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M. H. BÖNINGER

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TOY

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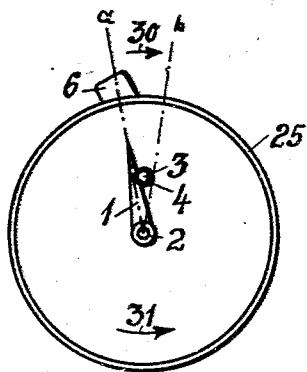


Fig. 1.

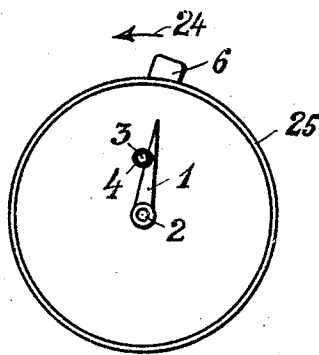


Fig. 7.

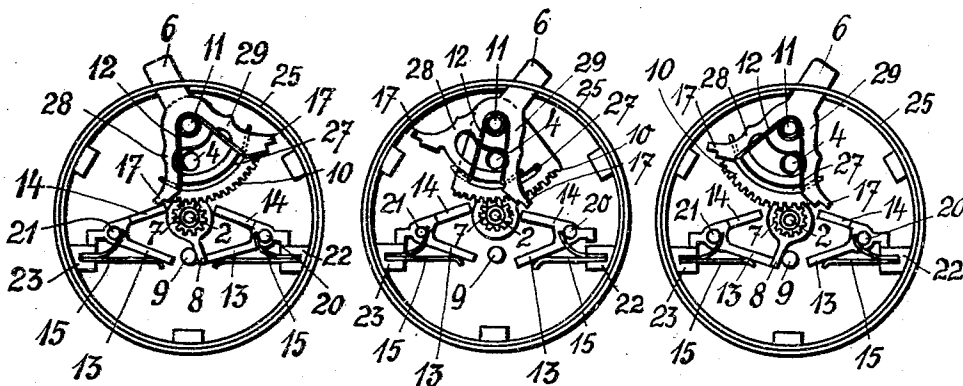


Fig. 3.

Fig. 4.

Fig. 5.

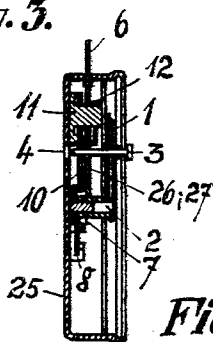


Fig. 6.



Fig. 2.

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TOY

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This invention relates to a toy which enables a peculiar optical illusion to be produced.

In the path of a rotary drive, constructed for example like a crank arm, an obstacle is arranged which would have to be cut through or severed during the further turning of the crank drive. In order to simulate this impossible effect, the crank arm is provided with a drive which rotates the crank arm very rapidly in the opposite direction by means of a spring motor and brings the crank arm behind the obstacle.

The toy can be combined with figures or the like in various manners. For example the crank arm may be constructed as a sword in the hands of a fakir. The end of the obstacle which is preferably arranged so that it can be pulled out of the device so as to convince the observer of its presence, may likewise carry the head of a fakir. With the aid of this toy it is possible to produce the impression that the sword passes through the neck of the head on the obstacle without any apparent damage or passage in the neck of the head. It is evident that the toy can be constructed in a great variety of models.

The invention is of particular importance in conjunction with advertising text.

An embodiment of the invention is illustrated by way of example in the accompanying drawing in which:—

Fig. 1 shows in front elevation a dial of a toy constructed in the shape of a watch with a hand-shaped crank arm and a simple pin projecting as obstacle.

Fig. 2 shows the construction of the crank arm as a sword in the hand of a fakir and the projecting end of the obstacle constructed as a human head.

Fig. 3 is a front elevation with the dial removed, showing the driving mechanism of the toy in one of its positions of rest.

Fig. 4 is a similar view to Fig. 3 showing the driving mechanism in an intermediate position between its two positions of rest.

Fig. 5 is a similar view to Figs. 3 and 4 showing the driving mechanism in its second position of rest.

Fig. 6 is a central vertical cross section

through the toy with the driving mechanism in the position shown in Fig. 3.

Fig. 7 shows the driving mechanism in the position of Fig. 5, viewed in the same direction in which the elements in Fig. 1 are shown for the position of the elements shown in Fig. 3.

A crank arm 1 is constructed according to Fig. 1 in the shape of a hand and according to Fig. 2 as a sword. Its shape is immaterial. The crank arm 1 is keyed on a shaft 2 which is rotatable by means of an operating lever 6. A pin 3 extends transversely through the entire device parallel to the shaft 2 as shown in Fig. 6. This pin 3 is mounted in a bore 4, as shown in Fig. 1, so that it can be removed to convince the observer of its presence. It therefore also extends through a glass pane which is preferably arranged in front of the toy like a watch glass. In Fig. 2 a fakir's head 26 is mounted on the head of the pin 3, so that it appears as if this head 26 is in the path of movement of the crank arm 1 constructed in the shape of a sword. By shifting the operating lever 6 in the direction of the arrow 30, the crank arm 1 is, however, only apparently moved in the direction of the arrow 30 from the radius a to the radius b , that is transversely through the pin 3 (Fig. 1) or through the head of the fakir (Fig. 2). In reality, the crank arm 1 or the sword is very rapidly moved by a driving mechanism, which will be hereinafter described, in the direction of the arrow 31 to the other side of the obstacle, so that the optical illusion is produced that the crank arm 1 (Fig. 1) or the sword (Fig. 2) passes transversely through the obstacle.

This mechanism comprises, according to Figs. 3 to 7, a toothed wheel 7 keyed on the shaft 2. This shaft carries on its front end the crank arm or hand 1 and on its rear end a locking arm 8 projecting from an eye. The locking arm 8 bears either against the right or left side of a pin 9 arranged below the axle 2 according to whether the crank arm 1 is situated on the one or other side of the pin 3 in the position shown in Fig. 1 or Fig. 7. The toothed wheel 7 meshes with a toothed sector 10, which rotates around an axle 11

arranged above the shaft 2 as near as possible to the edge of the case 25 of the toy. As shown in Fig. 6, the operating lever 6 is rotatably mounted on this axle 11. The operating lever 6 is, as shown in Fig. 3, bifurcated at its end adjacent the axle 2 and forms two arms 28 and 29. A spiral spring 12 is wound around the axle 11, the ends of this spring bearing against the above mentioned parts so that a kind of spring motor is formed. This spring motor can be wound by means of the operating lever 6 irrespective as to whether the operating lever 6 is in the position *a* or *b*, that is in the position shown in Fig. 1 or Fig. 7. This spring motor serves to suddenly rotate the pinion 7 on the shaft 2 through the intermediary of the spring 12 and the toothed sector 10 and to bring the crank arm 1, that is the hand (Fig. 1), or the sword (Fig. 2), from one side of the obstacle to the other by means of the shaft 2. The driving direction of the spring motor owing to the arrangement above described and illustrated in Figs. 3 and 6 is always contrary to the winding direction of the operating lever 6. To enable the winding of the spring motor, it is held by a locking device during the shifting of the operating lever 6. The above described abutment pin 9 and the locking arm 8 already described serve for effecting this locking.

The release is effected by one of two projections 17 on the arms 28, 29. These projections act on forks each having two arms 13 and 14 and they are arranged symmetrically one at each side of the shaft 2. The arms 14 are slotted so that the locking arm 8 can pass therethrough. The two locking forks 13, 14 are mounted on pivots 20 and 21 and each one is pressed in upward direction by means of a spring 15. The springs 15 are clamped at one end in blocks 22 and 23 respectively.

The spring motor provided with the spring sector 10 is situated, as shown in Fig. 6, in a plane parallel to that of the operating lever 6 and the arms 28, 29 of this lever. The spring 12 is situated between the arms 28 and 29 and has bent ends engaging in the slot 27 in the toothed sector 10 so that the spring is compressed between one arm of the operating lever and one end of the slot 27.

The operation is as follows:—

If the operating lever 6 is shifted in the direction of the arrow 30, the spring motor carrying the toothed sector 10 is rotated so that the spring 12 is compressed or wound. The shaft 2, however, is held by the arm 13 of one of the two locking forks with the aid of the locking arm 8, as clearly shown in Fig. 3. As soon as one of the two projections 12 shifts the arm 14 of the fork 13, 14, the fork shown on the right of Fig. 3 is oscillated so that its arm 13 moves downward against the action of the spring 15 and liber-

ates the locking arm 8 which rotates in the direction of the arrow 31 from the position shown in Fig. 4 into that shown in Fig. 5, coming into contact with the other side of the abutment pin 9. Consequently, the shaft 2 with the crank arm 1 rotates precipitately in the direction of the arrow 31 into the position shown in Fig. 5.

If the operating lever is shifted out of the position shown in Fig. 7 in the direction of the arrow 24 into the position shown in Fig. 1, the different parts move in the opposite directions to those above described.

I claim:—

1. A toy, comprising in combination an arm, an obstacle in the path of rotation of said arm, a spring motor operatively connected to said arm to precipitately rotate said arm from one side of said obstacle to the other, an oscillatable operating lever to energize said motor in each direction of movement, a shaft carrying said arm, a locking device on said shaft adapted to lock said arm during the energizing of said motor, and means for releasing said locking device actuated by said operating lever after the energizing of said motor to allow said motor to precipitately rotate said arm from one side of said obstacle to the other in the opposite direction to the movement of said operating lever to produce an optical illusion that said arm has passed through said obstacle.

2. A toy, comprising in combination a crank arm, an obstacle in the path of rotation of said crank arm, a spring motor operatively connected to said crank arm to precipitately rotate said crank arm from one side of said obstacle to the other, an oscillatable operating lever to energize said spring motor in each direction of movement, a shaft carrying said crank arm, a locking arm on said shaft, two spring-loaded locking levers arranged pivotally mounted one at each side of said crank shaft to cooperate with said locking arm to lock said crank arm during the winding of said motor, and two projections on said operating lever adapted to disengage said locking levers from said locking arm to release said crank arm and allow said motor to precipitately rotate said crank arm from one side of said obstacle to the other irrespective of which side of said obstacle said operating lever and said crank arm are situated.

3. A toy, comprising in combination a crank arm, an obstacle in the path of rotation of said crank arm, a spring motor operatively connected to said crank arm to precipitately rotate said crank arm, a shaft carrying said crank arm, an axle parallel to said shaft, an operating lever oscillatably mounted on said axle, a toothed wheel keyed on said shaft, a toothed sector on said axle and meshing with said toothed wheel and

having a slot, arms extending from said operating lever, a spiral spring on said axle having bent ends bearing against said arms and extending through the slot in said toothed sector adapted to be compressed between one end of said slot and one of said arms, a locking arm on said shaft, an abutment pin in the path of movement of said locking arm adapted to limit the rotation of said locking pin, and pivotally mounted spring-loaded locking levers arranged one on each side of said shaft adapted to lock said locking arm during the compression of said spring and to release said locking arm after the compression of said spring to allow the rotation of said shaft with said crank arm through the intermediary of said spring, said toothed sector and said toothed wheel to precipitately rotate said crank arm from one side of said obstacle to the other.

4. A toy, comprising in combination a crank arm, an obstacle in the path of rotation of said crank arm, a spring motor operatively connected to said crank arm to precipitately rotate said crank arm, a shaft carrying said crank arm, an axle parallel to said shaft, an operating lever oscillatably mounted on said axle, a toothed wheel keyed on said shaft, a toothed sector on said axle and meshing with said toothed wheel and having a slot, arms extending from said operating lever, a spiral spring on said axle having bent ends bearing against said arms and extending through the slot in said toothed sector adapted to be compressed between one end of said slot and one of said arms, a locking arm on said shaft, an abutment pin in the path of movement of said locking arm adapted to limit the rotation of said locking pin, pivotally mounted spring-loaded locking levers arranged one on each side of said shaft adapted to lock said locking arm during the compression of said spring, and projections one on the end of each operating lever arm adapted to oscillate said locking levers to release said locking arm after the compression of said spring to allow the rotation of said shaft with said crank arm through the intermediary of said spring, said toothed sector and said toothed wheel to precipitately rotate said crank arm from one side of said obstacle to the other.

5. A toy, comprising in combination a crank arm, an obstacle in the path of rotation of said crank arm, a spring motor operatively connected to said crank arm to precipitately rotate said crank arm, a shaft carrying said crank arm, an axle parallel to said shaft, an operating lever oscillatably mounted on said axle, a toothed wheel keyed on said shaft, a toothed sector on said axle and meshing with said toothed wheel and having a slot, arms extending from said operating lever, a spiral spring on said axle having bent ends bearing against said arms and extending

through the slot in said toothed sector adapted to be compressed between one end of said slot and one of said arms, a locking arm on said shaft, an abutment pin in the path of movement of said locking arm adapted to limit the rotation of said locking pin, pivotally mounted spring-loaded bifurcated locking levers having a solid arm adapted to lock said locking arm during the compression of said spring, and a slotted arm adapted to allow the passage of said locking arm, and projections on the end of each operating lever arm adapted to bear against the slotted arms of said locking levers to oscillate said locking levers and release said locking arm after the compression of said spring to allow the rotation of said shaft with said crank arm through the intermediary of said spring, said toothed sector and said toothed wheel to precipitately rotate said crank arm from one side of said obstacle to the other.

6. A toy as specified in claim 1, in which said obstacle is constructed as a removable pin extending transversely through the toy.

7. A toy comprising in combination a rotatably mounted arm, an obstacle in the path of rotation of said arm, a motor operatively connected to said arm to precipitately rotate said arm from one side of said obstacle to the other, a movable operating element, a locking device for locking said arm against movement, and means for releasing the locking device actuated by the operation of said movable operating element to allow said motor to precipitately rotate said arm around from one side of said obstacle to the other to produce an optical illusion that said arm has passed through said obstacle.

8. A toy comprising in combination a rotatable arm, an obstacle in the path of rotation of said arm, a motor operatively connected to said arm to precipitately rotate said arm from one side of said obstacle to the other, an oscillatable operating element, a locking device for locking said arm against movement, and means for releasing the locking device actuated by the operation of said oscillatable element to allow said motor to precipitately rotate said arm around from one side of said obstacle to the other in a direction opposite to the direction of movement of said oscillatable element to produce an optical illusion that said arm has passed through said obstacle.

9. A toy comprising in combination a rotatably mounted arm, an obstacle in the path of rotation of said arm, a motor operatively connected to said arm to precipitately rotate said arm from one side of said obstacle to the other, a manually movable element for energizing said motor, a locking device for locking said arm during the movement of said element, and means for releasing the locking device actuated by said manually movable element after the energizing of said motor to

allow said motor to precipitately rotate said arm around from one side of said obstacle to the other to produce an optical illusion that said arm has passed through said obstacle.

- 5 10. A toy comprising in combination a rotatably mounted arm, an obstacle in the path of rotation of said arm, a motor operatively connected to said arm adapted to precipitately rotate said arm from one side of
10 said obstacle to the other, means for normally preventing the motor from rotating said arm, a manually movable operating element, and means actuated by said manually movable
15 operating element to release said first mentioned means and to allow said motor to precipitately rotate said arm in a direction around from one side of said obstacle to the
20 other to produce an optical illusion that said arm has passed in the opposite direction through said obstacle.

In testimony whereof I affix my signature.

MORITZ HEINRICH BÖNINGER.

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