C. K. FOTHERINGHAM & A. R. LAING.

ADVERTISING DEVICE.

APPLICATION FILED APR. 15, 1910.

1,040,534.

Patented Oct. 8, 1912.

2 SHEETS—SHEET 1.

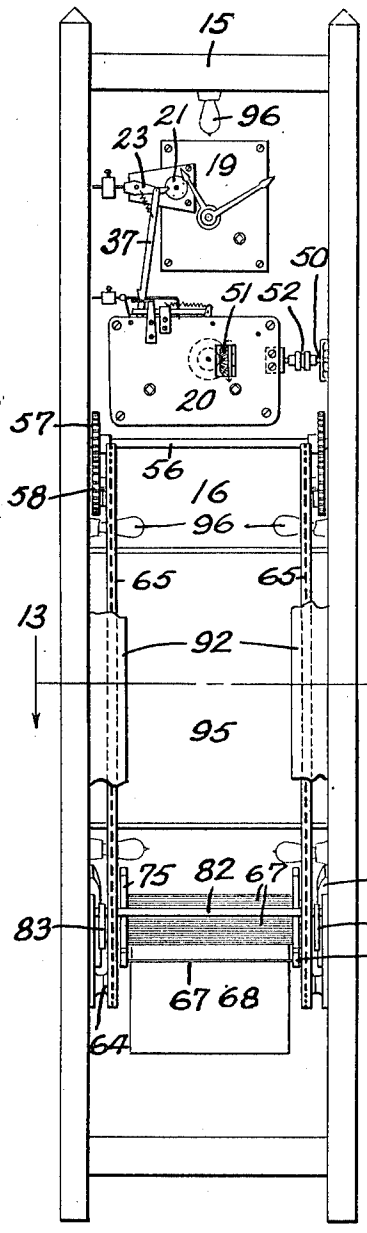

FIG. 1.

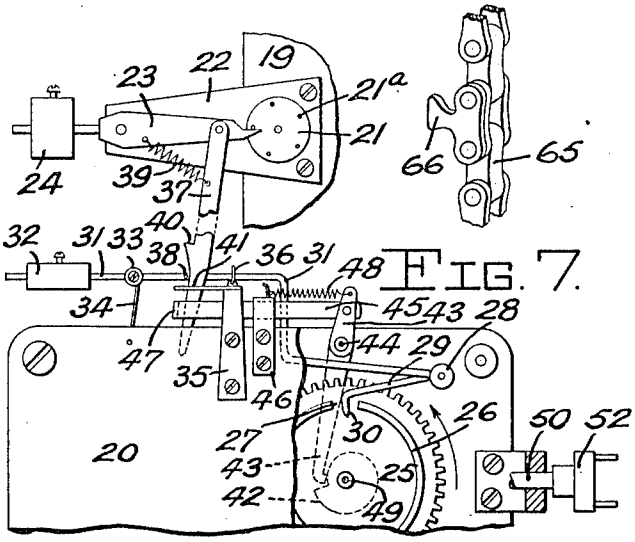

FIG. 2.

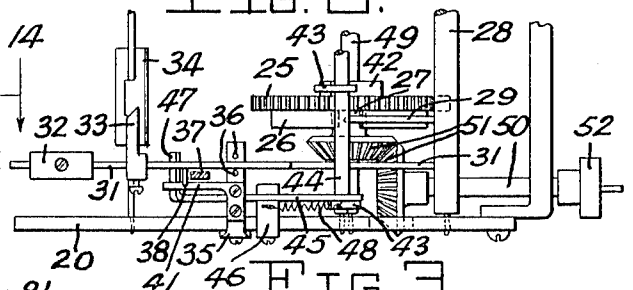

FIG. 3.

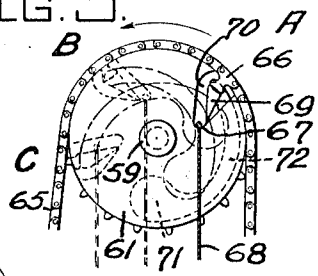

FIG. 5.

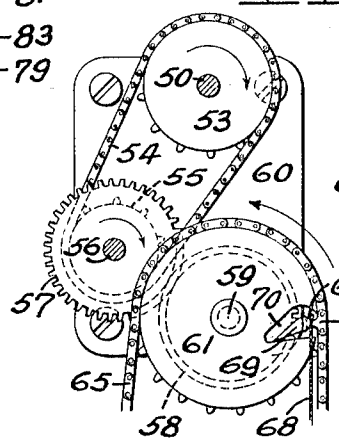

FIG. 4.

WITNESSES

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2 SHEETS—SHEET 2.

FIG. 8.

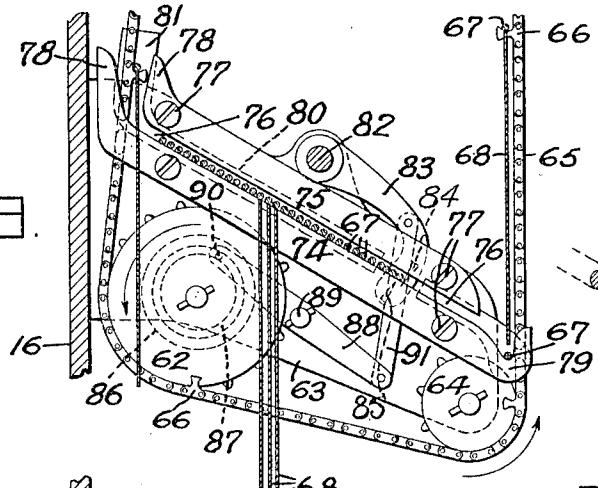


FIG. 10.

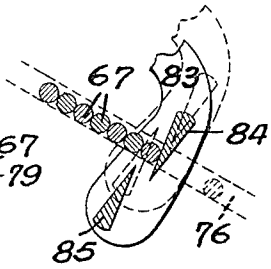


FIG. 9.

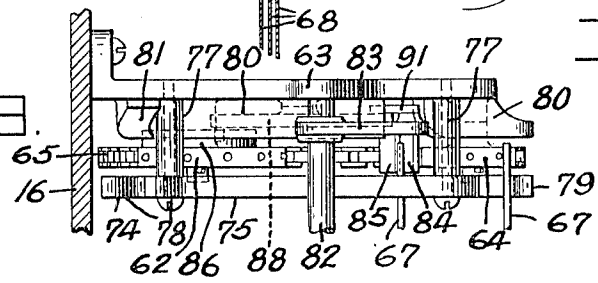


FIG. 6.

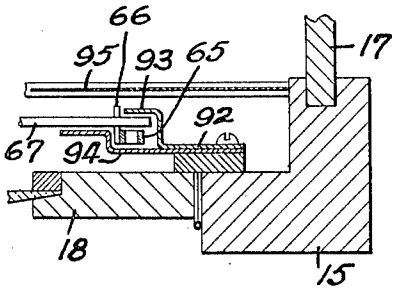
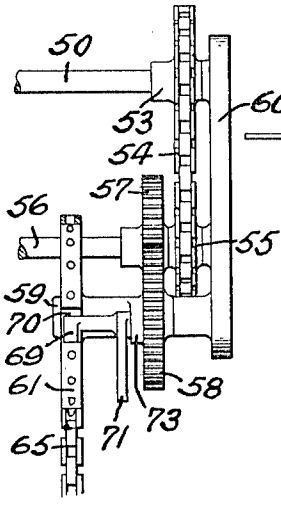


FIG. 11.



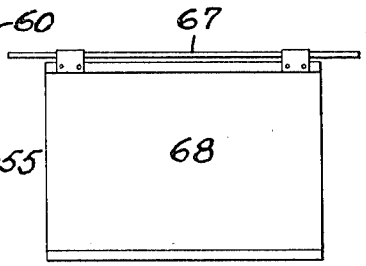


FIG. 12.

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ADVERTISING DEVICE.

1,040,534. Specification of Letters Patent. Patented Oct. 8, 1912.

Application filed April 15, 1910. Serial No. 555,701.

To all whom it may concern:

Be it known that we, CARLETON K. FOTHERINGHAM and ARCHIE R. LAING, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Advertising Devices, of which the following is a full, clear, and exact description.

This invention relates to improvements in advertising devices, and the main object of the invention is to provide, in combination with a clock, a device containing a large number of advertisements in a small space, which are displayed in rotation and shifted at regular intervals controlled by the clock itself.

A further object is to provide means whereby the load on the controlling clock will always be constant so as not to interfere with the precision thereof.

To accomplish these objects, we provide a clock having a suitable case containing a clockwork motor for shifting the advertisements, controlled from the clock, and a magazine from which the advertisements are taken for display and automatically returned at predetermined intervals.

In the drawings which illustrate our invention:—Figure 1 is a front elevation of a clock having the front removed to show the mechanism. Fig. 2 is an enlarged view showing the motor control mechanism operated by the clock. Fig. 3 is a plan view of same. Fig. 4 is a side elevation of the drive mechanism of the advertisement carrier. Fig. 5 is a detail view of the transfer device forming part of the drive mechanism. Fig. 6 is a front elevation of the drive mechanism. Fig. 7 is a perspective view of a portion of the carrier chain. Fig. 8 is a side view of one half of the magazine. Fig. 9 is a plan view of same. Fig. 10 is an enlarged detail view of the magazine gate. Fig. 11 is a cross-section on the line 13—14 of Fig. 1, showing the carrier guides. Fig. 12 is a view showing one of the advertising cards.

In the above defined figures, 15 designates a clock case of suitable form having a back 16, sides 17, and door 18. The movement 19 of the clock is preferably located at the top of the case in the usual way, and below it is placed a clockwork motor 20 which supplies power for shifting the advertisements. Any one of the spindles of the clock movement available for the purpose is allowed to project through the front plate of the movement and carries a small pin or trundle wheel 21, having teeth 21^a. A bracket 22 is fixed to the frame and supports a pivoted trip lever 23, one end of which engages the pins 21^a of the wheel 21, and the opposite end of which carries an adjustable weight 24. The third or fourth wheel 25 of the motor 20, as is found most desirable, is provided on one side with a circular flange 26 lying a short distance within the teeth of the wheel, having a single gap 27 therein. A shaft 28 is pivotally mounted adjacent the wheel 25 and carries a stop arm 29 having a downturned foot 30 adapted to ride on the flange 26 and drop into the gap 27. A trigger lever 31 is also fixed to the shaft 28 and extends along the top of the motor 20 a sufficient distance to lie under the bracket 22. An adjustable weight 32 is mounted on the extremity of the lever 31, and adjacent thereto is a small adjustable stop 33 adapted to be engaged by the fan 34. A small bracket 35 is fixed to the frame of the motor 20 and provided with a pair of guide pins 36 between which the lever 31 lies. A trip bar 37 is pivoted to the trip lever 23 and extends downwardly therefrom into engagement with a pin 38 on the trigger lever 31, against which pin the bar is held by a spring 39. Near the lower end of the bar 37 a small hook 40 is formed in the edge thereof engaging a pin 38. A guide 41 is attached to the bracket 35 to maintain the link 37 in line with the pin 38. On the opposite side of the wheel 25 from the flange 26, is a small spiral cam 42. A retractor lever 43 is pivoted at 44 intermediate its ends. The lower extremity of the lever engages said cam 42 and the upper extremity thereof is pivotally connected to a retractor bar 45 slidably supported in a guide block 46. The free extremity 47 of the retractor bar is turned at right angles to the main portion thereof so as to be hooked around the lower portion of the trip link 37. A spring 48 serves to keep the lower extremity of the retractor lever in engagement with the cam 42. The shaft 49 which carries the wheel 25 is connected to the transmission shaft 50 by miter gears 51. The transmission shaft 50 is preferably made in two parts connected by a coupling 52 in order that one portion of the mecha-

nism may be removed without disturbing the remainder. A small sprocket 53 is mounted on the shaft 50 and is connected by a chain 54 to a pinion 55 mounted on a counter shaft 56, which extends across the case 15. At each end of the shaft 56 are gears 57 meshing with similar gears 58, mounted on posts 59 fixed to the plates 60. The gears 58 are connected to and rotate sprockets 61 mounted on the posts 59, said sprockets 61 lying as near the front of the case as possible. At the bottom of the case, a similar sprocket 62 is revolubly mounted at each side of the case on plates 63, these sprockets being as near the back 16 of the case as possible. Small idler sprockets 64 are also revolubly mounted at each side of the case on the plates 63, these idlers 64 being at the front of the case, so that the chains 65 passing over the two sprockets and the idler at each side of the case, will run vertically at the front of the case. Small saddles 66, shaped as shown best in Fig. 7, are mounted at regular intervals on the inner sides of the chains 65 so as to overlie the edges of the sprockets, as seen in Figs. 4, 5 and 8. These saddles engage the extremities of the rods 67, which support the translucent advertising cards 68.

It is obvious that when the chains 65 carry the saddles 66 over the top sprockets 61, the rods 67 would slip off the saddles. To overcome this, a reversing device is placed on each of the sprockets 61 to receive the rods 67 from the upwardly moving sides of the chains 65, and transfer them to the other side of the saddles on the downwardly moving side of the chains. This device consists of a small wedge shaped switch 69 pivotally mounted to operate within a suitably shaped recess 70 in the rim of the sprocket. An operating weight is connected to the switch 69 at its pivotal point by means of a curved arm 72, and both the switch and weight are carried on an arm 73 which projects from the hub of the sprocket 61. The recess 70 is somewhat deeper than the switch so that a space remains between the end of the switch and the bottom of the recess sufficiently large to accommodate one of the rods 67 and allow the point of the switch to move without touching said rod. It is to be noted that the distance between the saddle 66, center to center, is equal to the exact root circumference of the sprockets 61, so that on each revolution of the sprockets 61 a saddle will come into register with the outer end of the switch 69, as shown in Figs. 4 and 5.

The magazine which holds the bulk of the advertisements is located near the bottom of the case and, as in the instance of the reversing device on the sprockets 61, is in two exactly similar parts located one at each side of the case. The magazine proper consists of a pair of bars 74 and 75, located one above the other, and inclined downwardly toward the front of the case. A space or slot 76 of sufficient width to allow the easy movement of the rods 67 is left between the bars 74 and 75, which are spaced away from the plates 63 and supported by pillars 77 attaching the bars rigidly to these plates. Both bars 74 and 75 are turned upwardly at their rear extremities 78 and slightly flared so as to form a V-shaped entrance to the slot 76. The lower end of the lower bar 74 projects beyond the corresponding end of the upper bar 75 and is turned upwardly at the extremity to form a hook 79 which is deepened by downwardly curving the upper edge of the bar. It will be seen in Fig. 8 that the mouth of the slot 76 is in line with the descending rear portion of the chain 65, while the hook 79 is in line with the saddles 66 on the ascending front portion of the chain.

An adjusting plate 80 is formed integral with or is attached to the plate 63, and follows the direction of the slot 76, being curved upwardly and flared outwardly at the rear end 81. The distance between the face of this plate 63 and the outer sides of the magazine bars 74 and 75 is equal to the distance the rods 67 will project beyond the magazine bars. The purpose of the adjusting plate 80 is, obviously, to aline the ends of the rods 67 in the magazine and to prevent the same catching on any part of the mechanism. A shaft 82 is journaled in the plates 63 and extends across the case from side to side. Near each end of this shaft, a J-shaped magazine gate 83 is fixed, said gate lying between the plates 63 and the magazine bars 74 and 75, and at such a distance from the bars that the body of the gate will be out of the path of the rods 67, as seen in Fig. 9. Near their lower ends the plates 80 are recessed to receive the magazine gate. Each gate carries a pair of sharp edged blades or pickers 84 and 85, the upper blade 84 being located edge downward in front of the lower blade 85, which lies edge upward. The edges of the blades are in a line parallel with the slot 76 and are spaced apart just sufficiently to allow the passage of one of the rods 67 between them. On one side of the case a disk 86 having an eccentric slot 87 therein is mounted on the sprocket 62. A suitable lever 88 is pivoted, intermediate its ends, at 89 to the plate 63 below the magazine. One extremity of this lever 88 carries a pin 90 which engages in the eccentric slot 87, while the opposite extremity is pivotally attached to one end of a link 91, the other end of which is pivoted to the gate at a suitable point. This gate operating mechanism is located at one side of the case only, and the gate at the opposite side of the case operated from the shaft 82, in order to insure absolute

unison in the movement of the gates, the shaft 82 being of sufficient size to prevent all twisting or bending.

To prevent the rods 67, carrying the advertisements 68, being dislodged from the saddles 66 on the front or upwardly moving portion of the chains 65, a guide 92 is provided embracing the chains at each side of the case. The rear or inside portion 93 of the guide, overlies the extremities of the rods 67, while the front portion 94 thereof prevents the chain from bulging forward sufficiently to allow the rods 67 to leave the saddles 66. The front portion of the guide will also hold the edges of the advertising cards and prevent the same coming in contact with the door 18, as seen in Fig. 11. A screen 95, of any suitable transparent material, is located behind the guides 92 and extends from side to side of the case in the middle thereof, as shown in Fig. 1, to prevent light shining through between the bottom of one advertisement and the top of the next. A series of illuminating devices 96, preferably incandescent electric lamps, are located within the case 15 to illuminate the advertisements and clock at night.

When the device is in operation, supposing the pin wheel 21 to make one revolution every fifteen minutes and to have five pins or teeth 21^a, as shown, the extremity of the trip lever 23 will be engaged by one of the pins 21^a every three minutes. As the wheel 21 revolves the tooth 21^a thereof in engagement with the lever 23 depresses the same and raises the weight 24. In this way the load on the clock is constant except during the fraction of a second when the weight falls to release the motor so that the accuracy of its time keeping is not interfered with. When the trip lever 23 is depressed it presses down the trip bar 37 until the hook 40 thereon slips under the pin 38 on the trigger lever 31. At this moment the tooth 21^a of the pin wheel disengages the trip lever 23, so that the weight 24 is free to raise the same. As the trip lever 23 rises to engage the succeeding tooth of the pin wheel, the trip bar 37 raises the trigger lever 31 by means of the hook 40 engaging the pin 38. The weight 32 on the extremity of the trigger lever is also raised and prevents the weight 24 throwing the trip lever 23 against the teeth of the wheel 21 with sufficient force to injure the clock in any way. When the trigger lever is raised, it rotates the shaft 28 so that the brake arm 29 is also raised and the foot 30 thereof leaves the gap 27 in the flange 26 of the wheel 25. The stop 33 is at the same time removed from the fan 34 so that the motor 20 is free to run. When the motor starts, the cam 42 revolves with the wheel 25 and shifts the retractor lever 43 against the tension of its spring 48, so that the retractor bar 45 pulls back the trip bar 37 against the tension of the spring 39, and disengages the hook 40 from the pin 38, thus allowing the trigger bar to drop. When the trigger bar drops, the foot 30 of the brake arm rides on the flange 26 until the wheel 25 has turned through one revolution, when the foot drops into the gap 27 and allows the trigger bar 31 to drop and throw the stop 33 in the path of the fan 34, and stop the motor. It will be seen in Fig. 2, that by reason of the shape of the cam 42, the retractor lever will be held out of its normal position as long as the motor runs, and will hold back the trip bar 37 so as to prevent any possibility of the pin 38 catching on the hook. The cam 42 is adjusted so that, immediately the trigger bar drops, the retractor lever will be released and allow the trip bar to resume its original position. When the wheel 25 makes one revolution, the transmission shaft 50 is driven through one revolution by the miter gears 57, and drives the sprocket 61 one revolution through the medium of the train shown in Figs. 4 and 6.

In considering the further operation of the device, the course of a single advertising card, 68, and its suspending rod, 67, will be traced through the cycle of travel commencing with the arrival of the advertisement at the top of the case, as shown in Fig. 4. When the advertisement reaches this position, the motor 20 is stopped, as above described. At the end of the usual period of time, the motor is released and revolves the sprocket 61 through one revolution before again stopping. At the commencement of the revolution, when the saddle 66 moves over the top of the sprocket, the rod 67 escapes from the saddle and slides down over the switch 69 to the bottom of the recess 70, as shown in position A, Fig. 5. As the sprocket 61 revolves, the recess 70 passes over the top and commences to descend on the rear side, whereupon the weight 71 falls by gravity and shifts its carrying arm 72 to throw the switch 69 to the opposite side of the recess, as shown in position B, Fig. 5. On the continued revolution of the sprocket 61, the recess 70 and switch 69 therein moves downwardly until the switch lies at such an incline that the rod 67 slides down over it and out of the recess 70 on to the saddle 60, as shown in position C, Fig. 5. Before the sprocket 61 completes its revolution, the weight 71 returns to its original position by gravity and shifts the switch across the recess 70 in position to receive the succeeding rod 67. It will be noted in following the movement of the rod 67 that the same is received from one side of the saddle at the front of the sprocket and delivered on to the other side of the saddle at the back of the sprocket, the saddle being meanwhile inverted in passing over the sprocket. The

same observation applies to the switch 69 and recess 70. The rod 67 enters between one side of the switch and recess, and after the throwing of the switch and the inverting of the switch and recess, the rod passes out between the opposite side of the switch and recess. During this transfer, the position of the advertisement has not been altered, the same having merely passed between the sprockets 61 from front to back, the extremities of the supporting rods 67 being carried in the recesses 70 in the sprockets. The advertisements and rod 67 now pass down the back of the case in a series of steps, the intervals of time between which are controlled by the clock, as previously described. During the last of these steps, the rod 67 enters the mouth of the magazine and rests on the lever bar 74 thereof, the chains 65 moving uninterrupted so that the saddles 66 are withdrawn and the rod 67 freed, so that its ends slide down in the slots 76 until the rod comes to rest against the other rods 67 ahead of it in the slots 76. These rods work through the magazine by gravity until they reach the gate 83. The normal position of the gate, *i. e.* when the mechanism is at rest, is, as shown in Figs. 8 and 10, with the upper blade 84 extending across the slot 76, and the front rod 67 in the slot resting against this blade. When the motor shifts the mechanism, the sprocket 62 revolves and carries with it the disk 86, which shifts the lever 88 by reason of the pin 90 thereon engaging the eccentric slot 87 of the disk. When the lever 88 shifts, it raises the gate through the medium of the link 91. As the gate 83 rises, it raises the blade 84 so as to allow the front rod 67 in the magazine to escape. The lower blade 85 rises simultaneously with the upper blade 84 and passes between the front rod 67 and the succeeding rod, so that when the front rod is released by the blade 84, the other rods in the magazine will be held by the lower blade 85. The gate is lowered in the same manner as it is raised and the rods 67 liberated by the blade 85 which shifts down against the blade 84. The liberated rod 67 slides down the remainder of the slot 76 and into the hook 79 at the bottom thereof. At the next shift of the mechanism, the saddles 66 on the front or rising side of the chains pick the rod 67 out of the hooks and carry it upward with the advertisement 68 depending therefrom. The upward passage of the advertisement in front of the screen 95 is in steps, as previously described, until finally the saddles carrying the rod 67 again register with the switches 69 on the upper sprockets 61.

Having thus described our invention, what we claim is:—

1. In a device of the class described, a clock, a motor, clock controlled mechanism for releasing said motor, an endless advertisement carrier driven by the motor, saddles on said carrier adapted to support advertisements, and a gravity actuated switch for transferring the advertisements from one edge of the saddle to the other when the saddle is inverted.

2. In a device of the class described, a clock, a motor connected thereto, an endless advertisement carrier driven by the motor, saddles on said carrier adapted to support advertisements, wheels supporting the top of said carrier having a recess in the periphery thereof, and a switch in said recess adapted to register with the saddles and transfer advertisements from one edge of the saddle to the other when the saddle is inverted in passing over the supporting wheels.

3. In a device of the class described, a motor, a clock controlling same, an advertisement carrier, an advertisement magazine comprising a pair of inclined bars flared at the upper ends to receive advertisements, the lower of said bars being hooked at the lower end to hold advertisements for delivery to the carrier, an advertisement alining plate parallel with the magazine, flared therefrom at the top and recessed toward the bottom, a pivoted gate operating in the recess of the alining plate adapted to allow the advertisements to escape singly to the carrier, and means actuated by the carrier for operating said gate.

4. In a device of the class described, a motor, a clock, an advertisement magazine, a carrier driven by the motor and adapted to remove advertisements from the magazine and to return the same to the magazine in rotation, a pin wheel in the clock movement, a trip lever engaging the pin wheel, a trigger mechanism on the motor, a trip bar connecting the trip lever and trigger mechanism, a retractor bar for withdrawing the trip bar from the trigger mechanism when the motor is in motion and for releasing the trip bar when the motor stops, means for operating said retractor bar, and a motor stop mechanism operated by the trigger mechanism.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

CARLETON K. FOTHERINGHAM.
ARCHIE R. LAING.

Witnesses:
STUART R. W. ALLEN,
C. W. TAYLOR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."