

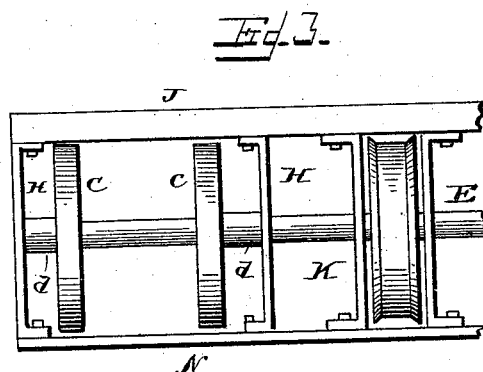
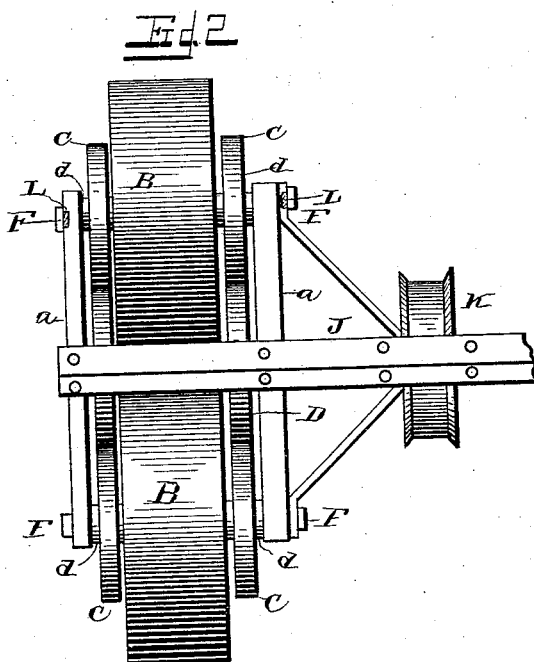
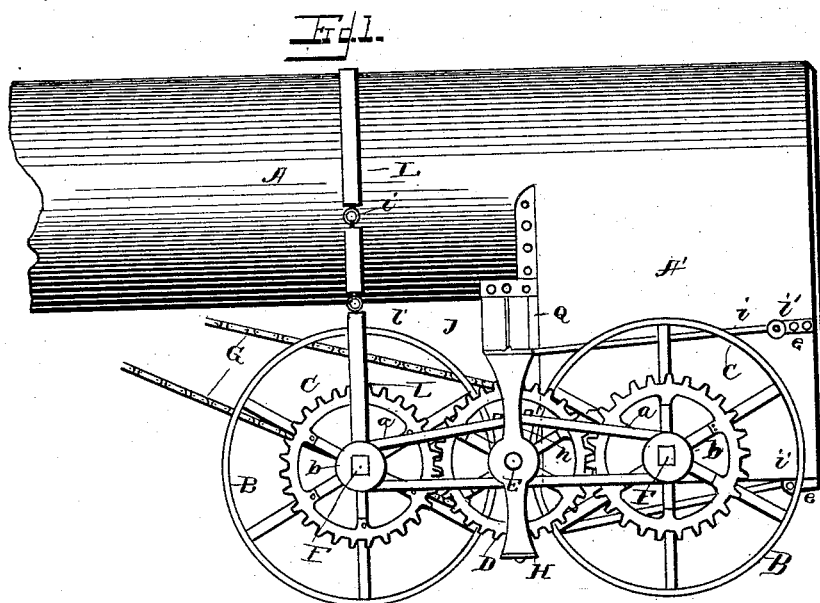
(No Model.)

2 Sheets—Sheet 1.

J. M. SMELSER.  
TRACTION ENGINE.

No. 455,889.

Patented July 14, 1891.



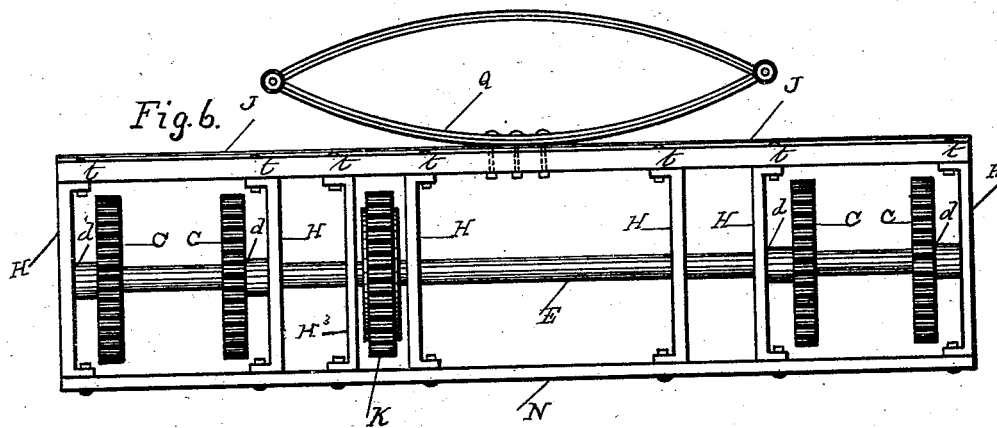
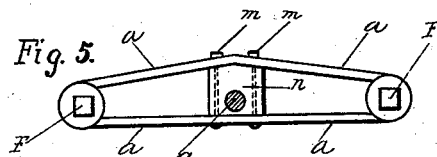
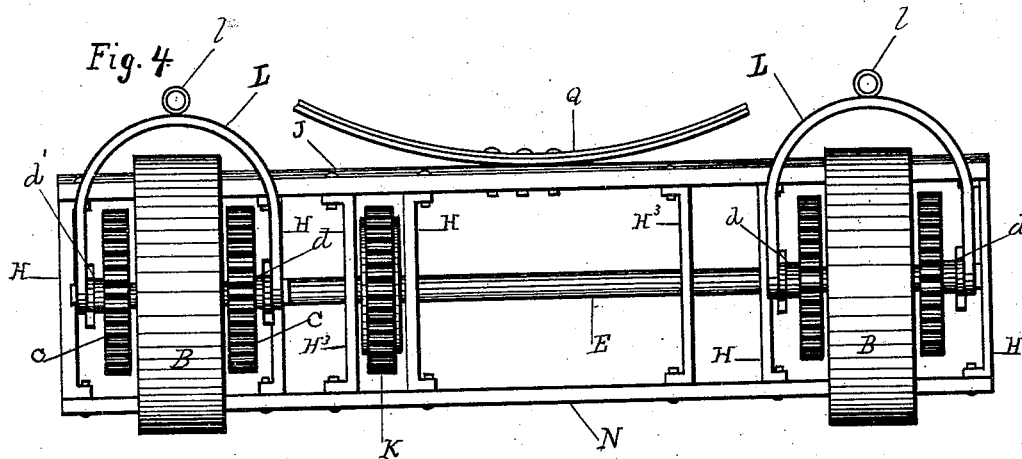
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# UNITED STATES PATENT OFFICE.

JAMES M. SMELSER, OF RICHMOND, INDIANA.

## TRACTION-ENGINE.

**SPECIFICATION** forming part of Letters Patent No. 455,889, dated July 14, 1891.

Application filed March 4, 1891. Serial No. 383,804. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. SMELSER, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Traction-Engines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of engines known as "traction-engines."

The object of my invention is to provide means to enable the bearings which support the rear end of the boiler and its attachments to have an oscillating movement vertically.

My invention consists in the devices herein described and claimed, by which an oscillating motion is allowed in the supporting-frame of a traction-engine.

In the drawings, Figure 1 is a side elevation of my improvement. Fig. 2 is a top plan view of the cross-sill driving-wheels and ground-wheels and their connections on one side of the engine. Figs. 3 and 6 are rear elevations of the cross-frame supporting the rear end of the boiler and its attachments, driving-wheels, and the shaft on which they are mounted, the bearings of the shaft, the sprocket-wheel which operates the shaft, and the cross-sill on which the spring is mounted which supports the boiler. Fig. 4, Sheet 2, is a rear end elevation showing the driving-shaft, sprocket-wheel, driving-wheels, and ground-wheels, the cross-sill and its supports, also the hoop-frame which secures the front portion of the boiler to the carriage. Fig. 5 is a side elevation of the oscillating frame and the head-block on which it is permitted an oscillating motion vertically and the shaft on which it is supported.

In the drawings, A represents the cylindrical portion of the boiler of a traction-engine, and A' the rear end and fire-box.

B B represent the ground-wheels, and C C are spur-gear-wheels, smaller in diameter than the ground-wheels, to the arms of which they are rigidly attached, having a common center.

An intermediate spur-wheel D meshes into and operates the spur-gear-wheels C C, being centrally between them, their centers being in a horizontal plane. The intermediate wheel D is rigidly attached to a horizontal shaft or axle E, the journal of which has its bearing in a vertical standard H, which forms the end of the frame which supports the cross-sill J. The standard H is provided with lugs or projections on its inner surface to support the upper and lower bars *a a a a* of a truss-frame, which frame is supported at either end by the hub of the ground-wheel. The center of the truss-frame is attached to a head-block *n*, and has screw-bolts *m m* connecting the upper and lower bars *a a* on each side of the head-block. The head-block *n* sits on a sleeve *d'*, which projects from standard H, and is the support of the oscillating truss-frame *a a a a*. The standard H is shouldered at right angles at each end and receives and sustains the cross-sill J, to which it is secured by a screw-bolt at its upper end, while its lower end is similarly attached to the horizontal bar N, which extends parallel with the cross-sill J, and is secured to it at the opposite end by a vertical standard H in the same manner as above described.

A series of vertical standards H H H H connect the cross-sill J and the cross-bar N at intervals, all of them serving as journal-bearings for the axle-shaft E, which carries a sprocket-wheel K, which is placed thereon at a point parallel with the fellow sprocket-wheel in the driving-shaft of the engine, as shown by the open-link chain G, Fig. 1, which propels the axle-shaft E, carrying the wheel D, which in turn gives motion to the spur-gear-wheels C C and the ground-wheels B B, making the whole locomotive.

A supporting-spring Q is placed under the boiler and on the top surface of the cross-sill J, which sustains the weight of the boiler and its attachments. The upper surface of the cross-sill J is beveled, so as to form a rib in the longitudinal center, and the under side of the spring Q is recessed on its under surface to receive it. The screw-bolts *t t t t t*, which secure the flanges of the vertical standards H H H to the cross-sill J, are inserted near the thinner edges of the sill J, and their heads are below the plane of the rib.

A curved bar  $L'$  extends over the boiler in front of the fire-box connected on each side of the boiler to a barrel-spring  $M$  by a ring  $l$ , while the lower end of the barrel-spring is  
 5 connected by a similar ring to the upper part of a hoop-frame  $L$  by a ring  $l'$ . The legs of the hoop at their lower ends are secured to the front end of the truss-frame  $a a a a$ . This arrangement by means of the barrel-spring  
 10 permits a slight elevation of the front end of the boiler, which is restrained by the barrel-spring.

Braces  $i i$ , jointed to lugs  $e e$  at  $i' i'$ , extend forward from the rear end of the fire-box, and  
 15 are provided with jointed attachments to the top and bottom ends of the vertical standard  $H^8$ . The lugs  $e e$  are secured to the fire-box in a suitable manner.

An elliptical or other spring  $Q$  is mounted  
 20 upon the cross-sill  $J$  to receive the weight of the boiler, if desired.

The spur gear-wheels  $C C$  are firmly attached to the spokes of the ground-wheels  $B B$  and operate them. They are shown in the  
 25 drawings, Figs. 3 and 4, as being on both sides of the ground-wheels; but in practice

they may be attached to the outside or inside of the ground-wheels, as desired, or they may be attached to both sides, as shown. Sleeves  $d d d d$  are affixed to the standards  $H H H H$ , 30 which support the head-block  $n$ , and with it the truss-frame  $a a a a$ .

Having thus fully described my said improvement, what I claim as my invention, and desire to secure by Letters Patent, is— 35

1. In a traction-engine having two pairs of ground-wheels, the cross-sill  $J$ , standards  $H H H H$ , provided with sleeves  $d d d d$ , the frame  $a a a a$ , and head-block  $n$ , constructed and operating substantially in the manner 40 and for the purpose set forth.

2. In combination with the sill  $J$ , standards  $H H H H$ , and head-block  $n$ , the shaft  $E$ , carrying sprocket-wheel  $K$ , the wheels  $C C$  and  $D$ , and ground-wheels  $B B B B$ , as and 45 for the purpose herein set forth and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES M. SMELSER.

Witnesses:

W. T. DENNIS,  
 I. C. DOAN.