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(54) Sensitometer

(57) A sensitometer comprises a lid 2 and a housing 1 between which a film strip to be measured can be arranged. The lid 2 can be operated by hand, and when it is pressed down and closed it actuates a timer for powering an electroluminescent plate 7 which serves as a light source for exposing the film strip *via* a density step wedge 6. For indicating when an exposure is taking place, use is made of a buzzer. The lid 2 and the housing 1 are interconnected by means of a hinge 3 so that in the closed condition the film strip is pressed flat against the step wedge 6 in a light-tight manner, the lid 2 being slightly open in the rest condition.

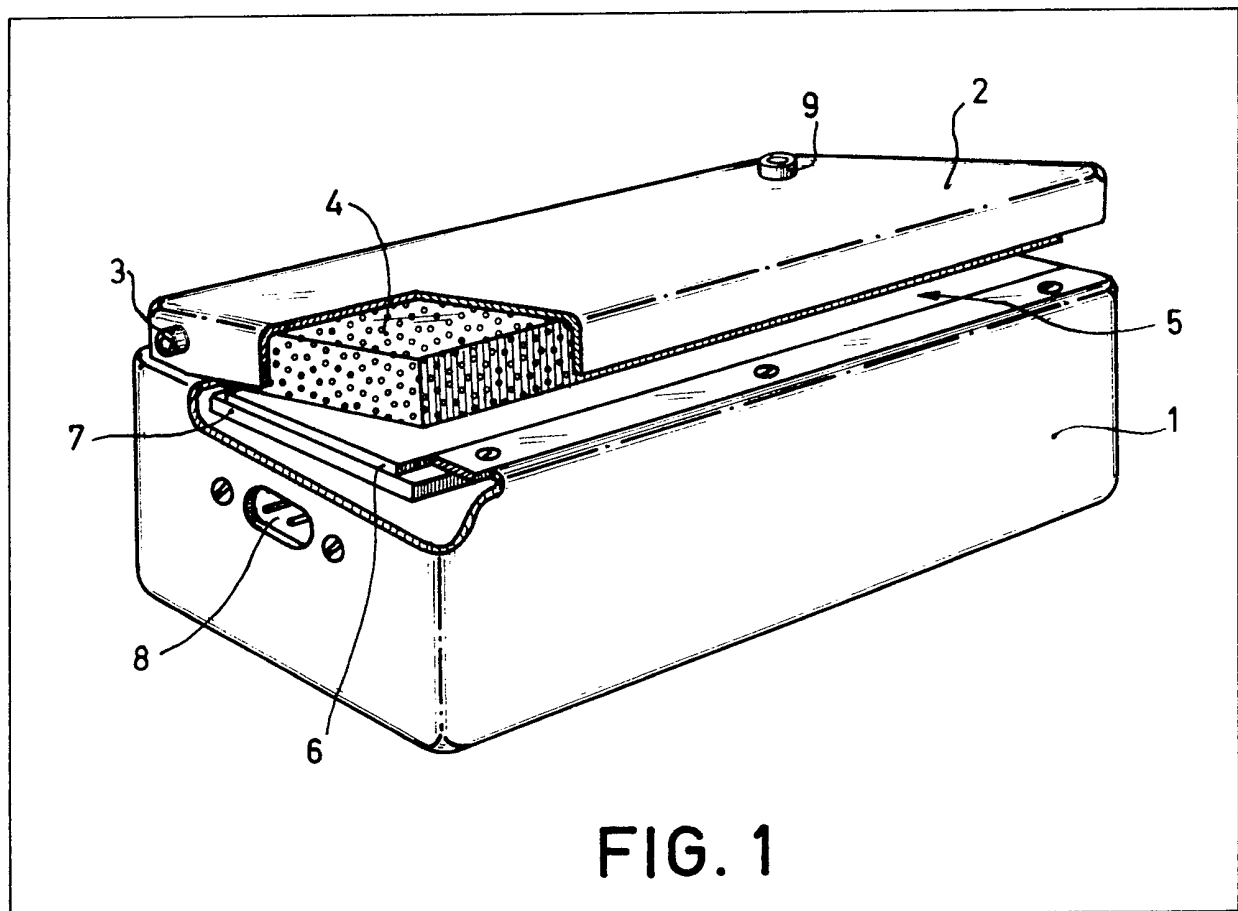


FIG. 1

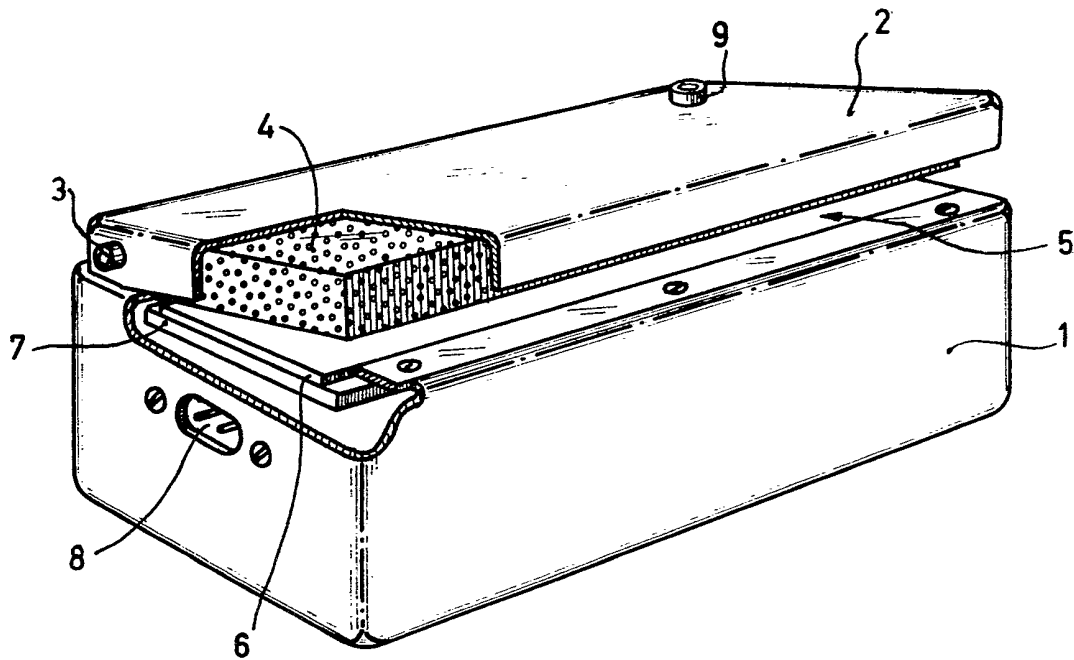


FIG. 1

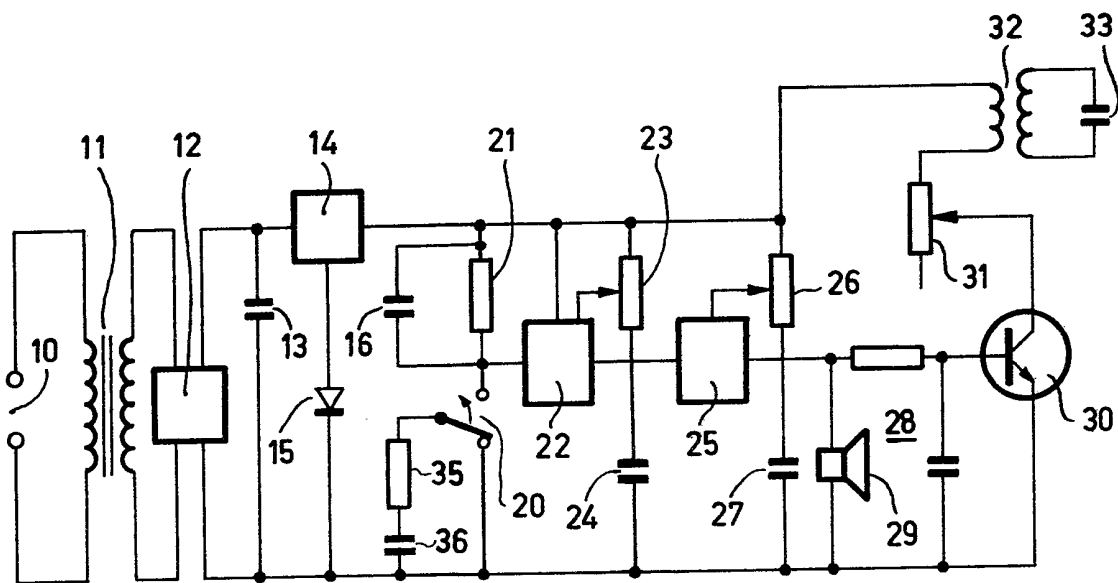


FIG. 2

## SPECIFICATION

### Sensitometer

5 The invention relates to a sensitometer, comprising a light source, a timer, a step wedge and an indicator.

The application of known sensitometers is rather limited because they are usually heavy, expensive,  
10 and not easy to handle.

It is an object of the invention to mitigate these drawbacks and to provide an improved sensitometer of the kind set forth.

According to the invention there is provided a sensitometer, comprising a light source, a timer, a step wedge and an indicator, characterized in that the light source is an electroluminescent plate, the energisation of which is initiated by the action of closing a manually operable lid portion of the meter, which  
20 is also arranged to cause the electroluminescent plate, the step wedge and a film strip under test, which are arranged between the lid and the housing portion of the meter, to be urged into planar contact with one another substantially throughout the entire surface thereof.

As a result of this construction, a sensitometer in accordance with the invention can be used in a routine manner without substantial loss of time, and measurement data thus obtained can provide direct  
30 information relating to the quality of the film material. The apparatus can thus be used in conjunction with automatic film development apparatus in order to check its performance, namely as a film test for quality testing the film to be used, or in a medical diagnostic apparatus. When use is made of the sensitometer, departures from the desired standard of film image quality can usually be used to selectively identify equipment faults, faults in the film material or faults in the film development process; this may  
40 offer large savings as regards maintenance and can prevent an undue amount of time out of service for the equipment.

The electroluminescent plate in a preferred embodiment is formed so that it emits light in a wavelength range which corresponds to the light produced by a luminescent material used for exposing the film during subsequent film image formation. As a result, any difference in the wavelength sensitivity between image formation and sensitivity  
50 measurement can be compensated for. As a result of the advantageous arrangement of the light source and the film during the process of making a measurement exposure, one-sided illumination will suffice, which contributes to the simplicity and lowered cost of the apparatus. The step wedge is normally constructed with a layer of processed photo-sensitive material displaying about 20 grey steps in the shape of adjoining strips or mutually separated squares, a central one of which further displays an  
60 identifying mark. The photo-sensitive layer is preferably located on the upper surface of the glassy support when fixed in the meter and is, in order to avoid deterioration thereof, provided with the protective layer.

65 In a further preferred embodiment, the indicator is

formed by a buzzer or a loudspeaker which provides a reliable indication of whether or not an exposure is taking place; a buzzer is to be preferred in view of the small dimensions of the apparatus and the fact that the apparatus also serves to measure larger film strips such as film plates which would, for example completely cover an indicator light.

70 An embodiment of the invention will now be described by way of example, with reference to the accompanying drawing, of which

75 Figure 1 is a view of a partly open sensitometer in accordance with the invention, and

Figure 2 is a circuit diagram of such a sensitometer.

80 A sensitometer embodying the invention is shown in Figure 1 and a practical example thereof can have dimensions of approximately 15 cm x 8 cm x 5 cm, and a weight of approximately 800 g. The sensitometer comprises a housing 1 and a lid 2.

85 In the rest condition, the lid portion is maintained slightly open by means of a spring (not shown), for example, from 10° to 30°, so that film material to be exposed and measured, can be arranged between the housing 1 and the lid 2. The lid 2 is connected to the housing by means of a hinge 3 which ensures that a resilient cushion 4 provided in the lid is urged into planar contact with the top 5 of the housing in the closed position of the lid. The cushion is preferably made of a black foam material, so that a good light-tight seal can also be provided. The mounting arrangement of the lid and the mass can also be provided. The mounting arrangement of the lid and the mass ratio of lid to housing are chosen so that the lid can be readily operated by one hand. At the  
100 top 5 of the housing there is mounted a step wedge 6 and directly therebelow there is arranged an electroluminescent plate 7 whose size is, for example, 13.5 cm x 2 cm. When the lid is pressed down, a timer is actuated for controlling the energisation of the electroluminescent plate, an indicator, preferably a buzzer, being energized at the same time. The housing of such a sensitometer can have dimensions of, for example, 15 cm x 8 cm x 5 cm, and the sensitometer can weigh less than 1 kg. The housing  
110 is provided with a mains voltage connection 8 for supplying power to the timer circuit accommodated in the housing.

A circuit for use in the sensitometer, is shown diagrammatically in Figure 2 and comprises subsequent  
115 to an input terminal 10 which serves as the input supply connection, a transformer 11, a full-wave rectifier 12, a first smoothing capacitor 13, a voltage regulator 14 with a diode 15. A control stage connected thereto comprises a switch 20 linked to base via a resistor and a capacitor 36 which switch is operated by an adjustable screw 9 mounted in the lid and which is connected to an RC-network circuitry 16, 21, a first half 22 of a dual timer with a first voltage divider 23 and a capacitor 24, the second half 25  
120 of the dual timer with a second voltage divider 26 and a capacitor 27, and an oscillator circuit 28 with a buzzer or loudspeaker 29. Luminescent plate electrodes 33 are connected via a transformer 32 and a potentiometer 31 to a transistor 30 forming part of the oscillator circuit 28 in order to supply an alternat-

ing voltage having a peak-to-peak value of, for example approximately 200 V to the electroluminescent plate.

#### CLAIMS

- 5 1. A sensitometer, comprising a light source, a timer, a step wedge and an indicator, characterized in that the light source is an electroluminescent plate, the energisation of which is initiated by the action of closing a manually operable lid portion of  
10 the meter, which is also arranged to cause the electroluminescent plate, the step wedge and a film strip under test, which are arranged between the lid and the housing portion of the meter, to be urged into planar contact with one another, substantially  
15 throughout the entire surface thereof.
2. A sensitometer as claimed in Claim 1, characterized in that the electroluminescent plate is formed so that it emits light in a wavelength range which corresponds to luminescent light to be used for  
20 exposing the film during subsequent image formation.
3. A sensitometer as claimed in Claim 1 or Claim 2, characterized in that the step wedge consist of a glassy support with, when located in the meter, on  
25 the upper surface a processed photo sensitive layer displaying about 20 grey scale steps, a central one of which further displays an identifying mark.
4. A sensitometer as claimed in any of the preceding claims, characterized in that the indicator is  
30 an acoustic element.
5. A sensitometer of the kind set forth, substantially as herein described with reference to the accompanying drawing.

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