

(No Model.)

J. H. WILSON.  
GYROSCOPE OR REVOLVING TOY.

No. 461,948.

Patented Oct. 27, 1891.

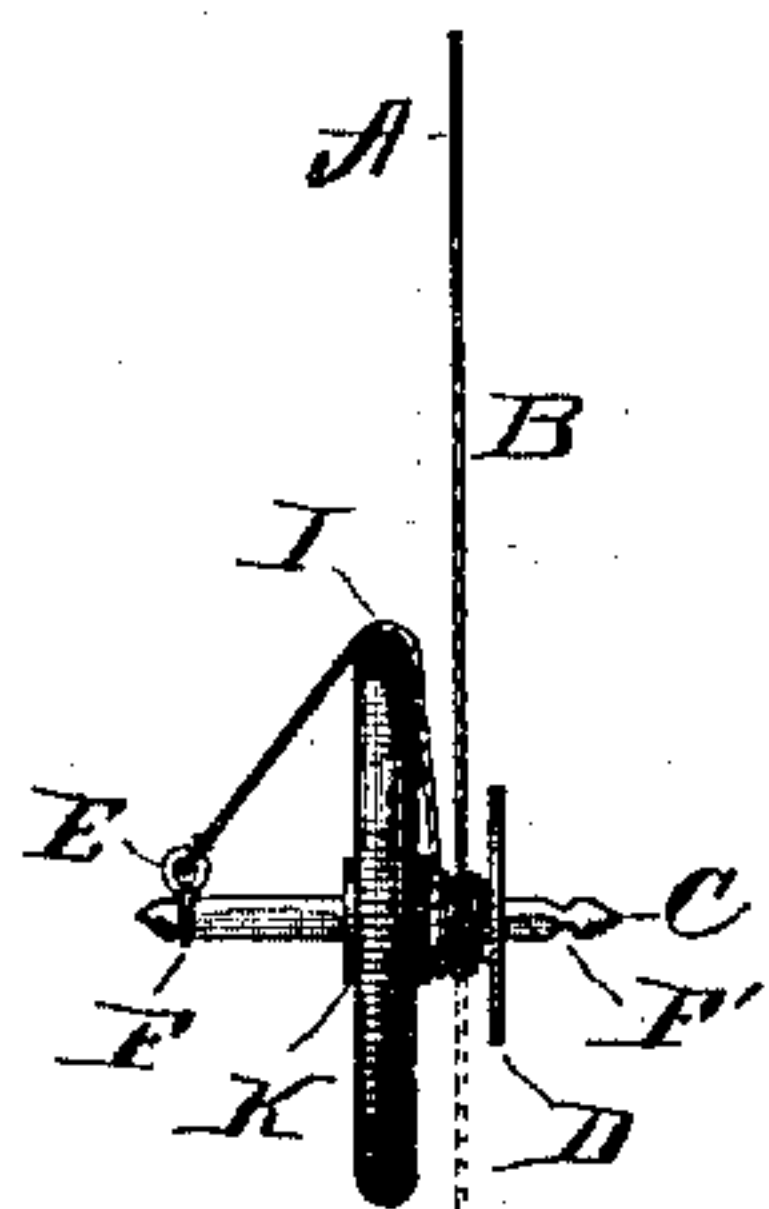


Fig. 1.

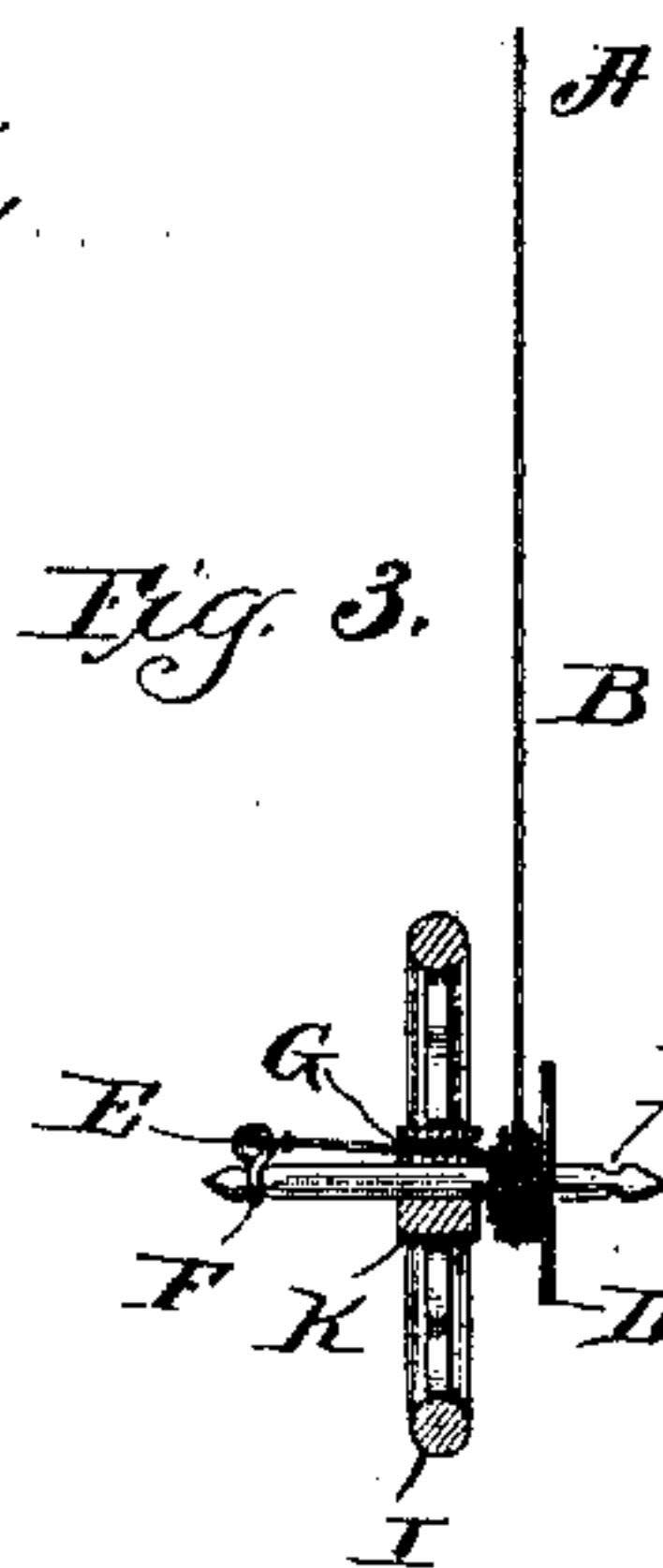


Fig. 3.

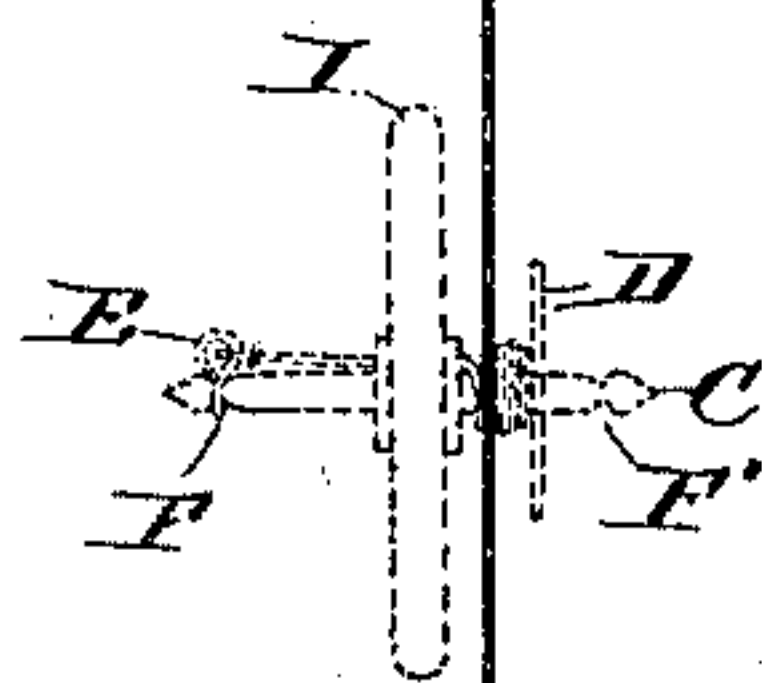


Fig. 4.

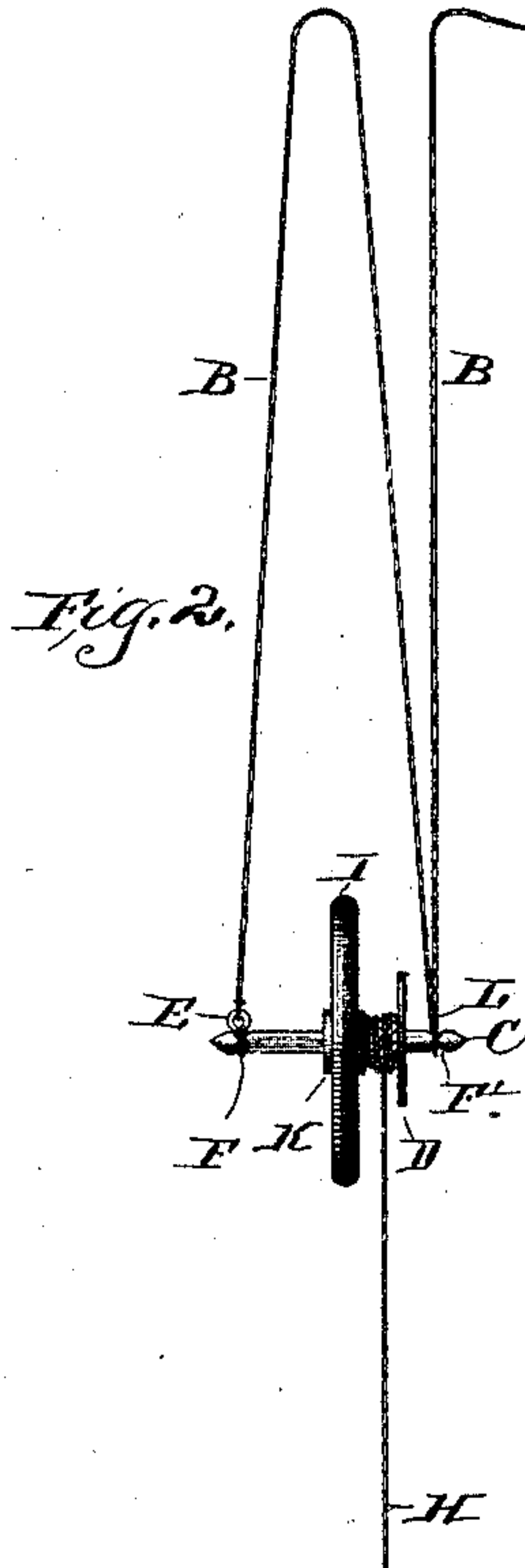


Fig. 2.

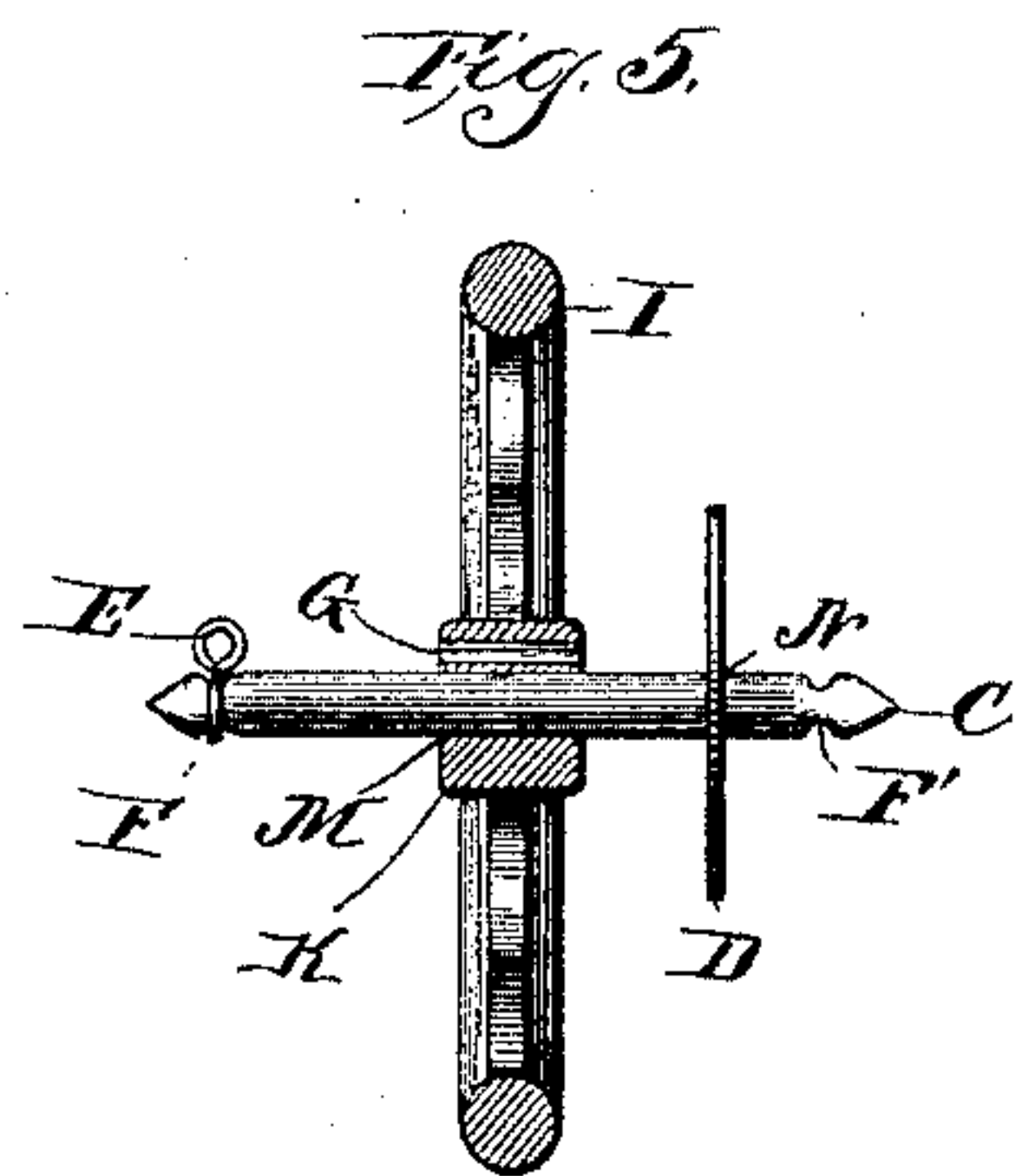


Fig. 5.

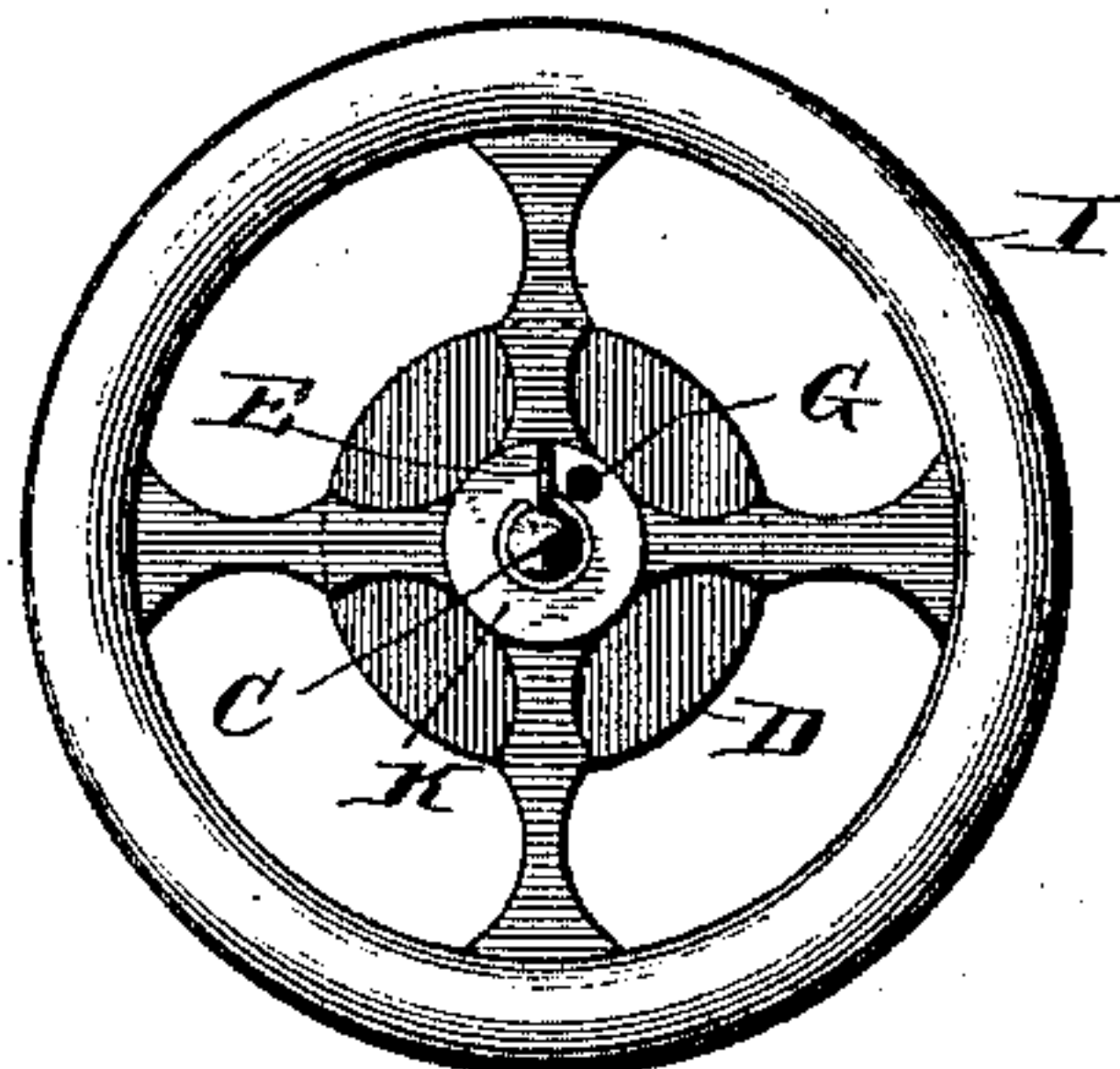
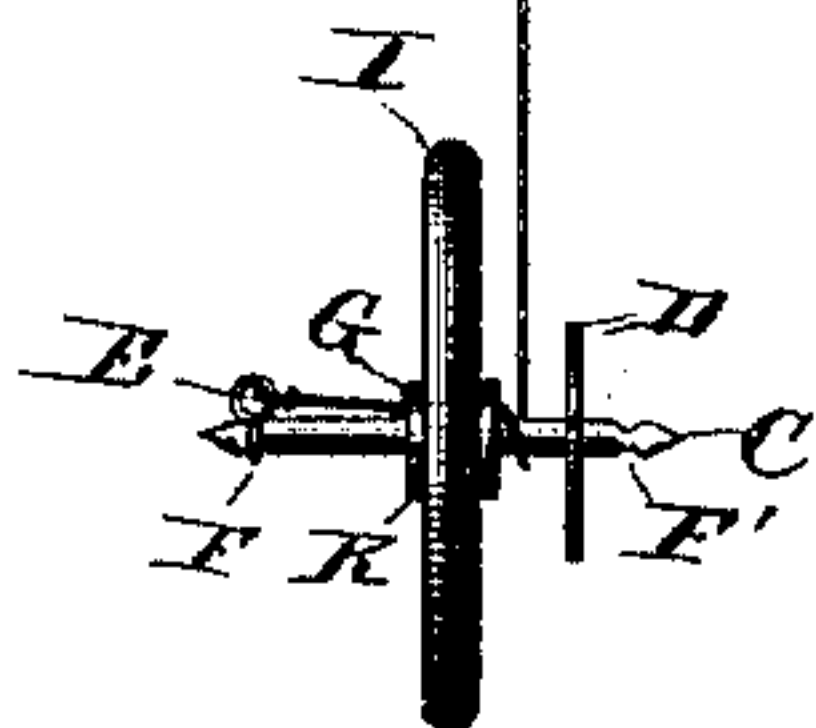


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JAMES H. WILSON, OF CHICAGO, ILLINOIS.

## GYROSCOPE OR REVOLVING TOY.

SPECIFICATION forming part of Letters Patent No. 461,948, dated October 27, 1891.

Application filed October 23, 1890. Serial No. 369,037. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. WILSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Machine or Toy, of which the following is a specification.

My invention relates to improvements in gyroscopes or other revolving toys; and the objects of my improvement are to provide in a simple form a small machine that will combine many interesting features in the way of gyroscopic rotations and spinning movements, and which at the same time can be used as a toy. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of the entire machine wound and the wheel ready to be set in revolution by suspending the thread or cord at A and allowing the wheel and axle to freely descend under the law of gravity, the dotted line showing the path of such descent and the position of the cord, axle, and wheel during the period of maximum rotation of said wheel and axle. Fig. 2 is an illustration of the wheel and axle with a cord H wound upon the axle and the wheel ready to be set in motion or revolution by the rapid unwinding of said cord H from said axle, the whole being suspended during said process of unwinding by the thread or cord B, one portion of said thread or cord B being looped into a groove F' in said axle near one end thereof and the other or remote end of said thread or cord B being fastened into a link or groove near the other or remote end of said axle in such manner as to allow said axle to freely revolve in said loop, link, ring, or fastening of said thread or cord B. Fig. 3 is a sectional view of the entire machine, designed to illustrate the law of action and reaction, one end of the thread or cord B being fastened loosely in groove F or link E and the other or remote end of said thread being drawn through the hole or aperture G in the hub K and there wound upon the axle C, ready to make the descent when suspended from the point A. Fig. 4 is a view of the entire machine as last above described, the wheel and axle having been put in motion or revolution by descent from a point near

the point of suspension A and by the unwinding of said thread or cord from said axle. The dotted portion of said Fig. 4 shows the upward return or position of said wheel and axle after they have descended the distance or length of said thread or cord so wound upon said axle and again ascended by the automatic winding of said thread or cord upon said axle, as aforesaid. Fig. 5 is a sectional view of the entire machine without the thread or cord necessary to cause said axle and wheel to revolve and without the necessary thread or cord to support said axle and wheel during the period of rotation thereof. Fig. 6 is a plan view of the entire machine without the thread or cord last above described.

Similar letters refer to similar parts throughout the several views.

I is a wheel, the principal weight of which is in the periphery. C is an axle or shaft, with which said wheel revolves, the length of this shaft may equal about the diameter of said wheel, and the ends protrude through the center of said wheel about an equal distance on each side thereof and at right angles to the sides of said wheel.

A is the point of suspension of the thread or cord B.

B is a thread or cord having one end thereof connected with the shaft C by a loop made in one end of said cord fastened loosely in the groove F, or connected with said shaft by being fastened to a ring or link of metal, clasped or fastened loosely into said groove. D is a flange, washer, or wheel fastened upon said shaft C between the point F' and said wheel I. E is a link or ring loosely fitting in the annular groove F near one end of said shaft C. F F' are annular grooves made in said shaft or axle C, one of said grooves being made in said shaft near each end of said shaft and parallel with the sides of said wheel when in place. G is a hole or aperture through said wheel I or through the hub of said wheel, at or near the outer surface, when in place, of said shaft or axle, and parallel with the length of said axle or shaft.

H is an independent thread or cord wound upon the shaft C between the washer or wheel D and the wheel I, used to impart rotary motion to said shaft or axle C and wheel I when



said machine is suspended by said cord B from the loop L and link E, Fig. 2. K is a hub or portion of said wheel I, adjacent to the center thereof. L is a loop made in said thread or cord B, and inserted or drawn in groove F'. M is a hole made in the center of said wheel I perpendicular to the sides of said wheel I for the reception of said shaft or axle C. N is a hole made in said washer or wheel D at the center thereof and perpendicular to the sides of said washer or wheel D for the reception of said shaft or axle C.

The manner of constructing and operating the machine may be briefly described as follows—that is to say: A wheel I is made of metal or other suitable material and of any desired size. The device operates the most satisfactorily when the principal weight of the wheel is in or near the periphery of said wheel. A hole M is made in the wheel I at the center of said wheel and in a direction perpendicular to the sides thereof. A shaft or axle C is then made of about the same diameter as said hole M. This shaft may be of any desired length, but ordinarily should in length be about equal to the greatest diameter of said wheel I. Annular grooves F F' are made in and upon said shaft or axle near the ends thereof. Said shaft or axle C is then inserted in said hole M in said wheel I to about the middle of said axle or shaft C and there securely fastened. Said wheel and axle may also be made solid or of one piece, if desired. A hole or aperture G is made through the hub K of said wheel or through said wheel near to and parallel with said hole M. A washer or wheel D is then made having a hole N at the center thereof, which hole should be the same diameter as said shaft or axle C. Said washer or wheel D is then advanced upon said shaft or axle C to a point about midway between said wheel I and said groove F' at one end of said shaft or axle, at which point said washer or wheel D is securely fastened to said shaft or axle C. A ring or link E, of metal or other suitable material, is then fastened around said axle or shaft C in said groove F. At the other or remote end of said shaft or axle C, into a ring or other suitable projection of said link E, said thread or cord B is securely fastened. This link E is inserted and fastened in said groove F in such manner as to allow said axle or shaft to easily revolve in said link. Said cord or thread B may also be looped or tied in said groove F in such manner as to allow said shaft or axle to revolve in said loop so made or tied, as aforesaid, in the end of said cord or thread without the intervention of said metal ring or link.

The manner of operating the device may be briefly described as follows: After one end of said thread or cord has been looped into or tied into said groove F or into said ring or link E the thread or cord is then drawn over the periphery of said wheel I, Fig. 1. So much of said cord as is thus drawn over said

periphery is then evenly wound upon said shaft or axle C between said wheel I and said washer or wheel D, leaving a portion of said thread or cord near the point A, from which to suspend the machine during the process of unwinding. Said thread or cord B is then grasped by the hand or otherwise suspended at a suitable distance from the floor or other obstruction, and the other hand or support for said wheel and axle is removed when the unwinding of said cord or thread from said axle or shaft will cause said wheel and axle to rapidly rotate or revolve in a vertical plane until said thread or cord is wholly unwound, when the wheel I, during the maximum of its revolution or rotation, will assume the position of the gyroscope shown in Fig. 1, the thread B acting as the point of suspension of said wheel and axle.

The machine is also operated by fastening one end of said thread or cord in said link E upon one end of said shaft or axle, and by looping another portion of said thread or cord in the groove F' in the other or remote end of said axle or shaft, first winding upon said shaft or axle between wheel I and said washer D another and independent thread or cord H. The machine, when operated as herein last mentioned, is set in motion by firmly grasping the thread or cord B at the points A A', Fig. 2, with one hand and grasping the thread or cord H at or near the point H and sharply drawing the thread or cord H from the axle. This movement will cause the thread or cord H to rapidly revolve the axle C and wheel I, when upon loosening the grasp of the hand or fingers from said thread or cord B at A' the wheel I will drop and revolve as at first described, being supported during the revolutions thereof by said thread or cord B.

The machine is also operated by fastening one end of said thread or cord B in the link E, and then threading said cord or thread through the hole G of said wheel I, Figs. 3 and 4, and then winding upon said shaft or axle between said wheel I and washer D so much of said thread as has been drawn through said hole, reserving a portion of said thread or cord from which to suspend the same at A, when the machine is put in operation. The machine, when set or wound as last above described, is put in motion by suspending the same by the thread or cord B at or near the point A at a suitable distance from the floor or other obstruction, and allowing said wheel and axle or shaft to freely descend by their own weight, which descent and suspension of said cord B at A and unwinding of said cord will cause said shaft and wheel to rapidly revolve, which revolution will continue for a limited period of time after said thread or cord shall have become unwound from said shaft or axle, and as a result of said continued revolutions of said wheel and shaft said thread or cord will automatically wind upon said shaft or axle and cause said wheel and axle to ascend, as is in-



indicated by the dotted portion on Fig. 4. When said wheel and axle or shaft have ceased to wind and ascend, as last above described, they being acted upon by gravity will descend, as before described, and again ascend in the manner mentioned. This descent and ascent of said wheel and axle or shaft will automatically continue; but the movement will become each time less in extent until friction and the resistance of the air have substantially overcome the momentum first imparted to said wheel and axle.

I am aware that prior to my invention a thread or cord acting upon a shaft has been used to impart rotary motion to wheels. I therefore do not claim such a combination broadly.

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

1. The combination of the wheel I, having the hole G, with the shaft C, having groove F, into which thread B is loosely fastened or attached by link E, said shaft C having washer D thereon.

2. The combination of the wheel I, having the hole G, with the shaft C, having grooves F and F' and having washer D thereon, and with the thread B fastened loosely in groove F or attached to link E in said groove.

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Witnesses:

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