No. 793,637. PATENTED JULY 4, 1905.

D. P. CLARK.

LOCOMOTIVE TOY.

APPLICATION FILED JULY 25, 1904.

Fig. 1.

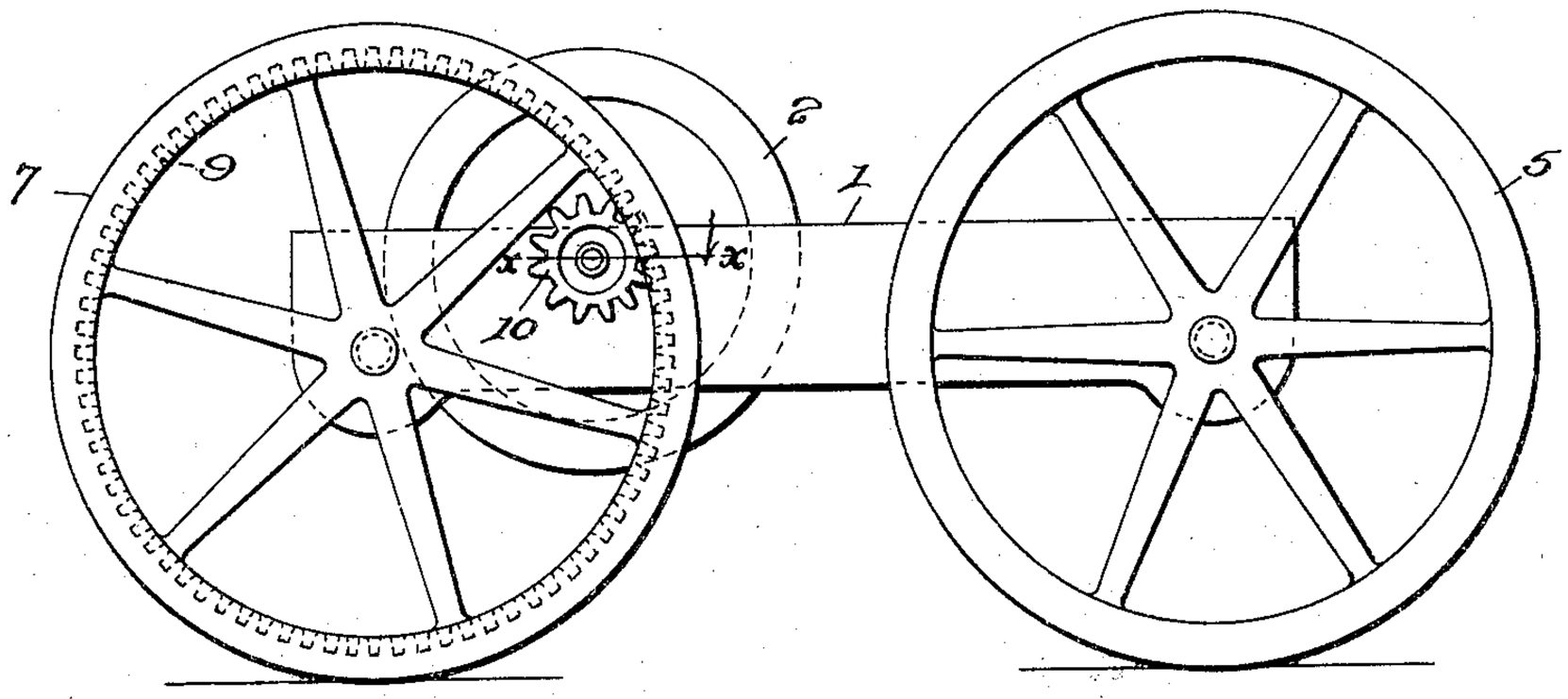


Fig. 2.

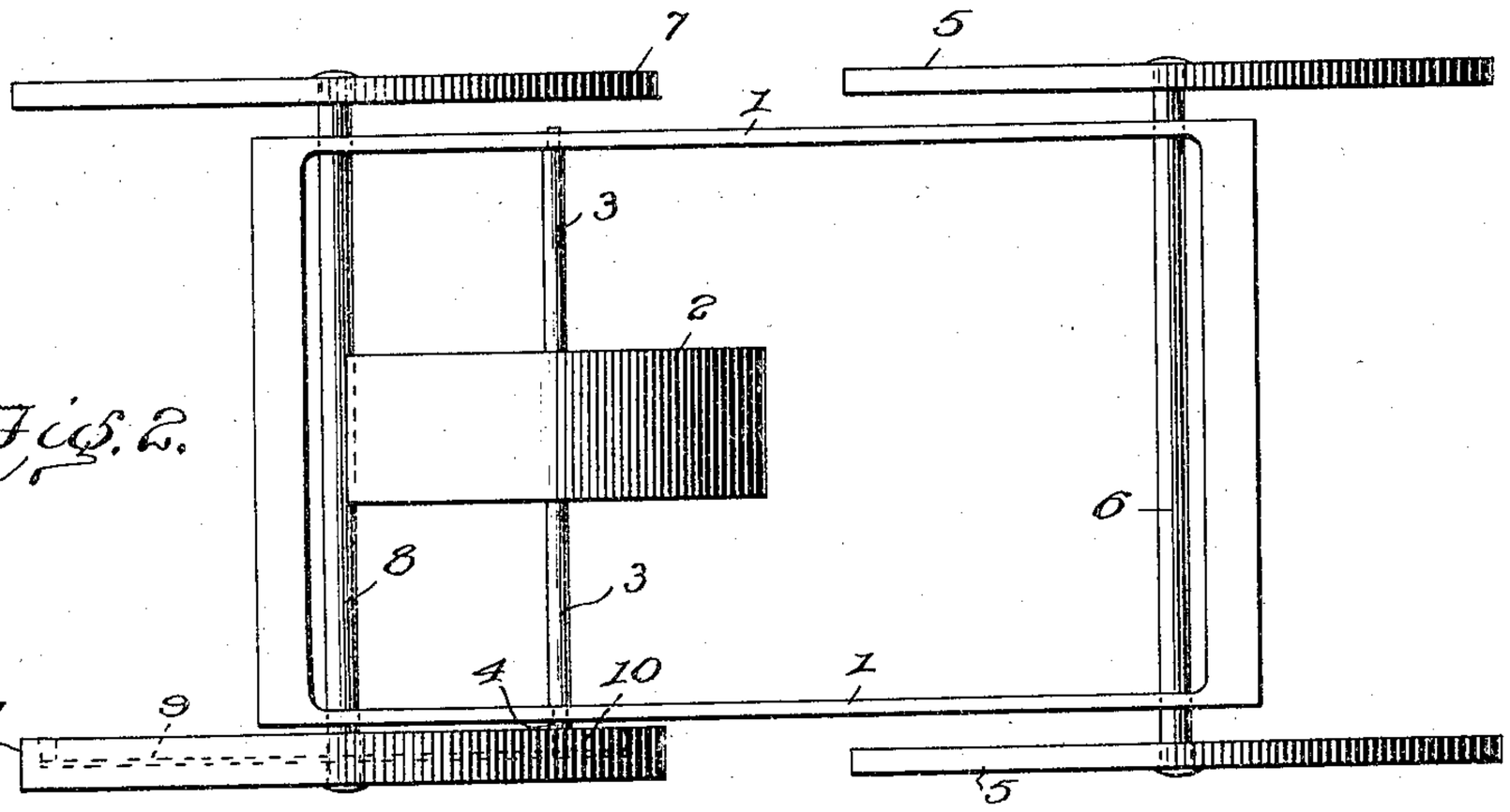


Fig. 4.

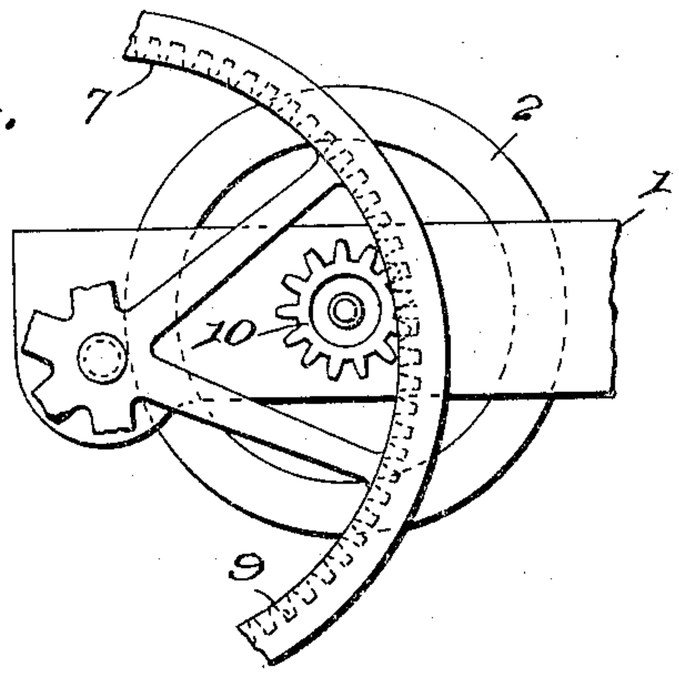
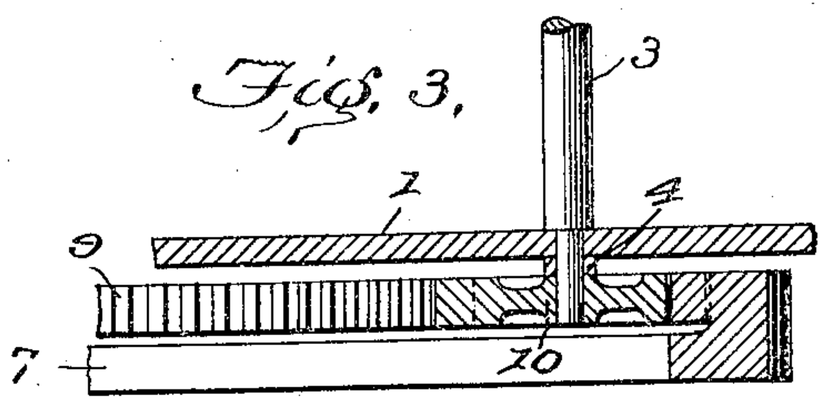


Fig. 3.



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No. 793,637. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

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LOCOMOTIVE TOY.

SPECIFICATION forming part of Letters Patent No. 793,637, dated July 4, 1905.

Application filed July 25, 1904. Serial No. 218,006.

To all whom it may concern:

Be it known that I, DAVID P. CLARK, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Locomotive Toys, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to locomotive toys, and has for its object to produce a toy of this description in which the motive power is stored in and derived from an inertia-wheel which is positively connected with one of the running-wheels by spur-gearing, the arrangement being such that the expense of manufacture is reduced to a minimum, while the toy is rendered safe for children's use by reason of the location of the spur-gearing in such a way that injury to the fingers of the user is prevented.

To these ends my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a locomotive toy embodying my invention in one form. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional view taken on the line X X of Fig. 1 and looking in the direction of the arrows, and Fig. 4 is a detail side elevation illustrating a modification.

My present invention is in the nature of an improvement upon the construction set forth in my Letters Patent No. 768,268, dated August 23, 1904, for improvements in locomotive toys, in which application as originally filed the construction illustrated in Figs. 1, 2, and 3 of the present application was shown and described.

In carrying out my present invention I employ a suitable supporting-frame 1, in which is mounted an inertia-wheel 2 of considerable weight, said inertia-wheel having an axle 3 mounted in suitable bearings in the frame 1 and extending beyond the same at one end, as indicated at 4. The frame is supported on running-wheels, of which there may be four, arranged in pairs, one pair, which may be the front pair, being indicated by the reference-numeral 5 and their axle by the reference-numeral 6, while the other pair, which may be the rear pair, are indicated by the reference-numeral 7 and their axle by the reference-numeral 8. One of these running-wheels has incorporated with it a large spur-gear 9, preferably formed in one piece therewith, said spur-gear having its teeth directed inwardly or toward the axis of revolution of said running-wheel, which constitutes a driving-wheel. Said spur-gear 9 is located on that side of the central vertical plane of the driving-wheel which is adjacent to the frame 1, and the inertia-wheel axle 3 has its extension 4 beyond said frame located adjacent to and within said spur-gear 9 and is provided with a spur-pinion 10, which meshes directly with said spur-gear, within which it is positioned. It will be seen that said spur-pinion is located between the side of the frame structure and the body portion of the adjacent driving running-wheel, in which position it is protected by said wheel and frame in such a manner that it will be difficult if not impossible for the operator of the toy to get his fingers caught in the spur-gearing. This is a matter of very high importance, since such toys are usually operated by and intended exclusively for children, and the construction just described permits the utilization of the highly-effective spur-gearing without the consequent danger of injury to the child by reason of its fingers being mutilated by being caught in the gearing. It will further be noted that the spur-pinion is so arranged relatively to the spur-gear that its inner face does not extend inward beyond the inner face of the latter, the absence of any projection of the pinion beyond the spur avoiding any possible danger of the pinching or entangling of the fingers or clothing of the operator within the angle which would otherwise be formed between said projection and the inner face of the gear, while at the same time the inertia-wheel axle is set so far back from the gear as to avoid any danger of this kind.

It will be observed that the inertia-wheel axle is mounted in fixed bearings in the frame

in a position parallel with the axis of revolution of the driving running-wheel, the relation between said running-wheel axis and the axis of the inertia-wheel and pinion being fixed, so that the transmission of power from the inertia-wheel to the driving-wheel is absolute and not dependent upon relative movement of these parts through pressure or gravity, as is the case of frictional driving toys. It will also be observed that the inertia-wheel axle is in approximately the same horizontal plane as the axes of revolution of the running-wheels, so that the center of gravity of the toy is made low and all tendency to careen when at high speed is avoided.

The toy may be prepared for operation by moving it over a suitable surface, with the running-wheels pressed against said surface, whereby a rapid movement of rotation will be positively imparted to the inertia-wheel. The toy may then be operated by placing it upon a suitable surface and releasing it, whereupon the inertia-wheel will positively impart its rotary movement to the driving running-wheel and will thus cause the toy to travel a considerable distance at a relatively high speed. Since there are no frictional contact-surfaces employed to transmit the power, machine finishing and the consequent expense may be done away with, and when the internal gear is formed in one piece with the driving running-wheel the wheel and gear may be readily cast at a minimum expense.

It will be understood, of course, that a suitable toy-body of any kind may be secured to or mounted on the frame; but the particular character of this toy-body forms no part of my present invention, and I have not, therefore, illustrated it.

I do not wish to be understood as limiting myself strictly to the precise details of construction hereinbefore described, and shown in the accompanying drawings, as it is obvious that these details may be modified without departing from the principle of my invention. For instance, the structure shown in Figs. 1 to 3, inclusive, has the spur-pinion located between the frame side and the adjacent running-wheel, since the pinion is in a plane between the planes of said running-wheel and frame side; but the pinion projects slightly above the frame side, which is not objectionable as a rule, since the toy-body and the upwardly-extending running-wheel above the pinion will amply protect the same. The pinion may, however, be located not only in a plane between the running-wheel and frame side, but also may be so arranged as to be wholly protected by these two parts, as shown in Fig. 4, in which the pinion does not project either above or below the frame side or the running-wheel.

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

1. A locomotive toy comprising a frame, running-wheels mounted therein and having each a body portion, a large spur-gear incorporated with one of the running-wheels with its teeth opening inward and located on the side of said wheel nearest the frame, and an inertia-wheel having a horizontal axle parallel with the axis of the driving running-wheel and mounted in fixed bearings in the frame, said axle having a spur-pinion thereon located between the side of the frame structure and the body portion of the adjacent running-wheel and meshing directly with the spur-gear, within which it is positioned, the relations between the running-wheel axis and the inertia-wheel and pinion axis being fixed, substantially as described.

2. A locomotive toy comprising a frame, running-wheels mounted therein and having each a body portion, a large spur-gear incorporated with one of the running-wheels with its teeth opening inward and located on the side of said wheel nearest the frame, and an inertia-wheel having a horizontal axle parallel with the axis of the driving running-wheel and mounted in fixed bearings in the frame, said axle having a spur-pinion thereon located between the side of the frame structure and the body portion of the adjacent running-wheel and meshing directly with the said spur-gear, within which it lies so as to not project inward beyond the same where said pinion and gear intermesh, the relations between the running-wheel axis and the inertia-wheel and pinion axis being fixed, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID P. CLARK.

Witnesses:
CARL F. SHUBER,
CARRIE SCHMIDT.