Nov. 18, 1952 A. E. MAY, JR 2,618,376

MATERIAL CONVEYING TOY

Filed Oct. 3, 1950

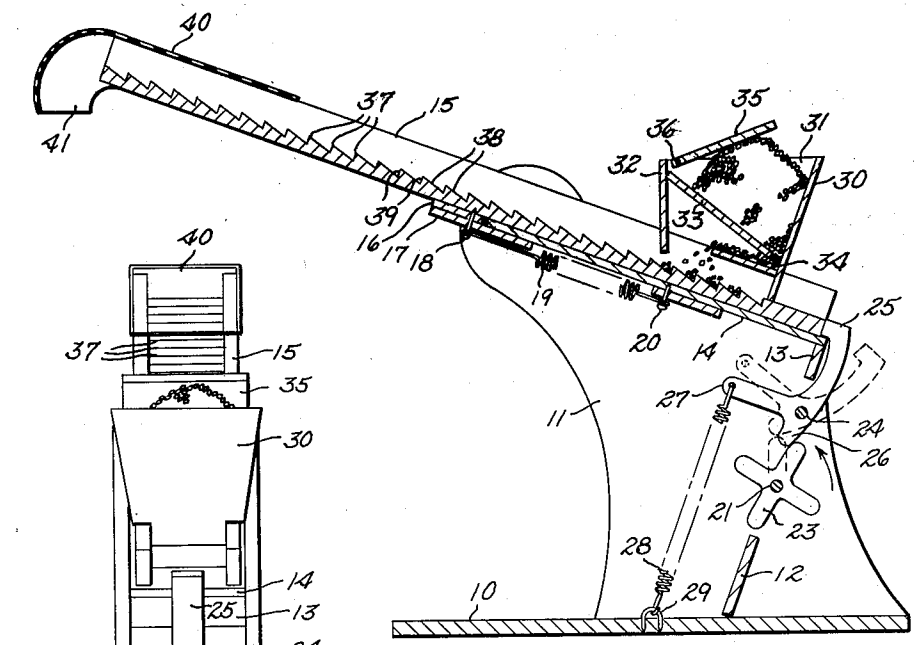


Fig. 3.

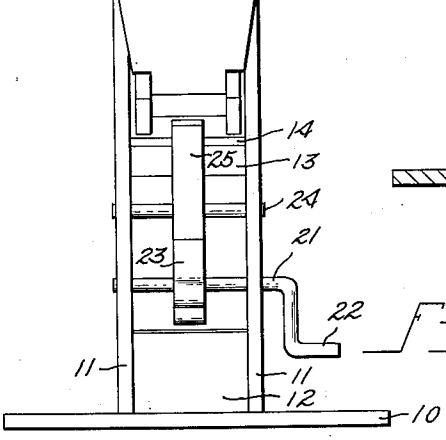


Fig. 2.

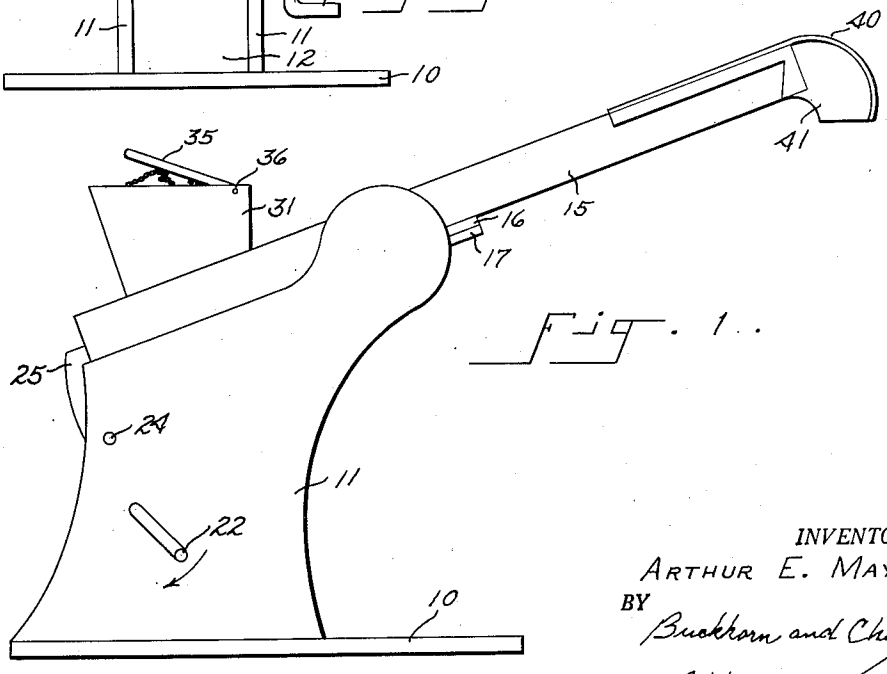


Fig. 1.

INVENTOR.
ARTHUR E. MAY, JR.
BY
Buckhorn and Cheatham
Attorneys

Patented Nov. 18, 1952 2,618,376

UNITED STATES PATENT OFFICE

2,618,376

MATERIAL CONVEYING TOY

Arthur E. May, Jr., Boise, Idaho

Application October 3, 1950, Serial No. 188,126

4 Claims. (Cl. 198—220)

1

The object of the present invention is to provide a conveyor toy of simplified construction which is easy to manufacture and assemble, and which is of sturdy and rugged construction so that it would not be easily broken in the hands of children of the age interested in such devices.

A further object of the present invention is to provide a conveyor toy which combines the desirable qualities of providing movement with noise making simulating the actual noises of the large-scale mechanism of the same type, and which simulates useful large-scale machinery so that the infant feels that he is operating just as his elders do.

The objects and advantages of the present invention will be more fully apparent from inspection of the accompanying drawings taken in connection with the following specification wherein like numerals refer to like parts throughout.

In the drawings,

Fig. 1 is a side elevation of a preferred form of the present invention;

Fig. 2 is an end elevation of the present invention; and

Fig. 3 is a longitudinal section through the present invention.

The preferred embodiment of the toy comprises a frame including a base plate 10 and a pair of side frame members 11. The frame may be of such weight as to support the toy in upright position when in use, but it may be made of relatively light material and the base 10 is extended as shown to provide a platform upon which to rest one hand in order to hold the toy on a surface while it is in use. The side members 11 are held in spaced apart relation by suitable cross members including a lower member 12, an upper member 13 in substantial alignment with the lower member 12 and an inclined top member 14 which is of considerable length and is inclined upwardly over the extension of the base 10. The side members are extended above the inclined member 14 for at least a portion thereof so as to provide trough-shaped guiding means to retain and guide a longitudinally movable trough 15. An intermediate portion of the bottom of the trough supports an abutment plate 16 of substantially the same thickness as the member 14, and a guiding and retaining plate 17 mounted on the lower surface of the abutment 16 extends downwardly and over the end of the guide member 14. The upper end of the member 14 constitutes a cooperating abutment on the frame engageable with the lower end

2

of the abutment 16 mounted on the movable trough 15. A pin 18 extending through the members 16 and 17 and projecting therebelow provides means to anchor one end of a coil spring 19, the other end of which is anchored to a pin 20 projecting beneath the bottom of the trough 15. The spring is stressed in the longitudinal direction of the trough and is so tensioned as to hold the abutments normally in engagement with each other but may yield to permit upward movement of the trough.

A crank is mounted transversely of the frame, the same comprising a transverse shaft 21 having a laterally projecting integral handle 22 which may be engaged and rotated by the free hand. The crank mounts cam means 23 preferably in the form of a multilobed cam which is located centrally of the frame. A rock shaft 24 mounted above the crank shaft 21 pivotally supports a hammer member comprising a hammer head 25 located in position to strike the lower end of the trough 15, a cam engaging projection 26 and a spring mounting arm 27. A second spring 28 is tensioned between the outer end of the arm 27 and a suitable anchoring member 29 extending upwardly from the base 10, the spring being tensioned normally to hold the hammer 25 in engagement with the lower end of the trough. When the crank 22 is rotated the hammer member is repeatedly rocked to move the hammer outwardly to the position shown in dotted outline in Fig. 3, whereupon the spring 28 forcibly causes the hammer to strike a jarring blow in the longitudinal direction upwardly upon the lower end of the trough 15, the same being accompanied by percussion noises in fairly rapid repetition simulating the noise of field apparatus of similar type. Each blow causes the trough to move upwardly to a slight extent accompanied by stressing of the spring 19, and as soon as the next lobe of the cam 23 engages the hammer member, the spring 19 causes the trough 15 to return until the abutments 16 and 14 are forcibly reengaged.

Means are provided to feed granular material such as sand into the lower end of the trough, such means preferably comprising a hopper mounted upon the trough itself, the hopper including a rear wall 30 extending down to the inner surface of the bottom of the trough to provide reinforcement and to prevent the sand from dropping from the bottom of the trough, side walls 31 which engage the side walls of the trough and a front wall 32 which extends downwardly to within a short distance of the bottom of the

trough. The hopper also preferably comprises a bottom wall 33 which extends downwardly and rearwardly from the top of the front wall to within a short distance of the back wall 30 to provide a narrow egress slot, and a forwardly extending baffle 34 extending longitudinally above the bottom of the trough a short distance toward the front wall, thus providing a trap to prevent the sand from running rapidly out of the hopper but permitting feeding escape thereof in limited quantities at each jarring movement imparted to the trough. A lid member 35 is preferably pivoted on the side walls at 36 adjacent the upper edge of the front wall 31 to provide means to prevent sand from being thrown out of the hopper when the jarring is occurring.

The bottom of the trough comprises a plurality of transverse ridges 37. Each of the transverse ridges 37 comprises an upwardly inclined upper surface 38 having upward inclination with respect to the inclination of the trough and an abrupt, substantially vertical forward surface 39. The spacing of the ridges is somewhat approximate to the extent of movement of the trough effected by the hammer 25. At each blow some granular material drops from the hopper and the transverse ridges successively catch the granular material which is jarred forwardly, so that in effect the granular material climbs the steps provided by the transverse ridges until it is forced over the top step and drops into a bin or toy truck.

The upper end of the trough is preferably provided with a protective hood including a top plate 40 which extends over the end of the conveyor and is curved downwardly to direct the ejected material downwardly from the trough, the hood also comprising side plates 41 which snap into engagement with the sides of the trough. The hood is preferably formed of transparent sheet material so that the operator can observe the operation of the toy throughout the extent of the trough.

It is to be appreciated that the herein described and illustrated modification is exemplary of many forms which the toy may assume and that the toy may comprise many modifications in detail and arrangement. All such modifications as come within the true spirit and scope of the appended claims are considered to be a part of my invention.

I claim:

1. A conveyor toy comprising a frame, an upwardly inclined trough, cooperating means on said frame and said trough slidably retaining and guiding said trough for longitudinal movement on said frame, the bottom of said trough comprising a plurality of transverse ridges, means to feed granular material into the lower end of said trough, an abutment on said frame, resilient means stressed in the longitudinal direction of said trough normally to retain said trough against said abutment, and means including a hammer operable to strike said trough in line with its longitudinal dimension repeatedly to jar said trough longitudinally away from said abutment whereby said material is caused to climb up said trough.

2. A conveyor toy comprising a frame, an upwardly inclined trough, cooperating means on said frame and said trough slidably retaining and guiding said trough for longitudinal movement on said frame, the bottom of said trough comprising a plurality of transverse steps each having an upwardly inclined upper surface with respect to the bottom of said trough and a precipitous forward surface, means to feed granular material into the lower end of said trough, an abutment on said frame, resilient means stressed in the longitudinal direction of said trough normally to retain said trough against said abutment, and hammer means effective repeatedly to jar said trough longitudinally away from said abutment whereby said material is caused to climb said steps.

3. A conveyor toy comprising a frame, an upwardly inclined trough, cooperating means on said frame and said trough slidably guiding said trough for longitudinal movement, cooperating abutment means on said trough and said frame normally in engagement with each other, a spring tensioned between said frame and said trough in the longitudinal direction, the bottom of said trough comprising a plurality of transverse steps, a hopper for granular material mounted on the lower end of said trough and having an outlet arranged above the lowermost of said transverse steps, and hammer means effective repeatedly to strike an end of said trough in the longitudinal direction to cause separation of said abutment means against the tension of said spring whereby granular material is deposited in said trough from said hopper and is caused to climb said steps.

4. A conveyor toy comprising a frame, an upwardly inclined trough, cooperating means on said frame and said trough slidably guiding said trough for longitudinal movement, cooperating abutment means on said trough and said frame normally in engagement with each other, a first spring tensioned between said frame and said trough in the longitudinal direction, the bottom of said trough comprising a series of transverse steps, a hopper for granular material mounted on the lower end of said trough and having a restricted outlet arranged above the lowermost of said transverse steps, and means repeatedly to jar said trough in the longitudinal direction to cause separation of said abutment means whereby granular material is deposited in said trough from said hopper and is caused to climb said steps, said means comprising a hammer movable in the longitudinal direction of said trough and engageable with the lower end of said trough, a second spring normally holding said hammer against the lower end of said trough, cam means for alternately raising said hammer against the tension of said second spring and releasing it to strike said trough, and a crank operatively connected to said cam means.

ARTHUR E. MAY, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
757,477	Marcus	Apr. 19, 1904
1,497,603	Stebbins	June 10, 1924
1,836,115	Gueydan	Dec. 15, 1931

FOREIGN PATENTS

Number	Country	Date
442,284	Great Britain	Feb. 5, 1936