Jan. 3, 1939. H. R. STRONGMAN 2,142,419

EXAMINATION PAPER SCORING DEVICE

Filed Dec. 9, 1936

Fig. 1

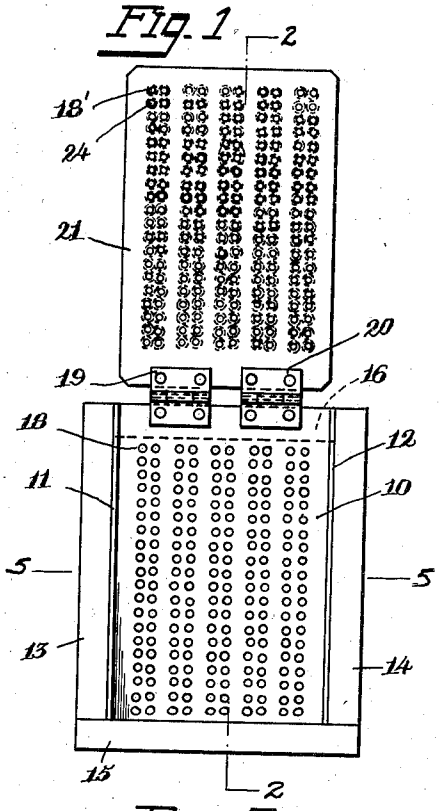


Fig. 2

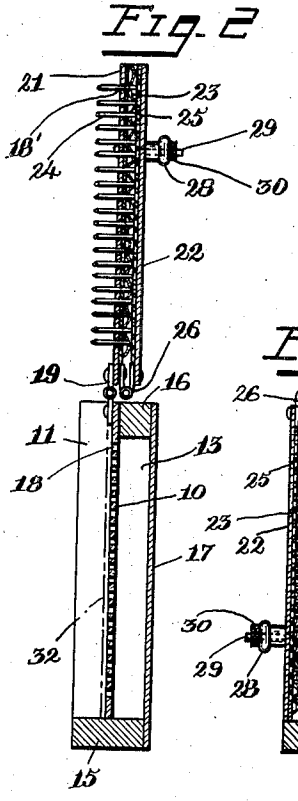


Fig. 4

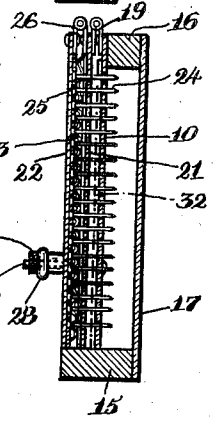


Fig. 3

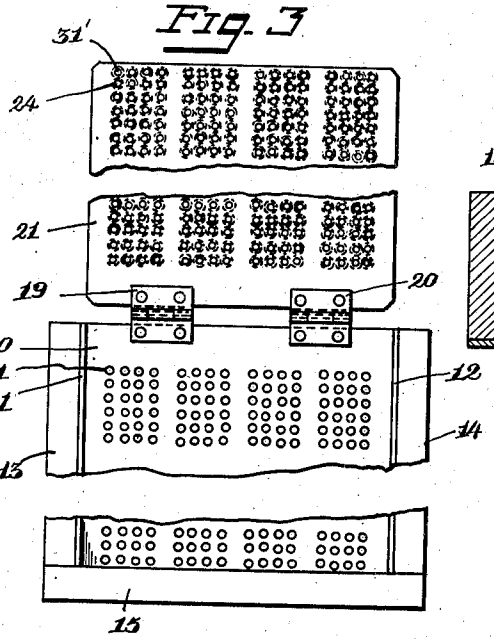
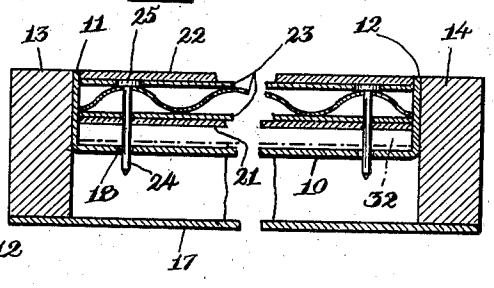


Fig. 5



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EXAMINATION PAPER SCORING DEVICE

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3 Claims. (Cl. 35—48)

This invention relates generally to an examination paper scoring device, and more specifically to a device adapted to correct pupil's examination papers in an efficient and scientific manner, the device being especially adapted for "objective tests", wherein the pupil marks an answer or scoring sheet.

The main object of the invention is the provision of a device of the above nature which aids in quickly correcting the "true-false" or "yes-no" types of questions as well as the "multiple choice" types of questions by means of a mechanical indication of the correct answers.

Another object of the invention is the provision of a device whereby a plurality of examination papers of the same type are corrected by one manipulation rather than by individual correction.

Another object of the invention is to provide a device which is portable and which may be easily applied by an easy arrangement of indicators.

Another object of the invention is to provide a device which encourages the substitution of questions amenable to simple replies and correction in contrast to the submission of the students examined to the so-styled essay type of question.

Another object of the invention is to perfect a device of the above nature which is cheap to manufacture and easy to manipulate.

These objects and other incidental ends and advantages of the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

In accordance with the drawing:

Figure 1 is a top plan view of the device with the cover member thereof extended 180°.

Figure 2 is a cross-sectional view of Figure 1 along the plane 2—2 thereof.

Figure 3 is a foreshortened view similar to Figure 1 showing a different number of perforators and perforations.

Figure 4 is a cross-sectional view of the apparatus similar to Figure 2 with the cover member thereof closed.

Figure 5 is a sectional view of Figure 1 along the plane 5—5 thereof.

In accordance with the invention and in accordance with the preferred form shown in the drawing, the scoring device consists essentially of a portable box construction having a hinged cover member. A metal sheet perforated with columns of holes to receive perforators such as tacks, pegs, pins or rivets is mounted within the box so that when the cover member or metallic housing, having perforators corresponding to the position of the perforations in the metal plate, is closed, the perforators will pass through the corresponding respective openings in the perforated metal plate thereby piercing scoring sheets positioned between the cover and the perforated metal plate.

The scoring device comprises a frame work having side walls 13 and 14 and a lower transverse wall 15. The upper transverse wall 16 is reduced inside of the side walls 13 and 14 to permit a cover member to be hingedly secured thereto as will hereinafter appear. A perforated metal plate 10 is mounted within the frame work extending from the upper surface of reduced wall 16 to form an intermediate partition. The plate 10 is suitably mounted to the frame work by means of side flanges 11 and 12 secured to the inner surfaces of side walls 13 and 14, the metal plate 10 being also secured to the upper surface of wall 16 by means of hinges 19 and 20. The said hinges serve also to secure the cover member to the frame work.

The lower surface of the frame work is provided with a plate or other covering member 17 making the frame work box-like in construction.

Numeral 18 in Figure 1 represents one of the perforations in perforated metal plate 10, the said perforations as shown being disposed in five double vertical columns, each double vertical column having a set of twenty double holes arranged vertically. Numeral 31, in Figure 3 represents one of the perforations of an arrangement wherein there are four parallel vertical columns, each vertical column containing preferably twenty-five lines of holes with four holes on a line. It is of course understood that the arrangement of the perforations in metal plate 10 follows the arrangement of the boxes on the scoring or answer sheets, and that there may be as many differently designed metal plates 10 as there are scoring sheets. The scoring sheets are adapted to lie on metal plate 10 with each printed box superposing a hole therein.

The cover member is hinged to the frame work at the upper surface of transverse wall 16 by means of hinges 19 and 20, as has been mentioned, and is in reality a metallic housing having a plurality of perforators projecting from the under surface thereof. The housing comprises an inner plate 21, an outer plate 22 and an intermediate gasket or section of corrugated board 23. The inner plate member 21 is provided with a series of perforations disposed in

the same arrangement as the perforations 18 or 31 of perforated metal plate 10. These perforations are indicated by numerals 18' and 31'. Freely extending through the perforations 18' and 31' are perforators or indicators, the latter being in the form of pegs, tacks, pins and the like, and having heads 25. The gasket or section of corrugated board 23 has a series of punctures therein similar in position to perforations 18' or 31', so that the perforators 24 may be inserted through the said punctures and project from gasket 23 to penetrate perforations 18' or 31' in the inner plate member 21. The heads 25 of perforators 24 rest on the outer surface of gasket 23. Outer plate 22 serves as a compression element against the heads 25 of perforators 24, the gasket 23 preventing the perforators 24 from being displaced in 18' or 31'. The outer plate 22 and inner plate 21 are hinged together by a set of hinges as indicated by numeral 26, the said hinges being secured to the opposing faces of the said inner and outer plates 21 and 22. A handle and bolt attachment is provided to secure plates 21 and 22 and gasket 23 together. Bolt 29, extending from the outer surface of inner plate 21 penetrates gasket 23 and projects beyond the outer surface of outer plate 22. The end of said bolt is threaded for a nut 30 to maintain a handle or knob on the projecting portion of bolt 29.

When the knob 28 is removed, the inner plate 21 may be separated from the outer plate 22 on hinges 26. This separation frees inner plate 21 from perforators 24, leaving the said perforators 24 attached to gasket 23. Gasket 23 may be removed with all the perforators 24 therein for purposes of rearrangement to conform with the correctness of the answers to be marked on the score sheets 32.

In the "yes-no" type of questions, the perforation for which is illustrated in Figure 1, perforators 24 are arranged in pairs in vertical columns for 100 questions, so that one perforator remains in each pair to perforate the correct or incorrect responses, at the discretion of the marker. The answer is crossed or checked by the pupil on his marking sheet. For the construction shown in Figure 3, the perforators 24 are arranged so that one perforator remains in each set of holes 31', the said holes 31' corresponding to the orifices 31 of perforated metal plate 10, as shown in Figure 3. The perforations 18 and 31 of the metal plate 10 are larger than the perforators 24, so that the said perforations may receive the points of the perforators. The perforators 24 are properly set according to the correctness of the responses, as aforesaid, and will penetrate the test papers placed above perforated metal plate 10 upon the closing of the cover member. The papers 32 are placed against the hinges 19 and 20 to insure the accuracy of position thereof relative to the perforated metal plate 10. The score sheets 32 are provided with box enclosures which are arranged to superpose the perforations 18 or 31, the said enclosures being numbered to identify them with the number of each question asked. The pupil inserts a check in the enclosures to indicate the correct answers.

The cover member of the box has sufficient weight so that when closed the perforators 24 may pierce a plurality of score sheets answering the same examination questions.

The pupil's scores may be derived by inspection of the number of answers marked by the pupil which have no perforations, such answers being incorrect. It is assumed that there will be a fewer number of incorrect answers than correct ones. In this way, time is reduced in ascertaining the pupil's scores.

It is understood, of course, that the perforations 18 and 31 may be varied in number and in formation corresponding to the number and formation of the score sheets. However, the variation in the arrangement and number of perforations 18 and 31 is accompanied by a similar variation in the perforations 18' and 31' of the cover member.

I wish it understood that minor changes in the material of the scoring device in the size, attachment and integration of the several parts may be resorted to without departing from the spirit of the invention and without departing from the scope of the appended claims.

I claim:

1. In apparatus for grading answers simultaneously on a plurality of scoring or answer sheets, the latter having printed thereon a predetermined arrangement of box enclosures corresponding to examination questions, a perforated plate member having perforations in the same spaced relationship as the box enclosures printed on the scoring sheets and on which perforated plate member the said scoring sheets lie with the box enclosures registering with the said perforations, mounting means for the said perforated plate member, a cover member for the perforated plate member having a separable inner and outer plate and an intermediate gasket member a plurality of perforating members mounted in the gasket member and penetrating the inner plate and being adapted to register with the perforations of the perforated plate member and being arranged in a predetermined spaced relationship whereby upon engagement with the perforated plate member the box enclosures of the scoring sheets having the correct answers checked or crossed will be pierced.

2. In an apparatus as described in claim 1 wherein the cover member is comprised of an inner and outer plate member, a gasket member between the said plate members, means to pivotally connect the plate and gasket members, means to pivotally connect the cover member to the mounting means for the perforated plate member, and a plurality of removable perforating members penetrating the inner plate member and extending from the outer surface of the gasket member.

3. In an apparatus as described in claim 1 wherein the cover member is comprised of an inner and outer plate member, a gasket member between the said plate members, means to connect the plate and gasket members, means to connect the cover member to the mounting means for the perforated plate member, and a plurality of removable perforating members penetrating the inner plate member and extending from the outer surfaces of the gasket member.

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