

Dec. 22, 1931.

A. T. JOHNSON

1,837,872

SURGICAL APPLIANCE

Filed May 31, 1930

2 Sheets-Sheet 1

Fig. 1.

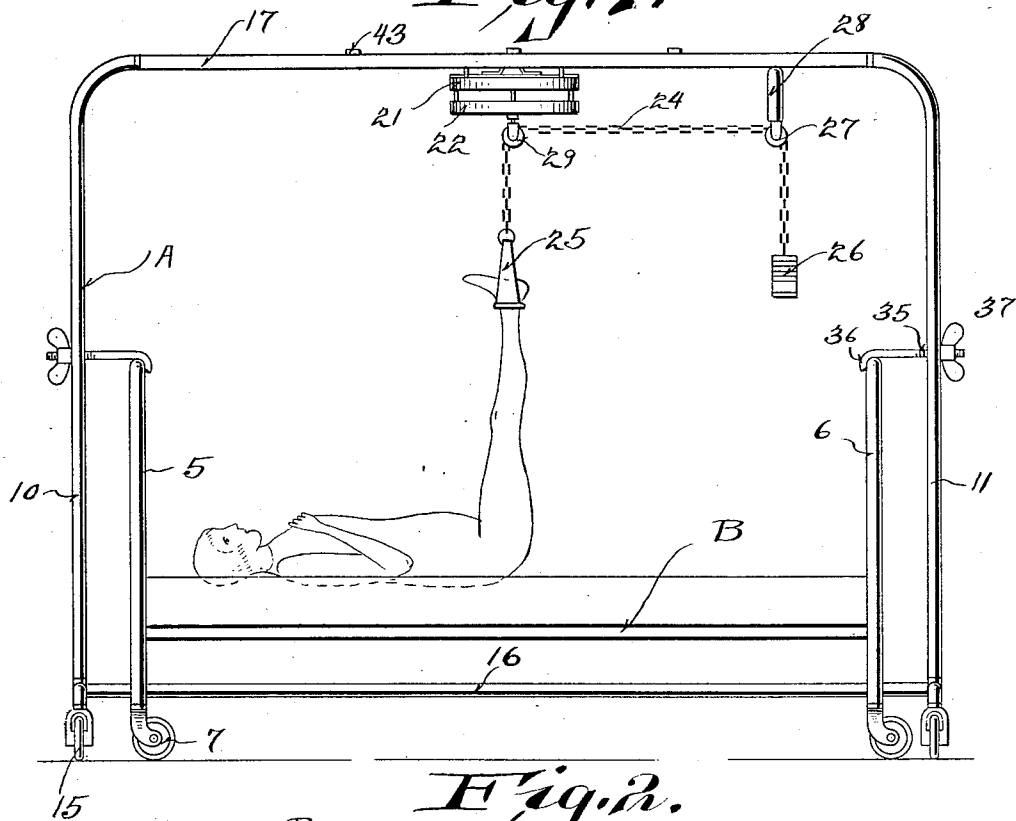
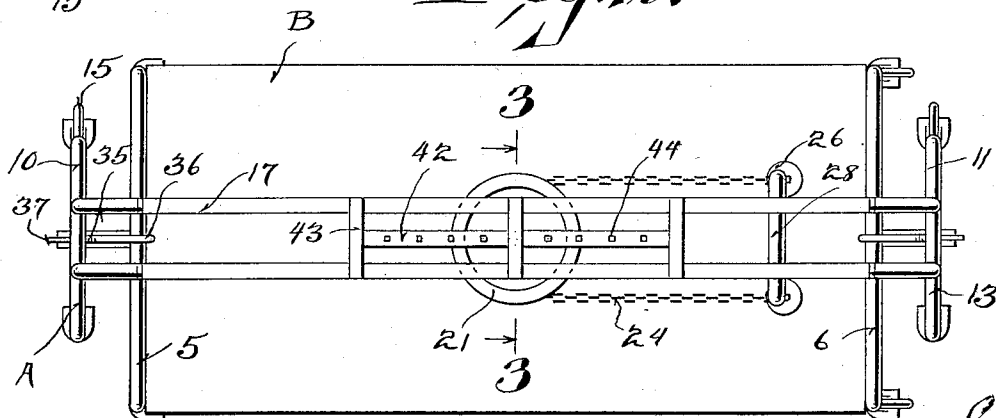


Fig. 2.



Inventor
A. T. Johnson
By *Young Young & Co.*
Attorneys

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A. T. JOHNSON

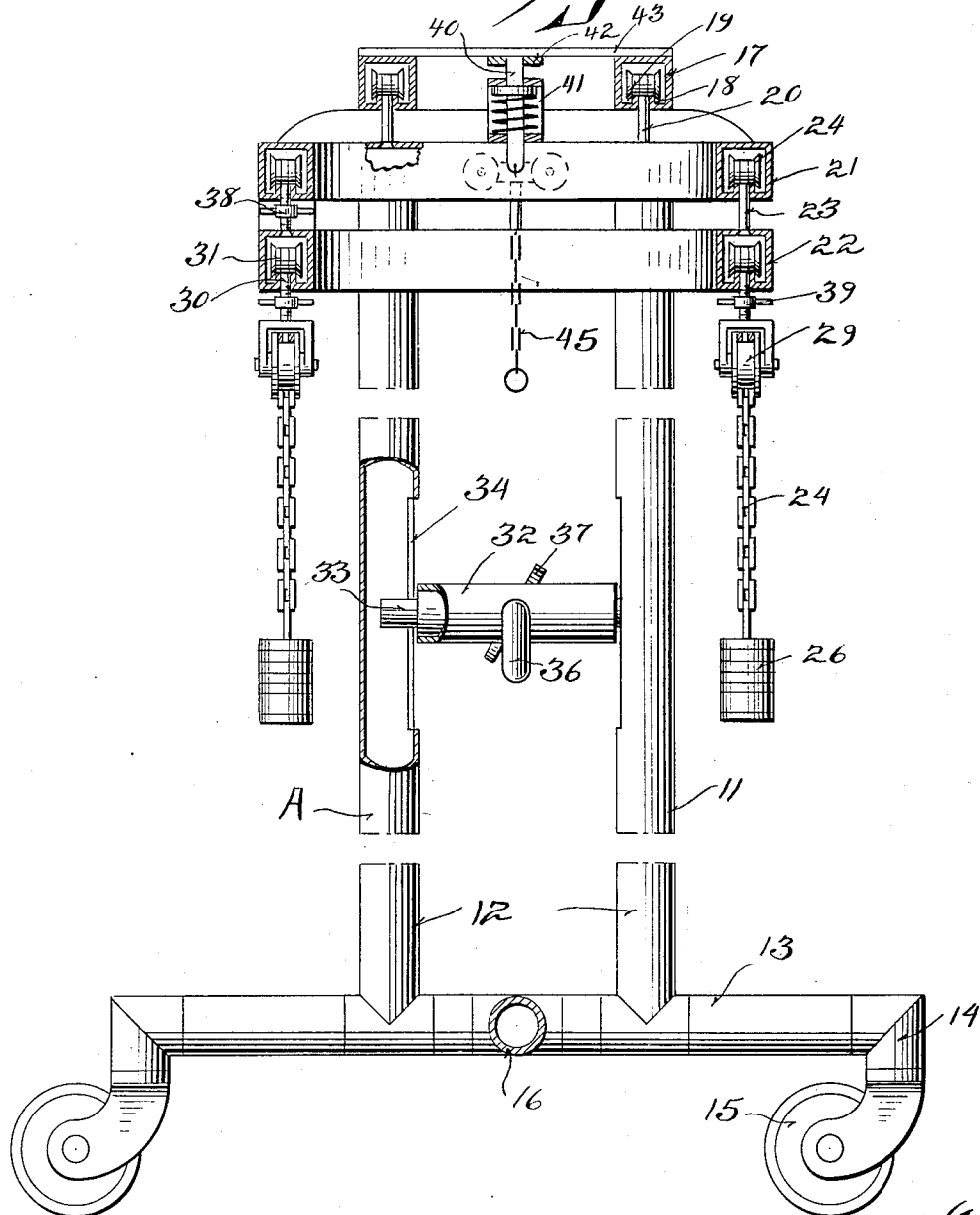
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Fig. 3.



Inventor
A. T. Johnson

By *Wm. H. Johnson*
Attorney

UNITED STATES PATENT OFFICE

ARTHUR T. JOHNSON, OF SAUK CITY, WISCONSIN

SURGICAL APPLIANCE

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This invention appertains to surgical appliances and more particularly to means for handling leg fractures between the hip and ankle in children permitting and allowing
5 free excursions from head to foot of the bed.

One of the primary objects of my invention is the provision of a device for association with a standard size children's hospital bed having means by which the fractured
10 limb or limbs can be suspended from an overhead support in such a manner as to leave the body of the patient free for movement.

Another important object of my invention is to provide a surgical apparatus for handling leg fractures, which can be readily and easily attached to a hospital bed and adjusted to the size of the patient and the particular requirements of the fracture.

A further object of my invention is the provision of a wheeled frame movable to operative position relative to a hospital bed having a longitudinally movable carrier disposed over the bed, the carrier embodying a freely movable circular track from which depends
20 suitable foot harness for engaging the fractured limb or limbs, means being provided for creating a tension or pull on said foot harness.

A further object of my invention has the provision of means for locking the circular track in an adjusted position when necessary or desirable.

A further object of my invention is the provision of novel means for clamping the apparatus to the bed whereby the apparatus
35 will form a rigid part of said bed when in use.

A still further object of my invention is to provide and improve surgical apparatus of the above character which will be durable and efficient in use. One that will be simple and easy to manufacture and one which can be placed upon the market at a reasonable cost.

With these and other objects in view the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a side elevation of my improved device showing the same applied to a hospital bed and in use.

Figure 2 is a top plan view of the same, and

Figure 3 a vertical section taken on the line of 3—3 of Figure 2 looking in the direction of the arrows, the bed being omitted in this view.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout several views the letter A generally indicates my improved surgical apparatus and B a hospital bed with which the same can be associated.

The bed B can be of standard construction and includes the usual head and foot pieces 5 and 6 supporting the conventional bed spring and mattress. As shown, the legs of the bed are provided with casters or rollers 7.

My improved apparatus embodies a supporting frame work preferably formed from tubular material bent into the desired shape. This frame includes oppositely disposed end sections 10 and 11 each of which consists of vertical upright spaced parallel posts 12 connected at their lower ends to a cross-piece 13. The terminals of a cross-piece 13 may carry depending legs 14 supporting rollers or casters 15 preferably provided with rubber or fibre treads. The cross-pieces 13 of each end section 10 and 11 can be connected together by longitudinally extending rail 16. The upper terminals of the posts 12 of the sections 10 and 11 are connected together by longitudinally extending spaced parallel connecting bars 17 which form tracks, for a purpose which will later appear.

The spaced parallel bars 17 are hollow and the lower faces are provided with longitudinally extending slots forming guideways. The walls of the slots are extended inwardly to provide guide flanges 18 on which travel pairs of anti-friction rollers 19. These rollers 19 are preferably formed of fibre so as to reduce noises incident to their travel in said bars 17. The rollers 19 carry depending studs 20, the lower ends of which are rigidly connected to an upper circular track 21. By this construction it can be seen that the cir-

cular track 21 can be freely moved longitudinally of the apparatus. Disposed below and concentric with the upper circular track 21 is a lower circular track 22, which lower track 22 carries upstanding rigid studs 23. These studs 23 rotatably carry anti-friction rollers 24 mounted for movement in the upper circular track 21. By this arrangement, the lower track 22 is freely movable relative to the upper track.

The lower track 22 carries the means for engaging and supporting the leg or legs of the patient and this means embodies suitable tension cables or the like 24. The inner ends of the cables 24 carry any preferred type of harness 25 for engaging and holding the feet of the patient while the outer ends of the cables support suitable weights 26. The tension cables 24 adjacent to their outer ends are trained over guide pulley wheels 27 carried by the lower ends of an inverted U-shaped frame bar 28. This frame bar 28 is secured to and extends transversally of the upper parallel bars or tracks 17. The forward ends of the cables 24 are trained over guide pulleys 29, which pulleys are carried by depending studs 30. The upper ends of the studs 30 carry rotatable anti-friction rollers 31 mounted for movement in the lower circular track 22. By this arrangement, it is obvious that the pulley wheels 29 are freely movable around the lower track 22.

In use of my improved surgical apparatus, the same is wheeled towards the bed B with which the same is to be used and one edge of the bed can be lifted over the longitudinal rails 16 of my device. My apparatus is then firmly clamped to the bed and I provide novel clamps for this purpose. The clamps are movable, within certain limits, on the uprights 12 so that the same can engage different sizes of head and foot pieces of beds as shown. Each of the clamps include a horizontal bar 32 the terminals of which carry pins 33 slidably received in suitable slots 34 formed in the uprights 12 of end pieces 10 and 11 of the frame. Slidably mounted through the center of each horizontal bar 32 is the threaded shank 35 of a hook 36. The shanks 35 have threaded thereon wing nuts 37 which are adapted to infringe against the outer faces of the horizontal bars 32.

In use of the clamps, the nuts 37 are loosened and the horizontal bars 32 are moved to the desired elevated position and the hooks 36 are placed over the top rails of the head and foot pieces 5 and 6 of the bed B. The wing nuts 37 are now tightened which will force the hooks 36 into intimate gripping contact with the head and foot pieces of the bed and the pins 33 into binding engagement with the inner walls of the slots 34 of the uprights 12. This will lock the horizontal bars 32 in their adjusted position and the hooks

36 into contact with the bed holding my apparatus positively locked with the bed.

The fractured limbs of the child are now raised as shown in Figure 1 of the drawings and the foot harness 25 attached to the patient. The weights 26 will create a tension on the fractured limbs and hold the same in the desired elevated position and the formation of the device will allow free movement of the body of the child.

When it is desired to lock the lower track 22 against movement and the pulley wheels 29 against travelling about in the lower track, these elements can be firmly held in place. As shown certain of the studs 23 have threaded thereon adjusting nuts 38 which can be threaded into binding contact with the lower face of the upper track 21, which will prevent rotation of the lower track. Likewise the studs 30 of the pulleys 29 can have threaded thereon nuts 39 which can be moved into engagement with the lower face of the lower track 32 so as to prevent travel of the pulleys around said track.

Likewise the circular tracks can be held in any adjusted position longitudinally of bars 17 by suitably locking mechanism, which embodies a spring pressed locking bolt 40 slidably carried by frame structure 41 secured to the upper face of the track 21. This latch bolt 40 is normally urged toward a longitudinally extending locking bar 42 arranged between the parallel bars 17. The locking bar 42 is held in place by suitably transversally extending straps 43 connected with the upper faces of the parallel bars 17. The locking bar 42 is provided with spaced keeper openings 44 into any one of which the latch bolt 40 is adapted to spring.

A depending pull chain 45 is connected with the lower end of the latch bolt so that the same can be pulled downwardly from out of engagement with the lock bar 42 so that the circular tracks can be moved to the desired positions.

From the foregoing description it can be seen that I have provided an exceptionally simple apparatus for efficiently handling the fractured limbs of children and which will facilitate the rapid knitting of the fractured limbs.

I claim:

1. A surgical apparatus for handling fractured limbs comprising an overhead support, means for rigidly connecting the support to a bed, a circular supporting track mounted for sliding movement longitudinally of the overhead support, means for locking the track in an adjusted position against sliding movement on the support, a carrier depending from and rotatable around said track, and depending tensioned limb engaging members supported by said carrier.

2. A surgical apparatus for handling fractured limbs comprising an overhead support,

means for rigidly connecting the support to a bed, a circular supporting track mounted for sliding movement longitudinally of the overhead support, means for locking the track in an adjusted position against sliding movement on the support, a carrier depending from and rotatable around said track, depending tensioned limb engaging members supported by said carrier, and means for detachably locking the carrier to the track against movement.

3. A surgical apparatus for handling fractured limbs comprising an overhead support, means for clamping the support to a bed, a circular track slidable longitudinally of the overhead support, a depending carrier rotatable around the track, depending pulleys rotatable around the carrier, tension cables trained over the pulleys, foot harness carried by the inner ends of the cables for the patient and weights connected with the outer ends of the cables.

4. A surgical apparatus for handling fractured limbs comprising an overhead support, means for clamping the support to a bed, a circular track slidable longitudinally of the overhead support, a depending carrier rotatable around the track, depending pulleys rotatable around the carrier, tension cables trained over the pulleys, foot harness carried by the inner end of the cables for the patient and weights connected with the outer ends of the cables, and means for locking the carrier against movement on the circular track.

5. A surgical apparatus for handling fractured limbs comprising an overhead support, means for clamping the support to a bed, a circular track slidable longitudinally of overhead support, a depending carrier rotatable around the track, depending pulleys rotatable around the carrier, tension cables trained over the pulleys, foot harness carried by the inner end of the cables for the patient and weights connected with the outer ends of the cables, means for locking the carrier against movement on the circular track, means for locking the track against movement on the support, and means for locking the pulleys against movement on the carrier.

6. A surgical apparatus for handling fractured limbs comprising a wheeled frame including upright end pieces and longitudinally extending overhead bars connecting said end pieces, adjustable clamps carried by the end pieces for engaging the opposite ends of a bed, a circular track mounted for sliding movement longitudinally of the connecting bars, a circular carrier arranged concentric with the track and rotatable relative thereto, pulley wheels rotatable around the carrier, guide pulley wheels supported by the connecting bars, tension cables trained over the first mentioned pulley wheels and the guide pulley wheels, foot harness for the patient carried by the inner ends of the ten-

sion cables, and weights carried by the outer ends of the cables.

7. A surgical apparatus for handling fractured limbs comprising a wheeled frame including upright end pieces and longitudinally extending overhead bars connecting said end pieces, adjustable clamps carried by the end pieces for engaging the opposite ends of a bed, a circular track mounted for sliding movement longitudinally of the connecting bars, a circular carrier arranged concentric with the track and rotatable relative thereto, pulley wheels rotatable around the carrier, guide pulley wheels supported by the connecting bars, tension cables trained over the first mentioned pulley wheels and guide pulley wheels, foot harness for the patient carried by the inner ends of the tension cables, weights carried by the outer ends of the cables, and means for locking the circular track in adjusted position longitudinally of the connecting bars, said means including longitudinally extending lock bar having keeper openings, means rigidly securing the lock bar to the connecting bars, and a spring pressed lock bolt slidably carried by the circular track for selective engagement with any one of the keeper openings.

8. A surgical apparatus including a supporting frame, spaced longitudinal trackways at the top of the frame, superposed circular trackways beneath the longitudinal trackways, means for adjustably suspending the circular trackways from the longitudinal trackways, means for connecting the circular trackways to permit independent movement of the two circular trackways, and tensioning cables suspended from the lowermost of the circular trackways and movable relative thereto.

In testimony that I claim the foregoing I have hereunto set my hand at Sauk City, in the county of Sauk and State of Wisconsin.

ARTHUR T. JOHNSON.