Dec. 2, 1969 H. E. ALLEN ETAL 3,481,593

MEDICAL EXAMINATION SUPPORT DEVICE

Filed Sept. 22, 1967 2 Sheets-Sheet 1

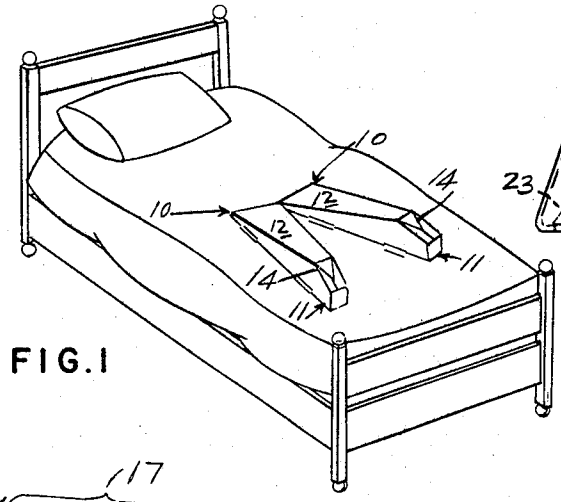


FIG. 1

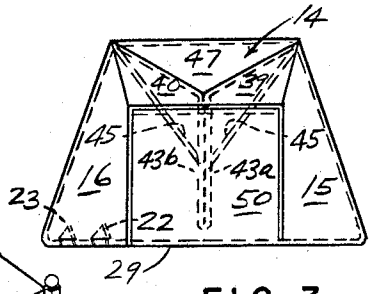


FIG. 3

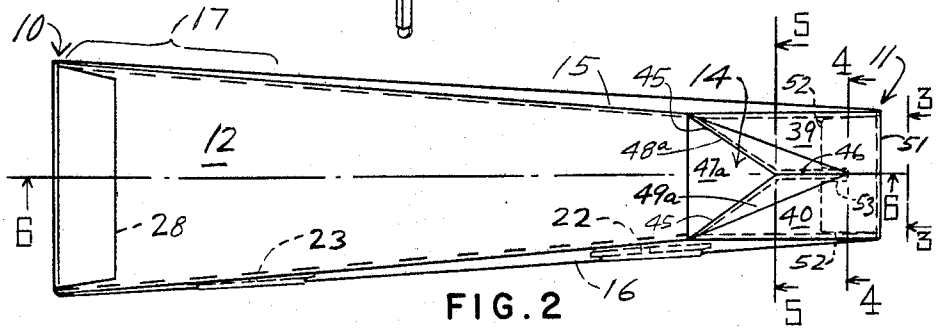


FIG. 2

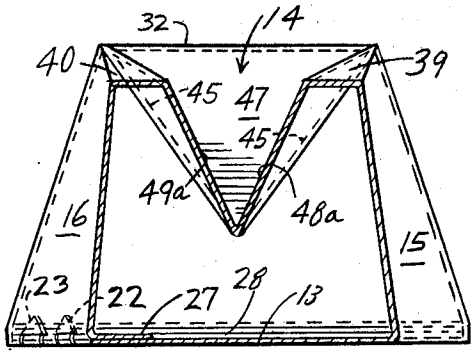


FIG. 5

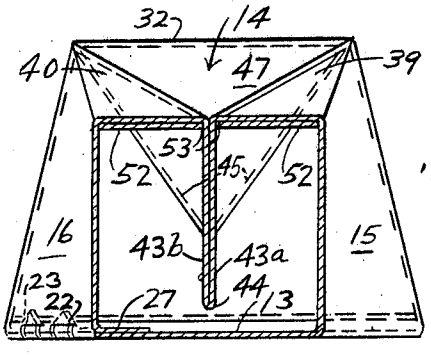


FIG. 4

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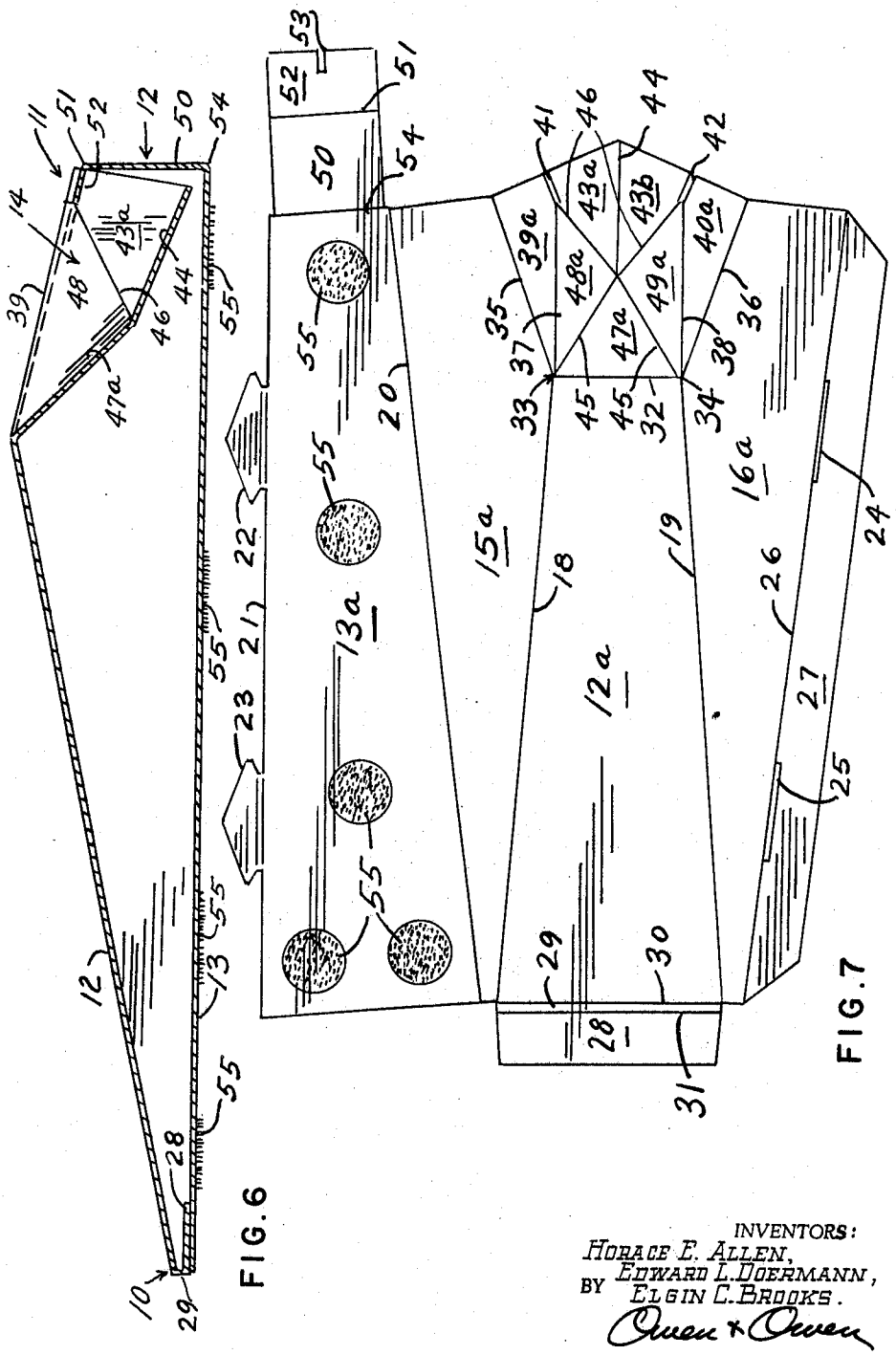


FIG. 6

FIG. 7

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MEDICAL EXAMINATION SUPPORT DEVICE

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ABSTRACT OF THE DISCLOSURE

A supporting device for positioning a person upon a horizontal surface, such as a bed, in an attitude to facilitate medical examination thereof. A pair of the devices will particularly facilitate the proper positioning of the pelvic area for obstetrical and gynecological examination and treatment. The device comprises an elongate member with upper and lower surfaces of sufficient size to support and elevate a buttock of a person who is lying upon a bed. The device is generally wedge-shaped with the upper and lower surfaces extending at an angle to one another with a means for positioning and supporting a foot of the person adjacent the upper surface of the device at its distal end. The distance between the foot supporting means and the area for supporting the buttock of the person is less than the length of the extended leg of the person. In use, a device is positioned under each of the buttocks of the person with the heel of the corresponding foot of the person placed within the foot supporting means in that device. The proper attitude for examination of the person may be attained by adjusting the position of the buttock upon the upper support surface to vary the distance between that position and the foot supporting means and by varying the horizontal angular relationship between two of the devices as desired by the examining physician.

This invention is a device to assist in supporting a patient on a horizontal surface, such as a bed, in the proper position for pelvic examination and treatment, particularly for obstetrical and gynecological examination, observation and treatment. It is necessary to make such examinations upon arrival of the patient at the medical examining station or hospital emergency room, and prior to operation or treatment during recuperative period in which the patient is bedridden. Such examinations are particularly difficult in the case of the bedridden patient, due to the fact that the weight of the patient's hips tends to recess the pelvic area of the patient below the plane of the bed, thus rendering proper examination and treatment difficult.

It is accordingly an object of this invention to provide a device which will assist in properly positioning a patient for examination and treatment by elevating the pelvic area at least to the plane of the bed. The invention in addition will obviate the need for transferring the patient from a hospital bed or other support to an examination table, which transfer, in many cases, is time-consuming and may be detrimental to the health of the patient.

The invention, in its preferred embodiment, consists of an elongate wedge-shaped support which can be manufactured of light-weight material, such as foamed polystyrene, but preferably is made from a single piece of light-weight but strong folding material, such as cardboard or corrugated paper board. When so constructed, the foldable cardboard devices are economical, may be easily stored and transported in flat condition, can be supplied to all possible stations in a hospital or clinic

where the device may be used to facilitate medical examination, and readily can be disposed of after each usage.

Referring to the drawings, FIG. 1 is a view in perspective of two of the support devices of this invention placed in position upon a bed. It is to be understood that a patient to be examined would be resting face up upon the bed with one leg supported by each of the devices shown;

FIG. 2 is a top view of the support device of this invention, showing in dotted lines some of the construction details of the folded cardboard device;

FIG. 3 is an end view taken along line 3—3 of FIG. 2 and showing, on an enlarged scale, details of the elevated foot support of the device of this invention;

FIG. 4 is a cross-sectional view, shown on an enlarged scale and taken along line 4—4 of FIG. 2;

FIG. 5 is another cross-sectional view, shown on an enlarged scale and taken along line 5—5 of FIG. 2;

FIG. 6 is a longitudinal, vertical cross-sectional view taken along line 6—6 of FIG. 2 and shown on an enlarged scale; and

FIG. 7 is a plan view of a single sheet of foldable material, such as cardboard, which may be constructed to form the device of this invention as it is shown in FIGS. 1 through 6.

As seen in perspective in FIG. 1, the device of this invention consists of a generally wedge-shaped elongate member having diverging upper and lower support surfaces extending from its proximal end **10**, at the apex of the angle, towards its distal end **11**.

As best seen in FIG. 2, the proximal end **10** of the device is substantially wider than the distal end **11** of the device. The width of the proximal end **10**, which, in the preferred embodiment, is about 6–8 inches, is such that the upper surface of the device, designated by reference numeral **12**, is wide enough to fully support a buttock of a patient. The lower surface, generally designated by reference numeral **13**, at the proximal end **10** is of the same width as the upper surface **12** to provide a substantial support area so that the device will not be depressed for any distance into the bed surface by the weight of the patient, and, thus, to elevate the pelvic area above the bed surface.

At the distal end of the upper surface **12** is a depressed area which forms a foot positioning and support means **14** for receiving a heel of the person to be examined. This foot support means or depression **14** is formed between the uppermost edges of a pair of generally triangular sidewalls **15** and **16** which support the upper surface **12** above the lower surface **13**. The depression **14** is just wide enough to position the heel of the patient's foot between the upper edges of the sidewalls **15** and **16**, is generally triangular in shape, and is formed by folding and depressing portions of what would be an extension of the upper surface **12** below its level, as will be subsequently explained. The distance between the foot supporting means or depression **14** and the area on the upper surface **12** for supporting the buttocks of the patient, generally designated by reference numeral **17** in FIG. 2, is shorter than the length of the patient's leg when extended, so that, when the patient is properly positioned upon the device, the knee will be flexed. The amount of knee flexure may be varied by sliding the device further under the patient to shorten the effective distance between the position of the foot on the foot supporting means **14** and the position of the corresponding buttock of the patient.

The device of this invention, as it is shown in the embodiment of FIGS. 1 through 6, is constructed from a single sheet of material shaped as shown in FIG. 7 and

folded along the lines indicated by light lines in FIG. 7. This sheet of material may be cardboard or corrugated board and preferably is scored for folding along the lines indicated. The upper surface of the device lies at the center of the unfolded sheet, as designated by reference numeral **12***a* and is between two identical, generally triangular sections **15***a* and **16***a* which form the lateral sidewalls **15** and **16**. The junctures or borders between the sections **15***a* and **16***a* and section **12***a*, designated by reference numerals **18** and **19**, respectively, are scored to facilitate proper folding. At the outer edge of section **15***a* is a section **13***a* which, when folded along its scored juncture **20**, will comprise the lower surface **13** of the device. At the outer edge **21** of the section **13***a* are a pair of locking tabs **22** and **23** which are adapted for insertion in slots **24** and **25** which are correspondingly positioned on a scored juncture **26** between the sidewall section **16***a* and a flap **27** which extends along its outer edge. As best seen in FIGS. 4 and 5, the flap **27** is folded at right angles to the section **16***a* so that, when the tabs **22** and **23** are inserted in the slots **24** and **25**, respectively, the flap **27** lies parallel to the adjacent edge of the inner surface of section **13***a*.

At the proximal end **10** of the section **12***a* which forms the upper surface **12** of the device, a flap **28** is provided to be folded inwardly to rest upon the inner surface of the section **13***a* which becomes the lower surface **13** of the device, as best seen in FIG. 6. The flap **28** is attached to the edge of the section **13***a* by a narrow section or strip **29** bounded by a pair of score lines **30** and **31** which assures complete closure of the proximal end **10** of the device when folded.

At the distal end of the section **12***a* is a juncture or score line **32** which extends across the section **13***a* and intersects the score lines **18** and **19** at points designated by reference numerals **33** and **34**. From these points **33** and **34**, a pair of score lines **35** and **36** extend to the ends of the sections **15***a* and **16***a* as shown. From the points **33** and **34** a second pair of score lines **37** and **38** extend at an angle to the score lines **35** and **36** to define a pair of sections **39***a* and **40***a* which, when the device is folded, constitute exposed surfaces **39** and **40** that lie in the same plane on either side of the foot supporting means or depression **14**.

A pair of slots **41** and **42** extend inwardly from the outermost end edges of this section of the sheet on either side of a pair of sections **43***a* and **43***b* which are separated by a central score line **44**. Finally, between the inner ends of the slots **41** and **42** and the points **33** and **34**, two pairs of score lines **45** and **46** meet at an apex with the line **44** and divide the area between lines **37** and **38** into three triangular sections, **47***a*, **48***a* and **49***a* which, when depressed below the level of the surfaces **39***a* and **40***a* and the edge of the upper surface **12** at score line **32**, form the foot supporting depression **14** as will be subsequently explained below. Finally, an end closure section **50** extends from the proximal end of the outer section **13***a* and a score line **51** separates a locking tongue **52** from the end closure section **50**. A slot **53** is cut into the outer edge of the locking tongue **52**. This slot **53** is wide enough to embrace the sections **43***a* and **43***b* (FIG. 4) when they are folded together along the score line **44**.

To fold the device from the shaped and scored sheet of material shown in FIG. 7, the first step is to fold downwardly the sections **15***a* and **16***a* along the score lines **18** and **19** which separate these sections **15***a* and **16***a* from the section **12***a*, to form an inverted, U-shaped tunnel. The bottom of the tunnel is closed by folding the outer section **13***a* downwardly along its score line **20** relative to the section **16***a*. After the flap **28** has been folded downwardly along the score lines **30** and **31** to a position almost parallel with the section **12***a*, as seen in FIG. 6, the section **13***a* is folded under the section **12***a* and the locking tabs **22** and **23** are inserted in slots **24** and **25**, respectively, with the flap **27** positioned parallel to the inner surface of the section **13***a*, as best seen in FIGS. 4 and 5.

The foot supporting means or depression **14** is formed by depressing the sections **47***a*, **48***a* and **49***a* downwardly and by folding the sections **43***a* and **43***b* toward each other so that their exposed faces, as seen in FIG. 7, will be adjacent, as seen in FIG. 4. When thus folded, the surfaces **39** and **40** face upwardly and extend from the points **33** and **34** at right angles to the sidewall sections **15** and **16**. The slots **41** and **42** are in side-by-side position just below the surfaces **39** and **40**, as best seen in FIG. 6. The end closure **50** is then folded upwardly with respect to the bottom section **13***a* along score line **54** and the locking tongue **52** is folded downwardly with respect to the end closure **50** and the slot **53** is inserted into the slots **41** and **42**, as best seen in FIG. 6, to complete construction of the device. The device thus formed appears as it is shown in FIG. 1, and is ready for use.

Preferably the underside of the bottom **13** is coated with at least several areas, indicated by the reference numeral **55** in FIG. 7, of a suitable anti-slip material, such as rubber, in order to retain the devices and, thus, the legs and knees of the patient in the spread position selected by the examining physician.

The device of the preferred described embodiment, which is folded from a single piece of sheet material, is particularly advantageous in that it may be quickly constructed, may be stored flat in stacks before construction, and is economical and thus may be used as a disposable item of equipment. It is light-weight but sufficiently strong to perform its intended function.

Various other modifications of the invention may be apparent to those skilled in the art and may be made without departing from the spirit and the scope of the attached claims.

We claim:

1. A supporting device for positioning a person upon a horizontal surface to facilitate medical examination comprising an elongate member having opposed upper and lower surfaces and vertically extending lateral surfaces, the upper and lower surfaces having a width at the proximal end thereof sufficient to provide generally planar upper and lower support surfaces of sufficient area to support a buttock of the person to be examined and with said upper and lower surfaces extending at an angle to one another from an apex at said proximal end toward the distal end of said elongate member, and means for positioning and supporting a foot of the person at a level above said lower surface and at said distal end of said body, the distance between said foot supporting means and the area for supporting the buttock being less than the length of the extended leg of said person whereby, when said proximal end of said device is properly positioned beneath the buttock of the person, the heel of the foot of the person may be positioned in said foot supporting means at said distal end by bending the knee of the person.

2. The device of claim **1** wherein said upper surface extends at an angle to said lower surface from the apex at said proximal end over one-half of the length of said elongate member whereby the effective distance between the foot support means and the area below the buttock may be adjusted with respect to the person being examined by positioning the buttock at its desired position along said upper surface.

3. The device of claim **1** wherein said foot supporting means at said distal end of said body includes a depression extending below the uppermost edges of said opposed lateral surfaces and below said upper surface adjacent said distal end to provide means for locating the heel of said foot adjacent said distal end and above said lower surface.

4. The device of claim **1** wherein the width of said upper and lower surfaces at said distal end of said elongate member is less than said width at said proximal end such that the distance between said opposed lateral sur-

faces at said distal end adjacent said foot supporting means is just sufficient to provide said foot supporting means therebetween.

5. A device constructed from a unitary piece of semi-rigid, foldable sheet material which, when constructed by folding together, provides a hollow elongate wedge-shaped member having diverging upper and lower surfaces with lateral sidewalls extending from the proximal end of said member to the distal end thereof and having a depressed area in said upper surface adjacent said distal end and elevated above said lower surface, said device comprising a generally planar sheet of material with

(1) a central elongate section,

(2) a generally triangular elongate sidewall section on each side of said central elongate section which, when folded at right angles to said central section along their junctures, form with said central section an elongate, inverted U-shaped member with generally triangular sidewalls, with said central section forming an inclined upper surface having an elevated distal end,

(3) an outer elongate section adjacent the outer edge of one of said sidewall sections and having the general dimensions of said central elongate section which, when folded along its juncture with and at right angles to its adjacent sidewall section, extends

across the open side of said U-shaped member to form a bottom closure therefor,

(3a) means for interlocking the outermost edge of said outer elongate section with the adjacent outer edge of the opposite sidewall section,

(4) a multiple scored area adjacent the distal end of said central elongate section which, when folded downwardly from the plane of said central elongate section, forms a depression between said sidewalls,

(5) an end closure tab secured to the distal end of said outer elongate section which, when folded at right angles thereto, extends across the elevated end of said elongate member, and

(6) means for interlocking said end tab with the adjacent portions of said multiple scored area at the distal end of said elongate member.

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U.S. Cl. X.R.

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