Aug. 9, 1966 P. C. TABBERT 3,265,432

HOSPITAL STRETCHER WITH DROP END

Filed May 14, 1964 3 Sheets-Sheet 1

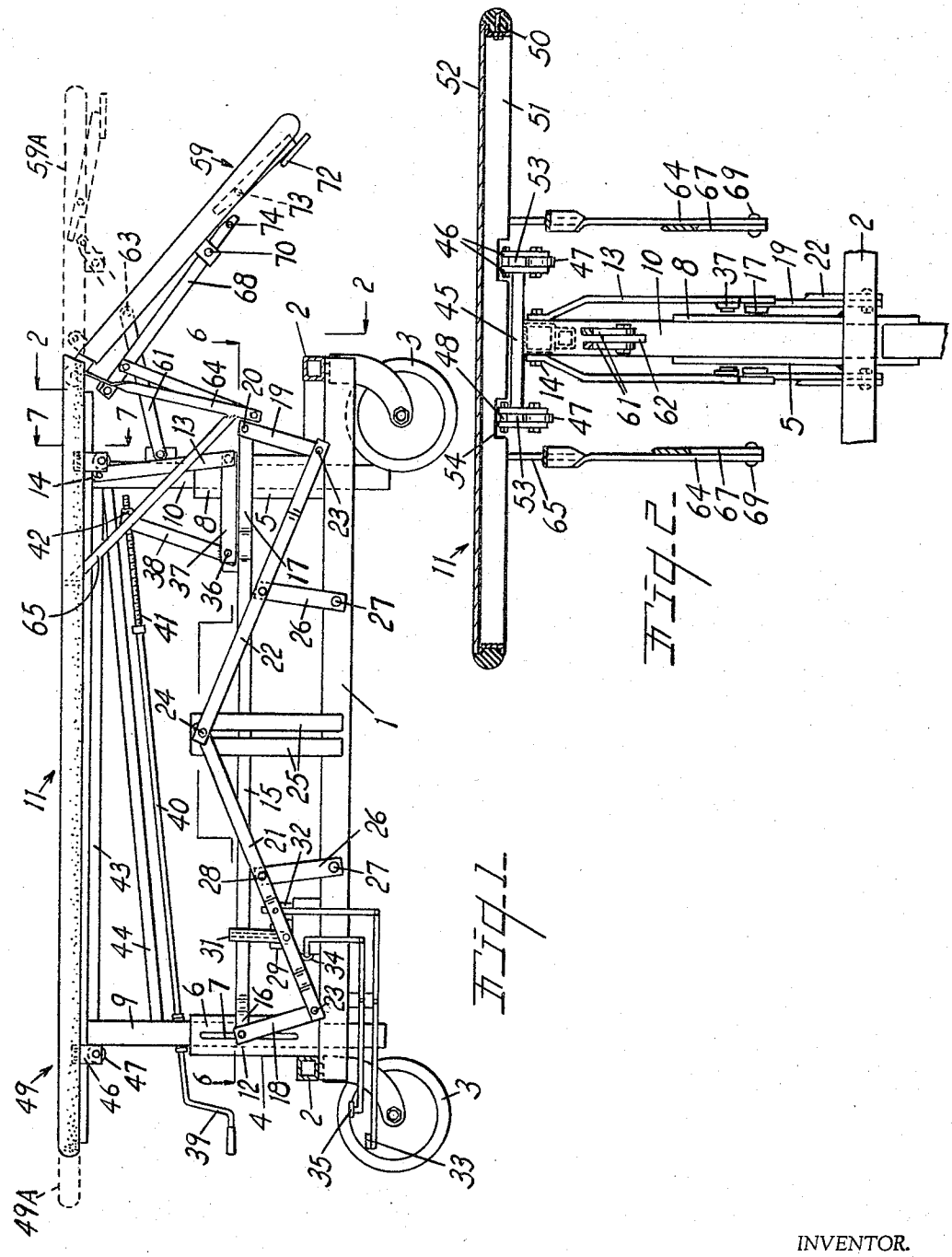


FIG. 1

FIG. 2

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HOSPITAL STRETCHER WITH DROP END

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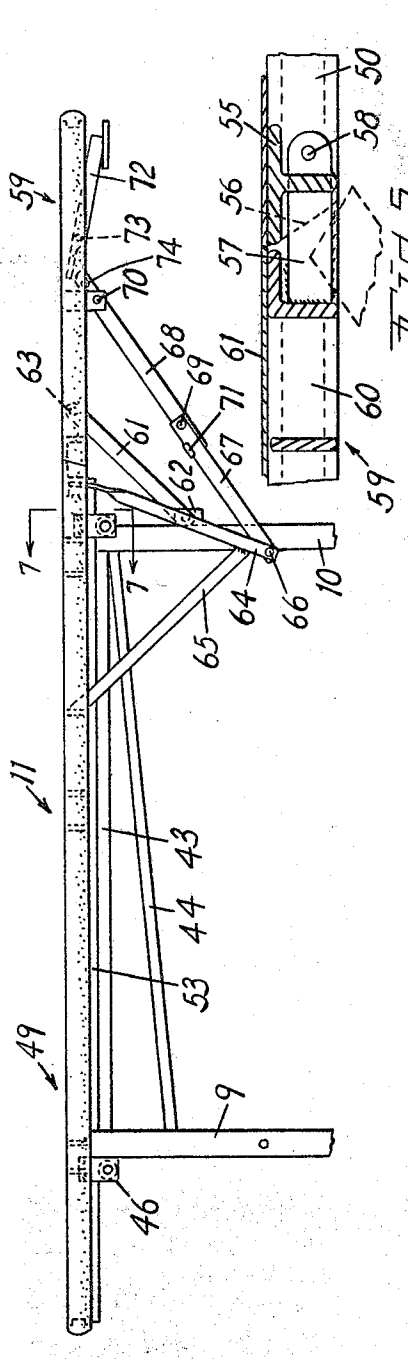


FIG. 5

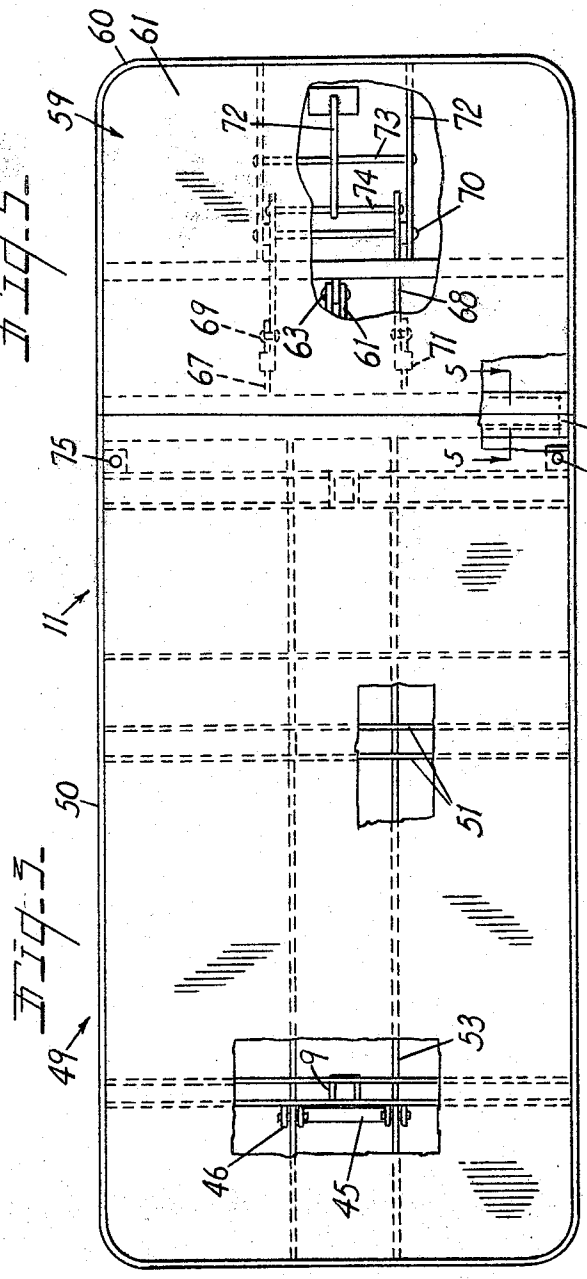


FIG. 4

FIG. 3

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HOSPITAL STRETCHER WITH DROP END

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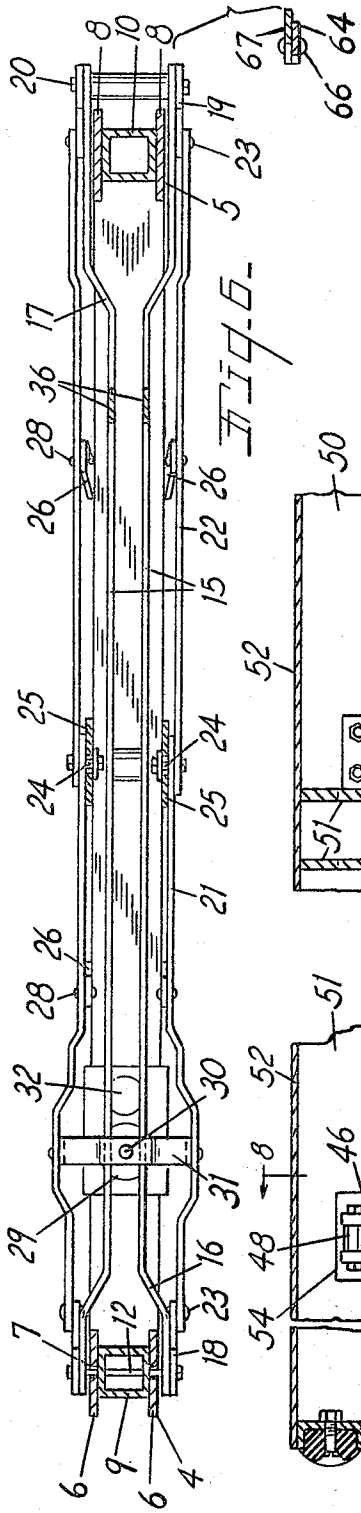


FIG. 6

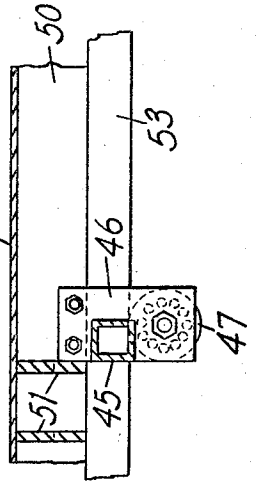


FIG. 8

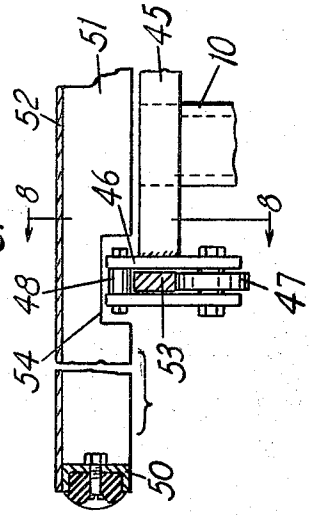


FIG. 7

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3,265,432

Patented August 9, 1966

3,265,432

HOSPITAL STRETCHER WITH DROP END

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Filed May 14, 1964, Ser. No. 367,384
6 Claims. (Cl. 296—20)

This invention relates to improvements in hospital stretcher with drop end. The principal objects of this invention are:

First, to provide a hospital stretcher, particularly for obstetrical work which will permit the lower or foot end of the stretcher top to be lowered perpendicularly below the remainder of the stretcher top.

Second, to provide a stretcher having a drop end which slides on its support so that it will be balanced from end to end when the drop section is both down and up so that a patient cannot be loaded onto the stretcher in a position to over-balance and up-end the stretcher.

Third, to provide a stretcher with a drop end that is connected to a sliding top and the support for the sliding top so that lowering or raising of the drop end results in corresponding reverse sliding of the top to a balanced position on the support in all positions of the drop end.

Fourth, to provide a stretcher having the foregoing characteristics which may also be elevated or tilted endwise without interfering with the drop end structure or its operation.

Fifth, to provide a stretcher having the foregoing characteristics which may be mounted on a wheeled carriage.

Sixth, to provide a wheeled stretcher with a drop end which permits the stretcher to be used for obstetrical work and for moving the patient between a labor room, delivery room and a recovery room without moving the patient from the stretcher.

Other objects and advantages of the invention will be apparent from a consideration of the following description and claims. The drawings of which there are three sheets, illustrate a highly practical form of the stretcher.

FIG. 1 is a side elevational view, partially in section at the bottom of the stretcher with the end in partially lowered position.

FIG. 2 is a fragmentary vertical cross sectional view taken along the plane of the line 2—2 in FIG. 1.

FIG. 3 is a fragmentary side elevational view of the top of the stretcher with the drop end in raised position.

FIG. 4 is a top plan view, partially broken away, of the top of the stretcher.

FIG. 5 is a fragmentary cross sectional view taken along the plane of the line 5—5 in FIG. 4 showing the hinge of the stretcher top.

FIG. 6 is a fragmentary horizontal cross sectional view through the top supporting and elevating mechanism taken along the plane of the broken line 6—6 in FIG. 1.

FIG. 7 is a fragmentary vertical cross sectional view taken along the plane of the line 7—7 in FIGS. 1 and 3.

FIG. 8 is a fragmentary cross sectional view taken along the plane of the line 8—8 in FIG. 7.

The stretcher of the invention is designed primarily for obstetrical use but may be used in other cases. A base consisting of a longitudinal center beam 1 with end cross bars 2 has caster wheels 3 connected to the ends of the cross bars for mobility. Rigid uprights 4 and 5 project above the beam near each end thereof. Upright 4 consists of two spaced plates 6 that are vertically slotted as at 7 while upright 5 consists of similarly spaced but

unslotted plates 8. Support posts 9 and 10 of box section fit slidably between the plates 6 and 8 and are laterally retained in upright position therebetween. The support posts support the stretcher top or table indicated generally at 11 as will be described in greater detail presently.

The support posts 9 and 10 are adjustably supported first by a pin 12 passed through the post 9 and upright links 13 pivoted to the upper end of post 10 at 14. A vertical adjusting frame consisting of spaced horizontal side bars or rails 15 extends along and over the main base beam 1 with outwardly off-set ends 16 at one end embracing or positioned alongside of the upright plates 6. Offset ends 17 at the other ends of the adjusting frame rail lap along the sides of plates 8. The pivot and support pin 12 projects through the support post 9 and the slots 7 and ends 16 of the adjusting frame 15. Depending lifting links or bars 18 also pivot on the ends of pin 12. Other depending lifting links or bars 19 are pivoted to the other end of the lifting frame 15 at 20.

The lifting links 18 and 19 are connected at their lower ends to jack levers 21 and 22 at 23. The jack levers 21 and 22 have their inner ends pivotally connected by a pin 24 that slides vertically between guide plates or bars 25. Tension links 26 pivoted to the beam 1 at 27 are pivotally connected to mid-sections of jack levers 21 and 22 at 28. A hydraulic jack 29 mounted on the beam 1 has a piston rod 30 connected by a yoke 31 to the jack levers 21. A pump indicated at 32 and operated by the pedal 33 lifts the piston rod while a valve indicated at 34 and operated by the foot lever 35 permits draining fluid from the jack to lower the piston rod. Raising the piston rod 30 directly lifts the outer ends of jack levers 21 and links 18 to lift pin 12 and support post 9. Interconnected jack levers 22 raise links 19 and the other end of the lifting frame.

The lifting frame 15 carries pivots 36 on which cranks having lower arms 37 and upright arms 38 are pivoted. The previously described links 13 are connected to the lower arms 37 and raise with the lifting frame. This provides for vertical adjustment of the stretcher top at a constant angle, horizontal or inclined. The top of the stretcher can be tilted longitudinally while at any angle by turning the crank 39 and rod 40 journaled in the post 9. The rod is threaded at 41 and carries a traveling nut 42 pivoted to the swinging ends of crank arms 38 to swing the crank about pivot 36. By this means arms 37 and links 13 may be raised relative to the lifting frame 15 to an inclined Trendelenberg position.

The structure thus far described includes many of the details disclosed and claimed more fully in my Patent 3,050,745, issued August 28, 1962, for Hospital Stretcher.

The support posts 9 and 10 are connected by a rigid top bar 43 and inclined brace bar 44. Short cross bars 45 project laterally from the tops of the support posts and have spaced plates 46 connected to each end. Rollers 47 supported between the plates and below spacers 48 form slide supports for the top of the stretcher indicated generally at 49.

The top 49 has a main frame 50 of outwardly facing channel section with cross bars 51 extending thereacross to support the surface plate 52 of the stretcher. Longitudinal slide bars 53 secured to the bottoms of some of the cross bars 51 are supported by the rollers 47. Cross bars closely adjacent the plates 46 are notched as at 54 (see FIG. 7) to clear the plates as the top slides as will be described.

The right end of the main portion of the stretcher top terminates with a cross bar **55** of T shaped cross section (see FIG. 5) and the ends of the border frame are inclined rearwardly and downwardly as at **56**. Short hinge support plates **57** are welded to the inside of the border frame and project therefrom to support hinge pivots **58**. A stretcher top foot extension **59** having a border frame **60** and extension top plate **61** is swingably connected to the pivots with the ends of the frame **60** slanted to mate with the ends **56**.

The stretcher top extension **59** is held and controlled in its position, first by inclined links **61** pivoted to ear **62** on the support post **10** and to the underside of the foot extension at **63**. The main stretcher top has downwardly and rearwardly inclined fixed pivot support bars **64** secured to the T-shaped cross member **55** and extending downwardly in spaced clearing relation to the post **10** and the upright plates **5** as well as the end of the support frame **15**. Brace bars **65** welded to the bars **64** and extending back to the underside of the main stretcher top fix the position of pivots **66** relative to the main portion of the stretcher top.

Toggle links having lower toggle bars **67** and upper toggle bars **68** are pivotally connected at **69** with the lower bars connected to pivots **66** and the upper bars pivoted to the underside of the foot extension at **70**. The upper bars **68** have stops **71** that engage the lower bars with the pivots **69** slightly past or below the center line between pivots **66** and **70** when the foot extension is fully raised as shown in FIG. 3. This locks the foot extension in raised position. The over center toggle lock may be broken by hand lever **72** pivoted at **73** and engageable with a cross rod **74** connecting the upper ends of upper links **68** above the pivots **70**.

It will be noted that the toggle **67–68** cannot be straightened and locked with the foot extension **59** raised and closed on the main stretcher top **49** without the link **61** which is connected to the post **10** pulling both the foot extension **59** and the main stretcher top **49** back on the slide rollers until the entire stretcher top is centered over the wheels **3** as shown by the dotted lines at **49A** and **59A** in FIG. 1. The same connection and action of the link **61** causes both stretcher sections to slide to the right as the foot extension is lowered as shown by the full lines in FIG. 1. Thus the weight of the patient is moved automatically forward and the end of the main section **49** is moved over the wheels to the most convenient position for the doctor when the foot extension is dropped. The stretcher cannot be left with the foot extension up and extended longitudinally in an unbalanced position. This eliminates the danger of a patient being placed on an unstable stretcher.

Other attachments may be added to the stretcher as desired. For example **75** indicates sockets for leg rest posts. Permanent or folding side rails may be connected to the cross bars of the stretcher top as in the patent identified above.

What is claimed as new is:

1. A mobile hospital stretcher comprising a base mounted on wheels,

uprights mounted at each end of said base each consisting of laterally spaced support plates,

support posts vertically adjustably mounted on said uprights and laterally retained therebetween with one post pivotally supported and the other swingably supported to swing about the pivotal support of the other, cross bars fixedly connected to the tops of said posts and having laterally spaced guides connected to each end,

rollers forming top supports mounted between said guides below the upper ends of the guides,

a stretcher top having a frame with spaced longitudinal slide bars on its underside positioned between said guides and longitudinally slidably supported by said rollers,

an end cross member on said frame, depending fixed pivot supports connected to said end cross member and an intermediate underside portion of said frame and disposed on each side of one of said uprights underneath said top,

a stretcher top foot extension having an extension frame with downwardly and forwardly inclined break joint ends adjacent the ends of said stretcher frame, means forming a transverse pivot connection between the ends of said stretcher frame and said extension frame alined with said break joint ends,

a first rigid link pivotally connected between said one upright and said extension frame at points spaced from the pivot between said frame and said frame extension,

a toggle link having a lower bar pivoted to said fixed pivot support below said rigid link and an upper bar pivoted to said extension frame in outwardly spaced relation from said pivot connection between said top frame and said extension frame and the connection between said first link and said frame extension,

a pivot connecting the adjacent ends of said bars,

a stop on one of said bars limiting movement to a slight over-center locking position between pivots on said upright and said frame extension with said frame extension in erected continuation of said stretcher frame,

and a release lever pivoted on said frame extension and engageable with the upper bar of said toggle link to break the over-center position of the bars of the toggle link.

2. A mobile hospital stretcher comprising a base mounted on wheels,

uprights mounted at each end of said base each consisting of laterally spaced support plates,

support posts vertically adjustably mounted on said uprights and laterally retained therebetween, cross bars fixedly connected to the tops of said posts and having laterally spaced guides connected to each end,

rollers forming top supports mounted between said guides below the upper ends of the guides,

a stretcher top having a frame with spaced longitudinal slide bars on its underside positioned between said guides and longitudinally slidably supported by said rollers,

an end cross member on said frame, depending fixed pivot supports connected to said end cross member and an intermediate underside portion of said frame and disposed one each side of one of said uprights underneath said top,

a stretcher top foot extension having an extension frame means forming a transverse pivot connection between the ends of said stretcher frame and said extension frame,

a first rigid link pivotally connected between said one upright and said extension frame at points spaced from the pivot between said frame and said frame extension,

a toggle link having a lower bar pivoted to said fixed pivot and an upper bar pivoted to said extension frame in outwardly spaced relation from said pivot connection to said top frame and said extension frame,

a pivot connecting the adjacent ends of said bars,

a stop on one of said bars limiting movement to a slight over-center locking position between said fixed pivots and said frame extension with said frame extension in erected continuation of said stretcher frame,

and a release lever pivoted on said frame extension and engageable with the upper bar of said toggle link to break the over-center position of the bars of the toggle link.

3. A mobile hospital stretcher comprising a base mounted on wheels,
uprights mounted at each end of said base,
support posts vertically adjustably mounted on said uprights and laterally retained thereby, cross bars fixedly connected to the tops of said posts and having laterally spaced guides connected to each end,
slide supports mounted between said guides,
a stretcher top having a frame with spaced longitudinal slide bars on its underside positioned between said guides and longitudinally slidably supported by said slide supports,
depending fixed pivot supports connected to said frame and disposed on each side of one of said uprights underneath said top,
a stretcher top foot extension having an extension frame,
means forming a transverse pivot connection between the ends of said stretcher frame and said extension frame,
a first rigid link pivotally connected between said one upright and said extension frame at points spaced from the pivot between said frame and said frame extension,
a toggle link having a lower bar pivoted to said fixed pivot and an upper bar pivoted to said extension frame in outwardly spaced relation from said pivot connection between said top frame and said extension frame,
a pivot connecting the adjacent ends of said bars,
a stop on one of said bars limiting movement to a slight over-center locking position between said fixed pivots and said frame extension with said frame extension in erected continuation of said stretcher frame,
and a release lever pivoted on one of said frames and engageable with the upper bar of said toggle link to break the over-center position of the bars of the toggle link.

4. A mobile hospital stretcher comprising a base mounted on wheels,
uprights mounted at each end of said base,
support posts tiltably adjustably mounted on said uprights and laterally retained thereby, cross bars fixedly connected to the tops of said posts,
slide supports mounted on the ends of cross bars,
a stretcher top having a frame with spaced longitudinal slide bars on its underside slidably supported by said slide supports,
means forming depending fixed pivot supports connected to said frame and disposed underneath said top,
a stretcher top foot extension having an extension frame,
means forming a transverse pivot connection between the ends of said stretcher frame and said extension frame,
a first rigid link pivotally connected between the upright adjacent said transverse pivot and said extension frame at points spaced from the pivot between said frame and said frame extension,
a toggle link having a lower bar pivoted to said fixed pivot supports and an upper bar pivoted to said extension frame in outwardly spaced relation from said pivot connection between said top frame and said extension frame,
a pivot connecting the adjacent ends of said bars,
a stop on one of said bars limiting movement of the bars, to a slight over-center locking position between pivots on said fixed pivot supports and said frame extension with said frame extension in erected continuation of said stretcher frame,
and a release member mounted on one of said frame members and engageable with one bar of said toggle link to break the over-center position of the bars of the toggle link.

5. A mobile hospital stretcher comprising a base mounted on wheels,
uprights mounted at each end of said base each consisting of laterally spaced support plates,
support posts vertically adjustably mounted on said uprights and laterally retained therebetween with one post pivotally supported and the other swingably supported to swing about the pivotal support of the other,
cross bars fixedly connected to the tops of said posts and having slide supports connected to each end,
a stretcher top having a frame with spaced longitudinal slide bars on its underside slidably supported by said slide supports,
means forming a depending fixed pivot support connected to said frame and disposed on one side of one of said uprights underneath said top,
a stretcher top foot extension having an extension frame with downwardly and forwardly inclined break joint ends adjacent the ends of the said stretcher frame,
means forming a transverse pivot connection between the ends of said stretcher frame and said extension frame,
a first rigid link pivotally connected between said one upright and said extension frame at points spaced from the pivot between said frame and said frame extension,
a toggle link having a lower bar pivoted to said fixed pivot support below said rigid link and an upper bar pivoted to said extension frame in outwardly spaced relation from said pivot connection between said top frame and said extension frame and the connection between said first link and said frame extension,
a pivot connecting the adjacent ends of said bars,
a stop on one of said bars limiting movement to a slight over-center locking position between pivots on said fixed pivot support and said frame extension with said frame extension in erected continuation of said stretcher frame,
and a release means mounted on one of said frame members engageable with the upper bar of said toggle link to break the over-center position of the bars of the toggle link.

6. A mobile hospital stretcher comprising a base mounted on wheels,
uprights mounted at each end of said base,
support posts vertically adjustably mounted on said uprights and laterally retained thereby,
cross bars fixedly connected to the tops of said posts and having slide supports connected to each end,
a stretcher top having a frame with spaced longitudinal slide bars on its underside slidably supported by said slide supports,
means forming a depending fixed pivot support connected to said frame and disposed on one side of one of said uprights underneath said top,
a stretcher top foot extension having an extension frame with downwardly and forwardly inclined break joint ends adjacent the ends of said stretcher frame,
means forming a transverse pivot connection between the ends of said stretcher frame and said extension frame,
a first rigid link pivotally connected between said one upright and said extension frame at points spaced from the pivot between said frame and said frame extension,
a toggle link having a lower bar pivoted to said fixed pivot support below said rigid link and an upper bar pivoted to said extension frame in outwardly spaced relation from said pivot connection between said top frame and said extension frame,

a pivot connecting the adjacent ends of said bars,

a stop on one of said bars limiting movement to a slight over-center locking position between pivots on said fixed pivot support and said frame extension with said frame extension in erected continuation of said stretcher frame,

and a release means mounted on one of said frame members engagable with said toggle link to break the over-center position of the bars of the toggle link.

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