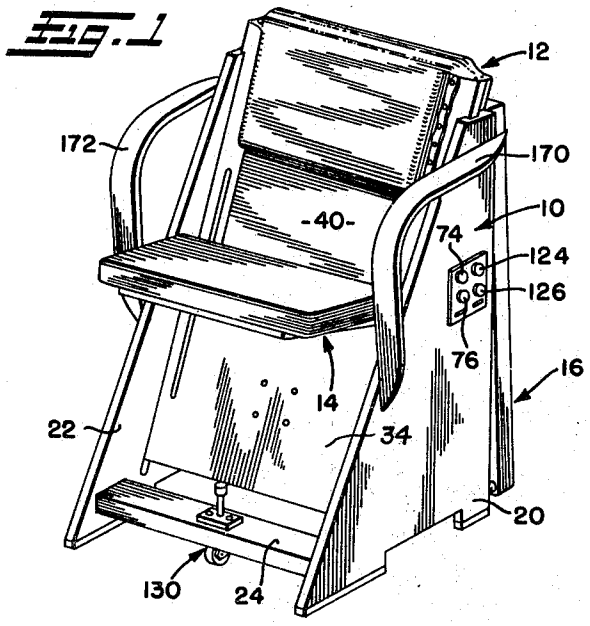
Feb. 3, 1970 B. A. CERALDI 3,493,225

MEDICAL EXAMINATION APPARATUS

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Fig. 1



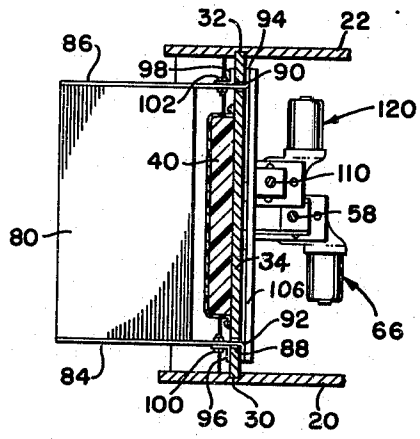


Fig. 5

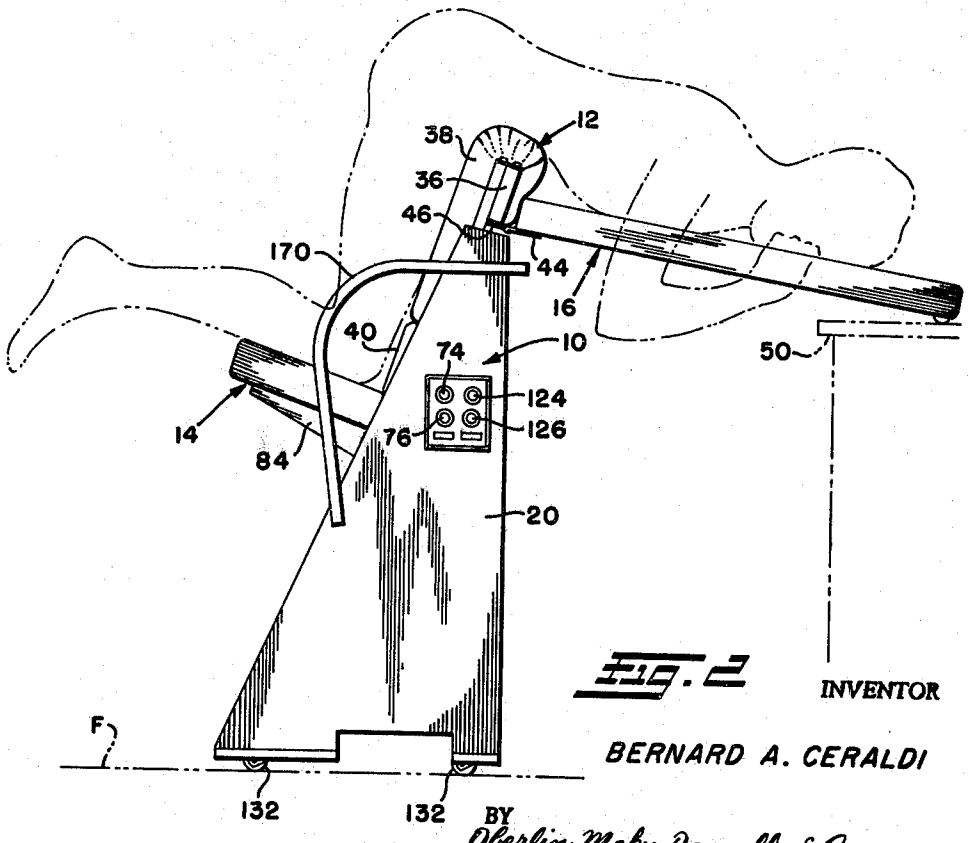


Fig. 2

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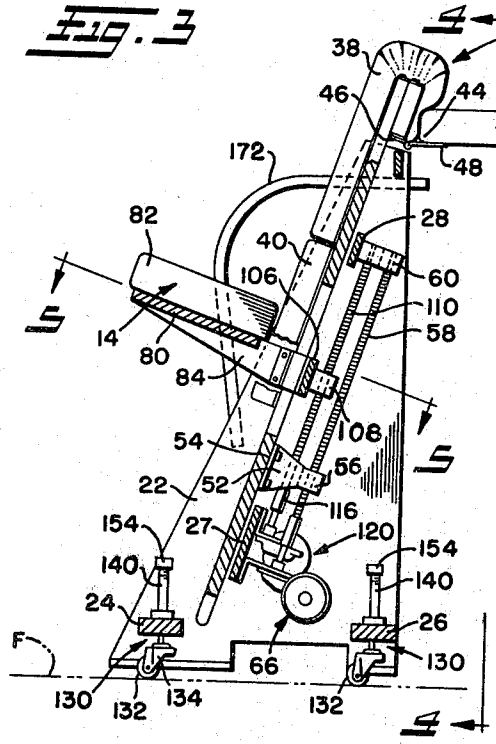
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MEDICAL EXAMINATION APPARATUS

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Fig. 3



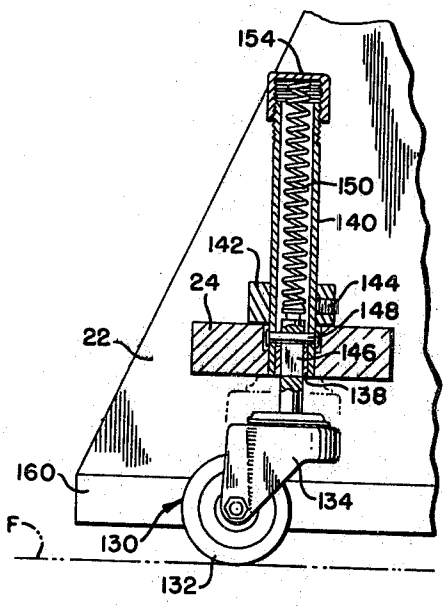


Fig. 6

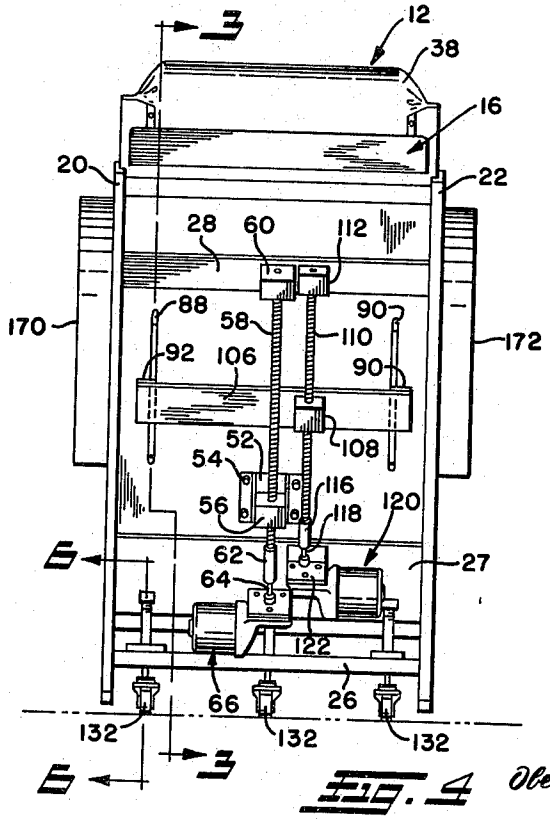


Fig. 4

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3,493,225

MEDICAL EXAMINATION APPARATUS

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U.S. Cl. 269—322 8 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for receiving and variably positioning a patient to facilitate proctological examination of such patient. A body support section is vertically linearly adjustable relative to the apparatus frame, with a knee rest being mounted on the body support section for vertical adjustment relative both to the frame and said body support section so that the patient can assume the most comfortable position for examination.

The present invention relates as indicated to medical examination apparatus and relates more particularly to a type of apparatus designed particularly for proctologists and proctological examination.

In proctological examination, it is important that the patient assume and maintain a particular position in order to permit proper examination by the physician. The assumption of such proper position is highly desirable to facilitate use of a sigmoidoscope or the like, and the maintenance of such proper position is necessary to prevent shifting of the patient's body during examination with such instrument in order to prevent possible injury to the internal organs of the patient. In order to insure the maintenance of such position, it is desirable that the patient be made as comfortable as circumstances permit.

Present equipment for facilitating proctological examination falls generally into two categories, one such category including the relatively large, self-contained medical examination table specifically designed for proctological examination. Although this type of equipment is satisfactory in operation, it is relatively costly and of such size as to practically require a separate room for housing and operating the same. The second category comprises what might be referred to as improvised devices which are portable and adapted to be used with the ordinary medical examination table. One known device of this type comprises simply a triangular shaped member which can lie flat on top of the examination table and over which the patient can drape himself to facilitate the proctological examination. While such improvised devices have the advantages of being portable and inexpensive, they have significant limitations in use, including an inability to satisfactorily accommodate patients of varying shapes and heights and the inability of the patient to comfortably assume the necessary position thereon for any period of time.

With the above in mind, an object of the present invention is to provide medical examination apparatus of the type described which is portable and particularly designed for associated use with the commonly available medical examination table. Specifically, the apparatus of the present invention is provided with a hinged extension which is adapted to be supported by the medical examination table, with such extension serving to support the upper regions of the body of the patient while in the examination position.

A further object of the present invention is to provide such an apparatus in which the main body supporting section thereof is vertically adjustable relative to the apparatus frame thereby to permit variable adjustment

of such section to accommodate the particular shape and height of the patient.

A further object of the present invention is to provide a knee rest carried by such main supporting section which is independently vertically adjustable thereby to permit final desired adjustment while the patient is in position for examination.

A still further object of the present invention is to provide such an apparatus which is relatively compact when not in use so that the same may be conveniently put to one side without significantly sacrificing valuable floor space.

Another object of the present invention is to provide an apparatus which is self-locking when the weight of the patient is placed downwardly thereon thereby to prevent shifting of the apparatus while the patient is being examined.

These and other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

FIG. 1 is a perspective view of the medical examination apparatus of the present invention;

FIG. 2 is a side elevational view of such apparatus, with the patient being shown in dashed lines properly positioned on the apparatus for examination;

FIG. 3 is a vertical sectional view taken on line 3—3 of FIG. 4;

FIG. 4 is an end view of the apparatus, taken on line 4—4 of FIG. 3;

FIG. 5 is a sectional view taken on line 5—5 of FIG. 3, and

FIG. 6 is an enlarged, fragmentary view of the bottom region of the frame of the apparatus, showing in greater detail the manner in which the frame is supported by casters for rolling movement.

Referring now in more detail to the drawings, wherein like parts are indicated by like reference numerals, and initially to FIG. 1, the apparatus of the present invention comprises a supporting frame generally indicated at **10**, a vertically adjustable body support section generally indicated at **12**, a knee rest generally indicated at **14** and a hinged extension **16**. As will be presently described, the body support section **12** and knee rest **14** are adjustable relative to the frame **10** and the knee rest **14** is independently adjustable relative to the support section **12** whereby the patient can be comfortably supported on the apparatus to facilitate examination by the physician.

The frame **10** includes side panels **20** and **22** which are in the form shown generally triangular in shape and which are spaced and rigidly interconnected adjacent the lower regions thereof by transverse supporting members **24** and **26**. Intermediate and upper transverse support members **27** and **28** are also provided which extend between the side panels **20** and **22** for spacing and interconnecting the panels in such regions.

Each of the side panels **20** and **22** is formed with longitudinally extending slots **30** and **32**, respectively, which extend substantially the entire longitudinal length of such panels and which are adapted to slidably receive the opposed side edges of panel member **34** of the body support section **12**. A transversely extending reinforcing member **36** is rigidly connected to the panel **34** at the upper end thereof and a cushion or pad **38** is attached to the upper

region of the panel **34** and the reinforcing member **36**, as shown both in FIGS. 2 and 3. In the form shown, a second pad section **40** is mounted to the panel **34** immediately below the pad **38**.

The extension **16** is hinged to the body support section **12** by means of hinge **44**, one leaf **46** of which is attached to the bottom face of the transverse supporting member **36**. The other leaf **48** of the hinge is attached to the underside of the extension **16**, with the axis of the hinge **44** being positioned to permit the extension **16** when not being used to assume a substantially vertical position, as shown in dashed lines in FIG. 3. When it is desired to use the apparatus, the extension **16** is raised and the free end thereof supported by an examining table shown in dashed lines at **50** in FIG. 2.

A generally T-shaped bracket **52** is attached to the back side of panel **34** by means such as bolts **54** or the like, with the outer end of such bracket carrying a nut member **56**. The nut **56** is adapted to threadedly receive a drive screw **58** the upper end of which is journaled in block **60** rigidly secured to the transverse brace member **28**. The lower end of the drive screw **58** is keyed to sleeve **62** for rotation therewith, with sleeve **62** in turn being drivingly connected to output shaft **64** of a conventional 90° reversible drive motor generally indicated at **66**. The axially offset portion of the drive motor **66** is rigidly attached to a generally L-shaped bracket **68** one leg of which is mounted on the transverse frame member **27**.

The drive motor **66** is suitably wired for electrical connection to a source of electric power, for example a conventional wall outlet, with control buttons **74** and **76**, FIGS. 1 and 2, being exposed at the exterior of side panel **20**. Control button **74** serves to drive the reversible motor and the drive screw in a direction to raise the nut **56** and the panel **34** connected thereto thereby raising the body support section **12** to the desired position, and the control button **76** actuates rotation of the motor and drive screw **58** in the opposite direction.

In the invention thus far described, it will be seen that the body support section **12** can be conveniently raised or lowered to vertically adjust the same to comfortably receive the patient. As described, the extension **16** when the apparatus is in use is supported at its free end by the examining table **50** or the like, with the extension pivoting about such free end when the panel **34** is raised to a position wherein the hinged end of the extension is vertically above the top of the examining table.

The knee rest **14** comprises a bottom support member **80** to which is attached a pad **82**. The support **80** is in turn rigidly attached to brackets **84** and **86** which extend through longitudinal slots **88** and **90** formed in the panel member **34**. The brackets **84** and **86** are formed at their inner ends with laterally outwardly extending flanges **92** and **94**, respectively, FIG. 5, disposed contiguous the adjacent face of the panel section **34**. Angle brackets **96** and **98**, respectively, are carried by the brackets **84** and **86** by bolt assemblies **100** and **102**, and define with the flanges **92** and **94** openings which are adapted to receive the panel **34** for guiding the movement of the knee rest **14** relative thereto.

The flanges **92** and **94** are mounted on a transverse bar **106** which is spaced by the thickness of such flanges from the adjacent face of the panel **34**. A nut member **108** similar to nut **56** is mounted on the transverse bar **106** generally centrally thereof but offset longitudinally from the drive screw **58**. A drive screw **110** drivingly engages the nut **108**, with the drive screw **110** being journaled at its upper end in journal block **112** mounted on transverse member **28** in a similar manner to the journal block **60**. The bottom of the drive screw **110** is keyed to sleeve **116** which is in turn drivingly connected to the output shaft **118** of a 90° reversible drive motor generally indicated at **120**. The latter is mounted on the transverse frame member **27** by means of bracket **122** similar to the bracket **68** previously described. Control buttons **124** and **126**, FIGS. 1 and 2, are provided to actuate the reversible drive motor **120** to raise or lower, respectively, the knee rest **14** relative to the support section **12**.

It will thus be seen that the knee rest **14** can be vertically adjusted relative both to the frame **10** and the body support section **12**. In this manner, the exact shape of the patient can be more precisely taken into account, with the knee rest portion **14** being vertically adjusted to accurately accommodate the length of the patient's legs between the hip joint and the knee. If desired, the patient can assume a temporary position on the apparatus and the knee rest section **14** and body support section **12** thereafter adjusted to positions most comfortable to the patient.

As above described, it is highly desirable to prevent shifting of the apparatus once the patient has assumed position thereon in order to prevent possible injury to the patient. A plurality of caster assemblies commonly and generally designated at **130** are provided, there being three such assemblies in the form shown, two being positioned adjacent each rear corner of the frame **10** and the third being positioned in the front of the apparatus generally below the knee rest **14** and intermediate the transverse member **24**. Each of such caster assemblies is identically constructed and, referring to FIG. 6, comprises a caster roller **132** rotatably carried in conventional manner by a swivel member **134**. A vertically extending pin **136** extends upwardly within sleeve **138** which is in turn telescopically received within an elongated cylindrical sleeve **140**. The latter extends through an opening provided therefor in the transverse member **24** and through an opening formed in a support plate **142** rigidly attached to the transverse member **24**. The sleeve **140** is retained in place by means of set screw **144** which is threadedly received in an opening formed in the support plate **142** and which engages the exterior periphery of the cylindrical sleeve **140**.

The pin **136** is formed with a longitudinally extending slot **146** which is adapted to receive a pin **148** extending transversely through the cylindrical sleeve **140**, with the exposed opposite ends of such pin being received in recesses provided therefor in the transverse member **24**. The lower end convolution of a coil spring **150** is operatively connected to the top of the pin **136** by a retaining screw **152**, with the upper convolution of the spring **150** seating against the bottom of cap member **154** which is threadedly secured on the upper threaded end portion of the cylindrical sleeve **140**.

Each side panel **20** and **22** carries at the bottom thereof a pad **160** preferably made of rubber or the like which is normally elevated from the floor F but which engages the same when the patient places his weight upon the device prior to examination, as will be presently described.

It will thus be seen that when the apparatus is not in use, it can be rolled over the supporting surface on the caster rollers to any desired location. When a patient is to be examined, the extension **16** is raised so that the free end thereof is supported by an examining table or like support surface, as shown in FIG. 2. When the patient positions himself on the apparatus, the weight of the patient is initially transferred downwardly through the frame to the several caster rollers **132**. By virtue of the resilient support of the rollers, the frame **10** will be lowered until the strips **160** contact the floor F, with the relative movement of the frame and caster assemblies being provided for by the slots **146** formed in pins **136**. When the transverse member is lowered relative to the caster rollers **132**, the coil springs **150** are relatively compressed and remain so until the weight of the patient is relieved. The patient is thus supported directly by the frame thereby to prevent inadvertent shifting of the apparatus during the examination of the patient. The compression of the springs **150** can be suitably controlled through adjustment of the caps **154** to accommodate a rather wide range of patient weights.

In the form shown, the apparatus is provided with arms **170** and **172** which serve both to restrict the lateral movement of the patient when positioned on the apparatus as well as to improve the esthetic qualities of the apparatus by giving it a chair-like appearance. The apparatus can thus be placed when not in use in the physician's examination room without significantly detracting from the decor thereof.

The operation of the apparatus should be apparent from the above description. To use the apparatus, the same is moved to a position adjacent the examining table **50** or other supporting surface. The patient then positions himself on the apparatus as shown in dashed lines in FIG. 2. If the patient is comfortable when assuming such position, no further adjustment of the body support section **12** and/or the knee rest **14** is required and the patient is ready for examination. If, on the other hand, the patient is not comfortably positioned on the apparatus, either the body support section **12**, or the knee rest **14**, or both, can by vertically adjusted relative to the frame **10** to provide the desired relation of these movable members relative to the frame to provide the most comfortable position for the patient, a typical patient position being shown in dashed lines in FIG. 2. Any such verical adjustment can be simply attended to by actuating the control buttons **74**, **76**, **124** or **126**, as described. The weight of the patient acts downwardly through the frame **10** to lower the frame so that the same is directly supported through the strips **160** by the floor F thereby to prevent shifting of the apparatus while the patient is being examined. When a patient dismounts, the resilient mounting of the casters is effective to raise the frame **10** thereby to permit the apparatus to be rolled over the supporting surface to a suitable non-use location as desired.

It will thus be seen that the present invention provides distinct advantages over presently existing equipment of this general type. The device is relatively simply constructed and can be manufactured at relatively low cost. The adjustments provided permit the patient to be comfortably positioned on the apparatus regardless of the height or shape of the patient thereby to facilitate the examination by the physician.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In medical examination apparatus of the type described comprising a main frame and body support and knee rest sections carried by said frame, the improvement comprising means for mounting said body support section for generally vertical linear adjustment relative to said frame, and drive means carried by said frame for vertically linearly moving said body support section relative to said frame, wherein said main frame comprises a pair of spaced and rigidly interconnected side panels, each of said panels being formed with longitudinally extending slots on the interior face thereof for slidably receiving a panel of said body support section, said drive means for vertically moving said body support section relative to said frame comprising a reversible drive motor mounted on said frame, and means operatively connecting said drive motor means to said body support section for vertically moving the same relative to said main frame.

2. The combination of claim **1** wherein said means operatively connecting said reversible drive means and said body support section comprises a drive screw threadedly received in a nut carried by said body support section, said drive screw being vertically fixed whereby rotation thereof effects vertical movement of said body support section relative to said main frame.

3. In medical examination apparatus of the type described comprising a main frame and body support and knee rest sections carried by said frame, the improvement comprising means for mounting said body support section for generally vertical linear adjustment relative to said frame, and drive means carried by said frame for vertically linearly moving said body support section relative to said frame, wherein said body support section is formed with a pair of transversely spaced longitudinally extending slots, said knee rest having mounted thereon a pair of brackets each of which extends through an associated slot, said brackets being operatively connected to an internally threaded nut member through which threadedly extends a rotatable drive screw, and reversible motor means for rotating said screw member in opposite directions thereby to vertically move said knee rest relative to said body support section and to said frame.

4. In medical examination apparatus of the type described comprising a main frame and body support and knee rest sections carried by said frame, the improvement comprising means for mounting said body support section for generally vertical linear adjustment relative to said frame, and drive means carried by said frame for vertically linearly moving said body support section relative to said frame, wherein said main frame comprises a pair of spaced and rigidly interconnected side panels, each of said panels being formed with a longitudinally extending slot on the interior face thereof for slidably receiving a panel of said body support section, said drive means for vertically moving said body support section relative to said frame comprising a first reversible drive motor mounted on said frame, means operatively connecting said drive motor means to said body support section for vertically moving the same relative to said main frame, said body support section being formed with a pair of transversely spaced longitudinally extending slots, said knee rest having mounted thereon a pair of brackets each of which extends through an associated slot, said brackets being operatively connected to an internally threaded nut member through which threadedly extends a rotatable drive screw, and a second reversible drive motor for rotating said drive screw in opposite directions thereby to vertically move said knee rest relative to said body support section and to said frame.

5. In medical examination apparatus of the type described comprising a main frame and body support and knee rest sections carried by said frame, the improvement comprising means for mounting said body support section for generally vertical linear adjustment relative to said frame, and drive means carried by said frame for vertically linearly moving said body support section relative to said frame, further including an extension member hingedly connected to said body support section and normally hanging substantially vertically downwardly therefrom, said extension being adapted to be raised so that the free end thereof may be supported by an examination table or the like.

6. An adjustable, folding medical patient supporting structure comprising a stand including a stationary section and a linearly movable body supporting section movable relative to said stationary section, a table extension hingedly secured at one end to said body supporting section at one side thereof, and adapted to be swung from a generally vertical to a generally horizontal position, a knee support mounted for vertical adjustment on said body supporting section on the side thereof opposite to the side thereof to which said table extension is hingedly secured, and means for vertically adjustably elevating said body support section and said knee support and table extension carried thereby relative to said stationary section of said frame.

7. Patient supporting medical examination apparatus comprising a stand, a table portion, means hingedly supporting one end of said table portion on said stand adjacent the upper end of the latter for swinging movement to and from a generally horizontal position at one side of

said stand, a knee support carried by said stand at the opposite side of the latter from said table portion and at a level lower than said table portion when said table portion is in such horizontal position, and means for adjustably elevating said supporting means for said table portion relative to said stand to vertically adjust said one end of said table portion.

8. The apparatus of claim 7 further including means for adjustably elevating said knee support relative to said table portion and said stand.

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