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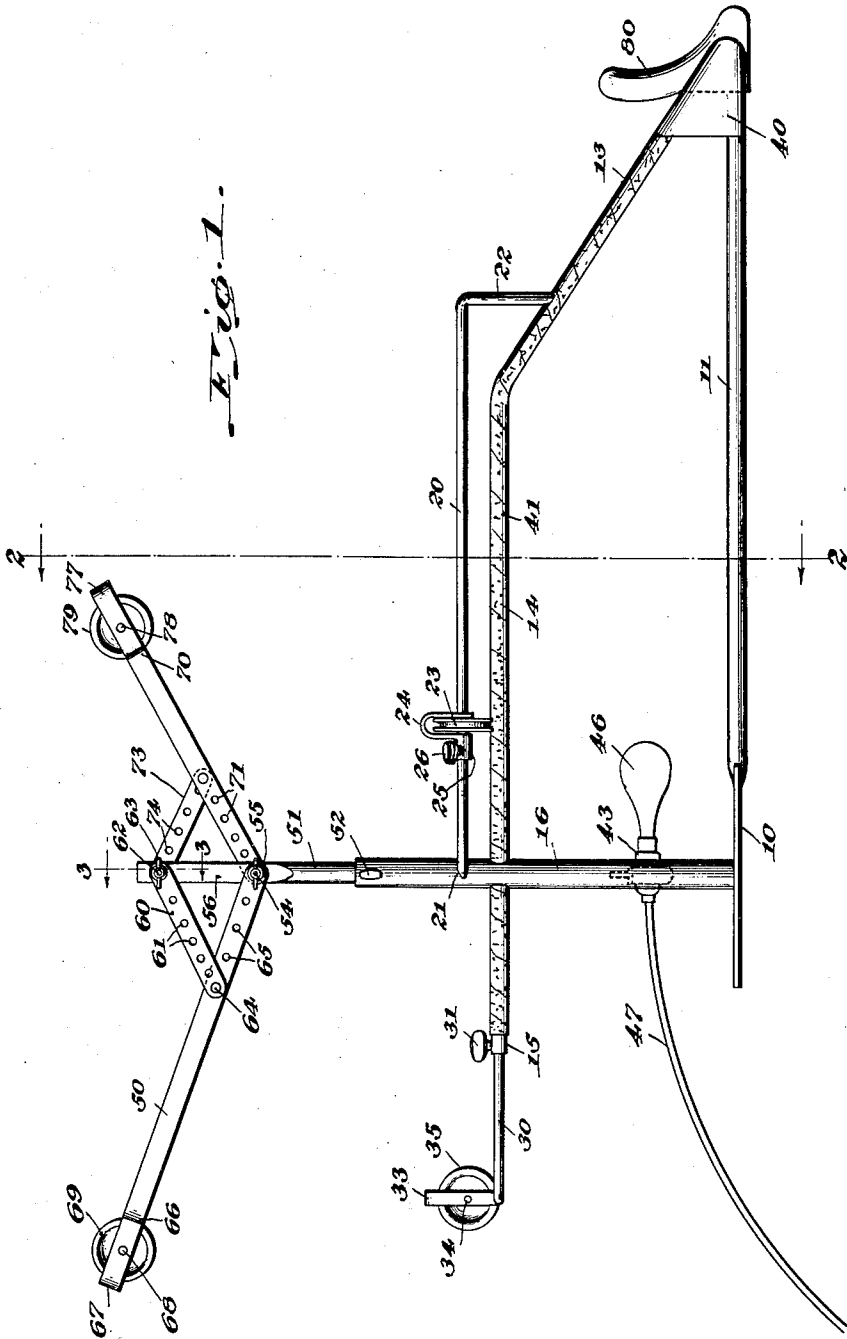
G. LANGE

1,978,752

SUSPENSION FRAME

Filed Jan. 11, 1933

2 Sheets-Sheet 1



WITNESS
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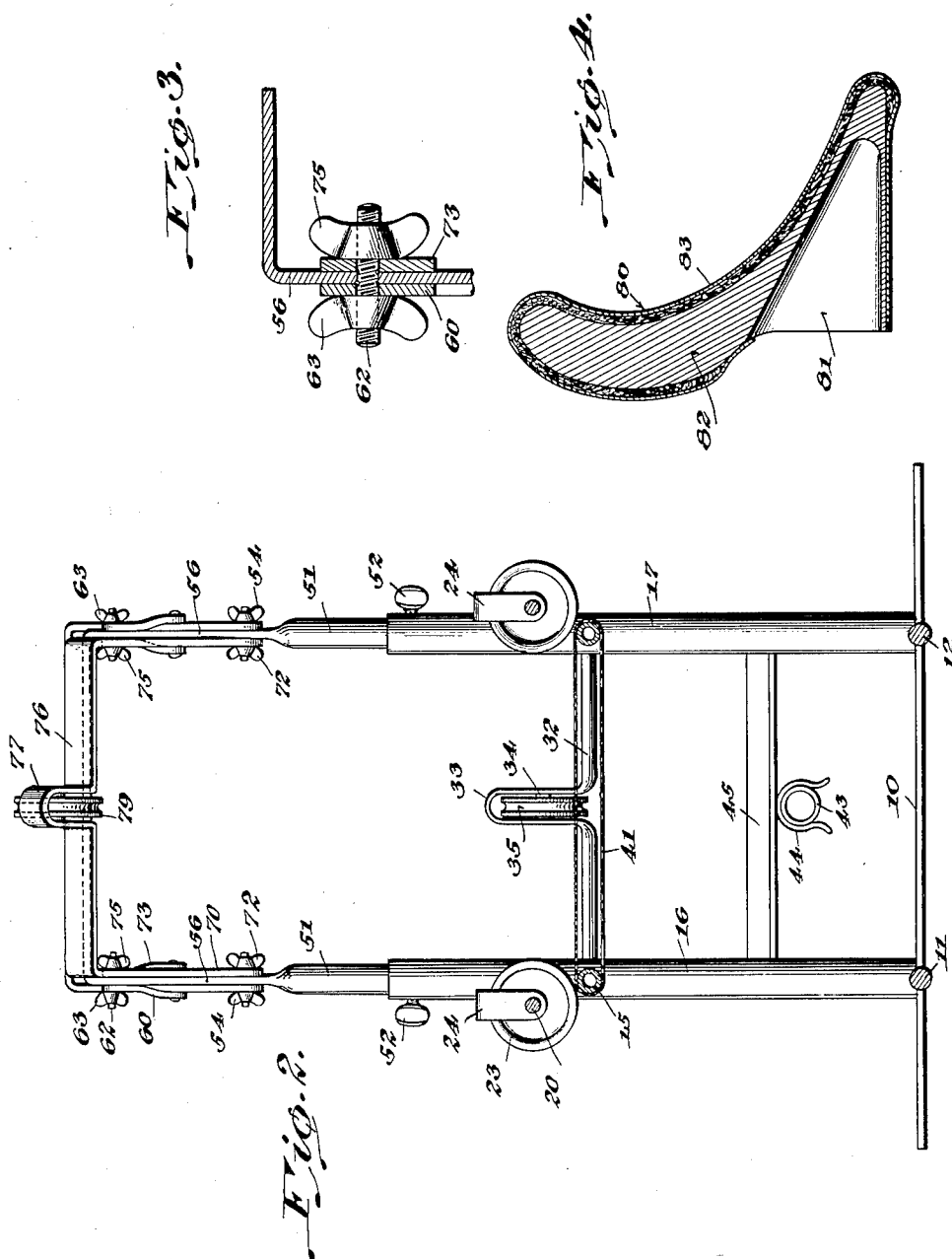
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UNITED STATES PATENT OFFICE

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SUSPENSION FRAME

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3 Claims. (Cl. 128—84)

This invention relates to a suspension frame for injured limbs.

An object of the invention is the provision of a suspension frame for supporting injured limbs in such a manner that the limb will be held in proper position so that the bones will be neatly held in position after a fracture.

Another object of the invention is the provision of a suspension frame for supporting a fractured or sprained limb with means supported by the frame for applying a pull upon the various parts of the limb for maintaining the fractured or sprained limb in proper position, the limb being supported above the surface of a bed so that the heat of a lamp may be applied to the limb when desired to stimulate circulation of blood.

A further object of the invention is the provision of a suspension frame for fractured or sprained limbs in which the frame is supported above a bed for maintaining the limb in an elevated position, the frame being supplied with a plurality of pulleys for supporting weights which will apply the proper pull upon various parts of the limb with the weights being connected to bandages or adhesive tape by suspension cords.

A still further object of the invention is the provision of a suspension frame having a supporting base with means disposed above the frame to support weights which will apply a pull to desired parts of the limb, the frame and supporting base together with the supporting structure above the frame being simply constructed, with parts being removable so that the frame may be carried by a physician to those homes where a patient cannot afford to have treatment in a hospital, the frame being so constructed that it may be used either for the right or left leg.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a side view in elevation of the leg suspension frame constructed in accordance with the provisions of my invention,

Figure 2 is a transverse vertical section taken along the line 2—2 of Figure 1,

Figure 3 is a fragmentary vertical section taken along the line 3—3 of Figure 1,

Figure 4 is a longitudinal vertical section of a shoe adapted to be applied to one end of a frame for maintaining the frame in position by certain parts of the body.

Referring more particularly to the drawings, 10 designates a metal plate having a pair of parallel bars 11 and 12 secured thereto at one end. These bars are extended outwardly from the plate 10 and are bent upwardly at an acute angle, as shown at 13. These bars are then disposed in a horizontal position, as shown at 14, with the free ends 15 of the bar projecting beyond a pair of standards 16 and 17 disposed vertically and in parallel relation. The portions 14 of the rods 11 and 12 extend through passages in the standards 16 and 17 and are secured to said standards.

Rails 20 are located upon opposite sides of the portion 14 of the bars 11 and 12 and are connected at one end, as shown at 21, to the standards. The opposite ends of the rails are bent downwardly, as shown at 22, and are connected to the angular portions 13 of the bars.

A pulley 23 is slidably mounted on each rail and is received by a U-shaped bracket 24 which has one arm provided with an opening to receive the rail while the opposite arm is provided with a sleeve 25 which is slidably mounted on the rail. A set screw 26 carried by the sleeve is adapted to secure the sleeve, bracket, and pulley 23 in a predetermined position along the rail.

A U-shaped extension member 30 has its legs received within the ends 15 of the bars and set screws 31 are carried by these ends for securing the legs of the U-shaped member in position. The bight portion 32 of the U-shaped member 30 is provided with a U-shaped bracket 33 which is vertically disposed and supports an axle 34 carrying a pulley 35 for a purpose which will be presently explained.

A metal cap 40 is applied to each portion of the bars 11 and 12 where the angular portions 13 extend from the said bars. These metal caps are shaped to conform to the curvature of the bars and the angular portions 13 and are welded or secured in any approved manner to said portions and the bars in order to provide a smooth surface to prevent injury to the body of the person.

A strip of gauze bandage, as shown at 41, is secured to one of the horizontal portions 14 of the bars and is wrapped around both of the hori-

zontally disposed portions of the bars and the angularly disposed portion 13 in order to provide a cushioning support for the leg of the patient.

5 An electric lamp socket 43 is carried by a U-shaped spring clip 44 secured centrally to the bottom face of a transverse bar 45 which is connected between the lower portions of the standards 16 and 17. This socket is adapted to receive
10 a lamp 46 and a cord 47 is connected to the socket which is adapted to be connected in the usual manner with a plug in the baseboard of a room or any suitable output terminal of a house current. The lamp is adapted to give off
15 heat so that when the leg is supported by the gauze cushion 41 the proper amount of heat may be applied to the leg to stimulate the circulation of blood when desired.

A pair of arms 50 are supported upon rods 51
20 which extend upwardly from the standards 16 and 17 and are held in place by set screws 52. The arms 50 are supported by means of threaded bolts 54 and wing nuts 55 and the threaded bolts passing through a perforation in the rods
25 51. It will be noted that the rods 51 form the legs of a U-shaped member which is flattened, as shown at 56, while the rods are cylindrical in form.

A link 60 is provided with a plurality of perforations 61 which are adapted to receive a
30 threaded bolt 62 carried by a perforation in the flattened portions 56 of the legs or rods 51. Wing nuts 63 are threaded onto the bolts for maintaining the bolts and likewise the links in
35 place. Each of the links is pivoted, as shown at 64, upon the arms 50 and arms are provided with a plurality of spaced perforations 65 which may be received by the bolts 54 for varying the position of the arms. The perforations 61 in the
40 links 60 likewise aid in raising or lowering the arms which are connected together by a bight portion 66.

The bight portions of the arms 50 are provided with U-shaped members 67 which carry an
45 axle 68 for supporting a grooved pulley 69.

A U-shaped member 70 similar to the U-shaped member just described is provided with a plurality of perforations 71 and one of these perforations is adapted to be received by one end
50 of the threaded bolt 54 and is maintained in position by means of a lock nut 72.

A link 73 is also provided with a plurality of perforations 74 which are adapted to be received by the threaded bolt 62 and is maintained in position
55 by means of the thumb nuts 75.

A bight portion 76 of the U-shaped member 70 is provided with a U-shaped bracket 77 carrying
an axle 78 for supporting a grooved pulley 79.

A shoe, generally designated by the numeral
60 80, is provided with a V-shaped pocket or opening 81 at its lower end adapted to be received by the angular portion of the bar 11 or 12 with the plate 40 neatly fitting within the pocket 81. The shoe is provided with a filler 82 formed of any suitable material and this is provided with a covering 83
65 which forms a pad to prevent injury to the body of the patient.

The pulley 35 is adapted to support a cable and a weight suspended from the cable with the other end of the cable being attached to some portion of the patient's foot in order to exert the desired pull on the leg when necessary.

The pulleys 23 slidably mounted on the rails

20 are likewise adapted to receive a cable for suspending a weight with one end of the cable being attached to bandages or adhesive tape which are applied to portions of the leg where the leg has
80 been fractured in order to exert the desired pull upon portions of the leg adjacent the fracture for maintaining the leg in proper position so that the bones will grow together in alinement.

The pulleys 69 and 79 are likewise adapted to support cables having a weight at one end with the other end of the cable attached to a bandage or adhesive tape which is applied to either the foot or a portion of the leg for exerting the proper pull as required by the condition of the fracture or sprain.
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It will also be noted that the legs 51 may be removed by releasing the set screws 52 and the longer U-shaped member 50 may be placed in the position of the shorter U-shaped member 70. It will also be noted that by the various numbers of pulleys that various pulls may be exerted upon the limb without the necessity of revising the structure for different patients since the U-shaped member 30 is adjustable for length and the pulleys 23 are adjustable along the rails 20.
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The U-shaped members 50 and 70 are also adjustable for height and may be varied to suit any size or type of patient.
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I claim:

1. A suspension frame for an injured limb comprising a supporting base, standards rising from one end of the base, a horizontally disposed frame secured intermediate the ends thereof to the standards, one end of the frame being bent downwardly towards and secured to one end of the supporting base, means on the frame for supporting a limb of a person, rails supported by the standards and frame and disposed adjacent the side edges of the frame, a pulley slidably mounted on each rail, and means for securing the pulleys in a predetermined position on the rails, said pulleys adapted to support weighted cables in such a manner that the cables will exert a desired pull on various parts of the leg.
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2. A suspension frame for an injured limb comprising a limb support having a horizontal portion and a portion inclined downwardly from the horizontal portion, means for maintaining the limb support in position, a U-shaped bracket extending vertically from the last-mentioned means, U-shaped supports having the free ends of the legs pivotally connected to the legs of the U-shaped bracket with the U-shaped supports extending in opposite directions, and links pivotally connected between the U-shaped supports and the bracket for adjustably maintaining said supports in position, said supports being adapted to carry weighted cables for exerting a pull on various parts of the limb.
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3. A suspension frame for an injured limb comprising a limb support, spaced standards connected to the support, a U-shaped bracket adjustably mounted on the standards, U-shaped supports extending in opposite directions from the bracket, common means for pivotally mounting the free ends of the legs of the supports on the brackets, a link pivotally connected with a leg of each support, and means for adjustably connecting the links with the bracket for raising or lowering the outer portions of the supports and for maintaining the supports in position.
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