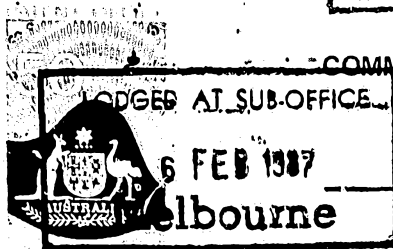


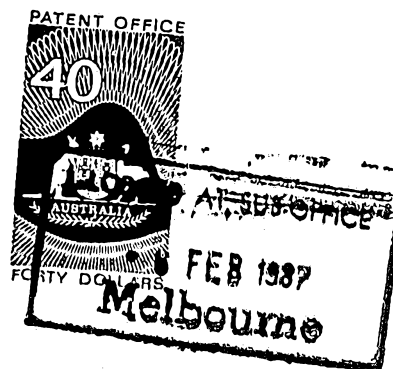
Form 1

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\$ 190 ATTACHED  
MAIL OFFICER.....



COMMONWEALTH OF AUSTRALIA

Patents Act 1952



595582

APPLICATION FOR A STANDARD PATENT

(Combined Form — Convention and Non-Convention)



AMERICAN ELECTRONICS, INC., a California corporation, ...  
located at 1600 East Valencia Drive, Fullerton, ...  
California 92631, United States of America  
hereby apply for the grant of a Standard Patent for an invention entitled ...  
SIDE LOAD SURVEILLANCE CAMERA ...

which is described in the accompanying ~~XXXXXXXXXX~~ Complete Specification.

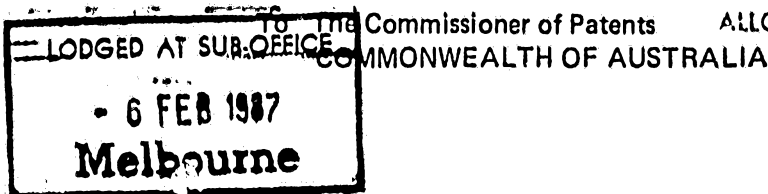
Strike out para. 2.  
for non-convention

2. This application is a convention application and is based on the application(s) for a  
patent or similar protection made —  
in ... United States of America ...  
on ... February 10, 1986 ..., numbered ... 06/828,029 ..., and  
on ..., numbered ..., and  
on ..., numbered ...

3. My/Our address for service is: Care of COWIE, THOMSON & CARTER, Patent  
Attorneys, of 71 Queens Road, Melbourne, Victoria 3004, Australia.

DATED this 2nd day of February 19 87

APPLICATION ACCEPTED AND AMENDMENTS



ALLOWED 1.290

COWIE, THOMSON & CARTER

By:

Patent Attorneys for  
AMERICAN ELECTRONICS, INC.

COWIE, THOMSON & CARTER

Patent Attorneys  
71 Queens Road, Melbourne,  
Victoria, 3004, Australia

## Declaration in Support of an Application for a Patent

In support of the *Convention*\* application made by AMERICAN ELECTRONICS, INC.

for a patent for an invention entitled: SIDE LOAD SURVEILLANCE CAMERA

I, Richard F. Holland....., President.....  
(INSERT FULL NAME) (CAPACITY)

of and care of the applicant company do solemnly and sincerely declare as follows:

1. ~~I am the applicant(s) for the patent~~  
~~Was~~

or

I am authorised by the applicant for the patent to make this declaration on its behalf.

Strike out Para 2, for non-convention

2. The basic application(s) as defined by section 141 of the Act <sup>was</sup>~~were~~ made

in United States of America.....

on the 10th day of February 1986, No. 06/828,029.....

by Richard C. Beaver....., and

in .....

on the ..... day of ..... 19....., No. ....

by ....., and

in .....

on the ..... day of ..... 19....., No. ....

by .....

The basic application(s) referred to <sup>was</sup>~~were~~ the first application(s) made in a Convention country in respect of the invention the subject of the application.

3. ~~I am the actual inventor(s) of the invention~~  
~~Was~~

or Richard C. Beaver, an American citizen,.....  
of 9310 3rd Avenue, Inglewood, California 90305, United.....  
States of America,.....

is ~~the~~ the actual inventor(s) of the invention and the facts upon which the applicant is entitled to make the application are as follows:- The said applicant corporation is the assignee of the invention from the said actual inventor.

---

(12) PATENT ABRIDGMENT      (11) Document No. AU-B-68567/87  
(19) AUSTRALIAN PATENT OFFICE      (10) Acceptance No. 595582

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(54) Title  
SIDE LOAD SURVEILLANCE CAMERA

International Patent Classification(s)  
(51)<sup>4</sup> G03B 017/02      G03B 017/26

(21) Application No. : 68567/87

(22) Application Date : 06.02.87

(30) Priority Data

(31) Number      (32) Date      (33) Country  
828029      10.02.86      US UNITED STATES OF AMERICA

(43) Publication Date : 13.08.87

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(71) Applicant(s)  
AMERICAN ELECTRONICS INC.

(72) Inventor(s)  
RICHARD C. BEAVER

(74) Attorney or Agent  
COWIE CARTER & HENDY

(57) Claim

1. A surveillance camera for mounting adjacent the ceiling of a bank or the like, comprising:

a housing having top and bottom walls, opposed side walls, and front and rear walls;

a lens mount and shutter means positioned in the housing adjacent the front wall thereof;

a horizontally extending wall in the housing spaced rearwardly of the lens mount and shutter means, intermediate the top and bottom walls, providing a magazine chamber and a drive means chamber;

an opening in a side wall of the housing for slidably receiving a film magazine in the magazine chamber;

a moveable cover for said opening;

a film magazine removably positioned in the magazine chamber, said film magazine having a bottom wall and a front wall with an aperture therein to provide an exposure location for film, and including first and second film spools, a film engaging sprocket, a film positioning assembly manually adjustable relative to said front wall, and film guide means for guiding film from said first spool, past said exposure location and film positioning

(11) AU-B-68567/87  
(10) 595582

-2-

assembly, past said film engaging sprocket, and onto said second spool;

an electric motor and drive means actuated by said motor provided in said drive means chamber for effecting rotation of the shutter and the film engaging sprocket in timed relationship for admitting light to the exposure location at predetermined intervals; and

means for maintaining the film magazine at a fixed position relative to the lens mount.

9. An upwardly opening box-like film magazine for a camera having a housing with a side opening for slidably receiving the film magazine in a magazine chamber, and a lens mount in the housing positioned forwardly of said magazine chamber, said film magazine including:

a bottom wall, opposed side walls, and front and rear walls;

a removable cover enclosing the top of the film magazine;

a rectangular shaped aperture in the front wall, open at the top, to provide an exposure location for film;

first and second film spools, a film engaging sprocket, a film positioning assembly adjacent the exposure location in the front wall, and film guide means provided in said film magazine, for causing film from said first spool to move past said exposure location and the film positioning assembly, past said film engaging sprocket, and onto said second spool; and

means for adjusting the location of the film positioning assembly relative to said front wall.



595582

Form 10

PATENTS ACT 1952-1973

**COMPLETE SPECIFICATION**

(ORIGINAL)

**FOR OFFICE USE**

Class:

Int. Cl:

Application Number.  
Lodged:

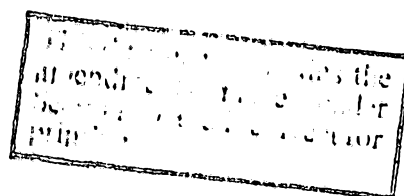
68567/87

Complete Specification—Lodged:

Accepted:

Published:

Priority:



Related Art:

**TO BE COMPLETED BY APPLICANT**

Name of Applicant: AMERICAN ELECTRONICS, INC., a California corporation,  
located at 1600 East Valencia Drive, Fullerton,  
California 92631, United States of America

Address of Applicant:

Actual Inventor: RICHARD C. BEAVER

Care of: COWIE, THOMSON & CARTER,  
Patent Attorneys,  
71 Queens Road,  
Melbourne, Vic., 3004.  
Australia.

Complete Specification for the invention entitled:  
SIDE LOAD SURVEILLANCE CAMERA

The following statement is a full description of this invention, including the best method of performing it known to me:—

- 1 -

\*Note: The description is to be typed in double spacing, plain type face, in an area not exceeding 250 mm in depth and 160 mm in width, on tough white paper of good quality and it is to be inserted inside this form.

## SIDE LOAD SURVEILLANCE CAMERA

### BACKGROUND OF THE INVENTION

Cameras containing motor driven rolls of film are extensively used at the present time for making permanent records of activities, such as a bank hold-up or the like. Typically, picture taking is controlled from a position remote from the camera, as by a push button or an alarm switch, and the camera itself is positioned in an out of the way location, often at the ceiling in a corner of the area under surveillance so as to be out of the way and to have a relatively unobstructed view of the area.

A number of problems have been encountered in the past in the utilization of such cameras. Because of the remote and often cramped location of the camera, there have been difficulties in changing film and in changing lenses. Also, prior film cartridges have relatively small capacity, thereby limiting the amount of activity which can be recorded at any one event. The cameras remain unattended for a long period of time and while reliable recording of a hold-up or the like is necessary, at the same time low cost and simplicity of construction are desirable features of a commercially satisfactory camera.

Accordingly, it is an object of the present invention to provide a new and improved surveillance camera which overcomes these and other problems, and in particular, to provide a camera which can be serviced while operatively positioned in close proximity with the ceiling of a bank or the like, which is reliable

while being relatively inexpensive, and which has a large film capacity. Other objects, advantages, and features will more fully appear in the course of the following description.

5           According to one aspect of the present invention, there is provided a surveillance camera for mounting adjacent the ceiling of a bank or the like, comprising: a housing having top and bottom walls, opposed side walls, and front and rear walls; a lens mount and shutter means  
10           positioned in the housing adjacent to the front wall thereof; a horizontally extending wall in the housing spaced rearwardly of the lens mount and shutter means, intermediate the top and bottom walls, providing a magazine chamber and a drive means chamber; an opening in a side  
15           wall of the housing for slidably receiving a film magazine in the magazine chamber; a movable cover for said opening; a film magazine removably positioned in the magazine chamber, said film magazine having a bottom wall and a front wall with an aperture therein to provide an exposure  
20           location for film, and including first and second film spools, a film engaging sprocket, a film positioning assembly manually adjustable relative to said front wall, and film guide means for guiding film from said first  
25           spool, past said exposure location and film positioning assembly, past said film engaging sprocket, and onto said second spool; an electric motor and drive means actuated by said motor provided in said drive means chamber for effecting rotation of the shutter and the film engaging  
30           sprocket in timed relationship for admitting light to the exposure location at predetermined intervals; and means for maintaining the film magazine at a fixed position relative to the lens mount.

35           The camera provides for side loading of a relatively large film magazine, and for front changing of lenses without requiring refocusing of the camera. As later described by way of example, the magazine film backup plate is factory adjustable to establish the camera focus so that field focusing is not required with changes in film magazines and lenses.



The camera drive system preferably includes a drive chain coupling gears on the motor, shutter and film drive shafts for positive control of operation, along with a cam, cam follower and switch actuated by one of the drive shafts for stopping shutter and film motion at a predetermined location. The film engaging sprocket provides positive advancement of the film along with a belt for driving the film take up spool from the sprocket within the magazine.

According to another aspect of the invention, there is provided an upwardly opening box-like film magazine for a camera having a housing with a side opening for slidably receiving the film magazine in a magazine chamber, and a lens mount in the housing positioned forwardly of said magazine chamber, said film magazine including: a bottom wall, opposed side walls, and front and rear walls; a removable cover enclosing the top of the film magazine; a rectangular shaped aperture in the front wall, open at the top, to provide an exposure location for film; first and second film spools, a film engaging sprocket, a film positioning assembly adjacent the exposure location in the front wall, and film guide means provided in said film magazine, for causing film from said first spool to move past said exposure location and the film positioning assembly, past said film engaging sprocket, and onto said second spool; and means for adjusting the location of the film positioning assembly relative to said front wall.



BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a camera incorporating the presently preferred embodiment of the invention and illustrating the loading of a film magazine;

Fig. 2 is a side view of the camera of Fig. 1;

Fig. 3 is a sectional view taken along the line 3-3 of Fig. 2;

Fig. 4 is an enlarged sectional view taken along the line 4-4 of Fig. 3;

Fig. 5 is an enlarged sectional view taken along the line 5-5 of Fig. 4;

Fig. 6 is a sectional view taken along the line 6-6 of Fig. 4;

Fig. 7 is a sectional view taken along the line 7-7 of Fig. 4;

Fig. 8 is partial top view of the film magazine of Fig. 1 taken partially in section; and

Fig. 9 is a sectional view taken along the line 9-9 of Fig. 8.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In Fig. 1, a camera 10 is shown installed on a mounting bracket 11, with a film magazine 12 positioned for insertion into the camera through an opening closed by a door 13.

The camera is enclosed in a housing or case 15 comprising a top 16, a bottom 17, a back 18, and sides 19, 20. The components of the housing typically are plastic moldings which are joined together to form the housing, with a main frame 21 for the camera mechanism supported on internally molded pillars 22 in the housing bottom 17.

A rib 25 projects rearwardly from the bottom 17 and includes an opening 26 for attachment to the mounting bracket 11. The door 13 is mounted in the side 20 by means of a hinge 27 and includes a conventional fastener 28 for maintaining the door closed. The magazine 12 is slideably inserted into and removed from the housing, and the main frame 21 and magazine includes interengaging means for positioning the magazine in the camera. Typically these comprise a transverse rib 31 projecting upward from the main frame 21 and a mating transverse groove 32 in the lower side of the magazine. A screw 34 is carried in the bottom 17 and is pulled downward to disengage the magazine drive for removing the magazine.

A removable front cover 37 is attached to the housing, typically by screws and includes a transparent window 38. A door 39 is provided in a side of the front cover 37 to permit access to the interior for the setting of the lens enclosed by the cover.

An electric motor 43 is mounted on a reduction unit 44 which in turn is mounted on the under side of the main frame 21. Shaft assemblies 45, 46 and 47 are journaled between a plate 48 and the main frame 21, as best seen in Fig. 5. Shaft assembly 45 carries a spur gear 48 and a bevel gear 49, with the bevel gear 49 engaging another bevel gear 50 mounted on a shaft 51 which carries a shutter 52 (Fig. 6). The shutter shaft 51 is journaled in a vertically disposed shutter plate 55 carried at the forward end of the main frame 21. The shutter plate 55 includes the shroud 56 partially enclosing the shutter 52, and a lens mount 57 is attached to the shroud and provides for threaded insertion of a lens 58.

The shaft assembly 46 includes another spur gear 61 disposed opposite the gear 48 of shaft assembly 45, and a gear 62 positioned for engaging a gear 63 on the shaft assembly 47. The shaft assembly 46 also carries a cam 64 which engages a cam follower 65 for actuating an electrical switch 66 (Fig. 6).

The shaft assembly 47 includes a film sprocket drive head 69 which slides axially on the shaft and which is urged upward to engage a sprocket 70 in the film magazine by a spring 71, with upward movement being limited by a transverse pin 72 carried on a shaft 73 and engaging a groove 74 in the head 69. A threaded hole is provided in the lower end of the shaft 73 for accepting the upper end of the screw 34. Hence when the screw 34 and shaft 73 are manually pulled downward, the transverse pin 72 pulls the head 69 down out of engagement with the sprocket 70 of the magazine.

The magazine 12 has a case 79 closed by a cover 80 with an opening 81 at the front of the magazine and a pull ring 82 at one side for ease of removal of the magazine from the camera. A film supply spool 83 and a film take up spool 84 are mounted for rotation about vertical shafts supported from the case 79. Film travels from the spool 83 past a guide post 85, around an idler roller 86 and the sprocket 70 onto the spool 84. The sprocket 70 has a double row of teeth for engaging the film and driving the film in a conventional manner. The take up spool 84 is driven from the film sprocket 70 by a belt 88 which rides in aligned grooves on the film sprocket and take up spool.

The shutter and the film sprocket have a positive drive obtained by a drive chain 91 connecting a gear 92 on the output shaft of the gear reduction unit 44 and the gears 48 and 61. This type of drive provides synchronized control between the film advance and the shutter rotation. In contrast, the belt drive between the film sprocket 70 and the take up spool 84 provides the required slippage since film is being advanced at a fixed rate by the film sprocket while the radius of the coil of film on the take up spool increases.

In the magazine, a film positioning assembly 95 is positioned between the idler roller 86 and the film sprocket 70. The idler roller 86 rotates on a shaft 96, with the upper end of this shaft 96 and the upper end of the sprocket 70 positioned in a

top plate 97. A film backup plate 98 is positioned between the top plate 97 and the case 79 of the magazine and is attached by screws 99 passing through slots in the top plate 97 and by screws 100 passing through slots in the case 79. With this arrangement, the exact position of the backup plate 98 with respect to the magazine guide groove 32 can be precisely set at the time of manufacture of the magazine. This arrangement provides control of the distance between the lens and the film, without requiring precise control of tolerances in manufacture of the various components of the camera and magazine.

A film pressure unit 103 is positioned in front of the backup plate 98, sliding in grooves 104 in the magazine case. The pressure unit 103 comprises a front plate 105 and a pressure plate 106 joined by springs 107. With this arrangement, the film moves between the pressure plate 106 and the backup plate 98, with the film being held in position against the backup plate.

In operation, unexposed film is installed in a magazine on the spool 83 and is threaded through the film positioning assembly and onto the spool 84. The cover is placed on the magazine and the magazine is inserted into the camera. Inter-engagement of the guide rib and guide groove precisely position the film with respect to the lens so that the image formed by the lens is in focus.

The motor in the camera is connected to an electric power source through the switch 66 which is normally in the open circuit condition. An alarm switch is positioned externally of the camera for actuation by personnel who wish to actuate the camera. This alarm switch provides an electrical bypass around the switch 66. When the motor is energized by the alarm switch, the shutter is rotated to expose film through the lens, the slot 110 in the rotating shutter and the openings in the pressure unit 103. The film is advanced by rotation of the sprocket, and camera action continues so long as the external alarm switch is maintained closed. Motor operation also rotates the cam 64 so

that the high surface of the cam engages the cam follower/to close the switch 66 and continue motor operation after the alarm switch is opened, with the motor running until a time when the shutter slot is away from the film. At this stage of the operation, the low portion of the cam is engaging the cam follower permitting the switch 66 to open and shut off power to the motor.

The magazine with the exposed film is easily removed by opening the side door 13, pulling down on the external screw 34, and pulling the magazine out. A new magazine can be inserted at the same time and the camera is ready for further use. When desired, the lens can be changed, such as to provide a different field of view, by removing the front cover, unscrewing the first lens, screwing in the new lens, and replacing the cover. This does not require refocusing, since the distance between the lens mount and the film is maintained fixed. This lens changing operation can be accomplished from the front end of the camera without requiring removal of the camera from the mount or any other motion of the camera.

The magazine of the camera is capable of handling a substantial quantity of film. The specific embodiment illustrated will handle 150 feet of 35mm film, and provide 1200 frames of pictures. With the magazine and camera configuration, the 35mm film travels horizontally. This enables the camera to provide 1.4 inches of picture as compared with 0.9 inches of picture obtained in the prior art camera. In the embodiment illustrated, the motor is arranged for being powered from an ac source and is running continuously when the alarm switch is closed. In an alternative configuration, a dc source may be utilized in conjunction with a stepper motor for driving the film.

The claims defining the invention are as follows:

1. A surveillance camera for mounting adjacent the ceiling of a bank or the like, comprising:

a housing having top and bottom walls, opposed side walls, and front and rear walls;

a lens mount and shutter means positioned in the housing adjacent the front wall thereof;

a horizontally extending wall in the housing spaced rearwardly of the lens mount and shutter means, intermediate the top and bottom walls, providing a magazine chamber and a drive means chamber;

an opening in a side wall of the housing for slidably receiving a film magazine in the magazine chamber;

a moveable cover for said opening;

a film magazine removably positioned in the magazine chamber, said film magazine having a bottom wall and a front wall with an aperture therein to provide an exposure location for film, and including first and second film spools, a film engaging sprocket, a film positioning assembly manually adjustable relative to said front wall, and film guide means for guiding film from said first spool, past said exposure location and film positioning assembly, past said film engaging sprocket, and onto said second spool;

an electric motor and drive means actuated by said motor provided in said drive means chamber for effecting rotation of the shutter and the film engaging sprocket in timed relationship for admitting light to the exposure location at predetermined intervals; and

means for maintaining the film magazine at a fixed position relative to the lens mount.

2. A surveillance camera as described in claim 1, wherein the means for maintaining the film magazine in the housing at a fixed position relative to the lens mount includes transversely extending, interengaging tongue and groove components carried by the film magazine and a

wall of the housing.

3. A surveillance camera as described in claim 1, wherein the film positioning assembly is adjacent the front wall of the magazine and includes a film backup plate and a film pressure plate, with the film moving between said plates and with the pressure plate yieldably urging the film against the backup plate.

4. A surveillance camera as described in claim 3, wherein the position of the film backup plate is adjustable relative to the front wall of the magazine, to achieve a fixed relationship between the lens mount and the film when the latter is against the backup plate.

5. A surveillance camera as described in claim 4, wherein the film backup plate is adjustably supported between the bottom wall of the film magazine and a top plate which is fixed relative to the front wall of the film magazine.

6. A surveillance camera as described in claim 5, wherein one end of said top plate receives the shaft of an idler roller of the film guide means, and the other end receives the shaft of the film engaging sprocket, and said backup plate extends between said roller and said sprocket.

7. A surveillance camera as described in claim 1, wherein the film positioning assembly includes:

a film backup plate adjustably supported adjacent the front wall of the film magazine; and

a film pressure unit comprising a front plate supported by the front wall of the film magazine and carrying a film pressure plate yieldably biased toward the film backup plate, whereby said pressure plate urges the film against the backup plate as the film moves therebetween.

8. A surveillance camera as described in claim 7, wherein the aperture in the front wall of the film magazine is open at the top to provide opposed side edges which contain vertically extending slots therein for slidably and removably receiving the side edges of the front plate of said film pressure unit.

9. An upwardly opening box-like film magazine for a camera having a housing with a side opening for slidably receiving the film magazine in a magazine chamber, and a lens mount in the housing positioned forwardly of said magazine chamber, said film magazine including:

a bottom wall, opposed side walls, and front and rear walls;

a removable cover enclosing the top of the film magazine;

a rectangular shaped aperture in the front wall, open at the top, to provide an exposure location for film;

first and second film spools, a film engaging sprocket, a film positioning assembly adjacent the exposure location in the front wall, and film guide means provided in said film magazine, for causing film from said first spool to move past said exposure location and the film positioning assembly, past said film engaging sprocket, and onto said second spool; and

means for adjusting the location of the film positioning assembly relative to said front wall.

10. A film magazine as described in claim 9, wherein the film positioning assembly is adjacent the front wall of the magazine and includes a film backup plate and a film pressure plate, whereby when the film moves between said plates, the pressure plate yieldably urges the film against the backup plate.

11. A film magazine as described in claim 10, wherein the position of the film backup plate is adjustable relative to the front wall of the magazine to achieve a fixed relationship between a lens mount in the camera housing





and the film when the latter is against the backup plate and the magazine is operatively positioned in the camera housing.

12. A film magazine as described in claim 11, wherein the film backup plate is adjustably supported between the bottom wall of the film magazine and a top plate which is fixed relative to the front wall of the film magazine.

13. A film magazine as described in claim 12, wherein one end of said top plate receives the shaft of an idler roller of the film guide means, and the other end of said top plate receives the shaft of the film engaging sprocket, and said backup plate extends between said roller and said sprocket.

14. A film magazine as described in claim 9, wherein the film positioning assembly includes:

a film backup plate adjustably supported adjacent the front wall of the magazine; and

a film pressure unit comprising a front plate supported by the front wall of the magazine and carrying a film pressure plate yieldably biased toward the film backup plate, whereby said pressure plate urges the film against the backup plate when a film moves therebetween.

15. A film magazine as described in claim 14, wherein the aperture in the front wall of the magazine is open at the top to provide opposed side edges which contain vertically extending slots therein for slidably and removably receiving the side edges of the front plate of said film pressure unit.

16. A surveillance camera substantially as herein described with reference to the accompanying drawings.

17. A film magazine substantially as herein described with reference to the accompanying drawings.

DATED this 10th day of April, 1989.  
AMERICAN ELECTRONICS, INC.

**COWIE, CARTER & HENDY**  
PATENT & TRADEMARK ATTORNEYS  
71 QUEENS ROAD,  
MELBOURNE, 3004, AUSTRALIA



FIG. 1.

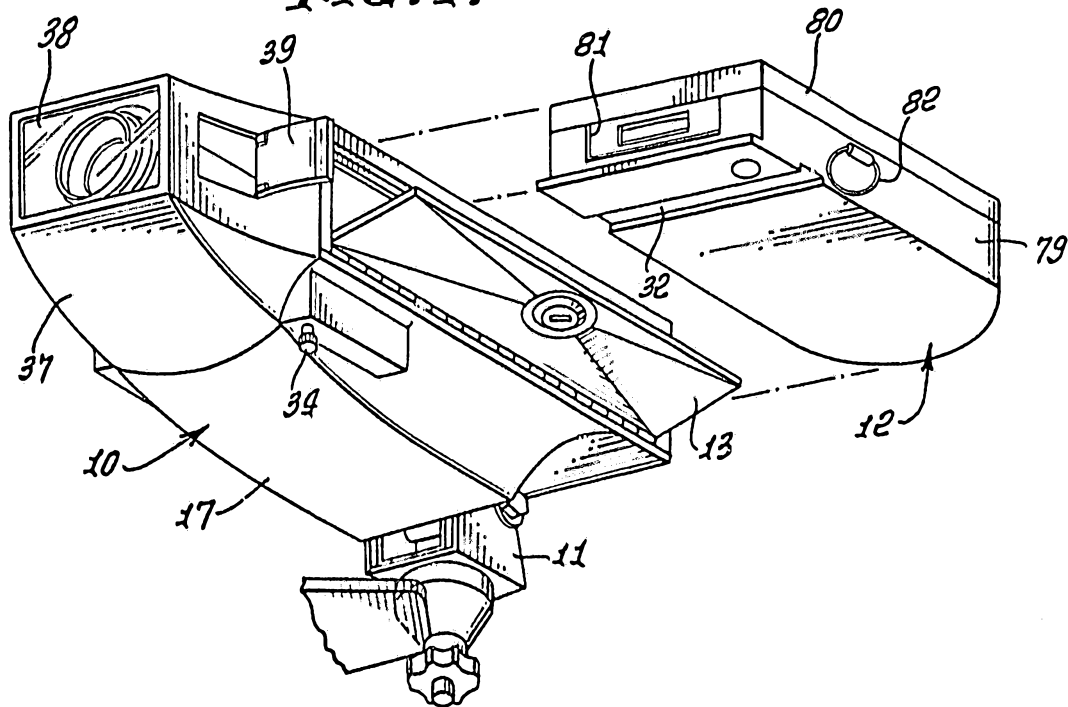
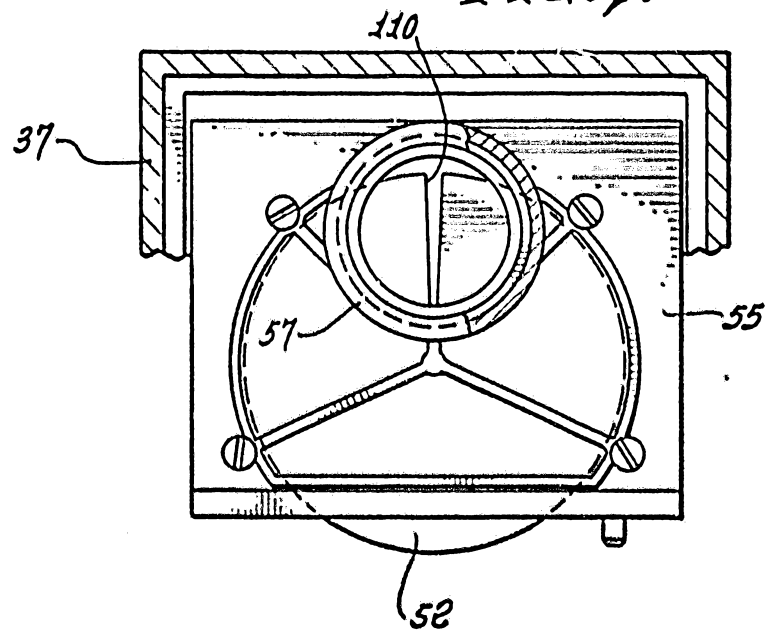


FIG. 7.





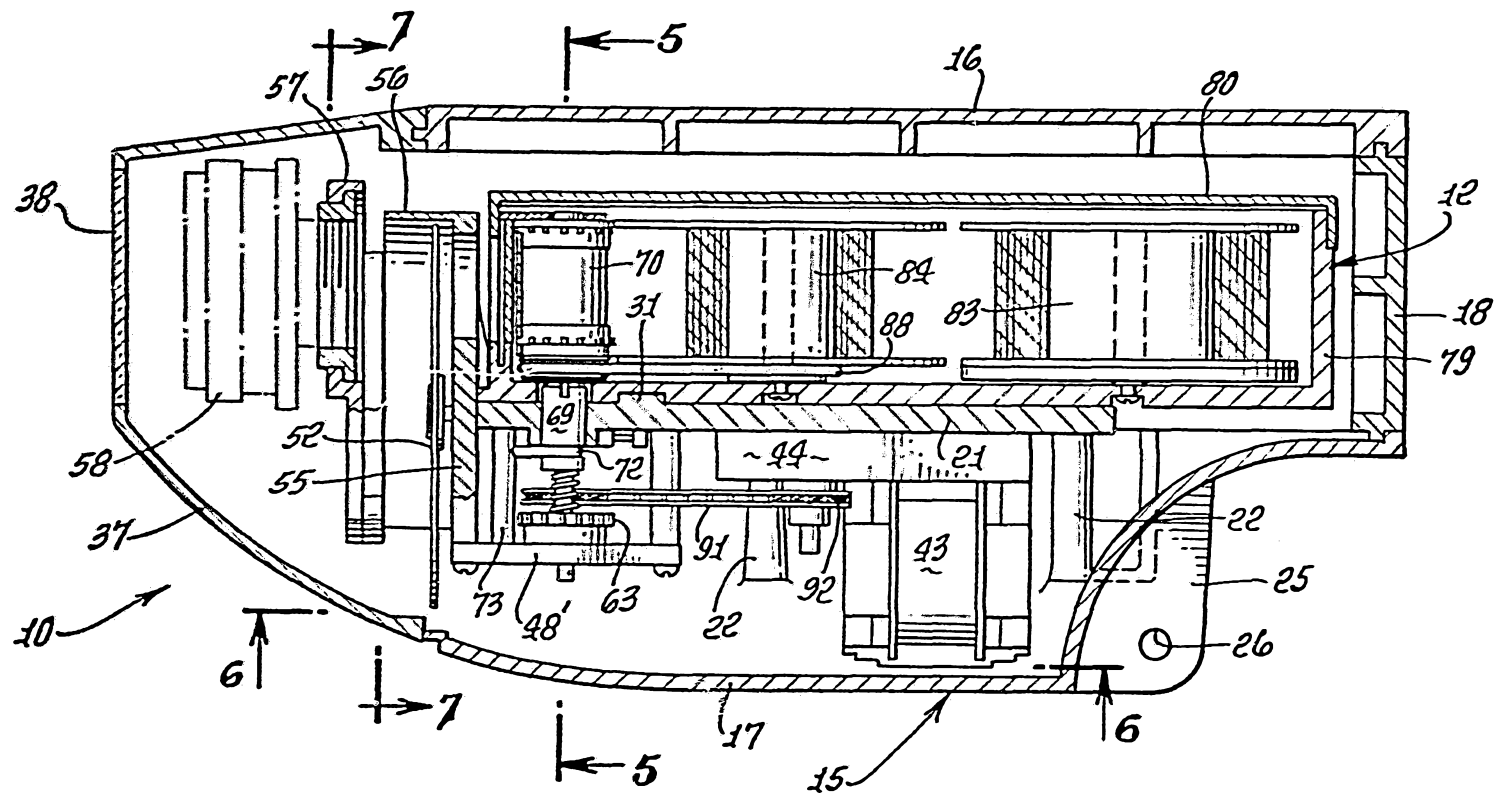


FIG. 4.

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