Almond F. Cooper's Imp^t in Driving Wheels of Locomotive Engines.

[20.]

119,014. Patented Sep. 19, 1871.

Fig. 1.

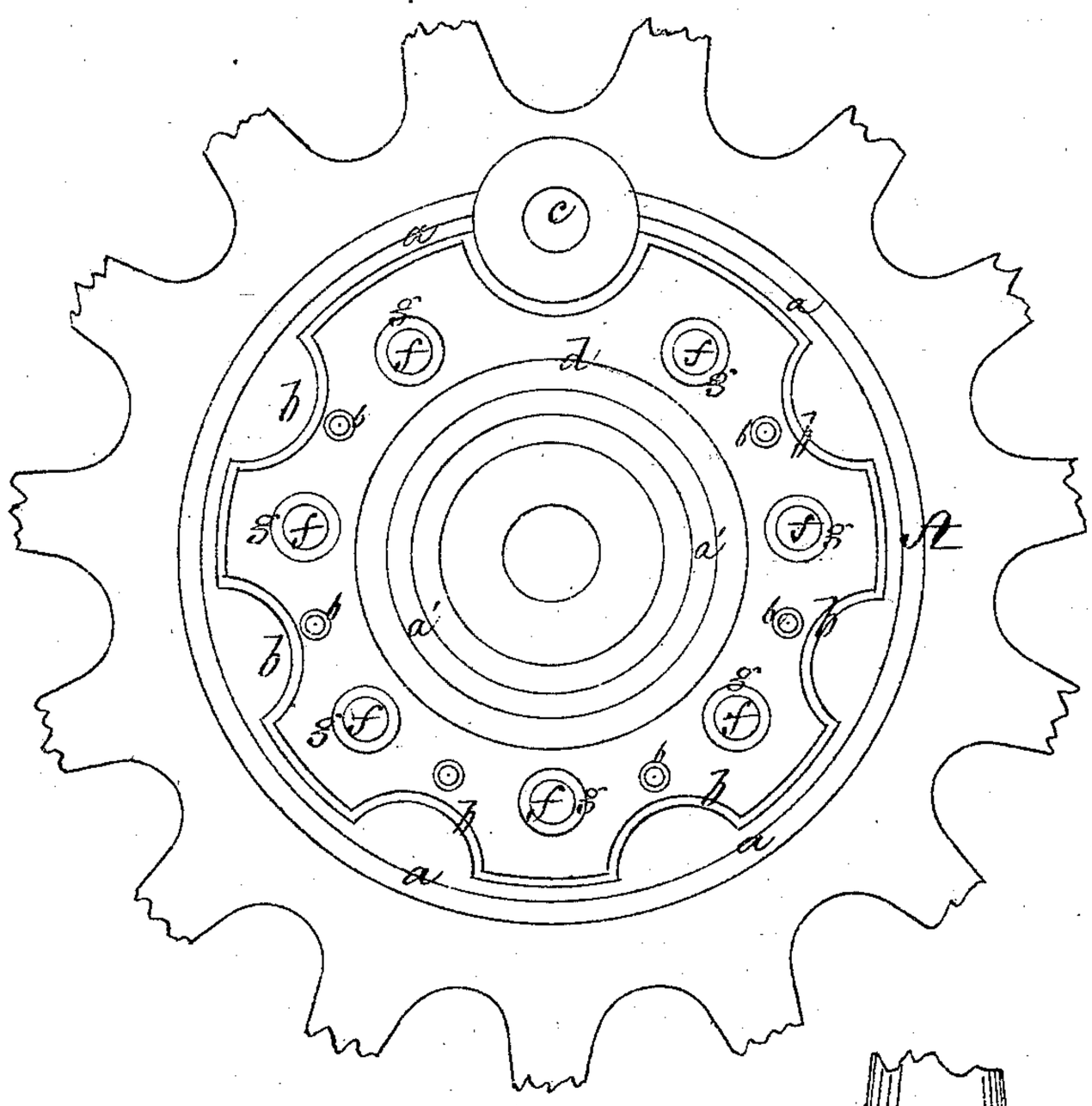


Fig. 2.

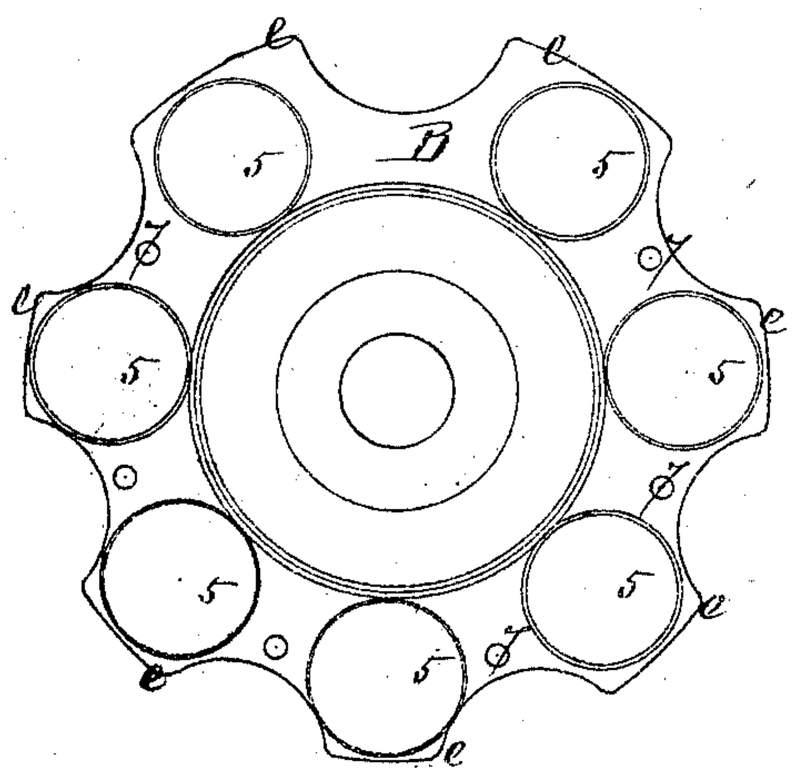
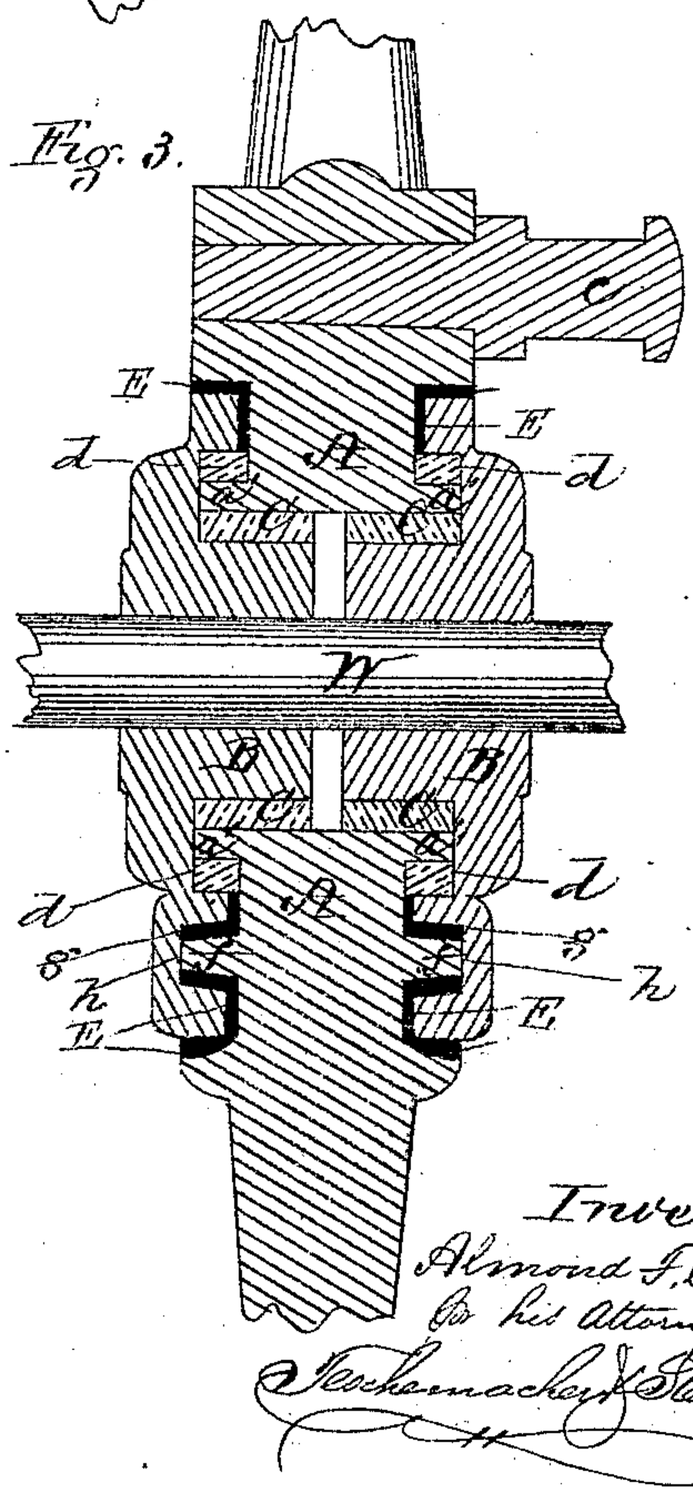


Fig. 3.



Witnesses,
W. J. Cambridge
W. F. Robbins

Inventor,
Almond F. Cooper
by his Attorneys
Dickenmacher & Stearns

UNITED STATES PATENT OFFICE.

ALMOND F. COOPER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN DRIVING-WHEELS OF LOCOMOTIVE ENGINES.

Specification forming part of Letters Patent No. 119,014, dated September 19, 1871.

To all whom it may concern:

Be it known that I, ALMOND F. COOPER, of the city and county of San Francisco and State of California, have invented certain Improvements in Driving-Wheels of Locomotive Engines and Wheels of Railroad Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is an elevation of the interior of one side of a driving-wheel of my improved construction. Fig. 2 is an elevation of the covering-plate of the same. Fig. 3 is a central vertical section through a driving-wheel with my improvements applied thereto.

My present invention is particularly applicable to the driving-wheels of locomotive engines, and may be also used to advantage in the construction of wheels of railroad cars generally; and my invention consists in a covering-plate, the outer edge of which is provided with a series of projections or corrugations fitting into the spaces between a series of corresponding projections or corrugations formed on the inner edge or flange of the outer surface of the hub or center of the wheel, the diameter of the covering-plate being less than that of the inner edge of the hub, in order that an elastic packing may be interposed between them, by which construction the parts are more effectually locked together and additional strength, durability, and elasticity are imparted to the wheel, the covering-plate being free to yield in the direction of its periphery or outer edge, and also in a vertical direction, as required, the tendency to slip being arrested by the projections of the plate forcing the packing against the contiguous projections of the hub. The improvements herein referred to have special relation to the invention covered by Letters Patent of the United States No. 103,573, granted to me on the 31st day of May, 1870.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawing, A is the hub of a driving-wheel provided with a circular opening at its center, in which snugly fits a boss or projection of each of the covering-plates, B B, which are of less diameter than the opening in the hub in order that a rubber packing, C, may be interposed between them, the covering-plates being forced onto the axle W in the ordinary way. The outer surface of each side of the hub has projecting from it a circular flange, *a*, and a series of projections or corrugations, *b*, inside of the same at a distance from the center equal to about that of the pin *c*, where the crank is connected. The inner circular flange *a'* is surrounded by a circular ring of rubber, *d*, and the diameter of the corrugated edge of the hub is sufficient to inclose a space large enough to receive a covering-plate, B, provided with corresponding projections or corrugations *e*, the diameter of the corrugated covering-plate being less than the diameter of the corrugated hub in order that the elastic packing E may be interposed between them, and the diameter of the elastic packing E is sufficient to allow it not only to snugly fill the space between the plate and hub, but also to lap and fold over the outer or corrugated edge of the covering-plate, whereby the plate is free to yield gradually in a vertical and lateral direction, as well as in the direction of its periphery. On each side of the wheel A, within the space between the flange *a* and the inner edge or corrugated flange of the hub, is formed (in one end the same piece as the wheel) a series of projections, *f*, surrounded by a series of rubber sleeves or thimbles, *g*, (see Fig. 2,) which are of a greater length than the projections *f*, and fit into a series of circular recesses, *h*, Fig. 3, formed in the covering-plate B, and extending through the packing E, secured thereto, the thickness of the portion of the plate where the recesses *h* are formed being increased at 5 to insure the necessary degree of strength; and the depth of the recesses *h* is a little less than that of the elastic sleeves *g*, so that they will be compressed when the plates B are properly secured in place. These rubber sleeves act as buffers or cushions, and, in connection with the elastic rings *c d* and packing E, serve to support the weight upon the wheel, which is thus allowed to have a slight motion independently of the axle in passing around curves, whereby the concussion and noise incident to wheels of the ordinary construction are avoided and the wear of the parts materially reduced. The principal office of the buffers, however, is to prevent the wheel from turning independently of the plates B, which, after being fitted in place upon the sides of the wheels, are forced by hydraulic or other pressure, until the packing E, sleeves *g*, and

rings C *d*, are compressed to a sufficient degree, and in this position the plates are securely held by bolts passing through holes 6 7 in the plates B and wheel A, the holes in the latter being made sufficiently large to allow the plates to yield. The covering-plates are now bored out to receive the axle, and the wheel with its plates is forced tightly thereon. The several parts are made tapering, as usual, in order that they may be drawn from the molds in casting, the tapering of the parts also facilitating the packing of the same. From the foregoing it will be seen that the corrugations on the plates, and those on the hub with the elastic packing interposed, serve to counteract and overcome the tendency which the crank has to revolve the plate independently of the wheel, the corrugations of the former compressing the packing against the corrugations of the latter and preventing the liability of slipping, which otherwise might occur.

It is evident that my improvements may be applied with advantage in the construction of the wheels of the ordinary railroad car without departing from the spirit of my invention, but I design to apply my improvements particularly to the driving-wheels of locomotives.

What I claim as my invention, and desire to secure by Letters Patent, is—

The covering-plates B B and hub A, with their corrugations *b e* and projections *f f*, in combination with the elastic packing C E and sleeves or thimbles *g*, the whole constructed substantially as shown and described.

Witness my hand this 29th day of May A. D. 1871.

ALMOND F. COOPER.

Witnesses:
N. W. STEARNS,
L. E. BATCHELLER.