No. 694,633. Patented Mar. 4, 1902.

H. GREINERT.

DETONATING TOY.

(Application filed Dec. 14, 1901.)

(No Model.)

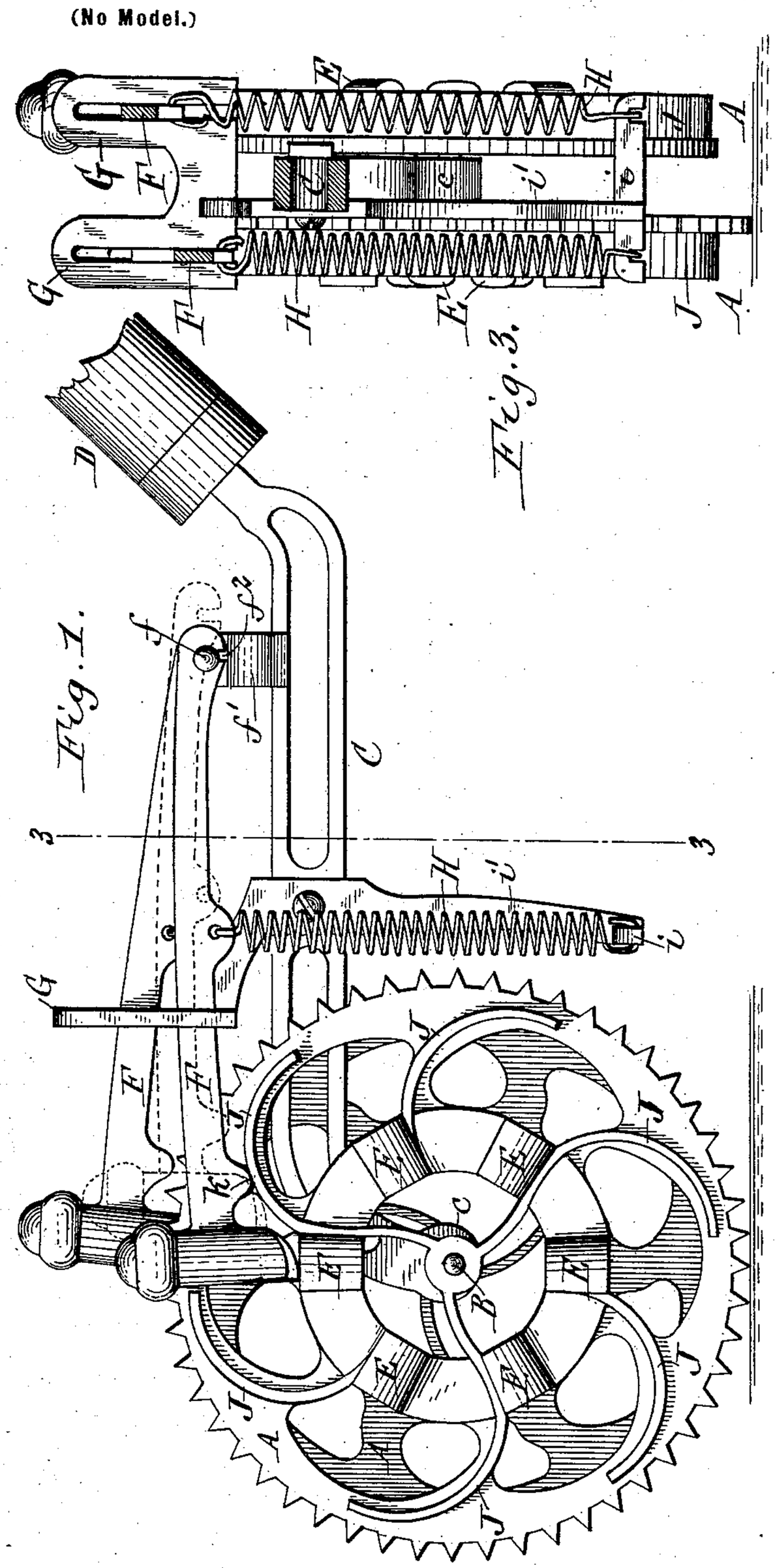

Fig. 1.

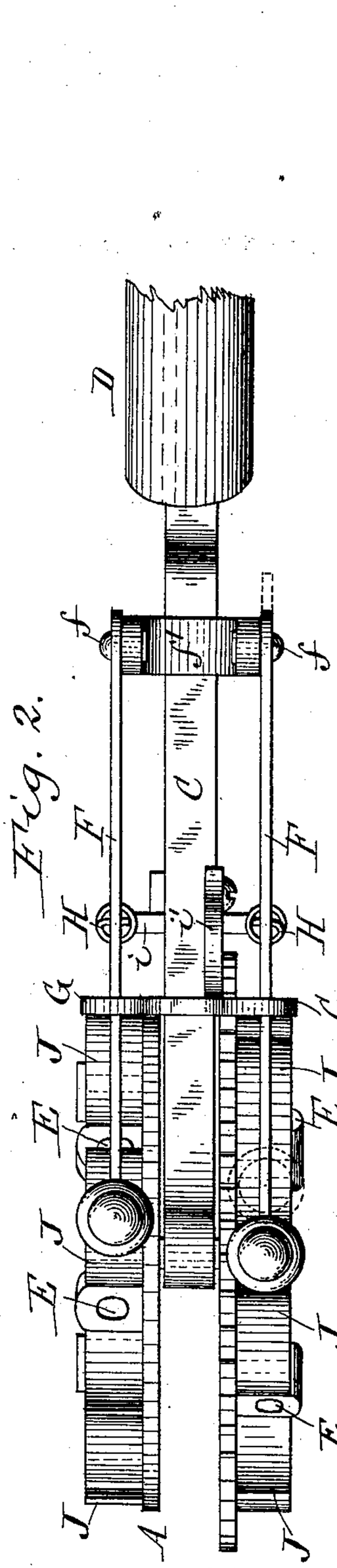

Fig. 2.

Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

HERMAN GREINERT, OF BUFFALO, NEW YORK.

DETONATING TOY.

SPECIFICATION forming part of Letters Patent No. 694,633, dated March 4, 1902.

Application filed December 14, 1901. Serial No. 85,957. (No model.)

To all whom it may concern:

Be it known that I, HERMAN GREINERT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Detonating Toys, of which the following is a specification.

This invention relates to detonating toys which comprise a wheel or rotary carrier containing one or more chambers adapted to receive cartridges or fulminating-caps and a hammer or hammers arranged to strike the cartridges and in which the cartridges are automatically discharged by rolling the toy on the floor or ground.

The object of my invention is the production of a neat, compact, and inexpensive toy of this kind which is so constructed that the same can be conveniently loaded without danger of accidentally discharging the cartridges.

In the accompanying drawings, Figure 1 is a side elevation of the toy, the greater portion of the handle being broken away. Fig. 2 is a top plan view of the toy. Fig. 3 is a transverse vertical section thereof in line 3 3, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A A indicate a pair of wheels secured side by side to an axle B, and C is an arm or frame extending rearwardly from the axle and arranged between said wheels. The arm is provided at its front end with a bearing *c*, in which the axle B turns, and at its rear end with a handle D of a convenient length to permit the toy to be trundled on the floor or ground without stooping. Each of the wheels A is provided on its outer side with an annular row of cartridge chambers or sockets E, arranged radially around its hub and constructed to snugly receive the cartridges, which latter are inserted from the outer ends of the chambers. These chambers are preferably formed by radial bosses, which project laterally from the wheels, and are provided with cartridge-openings, which extend from end to end of the bosses.

F indicates a pair of hammers pivoted at their rear ends upon the arm C by transverse pins *f* and provided at their front ends with heads having firing edges or pins, which are arranged to strike the cartridges in the chambers E as the latter successively pass underneath the hammers by the forward rotation of the wheels A. The pivot-pins *f* are carried by an upright yoke or double standard *f'*, secured to the upper side of the arm C, and one or both of the hammers F are removably mounted on said pivot-pins by providing the same with downwardly-opening notches f^2 or equivalent means, so as to permit one or both hammers to be detached from their pivots and shifted to an inoperative position preparatory to loading the cartridge-chambers.

The hammers are held against lateral displacement by stationary upright guides G, arranged on the upper rear side of the wheels A and carried by the arm C. The slots forming these guides are open at their lower ends to facilitate the introduction and removal of the hammers.

H indicates springs which tend to swing the hammers downward for firing the cartridges. In the construction shown in the drawings these springs are attached at their upper ends to the hammers and at their lower ends to a cross-head *i*, arranged at the lower end of a hanger or bracket *i'*, which extends downwardly from the arm C. This hanger may be formed in one piece with the guides G, as shown in the drawings.

The hammers F are automatically raised against the resistance of their springs by a series of cams or curved ribs J, arranged on the outer sides of the wheels A. Such a cam is located on the front side of each cartridge-chamber E, the cam rising upwardly and rearwardly from the rear side of the chamber immmediately in front of the chamber with which it coöperates and terminating at a point opposite the outer end of its companion chamber. By this arrangement each hammer after striking and exploding a cartridge is automatically elevated by the cam on the rear side of that cartridge until the cam by the forward rotation of the wheel A clears the hammer and allows it to snap down upon the cartridge of the next succeeding chamber under the reaction of its spring. The hammer is in this manner alternately elevated and allowed to swing downward, thereby successively discharging all the cartridges in the several chambers.

In order to reduce the friction between the hammers and the cams, and thereby facilitate

the movement of the hammers over the same, each hammer is provided at its lower edge immediately in rear of its head with a lug or projection *k*, which runs in contact with the cams in advance of the depending hammer-head and during the first portion of the upward movement of the hammer.

The wheels A may be provided with a greater or less number of cartridge-chambers and cams. The ribs forming the cams may be extended to the hubs of the wheels to strengthen the same; but when the wheels are provided with a comparatively large number of chambers, which are arranged closely together, as shown in the drawings, only every other rib is extended to the hub, and the intermediate ribs are constructed to terminate at the corresponding cartridge-chambers, so as to leave a sufficient opening or clearance at the inner end of the cartridge-chambers to permit a free expansion of the exploded gases, and thereby prevent the cartridge-shells from being blown out of the chambers and injuring the user. This construction also permits a suitably-shaped rod or wire to be thrust into the inner ends of the cartridge-chambers for ejecting the exploded shells.

One of the wheels A is preferably provided at its periphery with teeth or spurs, as shown in the drawings, for preventing slipping of the wheels on the floor or ground.

In order to balance the toy and furnish a comparatively large number of cartridge-chambers, two cartridge-wheels are employed, one on each side of the arm C, as shown; but, if desired, the toy may be provided with a single wheel and a companion hammer. When two wheels are employed, the cartridge-chambers and cams of the wheels are arranged to alternate or in staggered order, as shown in Fig. 2, so that no two of the cartridges are discharged at the same time.

In loading the toy one of the hammers F is lifted off its pivot and shifted backward to the position shown by dotted lines in Fig. 1, and the wheels are then turned forward sufficiently to move the adjacent cartridge-chamber clear of the detached hammer-head and held in that position against the tension of the hammer-springs. A cartridge is now placed in said chamber, and the wheels are then allowed to turn backward to bring said loaded chamber under the lowered hammer. The remaining chambers of the same wheel are then successively filled by bodily turning the toy, but not turning the wheels with reference to the handle-arm C. In the rearward position of the detached hammer above described the other hammer rests upon the contiguous cam a sufficient distance behind the adjacent cartridge-chamber to clear the latter and permit it to be loaded, and after loading this chamber the remaining chambers of the same wheel are successively filled. The detached hammer is then reëngaged with its pivot and the toy is ready for use. If desired, both hammers may be detached and moved to an inoperative position before loading the cartridge-chambers.

By mounting the cartridge-chambers and cams directly upon the ground-wheels of the rolling toy its construction is materially simplified, and by so combining the hammers with the cartridge-chambers and cams that the hammers can be shifted out of their operative position and reliably held there the toy can be loaded without danger of injury by an accidental or premature discharge of the cartridges.

By arranging the cartridge-chambers to project from the sides of the ground-wheels and extending their openings or sockets throughout the length of the bosses which form the chambers the cartridges are free to explode into the open center of the wheels, preventing breakage of the chambers and recoil of the toy, which would be liable to occur if the inner ends of these chambers were closed.

I claim as my invention—

1. The combination of an axle having a handle arm or frame, ground-wheels mounted side by side on the axle and each provided with a row of radial cartridge-chambers and a series of lifting-cams arranged in front of said chambers, the chambers and cams of the wheels being arranged in alternating or staggered order, and a firing-hammer for each wheel mounted on said handle-frame and arranged to coöperate with the cams and cartridge-chambers of the same, substantially as set forth.

2. The combination of an axle carrying an arm or frame, a wheel mounted on said axle and provided on its side with a laterally-projecting boss or bosses, each having a cartridge-opening which extends from end to end thereof, a firing-hammer mounted on said frame and arranged to strike the cartridges placed in said bosses, and lifting devices for said hammer carried by said wheel, substantially as set forth.

3. The combination of an axle carrying an arm or frame, a wheel mounted on said axle and provided on its side with a laterally-projecting boss or bosses, each having a cartridge-opening which extends from end to end thereof, said bosses being arranged radially on the wheel, lifting-cams which project laterally from the same side of the wheel as said bosses and extend upwardly and rearwardly from the bosses, respectively, to a point opposite the outer end of the next succeeding boss, and a firing-hammer carried by said frame and arranged to ride over said cams, substantially as set forth.

4. The combination of an axle having a handle-arm, a ground-wheel mounted on said axle and provided on its outer side with radially-arranged cartridge-chambers and a series of curved cam-ribs arranged in front of said cartridge-chambers and each extending upwardly and rearwardly from one of the chambers, alternate ribs of the series extend-

ing inwardly beyond the cartridge-chambers to the hub of the wheel, and the intermediate ribs terminating at the adjacent chambers, and a firing-hammer coöperating with said chambers and cam-ribs, substantially as set forth.

5. The combination of an axle having a handle arm or frame, a wheel mounted on said axle and having a radial cartridge chamber or chambers, hammer-lifting devices arranged in front of said chambers, a firing-hammer detachably pivoted upon said frame, and a guide for the hammer mounted on said frame, substantially as set forth.

6. The combination of an axle, a handle-arm attached to the axle and carrying a horizontal pivot, a ground-wheel mounted on said axle and provided with radially-arranged cartridge-chambers and lifting-cams arranged in front of said chambers, a detachable firing-hammer provided at its rear end with a notch which receives the pivot on said handle-arm, and a spring for depressing said hammer, substantially as set forth.

7. The combination of an axle having a handle-arm, a ground-wheel having radially-arranged cartridge-chambers and lifting-cams arranged in front of said chambers, a firing-hammer detachably pivoted upon said handle-arm, and a guide for the hammer mounted on said handle in front of the hammer-pivot, substantially as set forth.

8. The combination of an axle, a frame carried by said axle and provided on the rear side thereof with a depending bracket and in rear of said bracket with a horizontal pivot, a wheel mounted on the axle and provided with a cartridge chamber or chambers and in front of said chambers with lifting devices, a firing-hammer mounted on said pivot, and a spring connecting the hammer with the lower end of said bracket, substantially as set forth.

9. The combination of an axle having a handle-arm, a ground-wheel mounted on said axle and provided with radially-arranged cartridge-chambers and in front of said chambers with lifting-cams, and a vertically-swinging hammer pivoted upon said handle-arm and provided at its front end with a firing-head and in rear of said head with a depending lug arranged to ride over said cams in advance of said head, substantially as set forth.

Witness my hand this 10th day of December, 1901.

HERMAN GREINERT.

Witnesses:

CONRAD BENDER,

CARL F. GEYER.