No. 637,430.

Patented Nov. 21, 1899.

J. M. THOMPSON.

LOCOMOTIVE.

(Application filed May 10, 1899.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.

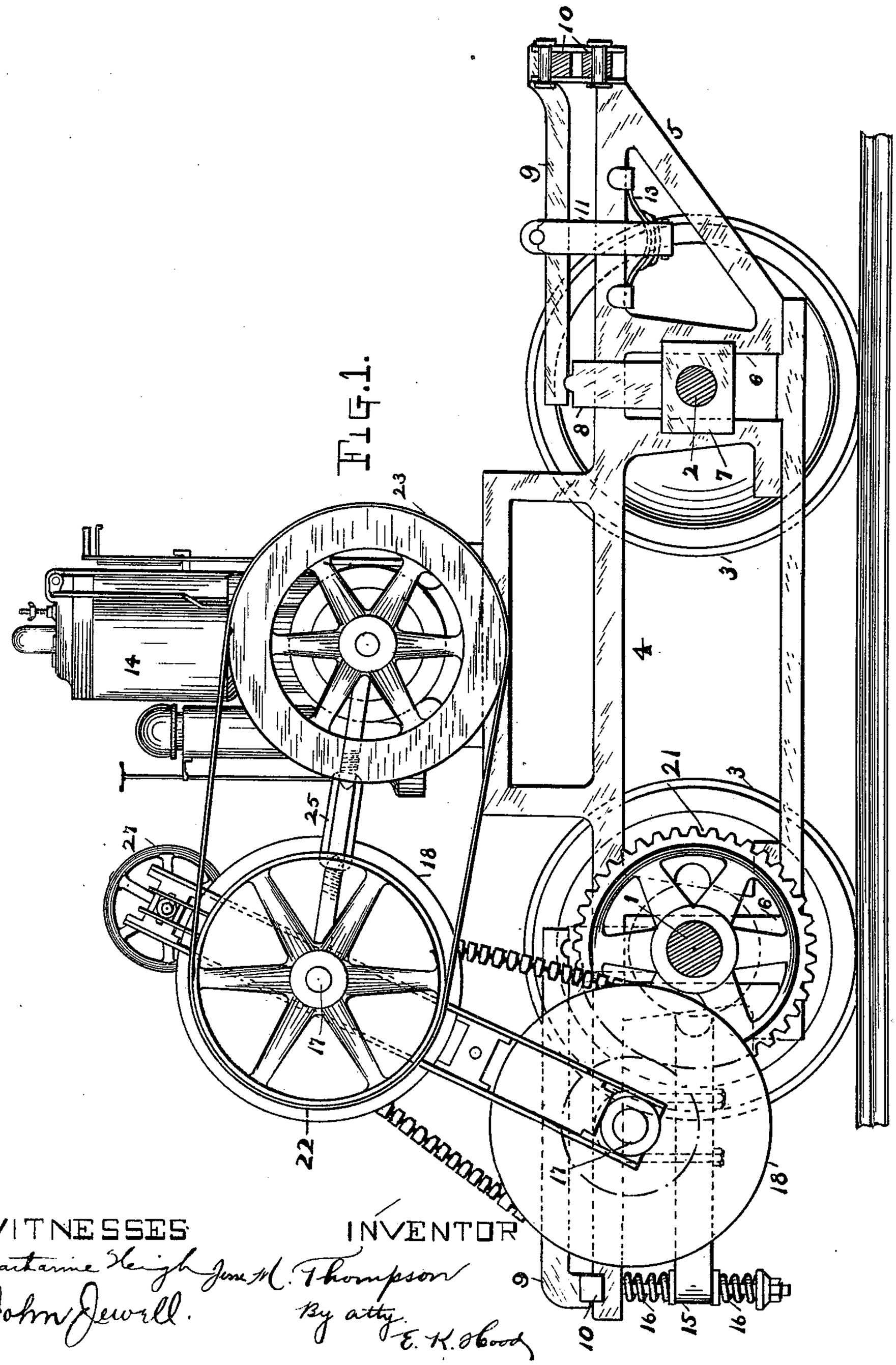

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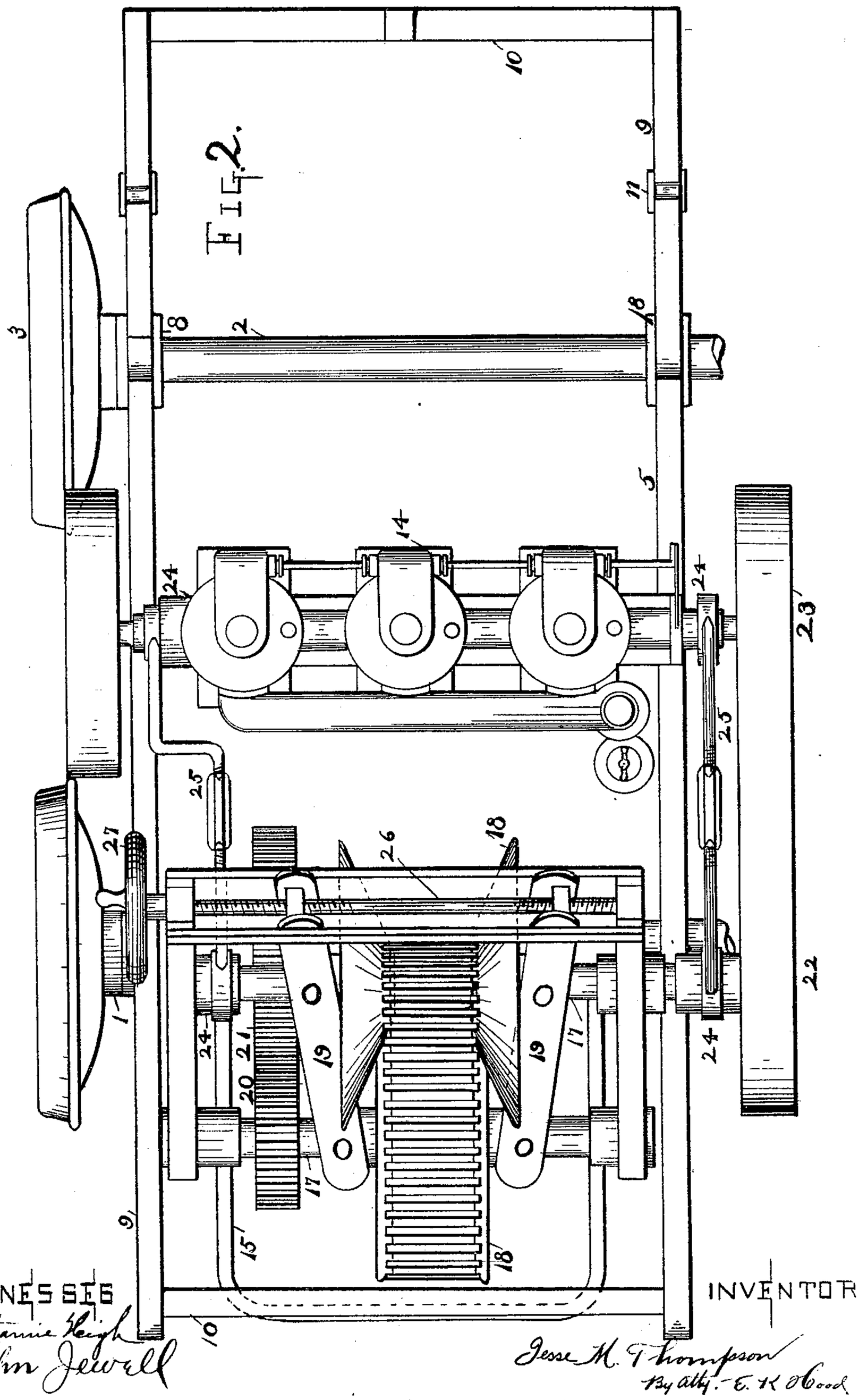
FIG. 2.



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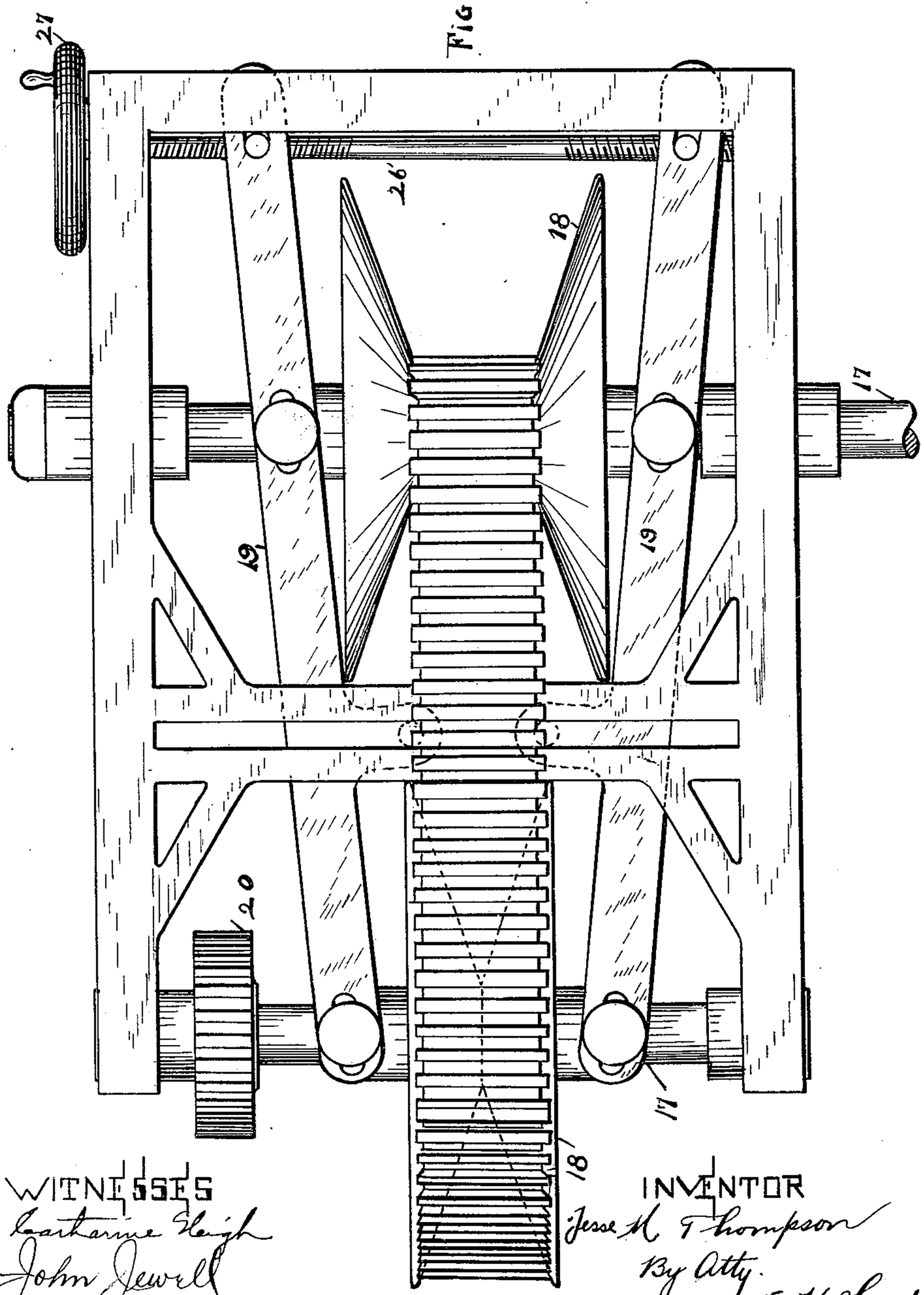
(No Model.) 3 Sheets—Sheet 3.

FIG. 3.



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UNITED STATES PATENT OFFICE.

JESSE M. THOMPSON, OF CHICAGO, ILLINOIS.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 637,430, dated November 21, 1899.

Application filed May 10, 1899. Serial No. 716,215. (No model.)

To all whom it may concern:

Be it known that I, JESSE M. THOMPSON, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locomotives, of which the following is a specification.

The object of my invention is to provide a locomotive wherein a continuous-running engine may be used and the power developed thereby transmitted to the axles of the locomotive at a varying speed.

It is a well-known fact that an engine of any type develops most horse-power when it is running at a constant predetermined speed. In ordinary locomotive practice the dead-load is started with the pistons at their slowest travel. So far as I know this is the universal practice. With my invention it is possible to start the load from zero and move it to the maximum velocity with an engine running at constant speed, thus enabling the operator to use the full horse-power of his engine at all times. The result of this it is that very heavy loads can be started and accelerated with comparatively small engines.

My invention consists in the combination and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of my device; Fig. 2, a plan of the same, and Fig. 3 a plan of the speed-controlling transmitting mechanism.

1 and 2 represent axles, each carrying a pair of flanged wheels 3. Mounted upon these axles is a frame 4, preferably of the construction shown, which consists of two parallel partial frames 5, each provided with guideways 6, which receive boxes 7, carried by the axles. Mounted above these boxes are standards 8, which carry one end of an equalizing-bar 9, extended so as to rest at its other end upon a cross-bar 10, connecting the two partial frames. Yoke 11, secured to equalizing-bars 12, passes down and under a part of the frame. A spring 13 is interposed between this yoke and the frame, so that the latter has a vertical resilience relatively to the axle. This construction of frame holds the axles in alinement. Mounted on this frame is an engine of an improved type; but I have shown one of three-cylinder explosion type. The engine 14 is secured to the frame 4, formed by the partial frames and cross-bars. The engine herein shown is self-starting and reversible.

Mounted on a secondary frame 15, which is pivoted at one end upon axle 1 and resiliently suspended at the other end from frame 4 by means of springs 16, is a speed-varying mechanism of the type shown in Letters Patent to Reeves Pulley Company, No. 583,402, granted May 25, 1897, No. 584,402, granted January 15, 1897, No. 588,354, granted August 17, 1897, and No. 603,067, granted April 26, 1898, which primarily consists of two parallel shafts 17, each carrying a pair of cone-shaped driving elements 18, splined to their respective shafts. The driving elements are provided with projecting hubs, each of which bears against a thrust-bearing. The corresponding thrust-bearings are connected by levers 19, pivoted half-way between the shafts, the said levers adapted to oscillate on their pivots and move one pair of driving elements together and the other pair apart simultaneously therewith. A beveled-edged driving-belt is stretched between the driving elements, and as one pair move together the belt assumes a larger driving diameter and the other pair move apart and the belt assumes a smaller driving diameter, thus varying the speed of one shaft relatively to the other. This mechanism in its entirety is old and I make no claim thereon except in the combination in which it is used. As before stated, this speed-varying mechanism is rigidly mounted on frame 15. The lower shaft 17 carries a spur-pinion 20, which meshes with a spur-gear 21, carried by axle 1. It will here be noted that the lower shaft 17 and axle 1 are held at a given distance apart, thus keeping the pinion and gear in mesh at all times, but still relieving the mechanism from undue jar.

The upper shaft 17 carries at its outer end a pulley 22, which is belted to a belt-wheel 23, carried by the engine-shaft. Yoked around upper shaft 17 and around the engine crank-shaft are boxes 24, which are connected by adjustable connecting-rods 25. In the form shown these connecting-rods consist of the ordinary turnbuckle. The object of these rods is to tighten the belt by forcing the upper shaft away from the engine and pivotally

around the lower shaft. After the belt is tight it will be noted that these upper rods compel the shaft 17 to swing about the engine crank-shaft if there is any relative movement between them. This, it will be noted, is considerable, as the main frame 4 is resilient on the axles and has a vertical play, while the frame 15, carrying the speed-varying mechanism, has an independent resilience around the axle 1 as a pivot. It will readily be seen that by this construction all the parts are mounted so as to be relieved from undue jar due to uneven road-bed and that all parts are held in perfect alinement at all times.

The power developed by the engine is transmitted through the belt to the upper shaft of the speed-controlling mechanism, from there to the lower shaft, and through the pinion and gear to the axle.

The levers are oscillated by right and left hand screw-shaft 26, which is operated by a hand-wheel 27. With this arrangement the load can be gradually taken up and accelerated while the engine is run continuous and any variation of speed can be attained.

I claim as my invention—

1. The combination of a truck, an engine carried thereby; a secondary frame pivotally secured to one of the axles; a speed-varying device carried by said frame; a power-transmitting connection between the engine and speed-varying device; and a power-transmitting connection between the speed-varying device and axles of the truck, substantially as and for the purpose set forth.

2. The combination with a truck, of an engine, a shaft connected therewith by power-transmission mechanism, a pair of cone-shaped driving elements carried by said shaft; a second shaft carrying a second pair of driving elements, a belt connecting the pairs of elements, means for moving one pair together and the other pair apart simultaneously, and a power-transmission connection between the second shaft and axles of the truck substantially as specified.

3. The combination with a truck, an engine, a shaft connected therewith by power-transmission mechanism, a spacing connection between the engine and shaft, a pair of cone-shaped driving elements carried by the shaft, a second shaft carrying a second pair of cone-shaped driving elements, a belt connecting the pairs, means for moving one pair together and the other pair apart simultaneously, and a power-transmission connection between the second shaft and axles of the truck, substantially as and for the purpose set forth.

4. The combination with a truck, of an engine, a shaft connected therewith by power-transmission mechanism, an adjustable connection between the engine and shaft; a pair of cone-shaped driving elements carried by the shaft; a second shaft carrying a second pair of cone-shaped driving elements; a belt connecting the pairs means for moving one pair together and the other pair apart simultaneously, and a power-transmission connection between the second shaft and axles of the truck, substantially as specified for the purpose set forth.

5. The combination of a truck, an engine carried thereby, a secondary frame pivotally secured to one of the axles; a shaft mounted on said secondary frame and carrying a pinion engaging with a gear on the axle of the truck; a pair of cone-shaped driving elements spline-mounted on said shaft; a second shaft supported on said secondary frame, a pair of cone-shaped driving elements, spline-mounted thereon; a belt connecting the pair of driving elements, means for simultaneously sliding the driving elements on the shafts in opposite directions, and means for transmitting power from the engine to the second shaft, substantially as and for the purpose set forth.

6. The combination of a truck, an engine carried thereby, a secondary frame pivotally secured to one of the axles; a shaft mounted on said secondary frame and carrying a pinion engaging with a gear on the axle of the truck; a pair of cone-shaped driving elements, spline-mounted on said shaft; a second shaft supported on said secondary frame, a pair of cone-shaped driving elements, spline-mounted thereon; an adjustable connection between the engine and second shaft; a belt connecting the pair of driving elements, means for simultaneously sliding the driving elements on their shafts in opposite directions, and means for transmitting power from the engine to the second shaft, substantially as and for the purpose set forth.

7. The combination of a truck, an engine carried thereby, a secondary frame pivotally secured to one of the axles at one end and resiliently suspended from the truck-frame at the other; a shaft mounted on said secondary frame and carrying a pinion engaging with a gear on the axle of the truck; a pair of cone-shaped driving elements, spline-mounted on said shaft; a second shaft supported on said secondary frame, a pair of cone-shaped driving elements, spline-mounted thereon; a belt connecting the pair of driving elements, means for simultaneously sliding the driving elements on their shafts in opposite directions, and means for transmitting power from the engine to the second shaft, substantially as and for the purpose set forth.

8. The combination of the main truck, of an engine carried thereby; a secondary frame pivotally secured to one of the axles, a speed-varying device of the class described carried by said secondary frame, and an adjustable connection pivotally secured to the engine and pivotally secured to the speed-varying mechanism substantially as and for the purpose set forth.

JESSE M. THOMPSON.

Witnesses:
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CATHARINE HEIGH.