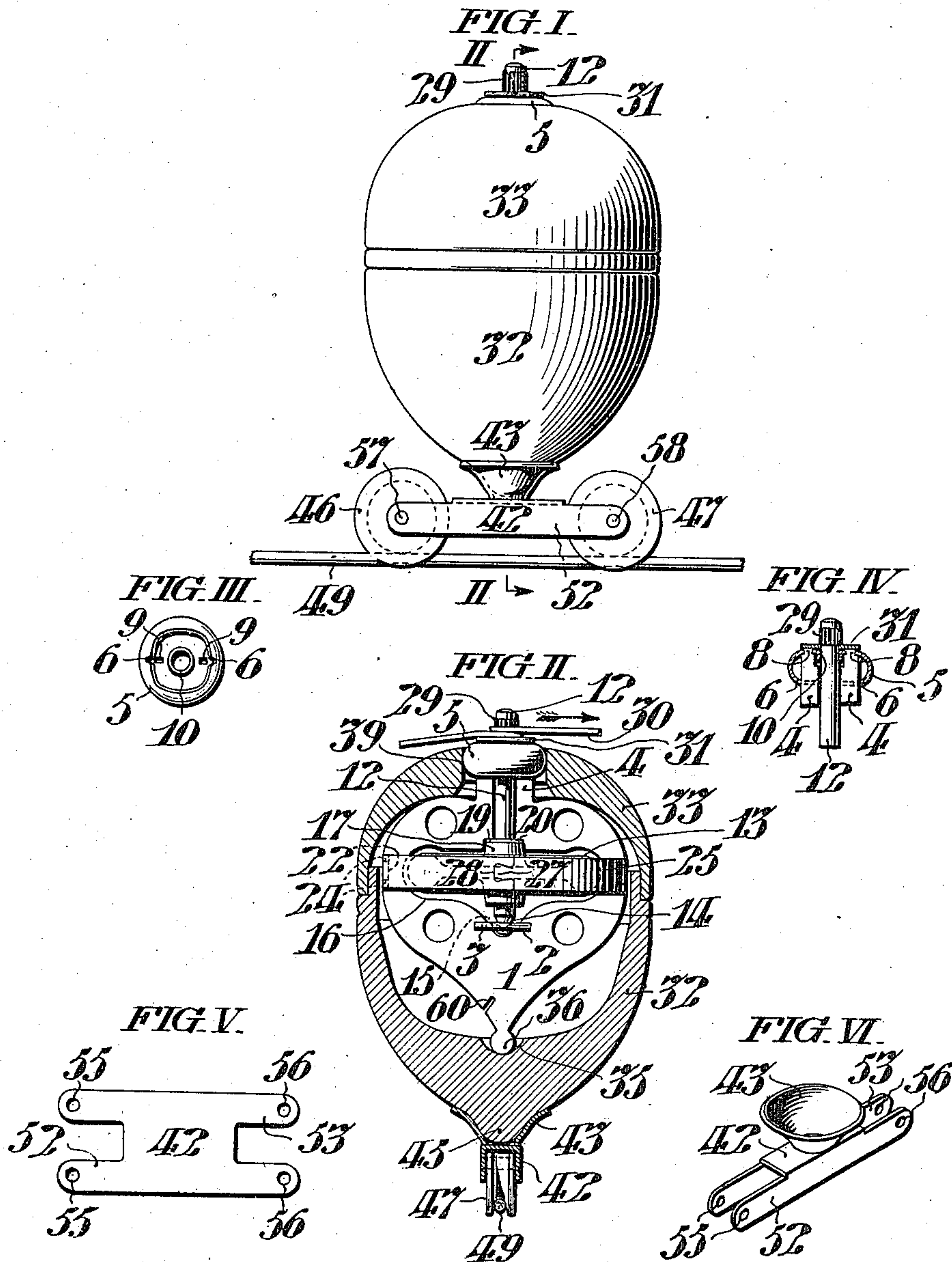


J. A. IRVING.
TOY TOP.

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965,465.

Patented July 26, 1910.



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UNITED STATES PATENT OFFICE.

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TOY TOP.

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To all whom it may concern:

Be it known that I, JAMES A. IRVING, of New York, in the State of New York, have invented a certain new and useful Improvement in Toy Tops, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to tops of the gyroscopic class, and the form thereof herein-
after described comprises a frame having a spinning point; a spindle mounted in said frame to rotate relatively to said spinning point; a balance wheel carried by said spindle; a cap on said frame having a bearing for said spindle, and, a casing formed of separable sections inclosing said top, having a seat for said spinning point and an aperture for said frame cap through which the operating end of said spindle is presented. Said casing having a spinning point at its end opposite to said aperture, an adjunctive feature of my invention is a carriage arranged to support said casing by said spinning point and to be maintained upright by the action of said balance wheel.

My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the accompanying drawing; Figure I, is a side elevation of a top comprising a casing and carriage constructed in accordance with my invention. Fig. II, is a central vertical sectional view of said casing and carriage, taken on the line II, II, in Fig. I, and showing the inclosed top in elevation. Fig. III, is an inverted plan view of the metallic frame cap which comprises the upper bearing for the top spindle. Fig. IV, is a central vertical section view of said frame cap, taken in a plane parallel with the frame plate of said top. Fig. V, is a plan view of the flat sheet metal stamping from which the carriage is formed. Fig. VI, is a perspective view of the carriage, exclusive of its wheels.

In said figures; the frame plate 1, is conveniently pressed from sheet metal and comprises the seat 2, for the bearing disk 3, and the parallel arms 4, extending through the frame cap 5, in engagement with recesses 6, in the free edge of said cap. Said arms 4, having reduced projections 8, fitted to the openings 9, in said frame cap, are riveted to rigidly secure the latter. Said cap 5, com-

prises the central bearing 10, for the spindle 12, which carries the balance wheel 13; and which has its pointed end 14, supported in the socket 15, in the bearing disk 3. Said balance wheel 13, is arranged to rotate in the recess 16, in said plate 1, and has its hub 17, conveniently provided with an anti-friction washer 19, adjoining the shoulders 20, on said plate 1, which shoulders overhang said hub and retain said wheel 13, and spindle in proper position. Said frame plate 1, comprises the opposite recesses 22, arranged to receive the notched portions 24, of the circumferential band 25, shown attached to the frame plate 1, in Fig. II. Said band serves to guard the wheel 13, and may be conveniently formed of a pressed strip of sheet metal, having its opposite ends provided with complementary projections and recesses 27 and 28, which, when connected, are pressed and thus locked together to prevent their disengagement.

As indicated in Figs. I and II; the spindle 12, is provided with corrugations 29, at its operating end, extending above the frame cap 5, so as to engage the driving cord 30, which, as indicated in Fig. II, is looped around the spindle 12, and is guided by the washer 31. Said washer 31, is loosely mounted on the spindle 12, and rests upon the frame cap 5, and is prevented from displacement by the ridges of said corrugations 29, said ridges being of greater diametrical extent than the normal diameter of said spindle, as best shown in Fig. IV.

The mechanism above described is inclosed by the hollow, oval casing comprising the separable sections 32 and 33. Said base section 32, has the recess 35, forming a seat for the spinning point 36, on said frame 1, and, the cover section 33, which extends in such relation with the frame plate 1, as to normally prevent the escape of the latter, has the aperture 39, in which the frame cap 5, is snugly fitted, to prevent lateral displacement of said top and present the operating end of the spindle 12, exterior to said casing, for engagement with the driving cord 30, as shown in Fig. II. It is to be understood that when said cord 30, is drawn in the direction of the arrow indicated in Fig. II, while the casing 33, is held stationary, the spindle 12 and the balance wheel 13, may be rotated at such speed that the casing 1, will

be maintained at any desired angle, by the gyroscopic effect of the rotary mass, and may be supported upon any suitable surface by its spinning point 45, or upon the carriage 42, shown in Figs. I and II, having the socket 43, arranged to receive said point 45. As best shown in Figs. I and II, said carriage 42, comprises the grooved supporting wheels 46 and 47, arranged in tandem relation to traverse a cord or wire 49.

As best shown in Fig. V, the carriage frame is formed of a primarily flat sheet metal stamping 50, of H-shaped configuration, bent, as shown in Fig. VI, to form parallel plane bearing arms 52 and 53, having apertures 55 and 56, for the shafts 57 and 58 of the respective wheels 46 and 47.

The socket 43 aforesaid, may be conveniently pressed from a sheet metal stamping and soldered or otherwise secured to the frame of the carriage 42, as shown in Figs. II and VI.

The top above described may be operated by first causing the spindle 12, and balance wheel 13, to rapidly rotate by drawing the driving cord 30, as shown in Fig. II, until it is clear of said spindle and then setting the top upon the spinning point 45, of the casing. The casing may be maintained upright or inclined, by the gyroscopic effect of the rotary mass within it, and rotary motion be gradually imparted to said casing by said mass, such transmission of motion being due to the frictional engagement of said spindle 12, with its frame 1, and said frame with said casing. Although the casing is normally closed, in the position shown in the drawings, and may spin for a considerable period of time in such closed position, there is a gyratory stress produced between the rotary mechanism and the casing, which, during the continuance of the spinning operation, causes the gyroscopic mechanism to throw off the casing cover 33, and jump out of the casing base 32, and thereafter to continue to spin upon the spinning point 36, or, it may be caught upon a cord or wire engaging the notch 60, of the frame 1. When thus supported the frame may be upheld, against the action of gravity, by the gyroscopic effect of the rotating mass within the frame, while the latter traverses an inclined support without rotation.

It is to be understood that if, when the top is spun, as above described, it is supported in the carriage 42, as shown in the drawings, the gyroscopic effect of the rotating mass serves to uphold both the top and the carriage against the action of gravity while the carriage traverses an inclined support with its load.

I do not desire to limit myself to the precise details of construction and arrangement herein specified, as it is obvious that various modifications may be made therein, without

departing from the essential features of my invention, as defined in the appended claims.

I claim:—

1. The combination with a casing formed of transversely divided separable sections, one section having an exterior spinning point and an interior seat concentric with its major axis, and another section having an aperture concentric with its major axis; of gyroscopic mechanism fitted within said casing, comprising a frame with a spinning point in registry with said casing seat; a cap on said frame in registry with said casing aperture, and, a spindle projecting through said aperture, exterior to said casing, and carrying a balance wheel within said frame; a carriage having a socket arranged to support said casing and grooved wheels arranged to support said carriage, whereby, said spindle and balance wheel may be rotated relatively to said frame, casing and carriage to uphold them against the action of gravity, and rotary motion be transmitted to said casing by frictional engagement between said frame and said casing, and the latter be automatically opened and said frame be ejected therefrom by stresses between said balance wheel and casing.

2. The combination with a casing formed of separable sections, having an exterior spinning point, an interior seat and an aperture concentric with its major axis; of gyroscopic mechanism fitted within said casing, comprising a frame with a spinning point in registry with said casing seat; a cap on said frame in registry with said casing aperture; and, a spindle projecting through said aperture exterior to said casing, and carrying a balance wheel within said frame; whereby, said spindle and balance wheel may be rotated relatively to said frame and casing, to uphold them against the action of gravity, and rotary motion be transmitted to said casing by frictional engagement between said frame and said casing, and the latter be automatically opened and said frame be ejected therefrom by stresses between said balance wheel and casing.

3. The combination with a casing formed of separable sections, having an exterior spinning point, an interior seat and an aperture concentric with its major axis; of gyroscopic mechanism fitted within said casing, comprising a frame with a spinning point in registry with said casing seat; a cap on said frame in registry with said casing aperture; and a spindle projecting through said aperture exterior to said casing, and carrying a balance wheel within said frame; whereby, said spindle and balance wheel may be rotated relatively to said frame and casing, to uphold them against the action of gravity, and rotary motion be transmitted to said casing by frictional engagement between said frame and said casing, and the

latter be automatically opened and said frame be ejected therefrom by stresses between said balance wheel and casing.

4. The combination with a top comprising
5 a frame with a spinning point, a spindle independent of said spinning point, a balance wheel carried by said spindle, and a cap on said frame having a bearing for said spindle; of a casing inclosing said top, having
10 a seat for said spinning point and an aperture for said frame cap.

5. The combination with a top comprising
15 a frame with a spinning point, a spindle independent of said spinning point, a balance wheel carried by said spindle, and a cap on said frame having a bearing for said spindle; of a casing formed of separable sections, inclosing said top, and having a seat for said spinning point, and an aperture for said
20 frame cap.

6. The combination with gyroscopic mechanism comprising a spinning point, a spindle rotatable independently of said spinning point, and a balance wheel carried by said
25 spindle; of a casing formed of sections, separable in a plane transverse to the axis of said spindle, inclosing said mechanism and having a seat for said spinning point and an aperture through which said spindle
30 extends exterior to said casing.

7. The combination with gyroscopic mechanism comprising a frame with a spinning point, a spindle rotatable independently of said spinning point, a balance wheel carried
35 by said spindle, and a cap on said frame having a bearing for said spindle; of a casing having a seat for said spinning point, and comprising a cover arranged to retain said spinning point in said seat, and having
40 an aperture for said cap, through which said spindle extends, exterior to said casing.

8. The combination with gyroscopic mechanism comprising a frame with a spinning point, a spindle rotatable independently of
45 said spinning point; a balance wheel carried by said spindle; of a casing inclosing said mechanism, having means arranged to retain said spinning point in said seat, and, an aperture through which said spindle extends exterior to said casing.
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9. A toy top comprising a frame plate having parallel arms; a rotary spindle; a balance wheel carried by said spindle; a bearing plate, having a socket for the point
55 of said spindle, mounted in said frame plate; a cap on said frame comprising a bearing for said spindle, and having notches in its

free edge, arranged to engage said parallel arms, and, apertures into which said arms extend in riveted relation.

10. A toy top comprising a frame plate, formed of sheet metal, and having parallel arms; a spindle arranged to rotate between said parallel arms; a bearing for the point of said spindle; a cap on said frame comprising a bearing for said spindle, intermediate of its length, and having apertures arranged to receive the ends of said arms, which are riveted therein, and having
60 notches in its lower edge in alinement with
65 said apertures arranged to embrace said arms.
70

11. A toy top comprising a sheet metal frame plate provided with parallel arms having reduced ends; of a rotary spindle
75 arranged to rotate between said arms, and having corrugations adjacent to its free end arranged to engage a driving cord; a bearing for the point of said spindle; a balance wheel carried by said spindle; a frame cap
80 comprising a bearing for said spindle, adjacent to said corrugations, and having apertures arranged to receive the reduced ends of said arms, which are riveted therein, and having notches in its lower edge, arranged
85 to embrace said arms; and a washer, loosely mounted on said spindle, supported by said frame cap, and prevented from displacement by the extended ridges of said corrugations, arranged to guide said driving cord.
90

12. A toy top comprising a frame plate formed of sheet metal and having a spinning point, and a notch eccentric with respect to said spinning point, arranged to engage a cord or wire; a spindle, having
95 corrugations arranged to engage a driving cord, adjacent to its free end, mounted to rotate in said frame plate; a balance wheel carried by said spindle; a frame cap in riveted relation with said frame plate, and
100 comprising a bearing for said spindle; and means arranged to guide said driving cord, comprising a washer mounted loosely on said spindle, supported by said frame cap, and prevented from displacement by the
105 projecting ridges between the grooves of said corrugations.

In testimony whereof, I have hereunto signed my name at New York, New York, this 6th day of November 1908.

JAMES A. IRVING.

Witnesses:

FRED OPPENHEIMER,
WALTER N. GLADKE.