

No. 753,109.

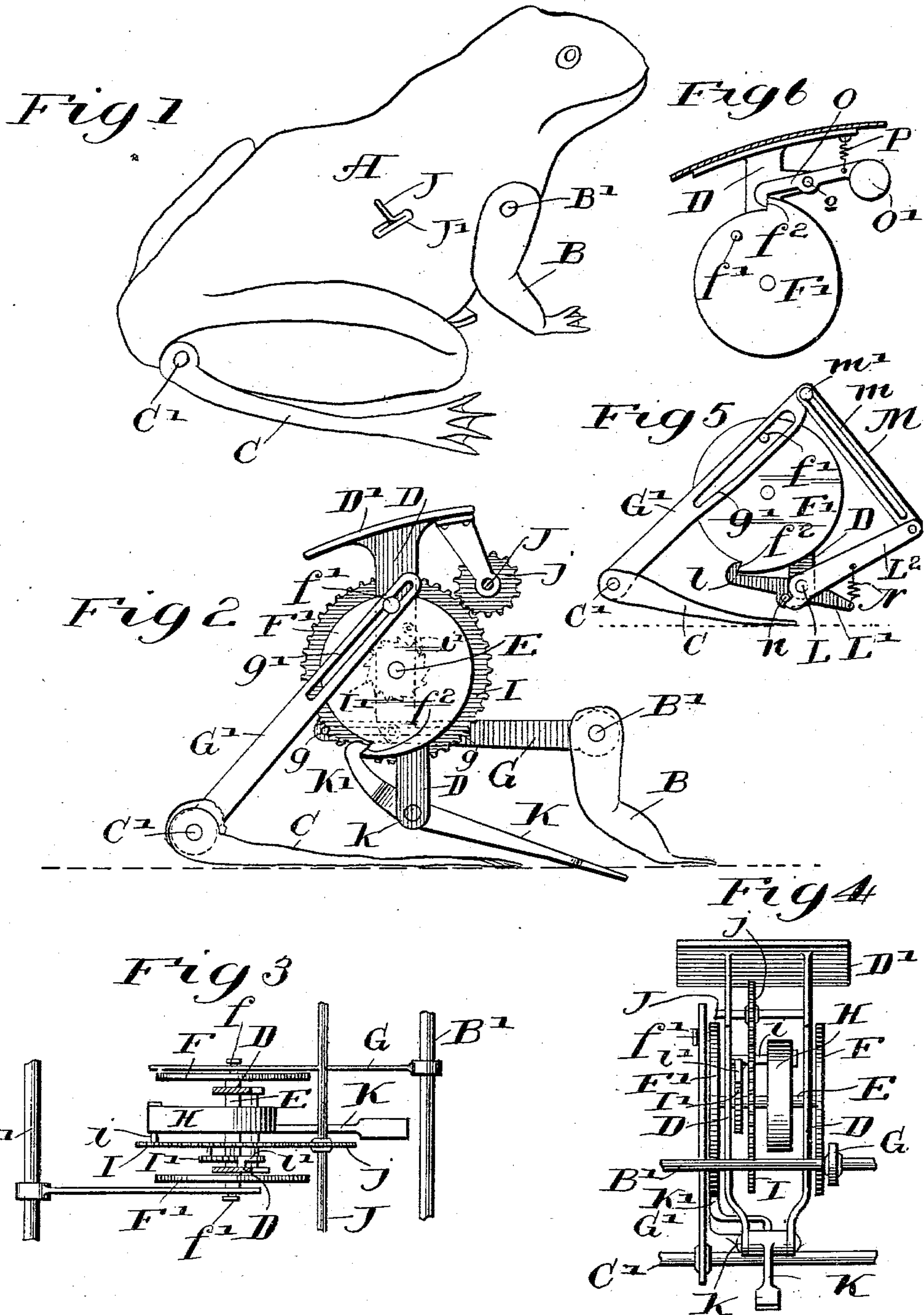
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H. A. POPPENHUSEN.

TOY.

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NO MODEL.



Witnesses:-

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UNITED STATES PATENT OFFICE.

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TOY.

SPECIFICATION forming part of Letters Patent No. 753,109, dated February 23, 1904.

Application filed May 1, 1903. Serial No. 155,129. (No model.)

To all whom it may concern:

Be it known that I, HERMAN A. POPPENHUSEN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Toys; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel spring-actuated toy adapted for forward movement by a series of impulses imparted to movable impelling members that operate against the floor or surface upon which the toy rests, the device being more particularly intended to simulate an animal, such as a frog or rabbit, that moves forward by a series of leaps or jumps.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

As shown in the accompanying drawings, Figure 1 is a perspective view of a toy having the form of a frog embodying my invention. Fig. 2 is a view in side elevation of the impelling mechanism of the toy shown separately from the body thereof. Fig. 3 is a plan view of said impelling mechanism. Fig. 4 is an elevation thereof as seen in end view, and Fig. 5 is a modified form of device for actuating the trigger of the device, and Fig. 6 illustrates a further modification of the trigger-actuating device.

As shown in said drawings, A indicates the hollow body of the toy, which in the instance illustrated simulates a frog. B and C indicate front and rear impelling members, shown in the drawings as having the form of the front and rear legs of the frog. Said impelling members are rigidly attached to the ends of horizontal rock-shafts B' and C', which are mounted in suitable bearings, shown in the drawings as formed by means of apertures in the walls of the hollow body A.

Within the hollow body A is located a spring-operated actuating mechanism the frame of which, as shown in the drawings, consists of two parallel supporting members D D, which are attached to a base-plate D', which base-plate is secured in any suitable manner to the

top of the hollow body A. In the said frame-arms D D is mounted a horizontal rotative driving-shaft E, arranged parallel with the shafts B' C' and which projects at its ends beyond the said members D. Rigidly attached to the opposite ends of said shaft are two crank-disks F F', provided with crank-pins *f f'*, which crank-pins project from the outer faces of the said disks. The crank-pin *f* on the disk F engages a longitudinal slot *g*, formed in an actuating-arm G, which is rigidly attached to the shaft B' of the forward impelling members B B. The crank-pin *f'* of the disk F' is engaged with a like slot *g'* in an actuating-arm G', which is rigidly attached to the shaft C' of the rear impelling members C C. The free ends of the said arms G and G' are adapted to swing or oscillate freely across the outer faces of the disks F F', and when said shaft E is turned or rotated the disks F and F' are turned therewith, and at each complete rotation of the disks the crank-pins *f f'*, through their engagement with the arms G G', will give a single oscillatory movement thereto or, in other words, will carry said arms from their normal position to the opposite limit of their throw and back again to such normal position. The said arms G G' are so arranged with respect to the impelling members B and C that when the said actuating-arms are in their normal positions the impelling members will be at the forward and upward limit of their stroke or movement, so that each time the crank-pins *f f'* make a complete rotation the impelling members B and C will be thrown downwardly and rearwardly and again restored to their forward and elevated positions.

For giving rotative movement to the shaft E and the crank-pins *f* and *f'* a suitably-applied spring is employed, the same, as shown, having the form of a coiled spring H, which is wrapped around and secured at its inner end to the said shaft E and is attached at its outer end to a normally fixed stud *i*. To provide for the winding of the spring, the stud *i* is mounted on a wheel I, which is adapted to turn on the shaft E and is adapted to be rotated for the purpose of winding the spring H. Said wheel is provided with a rigidly-attached ratchet-wheel I', engaged by a pawl

2", pivoted to the inner face of one of the frame members D. Said wheel I is, moreover, provided with peripheral teeth and intermeshes with a gear-pinion j on a winding-shaft J, which passes horizontally through the hollow body A and is provided at one of its ends with a finger-piece or button A', by which said shaft J may be turned with the effect of rotating the wheel I, and thus winding the spring H.

For the purpose of holding the shaft E from rotation during the winding of the spring and to release said shaft to permit the turning of the crank-pin $f f'$, I employ a trigger K, which is adapted for contact with the surface on which the toy rests and which projects below the level of the actuating members C and D when the same are in their normal positions and rest on said surface, so that the said trigger will be actuated or moved by contact with such supporting-surface when the toy is placed or dropped thereupon. Said trigger K is, moreover, arranged to engage a tooth or shoulder on a part which turns or rotates with the shaft E, so that the trigger will hold the shaft from turning under the action of the spring except when said trigger is actuated by contact with the surface on which the toy is placed.

As shown in the accompanying drawings, the trigger K is pivoted by means of a pivot-pin k to the lower ends of the frame members D, and said trigger is provided at its inner end with a hooked arm K', adapted for engagement with a shoulder f^2 , formed on one of the disks F', the hooked end of the arm K' being so arranged that when engaged with the shoulder f^2 it will hold the disk from turning, and thus prevent movement of any of the parts under the action of the spring H.

The operation of the parts made as above described is as follows: At the time of winding the spring H the trigger will be engaged with the shoulder f^2 on the disk F', so as to hold said disk from turning, said shoulder being arranged in such relation to the crank-pins $f f'$ that when the disk is thus held from turning the actuating arms or members B and C will be held at the upper and forward limit of their oscillatory movement or in what may be termed the "normal" position of these parts. When the trigger K is thus engaged with the disk F' and the impelling members are in the position described and shown in Fig. 2, the free end of the trigger K, which projects downwardly in an inclined direction from the pivot k , extends below the level of the free ends of said impelling members, as clearly shown in Fig. 2. If when the parts are in this position the toy be dropped or allowed to rest upon a floor or horizontal surface, such as indicated by the dotted line in Fig. 2, the free end of the trigger K will be lifted when it strikes such surface and will rise until the impelling members B and C come to rest upon said surface.

As said free end of the trigger K is elevated, however, its hooked arm becomes disengaged from the shoulder f^2 , thereby releasing the said disk and permitting rapid rotation of the crank-pins under the action of the spring. Such turning of the crank-pins will have the effect of throwing the forward ends of the oscillatory members B and C downwardly and rearwardly, and the downward and rearward pressure of the impelling members on the supporting-surface will have the effect of impelling the toy upwardly and forwardly, so as to simulate the leap or jump of a frog or other animal. As soon as the toy rises from the supporting-surface the free or lower end of the trigger will descend by gravity, with the result of throwing its hooked arm K' in position to again engage the shoulder f^2 , so that at the completion of a single revolution of the crank-pins $f f'$ the movement of said crank-pins will be stopped or arrested, and the parts will resume their original positions, the impelling members being first thrown downwardly and backwardly and then upwardly and forwardly in the turning of the crank-pins, so that at the end of the rotative movement of said crank-pins said impelling members will be again held at the upward and forward limits of their oscillatory movement. The complete downward and upward oscillation of the impelling members, as well as the reengaging movement of the trigger described, will take place very quickly and will be accomplished during the time that the toy is in the air or is making its flight through the impulse given by the downward movement of the impelling members, so that when the toy again alights or strikes the supporting-surface the parts will have been restored to their original positions and will be again in position for action in the same manner as before described. As a consequence of the movements described when the spring of the driving mechanism has been wound up and the toy is placed upon the floor or supporting-surface the impelling movements or impulses of the impelling members will continue until the spring has exhausted its force, so that the toy will advance by a series of leaps or jumps until the spring has run down, it being of course understood that at each contact of the toy with the supporting-surface the trigger K will be actuated to release the operating mechanism, and thus permit the action of the impelling members in a manner to give a new forward and upward impulse to the toy.

While I have shown the toy as having the form of a frog, yet the same may simulate a rabbit or other animal or it may have any other desired external shape. While the impelling members B and C are shown as having the form of the legs of the animal, yet this is not necessary, as the figure of the animal may be complete in itself separately from impelling mechanism, and the latter may be ad-

ditional to parts simulating the legs of the animal—as, for instance, in the case of a toy resembling a frog the legs may be made separate from the impelling members and of rubber or other flexible material, permitting free flexure of the legs. Moreover, while I have shown the toy as having four impelling members, this being thought to be preferable, because with four such members the toy will be likely to maintain its horizontal position when alighting, yet in some instances it may be found practical or desirable to employ less than four of such impelling members.

The trigger which holds the spring from action instead of being operated by contact with the supporting-surface may be actuated through a slight movement of one of the impelling members, the latter in such case being connected with the rotative part of the device, which operates it by means affording a slight degree of lost motion. Such a construction is shown in Fig. 5, in which the rear impelling members C are utilized to operate the trigger. As shown in said figure, the arm G' has a slot g', wider at its outer end than the crank-pin f', which engages said slot. In this case also the trigger consists of a rock-shaft L, having a hooked arm l and a rigid arm L', attached to the shaft outside of the frame-arm D and about in the plane of the arm G'. A connecting-bar M is pivoted to the trigger-arm L' and has slot m, engaged by a stud m' on the actuating-arm G. A spring N is applied to hold the detent in position to engage the shoulder f'', and a stop-pin n on the arm D limits the movement of the trigger under the action of the spring. When the arm G' is in its normal position, the stud m' is in contact with the outer end of the slot m, and the spring N holds the trigger engaged with the disk and also holds the arm G', with the outer edge of the slot g', in contact with the crank-pin f'. If now the toy is dropped upon the floor, the contact of the impelling members therewith throws said impelling members upward and swings the arm G' as far as permitted by the width of the outer part of the slot g'. This slight movement of the arm G' will operate through the connecting-bar M to move the trigger far enough to release it from the disk F'. The disk will then turn and the crank-pin actuates the impelling members C in the same manner as before described, the arm G being permitted to move freely and independently of the trigger by the sliding of the stud m' inwardly and outwardly in the slot m of the bar M.

The release of the impelling members may be effected by the movement of a weight acting by gravity instead of by contact of a part of the mechanism with the surface on which the toy rests. Such a construction is shown in Fig. 6, in which the disk F' is provided with a shoulder f'', normally located at its upper part, and O indicates a trigger which is

pivoted at o to the frame-arm D above the said disk and is adapted to engage said shoulder. Said trigger in this instance has the form of a lever pivoted between its ends on a pivot o and having on its end remote from its holding-tooth a weight O'. A spring P acts upon the said lever in a direction to lift the weight, said spring being shown in the drawings as consisting of a coiled expansively-acting spring. In this device the gravity of the weight has such relation to the strength of the spring that the spring will hold the weight elevated under ordinary circumstances, thereby maintaining the trigger in engagement with the disk; but when the toy is dropped or alights upon the floor the impetus of the weight overcomes the force of the spring and releases the trigger from the disk.

I desire to have it understood that the general principles of my invention may be embodied in mechanical forms differing from those illustrated herein, and I do not, therefore, desire to be limited to the particular features of construction shown in the drawings except so far as the same are specifically set forth in the appended claims.

I claim as my invention—

1. The combination, with impelling members, of a shaft provided with crank-pins for operating the said impelling members, a spring applied to turn said shaft, a rotative disk which turns with the shaft, provided with a shoulder and a pivoted trigger engaging said shoulder to hold the disk and shaft from rotation and adapted to be released from said disk by contact of the toy with a supporting-surface.

2. The combination with oscillatory impelling members, of a shaft to which said members are attached, an arm rigid with said shaft, a spring-actuated disk provided with a crank-pin which engages a slot in said arm, said disk being provided with a shoulder and a pivoted trigger adapted to engage said shoulder.

3. The combination with front and rear oscillatory impelling members, two shafts to which said impelling members are attached, an arm attached to each of said shafts, a spring-actuated shaft, disks attached to the opposite ends of said shaft, crank-pins which project outwardly from the disks and engage said arms, one of said disks having a shoulder, and a trigger adapted to engage said shoulder.

4. A toy embracing a hollow body simulating an animal, front and rear shafts mounted in said body, impelling members attached to the shafts, arms attached to the shafts, a spring-actuated driving-shaft provided with crank-pins which engage and give oscillatory movement to said arms, a disk on said shaft provided with a shoulder, and a pivoted trigger adapted at one end to engage said shoulder and at its other end to engage a supporting-surface.

5. The combination with front and rear oscillatory impelling members, two shafts to

which said impelling members are attached, an arm attached rigidly to each shaft, a spring-actuated shaft, disks attached to the opposite ends of said spring-actuated shaft, said arms
5 being provided at their inner ends with slots, crank-pins projecting outwardly from said disks, and each engaging the slot of one of said arms, one of said disks having a shoulder and a trigger adapted to engage said shoulder.
10 6. The combination with front and rear oscillatory impelling members, two shafts to which said impelling members are attached, an arm attached rigidly to each shaft, a spring-actuated shaft, disks attached to the opposite
15 ends of said spring-actuated shaft, said arms being provided at their inner ends with slots, crank-pins projecting outwardly from said disks, and each engaging the slot of one of said arms, one of said disks having a shoulder
20 and a pivoted trigger adapted to engage said shoulder and to be released therefrom by contact of the toy with a supporting-surface.

7. A jumping toy comprising a frame hav-

ing downwardly-projecting side members attached to the body of the toy, a shaft extending between and having rotative bearing in said side members, a spring applied to said shaft to rotate the same, means for winding said spring, two disks, one on each end of said shaft, outside of said frame members, crank-
30 pins on said disks, front and rear oscillatory impelling members, two shafts to which said impelling members are attached, arms rigid with said shafts and adapted for engagement with the crank-pins of the disks, one of said
35 disks being provided with a shoulder and a trigger pivoted to said frame and adapted for engagement with said shoulder of the disk.

In testimony that I claim the foregoing as my invention I affix my signature, in presence
40 of two witnesses, this 2d day of April, A. D. 1903.

HERMAN A. POPPENHUSEN.

Witnesses:

WILLIAM L. HALL,
GEORGE R. WILKINS.