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E. HUBER & T. D. ULRICH.
SUPERHEATER FOR TRACTION ENGINES.

APPLICATION FILED AUG. 4, 1904.

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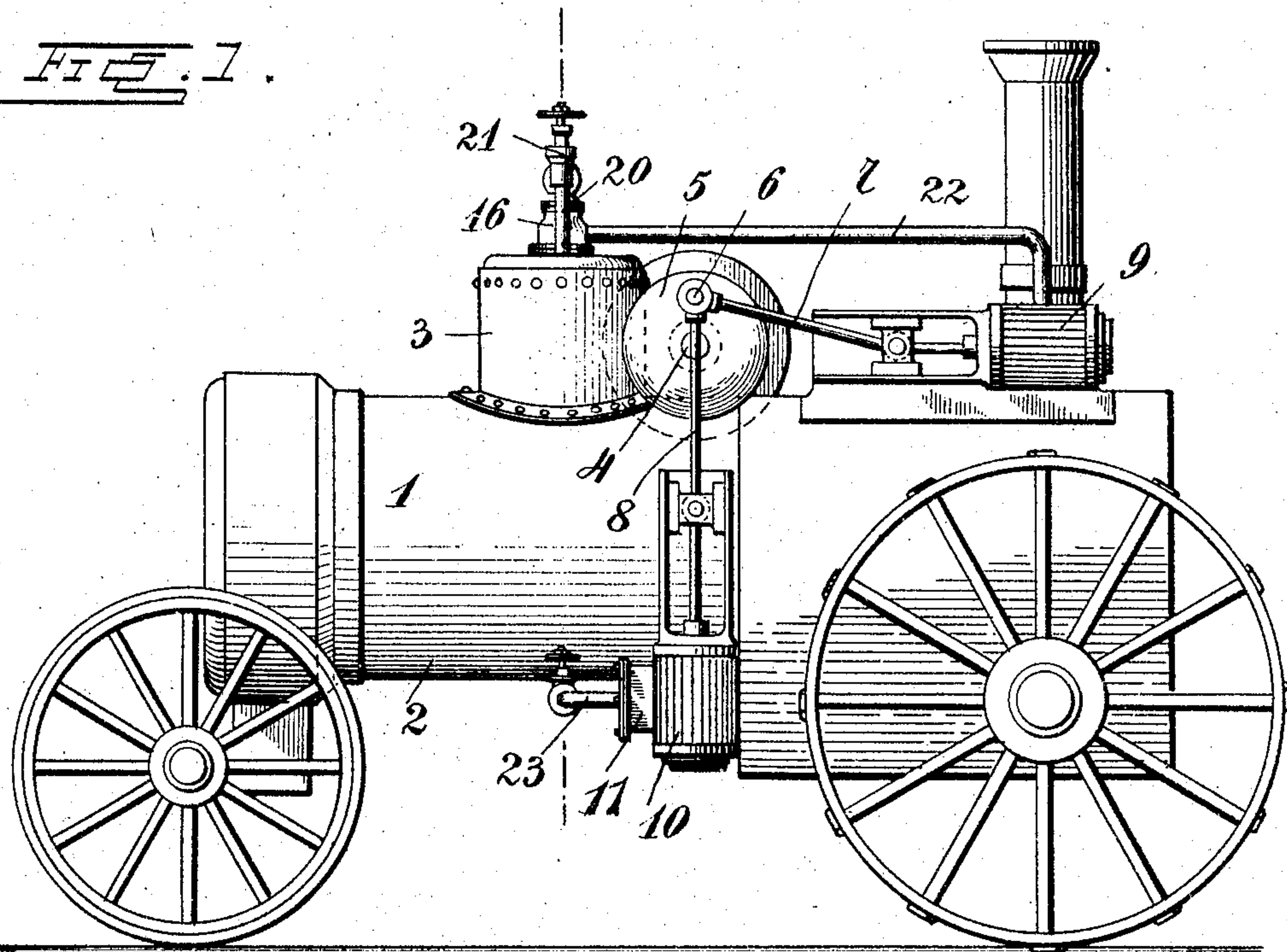
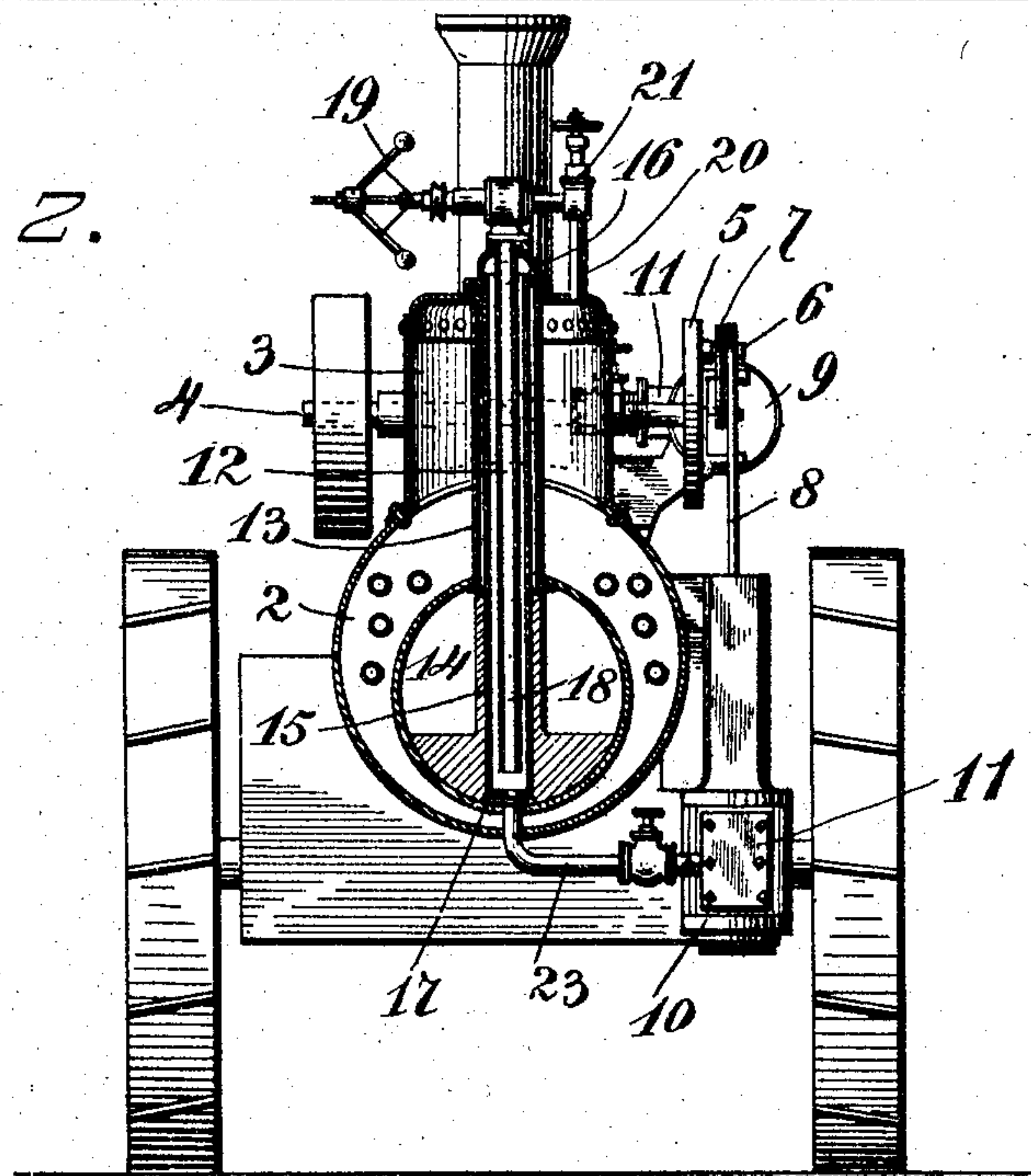


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD HUBER AND TOMEY D. ULRICH, OF MARION, OHIO, ASSIGNORS
TO THE HUBER MANUFACTURING COMPANY, OF MARION, OHIO, A
CORPORATION OF OHIO.

SUPERHEATER FOR TRACTION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 778,315, dated December 27, 1904.

Application filed August 4, 1904. Serial No. 219,510.

To all whom it may concern:

Be it known that we, EDWARD HUBER and TOMEY D. ULRICH, citizens of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Superheaters for Traction-Engines; and we 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.

Our invention relates to improvements in traction-engines, and more particularly to the manner of mounting the engines upon the boiler and the steam connections.

The object of our invention is to improve and simplify the construction and operation of machines of this character, and thereby render them more durable and efficient in use.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of a traction-engine embodying our invention. Fig. 2 is a vertical transverse sectional view through the same.

Referring to the drawings by numeral, 1 denotes a traction-engine, which may be of any well-known or approved construction and, as shown, comprises a horizontally-disposed steam-boiler 2, suitably mounted upon supporting-wheels and having a steam-dome 3. Mounted transversely upon the top of the boiler in rear of its steam-dome is a driving or power shaft 4, which has upon one of its ends a crank-disk 5, which is provided with a crank-pin or wrist-pin 6. To said wrist-pin 6 are connected the pitmen or connecting rods 7 and 8 of two steam-engines 9 and 10, which latter are disposed in planes at right angles to each other. The engine 9 has its cylinder disposed in a horizontal plane and is suitably mounted upon the upper rear portion of the boiler. The engine 10 has its cylinder disposed in a vertical plane and is suit-

ably mounted upon the lower central portion of the boiler below the crank-disk 5. By mounting the engines in horizontal and vertical planes and connecting them to the same crank or wrist pin it will be seen that the latter will never be on a dead-center, since while the piston of one of the engines is at one of the ends of its stroke the piston of the other engine will be at some intermediate point in its stroke.

The engines 9 and 10 may be of any desired form and construction, and, as illustrated, each is provided with a steam-chest or steam-box 11, which is connected, as clearly shown in Fig. 2 of the drawings, to a steam-superheating device 12. Said superheater comprises a tube 13, extending vertically through the steam-dome 3 and upper portion of the boiler 2 and opening into the fire-space or fire-flue 14 of the boiler. Spaced concentrically within said tube 13 is a vertical steam pipe or tube 15, which has its upper end secured in a coupling or connection 16, which closes the upper end of the tube 13. The lower end of the pipe 15, which extends to the bottom of the fire space or flue 14, is closed, as shown at 17. Spaced concentrically within the pipe 15 is a second steam-pipe 18, which has its upper end projecting through the coupling 16 and its lower open end terminating a short distance above the bottom or end 17 of the pipe 15. Upon the upper projecting end of the pipe 18 is mounted a governor 19 of any desired form or construction, which is in connection with the interior of the steam-dome 3 through a right-angular pipe connection 20, in which a suitable throttle-valve 21 is located. The steam-chest 11 of the horizontally-disposed engine 9 is connected by a steam-pipe 22 to the coupling 16, and the steam-chest of the vertically-disposed engine 10 is connected by a steam-pipe 23 to the bottom or lower end 17 of the pipe or tube 15.

The passage of the steam from the boiler to the engines will be readily seen upon reference to Fig. 2 of the drawings. From the steam-dome 3 the steam passes through the pipe 20,

the throttle-valve 21, the valve of the governor 19, and down the inner pipe 18 of the superheater. From the pipe 18 it passes into the pipe 15, the lower portion of which within
 5 the fire space or flue 14 is surrounded by a casting which when the furnace is fired is kept red-hot to effectively superheat the steam. The horizontally-disposed engine 9 takes its steam from the upper end of the pipe 15
 10 through the pipe 22, and the vertically-disposed engine 10 takes its steam from the lower end of said pipe 15 through the pipe 23.

From the foregoing description, taken in connection with the accompanying drawings,
 15 the construction and operation of the invention will be readily understood without requiring more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be
 20 resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. The combination with a horizontally-disposed steam-boiler and a vertically-disposed steam-superheater, of an engine disposed horizontally upon said boiler and connected to one
 30 end of said superheater, and an engine disposed vertically upon said boiler and connected to the opposite end of said superheater, substantially as described.

2. In a traction-engine, the combination with
 35 a horizontally-disposed steam-boiler having a vertically-disposed steam-superheater mounted therein, of an engine mounted horizontally upon the upper portion of said boiler, and an engine mounted vertically upon the lower portion of said boiler, a steam connection between
 40 the upper end of said superheater and said upper horizontal engine, and a steam connection between the lower end of said superheater and said lower vertical engine, substantially
 45 as described.

3. In a traction-engine, the combination with a boiler having a steam-space and a fire-space, of a steam-superheater comprising outer and

inner tubes extending through said steam-space and into said fire-space of said boiler, 50
 said outer tube having its ends closed and said inner tube having one of its ends opening adjacent to one of the closed ends of said outer tube and its other end projecting through the other closed end of said outer tube, a steam 55
 connection between the projecting end of said inner tube and the steam-space of said boiler, an engine mounted upon the upper portion of said boiler and connected to the upper end of said superheater, and an engine mounted upon 60
 the lower portion of said boiler and connected to the lower end of said superheater, substantially as described.

4. In a traction-engine, the combination with a boiler having a steam-space and a fire-space, 65
 of a steam-superheater comprising outer and inner tubes extending through said steam-space and into said fire-space of said boiler, said outer tube having its ends closed and said inner tube having one of its ends opening ad- 70
 jacent to one of the closed ends of said outer tube and its other end projecting through the other closed end of said outer tube, a steam connection between the projecting end of said inner tube and the steam-space of said boiler, 75
 a throttle-valve in said steam connection, a governor-valve in said steam connection, a horizontally-disposed engine mounted upon the upper portion of said boiler and connected to the upper portion of said superheater, a ver- 80
 tically-disposed engine mounted upon the lower portion of said boiler and connected to the lower end of said superheater, a shaft mounted upon said boiler having a crank or wrist pin, and connections between said en- 85
 gines and said crank or wrist pin, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

EDWARD HUBER.
 TOMEY D. ULRICH.

Witnesses:

JOHN J. CRAWLEY,
 P. E. BURKE.