

PORTABLE TRACTION APPARATUS FOR TREATING
FRACTURES OF THE FEMUR AND
FOR VARIOUS ORTHOPÆDIC
OPERATIONS.

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For several years I have treated most simple fractures of the femur in the young and middle-aged by the ambulatory method, using for this purpose a snugly fitting spica plaster-of-Paris cast, reaching from the waist to the ankle and having incorporated in it a special traction device extending an inch and a half below the sole of the foot. With a high-soled shoe on the opposite foot the patient is permitted to walk about on crutches after the first two or three days, and every day thereafter during convalescence. Most surgeons would probably condemn this practice on theoretical grounds as dangerous. My experience with this method, however, has convinced me not only that it is free from danger when properly used, but that it is superior to any of the traction methods that require the patient to lie for weeks on his back. The patient passes his convalescence in comfort, and there is no fear of shortening or displacement of the fragments. The fault lies not in the plaster-cast method, but in its unskillful and faulty application.

One of the greatest difficulties in the use of the spica plaster cast for fractures of the thigh arises from the crude and inadequate methods often used for holding the patient in position with sufficient traction and fixation of the broken limb while the cast is being applied. Several forms of orthopædic apparatus now in use serve this purpose admirably, but their expense and weight in the case of most of them are obstacles to their extensive adoption and use.

The portable traction apparatus which I devised the past year serves such a great variety of purposes, orthopædic

and surgical, that a detailed description of it may be of some interest.

As the photographs indicate, the apparatus merely rests on a table, but does not have to be clamped on or attached to it in any way—an obvious advantage under many conditions.

Traction is made on the patient's feet and counter traction at the perineum with the lower limbs in any desired position.

The two horizontal leg-bars (1) forty-two inches in length, the vertical perineal post (2) twelve inches in height, and the two vertical foot-posts (3) are all made of ten-gauge drawn seamless steel tubing one and one-eighth inches in diameter,—comparatively light and practically unbreakable. The castings are of tough malleable iron, and the whole apparatus is nickel-plated.

The thin metal sacral plate (5) is adjustable at any height.

A leather-covered hollow wood cylinder (9) can be slipped over the perineal post to give a broader surface for pressure in cases where very powerful traction is needed.

The horizontal leg-bars can be opened, compass-like, to any degree of abduction up to 180 degrees and securely locked at any point by a set-screw clamp (7).

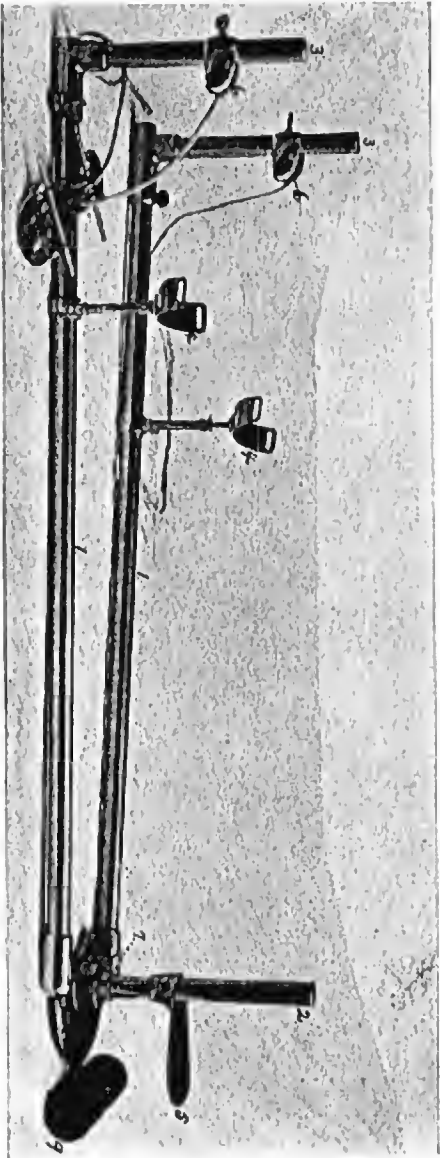
Two sliding and telescoping crutches (4) are attached to the leg-bars by means of split clamps, and are adjustable in a great variety of positions.

Two specially designed sole-plates (8), each bearing a double pulley, are attached to the feet by means of an ordinary muslin bandage. They fit a foot of any size and can be used equally well with or without a shoe. The traction, however great, can produce no trauma to the foot.

On each of the foot-posts is a combination tackle-block and clamping device (6), adjustable at any height. It is so constructed that when the operator (Fig. 2) stops pulling, the clamp pinches the cord automatically and prevents any release of traction.

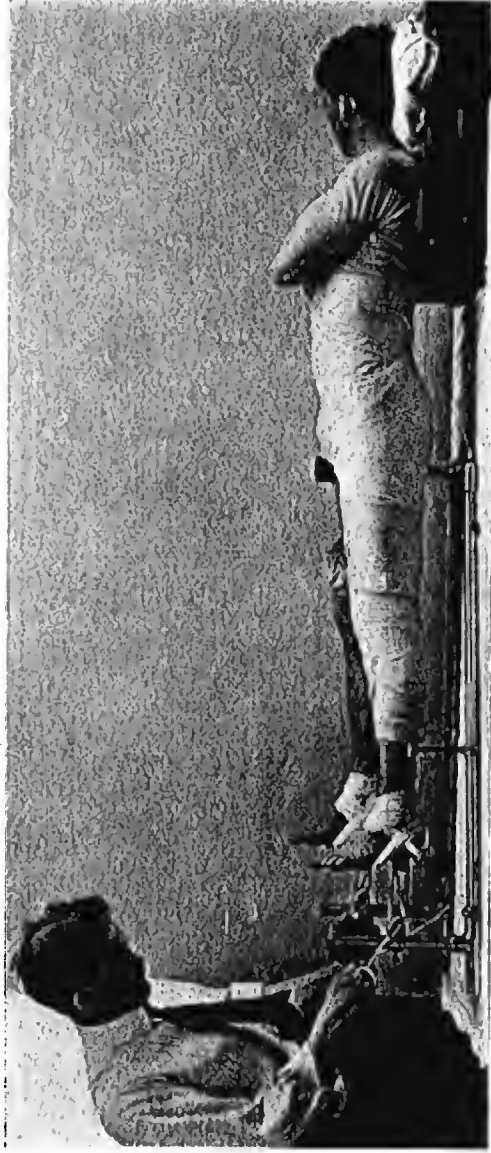
The pull made by the operator is multiplied by four.

FIG. 1.



Showing details of the traction apparatus.

FIG. 2.



Traction on feet preparatory to applying spica plaster bandage to left thigh

Thus, a pull of 100 pounds on the cord produces a traction of approximately 400 pounds on the leg.

Moderate flexion, or hyperextension of the thigh, may be produced by (a) raising or lowering the sacral support (5), (b) raising or lowering the feet (6), or (c) varying the thickness of the improvised head and shoulder rest.

The apparatus may be used for breaking up an ankylosis of the hip-joint in cases of flexion and adduction of the thigh with lordosis, traction and abduction being made on the affected limb, while an assistant depresses the opposite side of the pelvis.

The apparatus may be inverted and traction made on the legs without removing the patient from the bed—a useful manoeuvre in some cases of fracture of the shaft of the femur.

The apparatus has also been found convenient in the treatment of a contracted knee-joint, which, after being straightened by *brisément force*, is held in full extension by a bandage tied tightly about the horizontal leg-bar. After a plaster cast is applied with the limb in this position the bandage is cut away behind the knee. A padded *papier maché* or fibre splint may be used as a support for the thigh and enclosed in the cast if desirable.

By opening the horizontal leg-bars to 180 degrees, and applying the traction at the knees instead of the feet, the apparatus may be used like the "Extensionstische" of Heusner to hold the patient in position for applying a cast for double congenital dislocation of the hip-joints.

The cord-and-pulley traction device used in this apparatus has been found fully as efficient as the conventional jack-screw or windlass affair, and is lighter and less complicated. The traction can be applied or released instantly.

By using a suitably improvised back and shoulder rest the apparatus lends itself admirably to the application of body casts for Potts' disease of the dorsal or lumbar vertebræ.

In such procedures as *osteotomie subtrochanterica* and all open operations for old or recent fractures of the femur, some good traction apparatus is almost indispensable. This

apparatus not only furnishes the traction and fixation during operation, but maintains it without interruption, while the cast or splint is applied at the conclusion of the operation.

The entire apparatus can be quickly taken apart and carried like a shot-gun in a canvas bag.