

(No Model.)

W. CRIPPEN.

LOCOMOTIVE DRIVING GEAR.

No. 266,103.

Patented Oct. 17, 1882.

Fig. 1.

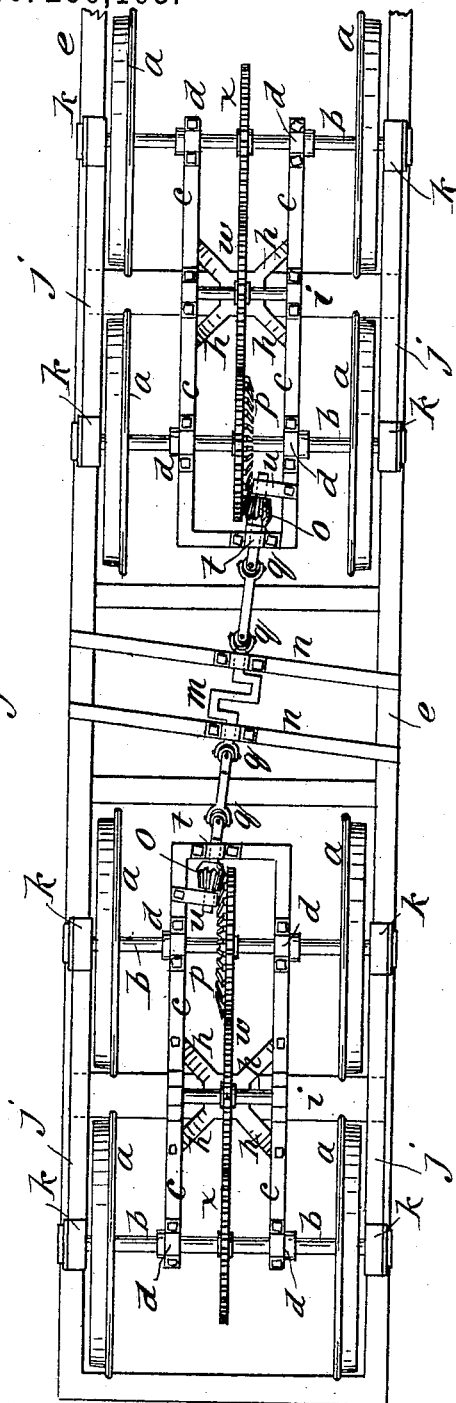


Fig. 2.

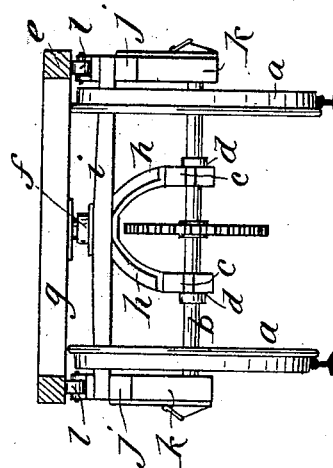
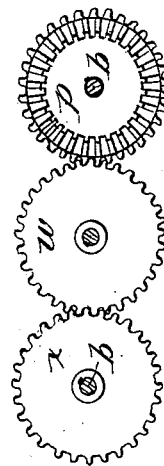


Fig. 3.



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# UNITED STATES PATENT OFFICE.

WILLIAM CRIPPEN, OF CADILLAC, MICHIGAN.

## LOCOMOTIVE DRIVING-GEAR.

SPECIFICATION forming part of Letters Patent No. 266,103, dated October 17, 1882.

Application filed August 12, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CRIPPEN, of Cadillac, in the county of Wexford and State of Michigan, have invented certain new and useful Improvements in Locomotive Driving-Gear, of which the following is a full, clear, and exact description.

My invention consists of a crank-shaft ranging lengthwise of the locomotive, and located between the trucks and gearing with them by toothed wheels, the crank-shaft having universal joints, and also having provision for sliding in the driving-pinions on it in order to compensate for the deflections of the line and the variations of the length of the same, due to the curvatures and grades of the road. The crank-shaft and transmitting-gears are located in the longitudinal center of the locomotive to lessen the variations as much as possible. The object is to dispense with the expensive and complicated connecting-rod and side-bar gear and substitute a cheaper contrivance, and also to lessen the friction of the machinery, all as hereinafter fully described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan of a locomotive-truck of my invention inverted. Fig. 2 is a transverse section, and Fig. 3 is a detail of the driving-gear in side elevation.

I use two four-wheel trucks consisting of wheels *a*, axles *b*, and frames *c*, the frames being located wholly inside of the wheels and fitted to the axles by boxes *d*, on which truck-frames the locomotive-frame *e* is pivoted at *f* by its bolsters *g* to allow the truck-frames the requisite lateral play for passing the curves. The pivot-bolts *f* have branches *h* resting on the side bars *c* of the truck-frames, and are fitted in the bolsters *i* of the trucks, which rest on the side bars *j*, to which the pedestals *k* for the axle-boxes are attached for the support of the locomotive-frame *e* by rollers *l* or other equivalent devices, allowing the trucks to shift under the locomotive-frame, as required by the curves.

*m* represents the crank-shaft. It is located

between the two trucks in bearing-supports attached to the locomotive-frame; or it may to the boiler to be worked by engines local on the boiler or on the frame *e*, as may found the best. The shaft extends each way toward each truck, with which it gears by pinions *o* and bevel-wheels *p* on the axles front of said shaft, the shaft having universal joint to allow it to shift with the trucks, and being fitted to slide in the pinions *o* as the length between the centers of the trucks changes with the curves, the pinions being kept in place by the bearings *t* and *u*, and the shaft being held in them by feathers or splines or by square shapes, by which they may so slide while applying the driving-power.

To drive on both trucks in the same direction the driving-shaft is arranged obliquely gear reversely with the bevel-wheels *p*, because of being reversely connected with said wheels in respect to their axles. The power is transmitted to the other axles of these trucks by means of the intermediate wheels, *w*, a wheels *x*, thus utilizing the traction of all the wheels.

It will readily be seen that my arrangement is much simpler and cheaper, and is adapted to work with less friction than the common arrangement.

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

1. The locomotive-gearing *x p p w*, arranged on the axles in a vertical plane passing through the longitudinal middle of trucks, in combination with a diagonal crank-shaft, *m*, having universal joints and end pinions, and adapted to slide in said pinions, as and for the purpose specified.

2. The combination, in the running-gear of locomotive, of inside truck-frames, *c*, branch center pins, *f*, truck-bolsters *i*, pedestal-frame *j k*, roller-supports *l*, and the locomotive-frame *e*, substantially as described.

WILLIAM CRIPPEN.

Witnesses:

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B. B. POWELL.