Dec. 24, 1968 R. G. CHUY ETAL 3,417,490

FLASH CARD APPARATUS

Filed March 30, 1967 4 Sheets-Sheet 1

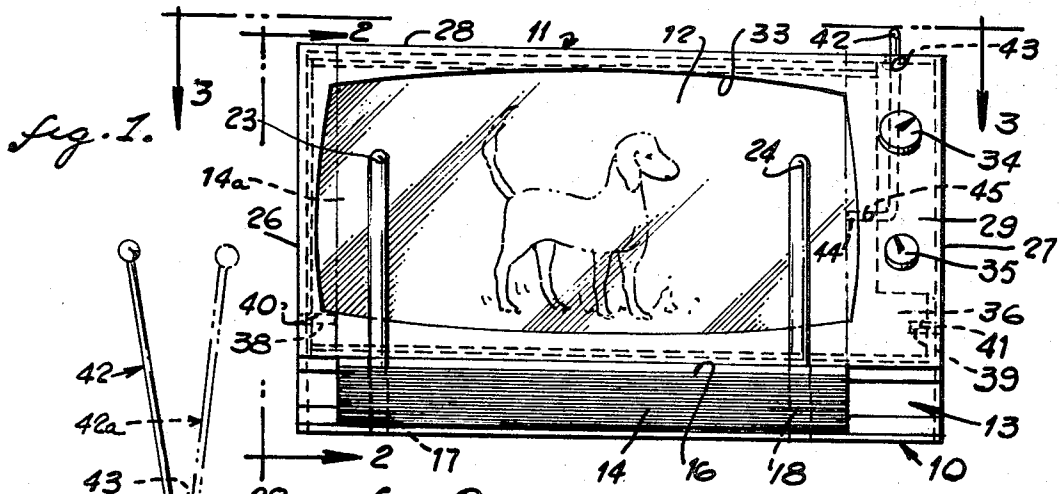
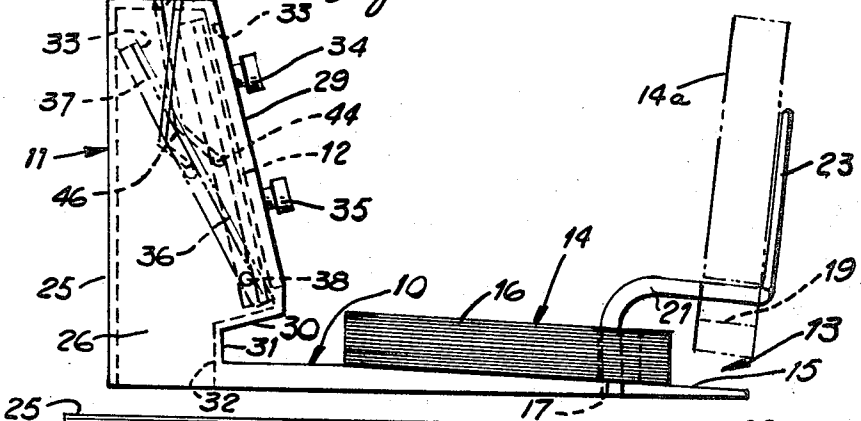


fig. 1.

fig. 2.



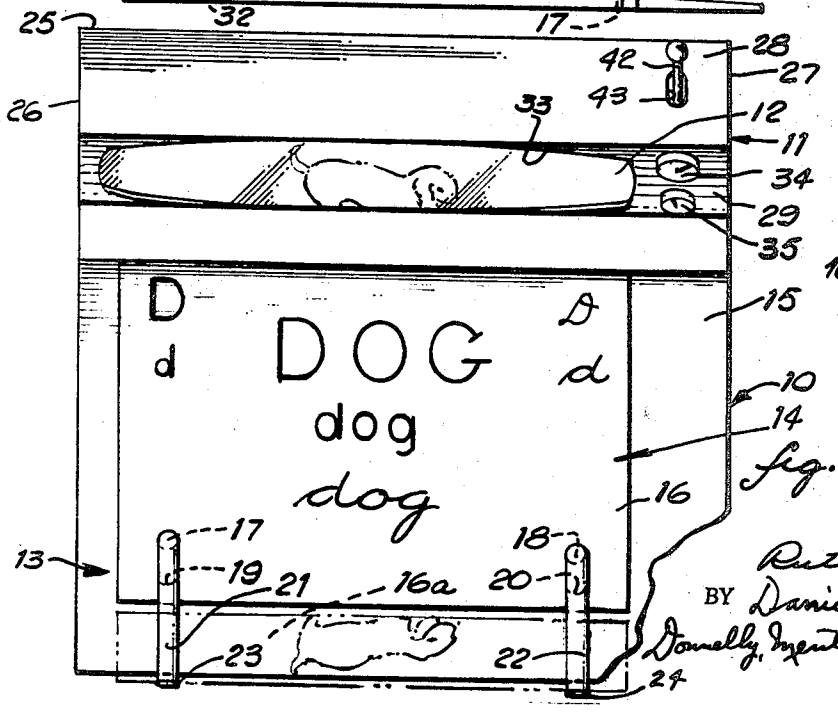


fig. 3.

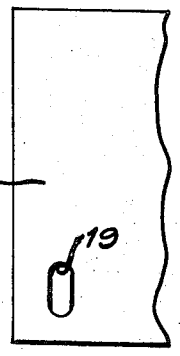


fig. 4.

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FLASH CARD APPARATUS

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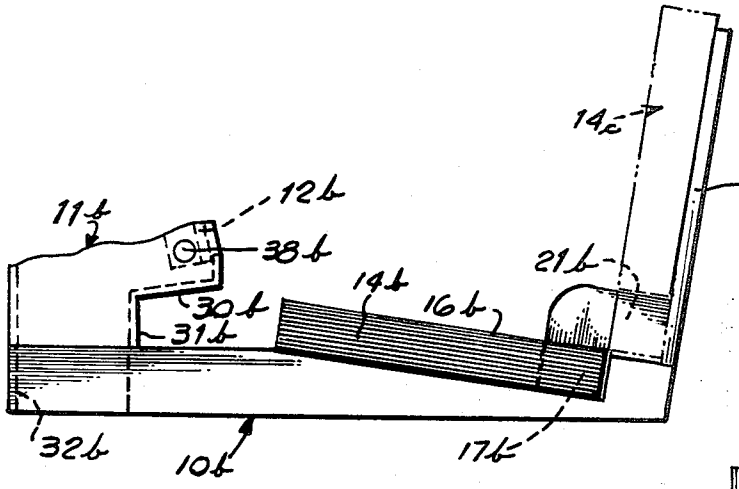

Fig. 6.

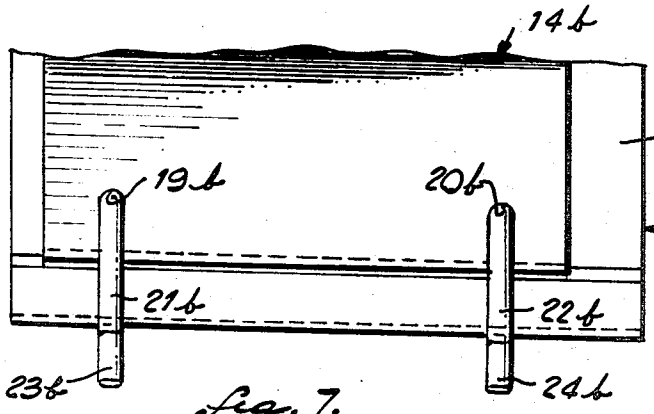

Fig. 7.

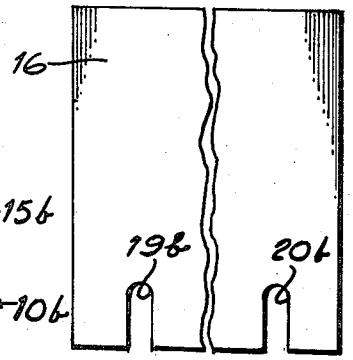

Fig. 8.

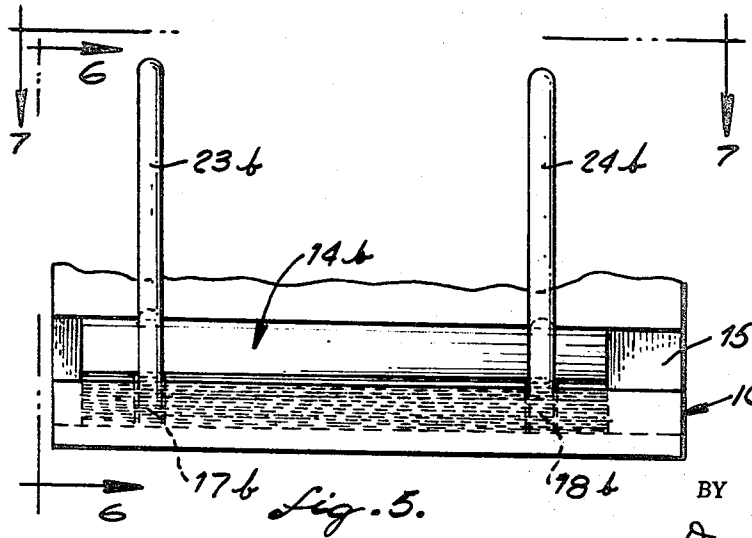

Fig. 5.

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FLASH CARD APPARATUS

Filed March 30, 1967 4 Sheets-Sheet 3

fig. 10.

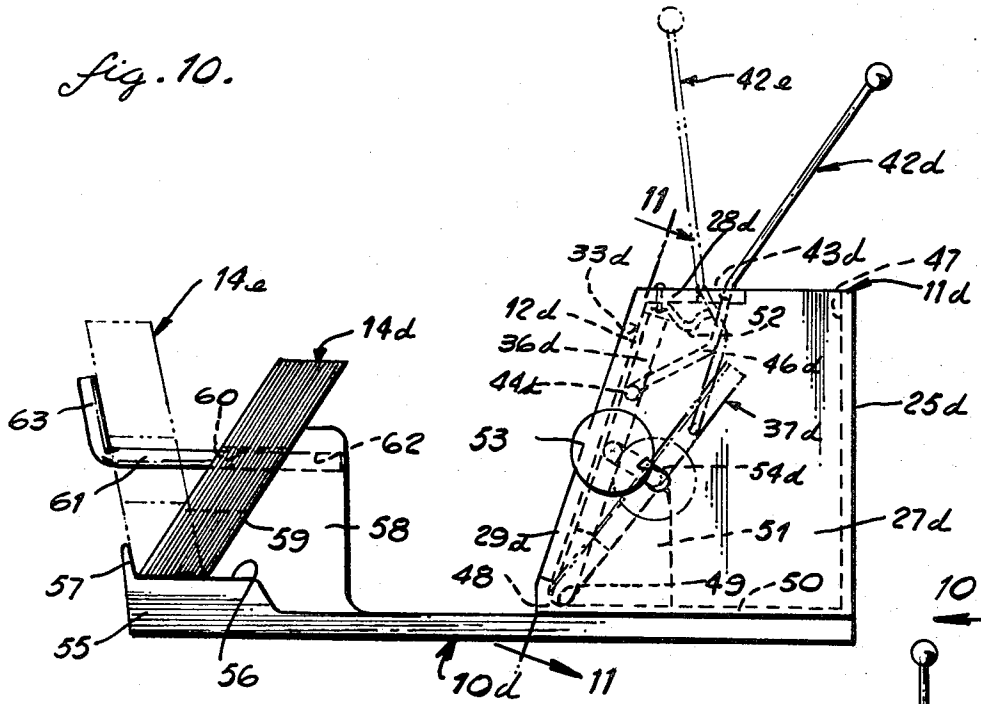
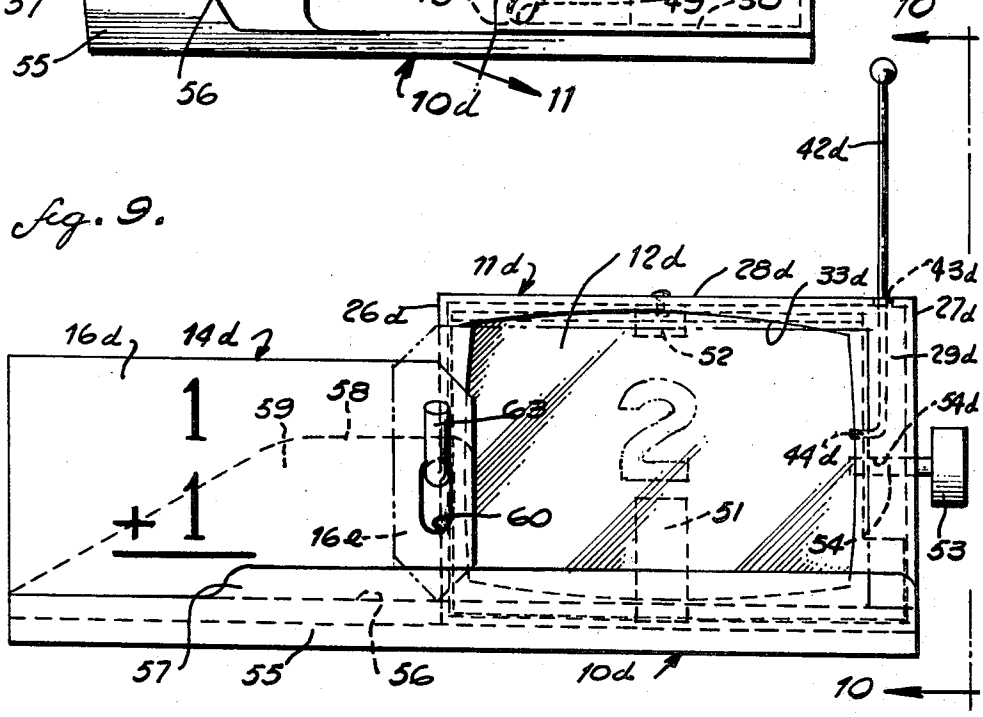


fig. 9.



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FLASH CARD APPARATUS

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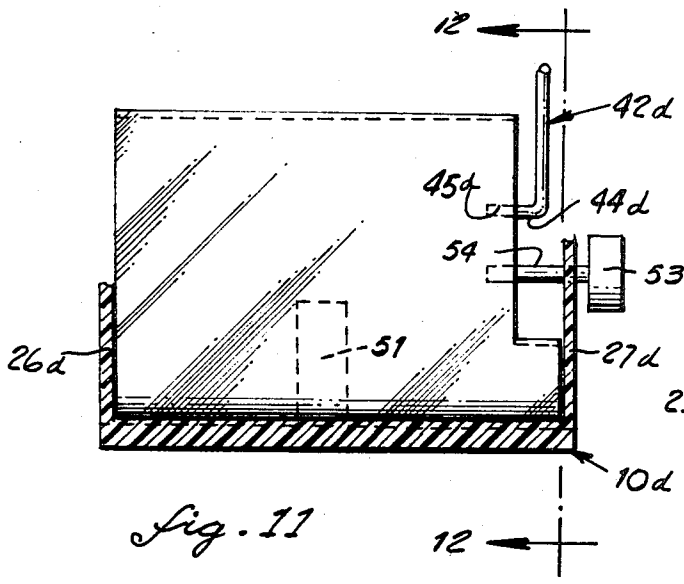

Fig. 11

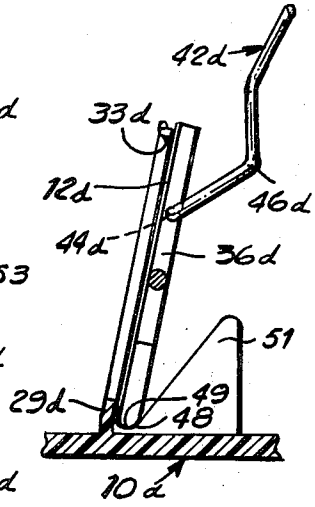

Fig. 12.

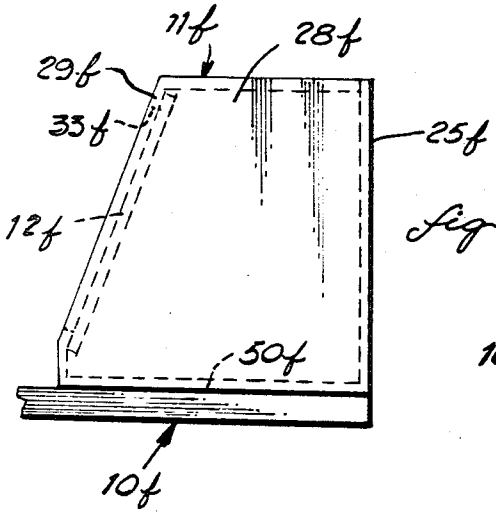

Fig. 13.

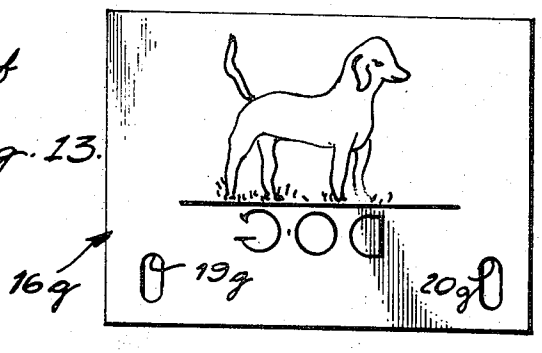

Fig. 14.

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3,417,490

FLASH CARD APPARATUS

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Filed Mar. 30, 1967, Ser. No. 627,267
15 Claims. (Cl. 35—9)

ABSTRACT OF THE DISCLOSURE

A flash card device having a set of flash cards pivotally mounted on a platform. The flash cards have problems, questions, words, and the like on the front faces thereof, and solutions, answers, and pictures corresponding to said words on the rear faces thereof. The flash cards are mounted at one end of a platform in a position spaced apart from an inclined mirror. The mirror may be fixed or pivotally mounted. The flash cards are movable from an inoperative position on the platform, or from a position at the side of the platform, to an inclined position on the platform in front of the inclined mirror so that when the flash cards are in an operative position the flash cards and mirror are disposed at diverging angles relative to each other.

Summary of the invention

This invention relates generally to flash card devices for teaching mathematics, names of flowers, names of animals, names of persons, and so forth, and more particularly to a flash card device which employs an inclined mirror and a set of inclined flash cards, and wherein the mirror and the flash cards are disposed at diverging angles relative to each other when the cards are in the operative position.

It is an important object of the present invention to provide a flash card device which mounts the flash cards in an inclined position in front of an inclined mirror so that a viewer may see the flash cards in an easier manner than heretofore possible with the prior art flash card devices. The mirror may be inclined in a fixed position or it may be mounted on a pivotal means whereby it may be tilted backwardly to an inoperative position so that the flash cards are not observable.

It is another object of the present invention to provide a flash card device which employs a means for mounting the flash cards on a stand in a position in front of an inclined mirror for viewing the rear faces of the cards when they are moved to a vertically inclined position so that a problem or other material appearing on the front faces of the flash cards and the answers on the rear faces thereof are quickly and easily observable as compared to the vertical mounting employed in the prior art flash card game devices.

It is a further object of the present invention to provide an improved means for mounting a set of flash cards on a stand in front of an inclined mirror by providing slotted openings in the cards for mounting the same over guide rods and about which the flash cards are flipped to an inclined upright position in front of the inclined mirror.

It is still another object of this invention to provide a flash card device which employs a stand and means on said stand for supporting a set of flash cards before an inclined mirror, and wherein the flash cards may be provided on the front faces thereof with the names of a flower, animal, person, question, problem, or the like, and the rear face of the preceding card is provided with a corresponding picture, solution, answer, or the like, and which is reflected simultaneously as one is reading the word or words on the front face of the succeeding or last card. For example, the word "dog" may appear on one flash card while the picture of a dog is being reflected from

a preceding card which is disposed in an inclined position in front of an inclined mirror. Alternately, the front face of said flash card may be blank and the picture and the corresponding words may be reflected from the rear face of each card, so that the rear face of the flash card may be read in the mirror and provide the effect of a silent movie on a TV screen.

It is still another object of this invention to provide a compact and simplified means for pivoting the viewing mirror of the flash card device within its housing from a first inoperative position to a second or operative viewing position.

Other objects, features and advantages of this invention will be apparent from the following detailed description, appended claims, and the accompanying drawings.

In the drawings:

FIG. 1 is a front elevational view of a flash card device made in accordance with the principles of the present invention;

FIG. 2 is a left side elevational view of the flash card device structure illustrated in FIG. 1, taken along the line **2—2** thereof, and looking in the direction of the arrows:

FIG. 3 is a top plan view of the flash card device structure illustrated in FIG. 2, with parts broken away, taken along the line **3—3** thereof, and looking in the direction of the arrows;

FIG. 4 is a fragmentary plan view of a flash card employed in the flash card device structure shown in FIG. 1;

FIG. 5 is a fragmentary, front elevational view of a flash card device of the type shown in FIG. 1, but showing a modification of the flash card supporting means;

FIG. 6 is a fragmentary, left side elevational view of the flash card supporting means shown in FIG. 5, taken along the line **6—6** thereof, and looking in the direction of the arrows;

FIG. 7 is a fragmentary, top plan view of the flash card holding structure shown in FIG. 5, taken along the line **7—7** thereof, and looking in the direction of the arrows;

FIG. 8 is a broken, plan view of a flash card employed with the flash card supporting structure illustrated in FIG. 5;

FIG. 9 is a front elevational view of a modified flash card device, showing the flash cards mounted to the side of a mirror contained in a housing in an inclined position;

FIG. 10 is a right side elevational view of the structure illustrated in FIG. 9, taken along the line **10—10** thereof, and looking in the direction of the arrows;

FIG. 11 is a fragmentary, elevational sectional view of the flash card device structure illustrated in FIG. 10, taken along the line **11—11** thereof, and looking in the direction of the arrows;

FIG. 12 is a fragmentary, elevational sectional view of the flash card device structure illustrated in FIG. 11, taken along the line **12—12** thereof, and looking in the direction of the arrows;

FIG. 13 is a fragmentary, side elevational view of a modified mirror housing for the flash card device of the present invention and showing a stationary mirror mounted therein; and,

FIG. 14 is a plan view of the rear face of a flash card having all of the educational aid subject matter on the rear face thereof.

Referring now to the drawings and in particular to FIGS. 1 through 4, the numeral **10** generally designates an elongated platform on which is carried a mirror housing, generally indicated by the numeral **11**, at the rear end thereof. The mirror housing **11** contains a pivotally mounted mirror **12**. A flash card mounting means, generally indicated by the numeral **13**, is formed on the front end of the platform **10**. The flash card mounting means **13**

is adapted to operatively support a set of flash cards, generally indicated by the numeral **14**, with each of the individual cards being designated by the numeral **16**.

The elongated platform **10** may be made from any suitable material, as for example, a plastic material, and it is formed in the shape of an elongated plate with a forwardly and downwardly sloping flash card seat or rest position on the front end thereof, indicated by the numeral **15**. The set of flash cards **14** is seated on the sloping card rest position **15** with the lower ends of the cards movably mounted on a pair of vertical, laterally spaced apart retaining rods **17** and **18** which are secured to the platform **10** by any suitable means, as by being pressed into suitable holes formed in the platform **10**. Ase best seen in FIG. **3**, the flash card retaining rods **17** and **18** are extended through the elongated slots **19** and **20**, respectively, which are formed through each of the flash cards **16** at the lower ends thereof and adjacent the lower corners thereof.

As shown in FIG. 2, the upper end of the flash card retaining rod **17** is integrally formed with the inner end of a second rod **21** which slopes forwardly and downwardly at an acute angle relative to the horizontal bottom surface of the platform **10**. As shown in FIG. 2, the forward end of the downwardly inclined rod **21** is integral with the lower end of a vertically disposed rod **23** which is inclined forwardly from a vertical plane. It will be seen that the two rods **21** and **23** form an L-shaped card support member for supporting the set of flash cards **14** in a forwardly inclined position indicated by the broken line set of cards **14***a*. As shown in FIGS 3, the flash card retaining rod **18** is also provided with a forwardly inclined L-shaped flash card support member formed by the rods **22** and **24**.

It will be seen in FIG. 2 that the flash cards **16** will be disposed at at acute angle relative to the mirror **12** when the flash cards are in the vertically inclined viewing position **14***a*. It will also be seen from an inspection of FIG. 3 that the flash cards **16** illustrated therein are each provided with a figure, such as a dog, on the rear side thereof which is reflected into the mirror **12** and with the name of the figure on the front side of the card, as in this case the word "DOG" spelled in capital printed letters, in small printed letters, and in written small letters. It will be obvious that other information may be printed on the front sides of the cards so that the viewer can see this information, and that corresponding information may be printed on the back of the cards. For example, problems may be mounted on the front sides of the cards **16** and the answers on the rear sides of the cards **16**. It will be seen that because the flash cards are disposed on an inclined plane relative to the mirror **12**, the material on the front side of the cards can be viewed easily while it is also possible to look over the heads of the raised cards shown in phantom in **14***a* to see in the mirror **12** the information written on the back of the cards. This feature is not obvious from FIG. 1 because of the particular disposition of this view, but it is obvious from an inspection of FIG. 2.

As shown in FIGS. 1 and 2, the mirror housing **11** is formed as a simulated television set which comprises a rear wall and a pair of integral side walls **26** and **27** (FIG. 3). The mirror housing **11** further includes an integral horizontal top end wall **28** and an integral inclined front side wall **29** which slopes downwardly and forwardly. The front wall **29** is integral with the side walls **26** and **27**. The lower end of the front wall **29** is integral with an inwardly and downwardly sloping intermediate wall portion **30** which terminates at the vertical lower end wall **31**. The wall **31** is integral with the base **10**. As shown in FIG. 2, the housing **11** is provided with an opening **32** on the lower end thereof for the insertion and mounting of the mirror **12**. The front wall **29** is provided with the opening **33** which is shaped like a television tube and through which is viewed the mirror **12**. As shown in FIGS. 1, 2 and 3, the mirror housing **11** is provided with simulated television operating knobs **34** and **35**.

As shown in FIG. 2, the mirror **12** is mounted on a suitable frame **36** for pivoting the mirror **12** between an inclined operative position against the inner face of the front wall **29** and a retracted inoperative inclined position **37**. When the mirror **12** is in the inoperative position **37** it is prevented from rotating rearwardly any further by the rear wall **25** which acts as a stop or limiting means for the mirror. As shown in FIG. 1, the mirror frame **36** is provided with the journals **38** and **39** which are disposed at the lower front corners of the mirror frame and which extend horizontally outward into rotatable engagement with the bores **40** and **41**, respectively, formed in the housing side walls **26** and **27**, respectively.

As shown in FIG. 2, the mirror **12** is rotated between the operative and inoperative positions by a suitable means which comprises a simulated television antenna rod **42**. As best seen in FIG. 3, the mirror operating rod **42** extends upwardly through the slot **43** in the housing top end wall **25**. As shown in FIG. 1, the lower end of the operating rod **42** is bent sidewardly inward, as indicated by the numeral **44**. The inwardly bent lower end of the rod **42** is rotatably mounted in the hole **45** formed in the side of the miror frame **36**. As shown in FIG. 2, the operating rod **42** is provided with a bend **46** at the lower end thereof, so as to have the lower end of the rod extended downwardly and forwardly.

It will be seen that when the rod **42** is moved rearwardly in the slot **43** to the solid line position shown in FIG. 2, that it will engage the rear end of the slot **43**, and continued rearward movement will pivot the rod **42** about the rear end of the slot **43** and the lower end of the rod **42** will cam the mirror **12** to the operative position against the inside of the housing front wall **29**. When the rod **42** is moved forwardly to the broken line position **42***a* of FIG. 2, it will engage the front end of the slot **43**, and continued movement will cam the mirror **12** backwardly to the retracted or inoperative position against the housing rear wall **25**. It will be seen that the inclined operative position of the mirror **12** is disposed at an acute angle relative to the position **14***a* of the flash cards when they are disposed in the vertically inclined position on the flash card holding support means.

FIGS. 5, 6, 7 and 8 illustrate a modified flash card mounting means. The parts of the embodiment of FIGS. 5 through 8, which are the same as the first embodiment of FIGS. 1 through 4, have been marked with the same reference numerals followed by the small letter *b*. The only difference in the embodiment of FIGS. 5 through 8 is that the rod type support means has been replaced by a rail type support means. This is, the rods **17***b*, **18***b*, and **21***b* through **24***b*, respectively. The last mentioned rails perform the same function as the previously mentioned rods, and they are disposed at an abtuse angle relative to the mirror **12***b*. In order to slide along the rail portions **16***b* and **17***b* and **21***b* and **22***b*, the slots **19***b* and **20***b* in the flash card **16***b* have been opened at the bottom end of the cards, as shown in FIG. 8. The numerical **14***c* in FIG. 6 illustrates the vertically inclined position of the flash cards during a viewing operation. The cards **16***b* would be made and used in the same manner as the flash cards **16** employed for the embodiment of FIGS. 1 through 4.

FIGS. 9, 10, 11 and 12 illustrate a further modified flash card device made in accordance with the principles of the invention and in which the flash card mounting means is slightly modified and the means for rotating the viewing mirror is slightly modified.

The parts of the embodiment of FIGS. 9 through 12 which are the same as the embodiment of FIGS. 1 through 4 have been marked with the same reference numerals followed by the small letter *d*.

As shown in FIG. 10, the upper end of the mirror housing **11***d* is provided with an opening **47** for insertion of the mirror **12***d* into the mirror housing. The mirror **12***d* is adapted to be moved forwardly and backwardly between

the operative inclined position against the inner face of the front wall **29***d* in the same manner as in the first embodiment of FIGS. 1 through 4. However, the mirror frame **36***d* is not pivoted on any journal means on the side walls of the mirror housing **11***d*. Instead, the lower end of the mirror frame **36***d* is rounded as indicated by the numeral **48** in FIG. 10, and this rounded lower end of the mirror frame is adapted to be rotatably seated in the rounded groove **49** which is formed in the bottom wall **50** of the mirror housing **11***d*, adjacent the inner lower end of the front wall **29***d*. Accordingly, the mirror **12***d* will be rotated between the inclined operative position against the inner face of the front wall **29***d* and the dotted line inoperative position **37***d* (FIG. 10) when the antenna operating rod **42***d* is moved between the solid line position of FIG. 10 and the broken line position **42***e* of FIG. 10.

As shown in FIGS. 9 and 10, the mirror housing **11***d* includes a stop member **51** having a front angular face on which the mirror frame **36***d* is supported in a rearwardly sloping inoperative position **37***d*. The mirror **12***d* is held against the inner side of the front wall **29***d*, so that it can be viewed through the substantially rectangular opening **33***d*, by the spring **52** which is secured to the top wall **28***d* by any suitable means, as by being riveted in place.

The mirror **12***d* may also be rotated between the operative and inoperative positions by the knob **53** which is connected to the mirror frame **36***d* by the fixed shaft **54**. The shaft **54** is slidably mounted in the elongated slot **54***d* formed through the right side wall **27***d* of the mirror housing lid.

The modified flash card mounting means of the embodiment of FIGS. 9 and 10 includes an outwardly extended platform extension **55** which has a laterally extended surface **56** that is elevated above the upper surface of the paltform **10***d*. The front edge of the card supporting surface **56** is bounded by the vertical flange **57** which has a forwardly and outwardly inclined inner face. As shown in FIGS. 9 and 10, a raised or upwardly extended card support member **58** is formed on the platform extension **55** on the left side of the platform **10***d* so as not to obstruct the frontal view of the mirror **12***d*. The front face of the support member **58** has a forwardly and downwardly sloping surface **59** which is adapted to support a set of flash cards **14***d* in a position awaiting their turn to be flipped or moved in front of the viewing mirror **12***d*. Each of the cards **16***d* of the set of flash cards **14***d* is provided on their right side with a vertically extended slot **60** for mounting the flash cards on a horizontal, forwardly extended rod **61** which is disposed on a plane that passes through the left side of the mirror housing **11***d*. The rear end of the rod **61** is secured in a hole **62** in the upper end of the card support member **58**. Integrally formed on the front end of the horizontal rod **61** is a vertically disposed, and forwardly and outwardly inclined rod **63**.

As shown in FIG. 9, the set of flash cards **14***d* is formed slightly different from the flash cards used with the first embodiment. The flash cards **16***d* are provided with educational aid subject matter on the front and rear faces thereof in the following described manner. The front face of the first flash card in the pack **14***d* is blank. However, on the rear face of the first flash card would be the answer or corresponding information to the educational aid subject matter set forth on the front face of the second flash card. As shown in FIG. 9, the second flash card is provided on the front face thereof with a mathematical addition problem for showing the addition **1** plus **1**. The answer to the mathematical problem set forth on the front face of the No. **2** card **16***d* is shown on the back face of the preceding No. **1** card **16***d* which has been rotated clockwise into a position in front of the mirror **12***d* so as to show the answer **2** in the mirror **12***d*. It will be seen from an inspection of FIG. 10, that the flash cards **16***d* are disposed at an upwardly and inwardly sloping angle at the left side of the flash card device for viewing the first question or problem, and at an upwardly and forwardly inclined angle when the flash cards have been rotated to a viewing position in front of the mirror **12***d* so as to expose the answer to the question or problem or the like.

FIG. 13 illustrates a modified mirror housing **11***f* in which the mirror is mounted in a fixed, inclined, operative position. The parts of the mirror housing **11***f* which are the same as the mirror housing **11** of the first embodiment of FIGS. 1 through 4 have been marked with the same reference numerals followed by the small letter *f*. The mirror **12***f* would be cemented in place on the inside of the front wall **29***f* so that it may be viewed through the rectangular opening **33***f*. It will be understood, however, that the inclined mirror **12***f* of the embodiment of FIG. 13 would provide the same advantageous function as the rotatable inclined mirrors of the other described embodiments. The first described embodiments with the pivotal mirror, which is movable by the TV antenna, may be of greater interest to children in stimulating them to use the flash card device.

FIG. 14 illustrates a modified flash card **16***g* wherein all of the educational aid subject matter is shown on the rear face of the card **16***g* so that the information, including questions and answers and so forth, may all be seen in the viewing mirror **12** in the same manner as watching a silent movie. The card **16***g* shown in FIG. 4 is usable with the embodiments of FIGS. 1 through 4, and 5 through 8, but it will be understood that the same procedure could be followed for the cards used in the embodiment of FIGS. 9 and 10 which are flipped sidewise.

In the following claims, the information shown on the front and rear faces of the cards has been described as educational aid subject matter, and this term is used to cover or include questions, answers, problems, pictures, names for the pictures and so forth.

While it will be apparent that the preferred embodiments of the invention herein disclosed are well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. A device of the class described, comprising:

(a) a platform;

(b) a housing on the rear end of said platform;

(c) a mirror mounted in said housing in an operative inclined position so that the mirror slopes upwardly and rearwardly relative to the front end of the platform;

(d) a set of flash cards carrying educational aid subject matter;

(e) a flash card mounting means on the front end of the platform including means for detaining said set of the platform including means for retaining said set ror, and means for holding a flash card moved from said unobservable position in an inclined observable position spaced forwardly from said mirror, so that when the flash card is in said inclined observable position the rear face of said flash card is viewable in said mirror; and,

(f) said last mentioned means for holding a flash card in an inclined observable position is adapted to hold the card at a forwardly and upwardly inclined angle so that the rear face of a flashcard viewable in said mirror is disposed at an acute angle relative to said mirror.

2. A device of the class described in claim **1**, wherein:

(a) said mirror is fixed in said housing in said inclined position.

3. A device of the class described in claim **1**, wherein:

(a) said mirror is pivotally mounted in said housing and is movable between said inclined operative position and a retracted inoperative position.

4. A device of the class described in claim **3**, including:

(a) means for moving said pivotally mounted mirror between said operative and inoperative positions.

5. A device of the class described in claim 4, wherein:

(a) said means for moving said pivotally mounted mirror between said operative and inoperative positions includes:

(1) means on the side of said mirror for journaling said mirror on said housing for rotatable movement between said positions,

(2) a control rod having one end connected to said mirror and the other end extended outwardly of said housing for manual movement of the rod to mirror between said positions.

6. A device of the class described in claim 5, wherein:

(a) said housing is shaped as a simulated television set; and,

(b) said control rod is a simulated television antenna rod.

7. A device of the class described in claim 4, wherein:

(a) said means for moving said pivotally mounted mirror between said operative and inoperative positions includes,

(1) a mirror supporting frame having a rounded lower end, and said housing is provided with a rounded groove in which is seated the rounded lower end of said mirror frame; and

(2) a control rod having one end connected to said mirror frame and the other end extended outwardly of said housing for manual movement of the rod to move the mirror between said positions.

8. A device of the class described in claim 7, wherein:

(a) said means for moving said mirror between said position further includes a manual control knob connected to said mirror frame.

9. A device of the class described in claim 7, wherein:

(a) said housing is provided with means for releasably holding said mirror in said inclined operative position.

10. A device of the class described in claim 9, wherein:

(a) said releasable mirror holding means comprises a spring means.

11. A device of the class described in claim 1, wherein:

(a) said educational aid subject matter is shown on only the rear faces of the flash cards.

12. A device of the class described in claim 1, wherein:

(a) some of said educational aid subject matter is shown on the front faces of the flash cards and related educational aid subject matter is shown on the rear faces of the flash cards.

13. A device of the class described in claim 1, wherein:

(a) some of said educational aid subject matter is shown on the front faces of the flash cards and related educational aid subject matter is shown on the rear faces of the preceding flash cards.

14. A device of the class described in claim 13, wherein:

(a) said means for retaining said flash cards in a position unobservable in said mirror includes means for pivotally mounting the set of flash cards on one side of said platform so that the flash cards may be rotated into position in front of said mirror to said inclined observable position.

15. A device of the class described in claim 1, wherein:

(a) said means for retaining said flash cards in a position unobservable in said mirror includes means for pivotally mounting the set of flash cards on the platform in front of the mirror so that the flash cards may be rotated into position in front of said mirror to said inclined observable position.

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U.S. Cl. X.R.

35—31

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,417,490 December 24, 1968

Ruth G. Chuy et al.

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 14, "Ase" should read -- As --; line 35, "at", second occurrence, should read -- an --. Column 4, line 53, "abtuse" should read -- obtuse --; line 57, "numerial" should read -- numeral --. Column 6, line 54, cancel "of the platform including means for detaining said set"; line 55, after "set" insert -- of flash cards in a position unobservable in said mir- --. Column 7, line 7, "side" should read -- sides --; line 13, after "to" insert -- move the --; line 34, "position" should read -- positions --.

Signed and sealed this 17th day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

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Commissioner of Patents