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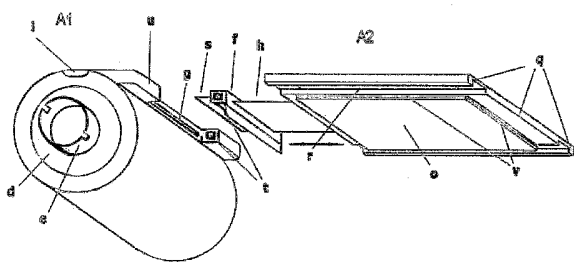
(54) **Title:** DIGITAL FILM ROLL FOR ANALOGUE CAMERAS



(57) **Abstract:** The DigitalFilmRoll allows any traditional photographic device to make photos in a digital format without the need of any modification. Used in place of the traditional film-roll, the DigitalFilmRoll receives the image framed and measured by the host camera and only has to convert (A/D) and memorize it in a digital format. All the analogue functions as: light measurement, stop aperture, shutter speed, focusing, using of the flash and choice of lenses will continue to be carried out by the host camera. The apparatus is made up of two parts: The body (Al), which also contains the battery, is connected to the appendix (A2), containing the sensor (o), by means of the connection system (f)(g)(u)(t)(s) and it disconnects by pushing the button (1). The sliding of the mobile-flexible part (h) allows the sensor (o) to be positioned exactly in correspondence to the shutter of the camera. The closure of the film compartment turns on the DigitalFilmRoll in "stand-by" position by pushing it self the button (n) placed to the side of the back (p) of the sensor. The software supplied, as well as converting and memorizing the image, will carry out the automatic progression of the shots by alternately using "light/no-light" activated by the opening/shutting of the shutter. It also turns the apparatus on "stand-by position" after five minutes without using it, and goes automatically in "ready position" after the first shot (non-memorized). The three LEDs (m) positioned on the body (Al) signal various functions of the DigitalFilmRoll (stand by/ready/state of the remaining battery charge and memory). For the storage of the images, the DigitalFilmRoll uses a picture-card, which slot is placed on the side of the body, and/or a wireless communication system (as " Blue-Tooth") that can be used with one of the numerous types of PDAs (Pocket PC, Palm...) or with other portable media player easily provided with the same technology. The apparatus fits any 35mm camera and with the correct modification in shape and size can be adapted to other formats. It can also be used for "compact" type cameras (provided with toothed washers) thanks to the slits (r) on the sides of the sensor that allows their free sliding.

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Description of the Patent for Industrial Invention entitled:

DIGITAL FILM ROLL FOR ANALOGUE CAMERAS

Description

The idea regards a new type of photographic accessory, which, by substituting the traditional roll of film, allows any analogue camera to take digital photos without the need for modifications.

As we know, the advent and diffusion of digital cameras is causing the traditional cameras to become obsolete or, at least , of remaining unused or under-used even when these cameras come with numerous professional expensive accessories and are technically very sophisticated.

The apparatus allows to shorten the gap between analogue and digital photography just replacing - when desired - the traditional film, by using a specific digital technique which leaves the host camera to carry out all its initial functions autonomously such as: light measurement, stop aperture, shutter speed, focusing, use of the flash and choice of lenses.

Its function will simply be that of receiving the image - framed and measured by the host camera - converting it and memorizing it on "Picture-Card" (or other media) in digital format.

To do this, it will be sufficient for the **DIGITAL FILM ROLL** - provided (like the traditional film) with the DX automatic positioning system on ISO values (pre-set on a fixed value) (e.g. ISO 200) - to be set inside the camera, instead of the conventional roll of film, on the "ready" position (or better still on the "Open Eyes" position – i.e. “away from any light source, ready to receive the image”).

The software supplied will carry out few essential functions: as well as converting the image and memorizing it, it will proceed to the automatic progression of the shots by alternately using "light/no-light" activated by the opening/shutting of the shutter.

Furthermore, it can position the apparatus back on "stand-by" if not used for longer than five minutes and it will return to "ready" (Open Eyes) by simply pressing the shutter button. (The first image will not be memorized since this operation simply routes the camera.) (N.B.: the lens has to be uncovered or provided with a light-permeable cover).

Finally the software will signal the various functions through three LEDs - positioned on the back of the body of the **DIGITAL FILM ROLL** as follows:

- intermittent green LED = "stand-by"
- fixed green LED = "ready" (Open Eyes)
- intermittent yellow LED = memory failure warning
- fixed yellow LED = memory failure
- intermittent red LED = battery failure warning
- fixed red LED = battery failure

N.B.: The functions regarding the yellow and red LEDs can also be provided with acoustic signals.

The apparatus is made up of two parts:

1) **The main body** - containing the "brain", that is the electronic part of the apparatus - apart from the batteries and the "Picture-Card" slot.
2) **The appendix** - containing the sensor (the eye), capable of reading the image and positioning itself (thanks to the mobile part with which it is provided) exactly in correspondence to the shutter.

At it's far end there is a button which, due to the pressure of the closing of the film cartridge holder, will provide to switch on the apparatus in "stand-by" position.

Operation

Stages related to the use of the apparatus are as follows.

1) - Placement of the **DIGITAL FILM ROLL** in the film cartridge holder of the host camera.

2) - Connection of the appendix to the main body and positioning of the sensor parallel to the shutter.

3) - Closure of the film cartridge compartment. In the case that the host camera is not provided with the ISO automatic positioning system (DX), this will be regulated manually on the pre-arranged ISO value (e.g. ISO 200).

The closure of the film cartridge compartment, by pressing the button at the extremity of the sensor itself, will switch on the apparatus in "stand-by" position.

As mentioned above, pressing the shutter button once (this take will not be memorized) will be sufficient - thanks to the opening of the shutter - to go from the "stand-by" position to the "ready" (Open Eyes) position and subsequently to start filming. To do this the lens has to be uncovered or provided with a light-permeable cover.

The apparatus can be removed from the host camera at any time.

In this way it will be possible to carry out the normal functions of changing the card and the battery and of transferring data on different storing hardware such as PDAs (Pocket PC, Palm...) or portable media players, enabling the host camera to return to being an analogue camera at any time.

For older cameras which are not provided with the possibility of visualizing the LEDs, it is possible to check them, when necessary, through the opening of operational compartment.

This action will in no way damage any of the already memorized images.

References - (Fig. 1/2/3/4/5/6/7/8)

The body (Al), which contains the battery compartment (**b**) and the card holder compartment (**c**) should preferably be in matt steel (or similar stiff material) with supporting parts in rubber.

To reach the battery compartment (**b**), it will be necessary to unscrew the cap (**d**) by turning the pivot (**e**) a half turn anti-clockwise.

The appendix (A2), which holds the sensor (**o**) and the starting button (**n**) needs a rigid structure in steel, or similar, and rubber reinforcement.

"Soft" material should be used for the supporting parts such as the exterior part of the fulcrum (**q**) and the perimeter of the sensor (**v**).

The appendix (**A2**) is connected to the body (**Al**) with a mobile part (**h**) - flexible and extractible - which contains the various connections and has a bayonet mount (**f**). By inserting this in the corresponding slot (**g**) on the side of the body, and connecting it to the same by means of the click shutter system (**t**), it will permit both the sensor (**o**) and the start button (**n**) to communicate with the rest of the apparatus thanks to the contacts (**s**).

The button(**l**) placed on the top part of the body will release the two parts.

The flexibility and mobility of the part (**h**) allows the correct positioning - and housing - of the sensor (**o**) in correspondence with the shutter of the camera.

The button (**n**), placed to the side - on the back (**p**) of the sensor - turns the apparatus on after shutting the film cartridge holder of the host camera.

The slits (**r**) on the sides of the sensor, warrant complete freedom of movement to the toothed washers used in some compact cameras as frame counter (in some case also to allow the film to be drawn) and which position can vary from camera to camera.

The LEDs (**m**), positioned on the back of the body, have to signal the activities of the apparatus.

The two projecting extremities of the body (**u**), as well as being part of the hooking system, also have the function of maintaining the **DIGITAL FILM ROLL** in the correct position.

At present the "XD-Picture Card" which measures 20x25xl.7mm, is perfectly suitable for the apparatus. (A further memory of 8 GB is shortly expected).

Naturally future development can anticipate the use of a Card of a smaller dimension and/or higher performance.

The apparatus fits any 35mm camera and, with the correct modifications in shape and size, can be adapted to other formats such as, for example, the 6X6cm, 6x7cm and the 6x9cm as well as all cameras using flat film for professional use.

Similarly to digital photographic cameras, it is possible to anticipate different categories of quality depending on the number of pixels supplied by the sensor.

Therefore it could be sufficient just to replace the appendix to improve the quality of the images.

The case for the **DIGITAL FILM ROLL (Fig.13)** will have the same dimensions of a normal case for a roll of film (approximately 55x39x39) and will also contain, apart from the two dismantled parts of the apparatus, two small containers used to keep the memory card (or cards) and/or battery replacements as well as a small card (like a mini credit card), with few basic instructions.

The measurement of the apparatus, subject to **minimum** variations during work in progress, (as well as some details as e.g. the batteries compartment...), are illustrated in **Fig.9/10/11/12.**

By substituting or adding to the memory card, the **DIGITAL FILM ROLL** can be provided with the transmitting data system "Blue Tooth" (or similar wireless system).

In this way the camera will be able to take an unlimited number of photos. The only limitation, apart from the wear of the battery, will be the memory capacity of the chosen hardware (media) for receiving and storing images.

To this purpose, apart from numerous types of PDAs (Pocket PC, Palm...) with "Blue Tooth" technology to be found on the market, there are many portable media player, easily provided with the same technology and with colour display for viewing and managing digital images. Memory capacity of some of these media is destined to improve enormously.

In this case a small Ram will provide the **DIGITAL FILM ROLL** with a just sufficient buffer memory necessary for carrying out simultaneously the function of transferring recent images and acquiring new ones.

The batteries (which size can be fixed during work in progress), easily replaced by opening the

Cap (**d**) (widened, if necessary, to the whole circumference of the body (**Al**)), can also be rechargeable batteries.

A further variation, to obtain higher level of potential, without modifying in any way the basic concept and the technical characteristics, is the possibility of moving the electronic circuit (previously printed on film) inside the appendix (**A2**) – immediately above the sensor (**o**) – with, on top of it, (optionally) the slot for the Memory-card (of extra thin type).

So in this way the space available inside the body (**A1**) of **DIGITAL FILM ROLL** will completely be used, apart from also containing the transmission system "Blue-Tooth" (provided with a small RAM), even to contain a battery (specially realized), of adequate potential and rechargeable.

The body, in this case, will not be an only block but will appear like a semi-empty half shell - with all the original characteristics starting from the LEDs (**m**), the connection system **(f)(g)(u)(t)(s),** the mobile-flexible part (**h**), the slits (**r**)... to the unhooking button (**l**) - which it's final shape (practically identical to the original) will result complete after having added the battery in it's right space.

This way the apparatus, keeping the same aesthetical and technical characteristics of the basic main model, will be equipped with the "Blue-Tooth" system (and the Memory Card) but also with the adequate charging capacity.

Claims

1) - The **Digital Film Roll** is a new type of photographic accessory, which, by substituting the traditional roll of film, allows any analogue camera to take digital photos without the need for modifications.

2) - The apparatus is made up of two parts:

- **The main body (A1)** - containing the "brain", that is the electronic part of the apparatus - apart from the batteries and the "Picture-Card" slot.
- **The appendix (A2)** - containing the sensor (the eye), capable of reading the image and positioning itself, thanks to the mobile part with which it is provided, exactly in correspondence to the shutter.

  At its far end there is a button which, by the pressure due to the closing of the film cartridge holder, will provide to switch on the apparatus in "stand-by" position.

3) - To do this, the **Digital Film Roll** doesn't need to follow functions as: light measurement, stop aperture, shutter speed, focusing, use of the flash and choice of lenses – functions that the host camera will continue to follow autonomously.

It will be sufficient to:

a) – Place the **Digital Film Roll** in the film cartridge holder of the host camera -

b) – Connect the appendix to the main body and to place the sensor parallel to the shutter -

c) – Close the film cartridge compartment and, if this should not happen automatically, (thanks to the ISO automatic positioning system (DX) of which the **Digital Film Roll** is provided -like the traditional film -), regulate the camera manually on the pre-arranged ISO value (e.g. ISO 200).

4) – Connecting System of the two parts:

The appendix (**A2**) is connected to the body (**Al**) with a mobile part (**h**) - flexible and extractible - which contains the various connections and has a bayonet mount (**f**). By inserting this in the corresponding slot (**g**) on the side of the body, and connecting it to the same by means of the click hooking system (**t**), it will permit both the sensor (**o**) and the start button (**n**) to communicate with the rest of the apparatus thanks to the contacts (**s**).

5) - The flexibility and mobility of the part (**h**) allows the correct positioning - and housing - of the sensor (**o**) in correspondence with the shutter of the camera.

6) - The button (**l**) placed on the top part of the body will release the two parts.

7) - The button (**n**), placed to the side - on the back (**p**) of the sensor - turns the apparatus on by shutting the film cartridge holder of the host camera.

8) - The slits (**r**) on the sides of the sensor, warrant complete freedom of movement to the toothed washers used in some compact cameras as frame counter (in some case also to allow the film to be drawn) and which position can vary from camera to camera.

9) - The LEDs (**m**), positioned on the back of the body, have the task to signal the activities of the apparatus.

10) - The functions of the three signalling LEDs are the following:

- intermittent green LED = "stand-by"
- fixed green LED = "ready" (Open Eyes)
- intermittent yellow LED = memory failure warning
- fixed yellow LED = memory failure
- intermittent red LED = battery failure warning
- fixed red LED = battery failure

11) - The two projecting extremities of the body (**u**), as well as being part of the hooking system, also have the function of maintaining the **Digital Film Roll** in the correct position.

12) - The software supplied will carry out the following functions:

- Converting and memorizing of the image.
- Automatic progression of the shots by alternately using "light/no-light" activated by the opening/shutting of the shutter.
- Positioning of the apparatus back on "stand-by" if not used for longer than five minutes.
- Return to "ready" ("Open Eyes" position) by pressing the shutter button once. (N.B.: the lens has to be uncovered or provided with a light-permeable cover).
- Signalling of the various functions through the three LEDs **(m)** positioned on the back of the body of the **Digital Film Roll.**

13) - The apparatus fits any 35mm camera and, with the correct modifications in shape and size, can be adapted to any different format.

14) - The case for the Digital Film Roll (**Fig.13**) will have the same dimensions of a normal case for a roll of film (approximately 55x39x39) and will also contain, apart from the two dismantled parts of the apparatus, two small containers used to keep the memory card (or cards) and/or battery replacements as well as a small card (like a mini credit card), with few basic instructions.

15) - By substituting or adding to the memory card, the **Digital Film Roll** can be provided with the transmitting data system "Blue-Tooth" (or similar wireless system).

In this way the camera will be able to take an unlimited number of photos. The only limitation, apart from the wear of the battery, will be the memory capacity of the chosen hardware for receiving and storing images. To this purpose, apart from numerous types of PDAs (Pocket PC, Palm...) with "Blue-Tooth" technology to be found on the market, there are many portable media player, easily provided with the same technology.

16) - The use of the data transmission system "Bluetooth" (or similar) in substitution or addition to the Memory Card can be used with any digital camera.

17) - A further variation, to obtain higher level of potential, without modifying in any way the basic concept and the technical characteristics, is the possibility of moving the electronic circuit (previously printed on film) inside the appendix **(A2)** – immediately above the sensor **(o)** - with, on top of it, (optionally) the slot for the Memory-card (of extra thin type).

So in this way the space available inside the body **(A1)** of Digital Film Roll will completely be used, apart from also containing the transmission system "Blue-Tooth" (provided with a small RAM), even to contain a battery (specially realized), of adequate potential and rechargeable.

The body, in this case, will not be an only block but will appear like a semi-empty half shell - with all the original characteristics starting from the LEDs **(m)**, the connection system **(f) (g) (u) (t) (s),** the mobile-flexible part **(h),** the slits **(r)**... to the unhooking button **(l)** - which it's final shape (practically identical to the original) will result complete after having added the battery in it's right space.

This way the apparatus, keeping the same aesthetical and technical characteristics of the basic main model, will be equipped with the "Blue-Tooth" system (and the Memory-card) but also with the adequate charging capacity.

Amended Claims

1 - An apparatus for converting a conventional film camera to a digital camera, the apparatus that includes: an appendix (A2) FIG.1/2/3/4/7/8, containing an optical sensor, connected to a body (A1) FIG.1/2/3/4/5/6/7, from the shape of a conventional film-roll, containing an electronic circuit, an electrical power source and an image storage system. The apparatus, by substituting the traditional film-roll, allows any analogue camera to take digital photos without the need for modifications and without the need to follow functions as: light measurement, stop aperture, shutter speed, focusing and taking care of the use of the flash, functions that the host camera will continue to follow autonomously.

2 - The apparatus of claim 1 composed of a body (A1), shaped as a conventional film-roll, with openings in the centre of the two extremities and where one can find: an electronic circuit to processing images, an electrical power source, image storage means and, positioned on the back of the body, also three LEDs (m) witch have the job to signal the activities of the apparatus.

3 - The apparatus of claim 1 wherein an appendix (A2), containing an image optical sensor, comprehends a mobile part (h), flexible and extractible, which allows the correct positioning – and housing – of the sensor (o) in correspondence with the shutter of a host camera.

4 - The apparatus of claim 3 wherein a mobile part (h) contains various connections that permit the sensor to communicate with the rest of the apparatus thanks to the contacts (**s**).

5 - The apparatus of claim 4 wherein a mobile part (h) comprehends a bayonet connection (f) that, by inserting it in the corresponding slot (g) on the side of the body (A1) and connecting it to the same by means of the click shutter system (t) it will permit the communication between the body (A1) and the appendix (A2).

6 - The apparatus of claim 5 wherein the body (A1) comprehends a button (l), positioned on its top, that will provide the releasing of the two parts: the body (A1) and the appendix (A2).

7 - The apparatus of claim 1 wherein the appendix (A2) also comprehends a button (n), placed laterally on its back, which turns the apparatus "on" by just shutting the back panel of the host camera. In the same way the opening of the back panel of the camera will turn the apparatus off. In stand-by position the sensor of the apparatus will be **out** whereas in ready position the sensor will be **on**, or rather, in "open eyes" position that means: ready to receive the image.

8 - The apparatus of claim 3 wherein the appendix (A2) includes two slits (r), placed parallel to the sides of the sensor, which allow the sprocket wheels freedom of movement thus allowing the frame counter to function and, in some compact type cameras, allowing the film to be drawn. The presence of two slits (r) is necessary since the position of the sprocket wheels can vary from camera to camera.

9 - The apparatus of claim 2 wherein the signalling LEDs are in three different colours and their functions are the following:

- intermittent green LED = stand-by
- fixed green LED = ready (open eyes)
- intermittent yellow LED = memory failure warning
- fixed yellow LED = memory failure
- intermittent red LED = battery failure warning
- fixed red LED = battery failure

10 - The apparatus of claim 9 wherein, in a different embodiment, the function regarding the yellow and red LEDs can also be provided with acoustic signal.

11 - The apparatus of claim 2 wherein the body (A1) comprises two projecting extremities (u) that, as well as being part of the hooking system, also have the function of maintaining the apparatus in the correct position.

12 - The apparatus of claim 1 comprehending a software that will carry out the following functions:

- Processing and memorizing of the image on a "memory-card".
- Automatic progression of the shots.
- Positioning of the apparatus back on "stand-by" position.
- Return to "ready" position (open eyes).
- Signalling of the various functions through the three LEDs (m) positioned on the back of the body of the apparatus.

13 - The apparatus of claim 12 wherein a software will carry out automatic progression of the shots by alternately using "light/no-light" activated by the opening/shutting of the shutter.

14 - The apparatus of claim 12 wherein a software will carry out positioning of the apparatus back on "stand-by" if not used for longer than five minutes and return to "ready" ("open eyes" position) by simply pressing once the shutter button of the host camera. In this case the lens of the host camera has to be uncovered or provided with a light-permeable cover.

15 - The apparatus of claim 1 fits any 35mm camera and, with the correct modifications in shape and size, can be adapted to any different format.

16 - The apparatus of claim 1 comprehending a container that will have the same dimensions of a conventional film-roll case (approximately 55x39x39) and witch will also contain, apart from the two dismantled parts of the apparatus, two small containers used to keep an extra memory-card and battery replacements.

17 - The apparatus of claim 1 in an alternative embodiment, by substituting or adding to the memory-card, can be provided with the transmitting data system "Bluetooth" or similar wireless system.

In this way a camera provided with the apparatus will be able to take an unlimited number of photos. The only limitation, apart from the wear of the battery of the apparatus, will be the memory capacity of the external hardware chosen for receiving and

storing images (PDAs, Pocket PC, Palm, portable media players ... with Blue-Tooth technology to be found on the market).

18 - The apparatus of claim 17 comprehending a small RAM which will provide the apparatus with a just sufficient buffer memory necessary for carrying out simultaneously the function of transferring recent images and acquiring new ones.

19 - The apparatus of claim 2 wherein the body (A1) comprehends a removable cap (d) that allows reaching the battery compartment (b), by turning the pivot (e), so to facilitate the replacement of the batteries that could also be rechargeable.

20 - The apparatus of claim 1 also comprehending an automatic positioning system on ISO which will automatically regulate the camera on a pre-arranged ISO value.

21 - The apparatus of claim 2 wherein the body (A1) also comprehends a slot, built in its side, for the insertion of a memory-card (c) FIG.5/6.

22 - The use of a transmission wireless system (Bluetooth or similar) for direct storage of the images in substitution or addition to the memory-card, according to claim 17, can also be adopted by any digital camera.

23 - An apparatus according to claim 1 wherein, in a different embodiment (not shown), without modifying in any way the basic concept and the technical characteristics, the electronic circuit and, eventually, a slot for a memory-card (of extra thin type) can be moved from the body (A1) to the appendix (A2).

So in this way the space available inside the body (A1) will completely be used, apart from also containing the transmission wireless system (provided with a small RAM), even to contain a specially realized battery of adequate potential and rechargeable.

The body (A1), in this case, will not be an only block but will appear like a semi-empty half shell, with all the original characteristics starting from LEDs , the hooking system, the mobile-flexible part, the slits, the connections and the contacts ... up to the buttons,

and which its final shape (practically identical to the original) will result complete after having added the battery in its right space.

24 - The apparatus of claim 22 comprehends an electronic circuit to process and store images, printed in film and situated immediately above the sensor (o) inside the appendix (A2).

25 - The apparatus of claim 23 wherein, above the electronic circuit, can also be a slot where the memory-card (of extra thin type) can be inserted.

26 - The apparatus of claim 1 wherein the body (A1) and the appendix (A2) should be preferably made as follows:

- the body (A1) should be in matt steel with supporting parts in rubber;
- the appendix (A2) needs a rigid structure in steel, or similar, and rubber reinforcement.
- "SOFT" material should be used for the supporting parts such as the exterior part of the fulcrum (q) FIG.2/3/4/8 and the perimeter of the sensor (v) FIG.3/7.

27 - The apparatus of claim 2 where the two extremities of the body (A1) are both opened and empty (FIG.1/2/3/5/6) so to fit perfectly with the need of any kind of host camera as the position of the pivot for holding the conventional film roll can vary from camera to camera.

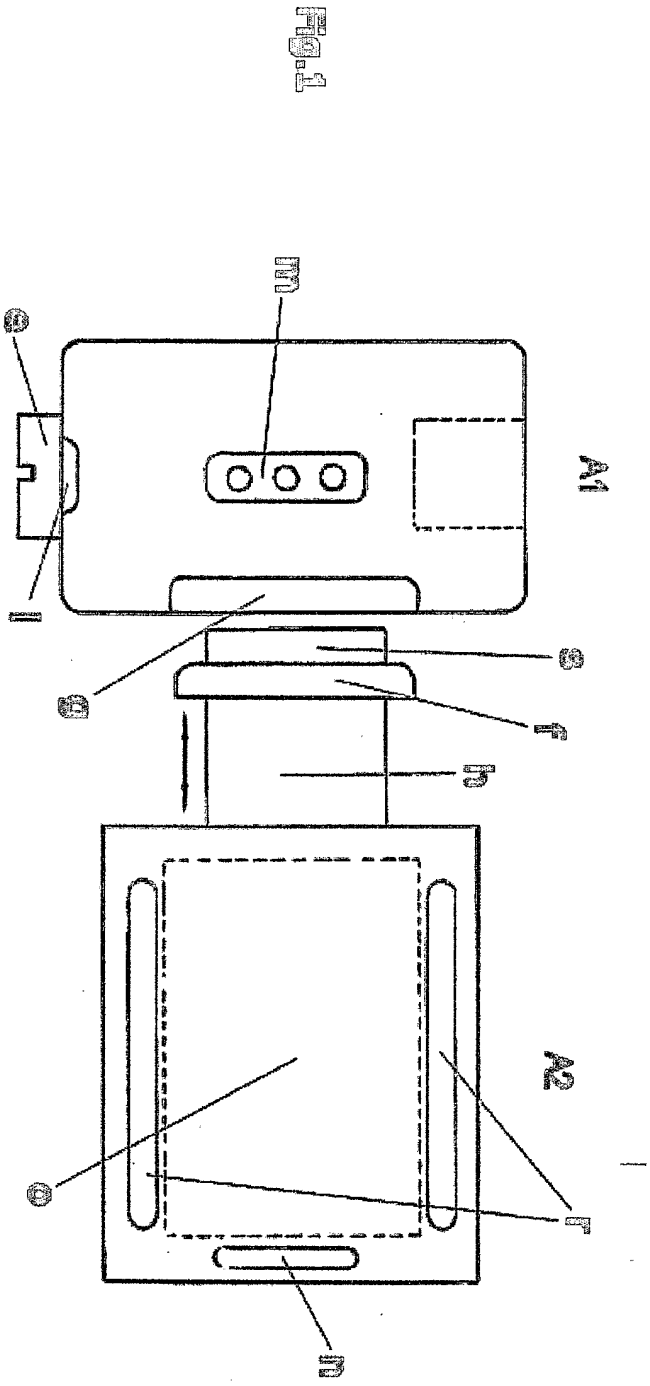


Fig.1
A1
A2
m
n
o
p
q
r
s
t

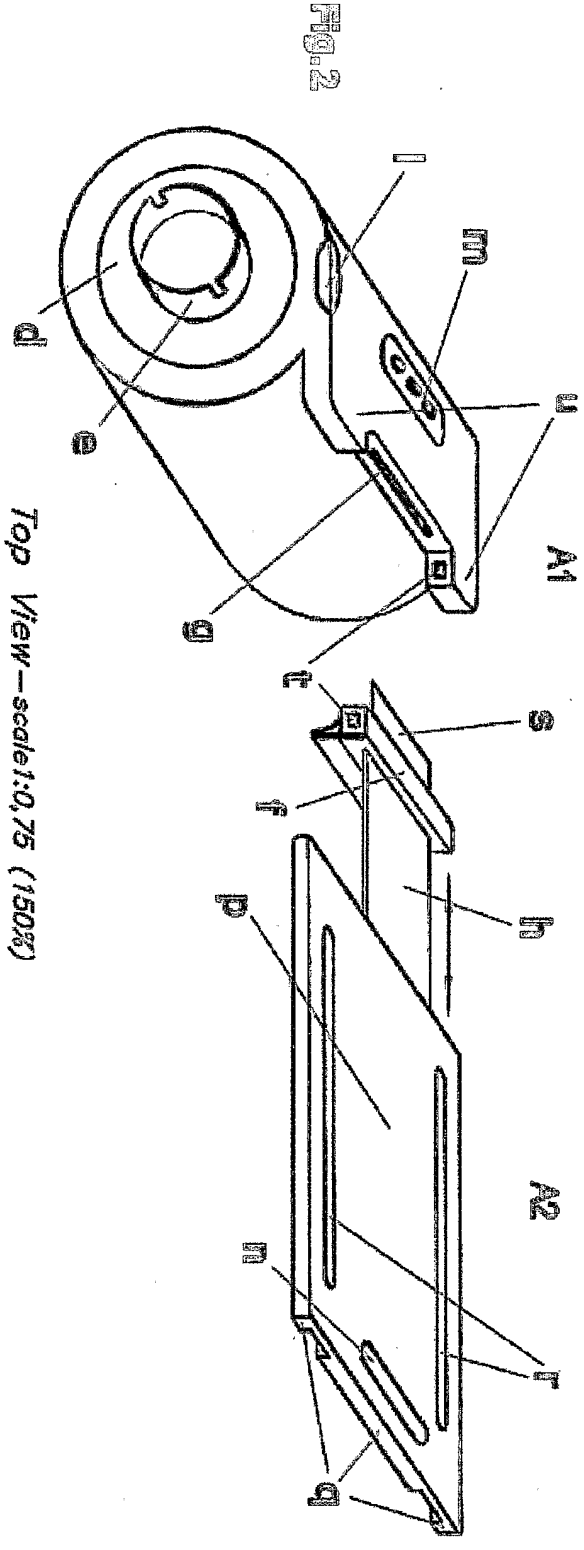


Fig.2
Top View – scale 1:0,75 (150%)
A1
A2
d
e
f
g
h
l
m
n
p
q
r
s
t

Bottom View – scale 1:0,75 (150%)

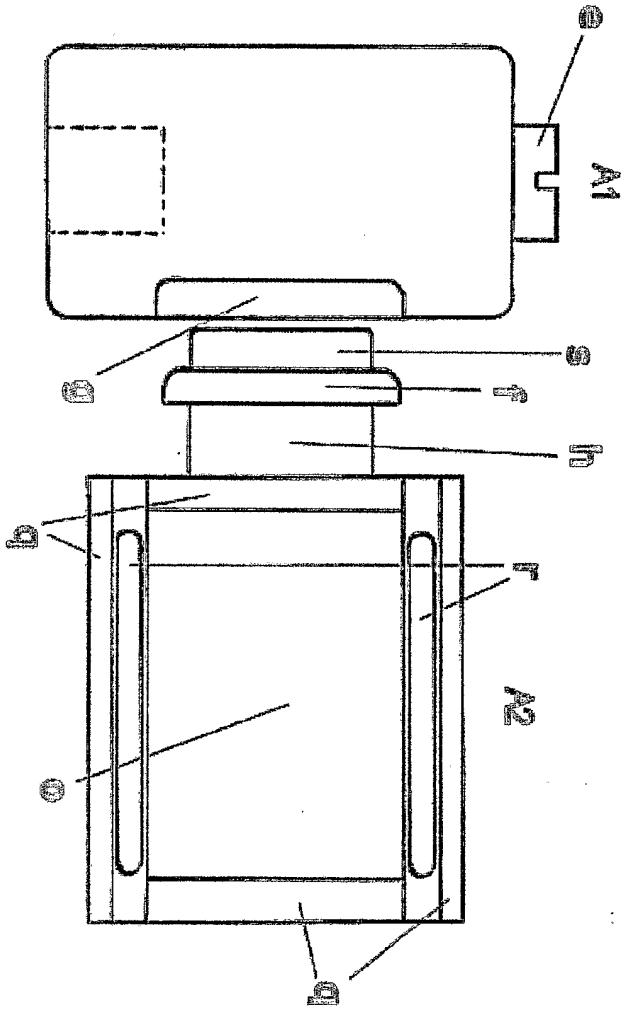


Fig. 4

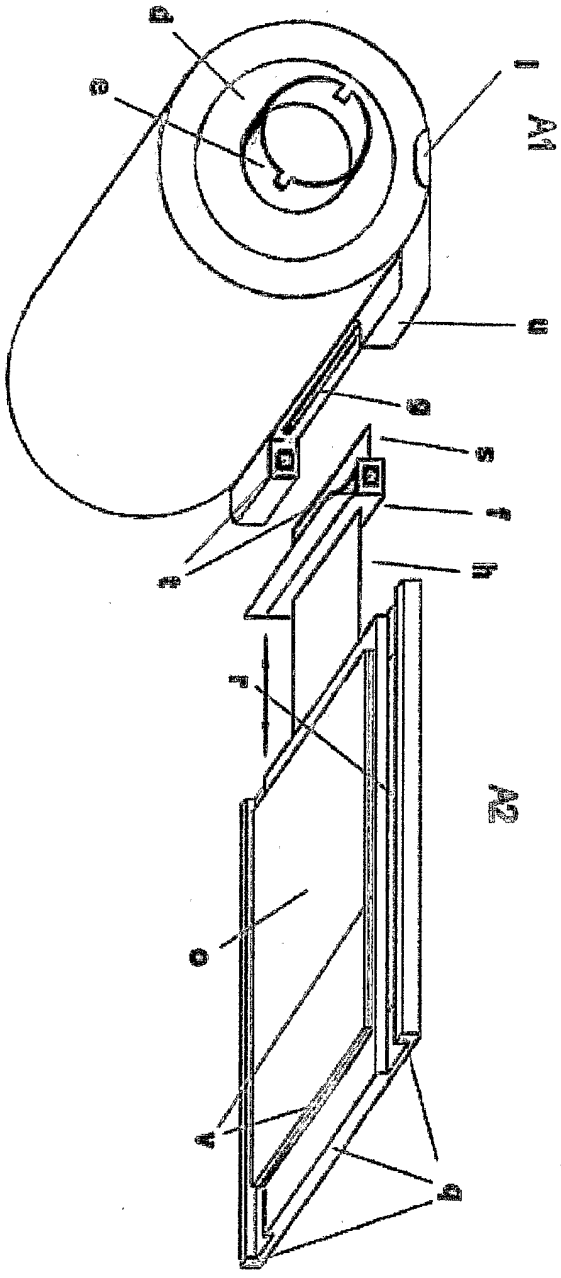
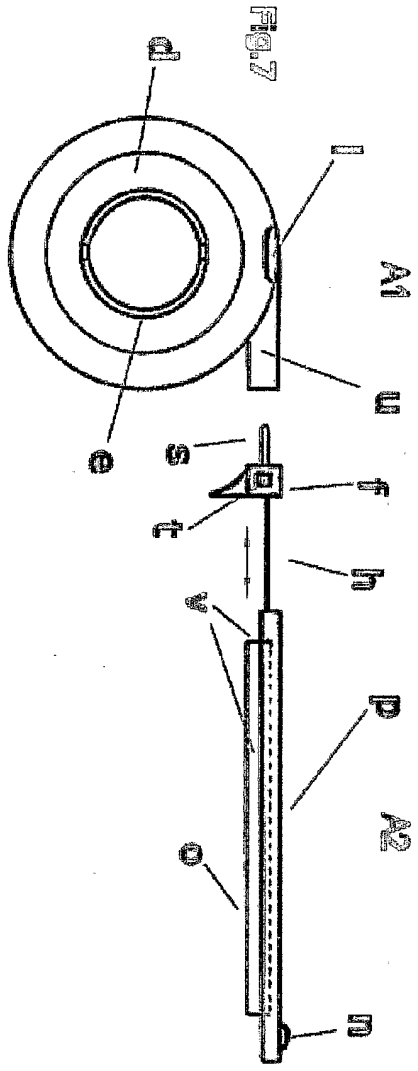


Fig. 3


scale 1:0,75 (150%)
Fig.7
A1
A2

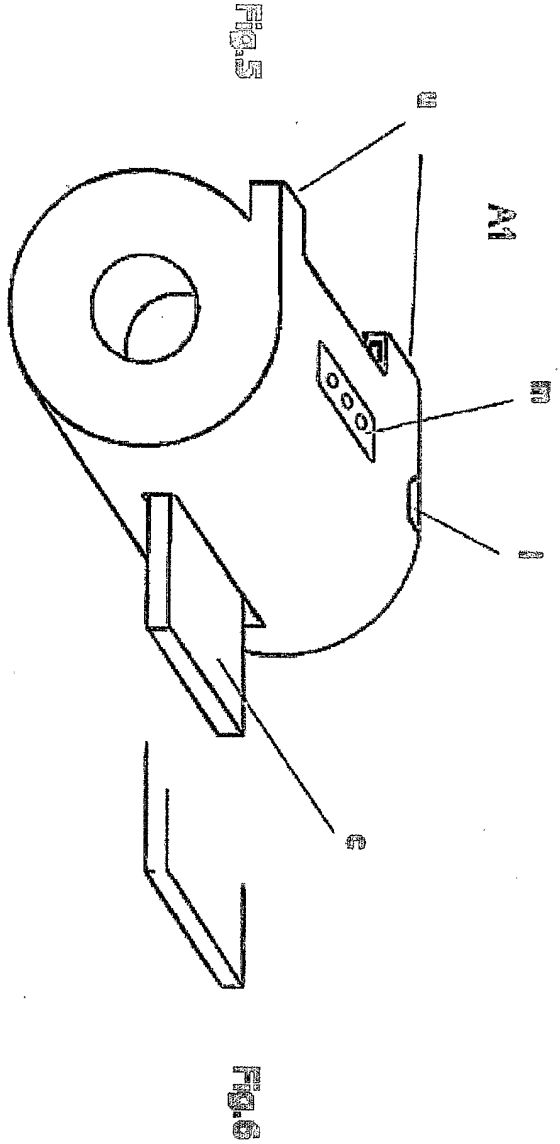


Fig.5
A1

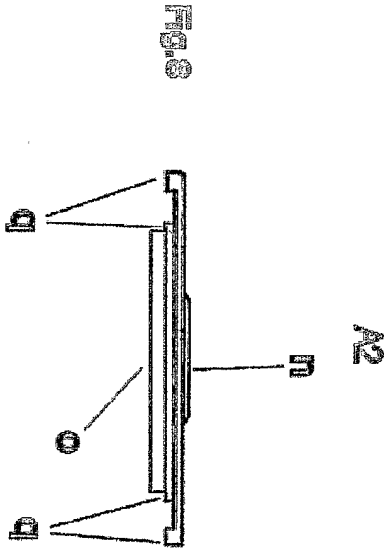


Fig.8
A2

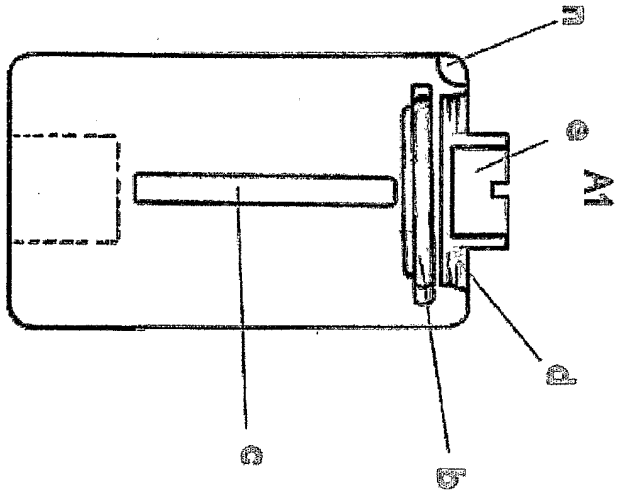
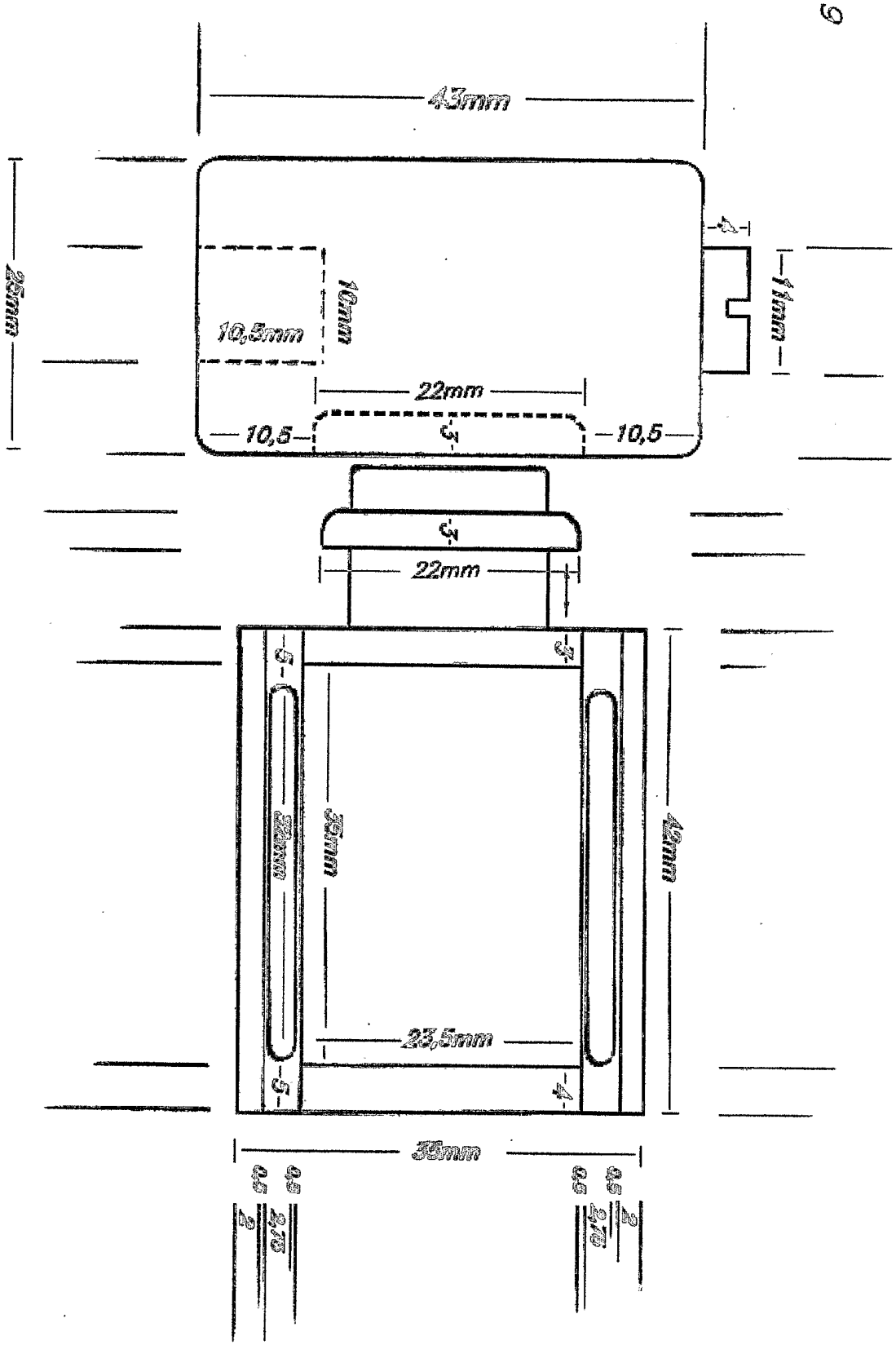


Fig.6
A1

Fig. 9



Measures - (seen from below) - scale 1:0,50 (200%)

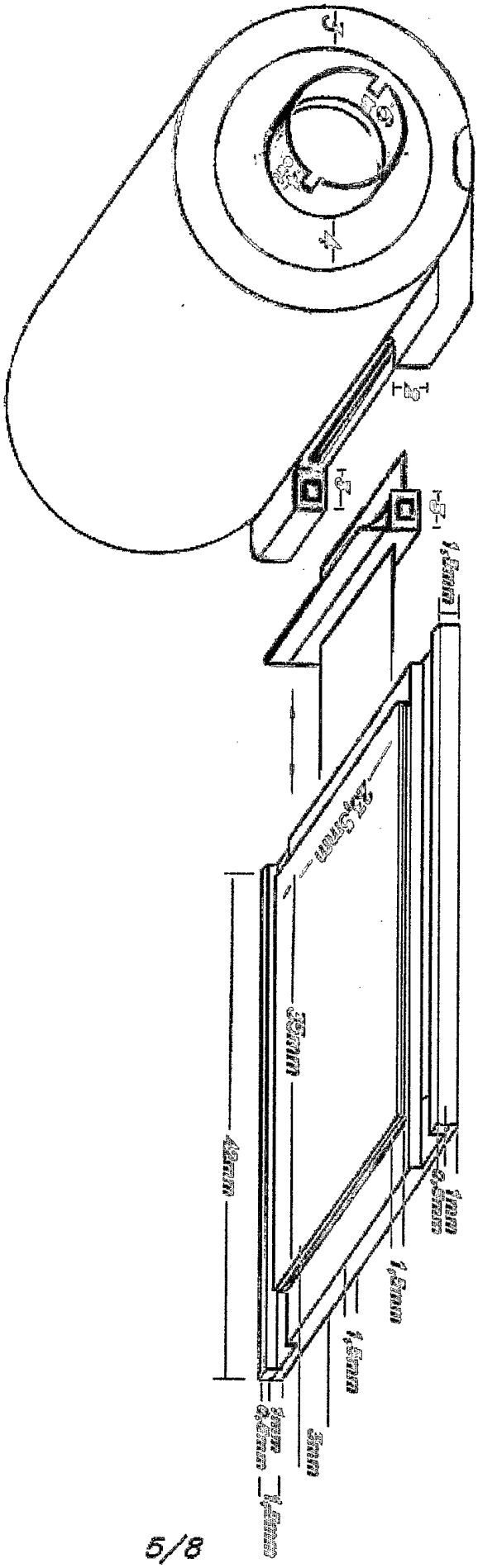


Fig. 10

Measures - (seen from below) - scale 1:0,50 (2008)

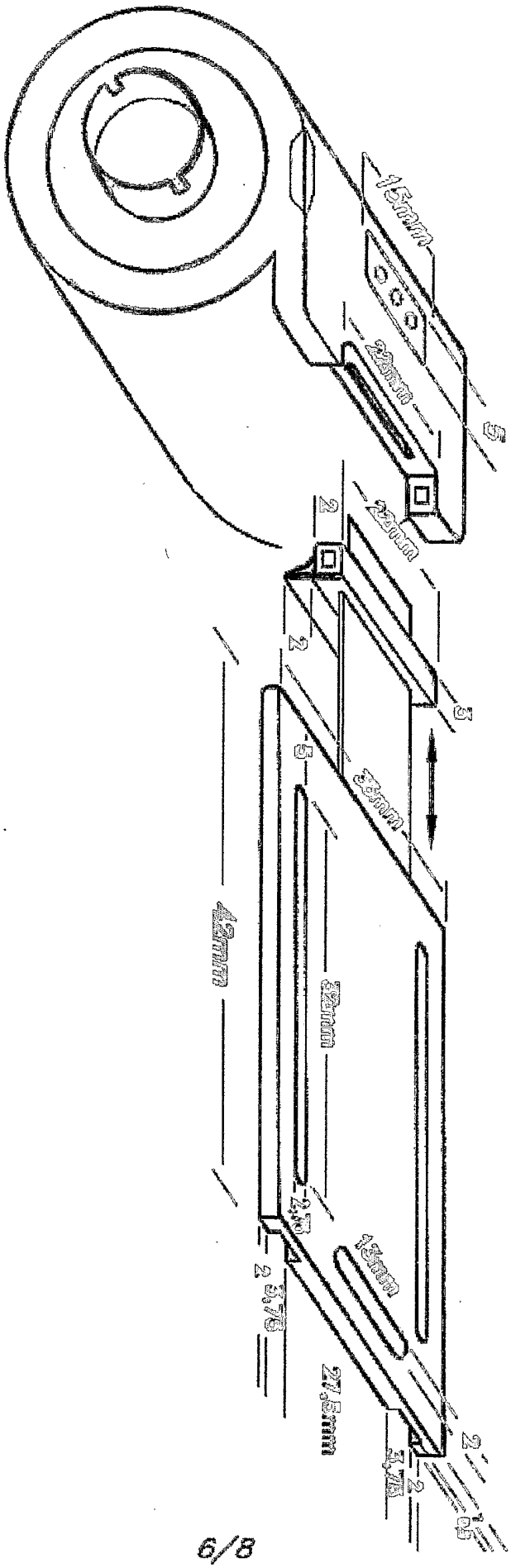
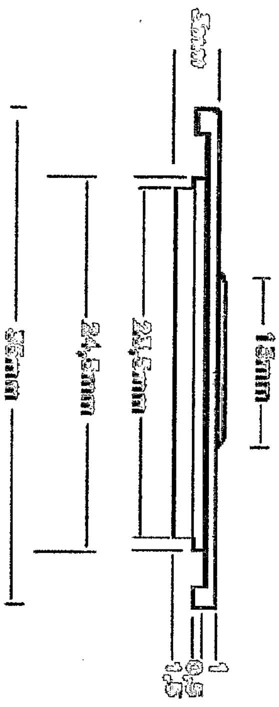


Fig. 11

Measures - (seen from above) - scale 1:0,50 (2003)



Measures - scale1:0,50 (200%)

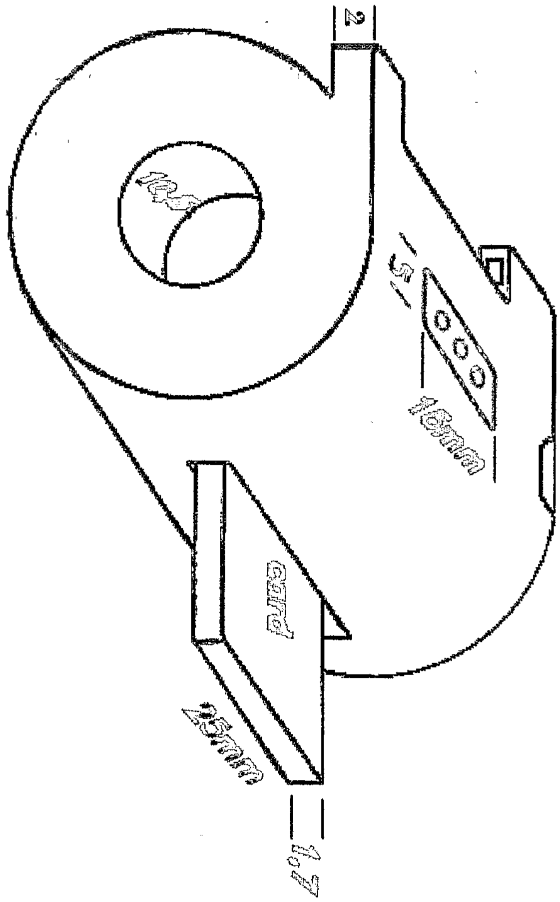
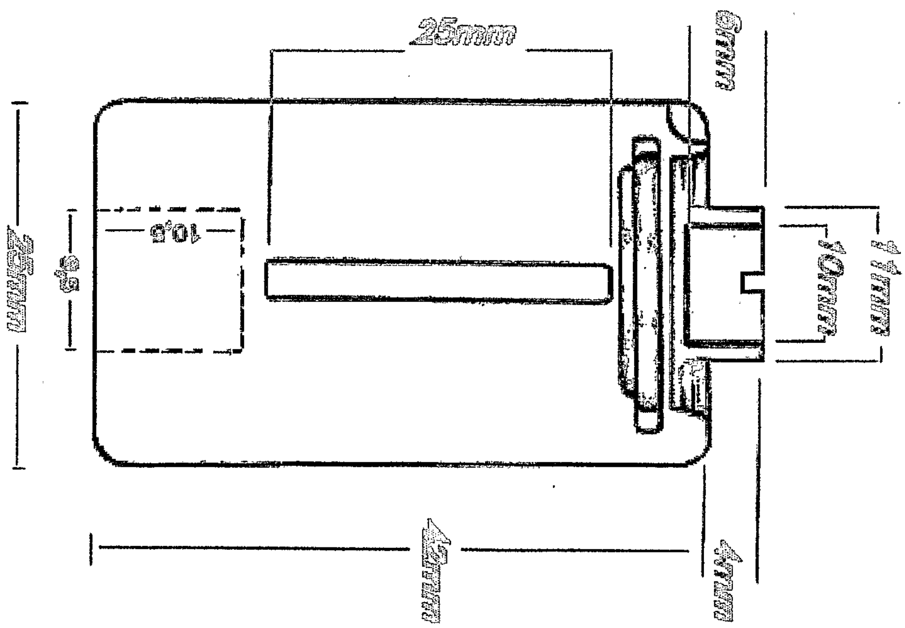


Fig. 12



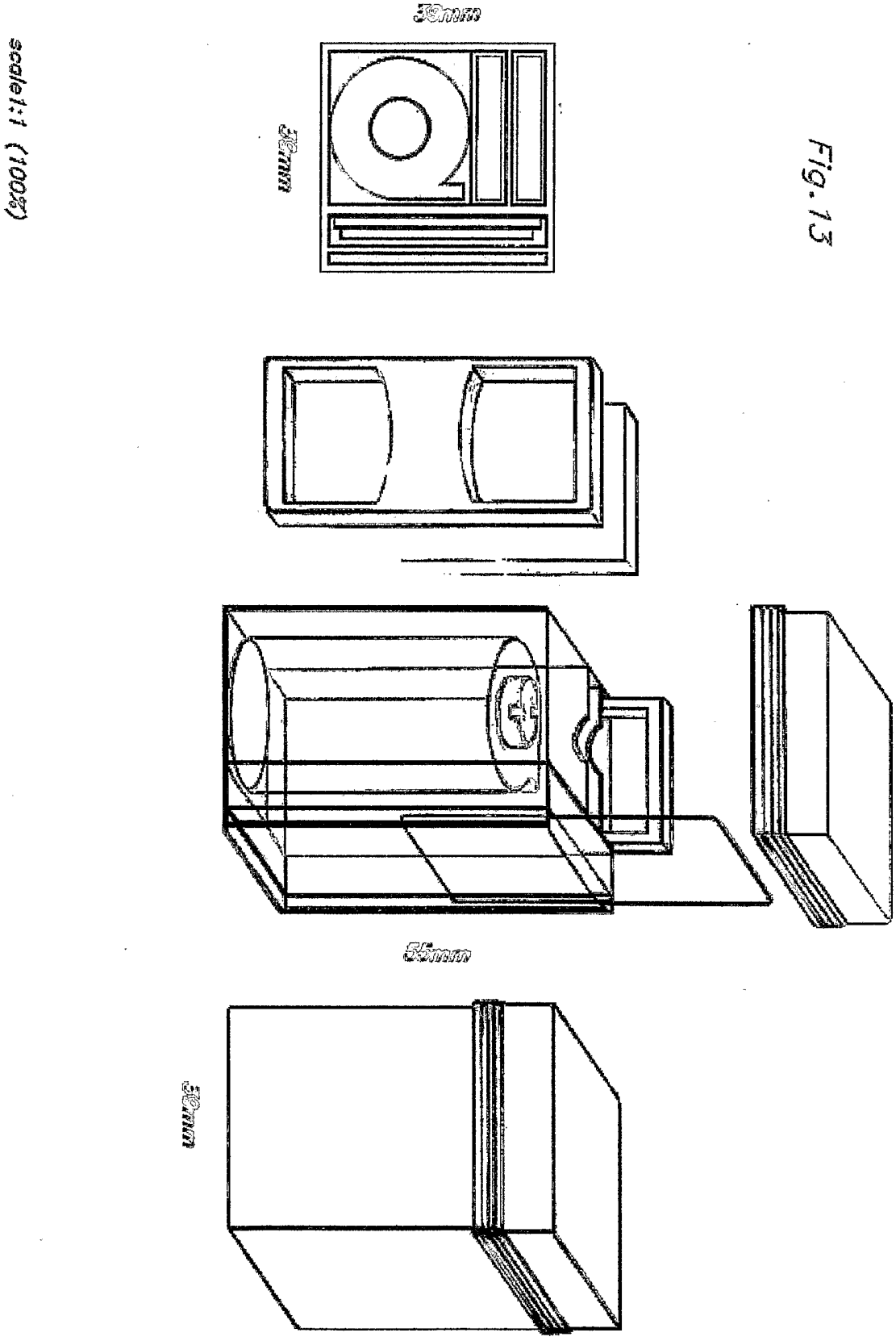


Fig. 13

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2005/000705

A. CLASSIFICATION OF SUBJECT MATTER
H04N5/225 H04N1/21 G03B29/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04N G03B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 665 672 A (POLAROID CORPORATION) 2 August 1995 (1995-08-02) column 5 - column 20	1,3, 12-17
X	US 6 351 282 B1 (DELEEUW WILLIAM ET AL) 26 February 2002 (2002-02-26) column 2 - column 6	1,3, 8-10, 12-14
X	US 6 181 833 B1 (KUWABARA SATORU) 30 January 2001 (2001-01-30) column 3 - column 4	1,2,5,7, 9,10, 12-16
X	WO 92/20007 A (INFRAMETRICS, INC) 12 November 1992 (1992-11-12) page 5 - page 8	1,14-17

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 March 2006	03/04/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Rückerl, R

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2005/000705

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 07, 29 September 2000 (2000-09-29) -& JP 2000 125158 A (FUJI PHOTO FILM CO LTD), 28 April 2000 (2000-04-28) abstract	1,4-6, 11,13,17
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 09, 13 October 2000 (2000-10-13) -& JP 2000 175097 A (FUJI PHOTO FILM CO LTD), 23 June 2000 (2000-06-23) paragraphs [0002], [0005], [0007] abstract	1,2,5

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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