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PATENTED JULY 4, 1905.

F. R. STEARNS & A. D. SKINNER.

TRACTION ENGINE.

APPLICATION FILED MAR. 6, 1905.

2 SHEETS—SHEET 1.

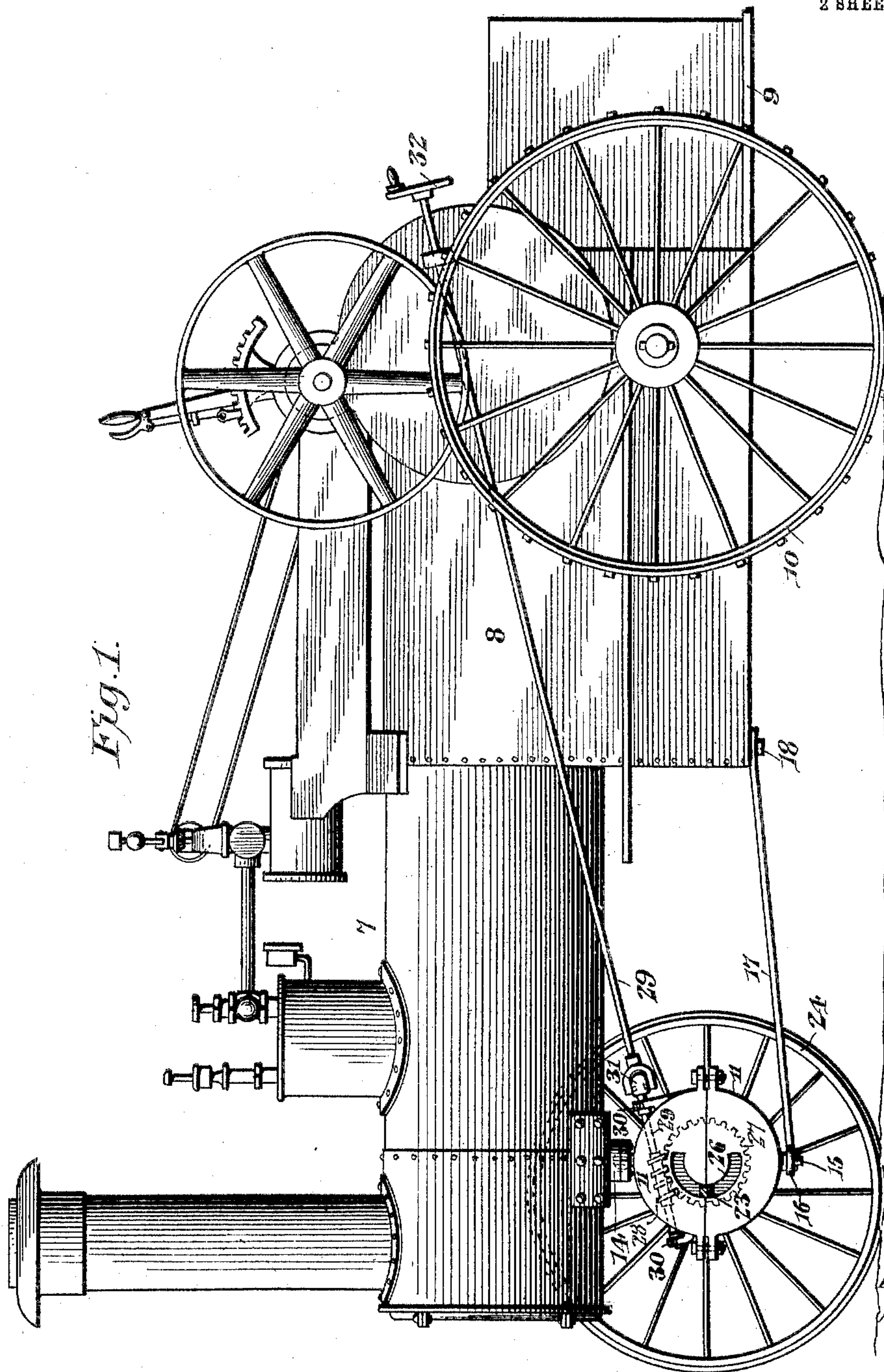


Fig. 1.

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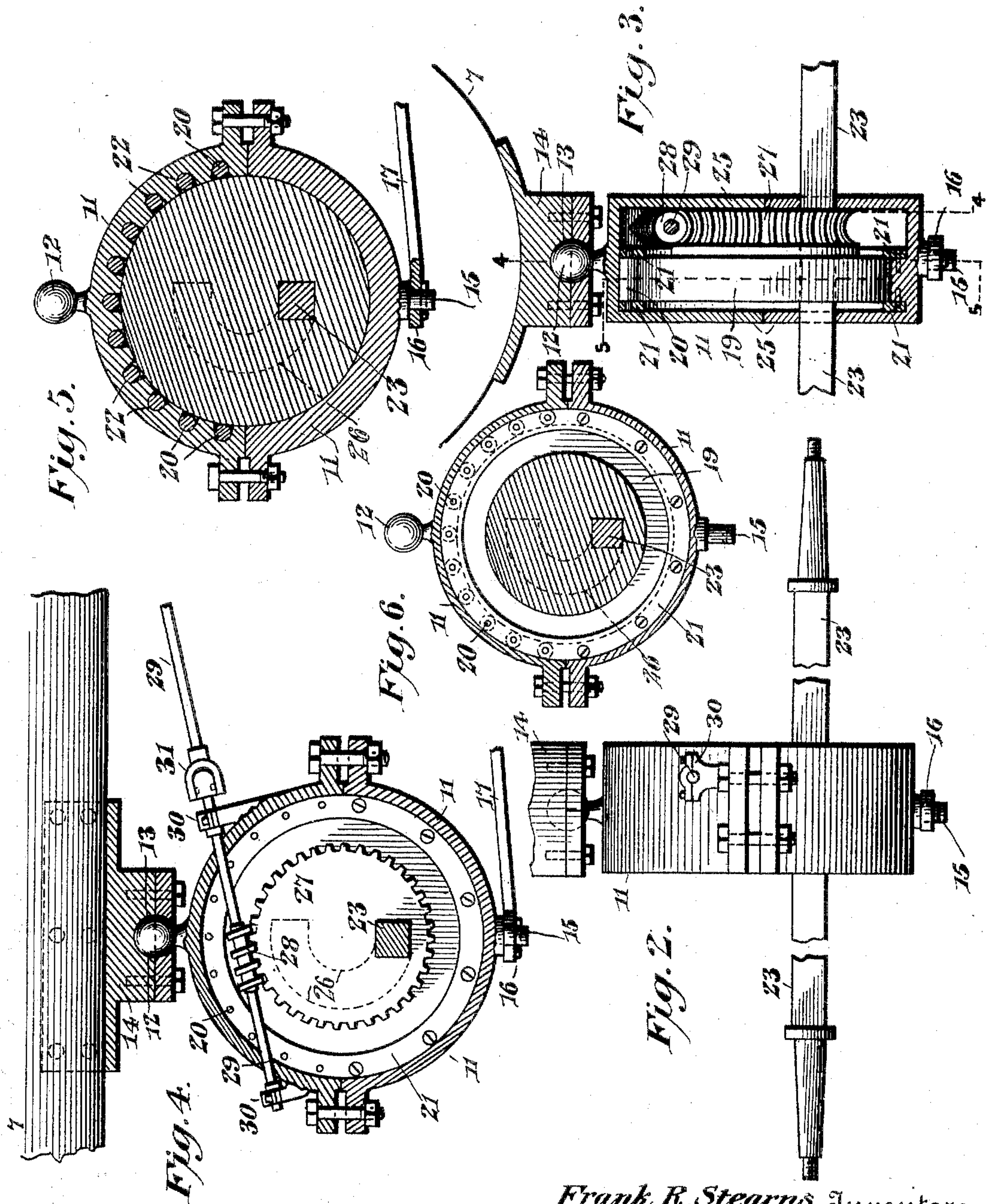
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

FRANK R. STEARNS AND ADO D. SKINNER, OF GRAND FORKS, NORTH DAKOTA.

## TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 794,055, dated July 4, 1905.

Application filed March 6, 1905. Serial No. 248,668.

*To all whom it may concern:*

Be it known that we, FRANK R. STEARNS and ADO D. SKINNER, citizens of the United States, residing at Grand Forks, in the county of Grand Forks and State of North Dakota, have invented a new and useful Traction-Engine, of which the following is a specification.

The present invention relates particularly to means for leveling the boilers of portable or traction engines either when the same are running up or down hills or when stationary upon uneven ground.

The principal object is to provide novel means of the above character and of a simple nature whereby an engineer can conveniently elevate or lower one end of the boiler upon the axle or other support for such end, so that said boiler can be kept level, thus keeping the sheets and the tubes at all times submerged and avoiding the danger of burning the same.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a well-known type of traction-engine, showing the new leveling means forming part of the same. Fig. 2 is an end elevation of said means, shown on an enlarged scale. Fig. 3 is a sectional view therethrough. Fig. 4 is another sectional view, taken on the line 4 4 of Fig. 3. Fig. 5 is still another sectional view, taken on the line 5 5 of Fig. 3. Fig. 6 is a detail view showing the casing portion of the box in section.

Similar reference-numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated a traction-engine is shown which includes a boiler 7, having a fire-box 8 and a footboard 9, the fire-box end of the boiler being supported on suitable wheels 10 in any well-known manner. The specific type of engine or boiler is not particularly important, as the improvements are applicable to many different makes. These improvements in the present structure are as follows: A journal-box in the form of a sectional ring 11 has at its upper end a ball 12, which is received in the socket 13 of a head 14, secured to the under front portion

of the boiler. The lower end of the journal-box is provided with a depending pivot 15, journaled in the terminal 16 of a brace bar or rod 17, that is secured at its rear end to the fire-box, as shown at 18. The journal-box, therefore, has a pivotal movement on a substantially vertical or upright axis. Rotatably mounted in said journal-box is a leveling member 19 in the form of a disk that thus has a substantially horizontal axis of rotation, the upper portion of this disk bearing against rollers 20, which reduce the friction to a minimum. The rollers 20 are journaled in suitable retaining-rings 21, secured in the box, and are seated in recesses 22, formed in the upper section of said box. Secured eccentrically in the leveling disk or member is the supporting means for this end of the boiler, said means comprising an axle 23, extending transversely through the member and through the journal-box and having the usual ground-wheels 24 mounted thereon. The ends of the journal-box are closed by casing-walls 25, and said walls are provided with curved slots 26, which allow the up-and-down movement of the axle, these slots extending to any distance desired, but preferably, perhaps, being semicircular in order that the closure can move between a lowermost and an uppermost position. Secured to one side of the leveling-disk and located within the box is a gear 27, having worm-teeth, and meshing with these gears is a worm 28, carried by a shaft 29, that extends through the journal-box and has bearings 30 thereon. The shaft 29 is composed of sections connected by a universal joint 31, and said shaft extends rearwardly to a position above the footboard 9, where a suitable hand-wheel 32 is secured thereto, which is thus in convenient relation to the engineer.

Under ordinary condition, or when the boiler is disposed on level ground, the shaft 29 will occupy a position centrally between the limits of its movement; but if the engine is running uphill or is on uneven ground with the front of the boiler uppermost the engineer by turning the shaft 29 revolves the worm, and consequently the worm-wheel engaged thereby, so as to turn the leveling member and carry the axle nearer the boiler until said



boiler assumes a horizontal position. On the other hand, when the rear portion of the boiler is higher it is necessary to reverse the movement of the actuating-shaft 29 to carry the axle away from the boiler, thus raising the end of the boiler upon its support. At the same time the structure does not at all interfere with the turning movement of the axle in guiding or moving the engine, as the journaling of the box 11 on an upright axis permits the usual swinging movement of the axle 23. It will thus be seen that simple means are provided for leveling the boiler, thus keeping the tubes and sheets properly submerged and avoiding the danger of burning out the same. Moreover, the mechanism can be operated with ease and expedition as the engine travels and ascends or descends hills, as well as when said engine is at a standstill.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a structure of the class described, the combination with a boiler, of means for leveling the same, said means including a boiler-support, and means connecting the boiler and support for effecting the upright oscillatory movement thereof bodily toward and from the boiler and in a direction longitudinally of said boiler.

2. In a structure of the class described, the combination with a boiler, of means for leveling the same, said means including a boiler-support comprising an axle and ground-wheels, and means interposed between the boiler and axle and connecting the same for effecting an upright oscillatory movement of said axle with respect to the boiler.

3. In a structure of the class described, the combination with a boiler, of means for leveling the same, said means including a boiler-support, and means for effecting an eccentric movement of the support with respect to the boiler.

4. In a structure of the class described, the combination with a boiler, of an axle for said boiler having an eccentric movement toward and from the same.

5. In a structure of the class described, the combination with a boiler, of a rotatable leveling member journaled on the boiler and on a substantially horizontal axis, and an axle eccentrically carried by the member.

6. In a structure of the class described, the

combination with a boiler, of a journal-box secured to the under side of the boiler, a rotatable leveling member journaled in the box and including a substantially horizontal axis of rotation, an axle eccentrically carried by the member, and means for rotating the member.

7. In a structure of the class described, the combination with a boiler, of a rotatable leveling member journaled on the boiler and on a substantially horizontal axis, an axle eccentrically carried by the member, worm-teeth mounted on said member, and an actuating-shaft having a worm meshing with the worm-teeth.

8. In a structure of the class described, the combination with a boiler, of an axle, and means for effecting an eccentric movement of the axle toward and from the boiler and permitting said axle to swing on an upright axis.

9. In a structure of the class described, the combination with a boiler, of a rotatable leveling member journaled on the boiler on a substantially horizontal axis and also having a swinging movement on a substantially upright axis, and an axle eccentrically mounted in the leveling member.

10. In a structure of the class described, the combination with a boiler, of a journal-box pivotally mounted on the boiler and having a substantially upright axis, a leveling member journaled in the box and having a substantially horizontal axis, and an axle eccentrically carried by the member.

11. In a structure of the class described, the combination with a boiler, of a journal-box, a ball-and-socket joint between the upper end of the journal-box and the boiler, a brace connecting the lower end of the journal-box and boiler, a leveling member comprising a disk journaled in the box, an axle eccentrically carried by the disk, a worm-toothed gear connected to the disk, and an actuating-shaft having a worm meshing with the gear.

12. In a structure of the class described, the combination with a boiler, of an axle-box having a ball-and-socket joint at its upper end with the boiler, a brace connected to the boiler and having a journal connection with the lower end of the box, a leveling-disk arranged in the box, roller-bearings for said disk, a shaft eccentrically mounted in the disk, casing-walls for the ends of the box, having curved slots in which the axle operates, a gear connected to the disk and located in the box, and a shaft extending into the box and having a worm meshing with the gear.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANK R. STEARNS.  
ADO D. SKINNER.

Witnesses:

H. M. ERICKSON,  
H. BENDEKE.