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SURGICAL APPLIANCE

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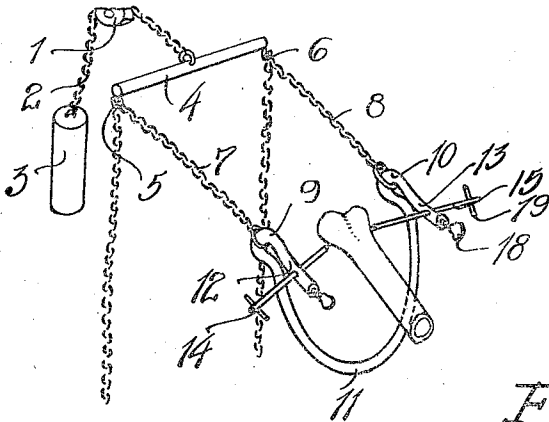


Fig. 1

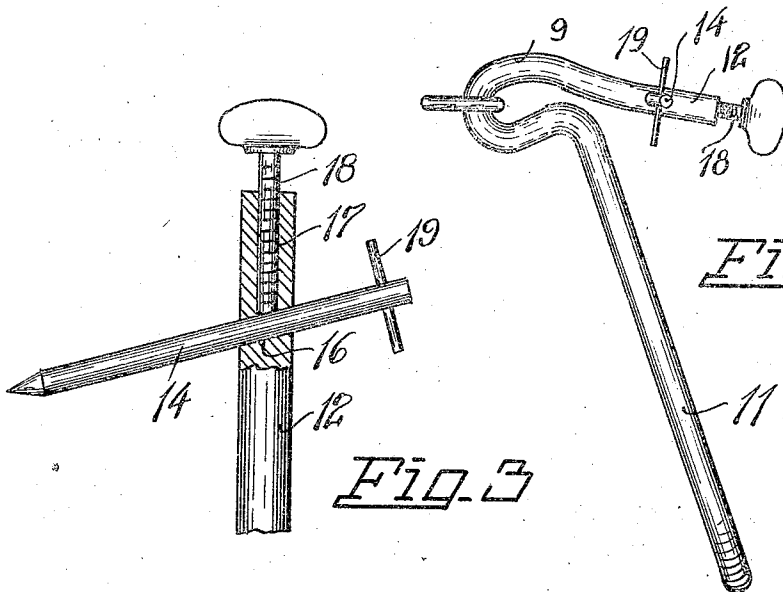


Fig. 2

Fig. 3

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# UNITED STATES PATENT OFFICE.

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## SURGICAL APPLIANCE.

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The present invention relates to improvements in surgical appliances or equipment for use in the treatment of fractures of the femur or thigh bone. The primary object of the invention is the provision of mechanical means of the caliper type whereby traction directly on the bone may be applied for such fractures during the process of knitting, thus avoiding the tendency toward deformity and shortening of the bone, insuring the required exercise to prevent stiffness of the knee joint and preventing possibility of atrophy of the thigh and leg muscles.

By the utilization of the appliance of my invention the patient may have movement of the limb to secure the required exercise while the fracture is knitting instead of waiting until the fracture has knit before exercising the limb.

The appliance consists in a portable equipment having certain novel features of construction and combinations and arrangements of parts whereby a traction device is insured that is simple in construction and operation and effective in the performance of its required functions, as will be hereinafter more particularly set forth.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged in accordance with the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is perspective view of the appliance showing it in operative position.

Figure 2 is a perspective view enlarged of the yoke employed beneath the knee joint.

Figure 3 is an enlarged detail view partly in section showing the adjustable caliper prongs or rods.

The traction device is employed to exert a pull on the limb and is used in conjunction with an exercising appliance that is manually operated by the patient for exercising the limb. While reclining, the patient by operating the exercising apparatus manually, imparts movement to the leg of the fracture, and the weighted traction device of my invention maintains the proper pull on the limb to hold the fractured portions of the bone in proper position.

The traction frame as illustrated in Figure 1 is suspended from an elevated pulley 1 which may be supported from the frame of the exercising apparatus, not shown. A

single chain 2 passes over this pulley and is provided at its free end with a weight 3. The other end of the weighted chain is connected at the center of a cross bar 4, and it will be apparent that the weight has a tendency to exert a pull on the bar through the chain.

At the ends of the cross bar are provided hooks 5 and 6 to which are connected a pair of parallel chains 7 and 8, the free ends of which are permitted to fall naturally to position, while selected links of the chain may be employed to connect with the hooks 5 and 6 for adjusting the length of the working portion of the chains.

The chains are connected at their ends to the respective eyes or loops 9 and 10 fashioned integrally with a U-shaped yoke 11. This yoke is made up of suitable material in its preferred U-shape and is designed to be located beneath the knee joint, as indicated in Figure 1, while the patient reclines. The looped ends of the yoke project in front of the knee joint and the chains, when in proper position are alined with the leg from the knee to the hip or thigh.

The yoke is fashioned with extension bars 12 and 13 projected from the eyes or loops and preferably at an angle to the body of the yoke. These parallel extension bars are equipped with complementary caliper pins 14 and 15 that project toward one another from their supporting extension bars and are pointed for co-action in treatment of a fracture as indicated in Figure 1. The extension bars are located at opposite sides of the leg above the knee joint or at the knee joint and the caliper pins carried by the bars co-act at diametrically opposite sides of the bone as indicated to attach the appliance to the leg of the patient. The caliper pins are disposed at an angle to the longitudinal axis of the bone and upon lines converging in the direction of the pull of the weighted frame.

The caliper pins are laterally adjustable with relation to their extension bars and are carried in angularly disposed transverse holes 16 therein. The free ends of the extension bars are bored out and threaded to form sockets 17 to accommodate the set bolts 18 for clamping the caliper pins in adjusted position. For convenience in manipulating the caliper pins they are provided with transverse handle bars 19 near their ends.

The length of the chains 7 and 8 is adjust-

able to adapt them to various conditions and the caliper pins are relatively adjustable in the extension bars to adapt the pins for use with different sizes of legs, and the whole appliance or traction frame, which is simple in construction, may with facility be quickly adapted for use and insure an efficient performance of the required functions in assisting in the healing of the fracture and in co-action with the exercising apparatus employed as described.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The combination in a surgical appliance with a suspended weighted frame, of a U-shape yoke flexibly connected therewith and formed with parallel extension bars, and complementary opposed caliper pins carried by said bars adapted to hold a bone against traction.

2. The combination in a traction frame as described of a yoke loosely connected therewith, and opposed complementary caliper pins carried by said yoke adapted to hold a bone against traction. 25

3. In a traction frame the combination therewith of a U-shape yoke having parallel extension bars, complementary caliper pins carried by said bars adapted to hold a bone against traction, and means for holding said pins in adjusted position in said bars. 30

4. In a traction frame the combination therewith of a U-shape yoke having parallel extension bars and angularly disposed holes in said bars, complementary caliper pins carried by said bars adapted to hold a bone against traction, and clamp bolts in said bars for retaining said pins in adjusted position. 35

In testimony whereof I affix my signature.  
MITCHELL LANGWORTHY. 40