No. 706,191. Patented Aug. 5, 1902.

S. S., W. S. & R. L. MORTON & W. & W. H. EVANS.

TRACTION ENGINE.

(Application filed Sept. 26, 1901.)

(No Model.)

Fig. 1.

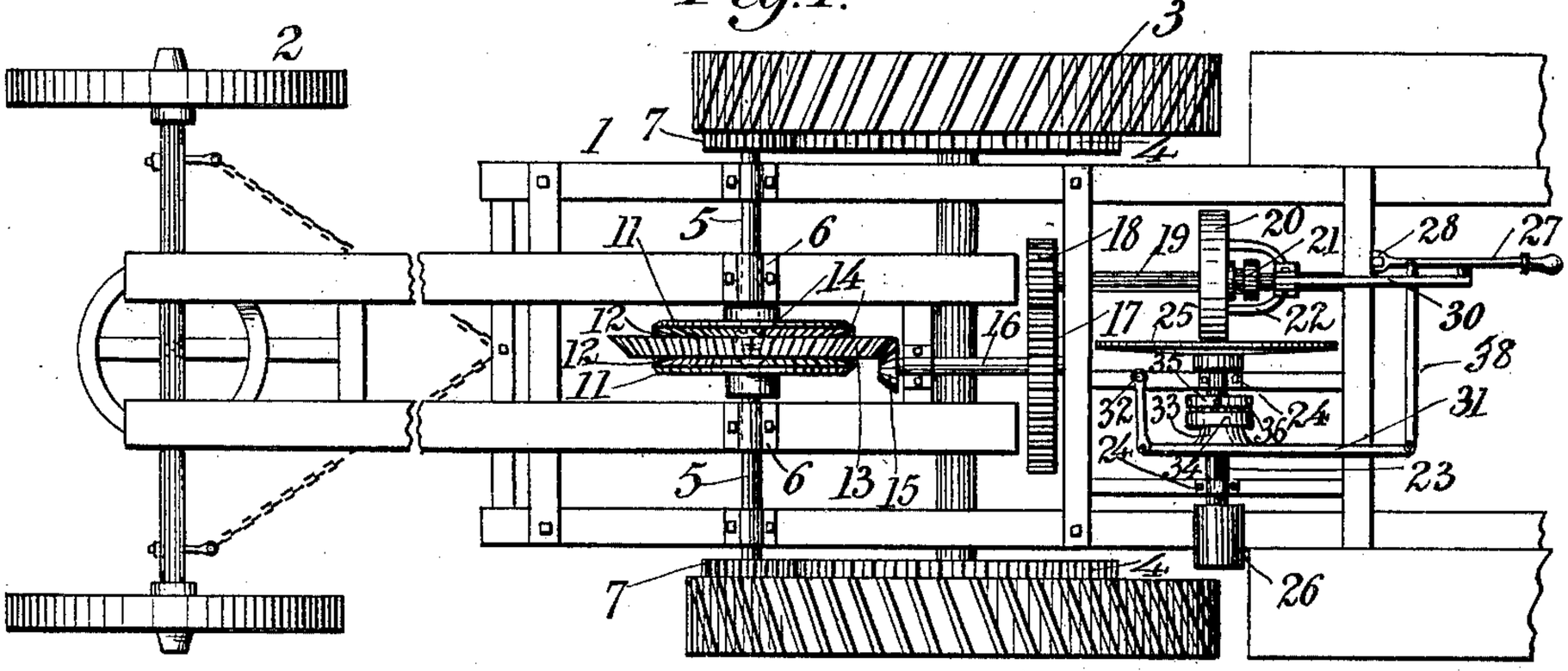


Fig. 2.

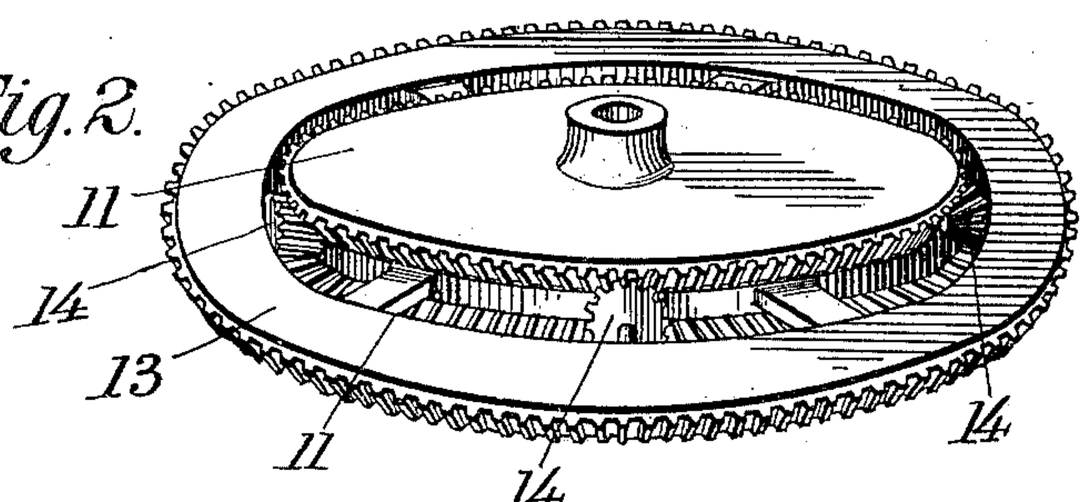


Fig. 3.

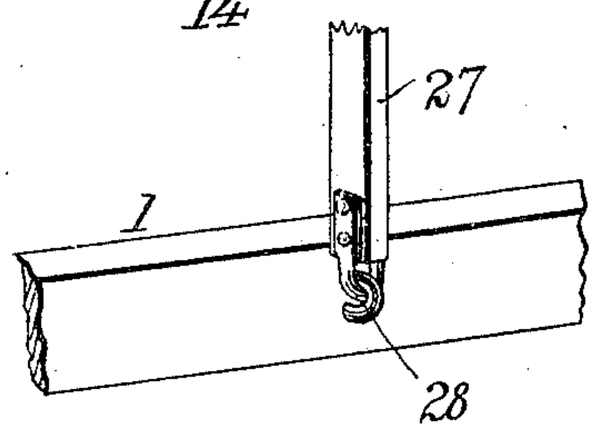
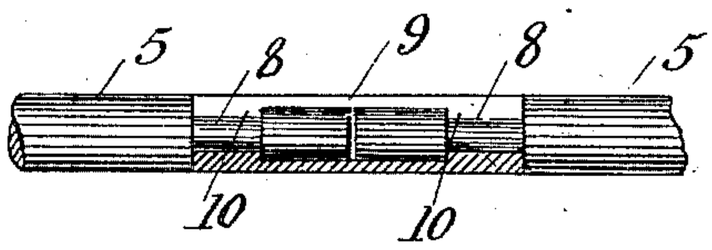


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL S. MORTON, WALTER S. MORTON, ROBERT L. MORTON, WILLIAM EVANS, AND WILLIAM H. EVANS, OF YORK, PENNSYLVANIA, ASSIGNORS, BY MESNE ASSIGNMENTS, TO MORTON MANUFACTURING COMPANY.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 706,191, dated August 5, 1902.

Application filed September 26, 1901. Serial No. 76,688. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL S. MORTON, WALTER S. MORTON, ROBERT L. MORTON, WILLIAM EVANS, and WILLIAM H. EVANS, citizens of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in 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.

The invention relates to traction-engines.

The object of the invention is to provide a simple, durable, and comparatively inexpensive form of gearing, whereby the power from the engine may be communicated to the drive-wheels and the operator with a single operating-lever be permitted to change the direction of movement of the traction-engine, vary its rate of speed in either direction, and start and stop the traction-engine without stopping the engine.

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

In the accompanying drawings, Figure 1 is a plan view of that much of the frame of a traction-engine necessary to illustrate the application of our invention. Fig. 2 is a detail perspective view of the compensating gearing. Fig. 3 is a detail view illustrating the manner of connecting the operating-lever to the frame of the machine. Fig. 4 is a detail view illustrating the manner of connecting the inner ends of the drive-shaft.

In the drawings, 1 denotes the framework of the traction-engine, 2 the front steering-wheels, and 3 the rear traction-wheels. As the present invention relates solely to the manner of driving the traction-wheels, the description will be confined simply to the mechanism employed for that purpose.

4 denotes gear-wheels fixed to the traction-wheels 3, and 5 denotes drive-shafts journaled in bearings 6 and provided with pinions 7 at their outer ends, which mesh with and receive motion from the gear-wheels 4. The inner ends of these shafts closely approach each other and are provided with annular grooves 8, which are connected together by a split sleeve 9, having annular inwardly-projecting flange 10 to engage said grooves, and thus said shafts are held against endwise movement one with respect to the other.

11 denotes gear-wheels fixed to the inner ends of the shafts at a point a slight distance to one side of the ends of the sleeve and are provided with opposed teeth 12, and 13 denotes a compensating gear loosely journaled upon said sleeve between said gears 11 and provided with loosely-journaled radial pinions 14, which mesh with the teeth 12 of the gears 11. By placing this gear 13 upon the sleeve said sleeve is held close and is prevented from having its flanges spread out of engagement with the grooves at the inner ends of the shafts 5. The beveled teeth of the gear 13 mesh with a pinion 15 on a suitably-journaled shaft 16, and this shaft 16 has provided at its opposite end a gear-wheel 17, which meshes with a pinion 18 on a suitably-journaled shaft 19. Splined on the shaft 19 to rotate therewith and slide longitudinally thereon is a friction-wheel 20, which is provided with a grooved hub 21, to which is attached a shipper 22.

23 denotes the power-shaft, journaled in bearings 24 to have a slight longitudinal movement therein and provided at one end with a friction-disk 25, which is adapted to be brought into frictional contact with the wheel 20, and provided at its opposite end with a pulley 26, which is connected by and receives movement from the engine. (Not shown.)

27 denotes an operating-lever the lower end of which has a universal connection at 28 with the frame of the traction-engine, so as to permit of the free movement of this lever forward or backward, sidewise, or obliquely with respect to the engine. This lever is pivotally connected to the shipper 22 by a link 30, so that by moving it forwardly or back-

wardly the friction-wheel 20 will be moved across the face of the friction-disk 25 to change the direction of movement of the traction-engine and also to vary the speed thereof.

31 denotes a lever pivoted to a stud 32 and straddling the shaft 23 and provided with a head 33, which bears against a loose collar 34, mounted upon the shaft 23. Confined between this collar and a collar 35, fixed to said shaft 23, is a ball-bearing 36. The rear end of the lever 31 is pivotally connected by a link 38 to the operating-lever 27.

In operation, owing to the compensating gear 13, the traction-wheels will be free to slip in making turns without interfering with the rotation of the shaft 16 and the gearing by which it is actuated. It will also be observed that the operator by manipulating the lever 27 has complete control of the direction of movement and speed of the traction-engine. If he moves the lever in a lateral direction, the shaft 23 will be moved longitudinally to bring the disk 25 into engagement with the friction-wheel 20, and by moving the lever in a longitudinal direction the wheel 20 will be moved along the face of the disk to vary the direction of movement of the traction-engine or to vary the speed thereof. A single movement in an oblique direction will throw the drive-gear into action as well as start the engine forward or backward at the desired rate of speed, according to the direction in which the lever is moved diagonally with respect to the longitudinal center line of the traction-engine.

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

Various changes in the form, proportion, and details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

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

1. The combination with a power-shaft and a driven shaft, the former having a longitudinal movement in its bearing, of a friction-wheel and a friction-disk, the one secured to the power-shaft and the other to the driven shaft, a collar fixedly secured to the power-shaft, a collar loosely secured to the power-shaft, and having antifriction-rollers arranged between them, a universally-movable lever, a link connecting the lever to the friction-wheel for moving it longitudinally upon its shaft across the face of the friction-disk, a pivoted lever adapted to engage the movable collar to force it toward the fixed collar, and a link between the pivoted lever and the universally-movable lever, substantially as set forth.

2. The combination with a two-part drive-shaft, the ends of which are arranged in close relation and are provided with beveled gears, a coupling-sleeve for connecting the ends of said shaft, a gear-wheel, the hub of which is loosely mounted upon said coupling-sleeve, and pinions journaled in said gear-wheel and in mesh with the gears carried by the shafts, substantially as set forth.

3. The combination with a two-part drive-shaft, the ends of which are arranged in close relation and are provided with annular grooves and with beveled gears, a split coupling-sleeve having annular inwardly-projecting flanges to engage said grooves, a gear-wheel, the hub of which is loosely mounted upon said coupling-sleeve to hold the same closed around the ends of the shafts, and pinions journaled in said gear-wheel and in mesh with the gears carried by the shafts, substantially as set forth.

4. In combination, gearing for the purpose described, comprising a power-shaft and a shaft to be driven, the one provided with a friction-disk and the other with a friction-wheel, and a universally-movable lever operatively connected to the disk and wheel and having an adjustment in one plane for independently adjusting the disk, an adjustment in a different plane for independently adjusting the wheel, and a third adjustment at an angle to said planes for simultaneously throwing the disk and wheel into frictional engagement and moving one across the face of the other, substantially as set forth.

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

SAMUEL S. MORTON.
WALTER S. MORTON.
ROBERT L. MORTON.
WILLIAM EVANS.
W. H. EVANS.

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