No. 725,126. PATENTED APR. 14, 1903.

H. N. PARKER.

TOY VEHICLE.

APPLICATION FILED APR. 14, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

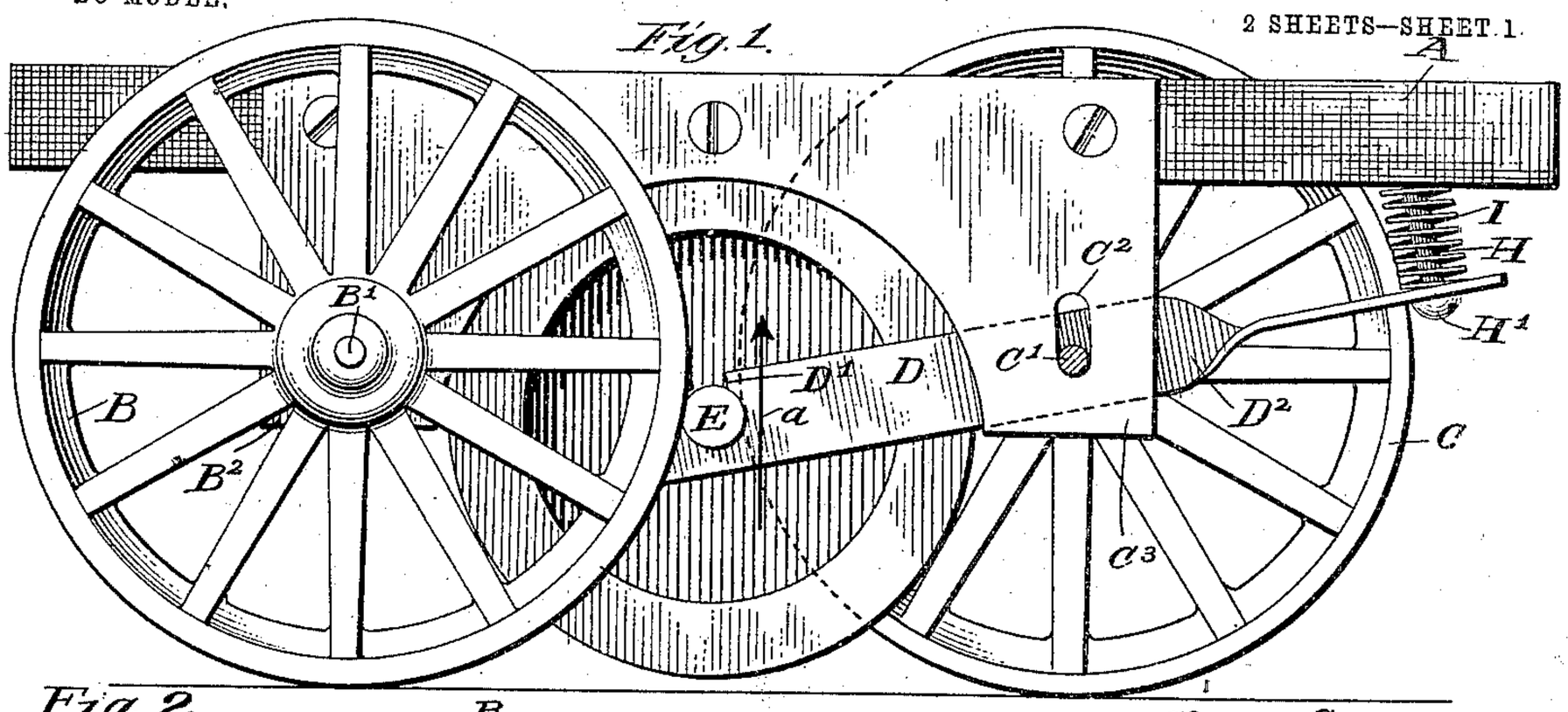


Fig. 2.

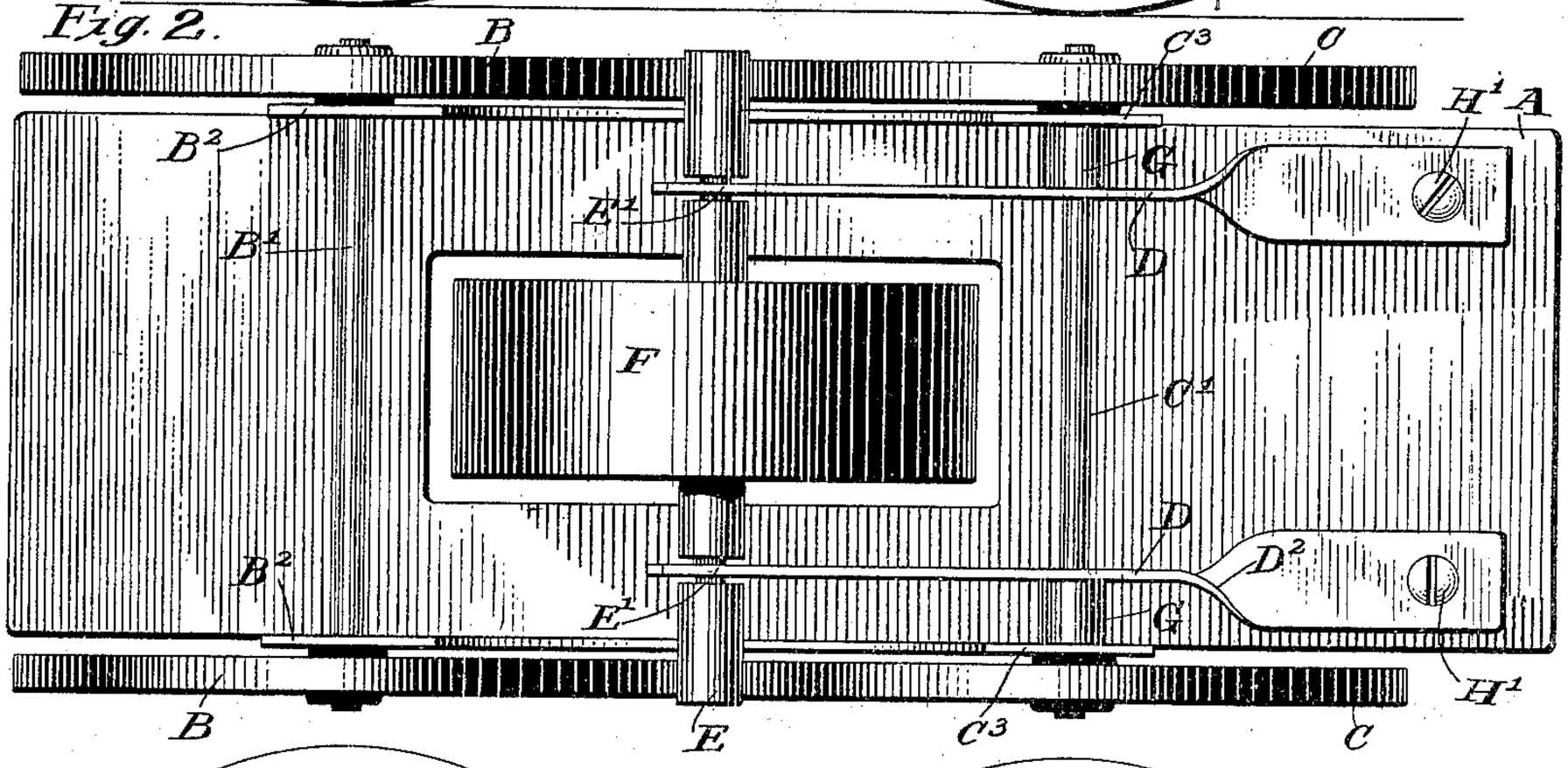
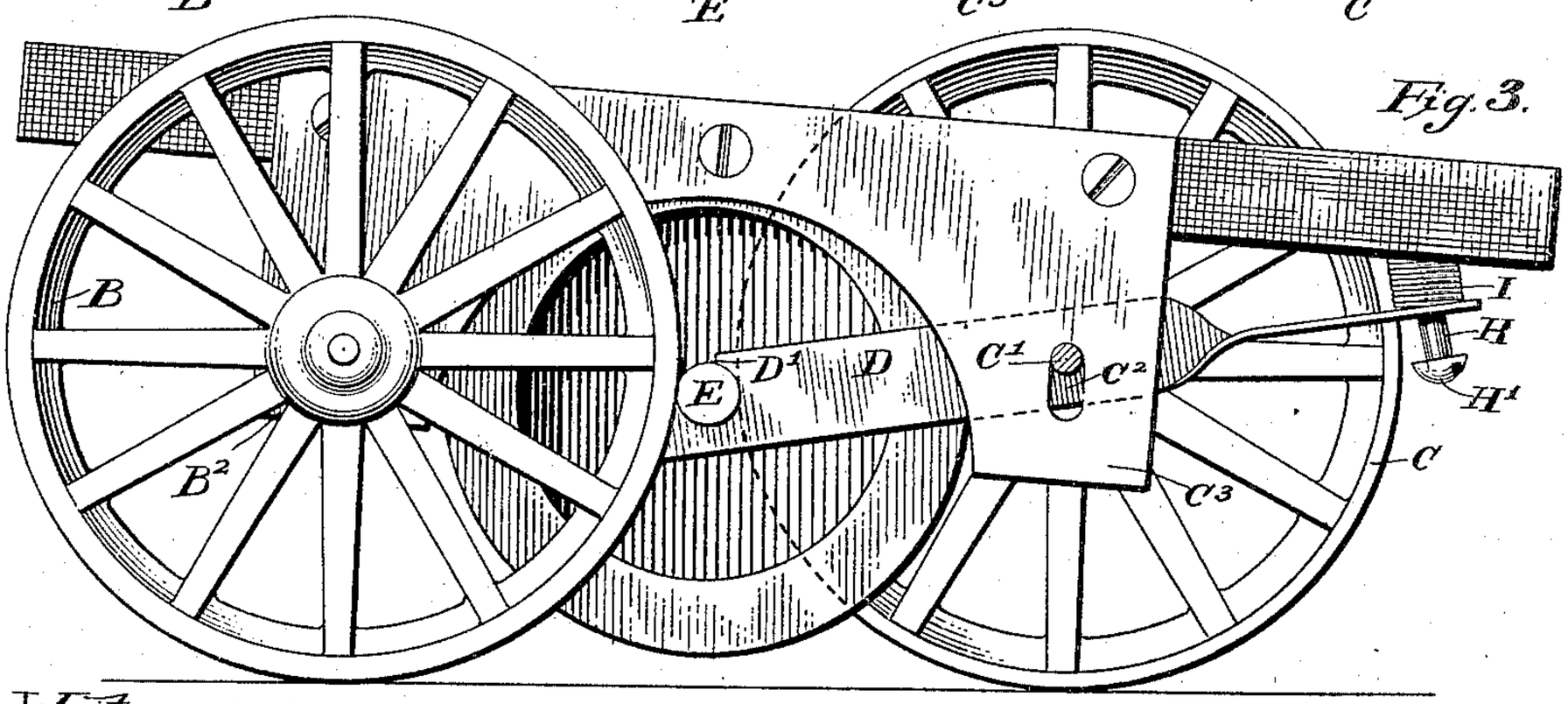


Fig. 3.



Witnesses

L. St. Homer

M. M. Schuermann.

Inventor

Homer N. Parker

By Rufus B. Fowler

Attorney.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

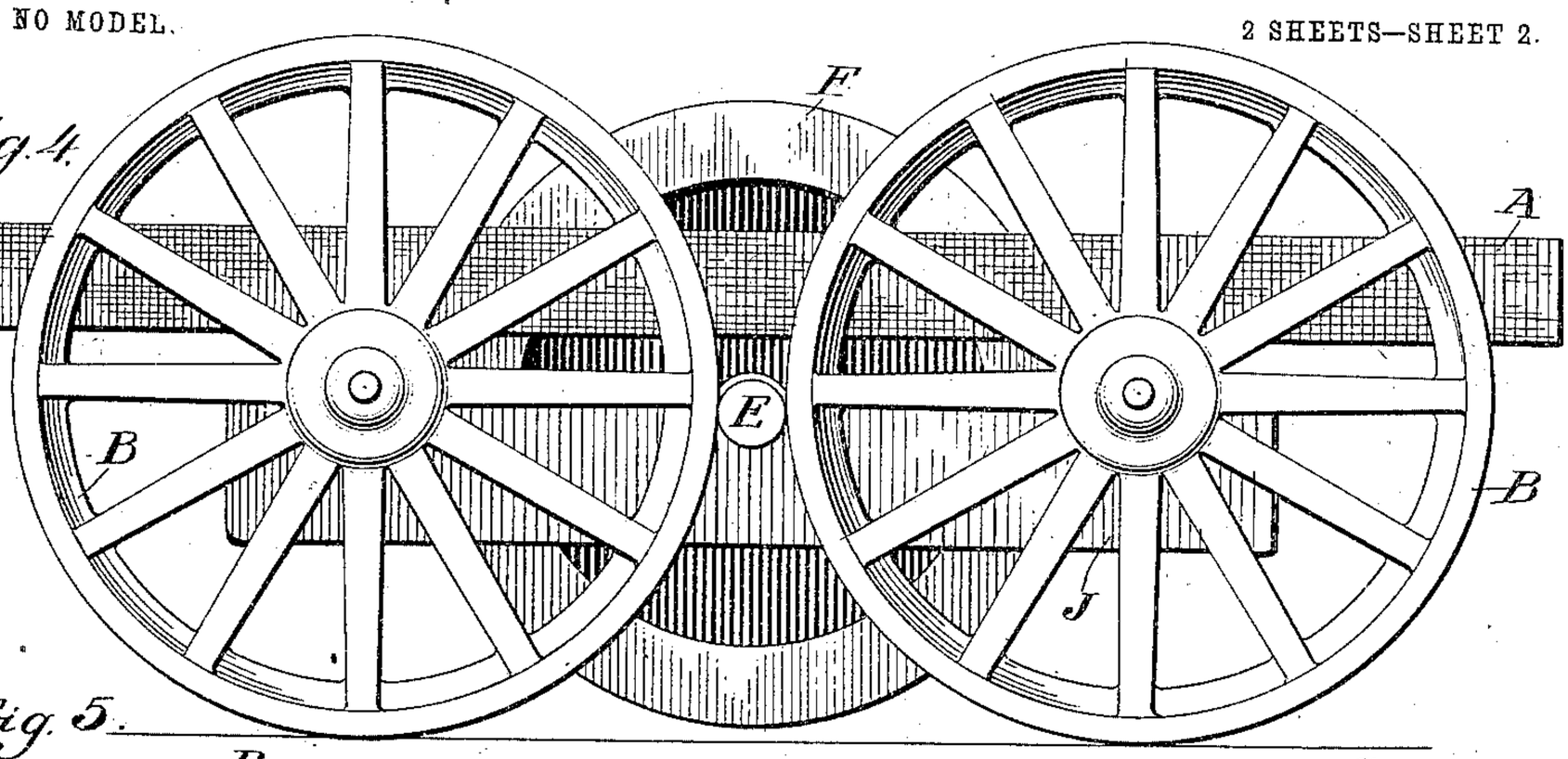


Fig. 5.

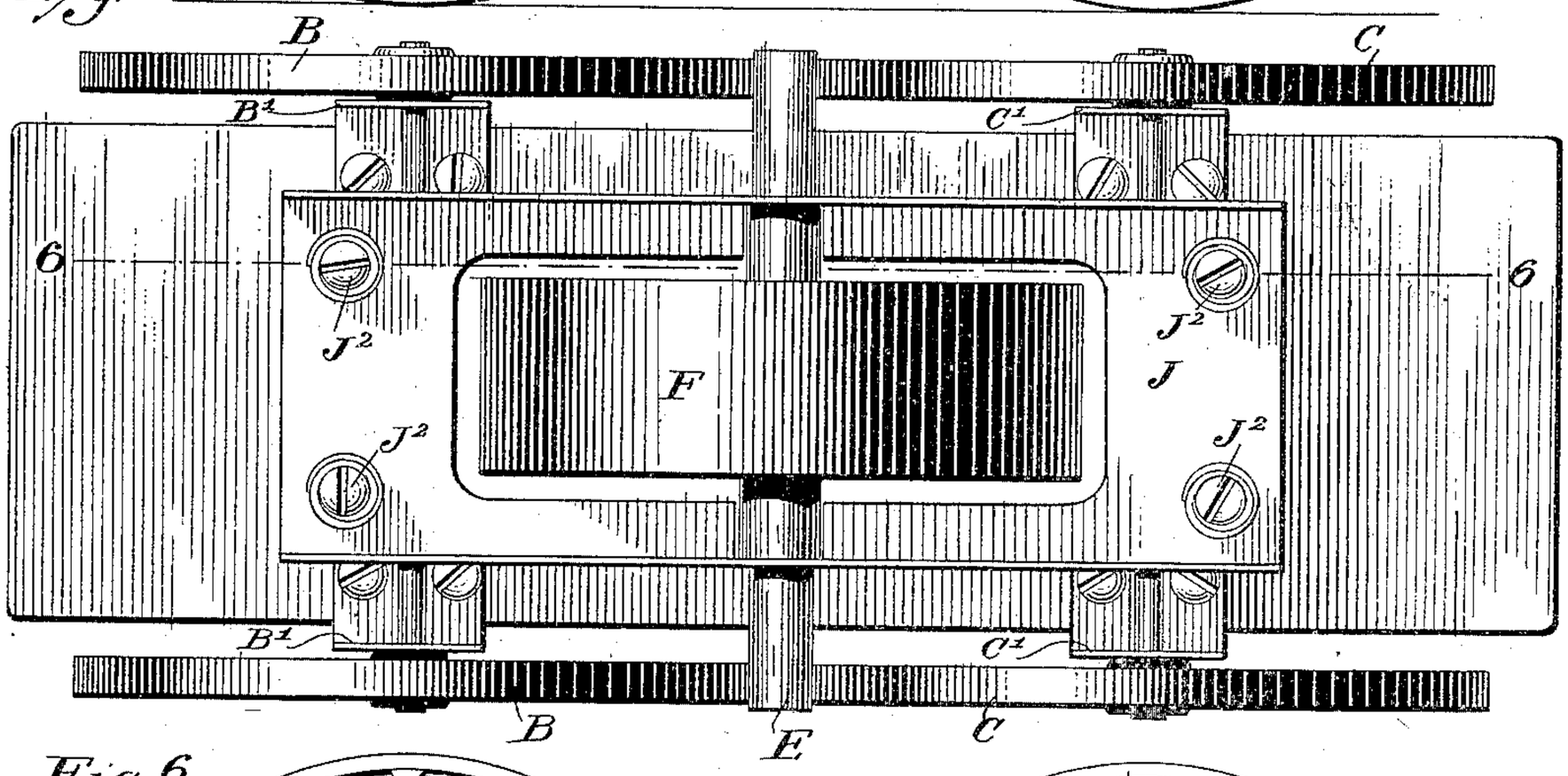
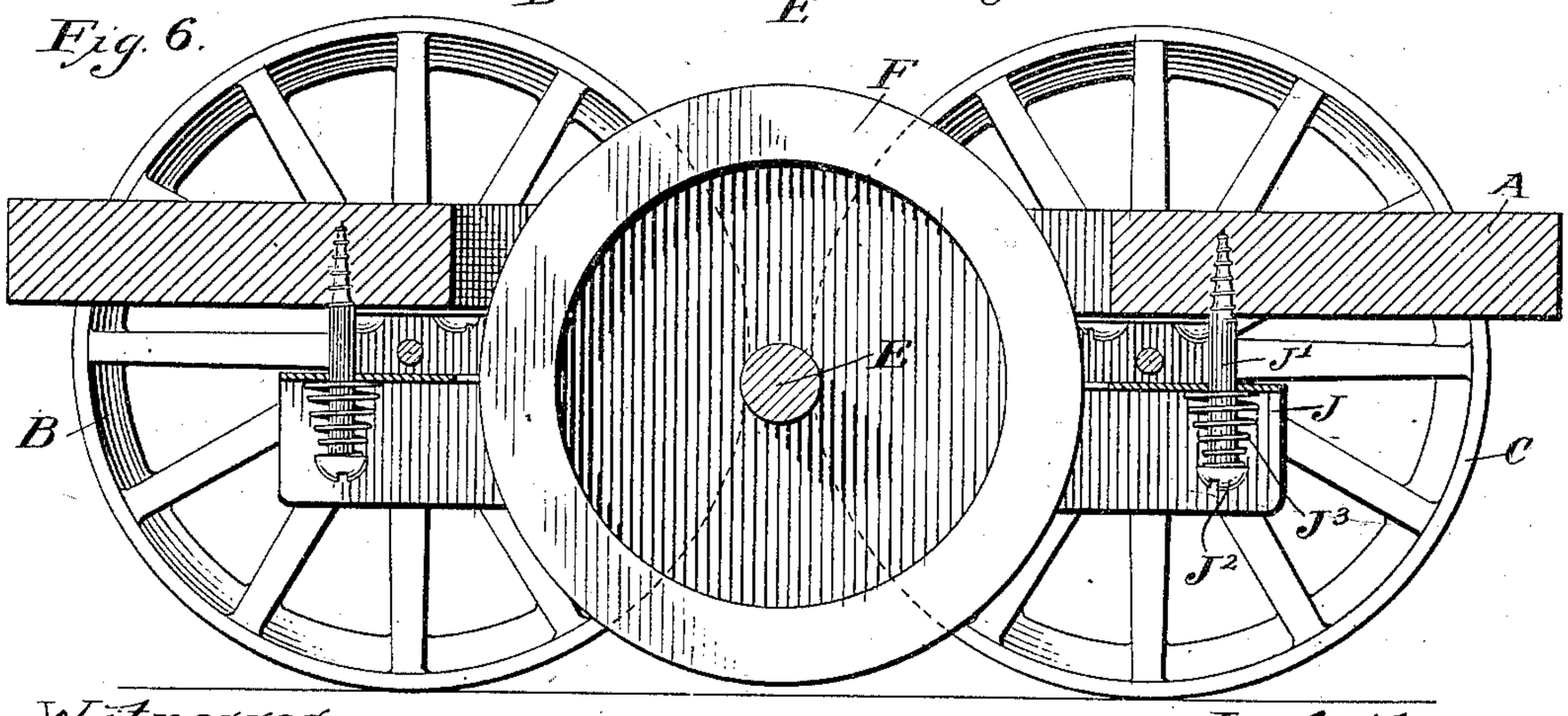


Fig. 6.



Witnesses

L. F. Horner

M. M. Schuermann.

Inventor

Homer N. Parker

By Rufus B. Fowler

Attorney.

UNITED STATES PATENT OFFICE.

HOMER N. PARKER, OF WINCHENDON, MASSACHUSETTS.

TOY VEHICLE.

SPECIFICATION forming part of Letters Patent No. 725,126, dated April 14, 1903.

Application filed April 14, 1902. Serial No. 102,826. (No model.)

To all whom it may concern:

Be it known that I, HOMER N. PARKER, a citizen of the United States, residing at Winchendon, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Toy Vehicles, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a side elevation of a toy vehicle embodying my invention and having one of the driving-wheels removed. Fig. 2 is a bottom view of the same. Fig. 3 is a side elevation having one of the driving-wheels removed and showing the body of the vehicle pressed downward in order to increase the frictional contact between the driving-wheels and the shaft of the inertia-wheel. Fig. 4 is a side elevation of a toy vehicle, showing a modification of my invention. Fig. 5 is a bottom view of the modified form shown in Fig. 4; and Fig. 6 is a sectional view on line 6 6, Fig. 5.

Similar reference-letters refer to similar parts in the different views.

My invention relates to certain improvements in that class of self-driven toy vehicles which comprise an inertia-wheel with its shaft arranged to bear upon the peripheries of the running-wheels of the vehicle, so that the rotation of the inertia-wheel will be imparted to the running-wheels, which then become the driving-wheels, thereby causing the vehicle to be propelled over its supporting-surface, a sufficient momentum having been given to the inertia-wheel through the running-wheels of the vehicle by means of the quick movement of the vehicle over the floor by hand, as hereinafter described, or by other means; and my invention consists in the construction and arrangement of parts, as hereinafter described, and pointed out in the annexed claims, whereby the frictional contact of the inertia-wheel shaft with the driving-wheels of the vehicle is rendered more uniform and certain and whereby the frictional contact between the peripheries of the driving-wheels and the inertia-wheel shaft may be increased for the purpose of imparting momentum to the inertia-wheel.

Referring to Figs. 1, 2, and 3 of the accompanying drawings, A denotes the body of a vehicle, mounted upon two pairs of driving-wheels B B and C C. The wheels B B are attached to a rotating shaft B′, journaled in lugs B^2 B^2, attached to the body of the vehicle. The driving-wheels C C are similarly attached to a shaft C′, which passes through slots C^2 in lugs C^3, attached to the body of the vehicle. The shafts C′ are journaled in a pair of levers D D and about midway their length. The inner end of the levers D D are notched to receive a shaft E, carrying an inertia-wheel F, attached thereto. The shaft E is provided with peripheral grooves, forming necks E′, which are inclosed in the notches D′ of the levers D, thereby limiting the longitudinal movement of the shaft E in the levers D. Between the levers D and lugs C^3 are collars G for the purpose of preventing the levers D D from spreading. The opposite ends of the levers D D are given a quarter-twist at D^2 and are provided with holes to receive the screws H, which are held in the body A of the vehicle. The holes in the ends of the levers D are sufficiently large to allow the levers to move freely over the screws H, and spiral springs I are inserted between the levers and the body of the vehicle. In the normal position of the operating parts the tension of the spiral springs I serves to force the outer ends of the levers downward against the heads H′ of the screws, thereby holding the shaft C′ at the bottom of the slots C^2, said shaft serving as the fulcrum upon which the levers D are rocked to carry the inner ends of the levers upward in the direction of the arrow *a*, Fig. 1, and thereby press the inertia-wheel shaft E against the peripheries of the driving-wheels B B and C C. The distance between the peripheries of the wheels upon each side of the vehicle and on a line joining their axes is slightly less than the diameter of that portion of the inertia-wheel shaft E which is in contact with the peripheries of the driving-wheels, and the inertia-wheel shaft is located below a line joining the axes of the driving-wheels, so that the pressure applied to the inertia-wheel shaft in the direction of the arrow *a* tends to wedge it between the driving-wheels and to hold it in close contact with their peripheries, causing the rota-

tion of the shaft E as it is driven by the momentum of the inertia-wheel F to be imparted to the driving-wheels B B and C C. In order to impart the initial movement to the inertia-wheel F, the body of the vehicle is held in the hand of the operator and the driving-wheels B B and C C are pressed against the floor and a short rapid movement is given the vehicle over the floor, causing the motion of the driving-wheels as they are rolled over the floor to be transmitted to the inertia-wheel shaft E. The vehicle is then lifted from the floor and returned to its first position and the operation repeated a sufficient number of times to cause a rapid rotary motion to be imparted to the inertia-wheel. Sufficient force is thereby stored in the inertia-wheel so that when the vehicle is placed upon the floor and allowed to move freely thereon it will travel forward for a considerable distance and even climb a steep ascent self-propelled by the force of the rotating inertia-wheel. During the rapid movement of the vehicle over the floor in order to impart motion to the inertia-wheel it is desirable to increase the pressure between the peripheries of the driving-wheels B B and C C and the inertia-wheel shaft E; otherwise the quick movement of the driving-wheels acting against the inertia of the wheel F will cause the peripheries of the driving-wheels to slip on the shaft E. In order to increase the pressure between the inertia-wheel shaft and the driving-wheels, the operator presses the body of the vehicle down, as shown in Fig. 3, thereby compressing the spiral springs I, carrying the shaft C′ to the upper end of the slots C^2 in the lugs C^3, and crowding the inertia-wheel shaft E against the peripheries of the driving-wheels B B and C C. When the vehicle is released and placed upon the floor, the levers D again assume their normal position, as shown in Fig. 1.

In Figs. 4, 5, and 6 I have shown a modification of my invention in which instead of placing the inertia-wheel shaft upon the ends of pivoted levers capable of a slight rocking movement I support it slightly below a line joining the axes of the driving-wheels B B and C C in the central portion of a frame J, the ends of the frame J being connected with the body A by means of screws J′, screwed into the body A of the vehicle and having heads J^2, between which and the frame J, I interpose spiral springs J^3, four such screws and springs being employed in the construction shown in Figs. 4, 5, and 6. The springs J^3 crowd the frame upward and carry the shaft E of the inertia-wheel F against the peripheries of the driving-wheels B B and C C. It has been customary heretofore in self-propelled toy vehicles of this class to place the shaft of the inertia-wheel above a line joining the axes of the driving-wheels and allow the inertia-wheel shaft to be pressed against the peripheries of the driving-wheels by the weight of the inertia-wheel itself. By this construction the pressure of the inertia-wheel shaft is limited by the weight of the inertia-wheel, which is required to be unduly heavy without a corresponding increase in its propelling forces. In toy vehicles of this class the running-wheels are not always exactly round, neither are their peripheries absolutely concentric, and these, among other causes, sometimes produce a jumping of the inertia-wheel shaft, which is overcome by applying spring-pressure to crowd the inertia-wheel shaft against the driving-wheels. By placing this shaft below the line of centers of the driving-wheels and applying a yielding pressure thereto I am able to increase the pressure while the inertia-wheel is being set in motion. As I am not dependent upon the weight of the inertia-wheel, I preferably recess the sides of the inertia-wheel, as shown in the accompanying drawings, leaving the greater part of the metal arranged around the rim of the wheel. Neither am I confined to the use of a mass of metal in order to rotate the shaft E by its momentum, as other known means for rotating this shaft may be employed and the proper frictional contact be secured between the driving-wheels and the shaft E, and for that reason I prefer to term the shaft E the "motor-shaft," which drives the running-wheels of the vehicle by frictional contact produced by a yielding pressure, such as that supplied by a spring.

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

1. In a toy vehicle, the combination with a body, wheels supporting said body, a shaft arranged to rotate in frictional contact with the peripheries of said wheels, means for actuating said shaft and a spring by which a yielding pressure is applied to said shaft, substantially as described.

2. In a toy vehicle, the combination with a body, two pairs of supporting-wheels, a motor-shaft arranged to run in frictional contact with the peripheries of said supporting-wheels, a frame carrying said motor-shaft and a spring applied to said frame to hold said motor-shaft in contact with said wheels with a yielding pressure, substantially as described.

3. In a toy vehicle, the combination with a body, supporting-wheels arranged in two pairs to receive the contact of a motor-shaft, a motor-shaft contacting with the wheels of each pair of supporting-wheels and below a line joining their centers, a frame supporting said motor-shaft and a spring applied to said frame to hold said motor-shaft in contact with the peripheries of said supporting-wheels, substantially as described.

4. In a toy vehicle, the combination with a body, a pair of supporting-wheels carried by a shaft held in slotted lugs attached to said body, a motor-shaft arranged to rotate in contact with said pair of wheels, a frame carrying said motor-shaft and a spring applied between it and the body of the vehicle, whereby said wheel-shaft may be crowded to the upper

end of said slots by the depression of the body and the motor-shaft pressed against said supporting-wheels, substantially as described.

5. In a toy vehicle, the combination of a body, lugs attached to said body and provided with slots for a wheel-shaft, supporting-wheels carried on said shaft, a pair of levers pivoted in said wheel-shaft, a motor-shaft carried by one end of said levers and a spring applied to the opposite ends of said levers to crowd the motor-shaft against said supporting-wheels, substantially as described.

6. The combination with a vehicle-body, of lugs attached thereto and having slots, a wheel-shaft held in said slots, levers pivoted on said wheel, a motor-shaft carried by the inner ends of said levers, springs interposed between the outer ends of said levers and the body of the vehicle and means for limiting the movement of said levers as actuated by said springs, substantially as described.

Dated this 9th day of April, 1902.

HOMER N. PARKER.

Witnesses:

BEATRICE I. FOOTE,

R. D. CRAIN.