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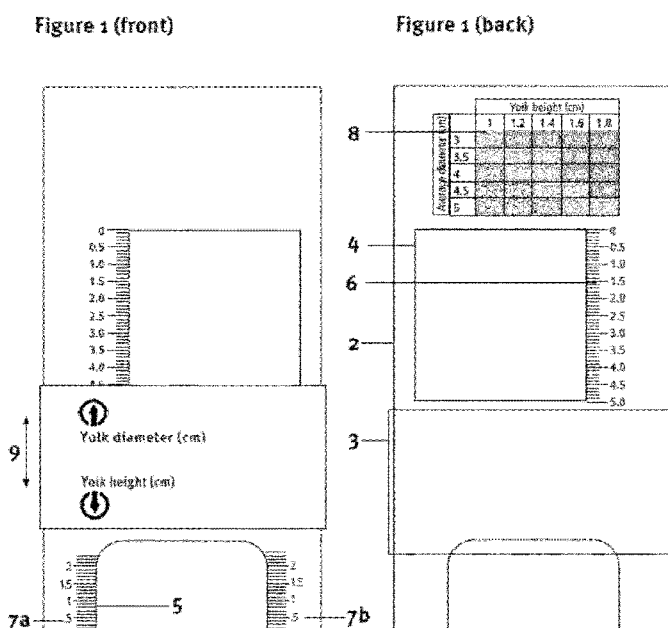
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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- (54) **Title:** EGG QUALITY INDEX INSPECTION DEVICE



- (57) **Abstract:** The present invention relates to an egg quality inspection device for use in determining egg yolk index. The inspection device (1) comprises two main parts, a stationary part as the first part (2) and a moving part (slider) as the second measuring part (3). The stationary part (2) comprises a punched hole (4) and an opening or cutout (5) at the smaller edge of part (2). The stationary part 2 further includes two markings (6 and 7) for measurement and scaling purposes, wherein marking (6) is placed along one edge of the square-cut hole (5) and the marking (represented by 7a and 7b) on both sides of the cutout (5) and wherein each of the markings have a metric measuring rule. The slider (3), which is the moving part of the device, is mounted on the stationary part (2) and movable along the longitudinal axis of part (2).

Egg Quality Index Inspection Device

The present invention relates to an egg quality inspection device for use in determining egg yolk index.

Yolk index is an easy and very effective way to determine the freshness and quality of an egg.

The flattening of the yolk of an egg as it ages was early recognized as a possible means for determining egg quality. Already in 1930 a procedure for determining a value for determining egg quality have been reported. The authors called the value "yolk index." The procedure required removal of the yolk from the albumen and then a five-minute waiting period for the yolk to spread prior to measuring its height and width, two ways at right angles. Later in 1948 a modification of that procedure have been proposed which greatly speeded up the procedure. This method involved measuring height and width of yolk with a measuring rod without removing it from the albumen and without waiting five minutes.

It has been well accepted worldwide to determine the egg yolk index as the ratio between height and diameter of yolk under defined conditions. Currently there is still a lack of equipment available which could be used for this procedure and/or which helps to simplify the procedure and to reduce errors and inaccurate measurements.

It is therefore the object of the present invention to provide an inspection device that may be used to easily measure yolk high and yolk diameter of a cracked egg.

According to the present invention there is provided a device, which is basically outlined in two dimensions, wherein the device can be used to measure yolk diameter and yolk high of a cracked egg without removing the yolk from the albumen.

The general shape and size of the inspection device is preferably selected with dependency on the size of the eggs to be measured and in the form of simple shapes with at least one straight-lined edge such as triangles, squares, rectangles, half-circles and pentagons.

The inspection device is typically made from paper, card or plastic although any other suitable material may be used.

Preferably the inspection device is made from thick polypropylene. Optionally the device is covered with a plastic or laminate material.

Preferably the inspection device is crease proof, moisture proof and resistant to wear.

Preferably the inspection device is overprinted with additional markings for measurement and scaling purposes, wherein these markings are intended to be used in cooperation with a slider to assist in the accurate measurement of yolk high and diameter.

In another preferred embodiment of the invention a "yolk index" table scaled by diameter and yolk high is typically printed onto the device.

In order to provide a better understanding of the invention, an embodiment will now be described with reference to the accompanying figures in which:

Figure 1 illustrate an embodiment of an inspection device in accordance with the present invention in front and back view;

Figure 2 illustrates the slider of the device in top view and

Figures 3a and 3b illustrate the device of figure 1 and 2 in use.

Referring now to figure 1 and 2, there is illustrated a preferred embodiment of the inspection device according to the present invention. The inspection device, generally indicated with a reference number 1, comprises two main parts, a stationary part as the first part 2 and a moving part (slider) as the second measuring part 3.

The shape and size of the stationary part 2 is rectangular, but the stationary part 2 can be of any shape such as triangles, squares, circles and pentagons.

As shown in Figure 1, the stationary part 2 comprises a punched hole 4 and an opening or cutout 5 at the smaller edge of part 2. The hole 4 has preferably a square shape wherein the opening 5 is essentially a rectangular cut out.

The stationary part 2 further includes two markings 6 and 7 for measurement and scaling purposes, wherein marking 6 is placed along one edge of the square-cut hole 5 and the marking 7 (represented by 7a and 7b) on both sides of the cutout 5 and wherein each of the markings 6 and 7 have a metric measuring rule.

The slider 3, which is the moving part of the device, is mounted on the stationary part 2 and movable along the longitudinal axis of part 2. It has an elongated rectangular body with central hole 3a (figure 2).

Onto the stationary part 2, there is a “yolk index” table 8 printed which is scaled by yolk diameter and yolk high and which shows the respected calculated yolk index values.

It will also be appreciated that whilst figures 1 and 2 depict a preferred inspection device, other embodiments may also be used. For example the inspection devices may be in the form of other simple shapes such as circles, triangles and pentagons. In addition it is envisaged that the form and shape of the hole 4 or the cutout 5 and the markings 6 and 7 can vary in different ways.

The inspection device can be made from a variety of materials, for example they may be paper, card, plastic or thick polypropylene and are therefore relatively light and can be transported easily. Furthermore the device is crease proof and wear resistant such that they may be stored without damages or distortion to their shape and re-used when required. In addition the inspection device may be covered by a protective plastic or laminate material which aids cleaning of the templates.

Figures 3a and 3b illustrate the inspection device 1 in use. The measurement of yolk diameter and yolk high and the calculation of the yolk index with the inspection device 1 is very simple and as follows:

1. Break the egg and place it on a support without separating the egg yolk 10 from the egg white 11.
2. Applying the hole 4 of part 2 to the yolk 10 such that the edge of square hole 4 which correspond the starting point of the metric scale 6 touches the yolk externally.
3. Measure the diameter (D1) of the yolk by moving the slider 3 towards the yolk 10 until it touches the opposite site of the yolk (figure 3a).
4. (Optionally) Turn the inspection device by 90° and measure the diameter (D2) of the yolk as described in 3.
5. Applying the inspection device vertically with its outcut 5 to the yolk 10 (figure 3b).
6. Measure the high (H) of the yolk by moving the slider 3 towards the yolk 10 until it touches the upper end of the yolk (figure 3a).
7. Calculate the yolk index as follows:

$$\text{Yolk index} = H \times 2 / D1 + D2$$

CLAIMS

1. An inspection device for measuring yolk high and yolk diameter, wherein the device is basically outlined in two dimensions and comprises a stationary part (2) with a hole (4) and an opening or cutout (5) at a straight-lined edge of said part (2) and a moving part (3) mounted on the stationary part (2).
2. The inspection device according to claim 1, wherein the moving part (3) is a slider mounted on the stationary part (2).
3. The inspection device of claim 1 or 2, wherein the hole (4) has a square shape and the cutout (5) is essentially a rectangular cut out and wherein the slider (3) is movable along the longitudinal axis of the stationary part (2).
4. The inspection device as claimed in any one of the preceding claims, wherein the stationary part (2) further includes two markings (6, 7) for measurement and scaling purposes and wherein each of the markings (6, 7) have a metric measuring rule.
5. The inspection device as claimed in any one of the preceding claims, wherein the stationary part is in the form of simple shapes with at least one straight-lined edge such as triangles, squares, rectangles, half-circles and pentagons.
6. The inspection device as claimed in any one of the preceding claims, wherein the two parts (2,3) are made from paper.
7. The inspection device as claimed in claims 1 to 5, wherein the two parts (2,3) are made from card.
8. The inspection device as claimed in claims 1 to 5, wherein the two parts (2,3) are made from plastic.
9. The inspection device as claimed in Claim 8, wherein the two parts (2,3) are made from polypropylene.
10. The inspection device as claimed in any one of the preceding claims, wherein the two parts (2,3) are covered with a plastic material.
11. The inspection device as claimed in any one of the preceding claims, wherein the two parts (2,3) are covered with a laminate material.
12. The inspection device as claimed in any one of the preceding claims, wherein the two parts (2,3) are crease proof, moisture proof and resistant to wear.

Figure 1 (front)

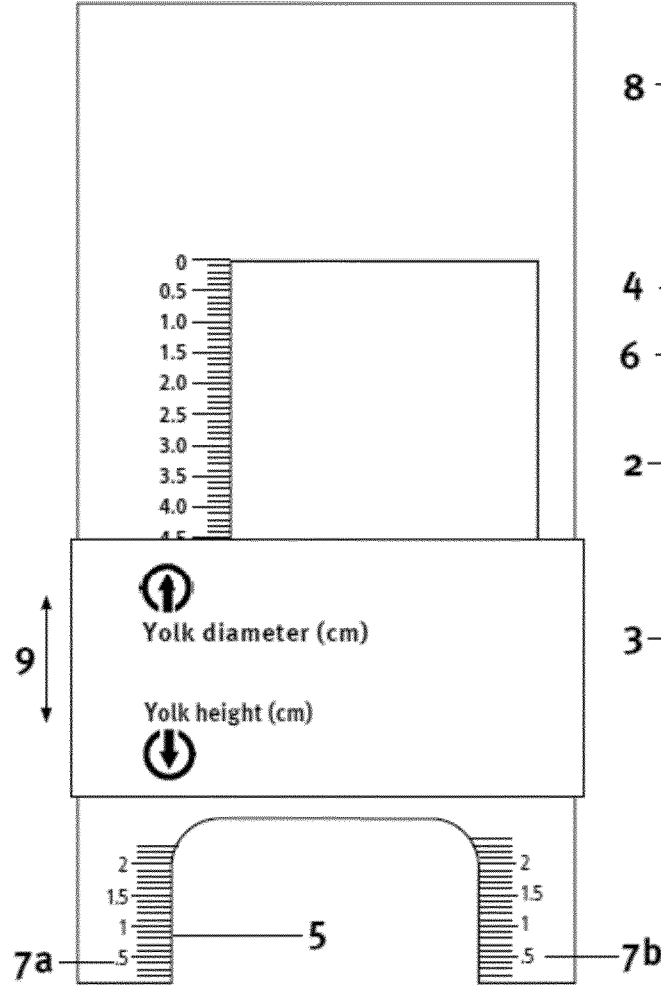


Figure 1 (back)

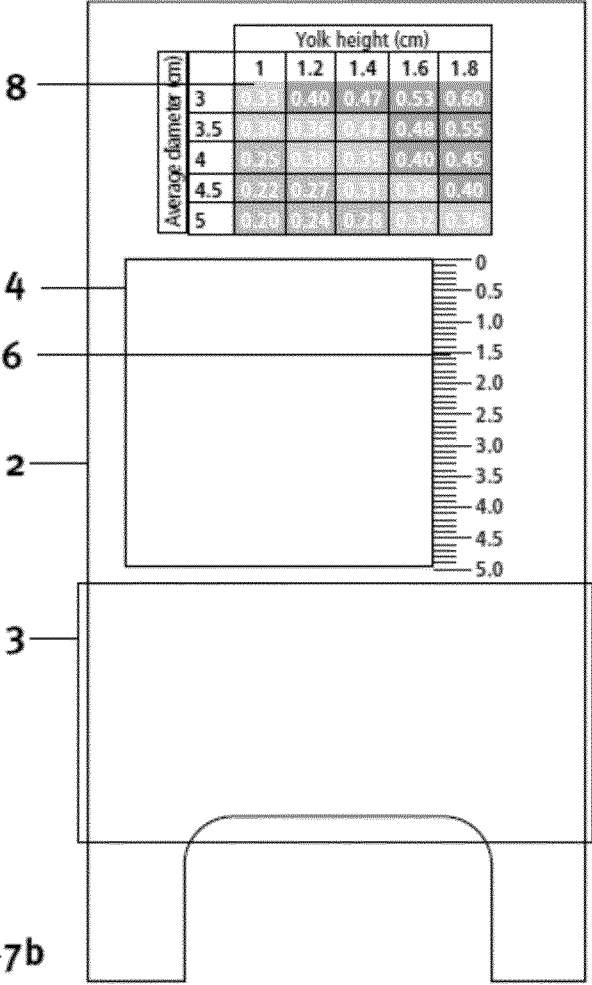


Figure 2

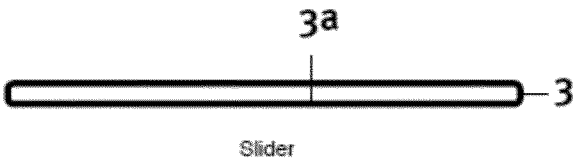


Figure 3a

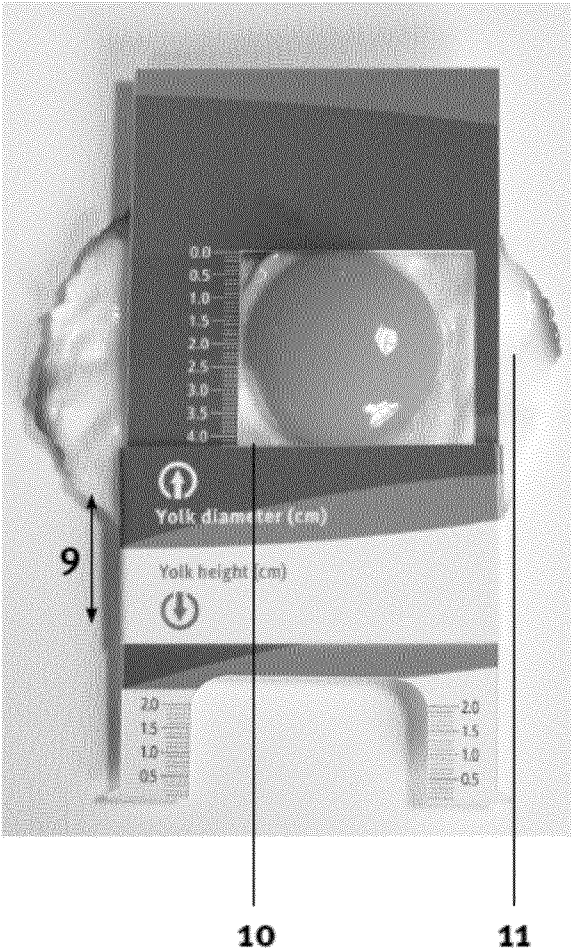
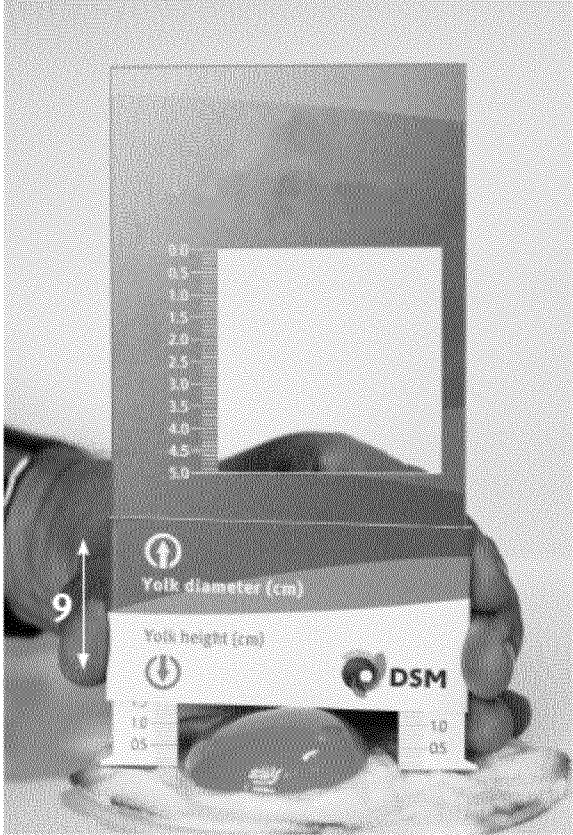


Figure 3b



INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER

INV. G01N33/08 G01B5/02
ADD.

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)

G01N G01B

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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7 497 113 B1 (PATEL AMRATLAL UNKABHAI [LU]) 3 March 2009 (2009-03-03)	1,2,4-12
A	column 2, lines 12-51; figures 1-3 column 3, lines 9-24; figures 6, 7 -----	3
X	US 5 501 019 A (CONCARI GABRIEL E [US] ET AL) 26 March 1996 (1996-03-26)	1,2,4-12
A	column 3, line 20 - column 4, line 8; figure 1 -----	3
X	US 3 381 384 A (SOUZA DAVID W) 7 May 1968 (1968-05-07)	1,2,5-12
A	column 2, lines 12-30; figures 1, 3 column 3, lines 21-32 -----	3,4
A	US 2007/202223 A1 (OREN ELI [IL]) 30 August 2007 (2007-08-30) paragraphs [0101], [0106] -----	1-12
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Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 241 578 A (LUCERNE LIMITED [GB]) 4 September 1991 (1991-09-04) page 8, line 3 - page 9, line 9; figures 7-12 -----	1-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/080474

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