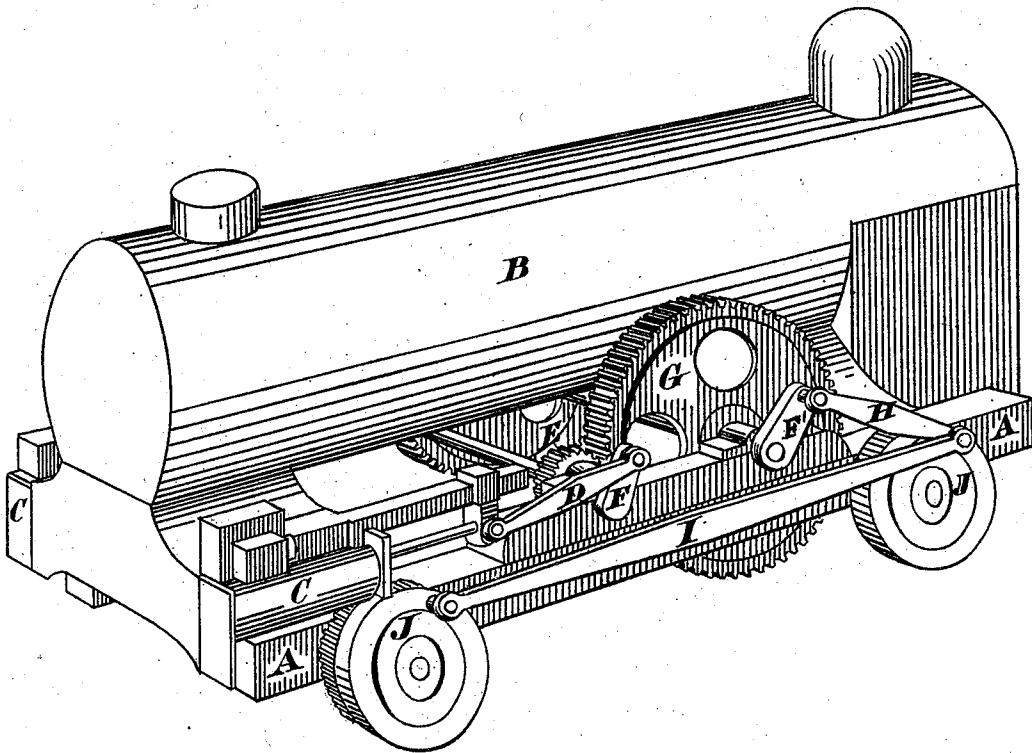


N. L. RESPESS.  
LOCOMOTIVE.

No. 176,684.

Patented April 25, 1876.



**WITNESSES.**

*Frank Pardon,*  
*Charles Swetner*

**INVENTOR.**

*Nathan L. Respass*  
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# UNITED STATES PATENT OFFICE.

NATHAN L. RESPESS, OF UPSON COUNTY, GEORGIA.

## IMPROVEMENT IN LOCOMOTIVES.

Specification forming part of Letters Patent No. **176,684**, dated April 25, 1876; application filed November 27, 1875.

*To all whom it may concern :*

Be it known that I, NATHAN L. RESPESS, of the county of Upson, in the State of Georgia, have invented a certain new and useful Improvement in Locomotives; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The drawing is a perspective view of the device, showing the construction and general arrangement of the several parts.

This my invention relates to improvements in locomotives, but more especially in the manner of applying the power of the engines to the driving-wheels, by means of which more direct power and greater traction are given with smaller engines, and therefore heavier grades may be overcome, with a larger number of loaded cars, than is generally done with the ordinary engines now in use; the object of which is to provide a more powerful locomotive, that will be capable of overcoming heavier grades with a greater number of loaded cars, where low speed only is required, than can be done with the ordinary locomotives as now constructed.

This device will be more fully illustrated in the drawings, in which A is the frame, and B is the boiler, all of which may be constructed in any of the known forms. C C are the engines, which are made similar to those now in common use, except that they are intended to be much smaller in proportion to the size of the locomotive than those now generally used. D is the pitman, and F F' are the driving-cranks. E is the driving-pinions, which are intended to be one-half the size of the wheel in which they work, instead of only one-fourth, as shown in the drawing. G is the large cog-wheel, by

means of which power is transmitted to the drivers of the locomotive. The object in using so large a cog-wheel is to increase the power, so that, with smaller engines, at a higher rate of speed, and at the same time, by means of its large diameter, it is made to answer as a substitute for cranks sufficiently long to admit of applying the power of the engines, by means of the connecting-links, directly to or near the verge of the driving-wheels, and thereby saving the large percentage of loss from direct back-pressure occasioned where the power is applied to crank-wrists that are only about one-third of the distance from the center to the verge of the wheels, as found to be the case with most of the locomotives now in use. H is the link connecting the cog-wheel and drivers. I is the link that connects the driving-wheels, all of which are made in form and arranged as shown in the drawing. J J are the driving-wheels, which are intended to be made of any suitable size and form, and, if necessary, may be provided with cogs or teeth on the face, to work in racks on the track when used in ascending unusually heavy grades.

Having thus fully described the nature and object of this my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the engines C and driving-wheels J J, of the pitman D, cranks F F', links H I, and gearing E G, constructed and arranged as shown and described, so that the power of the engines is applied at the verge of the driving-wheels, substantially as and for the purpose specified.

NATHAN L. RESPESS.

Witnesses:

FRANK PARDON,  
CHARLES SWETNER.