May 20, 1952 J. G. LUCAS 2,597,350

SEDIMENT TEST CARD

Filed Oct. 24, 1947

Fig. 1.

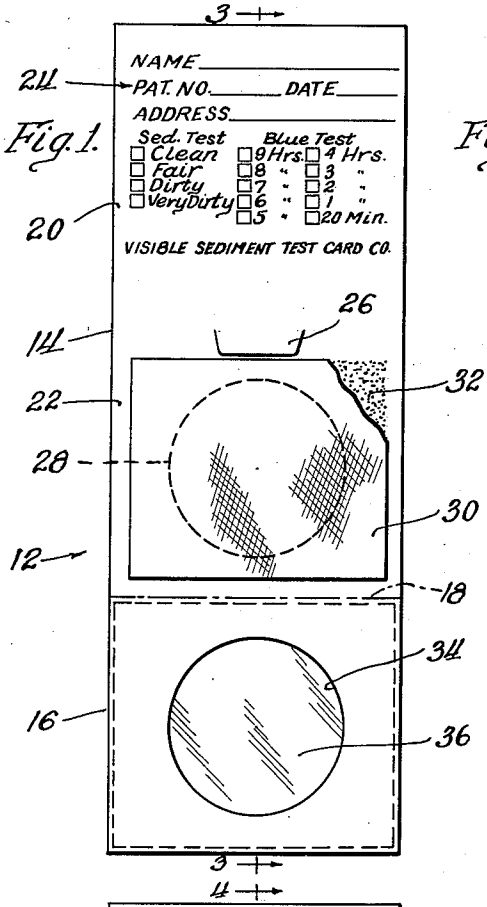


Fig. 2.

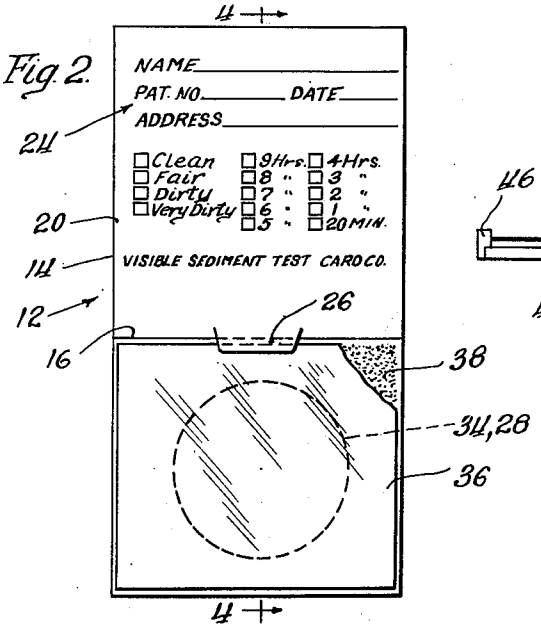


Fig. 3.

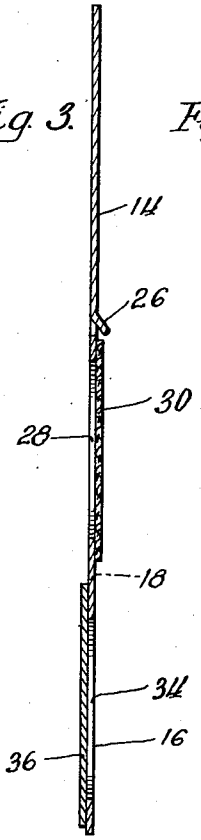


Fig. 4.

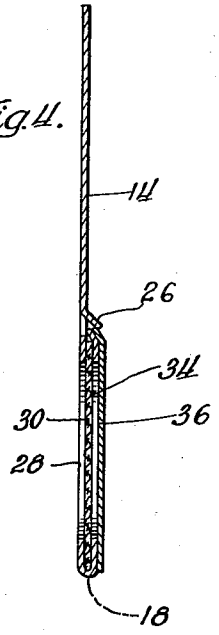
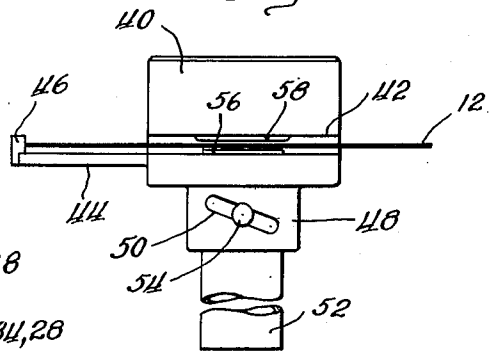


Fig. 5.



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SEDIMENT TEST CARD

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4 Claims. (Cl. 73—61)

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This invention relates to sediment test cards, especially adapted and most often used for obtaining and examining a specimen of milk or cream; but it will be understood that the test cards may be used in connection with other liquid materials containing solid matter as well.

Such test cards usually employ a filter element on which the specimen to be examined is placed, and the card with the filter and specimen thereon are later filed for record purposes.

An object of the present invention is the provision of a sediment test card of this general nature in which the filter element for containing the specimen is attached to the card in the manufacture thereof.

Another object is the provision of a novel test card specially designed so that a filter element may be secured thereto in such a manner that a specimen of the material to be tested can easily be obtained.

A further object of the invention is the provision of a test card which serves as a supporting means in handling the filter element in making tests, which results in saving of time on the part of the operator, with resulting economy.

A still further object is economy in manufacture and shipping resulting from the fact that the filter element and test card are made up in a single article.

Another object is the provision of a novel sediment test card for use in connection with a novel mechanism employed for obtaining specimens.

Still another object is the provision of a novel test card which, when used with the novel mechanism referred to, readily positions the filter element accurately for receiving a specimen; this is in contrast to the inconvenient and time consuming method formerly employed in which the operator obtained a specimen on a detached filter element and thereafter placed it in position on the test card.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a front view of the novel sediment test card of my present invention, unfolded in open position;

Figure 2 is a front view of the test card with a section thereof folded over in the position it assumes after a specimen has been obtained;

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Figure 3 is a sectional view taken on line 3—3 of Figure 1;

Figure 4 is a sectional view taken on line 4—4 of Figure 2; and

Figure 5 illustrates the test card in position in a novel mechanism employed for obtaining a specimen.

Referring in detail to the drawing, the sediment test card is indicated as a whole at (12). The card itself is in the form of a flat blank stamped from paper or light cardboard. Figures 3 and 4 illustrate the thickness of the card and of the other elements secured thereto in exaggerated thickness for purposes of clarity. The card 12 is disposed with its front face to the observer in Figure 1, and comprises a main section 14 and a smaller second section 16 hinged to the main section 14 at the line 18. The line 18 represents a scored or weakened line formed in the card.

The main section 14 is divided into a data area 20 and a test area 22. The data area 20 is provided with certain printing indicated at 24 for insertion of identification and other data pertinent to the test to be made with the card.

Formed in the card 12 is a tongue or flap 26 substantially at the meeting line between the data area 20 and test area 22. The tongue 26 is stamped from the material of the card, in a well-known manner, and is adapted to be inclined upwardly from the front face of the card. The free or swinging end of the tongue 26 is directed toward the test area 22.

A hole 28 is stamped out of the card in the test area 22, substantially centrally of the latter and encompassing a substantial portion of the test area. The hole 28 is illustrated as circular, but other shapes may be provided.

A filter element 30, of greater dimensions than the hole 28, is positioned over the hole on the front face of the card and secured thereon by means of an adhesive material indicated at 32, applied to the card in surrounding relation to the hole. If desired, the filter element 30 can be secured to the card by means other than adhesive material, such as by stapling or other means. Although the filter element 30 is preferably disposed on the front face of the card, it may be placed on the rear face with equal effectiveness.

The particular kind of filter element 30 does not form a part of the present invention, and may be of any preferred type effective for permitting milk to be flowed therethrough, and to retain sediment from the milk thereon.

A sight opening **34** is stamped from the second or foldable section **16** of the card. The sight opening **34** is similar in size and shape to the hole **28**, and is spaced from the hinge line **18** a distance substantially equal to the spacing therefrom of the hole **28**, for ultimate registration with the latter.

A transparent flexible piece of material **36** is secured to the foldable section **16** by means of an adhesive material **38**, over the sight opening **34** entirely covering the sight opening. The transparent material **36** is preferably without substantial thickness and covers substantially the whole of the foldable section **16**. The present illustration shows the transparent material **36** on the back face of the foldable section **16**, but it may be placed on either face.

Figure 5 illustrates a novel sediment test gun with which the test card of the present invention is used. This novel test gun is included in the subject matter of my co-pending application, Serial No. 781,886, filed October 24, 1947 (now Patent No. 2,515,522) to which reference may be had for complete details of the gun. However, a brief description of the test gun is here given to bring out the full advantages of the test card of the present invention.

The test gun is a small portable type and includes a main body **40** having a horizontal slot **42** formed therein. An arm **44** extends outwardly from one side of the body **40**, and so disposed that its upper surface is substantially flush with the lower surface of the slot **42**. An upstanding stop **46** is secured to the outer end of the arm **44**.

A tubular extension **48** is secured to the lower surface of the body, and the body has a vertical opening therethrough in register with the tubular extension **48**, which opens into the area of the slot **42**. An inclined cam slot **50** is cut in the tubular extension **48**.

A pipe **52** is loosely received in the tubular extension **48**, and held therein by a pin **54** secured to the pipe and extending through the cam slot **50**. By sliding the pin **54** in the cam slot **50**, the pipe **52** can be moved vertically in the tubular extension **48** until the upper end of the pipe extends into the area of the slot **42**, as indicated at **56**. Reverse movement of the pin **54** retracts the pipe **52**.

The numeral **58** indicates an annular sealing ring which surrounds a passage leading vertically out of the slot **42**, and through the upper part of the body **40** for communication with a means for producing a vacuum. The sealing ring **58** and the pipe **52** are in register with each other, and the passage through the upper part of the body is therefore in register with the pipe **52**.

For obtaining a specimen to be examined, the test card **12** is inserted in the slot **42** when the pipe **52** is retracted downwardly. The card is placed with its front face down, and the main section **14** thereof extended to the left in engagement with the stop **46**. In this position of the card **12**, the hole **28** is in register with the pipe **52**. The pin **54** is slid in the cam slot **50** to move the pipe **52** upwardly, which causes the upper end **56** of the pipe to clamp the card **12** between the pipe and the annular sealing ring **58**. The pipe **52** and the passage leading upwardly from the sealing ring **58** form a continuous passage with the filter element **30** secured therein.

The pipe **52** is then inserted in the milk (or other material) to be tested. Vacuum is produced in the passage through the test gun, whereupon the milk is drawn up through the pipe **52** and through the filter element **30** on the test card. Any sediment in the milk is then deposited on the front face of the filter element. After a specimen of the sediment is obtained, the pipe **52** is retracted and the card removed.

When a specimen has been so obtained, the foldable section **16** of the card is folded on the hinge line **18** over the filter element **30**, and the free or swinging end of the foldable section is inserted under the tongue **26**, as illustrated in Figures 2 and 4. The sight opening **34** is then in register with the hole **28**, and of course with that portion of the filter element **30** which is over the hole **28**, with the sediment from the milk deposited thereon. The specimen may be examined either before or after the section **16** is folded over, the transparent material **36** being such as to permit clear inspection therethrough. After the section **16** is folded over the filter element, the sediment is covered and confined by the transparent material **36**, and the sediment will not be accidentally rubbed or brushed off in later usage of the card, such as would be the case if it were not for the transparent material **36**. Appropriate test data is then entered in the data area, and the card can be eventually filed for record. It will be noted that the test, i. e., the filter and specimen, is made a permanent part of the card and cannot become separated therefrom.

It will be evident from the foregoing that an economical article results from the present invention, from the standpoint of manufacture and shipping. Moreover, in the use of the test card, much time is saved by the operator; there is not the necessity of procuring a specimen on a detached filter element and thereafter applying the filter element to the test card, as has been the procedure heretofore.

Obviously, the foldable section **16** of the card may be omitted, if such should be found advantageous. In this event, the card would be a simple flat card with the filter and specimen thereon exposed. The foldable section with the transparent material **36** thereon does not take part in the operation of obtaining and examining a specimen, but is, of course, preferred for record purposes.

While I have herein shown and described a preferred embodiment of my invention, manifestly it is capable of modification and rearrangement of parts without departing from the spirit and scope thereof. I do not, therefore, wish to be understood as limiting this invention to the precise form herein disclosed, except as I may be so limited by the appended claims.

I claim as my invention:

1. A sediment test card comprising, a main section and a second section lying in a common plane, said main section having an opening therethrough, a filter element positioned over said opening and secured to and carried by said main section, said card, with said filter element carried thereon, being adapted for positioning in operating means for flowing liquid through said opening and through said filter element and depositing sediment from the liquid on said filter element, said second section having a sight opening therethrough, and a sheet of transparent material covering said sight opening and secured to said second section, said second section being foldable over and against said main section on the side thereof on which the sediment is deposited, to a position wherein said openings are in substantial register with each other, and

the sediment on said filter element can be viewed through said sight opening and through said transparent material, and whereby said transparent material covers and confines the sediment and prevents its dislodgement in further usage of the card.

2. A sediment test card comprising, a main section and a second section lying in a common plane, said main section having an opening therethrough, a filter element positioned over said opening and secured to and carried by said main section, said card, with said filter element carried thereon, being adapted for positioning in operating means for flowing liquid through said opening and through said filter element and depositing sediment from the liquid on said filter element, said second section having a sight opening therethrough, and a sheet of transparent material covering said sight opening and secured to said second section, said second section being foldable over and against said main section on the side thereof on which the sediment is deposited, to a position wherein said sight opening is in register with a portion of said filter element on which the sediment is deposited, and the sediment on said filter element can be viewed through said sight opening and through said transparent material, and whereby said second section and the transparent material thereon cover and confine the sediment and prevent its dislodgement in further use of the card, and means for securing the second section in folded position against said main section.

3. A sediment test card having a front and a rear face, comprising, a main section and a second section lying in a common plane, said main section having a data area and a test area on the front face, a tongue struck from said main section and projecting from said front face and positioned substantially at the juncture between said data area and test area, said main section having an opening therethrough in said test area, a filter element on and secured to the front face of the card in covering relation to said opening, said card, with said filter element carried thereon, being adapted for positioning in operating means for flowing liquid through said opening and through said filter element and depositing sediment from the liquid on said filter element, said second section having a sight opening therethrough, and a sheet of transparent material covering said sight opening and secured to said second section, said second section being foldable over and against said main section on the front face thereof, the swinging edge of said second section being insertable under said tongue and the tongue being thereby effective for retaining said section in folded position, said openings being substantially in register with each other when said second section is in folded position, whereby the sediment on said filter element can be viewed through said sight opening and through said transparent material, said second section being foldable over and against said main section on the side thereof on which the sediment is deposited, to a position wherein said openings are in substantial register with each other, and the sediment on said filter element can be viewed through said sight opening.

4. A sediment test card comprising a main section and a second section, said main section having an opening therethrough, a filter element positioned over said opening and secured to and carried by said main section, said card, with said filter element carried thereon, being adapted for positioning in operating means for flowing liquid through said opening and through said filter element and depositing sediment from the liquid on said filter element, said second section having a sight opening therethrough and a sheet of transparent material covering said sight opening and secured to said second section, and means for securing said second section against said main section with said sight opening in register with the side of the filter element on which the sediment is deposited, said transparent material protecting the sediment on the filter element and permitting visual examination thereof.

JUNIOUS GUY LUCAS.

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