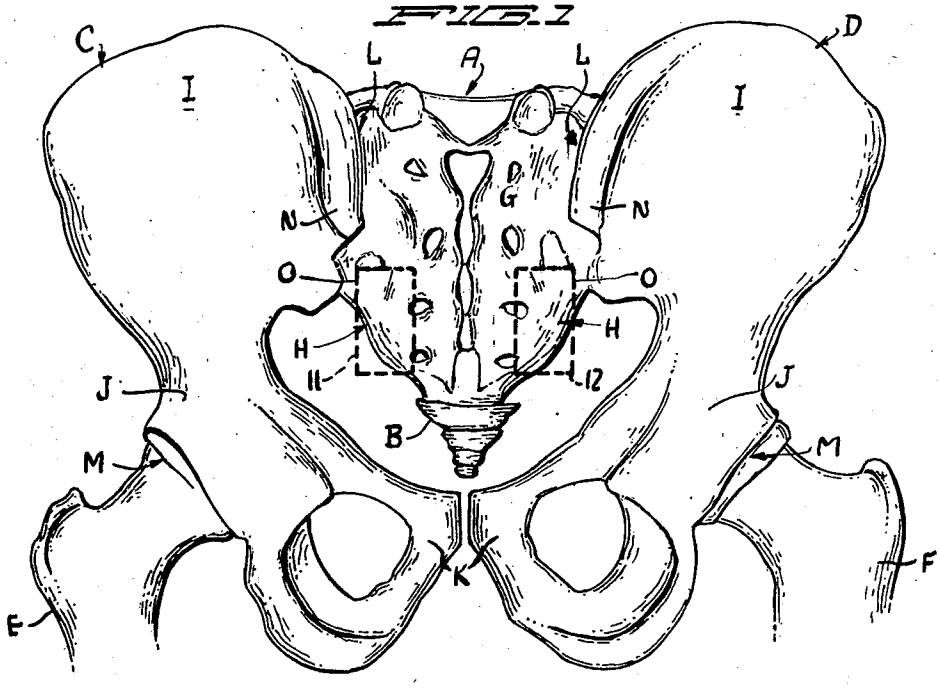
Jan. 7, 1958 J. W. JOHNSON 2,818,854

METHOD FOR MOBILIZING THE SACRO-ILIAC

Filed May 11, 1953 2 Sheets-Sheet 1

FIG. 1



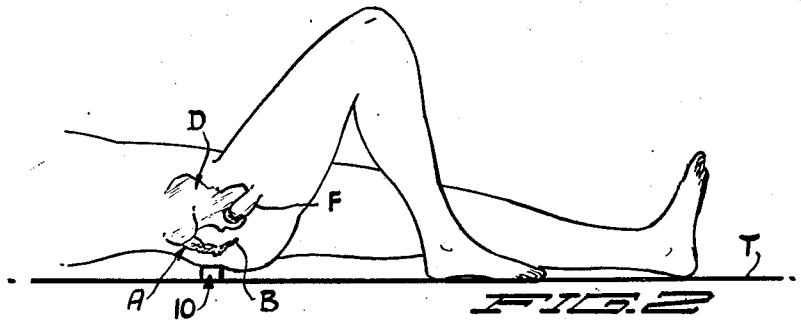


FIG. 2

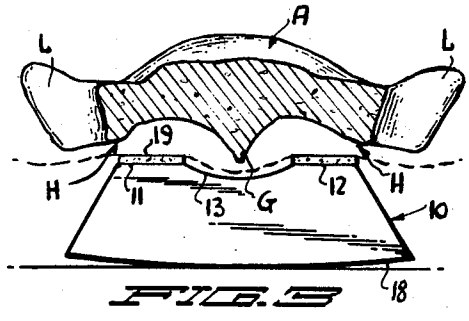


FIG. 3

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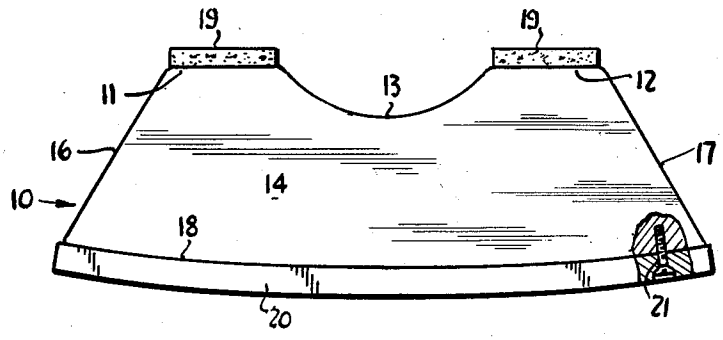
ATTORNEYS

Jan. 7, 1958 J. W. JOHNSON 2,818,854

METHOD FOR MOBILIZING THE SACRO-ILIAC

Filed May 11, 1953 2 Sheets-Sheet 2

FIG. 4



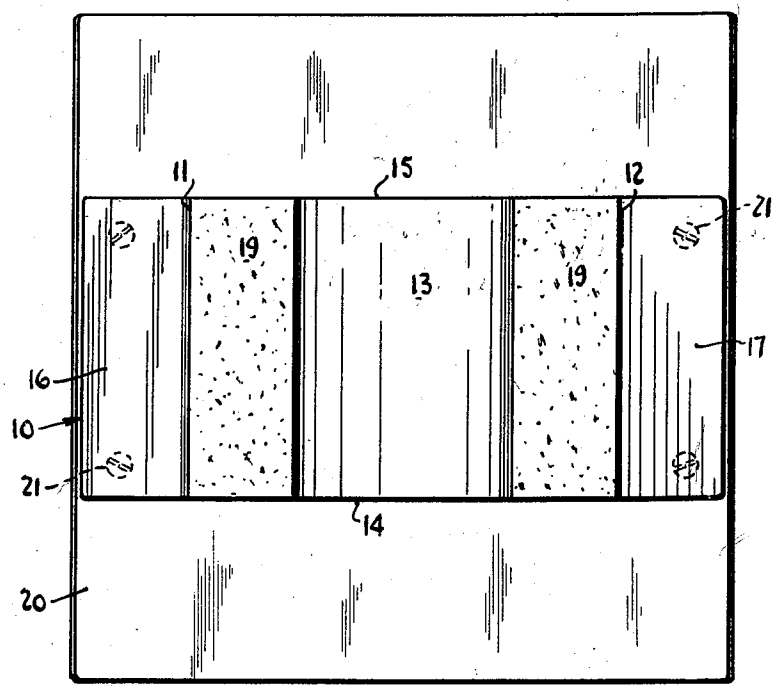


FIG. 5

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2,818,854

METHOD FOR MOBILIZING THE SACRO-ILIAC

Julian Willard Johnson, Minneapolis, Minn.

Application May 11, 1953, Serial No. 353,927

1 Claim. (Cl. 128—69)

My invention relates to certain improvements in the profession of osteopathy and the primary object is to provide an improved method, or technic, and apparatus for the mobilization of the human sacro-iliac articulations for the correction of displacements or fixations thereof.

It is well known to those of the profession and their patients that sacro-iliac disorders constitute a large part of lower back difficulties and the successful treatment of such disorders has been a long standing problem. Many people suffer from a persistently recurring subluxation of the sacro-iliac and if this condition continues over long periods of time it results in a gradual loss of the normal tone of the ligaments involved so that what is popularly called a weak back works its crippling effect upon the victim. It is possible for the osteopathic physician by accurate and objectively interpreted methods to test the mobility of the sacro-iliac and by known methods to correct a displacement or subluxation thereof in most instances, but in the persistent cases so many adjustments are required, in the office or home, that effective treatment to the point where the supportive ligaments regain their normal healthy tone and resiliency is almost impossible.

In the course of my practive I have discovered and invented a method or technic whereby the sacro-iliac articulation may be mobilized and restored to proper condition, with consistently effective results and a minimum of strain upon the patient. In carrying out the technic I provide counterforce or support over an accurately located area of the sacrum and, once this counterforce is properly applied, instruct or if necessary assist the patient to manipulate the leg upon the afflicted side through certain prescribed motions such that a force is exerted at the acetabulum and a backward thrust transmitted to the innominate which tends to rotate the innominate relative to the sacrum so that displacement or fixation of the articular surfaces are corrected, all as will be described in detail hereinafter. The area or point at which the counterforce is applied is quite critical but is readily located and I have, as a further part of my invention, provided a support, or mobilizing block, properly shaped and sized to produce the best results, as will also later appear.

Actual use of the technic and the block have demonstrated its almost completely consistent effectiveness in even very stubborn cases, but I have further discovered that the technic and block are actually capable of use by the patient in the home, under proper professional instruction or supervision, so that effective treatment can be carried on to the point that complete recovery is attained, or at least the condition greatly alleviated, something not heretofore possible to my knowledge.

Therefore, my invention embraces both a technic or method of mobilizing and restoring the sacro-iliac to its normal condition, in the office or the home, as well as a support or mobilizing block which has been carefully devised in order to provide exactly the support and

counterforce necessary to the most effective practice of the technic, either by the osteopath or by the patient alone.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which—

Fig. 1 is a posterior view of the bones of the human pelvis and adjacent upper portions of the femoral bones, illustrating in dotted outlines the areas or points at which counterforce is most desirably applied in the practice of my invention.

Fig. 2 is a lateral elevation of a patient in supine, dorsal position with the support or mobilizing block in place, certain portions of the bones of the pelvis being also shown.

Fig. 3 is a coronal or transverse sectional view through the human sacrum, taken on a plane below the auricular surfaces for the ilium and showing a support or block according to my invention in its relation to the lateral sacral crests.

Fig. 4 is a side view of the block, or support, fitted with a base useful where the underlying support is of a yieldable nature.

Fig. 5 is a plan view of the apparatus of Fig. 4.

Referring now particularly and by reference characters to the drawing I have, in Fig. 1 thereof, shown a posterior view of the human pelvis, the bony ring located between the vertebral column and the lower limbs, which comprises four elements, namely, the sacrum A, coccyx B and the laterally and forwardly located innominates or hip bones C and D. Also shown are the upper extremities of the left and right femur or thigh bones E and F. The sacrum A has the central or medial crest G which is a spiny dorsal projection and, as important to an understanding of my invention, also has the opposed lateral crests H which are also dorsal prominences or projections and are located some distance below the lateral auricular surfaces for articulation with the innominates C—D. Each innominate comprises a portion I known as the ilium, a relatively lower portion J known as the ischium and a relatively forwardly located portion K known as the pubis. Each ilium also has an auricular surface for articulation with the sacrum and it is the combined pivotal and slidable joint at the point indicated at L which is formed between these surfaces which is known as the sacro-iliac. Actually, of course, these auricular surfaces do not meet directly, there being intervening layers of cartilage, and in the drawing the various ligaments are omitted, but it is the damage to these cartilages and ligaments by repeated subluxation or fixation of the sacro-iliac which makes this articulation such a trouble spot for the osteopathic physician and a painful one to the patient.

Laterally each innominate C—D also is articulated with the upper end of the associated femur E—F at the points M, this articulation being formed between the acetabulum or socket in the innominate and the complementarily shaped head of the femur.

Also of interest in the following discussion it is to be noted that the ilium of each innominate has what is known as a posterior superior spine at N which is a dorsal projection at about the plane of the sacro-iliac as viewed posteriorly, and immediately therebelow there is a relatively lesser projection or prominence known as the posterior inferior spine O. It is these various dorsal projections or prominences G, H, N and O of the sacrum and innominates which have a bearing on the proper location and use of the counterforce support in the practice of my improved mobilizing technic as will later appear.

At this point the counterforce applying apparatus, or block as it will be hereinafter referred to for the sake of brevity, will be described and the same is seen to comprise a somewhat rectilinear element, designated generally at **10**, having an upper surface with spaced, lateral, flat topped and horizontal support areas or abutments **11** and **12**, between which there is a concavity or central groove **13**. The opposed sides **14—15** of the block are about vertical, while the end **16—17** diverge or are beveled outwardly and downwardly. The bottom **18** of the block is straight from side to side but is gently curved from end to end so that the bottom is downwardly convexed as viewed from either side. While not absolutely necessary the abutments **11—12** are capped by rectangular and rather thin soft rubber or other resilient cushions **19** cemented or otherwise secured in place. To the underside of the block there may be secured a rectangular base plate **20**, removably mounted by screws **21** and drawn tight to follow the end to end curvature of the block. Such base plate is about the same length as the block but is considerably wider as clearly shown in Fig. 5, the block being centered as also there shown. The block and base may be made of wood, plastic or any other suitable material, of course.

Of definite importance is the fact that the shape, size and spacing between the abutments or areas **11—12** is such that when the block is properly located these areas will coincide with the location of the lateral sacral crests H as best shown by the dotted outlines in Fig. 1, while the intervening groove **13** clears and in effect cradles the medial sacral crest G as seen in Fig. 3. These characteristics of the block and relationship with the sacrum are vital and the dimensions which I have found to be most advantageous will be presently set out.

The mobilizing technic for normalizing a subluxation or fixation of the sacro-iliac joint in office treatment will first be described. The patient on the table, indicated at T in Fig. 2, is placed in a dorsal position with the knees flexed and is instructed to raise the hips from the table. The operator then palpates the sacral region with the flat of the hand, locating the most prominent point of the sacral convexity with one finger and then moves the finger approximately an inch upward on the medial sacral crest. With this localizing finger in place the operator then reaches around the waist of the patient with the block **10** in the other hand and the block is brought beneath the pelvis with the block centered on the sacrum and its adjacent side in contact with that finger. The abutments **11—12**, of course, are next to the body and the block is held in such position while the patient lowers the hips, and brings the legs straight down upon the table assuming a supine position. When the block is properly located it is centered under the most prominent point on the sacrum with the medial sacral crest G comfortably cradled or received in the groove **13** of the block, while the lateral sacral crests H rest upon the abutments **11—12**. Not only is the location of the block transversely important for proper centering, but it is also important that the block be properly located lengthwise, or axially of the spine, so that the upper edge of the block is spaced below the posterior superior spines N of the innominates by about one-half inch. With the block in place it is possible for the operator to determine its proper location by palpation and if the patient senses the need therefor he may himself move slightly in order to comfortably cradle the sacrum upon the block. The location is substantially that shown in the drawing.

The operator now, while holding the block in place against movement in any direction, instructs the patient to bring up the knee upon the afflicted side, usually that next to the operator, so that the foot rests upon the table about even with the opposite knee and in such manner that the knee is brought up in flexion. Next the patient is instructed to rotate the foot outward, or externally, and the knee is then swung laterally, abducting the thigh to

the point at which the thigh is at approximately a thirty degree angle to the perpendicular, at which point it is sensed that the patient's pelvic weight is concentrated and quite well balanced upon the side being treated. These preliminary motions may be guided and assisted if the operator will place his hand upon the knee and gently assist in carrying out the proper motions. The patient is next and finally instructed to throw his foot straight out upon the table, with the foot remaining in sliding contact with or at least close to the table as it travels downward and so that the calf of the leg will strike the table at the same instant that the knee reaches its complete extension. This movement may also be followed and slightly assisted by the operator's hand upon the patient's knee, but it is most effective if performed in a completely relaxed manner without effort or tension. The external rotation of the foot and the abduction of the thigh causes the leg to come down on the table in what amounts to a complete external rotation. As a result, as the calf of the leg strikes the table, a sharp backward force is exerted at the acetabulum with the anterior fibers of the capsular ligaments of the hip joint and the ilio-femoral ligaments so tensed that the backward thrust is transmitted on the innominate quite effectively. The tendency, therefore, is for the innominate to rotate forward with relation to the auricular surface of the sacrum bringing about the necessary mobilization of the sacro-iliac to overcome the fixation or subluxation thereof. The consistent effectiveness of the movement is made possible by the fact that a firm counterforce is applied to the posterior extremity of the auricular surfaces between the sacrum and ilium by means of the block which localizes the motion at the sacro-iliac and insures the proper reduction and restoration of the displacement thereof. The patient in most cases experiences no definite sensation to indicate the success of the technic, but if the movement is properly performed it is consistently effective as may be determined by means of the usual sacro-iliac mobility test. Symptomatic response need not be relied upon as a test of the effectiveness of the technic.

The external rotation of the leg as it straightens out on the table is a normal and relaxed position which encourages relaxation of the patient and, furthermore, it is found that as the leg straightens out the heel, being turned from the side, does not strike the table forcefully nor does any excessive pressure inadvertently applied by the operator in assisting the movement result in a sharp hyperextension of the knee. The abduction of the thigh also tends to shift the patient's weight toward the side being treated, balancing the weight more or less upon the block, so that a firm and stable bearing and counterforce is applied. Relaxation of the patient is very desirable but where this is impossible the assistance of the operator is necessary, although excessive assistance is to be avoided in all cases. Where conditions do not permit the foregoing procedure the patient may be instructed to bring up the knee so that the foot clears the table and then slide the leg down in somewhat the manner described and, of course, so that the calf of the leg will slap down upon the table, as stated hereinbefore.

At this point the reason for the curvature of the base or bottom **18** of the block will become apparent. The abduction of the thigh as aforesaid tends to roll the pelvis slightly in a lateral direction and in the direction of such abduction. As this is done the block itself may roll upon its curved bottom **18** to follow the pelvis while maintaining proper contact with the sacrum. Were this rocking or rolling of the block not thus permitted the tendency of the pelvis to roll with relation to, rather than together with, the block may bring the support beneath the posterior inferior spine O of the ilium which obviously would prevent movement of the ilium in relation to the sacrum and render the technic ineffective.

Occasionally there will be found a case in which it is

impossible for the patient to perform the movements necessary to the technic as just described, due to a complete inability to relax or to some prohibitive pathology of hip or knee joints. In such cases the technic may be carried out by placing the mobilizing block under the sacrum about as previously described but possibly somewhat lower than usual. The operator may then kneel at the foot of the table, placing one hand under the patient's ankle at the side to be treated with this hand close to the heel and the other hand high on the back of the foot. Where the right sacro-iliac is being treated the operator's left hand should be placed under the ankle and vice-versa, but in either case the patient's foot rests upon the underneath hand, which in turn rests upon the table, while the upper hand rests upon the foot, all in as relaxed a manner as possible. The technic is then completed with a quick pull amounting to a traction thrust with both the patient and the operator relaxed and in such fashion that the pull is delivered sharply without preliminary movements or any tightening of the hands upon the foot and ankle. If the technic is successful as thus carried out, there is a sharp snap which is readily sensed indicating articular separation at the hip joint and the sharp downward and backward thrust imparted to the innominate by the separation tends to rotate the innominate forward relative to the sacrum. This rotation, acting against the firm counterforce applied by the block beneath the auricular surface of the sacrum, brings about an extension at the sacro-iliac which will overcome articular fixation and reduce the subluxation causing the difficulty. Where treatment of the other side is necessary it may be desirable to reposition the mobilizing block. In the event that an effective traction thrust or pull cannot be delivered in this manner, a sharp pull may be tried with the operator erect and the patient's leg raised from the table. This is a technic similar to that previously practiced to some extent but consistent effectiveness is obtained where it is applied at a moment of relaxation, with the firm counterforce provided by the mobilizing block of my invention. In almost any acute case the technic may be carried out and where it is impossible for the patient to come to the office it may be carried out on the bed by providing sufficient support for the mobilizing block so that a stable counterforce may be applied. The base **20** is desirable where the block is used upon the ordinary treatment table, the surface of which is yieldable to at least some extent and wherever necessary or the nature of the surface dictates even greater support may be provided by means of a book or any other available base of larger area.

In this connection it is to be noted that while the base **20** is forced to conform to the curvature of the bottom **18** of the block there is no curvature at right angles to this direction so that under no conditions is there permitted a rocking motion of the block in a longitudinal plane or in a plane parallel with the spinal axis. Any such motion would be undesirable since it would tend to uselessly absorb the desired mobilization of the sacro-iliac, as will be readily appreciated. On the other hand, the limited rocking or tilting motion in the transverse plane which is permitted whether the block is used alone or with the base is highly desirable as set forth hereinbefore, in that it permits the block to rock with the pelvis in a transverse plane and maintain its desired relationship with the sacrum.

The mobilization technic according to my invention may also be carried out to great advantage by the patient in the home where continued treatment is required, as in cases where the patient suffers from recurring subluxations or displacements and where over a course of time the tone and general strength of the involved ligaments has deteriorated. When properly carried out by the patient under direction and supervision of the osteopathic physician most such chronic cases can be brought, if not to an entirely complete cure, to a point such that little or no difficulty or disabling effect remains. Such persistently recurring displacements are difficult and in many cases impossible to treat adequately by office procedures and the extreme importance of proper continued and regular treatment may be realized when the resulting contribution to the general health and well-being of the patient is considered. Symptomatic recovery is sometimes possible despite recurring displacements, but normalization of the mechanics of the pelvis may be desirable nonetheless for relieving secondary spinal lesion pathological conditions.

For home treatment the patient is instructed to assume a supine dorsal position on the floor with knees flexed and to place the mobilizing block beneath the pelvis with the medial crest of the sacrum comfortably cradled in the groove **13**. With the block thus properly positioned transversely it is moved up or down as the case may be until it is under the most prominent dorsal projection of the sacrum with its lower edge an inch or two above the lower extremity of the coccyx. If this position is properly assumed it will be found that the weight of the pelvis balances upon the block and upon rocking slightly upward or downward, or toward the head and toward the feet, the pelvis will tend to rock about the block as a fulcrum rather than to rock upward or downward off the block, as the case may be. The patient is quick to sense this point of balance and to locate the block without diffculty. Once the block is properly positioned the patient may bring his legs down straight on the floor and by placing both hands flat under the hips may stabilize the pelvis as well as so diffuse sensation that any tendency toward discomfort is alleviated. At this point the knee on the side to be treated is brought up in flexion until the foot, from which the shoe has been previously removed, is about even with the opposite knee, whereupon the thigh is abducted to a point at which the patient can sense that his weight is more or less balanced upon the abutment **11** (or **12**) on the side being treated. The patient then carries out the technic as described hereinbefore, sliding the foot straight down so that the calf of the leg strikes the floor while retaining the foot in contact with the floor throughout. If the technic is carried out in the properly relaxed condition it is found to be as successful as though performed directly under supervision of an operator in the office.

Here again relaxation is the keynote of success and it may be desirable to instruct the patent to initiate the technic movement quite slowly for this reason, but to complete it under considerable acceleration in order to achieve the desired external rotation and proper motion of the parts involved. It has been found in actual practice that the proper abduction of the knee is secured if the patent will permit his normal reflexes to control and to bring the knee out to the point at which he senses a more or less unconscious tendency to stop. With the foot rotated outward and the thigh properly abducted the former is turned upward and dorsally flexed and it is desirable that the patient maintain this position as he slides the foot outward. When the leg and foot are so held the extensor muscles of the legs are slightly tensed so that the knee comes down in extension more readily and the technic is carried out most effectively. Daily use of the treatment may be continued until all symptoms of weakness in the lower back have disappeared, following which occasional use is suggested over a period of several weeks. Being harmless if properly conducted, however, the further treatment may be left to the discretion of the patient, until he has found that the tendency toward recurring subluxation is totally overcome. Obviously the patient must also be instructed as to the proper procedure in assuming the position for treatment and in returning to an erect position after the treatment is concluded in order to prevent any recurrence of the trouble actually under treatment.

As stated, the block **10** itself must be properly sized and shaped in order to provide counterforce and support at exactly the points desired. For this purpose the spacing between the abutments **11** and **12**, as well as the shape

and area thereof, must be so chosen that they will, as seen in Fig. 1, coincide with the location of the lateral sacral crests H while not coming into undesired juxtaposition to the posterior superior and inferior iliac spines N and O. Furthermore, the dimensions and depth of the intervening groove 13 must be such that the medial sacral crest G may be cradled comfortably therein. The proportions shown in my drawings have been found to be correct for this purpose in the average case. For example, but not to impose a limitation, I find that a block one and five-eighths inches high, two and three-eighths inches wide with abutments about one inch across and a groove of one and five-eighths inches across and three-eighths deep is satisfactory. The radius of curvature of the bottom 18 is about twenty-one inches. In addition, comfort is, of course, a factor in complete relaxation of the patient and it is for this purpose that I provide the yieldable cushions 19 upon the block and also, as shown, all edges of the block are smoothly rounded off. The effectiveness of the entire technic is directly proportional to the capability of the block to apply firm counterforce and support directly and accurately beneath the auricular surfaces of the sacrum so that the rocking motion of the innominates will have a maximum effect in the rearticulation of the sacro-iliac. Without this ability to apply such counterforce, and so to effectively stabilize the sacrum itself, it will be obvious to those skilled in the art that the technic would be relatively ineffective and inconsistent in its results in the office, and wholly ineffective for home use.

As heretofore described the block 10 applies counterforce to both sides of the sacrum or bi-laterally thereof, but under certain conditions it may be desirable to apply uni-lateral counterforce as will now be described. For this purpose one end only of the block is disposed beneath the patient and using the flexed thigh as a lever the operator rolls the pelvis of the patient away from him so that the block is positioned approximately as far beneath the pelvis as the beveled end 16 or 17 of the block will permit. The patient's knee is then drawn back toward the operator, rolling the pelvis back onto the block, whereupon the patient's foot is placed on the table even with the opposite knee and the thigh is abducted as aforesaid until the lateral portion of the pelvis is more or less balanced upon the one end only of the block. Here not only does the angular or beveled formation of the ends 16 and 17 facilitate proper placement of the block but the fact that the cushions 19 by their very nature have a high coefficient of friction will assist in holding the block properly in place. When the block is thus located one abutment 11 (or 12) provides support for the lateral area of the sacrum, while now the groove 23 provides clearance and is aligned with the sacro-iliac joint as well as the posterior inferior spine O of the ilium. Obviously this technic requires exact and accurate location of the block in both directions but afterward the technic may be carried out exactly as previouly described with consistently effective results. While such uni-lateral placement may not be so desirable for home use, it is of great benefit for routine office procedure due to the ease and rapidity with which the skilled operator may carry out the location of the block and subsequent technic.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claim. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

The method of mobilizing the human sacro-iliac articulation for correction of a displacement thereof which includes applying a firm supporting counterforce in a localized area beneath the lateral portion of the sacrum adjacent to the sacro-iliac, but clear of the posterior superior and inferior spines of the ilium, with the patient in a supine dorsal position upon a supporting surface, flexing the knee of the leg on the afflicted side to the point where the foot thereof is about even with the knee of the opposite leg and then rotating that foot outwardly and abducting the thigh until the pelvis of the patient is approximately balanced upon the counterforce support, and finally while maintaining a relaxed condition moving the flexed leg downward until the calf strikes the supporting surface to thereby cause the innominate to rotate forward and downward relative to the sacrum and correct the displacement of the sacro-iliac articulation.

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