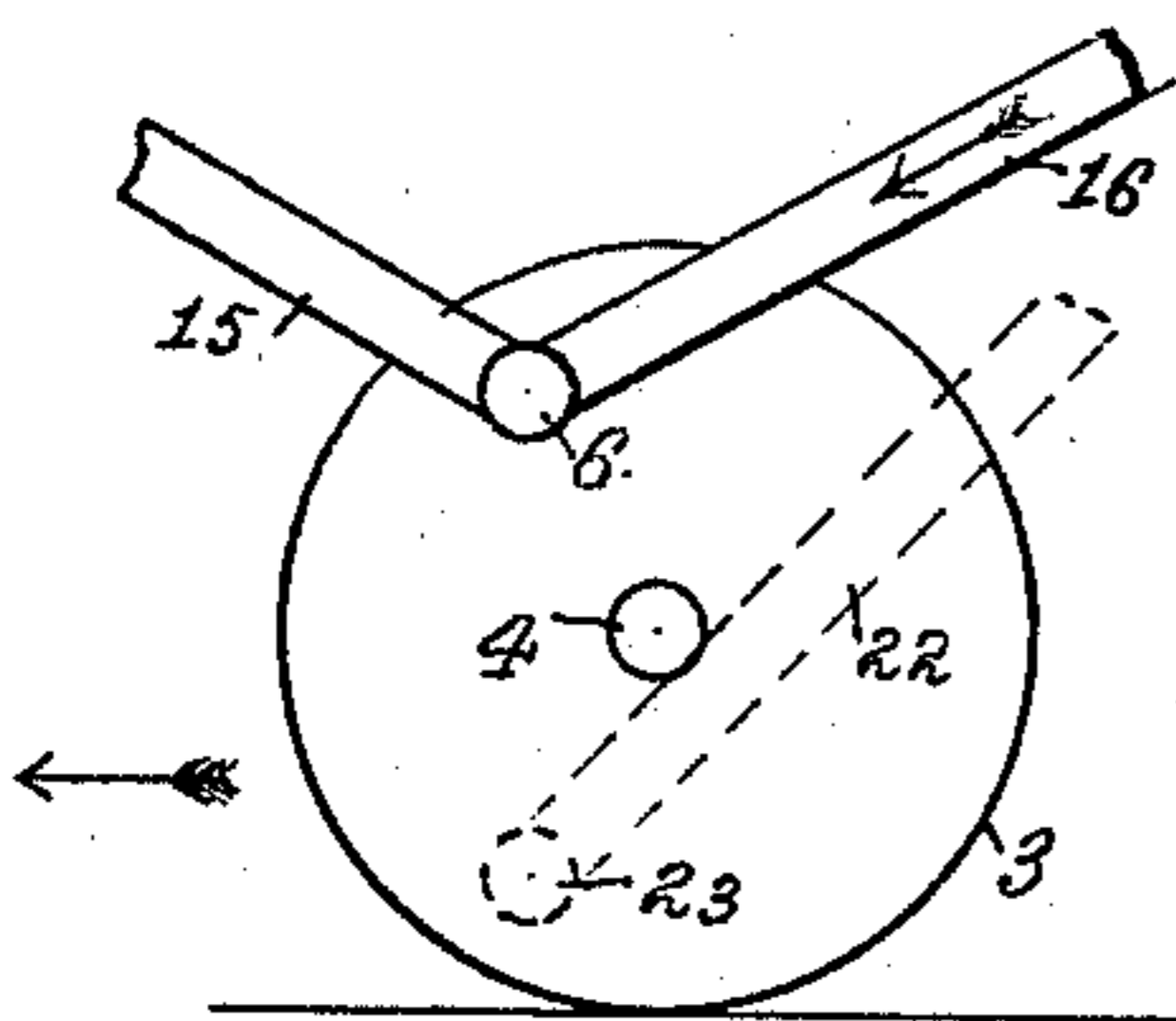


Fig. 3.

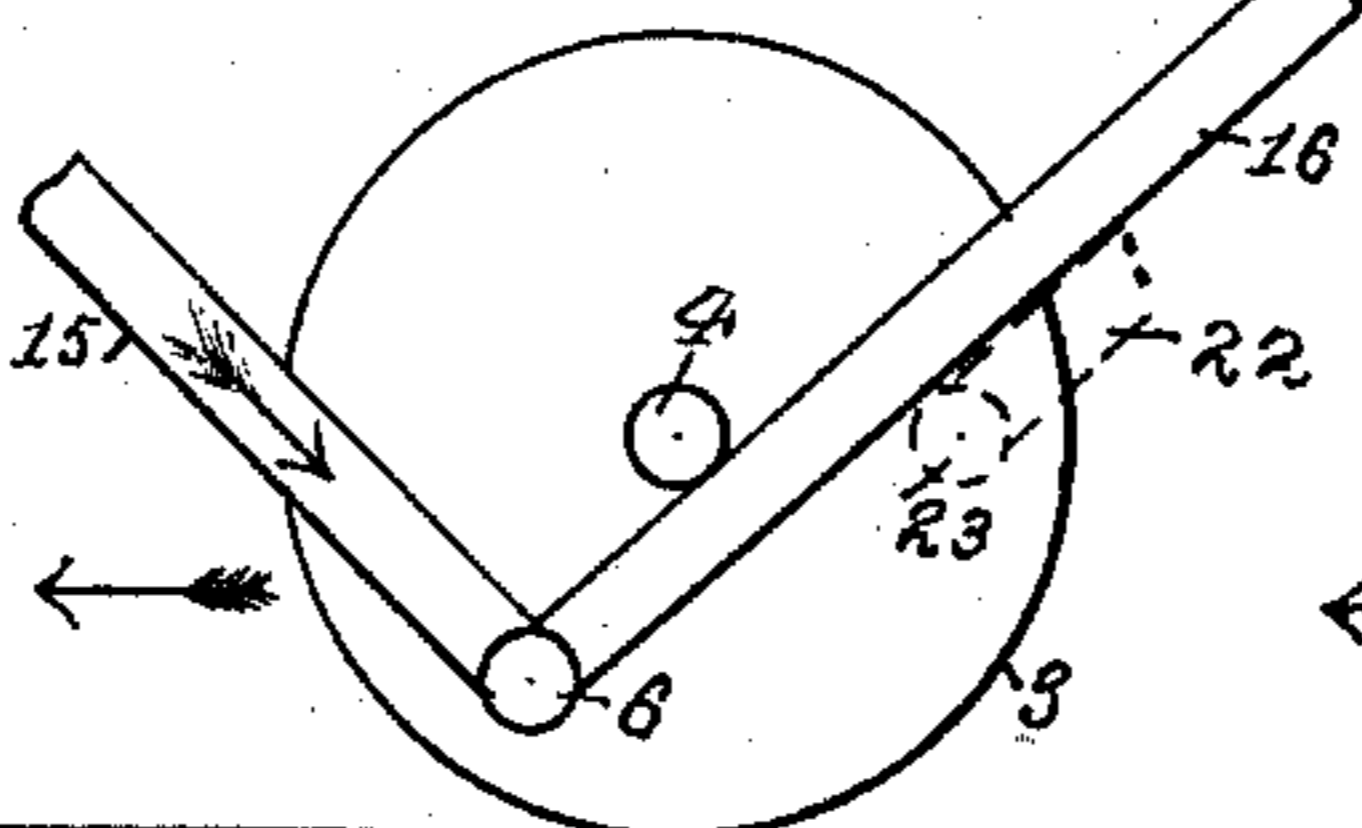


Fig 4.

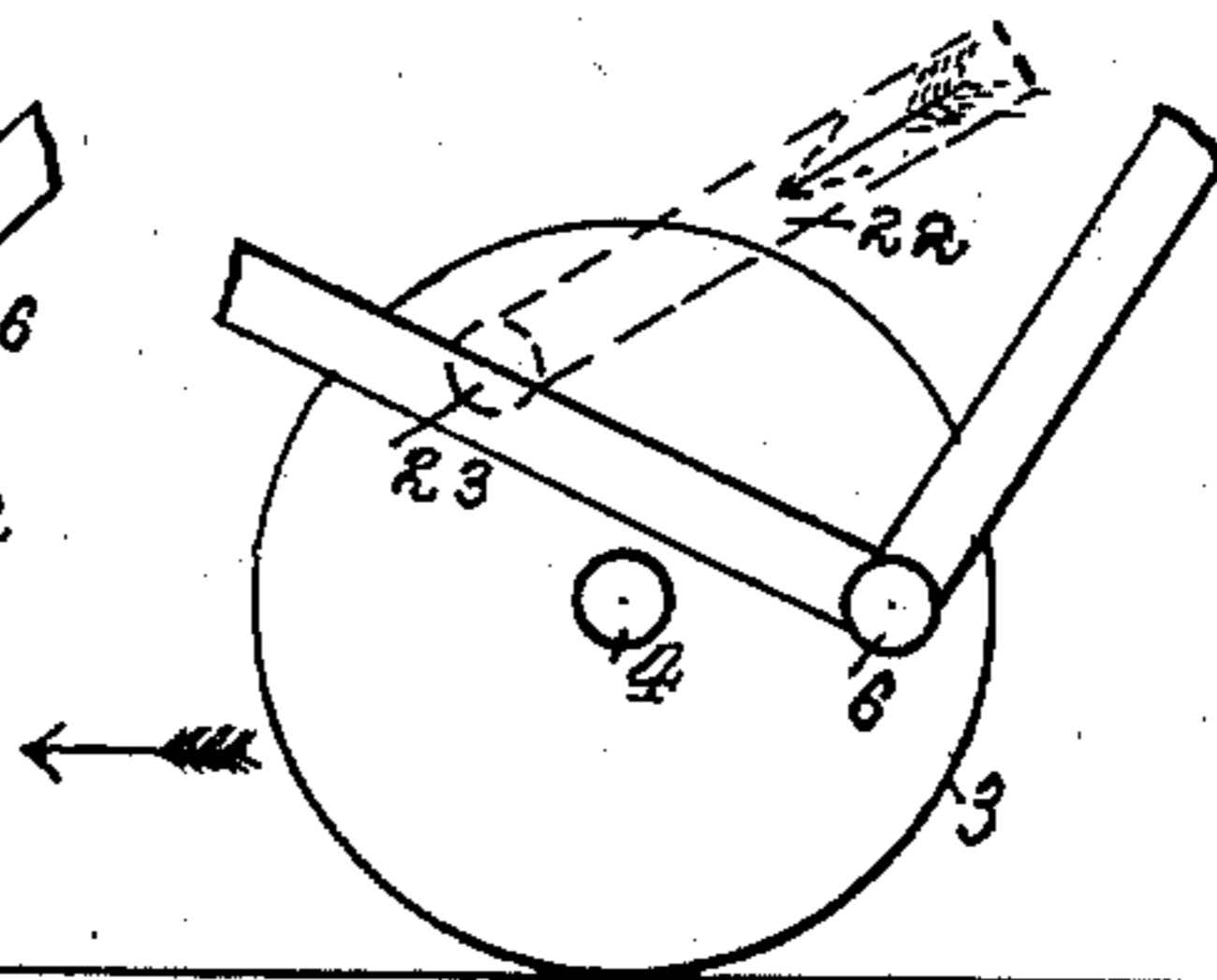


Fig. 5.

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UNITED STATES PATENT OFFICE.

OLIVER M. CAMPBELL, OF PITTSBURG, PENNSYLVANIA.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 671,159, dated April 2, 1901.

Application filed December 19, 1900. Serial No. 40,348. (No model.)

To all whom it may concern:

Be it known that I, OLIVER M. CAMPBELL, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Locomotives; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to locomotives.

The object of my invention is to provide a durable, simple, and effective means for the distribution of the power from the engines upon the driving-wheels of the locomotive. It also provides for the locomotive-engines being readily and easily reversed and the same amount of power given in either direction.

My invention consists, essentially, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use the locomotive, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of one side of a locomotive, showing my invention applied thereto; and Fig. 2 is a like view showing the other side of the same. Figs. 3, 4, and 5 are diagram views of the apparatus.

Like numerals of reference herein indicate like parts in each of the figures of the drawings.

My improved locomotive is shown at 1 and is provided with the ordinary approved boiler 2, which is supported upon and by the driving-wheels 3 3', mounted upon axles 4 4', and such driving-wheels 3 are connected together by means of the driver or connecting-rod 5, which are journaled on crank-pins or trunnions 6 6' on said wheels 3. Mounted upon one side 2' of the boiler 2 are the engines 7 and 8, composed of the cylinders 7' and 8', which are secured to said boiler at an angle of thirty degrees above the horizontal center of the axle 4, preferably of the center driving-wheels 3, and these cylinders 7' and 8' are provided with the usual pistons 9 and 10 therein, which are connected by the piston-rods 9' and 10' with the cross-heads 11 and

12, traveling within the slides 13 and 14, secured on said boiler 2, and connected to said cross-heads 11 12 are the rods 15 16, which are journaled around the trunnion 6 and the center driving-wheel 3. Secured to the other side 2' of the boiler 2, opposite the cylinder 8', and at an angle of thirty degrees from the horizontal center of the axle 4 of the center driving-wheels 3, is the engine 17, composed of the cylinder 17', which is provided with the usual piston 18 therein, connected by a piston-rod 19 with the cross-head 20, traveling in the slides 21, secured on said boiler 2. Connected to the cross-head 20 is the rod 22, which is journaled around a crank-pin or trunnion 23 on the opposite center driving-wheel 3 from the trunnion 6 on the driving-wheel, which trunnion 23 is secured on said wheel 3 one hundred and twenty degrees ahead of the trunnions 6 6' on the driving-wheels 3 3', and a connecting-rod 24 is journaled around said trunnion 23 and around trunnions 23' on the driving-wheels 3', located in a line with said trunnion 23 on the driving-wheel 3.

The operation of my improved locomotive is as follows: When steam is taken in at the upper end of the cylinders 7', 8', and 17' in the usual and well-known manner from the boiler 2, it will act to move the pistons 9, 10, and 18 within such cylinders and through the piston-rods 9', 10', and 19, cross-heads 11, 12, and 20, connecting with the crank-pins or trunnions 6 6' and 23 by means of the rods 15, 16, and 22, will act to turn said driving-wheels 3, and with them the driving-wheels 3', through the medium of the connecting-rods 5 and 24 and so operate to move the locomotive 1. By reason of the cylinders 7', 8', and 17' being mounted at an angle thirty degrees from the horizontal center of the axle 4 of the driving-wheels 3 and only taking steam at the upper ends thereof the weight of the pistons 9, 10, and 18, piston-rods 9', 10', and 19, cross-heads 11, 12, and 20, and rods 15, 16, and 22 is all on the crank-pins 6, 6', and 23, so that the pressure is downward at all times, which will obviate any jerking or pounding and any reverse pressure on the machinery. By means of the crank-pins or trunnions 6 6' on one side of the boiler 2 being attached to the engines 7 and 8 and set

one hundred and twenty degrees from the crank-pin or trunnion 23, attached to the engine 17 on the other side of the boiler 2, the distribution of the power upon the driving-wheels 3 3' is continuous at all times, so that when one of the engines 7, 8, or 17 is just losing power another engine comes to life. The power is equally distributed at all times by the location of the cylinders in their respective places, and the engines 7, 8, and 17 can be readily reversed, thereby giving the same amount of power in either direction of the engines.

Steam delivered from three points in a single revolution has the advantage over the ordinary delivery of steam from two cylinders from four equal points from the fact that you work on expansion and fresh steam at the same time, and it is also better, because the weight of the piston-heads and rods assists in the operations of this device, inasmuch as on the upstroke they must constantly be lifted, and thereby the pressure is always on the same side of the bearing, so overcoming the "knocking" usually found in an engine taking steam at both ends.

While the single engine 17 is shown as being opposite to the engine 8, it is obvious that said engine 17 can be mounted opposite to the engine 7, if desired, and that various modifications and changes in the construction, design, and shape of the various parts of the device may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that my improved manner of attaching the engines to locomotives provides for greatly increasing the power of the engines and the speed of the locomotive. The manner of attaching the engines can be applied to any locomotive regardless of size and when so applied renders the locomotive cheap and simple in its construction and effective and cheaper in its operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a locomotive, the combination with the boiler and driving-wheels, of two engines

connected to a crank-pin on one of said driving-wheels and mounted at an angle to each other and on an angle to the horizontal plane of said driving-wheels, and an engine connected to a crank-pin on the opposite driving-wheel and mounted at an angle to the horizontal plane of said driving-wheels.

2. In a locomotive, the combination with the boiler and driving-wheels, of two engines connected to a crank-pin on one of said driving-wheels and mounted at an angle to each other and on an angle to the horizontal plane of said driving-wheels, and an engine connected to a crank-pin on the opposite driving-wheel and located ahead of the crank-pin on the driving-wheel for the two engines, said engine being mounted at an angle to the horizontal plane of said driving-wheels.

3. In a locomotive, the combination with the boiler and driving-wheels, of two engines connected to a crank-pin on one of said driving-wheels and mounted on one side of said boiler at an angle to each other and above the horizontal plane of the driving-wheels thirty degrees, and an engine connected to a crank-pin on the opposite driving-wheel from the two engines, said engine being mounted on the boiler at an angle to and above the horizontal plane of the driving-wheels.

4. In a locomotive, the combination with the boiler and driving-wheels, of two engines connected to a crank-pin on one of said driving-wheels and mounted on one side of said boiler at an angle to each other and above the horizontal plane of the driving-wheels, and an engine connected to a crank-pin on the opposite driving-wheel for the two engines, said engine being connected one hundred and twenty degrees ahead of the double-engine connection and mounted on said boiler at an angle to and above the horizontal plane of the driving-wheels.

In testimony whereof I, the said OLIVER M. CAMPBELL, have hereunto set my hand.

OLIVER M. CAMPBELL.

Witnesses:

FRANK SHEEHAN,
J. N. COOKE.