Jan. 29, 1957 A. H. HOLMAN 2,779,127

TUMBLING TOYS

Filed Dec. 1, 1952. 2 Sheets-Sheet 1

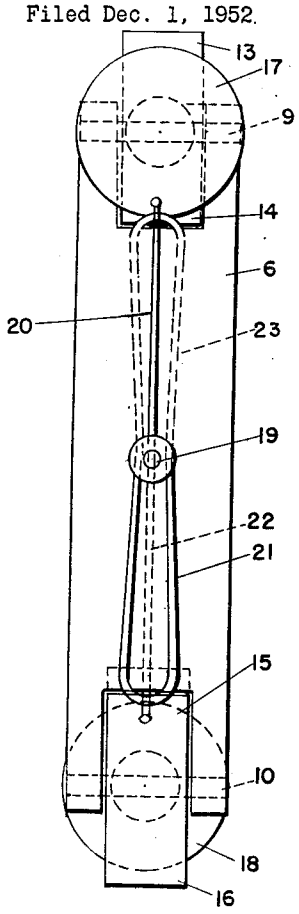


FIG. 1

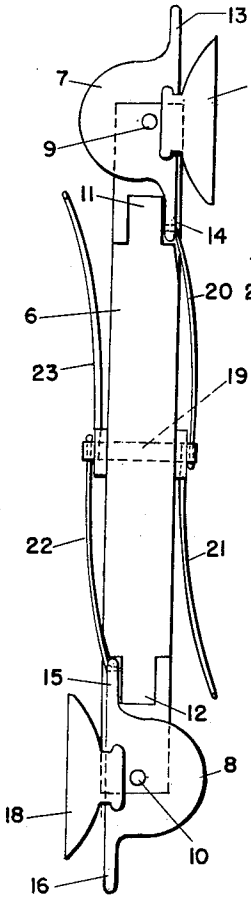


FIG. 2

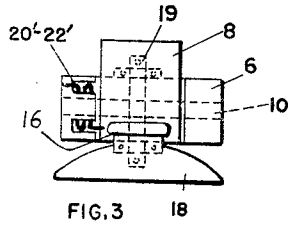


FIG. 3

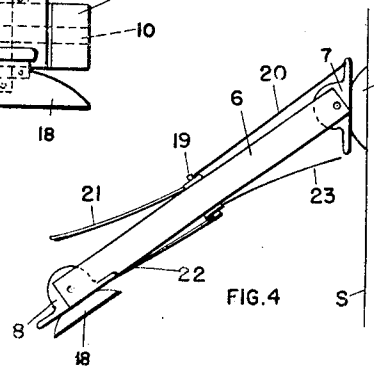


FIG. 4

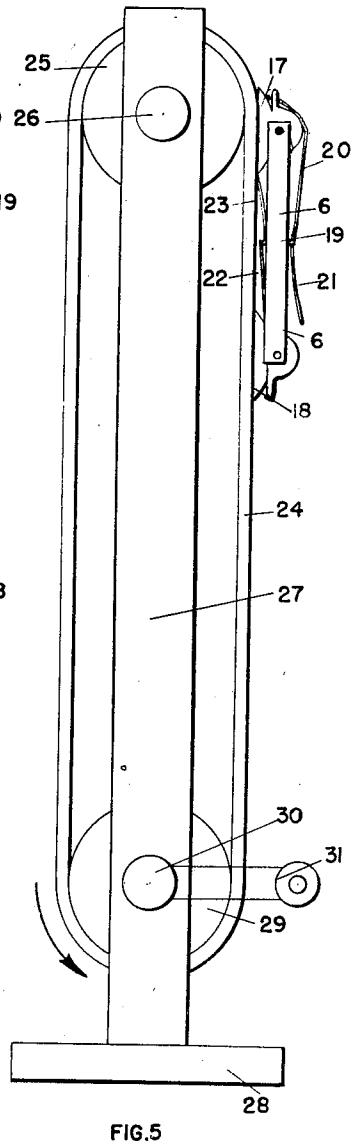


FIG. 5

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TUMBLING TOYS

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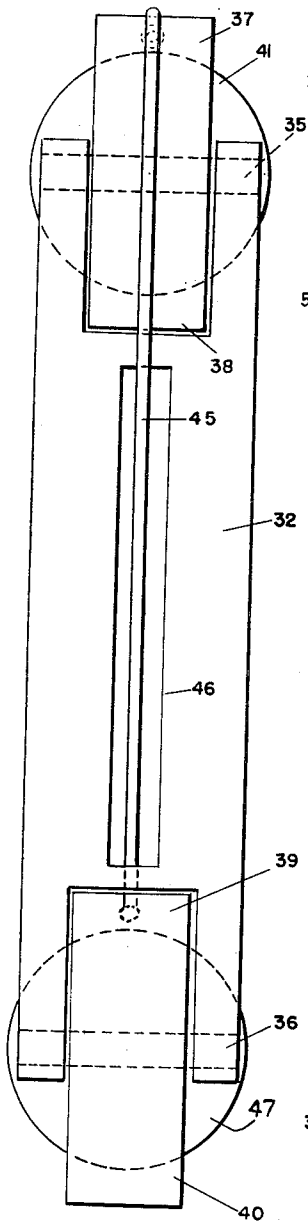


FIG. 6

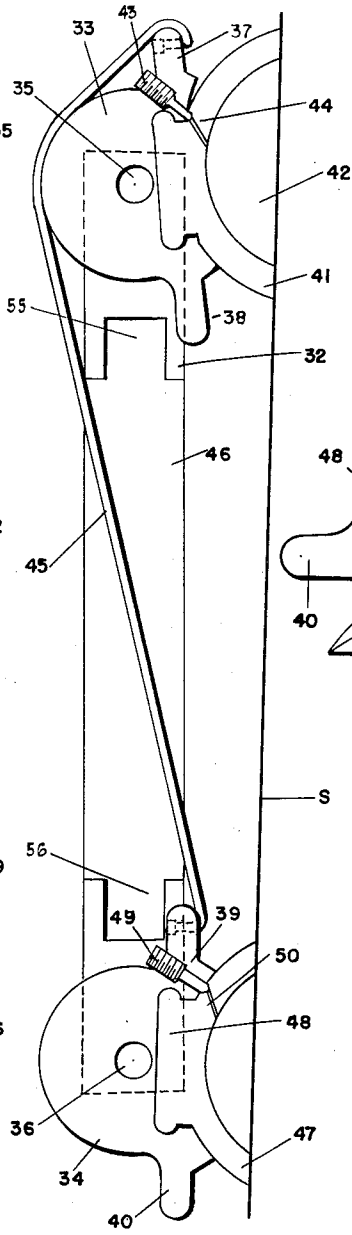


FIG.7

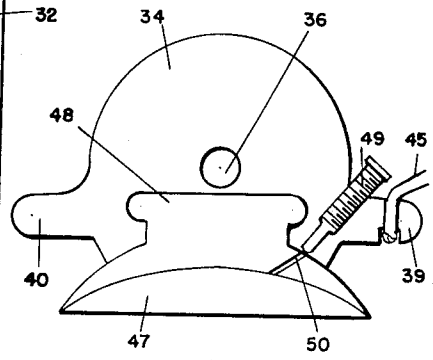


FIG.8

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TUMBLING TOYS

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Application December 1, 1952, Serial No. 323,444

1 Claim. (Cl. 46—1)

An object of this invention is to provide a toy which when pressed upon a vertical, or substantially vertical, smooth flat surface will automatically progress downward on this surface with an end over end motion.

In carrying out my invention, I provide a body member having a pivoted member secured at one end of the said body member and carrying a suction cup, and a like pivoted member carrying a like suction cup secured at the other end of the said body member, together and in combination with means for successively releasing from the said surface the vacuum cup which was then uppermost and additional means for then returning the released vacuum cup and its integral pivoted member to its free or striking position relative to the body member so it will automatically attach itself in a lower position on the said surface by an end over end motion of the toy.

The said object I have achieved by means of the toy which is now to be described in detail and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the inventive idea.

The novel nature and characteristics of this invention are set forth with particularity in the appended claims. The invention both as to organization and operation will be best understood from the following description of specific embodiment in connection with the accompanying drawings in which,

Fig. 1 is a front view of the toy.

Fig. 2 is a side view of the toy.

Fig. 3 is a detail view of one end portion of the toy showing one optional modification.

Fig. 4 is a view on a reduced scale showing the toy during the operation of moving down from one position to a lower position on the fixed surface "S."

Fig. 5 is a side view showing the toy employed with a traveling surface.

Fig. 6 is a front view of a modified or alternative construction.

Fig. 7 is a side view of this construction.

Fig. 8 is a detail view of one end portion of this construction.

Referring in detail to the views of the drawings first to Figs. 1 to 5 the numeral **6** designates a body member, the ends of which respectively carry members **7** and **8** pivoted on the pivot pins **9** and **10** inserted in the body member **6**. In the normal, or free, position of the toy shown in Fig. 2, the members **7** and **8** are reversely positioned from each other on the body member **6** which has reduced inset ends **11** and **12**.

The member **7** has opposite projections **13** and **14** adapted to engage opposite sides of the end **11** according to the position of the member **7** on its pivot **9**. The member **8** has opposite projections **15** and **16** adapted to engage sides of the end **12** according to the position of the member **8** on its pivot **10**.

Fig. 3 shows one end portion of the toy and indicates that coil springs such as designated by **20'—22'** may be

used as the positioning or tensioning means of the pivoted members **7** and **8** instead of rubber bands or other flexible devices as designated by **20** and **22**.

The pivoted member **7** has a flexible cup-shaped member or vacuum cup **17** secured thereto. The member **8** has a like cup-shaped member or vacuum cup **18** secured thereto. A pin **19** passes through the middle of the body **6** and is secured therein. A tensioning or positioning device such as a rubber band **20** is secured at one end to the pin **19** on one side of the body **6** and extends to the projection **14** of the pivoted member **7** and is secured thereto. A like tensioning or positioning device **22** is secured at one end to the pin **19** on the other side of the body **6** and extends to the projection **15** of the pivoted member **8** and is secured thereto. These tensioning or positioning devices hold the pivoted members **7** and **8** at substantially right angles to the body **6** and oppositely faced in their normal or free positions.

Also secured to the pin **19**, one on each side of the body **6** are the releasing devices or curved springs **23** and **21**, extending toward the pivoted members **7** and **8** respectively and residing on opposite sides of the body **6** from the tensioning or positioning means **20** and **22** respectively.

In Fig. 4 the toy is seen in operation and to clearly follow this drawing it must be understood that the toy as shown in Fig. 2 has been turned upside down before being seated on the surface S. Having turned the toy upside down the vacuum cup member **17** is pressed upon the surface S and the toy is allowed to fall around the axis or pivot of pivoted member **7**. During this fall the tensioning or positioning device, or rubber band, **20** is being stretched and the releasing device or curved spring **23** is approaching the surface S. Continuing this motion it will be seen that as the vacuum cup member **18** is just short of striking the surface S, the releasing device **23** will be just touching the lip of the attached vacuum cup member **17** at a point in conjunction with the surface S. The striking of the surface S by the vacuum cup member **18** and the consequent automatic attachment of itself thereto takes place simultaneously, or nearly so, with the entering of the tip of the releasing device **23** between the lip of the vacuum cup member **17** and the surface S. Air now entering the vacuum area of the vacuum cup member **17** releases the same from the surface S. As the toy now falls around the axis or pivot of the pivoted member **8** and its vacuum cup member **18** which is now attached to the surface S, the tensioning or positioning means **20** retracts and returns pivoted member **17** and its vacuum cup member **17** to its free or striking position relative to the body **6**. Since the above described action is substantially identical for both ends of the toy, the said toy automatically progresses end over end downward on the surface S.

Fig. 5 shows a traveling surface instead of the fixed surface S shown in Fig. 4. This traveling surface is embodied in an endless band **24** which runs on an idler pulley **25** on a shaft **26** mounted in the top end portion of a standard **27** extending up from a base member **28**. The band **24** runs around an active or live pulley **29** secured to a shaft **30** rotatably mounted in the lower portion of the standard **27**. A handle **31** is secured to the shaft **30** for turning it in the direction indicated in the drawing by an arrow. The toy is shown on a reduced scale and may be constructed the same as in the other Figures 1–4, or may be used without the releasing devices **23** and **21** shown in the Figures 1–4. If used without the said releasing devices **23** and **21**, the toy will operate on this surface only at the top, or position shown in Fig. 5, where the lip of the vacuum cup then uppermost rides over the curvature of the continuous band **24** passing

over the idle pulley **25**, allowing air to enter the vacuum space of the said vacuum cup.

Referring to Figures 6, 7, and 8, the toy is shown in modified or alternative form, said modifications consisting of the difference in the means used for releasing the vacuum cups from the surface upon which the toy operates and the method of attaching and placing the tensioning or positioning means of the pivoted end members.

Referring now in detail to the Figures 6, 7, and 8, the numeral **32** designates a body member the ends of which respectively carry the pivoted members **33** and **34** mounted on the pivots **35** and **36** inserted in the body member **32**, which has reduced inset ends **55** and **56**. The pivoted member **33** has opposite projections **37** and **38**, adapted to engage opposite sides of the end **55** according to the position of the said pivoted member **33** on its pivot **35**. The pivoted member **34** has opposite projections **39** and **40** adapted to engage opposite sides of the end **56** according to the position of the said pivoted member **34** on its pivot **36**. The pivoted member **33** has a flexible cup-shaped member or vacuum cup secured thereto. The pivoted member **34** has a like cup-shaped member or vacuum cup **47** secured thereto. A tensioning or positioning device such as a rubber band or rubber cord **45** is secured at one end to the projection **37** of the pivoted member **33**, and extends through a slot **46** cut into the body member **32**, and is secured at its other end to the projection **39** of the pivoted member **34**.

The pivoted member **33** has an adjustable pin **43** screw threaded through it to cooperate with a perforation **44** in the vacuum cup member **41**. The pivoted member **34** has an adjustable pin **49** screw threaded through it to cooperate with a perforation **50** in the vacuum cup member **47**.

In the normal or free position of the toy in this form the pivoted members **33** and **34** are held at substantially right angles relative to the body member **32** and oppositely faced, and the ends of the pins **43** and **49** effectively seal the perforations **44** and **50** in the vacuum cups **41** and **47** respectively.

Fig. 7 shows the toy in this form in a phase of its operation in moving downward on the surface S. The end of the toy carrying the pivoted member **34** and its vacuum cup **47** has swung down on the axis of the still attached pivoted member **33** and through the force of

this swing has attached its said vacuum cup member **47** to the surface S. During this swing the weight of the toy in addition to the pull of the tensioning of positioning member **45** has tended to pull around or rotate the pivoted member **33** on its axis or pivot **35** into a position abnormal to its free relationship with its vacuum cup **41**, which is presently attached to the surface S. This movement is possible due to the resiliency of the vacuum cup member **41**. As a result of this movement the adjustable pin **43** is pulled away from its seat in the perforation **44** of the vacuum cup member **41**, allowing air to enter the vacuum space of the said member **41**, and thereby releasing the same from the said surface S. It is to be understood, in this connection that the perforations **44** and **50** are very minute and the pins **43** and **49** are adjustable to hold the rate of the entering air to a desired minimum. Since the above described action is substantially identical for both ends of the toy, the said toy automatically progresses end over end downward on the said surface S.

It is believed that the foregoing description and accompanying drawings fully and understandably reveal this invention.

I claim:

In a tumbling toy, the combination of an elongated body member, a member horizontally pivoted to each end of said body member, an inset abutment at each end of said body member, opposite projections on each of said pivoted members for striking said abutment to limit rotation to approximately 180°, a flexible tensioning device stretched between and resiliently connecting a projection on one pivoted member to a projection on the other and tending to normally face the pivoted members in opposite directions, a perforated suction cup secured to the face of each of said pivoted members, and valve means carried by the connected projections for closing the perforations when the cups are fastened to a single surface but adapted to open such as for bleeding the upper suction cup upon distortion of said upper suction cup by the pulling force of said tensioning device.

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