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(54) **PRANK APPARATUS WITH AMUSEMENT EFFECT**

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B41J 7/32 (2006.01)

(52) **U.S. Cl.**
CPC ***B41J 7/32*** (2013.01); ***A63H 5/00*** (2013.01)

(58) **Field of Classification Search**
CPC A65H 5/00; B41J 7/32
USPC 446/397; 74/39, 40, 521, 534
See application file for complete search history.

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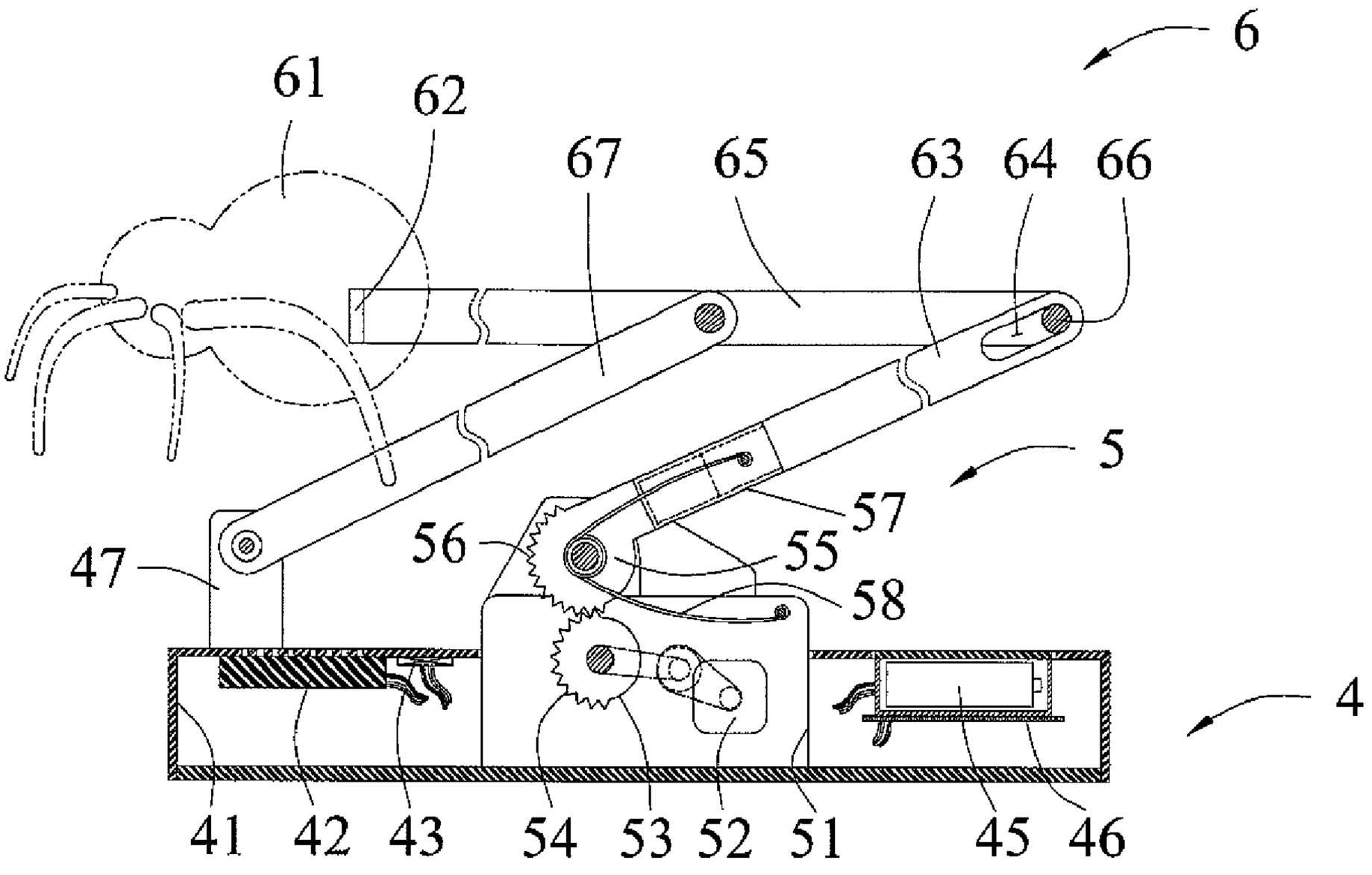
(57) **ABSTRACT**

A prank apparatus includes a base unit, a driving device and a decorative unit. The base unit includes a housing, a support rack, a sounder, a sensor, a power supply, and a control board. The driving includes a mounting seat, a drive wheel, a drive motor, a driven wheel, a support bar, and two torsion springs. **[**The**]** *In the preferred embodiment, the* decorative unit includes an extension shank having a first end connected with the support bar and a second end provided with a guide slot, a movable pin movably mounted in the guide slot, a first link having a first end pivotally connected with the movable pin, a decorative body connected with a second end of the first link, and a second link having a first end pivotally connected with the support rack and a second end pivotally connected with the first link.

9 Claims, 11 Drawing Sheets



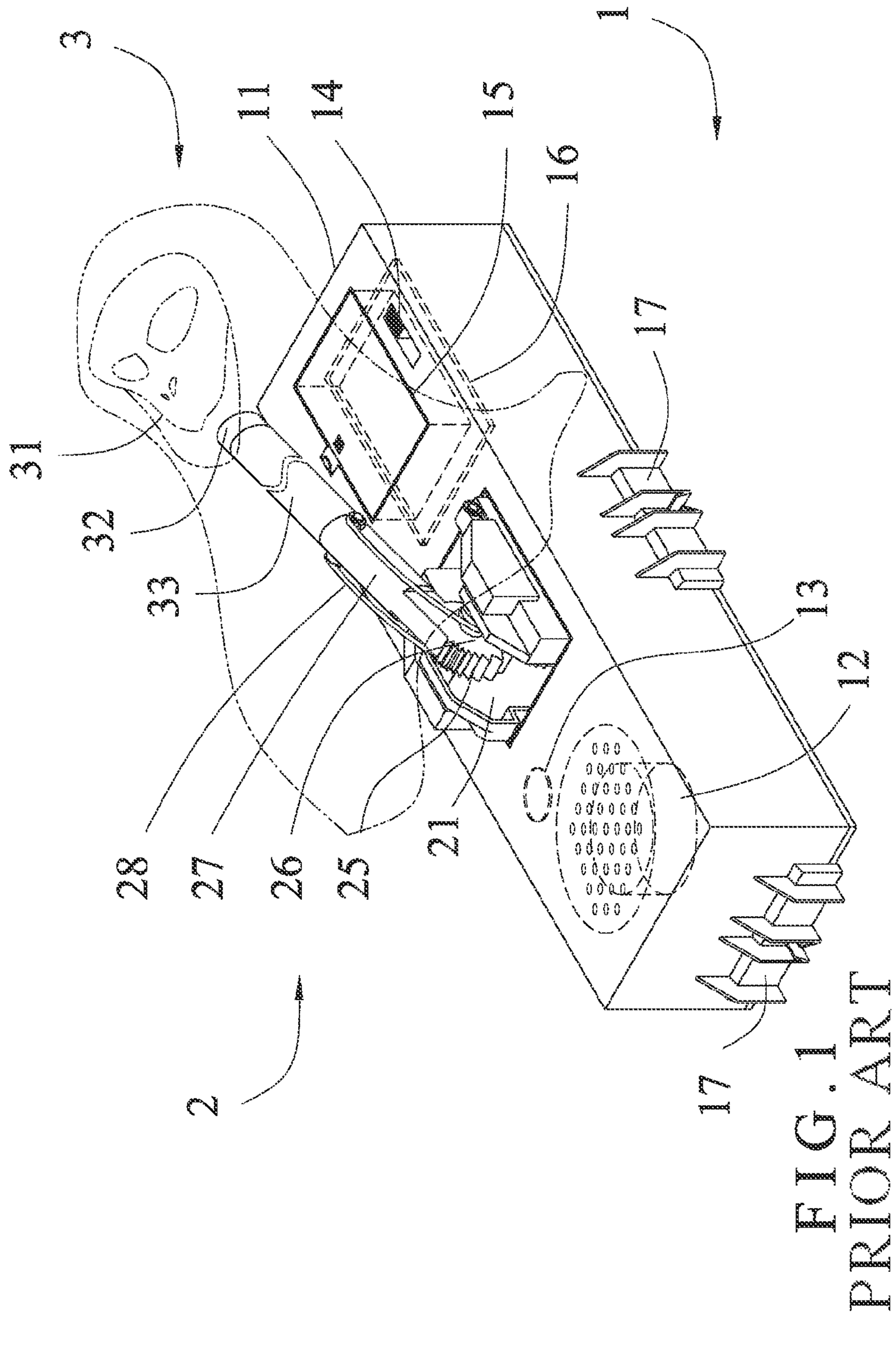


FIG. 1
PRIOR ART

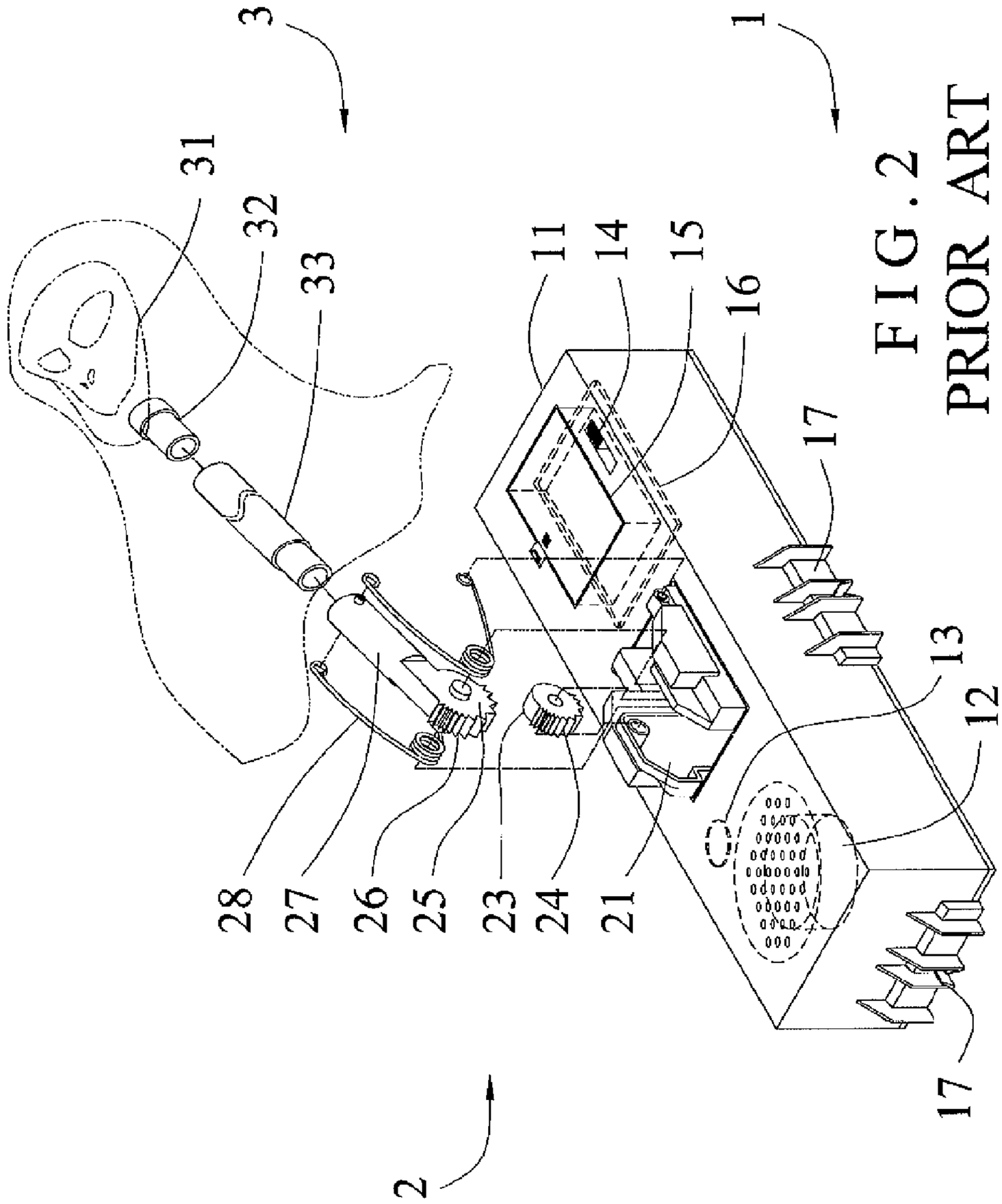


FIG. 2
PRIOR ART

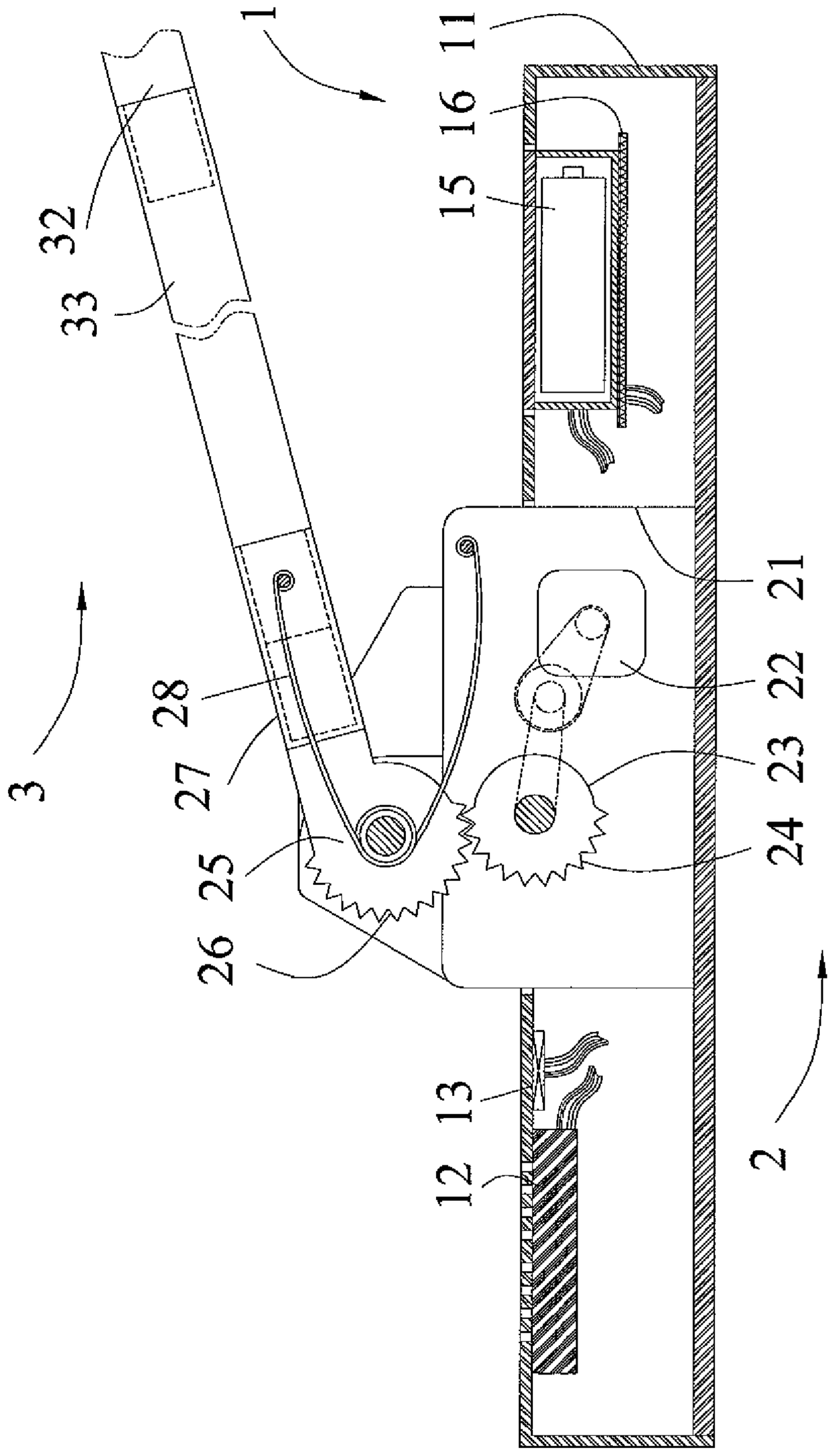


FIG. 3
PRIOR ART

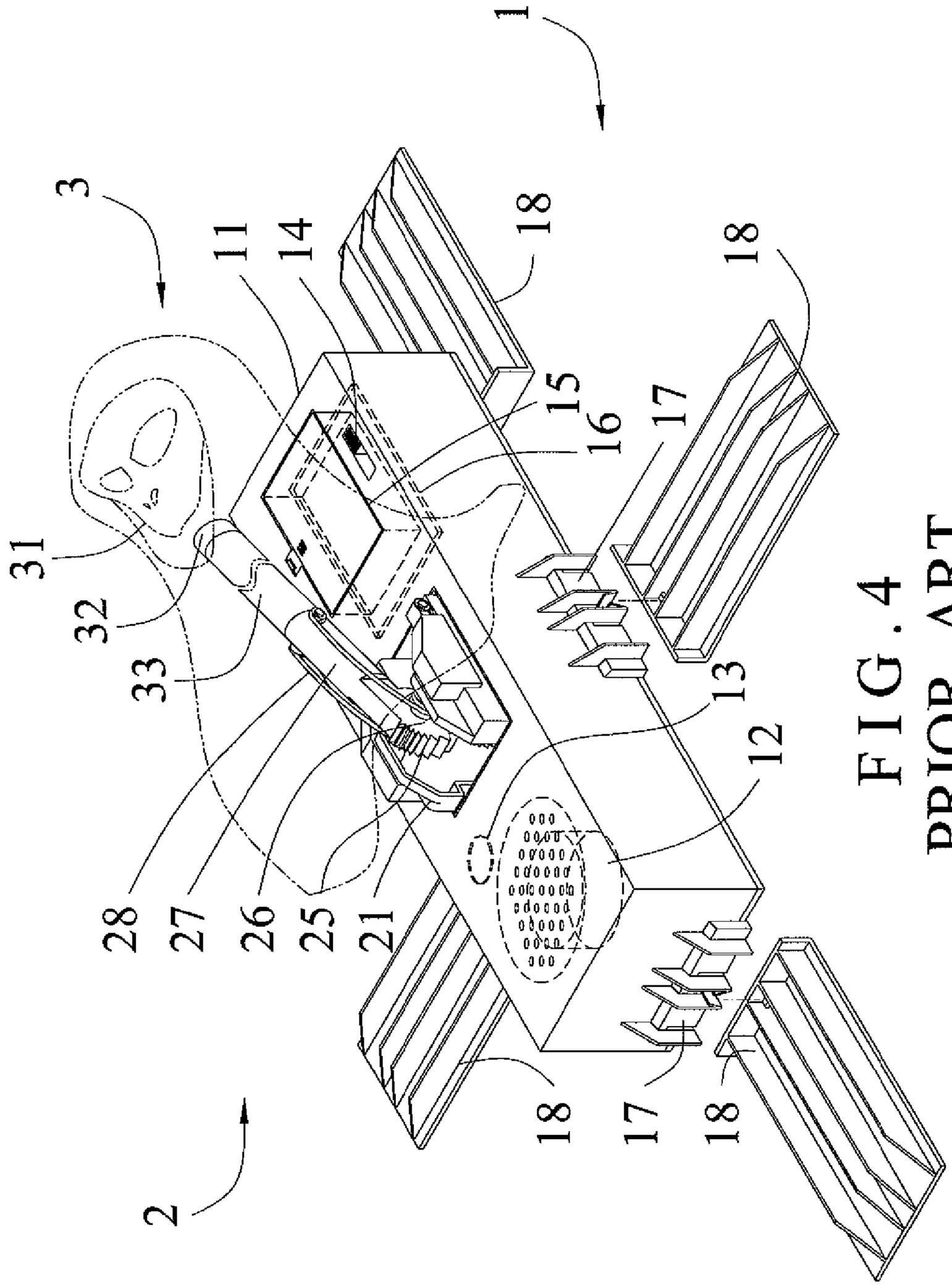


FIG. 4
PRIOR ART

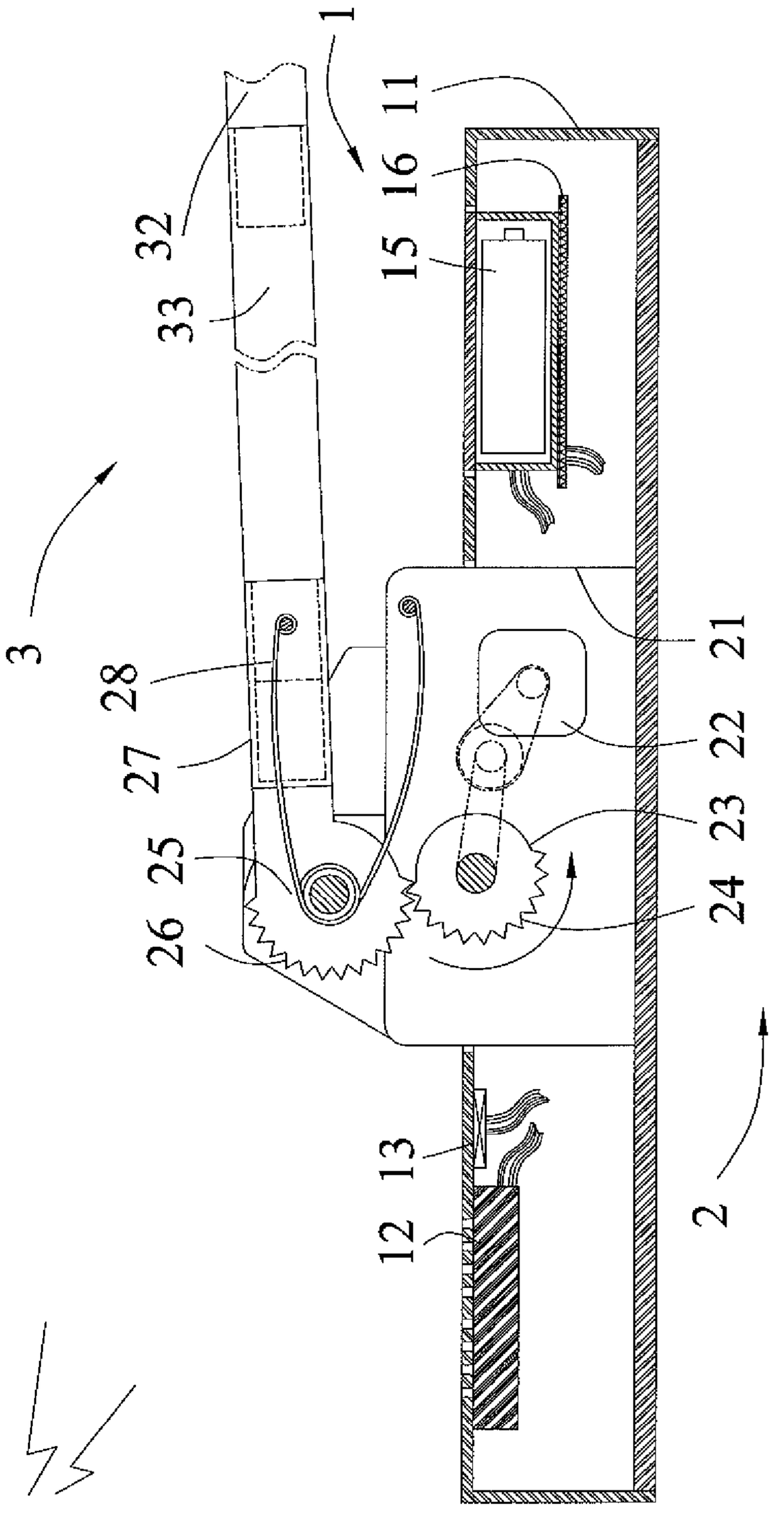


FIG. 5
PRIOR ART

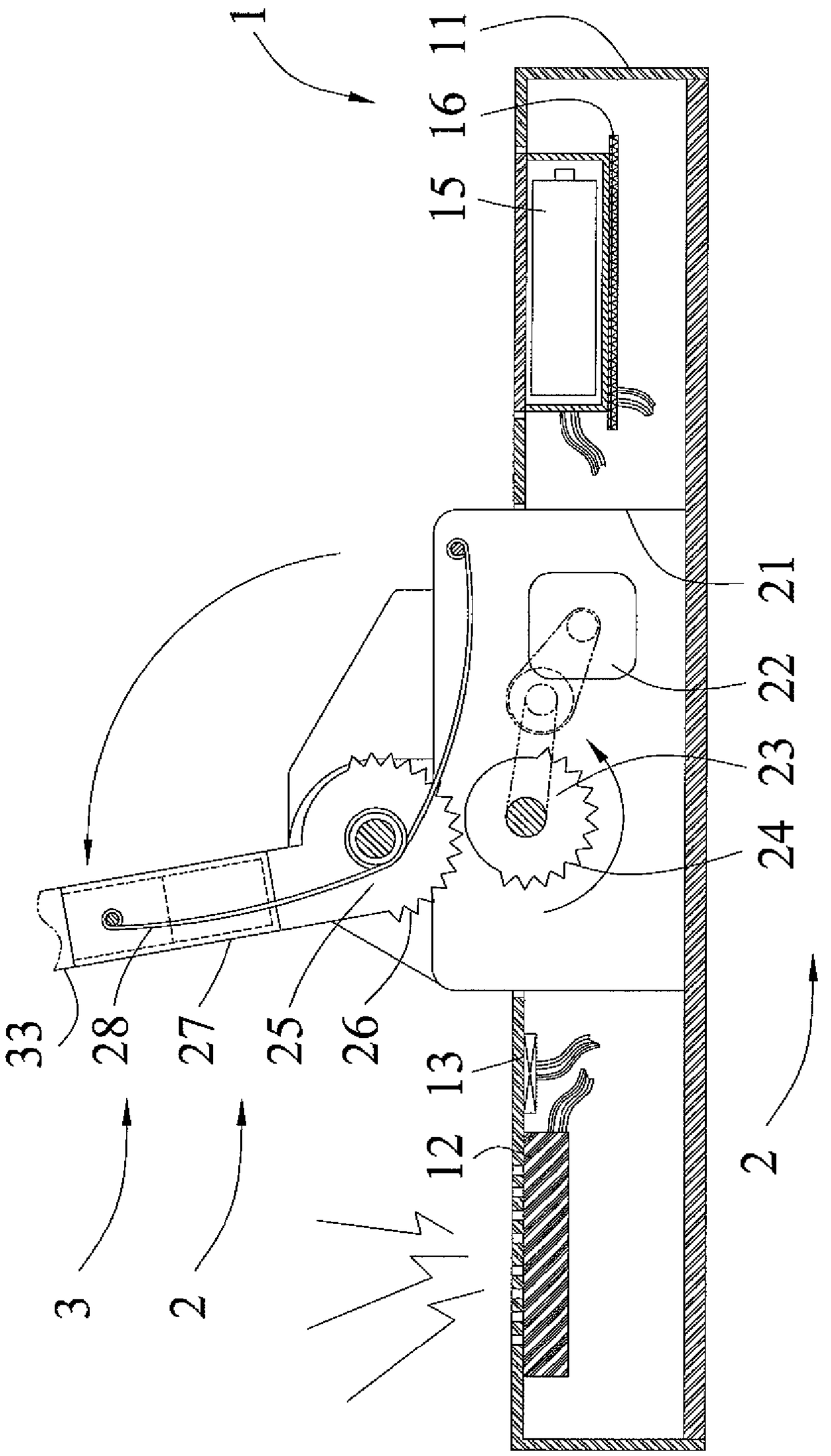


FIG. 6
PRIOR ART

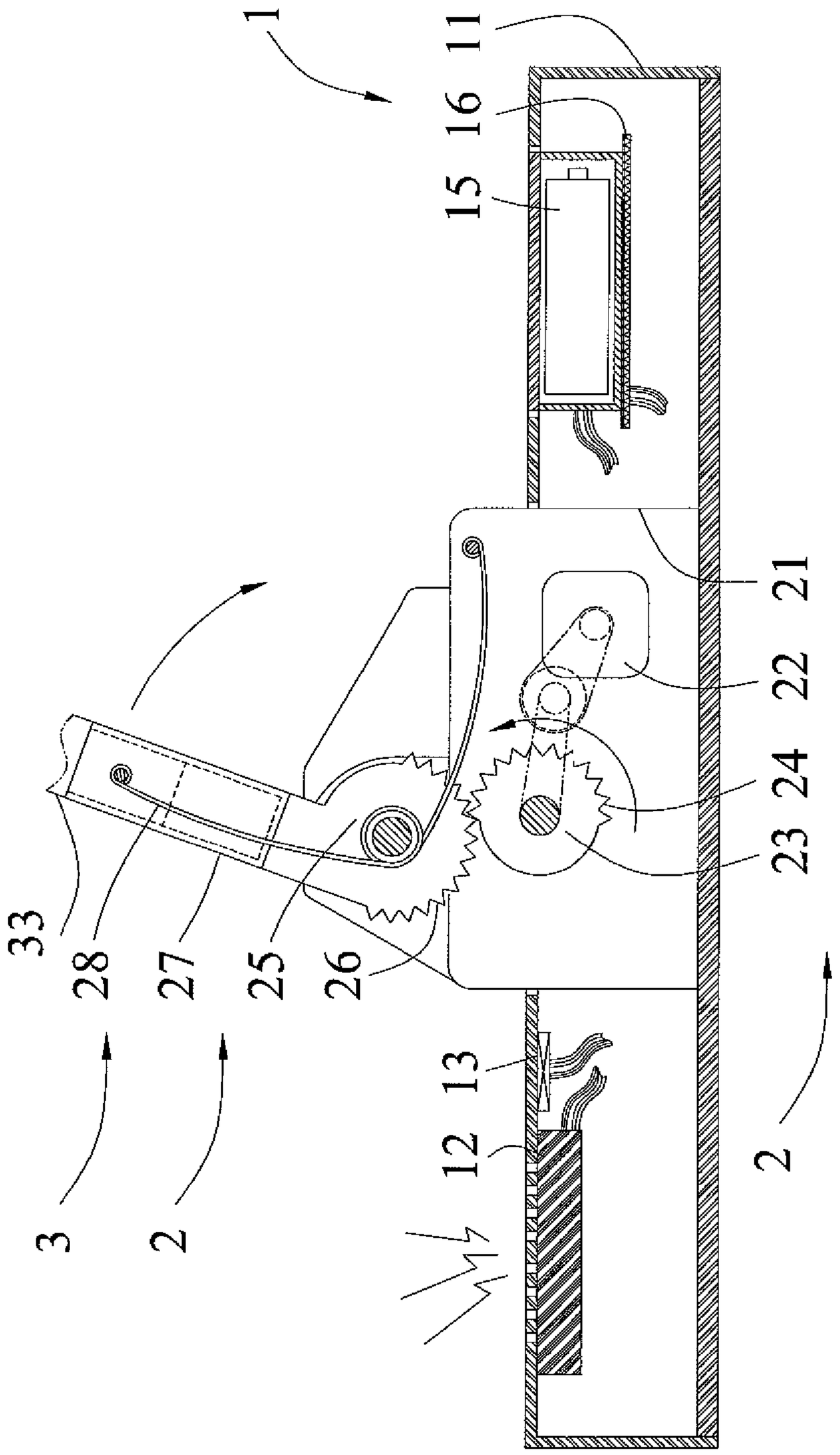


FIG. 7
PRIOR ART

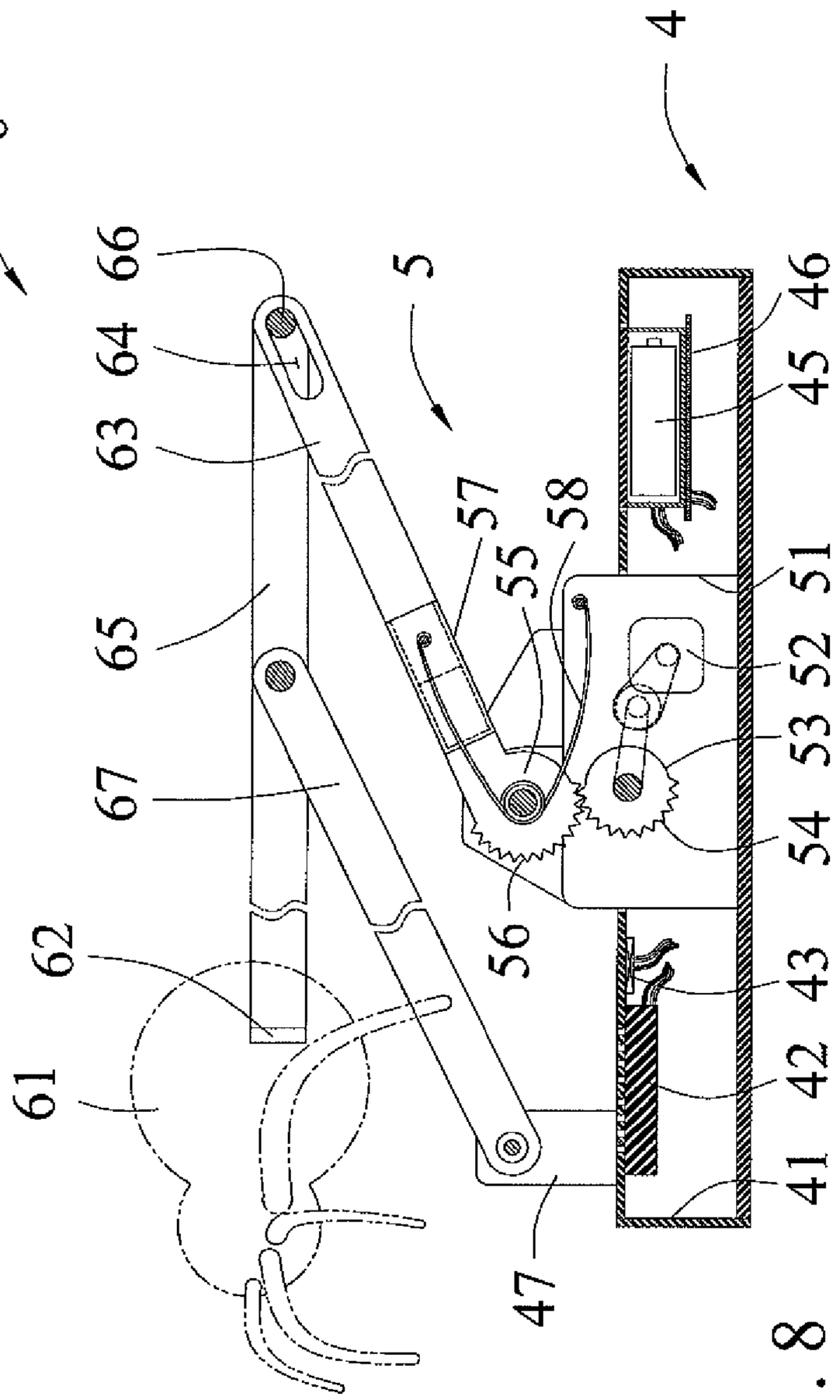


FIG. 8

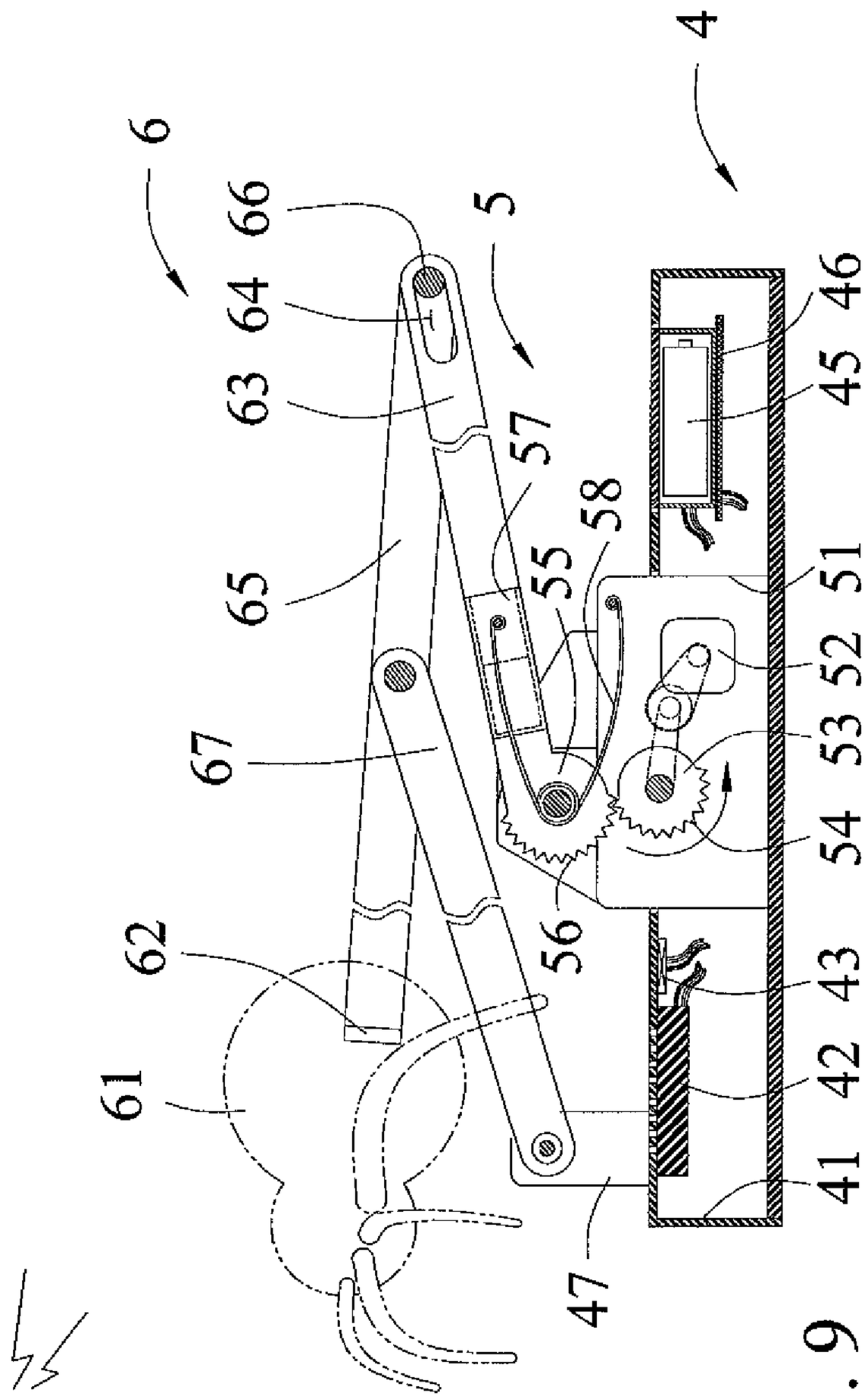


FIG. 9

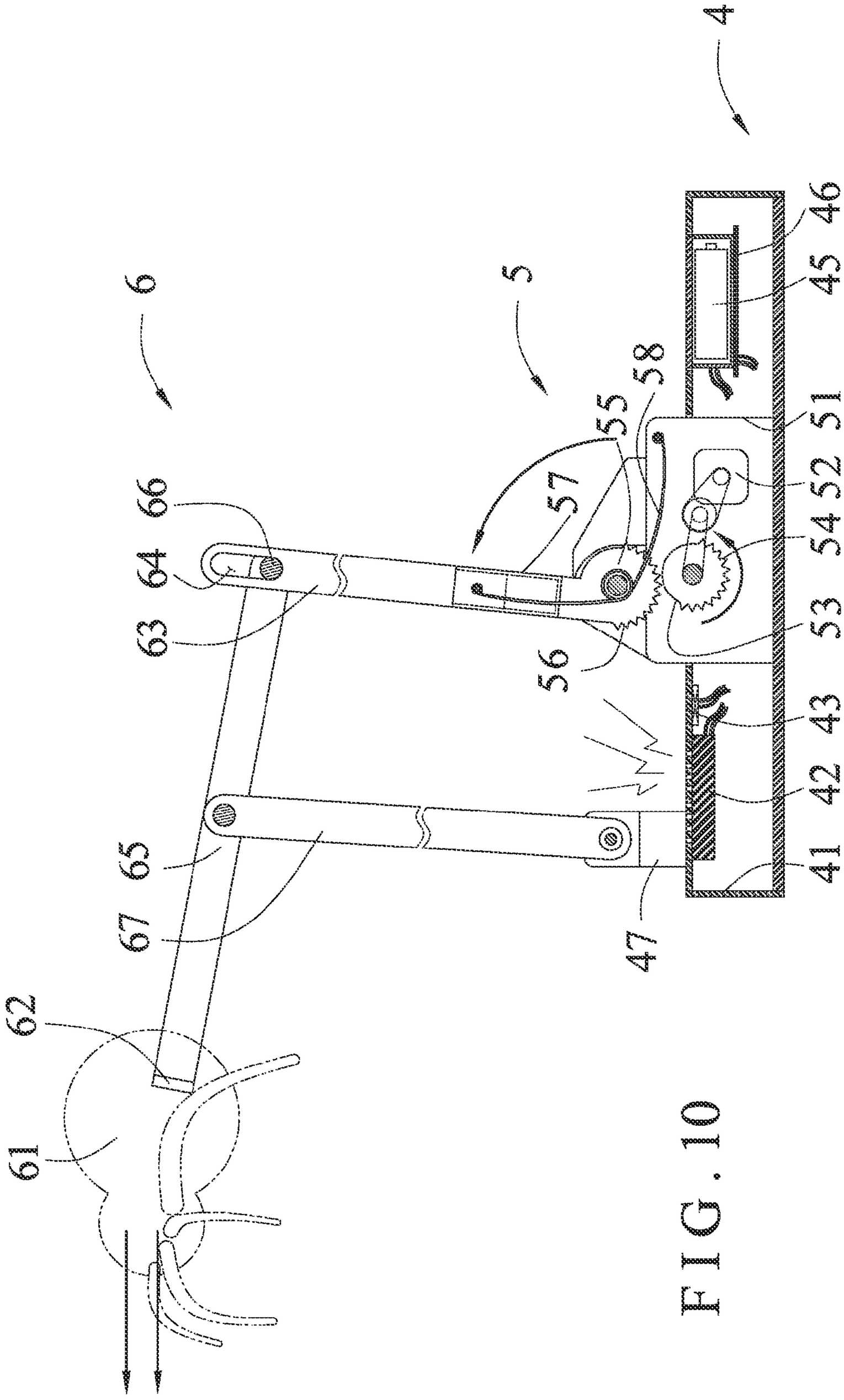


FIG. 10

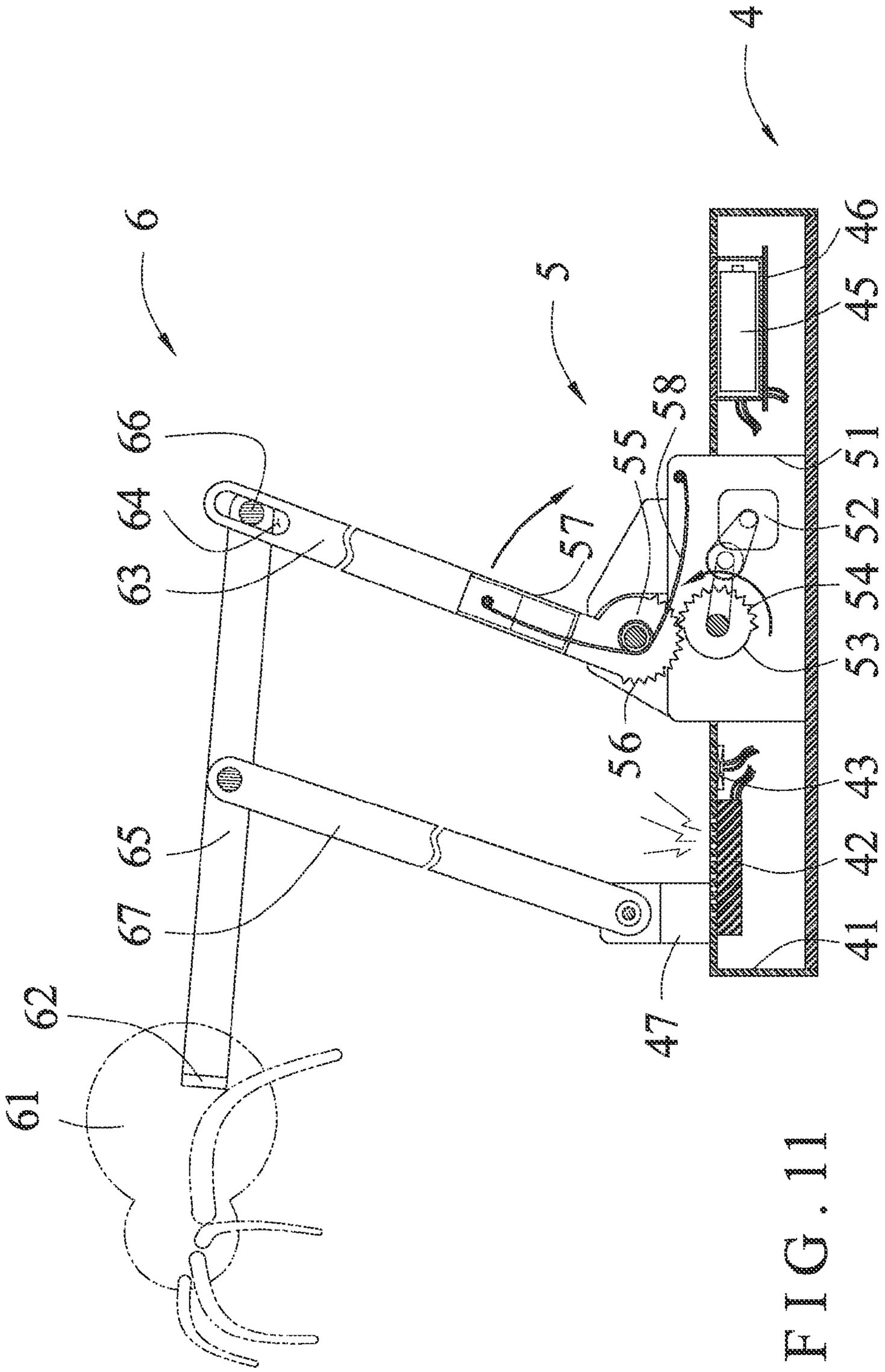


FIG. 11

PRANK APPARATUS WITH AMUSEMENT EFFECT

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a toy and, more particularly, to a prank (or tricky) apparatus with an amusement effect.

2. Description of the Related Art

A conventional prank toy has a strange [outlook] *appearance* to cause a frightening effect to people. Another conventional prank toy includes an upright plate with the figure of a human body to achieve a frightening effect to people. In addition, the conventional prank toy can emit sound or light simultaneously to enhance the frightening effect. However, the conventional prank toy cannot cause an interaction with other people, thereby limiting its versatility. In addition, the conventional prank toy has a boring structure and a limited function so that it cannot satisfy the consumers' requirements. A conventional prank apparatus in accordance with the prior art shown in FIGS. **1-7** comprises a base unit **1**, a driving device **2** mounted on the base unit **1**, and a decorative unit **3** mounted on the driving device **2**. The base unit **1** includes a housing **11**, a sounder **12** mounted in the housing **11**, a sensor **13** mounted in the housing **11**, a control switch **14** mounted on the housing **11**, a power supply **15** mounted in the housing **11**, and a control board **16** mounted in the housing **11**. The sounder **12** of the base unit **1** can emit sound with an amusement effect. The sensor **13** of the base unit **1** is operable to actuate the driving device **2**. The power supply **15** of the base unit **1** is connected to the driving device **2** to supply an electric power to the driving device **2**. The control switch **14** of the base unit **1** is connected between the power supply **15** and the driving device **2** to turn on/off the driving device **2**. The control board **16** of the base unit **1** is connected to the sensor **13** to select and control the detection states of the sensor **13**. The driving device **2** includes a mounting seat **21** mounted on the housing **11** of the base unit **1**, a drive wheel **23** rotatably mounted in the mounting seat **21** and having a periphery locally provided with a plurality of drive teeth **24**, a drive motor **22** mounted in the mounting seat **21** and connected with the drive wheel **23** to rotate the drive wheel **23**, a driven wheel **25** rotatably mounted on the mounting seat **21** and having a periphery locally provided with a plurality of driven teeth **26** meshing with the drive teeth **24** of the drive wheel **23**, a support bar **27** connected with the driven wheel **25** to move in concert with the driven wheel **25**, and two torsion springs **28** mounted on two opposite sides of the driven wheel **25** and each having a first end connected with the mounting seat **21** and a second end connected with the support bar **27**. The decorative unit **3** is mounted on the support bar **27** of the driving device **2** and includes a decorative body **31**, a fixing bar **32** secured in the decorative body **31**, and an extension shank **33** having a first end connected with the fixing bar **32** and a second end connected with the upper end of the support bar **27** so that the decorative body **31** is movable in concert with the support bar **27** of the driving device **2**. The decorative body **31** of the decorative unit **3** is a detachable element and

has a determined shape, pattern, figure or the like. Preferably, the decorative body **31** of the decorative unit **3** is made of a cloth which is decorated to have the profile of a ghost or the like to provide a frightening effect. In assembly, the drive motor **22** is initially mounted in the mounting seat **21**. Then, the mounting seat **21** is mounted on the housing **11**. Then, the drive wheel **23** is mounted in the mounting seat **21**. Then, the torsion springs **28** are mounted on the two opposite sides of the driven wheel **25**. Then, the driven wheel **25** is mounted on the mounting seat **21**, with the driven teeth **26** of the driven wheel **25** meshing with the drive teeth **24** of the drive wheel **23**. Then, the first end of each of the torsion springs **28** is connected with the mounting seat **21**, and the second end of each of the torsion springs **28** is connected with the support bar **27**. Finally, the extension shank **33** is connected with the support bar **27** to connect the decorative unit **3** with the driving device **2**, thereby accomplishing assembly of the prank apparatus. As shown in FIG. **4**, the base unit **1** further includes a plurality of connecting brackets **17** mounted on a periphery of the housing **11**, and a plurality of stands **18** connected with the connecting brackets **17** respectively to enhance rigidity and stability of the housing **11**. In operation, referring to FIGS. **5-7** with reference to FIGS. **1-3**, the control switch **14** of the base unit **1** is switched to turn on the driving device **2** so that the drive motor **22** can be operated to drive the drive wheel **23**. At this time, the user can transmit a signal to the sensor **13**. For example, the user can transmit a sound signal to the sensor **13** by clapping, shouting or the like. In such a manner, after the sensor **13** receives the signal from the user, the sensor **13** transmits a signal to the control board **16** which starts the drive motor **22** which drives the drive wheel **23** to rotate in the counterclockwise direction as shown in FIG. **5**. At this time, the driven teeth **26** of the driven wheel **25** mesh with the drive teeth **24** of the drive wheel **23** so that the driven wheel **25** is driven by the drive wheel **23** to rotate in the clockwise direction so as to move the support bar **27** and the extension shank **33** downward and backward and to compress the torsion springs **28** for storing a restoring force. Subsequently, the drive wheel **23** is further rotated in the counterclockwise direction until the driven teeth **26** of the driven wheel **25** disengage the drive teeth **24** of the drive wheel **23** as shown in FIG. **6** so that the driven wheel **25** is released from the drive wheel **23** and is pushed by the restoring force of the torsion springs **28** to rotate in the counterclockwise direction so as to move the support bar **27** and the extension shank **33** upward. In such a manner, the support bar **27** and the extension shank **33** are moved upward and forward by the restoring force of the torsion springs **28** so that the decorative body **31** of the decorative unit **3** is instantaneously sprung upward and forward. At the same time, the sounder **12** can emit a sound when the decorative body **31** of the decorative unit **3** is sprung. Thus, after the sensor **13** receives the signal from the user, the decorative body **31** of the decorative unit **3** is sprung upward and forward, and the sounder **12** emits a corresponding sound as to achieve a video/audio frightening amusement effect. In practice, the prank apparatus is [laced] *placed* in a site, such a haunted house and the like, and is available for a festival, such as the Halloween day and the like. Subsequently, the drive wheel **23** is further rotated in the counterclockwise direction until the driven teeth **26** of the driven wheel **25** mesh with the drive teeth **24** of the drive wheel **23** again as shown in FIG. **7** so that the driven wheel **25** is driven by the drive wheel **23** to rotate in the clockwise direction again so as to move the support bar **27** and the extension shank

33 downward and backward and to compress the torsion springs **28** for storing a restoring force.

BRIEF SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a prank apparatus having an excellent tricky amusement effect.

According to the primary advantage of the present invention, after the sensor receives the signal from the user, the decorative body of the decorative unit is initially moved downward and backward slowly and then sprung upward and forward suddenly, and the sounder emits a corresponding sound simultaneously.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

FIG. **1** is a perspective view of a conventional prank apparatus in accordance with the prior art.

FIG. **2** is a partially exploded perspective view of the conventional prank apparatus as shown in FIG. **1**.

FIG. **3** is a side cross-sectional view of the conventional prank apparatus as shown in FIG. **1**.

FIG. **4** is a partially exploded perspective view of another conventional prank apparatus.

FIG. **5** is a schematic operational view of the conventional prank apparatus as shown in FIG. **3**.

FIG. **6** is a schematic operational view of the conventional prank apparatus as shown in FIG. **5**.

FIG. **7** is a schematic operational view of the conventional prank apparatus as shown in FIG. **6**.

FIG. **8** is a side cross-sectional view of a prank apparatus in accordance with the preferred embodiment of the present invention.

FIG. **9** is a schematic operational view of the prank apparatus as shown in FIG. **8**.

FIG. **10** is a schematic operational view of the prank apparatus as shown in FIG. **9**.

FIG. **11** is a schematic operational view of the prank apparatus as shown in FIG. **10**.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to FIG. **8**, a prank apparatus in accordance with the present invention comprises a base unit **4**, a driving device **5** mounted on the base unit **4**, and a decorative unit **6** mounted on the driving device **5**.

The base unit **4** includes a housing **41**, a sounder **42** mounted in the housing **41**, a sensor **43** mounted in the housing **41** and located beside the sounder **42**, a power supply **45** mounted in the housing **41**, and a control board **46** mounted in the housing **41**. The sounder **42** of the base unit **4** is located in the front end of the housing **41** and can emit a sound with an amusement effect. The sensor **43** of the base unit **4** is operable to actuate the driving device **5**. In the preferred embodiment of the present invention, the sensor **43** of the base unit **4** is a light sensor, a sound sensor, a footpad control switch, a try-me switch or a combination of the above-mentioned parts. The power supply **45** of the base unit **4** is connected to the driving device **5** to supply an electric power to the driving device **5**. The control board **46** of the base unit **4** is located under the power supply **45** and is connected to the sensor **43** to select and control the detection states of the sensor **43**.

The driving device **5** is operable by the sensor **43** of the base unit **4**. The driving device **5** is mounted on the housing **41** of the base unit **4** and includes a mounting seat **51** mounted on the housing **41** of the base unit **4**, a drive wheel **53** rotatably mounted in the mounting seat **51** and having a periphery locally provided with a plurality of drive teeth **54**, a drive motor **52** mounted in the mounting seat **51** and connected with the drive wheel **53** to rotate the drive wheel **53**, a driven wheel **55** rotatably mounted on the mounting seat **51** and having a periphery locally provided with a plurality of driven teeth **56** meshing with the drive teeth **54** of the drive wheel **53**, a support bar **57** connected with the driven wheel **55** to move in concert with the driven wheel **55**, and two torsion springs **58** mounted on two opposite sides of the driven wheel **55** and each having a first end connected with the mounting seat **51** and a second end connected with the support bar **57**. The driven wheel **55** of the driving device **5** is disposed above the drive wheel **53**. The support bar **57** of the driving device **5** is formed on and extended outward from a side of the driven wheel **55**. Each of the torsion springs **58** has a substantially V-shaped profile.

In the preferred embodiment of the present invention, the base unit **4** further includes a support rack **47** mounted on the housing **41**. The decorative unit **6** is mounted on the support bar **57** of the driving device **5** and the support rack **47** of the base unit **4**. The decorative unit **6** includes an extension shank **63** having a first end connected with the support bar **57** of the driving device **5** and a second end provided with an elongate guide slot **64**, a movable pin **66** movably mounted in the guide slot **64** of the extension shank **63**, a first link **65** having a first end pivotally connected with the movable pin **66**, a decorative body **61** connected with a second end of the first link **65**, and a second link **67** having a first end pivotally connected with the support rack **47** of the base unit **4** and a second end pivotally connected with the first link **65**. The second end of the second link **67** is located between the movable pin **66** and the decorative body **61**. The decorative body **61** is movable in concert with the support bar **57** of the driving device **5** and is provided with a connector **62** connected with the second end of the first link **65**.

In operation, referring to FIGS. **9-11** with reference to FIG. **8**, the base unit **4** is operated and switched to turn on the driving device **5** so that the drive motor **52** can be operated to drive the drive wheel **53**. At this time, the user can transmit a signal to the sensor **43**. For example, the user can transmit a light-sensitive signal, such as an infrared ray and the like, to the sensor **43**. In such a manner, after the sensor **43** receives the signal from the user, the sensor **43** transmits a signal to the control board **46** which starts the drive motor **52** which drives the drive wheel **53** to rotate in the counterclockwise direction as shown in FIG. **9**. At this time, the driven teeth **56** of the driven wheel **55** mesh with the drive teeth **54** of the drive wheel **53** so that the driven wheel **55** is driven by the drive wheel **53** to rotate in the clockwise direction so as to move the support bar **57** and the extension shank **63** downward and backward and to compress the torsion springs **58** for storing a restoring force. Subsequently, the drive wheel **53** is further rotated in the counterclockwise direction until the driven teeth **56** of the driven wheel **55** disengage the drive teeth **54** of the drive wheel **53** as shown in FIG. **10** so that the driven wheel **55** is released from the drive wheel **53** and is pushed by the restoring force of the torsion springs **58** to rotate in the counterclockwise direction so as to move the support bar **57** and the extension shank **63** upward. In such a manner, when the support bar **57** and the extension shank **63** are moved

upward and forward by the restoring force of the torsion springs **58**, the first link **65** is moved upward and forward by **[**a sliding motion of the movable pin **66** in the guide slot **64]** *said upward and forward motion* of the extension shank **63**, and the second link **67** is moved upward and forward by **[**push**]** *said upward and forward motion* of the first link **65** so that the decorative body **61** of the decorative unit **6** is instantaneously sprung upward and forward, *and when extension shank 63 reaches a generally vertical orientation, decorative body 61 is permitted to continue its upward and forward motion by a sliding motion of the movable pin 66 in the guide slot 64 of the extension shank 63*. At the same time, the sounder **42** can emit a sound when the decorative body **61** of the decorative unit **6** is sprung upward and forward. Thus, after the sensor **43** receives the signal from the user, the decorative body **61** of the decorative unit **6** is sprung upward and forward, and the sounder **42** emits a corresponding sound so as to achieve a video/audio frightening amusement effect. Subsequently, the drive wheel **53** is further rotated in the counterclockwise direction until the driven teeth **56** of the driven wheel **55** mesh with the drive teeth **54** of the drive wheel **53** again as shown in FIG. **11** so that the driven wheel **55** is driven by the drive wheel **53** to rotate in the clockwise direction again so as to move the support bar **57** and the extension shank **63** downward and backward and to compress the torsion springs **58** for storing a restoring force.

In a further preferred embodiment of the present invention, the sensor **43** of the base unit **4** is a contact switch (such as a footpad control switch, a try-me switch or the like). In practice, the sensor **43** of the base unit **4** has a connecting line which has a terminal embedded in a determined position of the housing **41**. Thus, when the user touches the terminal of the connecting line of the sensor **43**, the sensor **43** of the base unit **4** is operated to actuate the driving device **5**.

Accordingly, after the sensor **43** receives the signal from the user, the decorative body **61** of the decorative unit **6** is initially moved downward and backward slowly and then sprung upward and forward suddenly, and the sounder **42** emits a corresponding sound simultaneously. In addition, the sensor **43** of the base unit **4** is operated in an optical, acoustical and manual contact manner so that the user can control the sensor **43** to actuate the driving device **5** so as to move the decorative body **61** of the decorative unit **6** easily and quickly.

Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.

The invention claimed is:

1. A prank apparatus, comprising:

a base unit;

a driving device mounted on the base unit; and

a decorative unit mounted on the driving device;

wherein the base unit includes a housing, a sounder mounted in the housing, a sensor mounted in the housing, a power supply mounted in the housing, and a control board mounted in the housing;

the driving device includes a mounting seat mounted on the housing of the base unit, a drive wheel rotatably mounted in the mounting seat and having a periphery locally provided with a plurality of drive teeth, a drive motor mounted in the mounting seat and connected with the drive wheel to rotate the drive wheel, a driven wheel rotatably mounted on the mounting seat and having a periphery locally provided with a plurality of driven teeth meshing with the drive teeth of the drive wheel, a support bar connected with the driven wheel to move in concert with the driven wheel, and two torsion springs mounted on two opposite sides of the driven wheel and each having a first end connected with the mounting seat and a second end connected with the support bar;

the base unit further **[**includes**]** *including* a support rack mounted on the housing;

the decorative unit **[**is**]** *being* mounted on the support bar of the driving device and the support rack of the base unit;

the decorative unit **[**includes**]** *including*:

an extension shank having a first end connected with the support bar of the driving device and a second end provided with an elongate guide slot;

a movable **[**in**]** *pin* movably mounted in the guide slot of the extension shank;

a first link having a first end pivotally connected with the movable pin;

a decorative body connected with a second end of the first link; and

a second link having a first end pivotally connected with the support rack of the base unit and a second end pivotally connected with the first link.

2. The prank apparatus of claim **1**, wherein

the decorative body is provided with a connector connected with the second end of the first link.

3. The prank apparatus of claim **1**, wherein

the second end of the second link is located between the movable pin and the decorative body.

4. The prank apparatus of claim **1**, wherein

the driving device is operable by the sensor of the base unit, the decorative body is movable in concert with the support bar of the driving device, and the sensor of the base unit is a light sensor, a sound sensor, a footpad control switch or a try-me switch that is operable to actuate the driving device.

5. A prank apparatus, comprising:

a base unit;

a power supply;

a driving device powered by the power supply, mounted on the base unit; and

a decorative unit mounted on the driving device;

the driving device including a drive wheel mounted on the base unit and having a periphery locally provided with a plurality of drive teeth, a drive motor mounted on the base unit and connected with the drive wheel to rotate the drive wheel, a driven wheel rotatably mounted on the base unit and having a periphery locally provided plurality of driven teeth intermittently meshing with the drive teeth of the drive wheel to rotate in a driven direction when the drive wheel rotates in a driving direction, a support bar connected with the driven wheel to move in concert with the driven wheel, and a torsion spring having a first end connected with the base unit and a second end connected with the support bar and configured to bias the driven wheel to rotate in a springing direction and the support bar to pivot in the springing direction opposite to the driven direction, and to cause the driven wheel and support bar suddenly to so rotate and pivot when the driven teeth of the driven wheel lose contact with the drive teeth of the drive wheel;

the decorative unit including:

an extension shank connected to the support bar to move in concert with the support bar, the extension shank having a first end connected to the support bar and a second end extending away from the support bar, said sudden pivoting of the support bar in the springing direction caus-

ing sudden pivoting of the extension shank in the springing direction and sudden upward and forward movement of the extension shank relative to the base unit;

a first link having a first end pivotally connected to the extension shank and configured to pivot relative to the extension shank in a direction opposite to said springing direction and to move upward and forward relative to the base unit in response to said sudden pivoting of the support bar and extension shank in the springing direction;

a decorative body connected to a second end of the first link positioned forward of the first end, the decorative body configured to spring upward and forward, and to rotate relative to the extension shank in the direction opposite to said springing direction, in response to said sudden pivoting of the support bar and extension shank in the springing direction; and

a second link having a first end pivotally connected to the base unit at a pivotal joint spaced forwardly of the driven wheel and a second end pivotally connected with the first link, the second link being located forward of the support bar and extension shank and configured to pivot relative to the base unit in response to the sudden pivoting of the support bar and extension shank in the springing direction of said sudden pivoting of the support bar and extension shank.

6. The apparatus of claim 5, further comprising the drive motor being mounted in a mounting seat of the driving device, the mounting seat mounted on a housing of the base unit.

7. The apparatus of claim 6, further comprising the drive wheel being rotatably mounted in the mounting seat.

8. The apparatus of claim 5, further comprising a support rack, the first end of the second link being pivotally connected to the support rack.

9. The apparatus of claim 5, further comprising

a sounder; and

a sensor selected from the group consisting of a light sensor, a sound sensor, a footpad control switch or a try-me switch;

the sensor being operable to actuate the driving device to cause the drive wheel to rotate in the driving direction and to actuate the sounder when the drive teeth of the drive wheel lose contact with the driven teeth of the driven wheel, so that a sound is emitted substantially simultaneously with the sudden movement of the decorative body.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : RE46,087 E
APPLICATION NO. : 14/555139
DATED : August 2, 2016
INVENTOR(S) : James C. Wirt

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the Title Page

Item (71) Applicant is corrected to read:
-- James C. Wirt, Orland Park, IL (US); --

Item (72) Inventor is corrected to read:
-- James C. Wirt, Orland Park, IL (US); --

Signed and Sealed this
Twenty-fourth Day of August, 2021

Drew Hirshfeld
Performing the Functions and Duties of the
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office