Sept. 8, 1936. F. J. STENGER 2,053,351

DEVICE FOR OPERATING ANIMATED SIGNS

Filed July 5, 1935

Fig. 1.

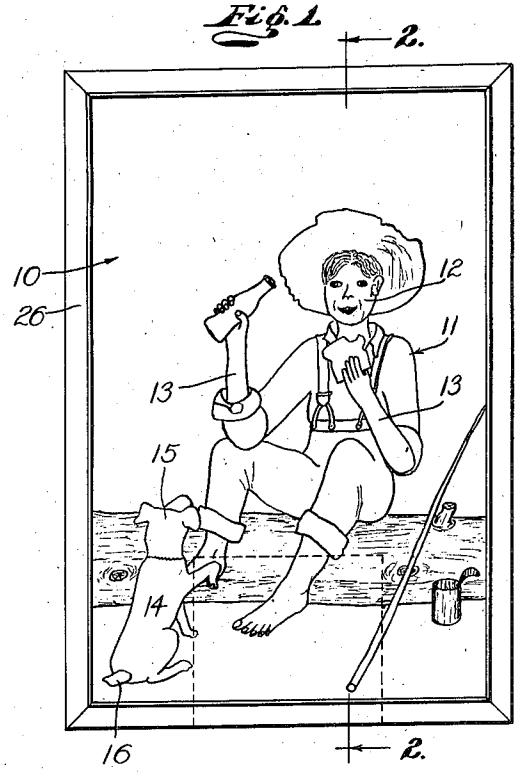


Fig. 2.

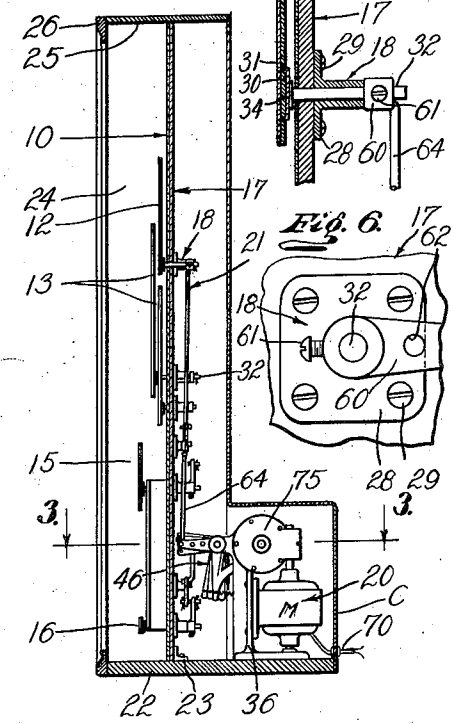


Fig. 5.

Fig. 6.

Fig. 3.

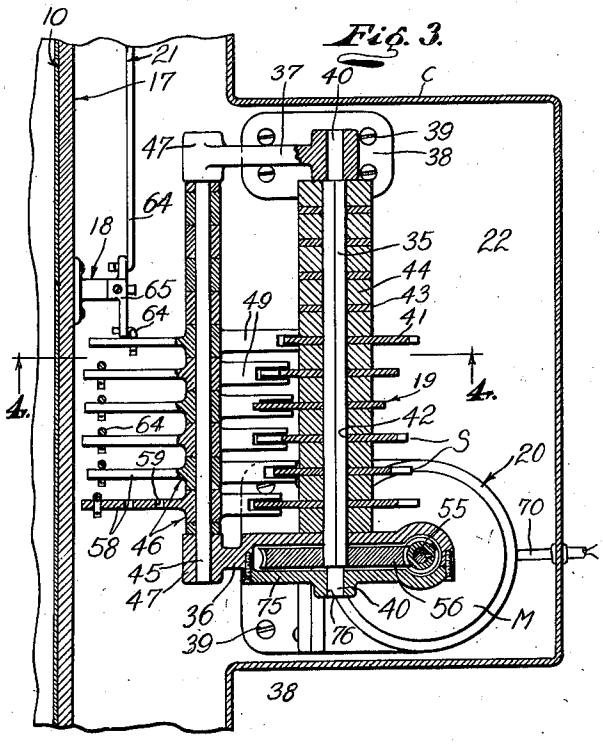
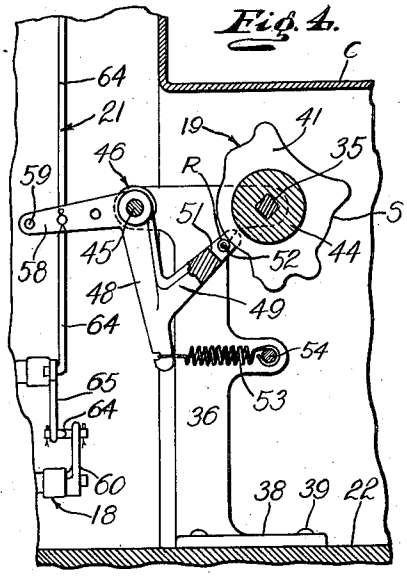


Fig. 4.



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DEVICE FOR OPERATING ANIMATED SIGNS

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13 Claims. (Cl. 40—126)

This invention relates to signs and relates more particularly to a mechanism or device for operating animated signs, advertising displays, models or the like, having active or moving parts to attract the attention of the passer-by. A general object of the invention is to provide a simple, practical and particularly effective device for operating animated signs, etc.

Another object of the invention is to provide a device of the character mentioned that is so constructed that it may be readily and quickly altered or modified to operate animated signs or advertisements of various classes and types and animated signs and advertisements having various numbers of movable parts.

Another object of the invention is to provide an animated sign operating device of the character mentioned that is particularly smooth and quit in operation and which requires little power, making the sign very economical to operate.

A further object of the invention is to provide a sign operating device of the character mentioned that is in the form of an especially simple, compact, and self-contained unit that is readily portable and which occupies a minimum amount of space, which is an important factor when the device is being employed to operate signs displayed in the windows of stores and like situations where the space is limited.

Another object of this invention is to provide a device of the character mentioned that is simple and inexpensive of manufacture in that it is made up of a minimum number of simple parts that are easily machined or finished and assembled. The device has only a few simple parts and there is a minimum of wear in its operation and, therefore, practically no upkeep cost.

The various objects and features of my invention will be fully understood from the following detailed description of a typical form and application of the invention, throughout which description reference is made to the accompanying drawing, in which:

Fig. 1 is a front elevation of a sign showing the device in connection therewith. Fig. 2 is a vertical detailed sectional view of the device and sign taken as indicated by line 2—2 on Fig. 1. Fig. 3 is an enlarged fragmentary detailed sectional view taken substantially as indicated by line 3—3 on Fig. 2. Fig. 4 is a fragmentary detailed sectional view taken substantially as indicated by line 4—4 on Fig. 3. Fig. 5 is an enlarged fragmentary detailed sectional view illustrating one of the pivotal mountings, and Fig. 6 is a fragmentary detailed sectional view taken as indicated by line 6—6 on Fig. 5.

The animated sign operating device provided by the invention is adapted to be varied or modified to actuate various classes and types of animated advertising signs, displays, etc. In this way the signs or displays can be altered or changed with very little modification of the actuating device. For instance, the sign may be displaying an advertisement for a certain company or concern, and after a period of time may be changed to have different figures or moving parts, or may be easily changed to present an advertisement for a different concern with but very little modification of the operating device. All that is necessary is to relocate the rotatable mountings for the moving parts, replace or insert new cams designed to give the movable parts their desired motion, and reconnect the movable parts with their respective cams, as will be hereinafter described. Further, the sign actuating device of the present invention is adapted to be employed for operating signs, etc. of different sizes, types, etc.

The particular animated sign illustrated in the drawing is not to be taken as limiting or restricting invention as it may be varied considerably without departing from the spirit of the invention. The particular advertisement or sign 10 illustrated in the drawing includes a figure or image 11 of a person having a movable head 12 and movable arms 13. The advertisement also includes a figure or image of an animal 14, having a movable head 15 and a movable tail 16. The movable parts of the advertisement or sign may all be mounted in substantially the same manner and in the manner to be hereinafter described.

The device provided by the present invention includes, generally, a board or mounting panel 17 for carrying or mounting the display or sign 10, rotatable mountings 18 for mounting the movable parts of the sign 10, a variable cam drive 19 that may be readily altered or modified when desired, a suitable power means 20, and means 21 operatively connecting the drive 19 with the movable parts.

The board or panel 17 for forming or carrying the background, lettering, etc., of the advertisement or sign 10, and for carrying the rotatable mountings 18 for the moving parts, may be considered as forming a part of a sign which the device of the present invention may operate or may be considered as an element of the device of the invention. The panel 17 may be of any shape or

configuration. In the construction illustrated in the drawing the panel is of substantially rectangular configuration and may be made of wood for the easy attachment of the mountings 18. The panel 17 projects substantially vertically from a base 22 and may be attached thereto by angle brackets or braces 23. The base 22 projects forward of the panel 17 a short distance to accommodate advertising that may consist of superimposed parts one in front of the other to give a relief effect, as illustrated in Fig. 2 of the drawing. Sides 24 and a top 25 may be provided around the panel 17 to form a frame, and may project forwardly the same distance from the panel as the base 22. The outer ends of the sides 24, the top 25 and the base 22 may be finished off with a molding 26. The base 22 projects rearwardly from the panel to carry or mount the drive 19 and the means 20. The sides 24 and the top 25 may also project rearwardly to house the operating mechanism. A removable cover or closure C is provided on the back of the device and extends from the top 25 to the base 22 and from one side 24 to the other. When the closure C is removed the operating mechanism is readily accessible for alteration or repair. It may be desirable to have parts of the advertisement or sign project beyond the edges of the panel 17, in which case the sides 25 and top 26 may be omitted, reduced in size or provided with openings to allow the advertisement parts to extend or move beyond the panel 17.

The rotatable mountings 18 for the several movable parts of the advertisement or sign 10 may be identical. Therefore, I will proceed with the description of one of the mountings 18, which description may apply equally well to the several mountings. Each mounting 18 includes a bearing 27. The bearing 27 is provided with a mounting flange 28 for attaching the bearing 27 to the rear side of the panel 17. The bearing 27 is removably secured to the panel 17 by screws 29 passed through openings in the flange 28. A bearing 27 may be located at each point of pivotal connection of the members or parts of the images or figures 11 and 14 with the panel 17. A clip or fastener in the form of a flat metal plate 30 is secured to the movable part of the sign by spaced lugs 31 formed on the plate. The lugs 31 may be integral with the plate 30 and project through slots in the movable part and are then bent over to secure the plate 30 to the part. A stub shaft 32 is rotatably carried by the bearing 27 and projects forwardly through an opening 33 in the panel 17. The shaft 32 is provided with an enlargement or head 34 on its outer end. The head 34 is sweated, soldered, or otherwise fixed to the plate 30 of the fastening to rigidly connect it thereto.

The cam drive 19 includes a cam shaft 35 mounted for rotation by spaced bearings or brackets 36 and 37. The base 22 may project rearwardly from the panel 17 to carry the brackets 36 and 37. The brackets 36 and 37 are provided with mounting flanges 38 which are secured to the base by screws 39 passed through openings in the flanges 38 and screwed into the base. The major portion of the shaft 35 is preferably polygonal for reasons to be hereinafter set forth. The outer ends 40 of the shaft 35 are cylindrical and are received in the bearings or brackets 36 and 37. A series of cams 41 is arranged on the polygonal portion of the shaft 35. The cams 41 have polygonal openings 42 for cooperating with or receiving the polygonal shaft 35. The walls of the polygonal openings 42 cooperating with the polygonal shaft form driving connections between the shaft 35 and the cams 41. The several cams 41 of the series are provided with surfaces S that give their respective movable parts of the sign 10 their desired or proper movement.

In the preferred construction the shaft 35 is proportioned to carry a considerable number of cams 41. In the particular construction illustrated in the drawing the shaft 35 is proportioned so that it may carry as many as ten cams. In the drawing I have only shown six cams 41 on the shaft 35, as that is all that is required for the operation of the particular sign 10 illustrated. It is a feature of the invention that the number of cams 41 on the shaft 35 may be varied to meet the particular needs. The invention provides spacers 44 arranged on the shaft 35 between the cams 41. If found practical the spacers 44 may be connected with the cams or may form parts thereof. In the construction illustrated in the drawing the spacers are separate pieces slid on the shaft to keep the cams 41 in a definite relation. Dummy washers 43 and extra spacers 44 may be arranged on the portion or portions of the shaft not occupied by the cams 41 and their spacers 44. The assembly of the cams 41, spacers 44 and the washers 43 or any part thereof may be easily removed or slid from the shaft 35 for replacement or rearrangement by detaching a bracket 36 or 37 from the base 22 to leave one end of the shaft free and exposed for the removal and rearrangement of the cams, spacers and washers.

The drive 19 includes a countershaft 45 carrying rockers 46 for cooperating with the cams 41. The end portions of the shaft 45 are supported in bosses 47 on the brackets 36 and 37. The countershaft 45 is parallel to the shaft 35 and is in substantially the same horizontal plane. The rockers 46 are mounted for rotation or oscillation on the countershaft 45. The rockers 46 are each provided with a depending arm 48. The arms 48 are provided with projections 49 extending upwardly and outwardly toward the shaft 35 to be substantially radial to the axis of the shaft 35. The outer ends of the projections 49 are bifurcated or yoked to have slots 51 for receiving the peripheral portions of the cams 41. Rollers R are rotatably mounted in the slots 51 on pins 52 and are adapted to contact or cooperate with the surfaces S of the cams. Springs 53 are connected with the lower ends of the rocker arms 48 and a cross bar or rod 54 carried between the brackets 36 and 37 to yieldingly urge the rollers R into cooperation with the cam surfaces S.

The power means 20 provided by the invention includes an electric motor M which may be of relatively low horse power to be economical in operation. It is also preferable to employ a motor that has a relatively low R. P. M. rating. The motor is provided with conductors 70 that may be connected with a convenient source of electrical energy. The motor M is attached to the bracket 36 to be adjacent one end of the cam shaft 35. The invention provides a drive or gear transmission between the motor M and the cam shaft 35. The transmission includes a worm 55 keyed to the outer end of the motor shaft and a worm wheel 56 on the cam shaft 35. The worm wheel 56 has a polygonal opening to cooperate with or receive the polygonal portion of the shaft 35. A plate 75 may be provided on the bracket 36 to enclose the worm 55 and the outer side of the worm wheel 56 so that the bracket 36 and its plate 75 forms a housing for the gearing or trans-

mission. One end 40 of the cam shaft 35 may be rotatably supported in an opening 76 in the plate 75. It is apparent how rotation of the motor M is transmitted to the cams 41 and how the cams 41 operate the rockers 46.

The means 21 for operatively connecting the drive 19 with the movable parts 12, 13, 15 and 16 of the sign proper 10 includes arms 58 on the rockers 46. The arms 58 project at substantially right angles to the arms 48 and project forwardly to be in substantially the same horizontal plane as the shafts 35 and 45. The arms 58 of the rockers 46 are each provided with a series of holes 59 spaced different distances from the axis of the shaft 45. Levers 60 are provided on the ends of the stub shafts 32 and are locked against rotation relative thereto by set screws 61. A series of holes 62 may be provided in each of the levers 60. Suitable linkage connects the levers 60 with the arms 58 of the rockers 46 and includes link members 64. It is believed that it is clear how the leverage of the linkage and the amount of movement of the linkage members 64 may be varied. The ends of the link members 64 may have angular or bent parts inserted in the holes of the arms 58 and the levers 60. These end parts of the link members 64 may be inserted in any of the spaced holes in the arms 58 or the levers 60 to obtain the desired relative movement of the movable parts of the sign 10. The linkage may be varied considerably without departing from the spirit of the invention, and its character depends upon the locations of the rotatable mountings 18 relative to the actuating arms 58. In most instances all that is required is a single link member 64 to constitute a connection between a rocker arm 58 and its related lever 60, while in some cases where the rotatable mounting 18 is in a remote place it may be necessary to provide a bell crank 65 and two connecting link members 64 such as shown for operating the movable part 16.

It is believed that the operating of the sign operating device provided by the present invention will be readily understood from the foregoing detailed description. The device is driven or actuated by the simple power means 20 consisting of an inexpensive electric motor M that may be connected in a convenient outlet of a supply line. Rotation of the motor M is transmitted through the worm 55 and worm wheel 56 to the cam shaft 35 to cause rotation of the series of cams 41. The cams are shaped to have active surfaces S of special or given contours, depending upon the action or movement to be given the movable parts of the advertisement or sign. Rotation of the cams 41 causes movement of the rockers 46 through the cooperation of the rollers R on the rocker arms 48 with the surfaces S of the cams 41. This movement of the rockers 46 is transmitted to the movable parts of the advertisement or sign through the link member 64 connecting the arms 58 of the rockers 46 with their respective levers 60 fixed on the shafts 32 that carry the movable parts. As described above, the cams 41 may be exchanged, replaced or modified in shape and the linkage suitably modified to adapt the device to operate animated signs of various characters and to adapt the device to changes in the particular sign in which it is employed. Thus the device has a wide range of use and is readily adaptable for use in various situations.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art or fall within the scope of the following claims:

Having described my invention, I claim:

1. A device for operating an animated sign having a movable part including, a power means, a link operatively connected with the movable sign part, and a cam drive between the power means and the link including a shaft driven by the power means, a cam on the shaft for operating the link, and means retaining the cam on the shaft for ready removal whereby said cam may be replaced by a cam of different shape to impart a different movement to the sign part.

2. A device for operating an animated sign having movable parts including, a power means, operating members operatively connected with the sign parts, and a cam drive between the power means and the operating members, the drive including a cam shaft driven by the power means, a plurality of cams on the shaft for operating the operating members, and a member supporting one end of the shaft and retaining the cams thereon for replacement by cams of different configuration to change the motion of the movable sign parts.

3. A device for operating an animated sign having movable parts including a power means, operating members operatively connected with the sign parts, a shaft driven by the power means, removable cams on the shaft for actuating the operating members, and a bracket supporting one end of the shaft and removable therefrom to permit replacement of said cams by cams operable to impart different movements to said sign parts.

4. A device for operating an animated sign having movable parts including a power means, operating members operatively connected with the sign parts, a shaft of polygonal cross section driven by the power means, a plurality of cams having polygonal openings receiving the shaft to turn therewith for the purpose of actuating the operating members, and means removably retaining the cams on the shaft whereby the cams may be easily removed for replacement by cams of different configuration to impart different movement to the said sign parts.

5. A device for operating an animated sign having movable parts including a power means, operating members operatively connected with the sign parts, a shaft of polygonal cross section driven by the power means, a plurality of cams having polygonal openings receiving the shaft to turn therewith for the purpose of actuating the operating members, and a bearing supporting one end of the shaft and removable to permit removal of the cams for replacement by cams of different shape.

6. A device for operating an animated sign having movable parts including, operating members to be operatively connected with the said movable parts, an electric motor, a cam shaft, a speed reducing drive between the motor and shaft, a plurality of cams on the shaft, a rocker shaft, and rockers on the rocker shaft actuated by the cams to operate the said members.

7. A device for operating an animated sign having movable parts including, operating members to be operatively connected with the said movable parts, an electric motor, a cam shaft, a speed reducing drive between the motor and shaft, a plurality of cams on the shaft, rockers operatively connected with said members, and anti-friction members on the rockers engaged by

the cams whereby the cams actuate the rockers and said operating members.

8. A device for operating an animated sign having movable parts including, operating members to be operatively connected with the said movable parts, a motor, a cam shaft, a speed reducing drive between the motor and shaft, a plurality of cams on the shaft, rockers operatively connected with said members, anti-friction rollers on the rockers engageable by the cams to provide for the movement of the operating members and sign parts, and springs acting on the rockers to hold the rollers in contact with the cams.

9. A device for operating an animated display having a plurality of movable parts including members operatively connected with the sign parts, a power means, a cam shaft, a worm drive between the power means and shaft, a plurality of spaced cams removably arranged on the shaft to turn therewith, a rocker shaft substantially parallel with the cam shaft, a plurality of rockers independently turnable on the rocker shaft and engageable by the cams for pivoting thereby, spring means urging the rockers into active cooperation with the cams, operative connections between the rockers and said members and a bearing supporting an end of the shaft and removable to permit replacement of said cams by cams of different shapes for cooperating with said rockers.

10. In combination, an animated display including a plurality of movable parts, and an actuating means including operating members connected with said parts, a power means, a cam shaft driven by the power means, cams on the shaft, a rocker shaft substantially parallel with the cam shaft, and rockers on the rocker shaft each having an arm engageable by a cam, and an arm operatively connected with one of said members.

11. In combination, an animated display including a plurality of movable parts, and an actuating means including operating members connected with said parts, a power means, a cam shaft driven by the power means, exchangeable cams on the shaft, rockers operated by the cams, and adjustable connections between the rockers and the operating members.

12. Mechanism for operating an animated sign having a plurality of movable parts comprising, a cam shaft, means for rotating the cam shaft, a rocker shaft substantially parallel with the cam shaft, a plurality of cams arranged on the cam shaft for rotation therewith and for removal therefrom, rockers arranged on the rocker shaft for removal therefrom and for individual engagement by a cam, a member retaining the cams and rockers on their respective shafts removable to permit replacement of the cams and rockers, and operative connections between the rockers and said parts.

13. Mechanism for operating an animated sign having a plurality of movable parts comprising, a cam shaft, means for rotating the cam shaft, a rocker shaft substantially parallel with the cam shaft, a plurality of cams arranged on the cam shaft for rotation therewith and for removal therefrom, rockers arranged on the rocker shaft for removal therefrom and for individual engagement by a cam, a member supporting an end of each of said shafts and retaining the cams and rockers on their respective shafts and removable to permit the replacement of the cams and rockers, and operative connections between the rockers and said parts.

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