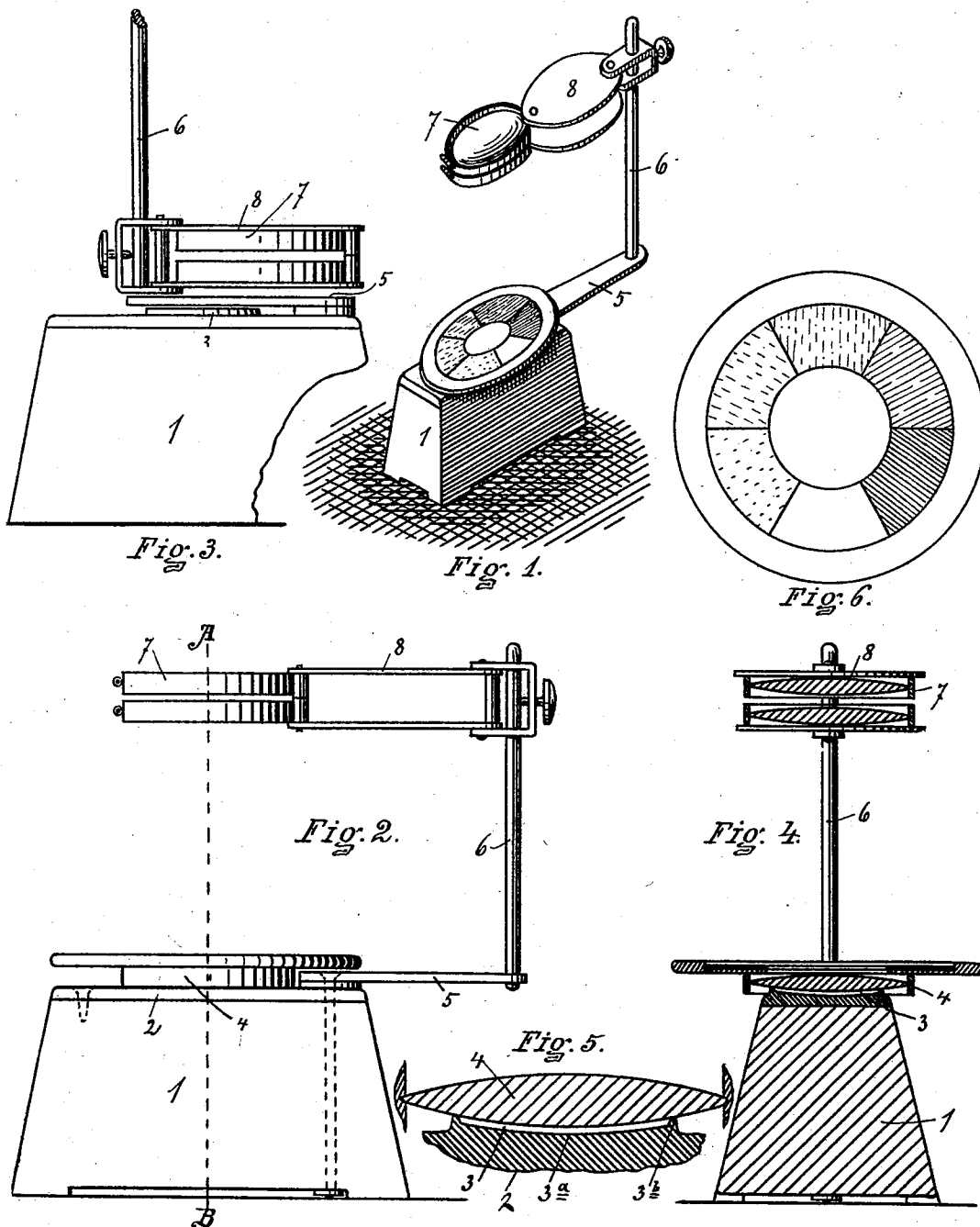


(No Model.)

W. G. SPENCE.
APPARATUS FOR INSPECTING MILK.

No. 517,367.

Patented Mar. 27, 1894.



WITNESSES.
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UNITED STATES PATENT OFFICE.

WILLIAM G. SPENCE, OF STITTVILLE, NEW YORK.

APPARATUS FOR INSPECTING MILK.

SPECIFICATION forming part of Letters Patent No. 517,367, dated March 27, 1894.

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To all whom it may concern:

Be it known that I, WILLIAM G. SPENCE, of Stittville, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Apparatus for Inspecting Milk; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to an improvement in an apparatus for inspecting milk, and which has been termed by me "milkscope."

The apparatus is designed to show the quality and condition of milk.

In the drawings in which similar figures of reference refer to corresponding parts in the several views, Figure 1 shows in perspective the "milkscope." Fig. 2 shows a plan side view of the device. Fig. 3 shows the device in a folded position, the parts being broken off to reduce the size of the figure. Fig. 4 shows a vertical central section on line A—B of Fig. 2. Fig. 5 shows an enlarged detail hereinafter more fully described. Fig. 6 shows a color plate carrying several shades of colors placed in a circle around a transparent opening so that the sample of milk under examination may be readily compared with the color plate in determining its quality and condition.

Referring more particularly to the reference numerals marked on the drawings, 1 indicates the base on which is mounted a plate 2 which has formed integral therewith a disk shaped sample holding pocket 3. The plate 2 and sample pocket 3 are preferably made of hard rubber or some material having a smooth black surface. The disk-like pocket is formed with a concave bottom 3^a (see Fig. 5) surrounding rim 3^b, surmounting the pocket or sample holder 3 is a lens 4 having a convex surface on its under side conforming to the curvature on the bottom of the sample holder, and either convex or of other suitable shape, on the upper side. The lens shown, is a double convex lens, which is preferable. On the base 1 pivoted at one side of the sample holding plate is a swinging arm 5, in the

outer end of which is mounted an upright standard 6. Mounted on the standard 6 and adjustable thereon, are one or more magnifying glasses 7, which when in extended position, as shown in Figs. 1 and 2, are in a vertical line over the sample plate. 8 is a case within which the lenses may be folded, as shown in Fig. 3, and when so folded, the case may be allowed to slide down the upright standard 6, so as to fold over the sample plate and protect it. The sample plate also being protected by the arm 5, which swings around directly over the plate, as shown in Fig. 3. The color plate shown in Fig. 6 consists of a circular piece of glass under which is placed a sheet of paper or other suitable material bearing the various shades of color surrounding a circular opening in the center of the plate, and the whole contained within a hard rubber or metal frame, all substantially as shown in cross section in Fig. 4.

The device is used substantially as follows: The lens 4 being removed from the sample plate a sample of milk is placed in the depression in the sample plate, and it is preferable that enough of the sample be placed to more than fill the depression. The lens 4 is then placed upon the sample, and on account of the convexity of the lens, it engages the sample at the center and as it closes down expels all the air from between the lens and the sample within the cavity containing the sample. This expulsion of the air is a very important feature, as much trouble has heretofore been experienced in the examination of samples of milk, by reason of air bubbles being retained in the sample, which are liable to be mistaken for evidences of milk in bad condition. The color plate is then placed on top of the lens 4, in the position shown, and the lenses 7 are brought to bear at a suitable focal point over the sample, when the sample may be readily and carefully examined. It will be observed that the film of milk is uniform over the surface of the sample plate, so that the color of the milk may be accurately seen and in the examination of different samples the same uniform film of milk free of all air bubbles is obtained. By means of this apparatus milk in bad condition, by reason of impurities and adulteration or early stages of putrefaction may be readily detected.

It is evident that many changes and modifications of the device may be made and the construction may be changed elaborately without departing from the spirit of my invention.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. In a testing instrument, a base having a concave depression surrounded by a rim or wall forming a pocket, and a lens adapted to be placed over the pocket having a convex side substantially conforming in curvature to the bottom of the pocket.

2. In a testing instrument, a base having a concave depression surrounded by a rim or wall forming a sample pocket, a transparent plate having a convex surface substantially coinciding in curvature with the bottom of the pocket, and adapted to be placed upon the sample contained in the pocket and supported on the rim or wall, substantially as set forth.

3. The combination in a testing instrument of a base having a concave depression surrounded by a rim or wall forming a sample holding pocket, a transparent plate having convex surface substantially coinciding in curvature with the bottom of the sample

pocket and adapted to be placed over the sample, a color plate having graduated colors surrounding a central opening, substantially conforming to the size of the pocket and adapted to be placed on the transparent plate over the pocket, substantially as set forth.

4. In an apparatus for examining milk, the combination of a base having a concave depression surrounded by a rim or wall forming a sample holding pocket, a transparent plate having a convex surface substantially conforming in curvature with the bottom of the pocket and adapted to be placed on the sample and supported on the rim or wall, a color plate of graduated colors having a circular opening substantially conforming in size to the pocket mounted upon the transparent plate, a lens, and a lens supporting arm pivotally mounted on the base and having a vertical post on which the lens is secured, substantially as set forth.

In witness whereof I have affixed my signature in presence of two witnesses.

WILLIAM G. SPENCE.

Witnesses:

GEORGE A. GAYMORDS,
GEORGE C. CARTER.