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Jacoby et al.

[11] **3,780,458**

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[54] **PORTABLE VISUAL-AID OR DISPLAY DEVICE**

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[52] **U.S. Cl.** **40/31**, 40/87

[51] **Int. Cl.** **G09f 11/29**

[58] **Field of Search** 40/31, 87, 88; 242/67.3, 67.4, 188

[56] **References Cited**

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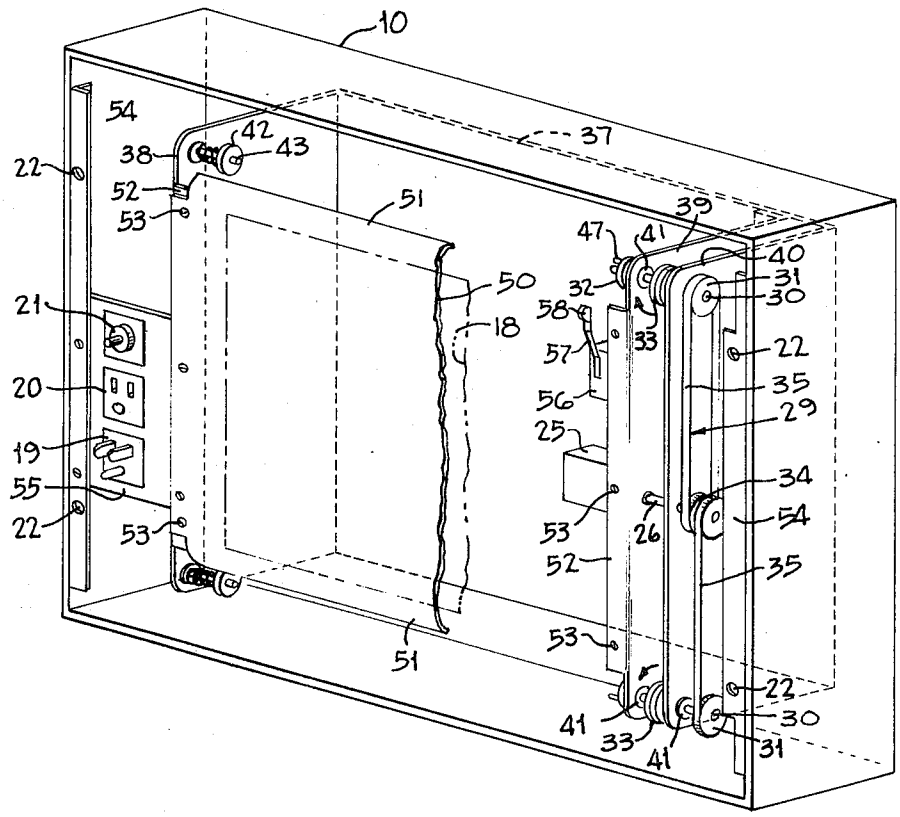
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[57] **ABSTRACT**

A rectangular portable carrying and display case of the attache type, adapted to stand vertically, is provided with a fully detachable front cover which is attached at the rear during use. At the front of the case, with the cover removed, a picture frame cover plate provides a viewing opening for observing visual-aid or display material in the form of a strip of paper or the like made up of individual elements or frame units connected end-to-end in a reel which is passed across the framed opening between two spaced rollers to display the information carried by each unit. Motor drive means with a hand-held control switch, and including overrunning clutches and belt drive for each roller, is connected therewith in a manner to wind the reel from one roller to the other in a forward direction past the viewing opening or to rewind it in the opposite direction.

2 Claims, 7 Drawing Figures



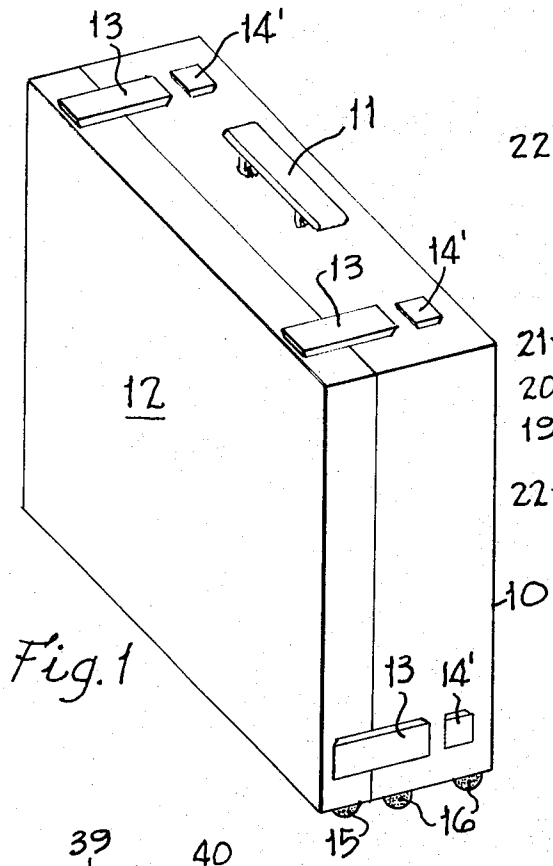


Fig. 1

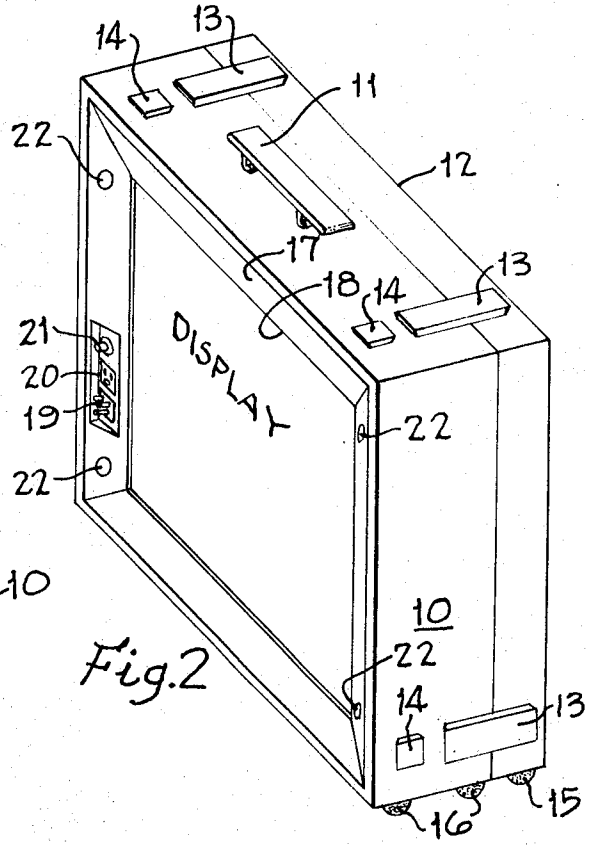


Fig. 2

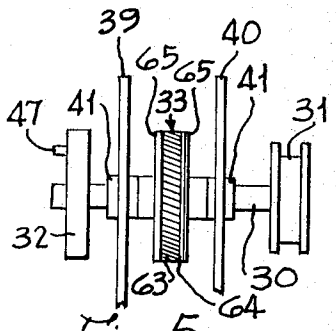


Fig. 5

Fig. 7

Fig. 6

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Fig. 3

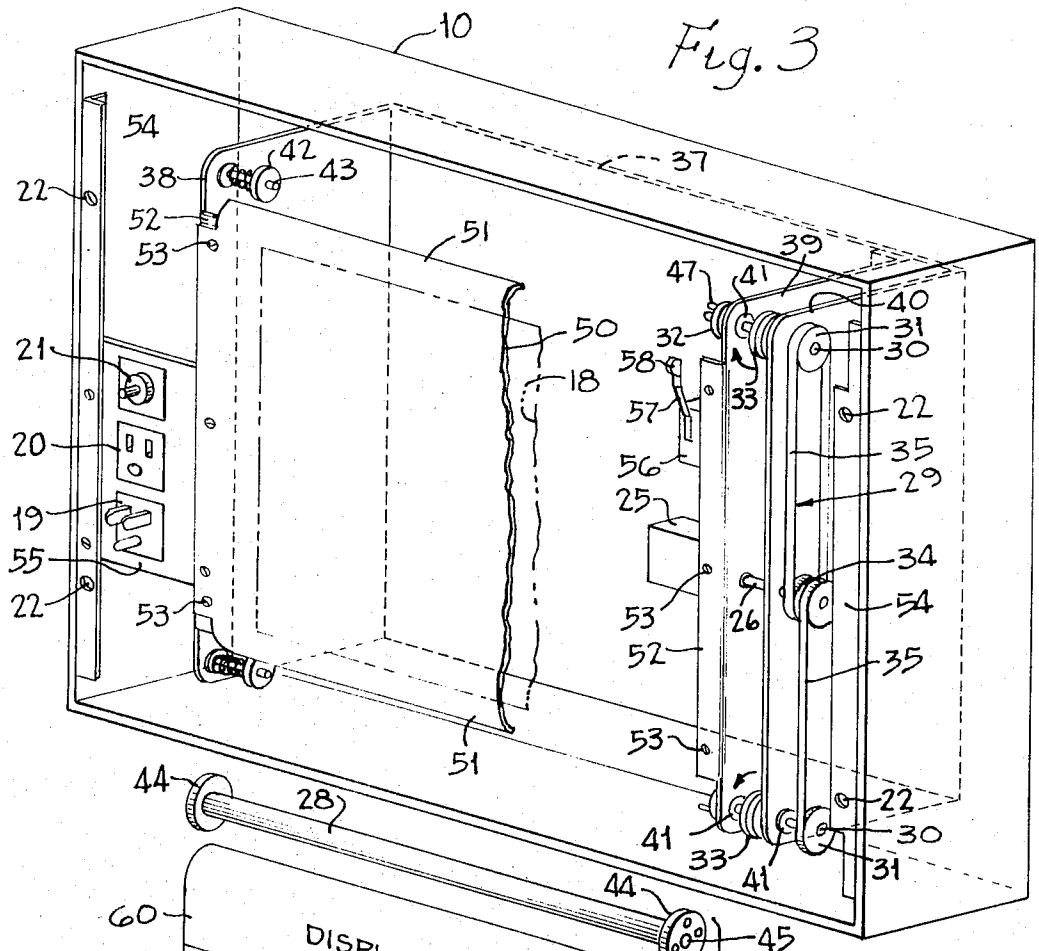


Fig. 4

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PORTABLE VISUAL-AID OR DISPLAY DEVICE

SUMMARY OF THE INVENTION

The present invention relates to visual-aid devices for improving the effectiveness of talks and sales presentations, by visually imparting supplemental information relating to the subject thereof.

The present invention is especially adapted for portable visual-aid devices for use with individuals and small groups, and is also adapted for use where the visual-aid information is carried on an elongated strip of sheet material for viewing as it is drawn from a reel. With visual-aid or display devices of the reel type, the use of an elongated strip of sheet material poses the problem of imprinting or otherwise marking the visual-aid information thereon over its length, and the problem of how to change any of the elements of such information or the order of presentation thereof when desired.

With visual-aid or display devices of the standard flip-chart type, the individual charts or pages are readily imprinted or marked, and the order of presentation may be changed at will. It thus has the advantage of ease of preparation and flexibility in use. However, the awkwardness and inconvenience of the standard flip chart, easel and large pages, both in use and in storage, is a disadvantage not shared by the reel type device, which is compact and convenient to use.

It is a primary object of this invention, therefore, to provide an improved visual-aid device in which the compactness and convenience of the reel type is combined with the ease of preparation of the visual-aid information and flexibility in use of the flip-chart type, without the disadvantages of either.

Another object is to provide a new and improved portable visual-aid device.

Another object of this invention is to provide an improved visual-aid device of the reel type which facilitates the scanning of an elongated strip of sheet material and whereby visual-aid information or data carried by said strip may be applied thereto and arranged therein for viewing in any orderly and controlled sequence.

A further object of this invention is to provide an improved visual-aid or display device of the reel type having an improved motor drive means and control for the reel and the display of visual-aid information thereby.

A further and important object of the invention is to provide an improved visual-aid or display device of the type referred to, which is portable and light-weight and is adapted for mounting in a standard size carrying case of the attache type and for standing firmly in use on a desk or conference table for talks and sales presentations with individuals or small groups, thereby avoiding the normal separation between a speaker at a flip chart, for example, and an audience some distance away.

In accordance with one embodiment of the invention, a portable light-weight visual-aid or display device is provided and mounted in a standard size carrying case, similar to a large attache case, which is adapted to stand on a desk or conference table in use. The carrying case is rectangular and is provided with a detachable front cover which is attachable to the back of the case for improved appearance and to provide a broad and stable base for standing firmly upright. In the closed or the open position, on the front or the back of the case, the detachable cover is attached by means of four clasps which grip and close on aligned legs on the top and ends of the case along the front and the back.

At the front of the case, with the cover removed, a picture frame cover plate provides a rectangular viewing opening for observing visual-aid or display material which is passed by the opening. The visual-aid material or information is carried in successive display areas on an elongated strip of paper or other suitable sheet material in a reel which is passed between two spaced rollers positioned above and below the opening and in rear of the cover plate.

Motor drive means, under control of an external handheld switch or the like, is connected with the rollers and includes a flexible drive belt for each roller connected therewith through an overrunning or slip clutch of the type having oriented clutch facings for transmitting rotary motion in one direction while slipping in the opposite direction. The motor drive means thus operates in a manner to wind the reel from one roller to the other in one direction past the viewing opening or to rewind it in the opposite direction. The motor drive means may also include motor control elements for positioning the successive display areas within the frame viewing opening without operator control.

The elongated strip of visual-aid material for the reel is of composite construction, comprising individual rectangular units or elements of sheet material, which may be standard size paper sheets, imprinted or otherwise marked to carry the desired visual-aid material or information, and then joined together end-to-end to provide the successive display areas in a desired sequence for frame-by-frame presentation in the viewing opening. Each sheet or unit is provided with a narrow strip of pressure or moisture sensitive adhesive along the top or bottom edge for attachment or joining together in any desired sequence for different talks and sales presentations.

There are many advantages in the individual sheet or unit construction in the preparation of visual-aid material of this type, some of which are as follows:

1. The sheets or units are readily adapted for duplication in quantity at one time and for temporary storage in stacks before use.

2. The sheets or units may be collated in any order in composing a sequence of visual-aid material into a complete reel for use in a talk or presentation.

3. The sheets or units for a given talk or sales presentation may be printed, collated, and joined in sufficient quantity to provide as many reels as may be desired for any simultaneous or widespread use of the same visual-aid material.

The invention will, however, be furtherstood from the following description, when considered with reference to the accompanying drawings, and its scope will be pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings;

FIG. 1 is a frontal view, in perspective, of a portable visual-aid or display device embodying the invention and shown in the closed or carrying condition;

FIG. 2 is a similar frontal view, in perspective, of the visual aid or display device of FIG. 1 in the open or operative condition as provided in accordance with the invention;

FIG. 3 is a further frontal view, in perspective, of the device of FIGS. 1 and 2, and on an enlarged scale therefrom, with certain portions removed or broken

away to show the interior construction and further features of the invention;

FIG. 4 is an exploded frontal view, in perspective, of certain display elements of the device showing their operative relation and construction in accordance with the invention;

FIGS. 5 and 6 are detail side and end views, respectively, of a portion of FIG. 3, on an enlarged scale, showing certain driving elements and the construction and arrangement thereof in accordance with the invention; and

FIG. 7 is a schematic circuit diagram showing the electrical control and operating elements of the visual-aid and display device of FIGS. 1, 2 and 3 as arranged and provided in accordance with the invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawings, wherein like reference numerals refer to like parts throughout, and referring more particularly to FIGS. 1 and 2, a light-weight rectangular carrying case 10 of the attache type, adapted to stand upright as shown, is provided with a top carrying handle 11 and a detachable front cover 12. It provides a complete housing or casing for the device, and when closed, as in FIG. 1, gives the appearance of a large attache case; in one form it is approximately 5 feet × 14½ feet × 20 feet in size, and it is adapted for smaller dimensions as well. It is thus easily portable and takes up a relatively small area of a desk or table on which the device is used.

The front cover is designed to be completely removed or detached from the front of the case to fully expose the viewing area and to be reattached to the back of the case, as in FIG. 2, for stability in standing and for improved appearance. In the closed or the open position, on the front or the back of the case, the detachable cover is arranged to be attached by means of releasable clasps 13, which presently are four in number, preferably with two at the top and one on each side, as indicated. The clasps grip and close on aligned duplicate lugs 14 and 14'' on the top and sides of the case along the front and back edges, respectively, in pairs as shown. This permits the cover to be switched from the front to the back of the case using the same set of clasps. This construction greatly simplifies setting up the device for use and closing it again for travel. Furthermore, with the cover in either position, this construction also provides a relatively wide and stable base for the device when set down either in travel or in use. For added stability and support when the case is set down with the detachable cover in either position, the base of the cover is preferably provided with two rubber or like footing buttons or feet 15, one at each end, and the base of the case is likewise provided with four more feet 16, two at each end.

A picture frame cover plate 17 of molded or like plastic material fits into the front of the case to provide a rectangular viewing opening 18 therein and marginally masks the interior and operating elements, so that with the cover removed, as in FIG. 2, only the visual presentation or display at the viewing opening 18 is visible, as indicated by the legend, along with the necessary electrical connection and control elements 19, 20 and 21, which project through openings in the cover plate at one side of the viewing opening. For opening up the case when desired, the cover plate is detachably mounted in the case by suitable means such as snap-on or push-pull button fastener elements 22 near each corner thereof.

Referring now more particularly to FIGS. 3 and 4, the operative elements of the visual-aid or display device are mounted in the case 10 behind the framing cover plate 17 of which only the viewing opening 18 is indicated by a dot-dash line, in order to better show said elements and the interior of the case. These elements include an electric drive motor 25 having a shaft 26, a pair of reel spools or rollers 27 and 28 for the visual-aid material, and a roller drive mechanism 29 connecting the motor with the rollers. The latter comprises two drive shafts 30, one for each of the rollers, located frontally of the case and at one side thereof near the top and the bottom in position to drive the rollers, located above and below the opening 18, and in substantially parallel relation as shown in FIG. 4.

Each shaft is provided with a pulley 31 (FIGS. 3 and 5) at one end and a coupling or drive plate 32 for the roller at the other end, together with an intermediate overrunning or slip clutch 33 therebetween. In the present example, these are oriented to drive in the direction of rotation indicated by the arrows and to slip in the opposite direction of rotation. The motor, which is of the reversible type, as located with the motor shaft 26 substantially midway between the two roller drive shafts 30 and is provided with a drive pulley 34 connected with the roller shaft pulleys 31 by two flexible web or rubber belts 35.

The operative elements of the device as above described may be mounted directly in the case or be carried on a frame or chassis 37 which is adapted for mounting in and attachment to the interior of the carrying case, as shown in FIG. 3. The frame or chassis includes two widely spaced parallel end plates 38 and 39 at either side of the viewing opening 18, between which the rollers 27 and 28 are mounted, and a third end plate 40 outside of and closely adjacent to the end plate 39 so that they support the two roller drive shafts between them, one near the top and one near the bottom, in teflon or like plug type bearings 41 provided therefor in the plates. The motor 25 is mounted adjacent to the drive mechanism 29, being attached to the inside of the end plate 39 with the shaft extending therethrough and through the end plate 40 to the pulley 34 in alignment with the pulleys 31 for the roller drive shafts.

Also carried by the frame or chassis remote from the drive mechanism, on the opposite end plate 38 and in axial alignment with each of the roller drive shafts 30, is a spring pressed, circular seat or holding plate 42 and centering pin 43 for each spool or roller. As shown in FIG. 4, the rollers are each of the same tubular construction with flanged ends 44 in which are provided center apertures or holes 45 for the centering pins 43 at one end and, at the opposite end, for the protruding drive shaft ends as centering pins in the coupling or drive shaft plates 32.

The rollers are thus mounted on the centering elements or pins and resiliently held against the coupling or drive plates 32 by the spring-pressed holding plates or seats 42. To provide a positive driving connection between each roller and the drive plate therefor, the flanged ends 44 of the rollers are further provided with a circular array of spaced apertures 46 surrounding the centering aperture 45 at each end for receiving a drive pin 47 projects from the face of the drive plate 32. By this arrangement, with the framing cover plate 17 de-

tached, the rollers may readily be inserted in or removed from the device as required to change the visual-aid material in preparing for different talks or presentations.

The visual-aid material indicated by the legends in FIG. 4 is carried on an elongated strip of paper or like sheet material **49** for the reel which is attached at each end of the rollers above and below the viewing opening **18**, and is drawn or reeled from one to the other across the opening in a flat plane over a fixed backing plate **50** directly in rear of and close to the viewing opening **18**. The backing plate is attached to the two chassis plates **38** and **39**, and is a rectangular flat sheet of plastic or like material with upper and lower edges **51** curved inwardly toward the rollers to direct the reel strip smoothly onto and off the plates in either direction while maintaining it flat directly behind the viewing opening **18**.

The backing plate **50** is detachably mounted (for ready removal, for servicing the interior elements of the device) on integral narrow brackets **52** on the forward edges of the end plates **38** and **39** by snap-on fasteners **53**. Narrow bracket elements **54** inside the case on each side have holes for receiving the button fasteners **22** therein as indicated.

Also attached to and carried by the chassis are the electrical connection and control elements **19, 20** and **21** which are located on the opposite side of the chassis from the motor drive elements and mounted on a common supporting panel **55** attached to the outside frontal edge of the end plate **38**. In this way the elements **19, 20** and **21** are grouped at one side of the viewing opening in rear of the cover plate and project therethrough, as shown in FIG. **2**, for connection and operation with the front cover removed. The element **19** is a three-terminal plug for an input power supply cord connection, the element **20** is a three-terminal receptacle or jack for a remote control connection cord, and the element **21** is a push-button type reversing switch for the motor, all as will be shown and described hereinafter.

An additional control element is provided as part of a sensing means for automatically stopping the motor and the reel movement to position the visual displays on the reel strip **49** in registration with the viewing opening **18**, which, in the present example, is a motor control switch **56** located on the end plate **39** adjacent to the backing plate **50** and reel strip as it moves thereover, and is provided with a movable operating arm **57** having a stop sensing element or button **58** at the outer end which extends through the backing plate into contact with the reel strip **49** to sense and be operated by cooperating stop openings **59** disposed lengthwise along the edge, as will further be described hereinafter.

Referring more particularly to FIG. **4**, the desired display material or information for one or more talks or sales presentations on the same or different subjects may be written, printed, marked, or otherwise applied to individual rectangular units **60** of sheet material in any desired quantity, and joined together in end-to-end relation in any desired sequence to make up successive display areas in any number of continuous reel strips, such as **49**, as may be desired. This display reel system is thus very flexible and convenient in preparation and use, and permits as many as twenty-five units to be provided in a reel strip, which is more than is generally required for many talks and presentations.

Thus the elongated strip of visual-aid or display material is of composite construction, preferably comprising regularly available units such as standard size, 8½ feet × 11 feet paper sheets, for example, which are easily handled and imprinted or otherwise marked in quantity and collated for any desired sequence in different reels. In any case, the dimension of each unit or sheet is greater than the viewing opening **18** in the cover plate, in order to fill the opening fully. In case a larger display and viewing opening is required, the dimensions of the units or sheets may be correspondingly larger within the limits of the size of the carrying case. Each unit or sheet has a narrow strip **61** of pressure or moisture sensitive adhesive along one edge at the top or the bottom for overlapping and joining together of the several units or sheets of a sequence into the continuous reel strip **49**, the units or sheets being in end-to-end relation as indicated by the dotted lines. With this construction, the stopping or positioning elements **59** for each reel strip may preferably be provided along the latter at the junctions of the units or sheets, as shown, where the adhesive strips provide increased thickness and strength for the strip.

The reel strip is made up, preferably, to be reeled from the lower roller **27** to the upper roller **28** so that the successive displays or display areas in the sequence move up into the viewing opening **18**. However, if desired, the units of the reel may be arranged in the opposite order for sequential display in the opposite direction of movement. In any case, the framing cover plate **17** focuses the attention on the exposed portion of the reel strip which is the visual presentation or display.

Referring to FIGS. **5** and **6** along with FIG. **3**, further consideration may be given to the construction and operation of the clutches **33**. These elements permit the rollers **27** and **28** to be driven in opposite directions by the single reversible motor **25**, and for this purpose are preferably of the oriented fiber type, as this type is of small size, is easily constructed at low cost, and is effective and long lasting in use. A commercially available clutch of this type which has been found to be satisfactory for the present use is the 3M Fibre-Tran overrunning clutch. The clutches **33** are of this type and are of like construction throughout, but are oriented to drive in opposite directions, as indicated in FIG. **3**. One of these clutches, as shown in FIG. **5**, may be considered to be the upper clutch element oriented for driving the upper roller in the foreward direction.

The clutch **33** is located between the end plates **39** and **40** and the shaft bearings **41** therein, and comprises two circular parts: an oriented fiber face or disc **63** and a fine metal screen face or disc **64** in contacting engagement. Each face or disc is adhesive backed for attachment to circular backing plates **65** connected with the drive pulley **31** and the roller drive plate **32** through the shaft on each side. As indicated in FIG. **5**, the fibers on the face or disc **63** are oriented to permit slippage in one direction and to catch on the screen face or disc **64** and drive in the opposite direction. As in the present example, the driver element is generally connected with the screen face or disc while the driven element is connected with the oriented fiber face or disc.

With the fibers in the face or disc **64** oriented as indicated in FIG. **5**, it will be seen that the clutch **33** drives the upper roller **28** when the motor rotates in the forward direction indicated in FIG. **3**, and slips when the motor is reversed. The fibers of the clutch for the lower

roller 27 are oriented in the opposite direction for driving when the motor is reversed. The oriented fiber clutch faces or discs are thus mounted in opposition so that, when the upper clutch engages to drive the reel in the forward direction, the lower clutch slips, while for rewind of the reel in the opposite direction, the lower clutch engages to drive and the upper clutch slips. The use of two oriented fiber type overrunning or slip clutches, in conjunction with a single reversible motor, thus greatly simplifies the construction and operation of the device.

Referring now to the circuit diagram of FIG. 7, wherein the case 10 is indicated in dotted lines, the driving motor 25 is reversible and is provided with a forward winding 66 and a reversing winding 67, both connected with a common terminal 68 and having respective individual terminals 69 and 70. The motor is preferably of the low-speed, high-torque, silent type, AC operable and of relatively small size to fit into the limited space provided by the carrying case.

The three-terminal power plug 19 is connected through one lead 71 with the common motor terminal 68 and through the other lead 72 with one terminal 73 of the remote control receptacle 20 and the motor reversing terminal 70 through the push-button switch 21. The third lead 74 from the plug 19 is the ground lead connected to chassis ground 75. A power supply cord 76 of suitable length is provided for the device and, when the device is set up for use as in FIG. 2, the cord is attached to the power plug 19 by a push-on receptacle 77 at one end and at the other end is provided with an input plug 78 for an electrical wall outlet.

The two remaining terminals 79 and 80 of the remote control receptacle or jack 20 are both connected with the motor forward terminal 69, the first directly through a connection lead 81 and the second indirectly through a connection lead 82 and the stop switch 56 which is biased to be normally open. When the reel strip 49 is moved in changing the displays, it depressed the element or button 58 on the movable operating arm 57 and holds the switch closed, as indicated in FIG. 7. The switch is positioned so that the stop sensing element or button meets a stop element 59 on the reel strip and drops into the opening to release the arm and open the switch, as indicated in dotted lines, each time a display area on the reel strip is in registration with the viewing opening.

A hand-held switch 84, on the end of a remote control connection cord 85, is provided for activating the motor and controlling the reel strip movement. The switch is of the two-way type having an intermediate neutral or "off" position from which it is moved in either of two directions, as indicated, by a thumb piece 86 connected with a contact element 87 which is movable thereby into engagement with one or the other of two fixed contacts 88 and 89. The opposite end of the connection cord 85 is provided with a connection plug 90 adapted to plug into the remote control receptable or jack 20, as indicated, and to complete circuit connections between the fixed switch contacts 88 and 89 and the receptacle terminals 79 and 80 respectively, and between the movable switch contact element 87 and the receptacle terminal 73. The movable contact element is thus connected with the lead 72 while both fixed contacts are connected with the motor forward terminal 69, the contact 88 being connected directly and the contact 89 being connected indirectly through the stop switch 56.

Both motor windings are connected through the common terminal 68 with the lead 71 so that, with the other lead 72 connected with the movable contact element 87, closing of the hand control switch 84 in either direction will energize the motor in the foward direction if the stop switch 56 is closed. When closed to the contact 88, the motor will operate to move the reel strip in the foward direction continuously until it is released and opens. For rewinding the reel strip, the push-button reversing switch 21 is closed to energize the reversing winding 67 of the motor and is released when the operation is completed, to stop the motor.

For automatic stopping by the stop sensing means, the control switch 84 is first momentarily closed to the contact 88 to start the motor and move the reel strip off a stop position, and thus permit the stop switch to be closed thereby. The control switch may then be shifted to the closed position in the opposite direction to energize the forward winding 66 through the contact 89 and the stop switch which opens and stops the motor and the reel strip movement when the switch stop sensing element meets the next stop element on the reel strip, as described hereinbefore. Thus the successive displays on the reel strip may be positioned in registration with the viewing opening without assistance of the operator so that full attention may be given to the talk or presentation relating thereto.

From the foregoing description, it will be seen that the portable visual-aid or display device of the present invention is of improved and compact construction providing flexibility and convenience in the preparation and use of visual-aid or display material for talks and sales presentations with individuals and small groups, and facilitates the scanning and control of such material in use.

What is claimed is:

1. A portable visual-aid device comprising:

a light-weight rectangular carrying case adapted to stand upright on a desk or conference table, said case including separate front and back hardware elements, and a fully detachable front cover adapted for attachment to the back of said case and having common hardware elements for attaching it to said front and back hardware elements in either position front or back interchangeably;

a picture frame plate in the front of the case, and exposed by detachment of the front cover, providing a rectangular viewing opening for observing visual-aid material therethrough; and means for presenting successive frames of visual-aid material in the viewing opening of said picture frame plate, said frame presenting means including:

a pair of reel drive rollers in the case above and below said viewing opening;

an elongated strip of sheet material comprising individual rectangular units bearing visual-aid or display information and connected in end-to-end relation in a reel extending from one roller to the other across said viewing opening;

motor drive means having a hand-held control switch and including a single reversible electric motor with an individual oriented fiber type overrunning clutch and belt drive for each roller connected therewith to alternately drive one roller or the other and to wind the reel strip in a forward direc-

tion from one roller to the other past the viewing opening and to rewind it in the opposite direction;

motor control means for stopping the successive display units in position within the viewing opening without operator control and including corresponding successive stop elements along the reel strip and a stop switch for the motor having a stop-sensing operating element positioned to meet said stop elements and operate the switch for each stop position;

and means connecting said hand-held switch to apply operating current directly to the motor or indirectly thereto through the stop switch.

2. A portable visual-aid device as recited in claim **3**, wherein the individual rectangular units of the reel strip are standard size paper sheets having dimensions greater than the viewing opening and joined together by self adhesive elements carried thereby along one edge.

* * * * *

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,780,458 Dated Dec. 25, 1973

Inventor(s) Joseph M. Jacoby, Richard Gelak

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

Col. 2, line 52, "furtherstood" should be --further understood--

Col. 10, line 4, claim "3" should be -- 1 -- .

Signed and sealed this 8th day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents