March 17, 1925. 1,529,872

A. S. CRAIG

AUTOMATIC TREATING TABLE

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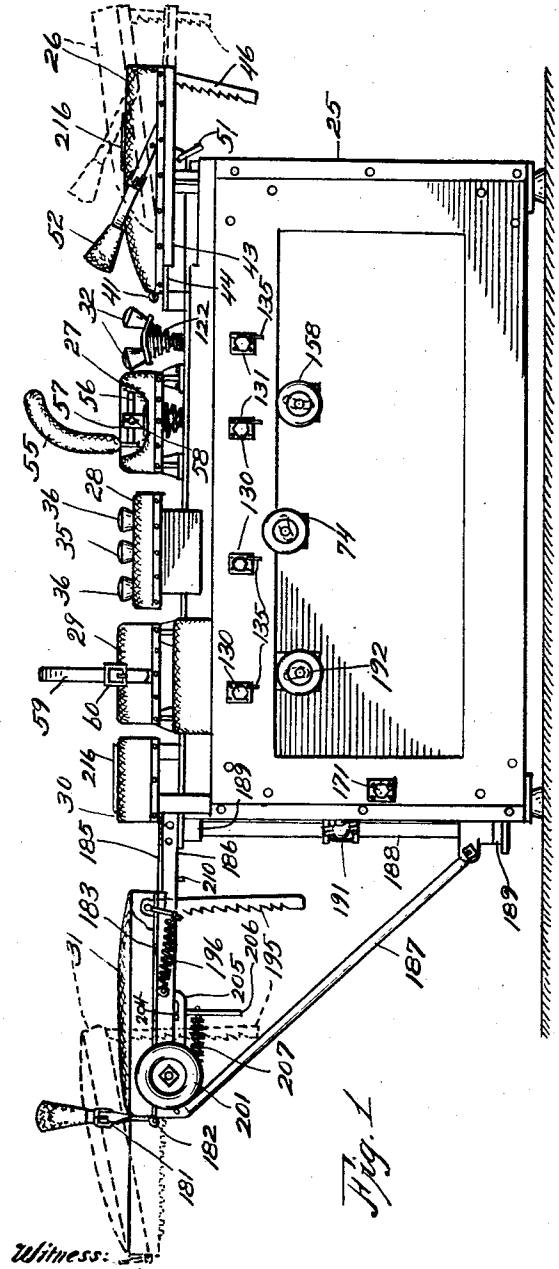


Fig. 1

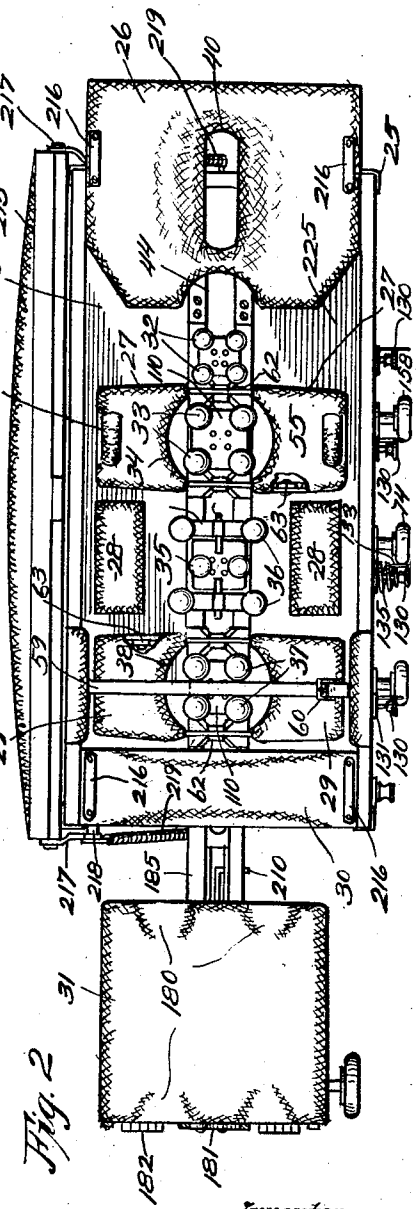


Fig. 2

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Filed Jan. 9, 1922 7 Sheets-Sheet 2

Fig. 3

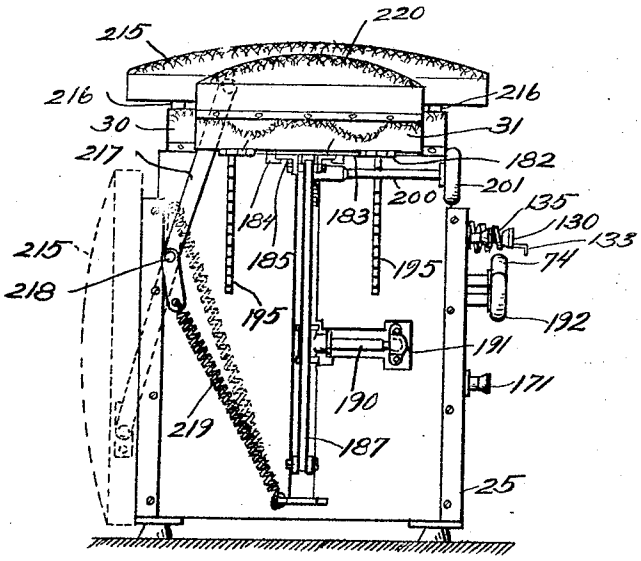


Fig. 4

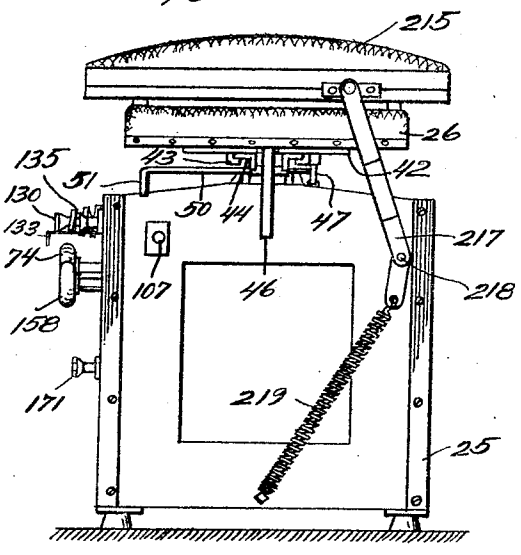
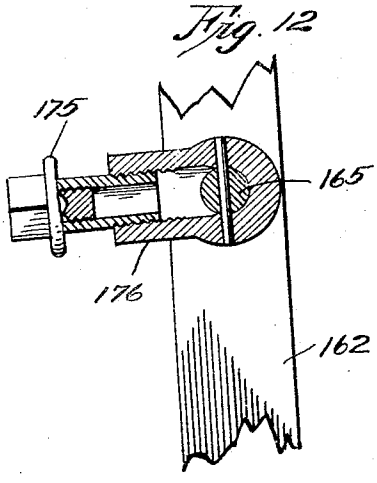


Fig. 12



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March 17, 1925. 1,529,872

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AUTOMATIC TREATING TABLE

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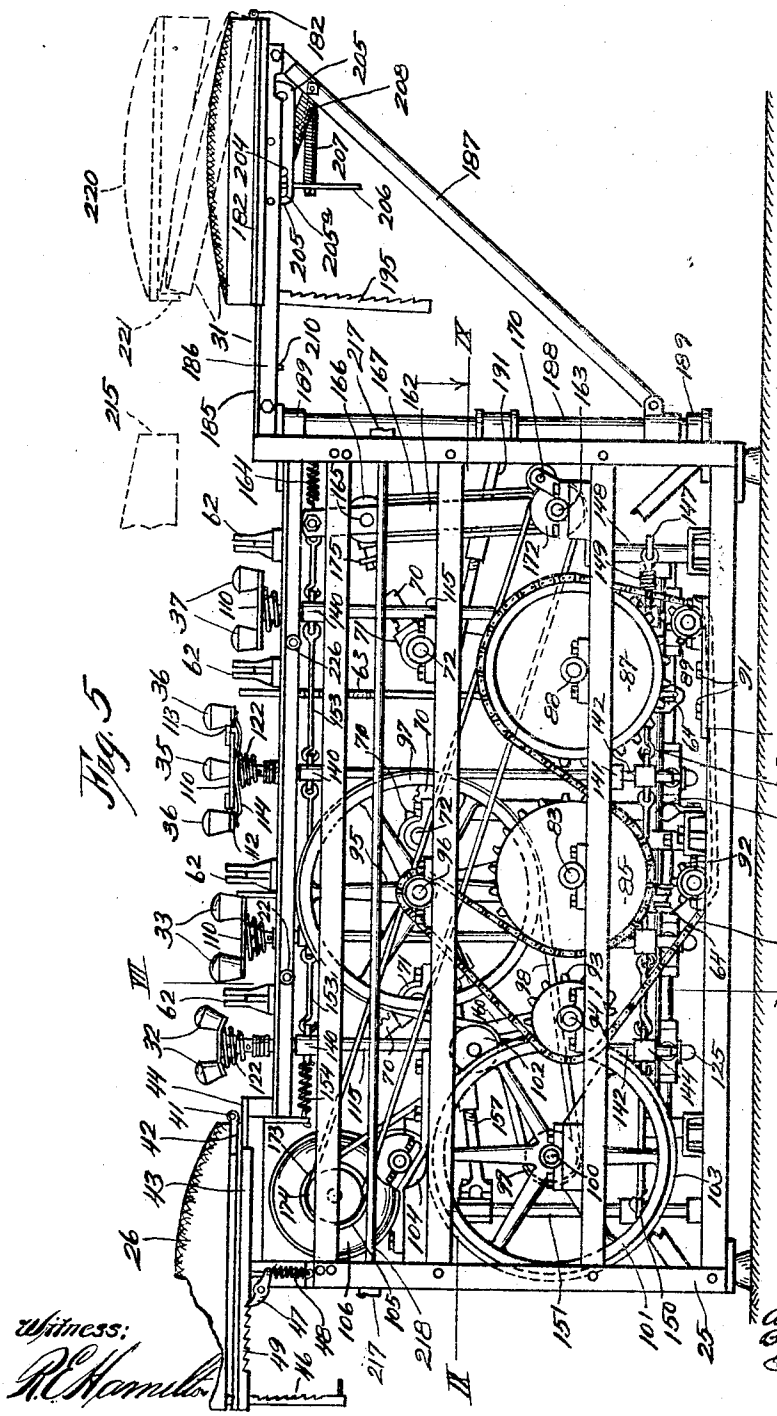


Fig. 5

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1,529,872

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AUTOMATIC TREATING TABLE

Filed Jan. 9, 1922

7 Sheets-Sheet 4

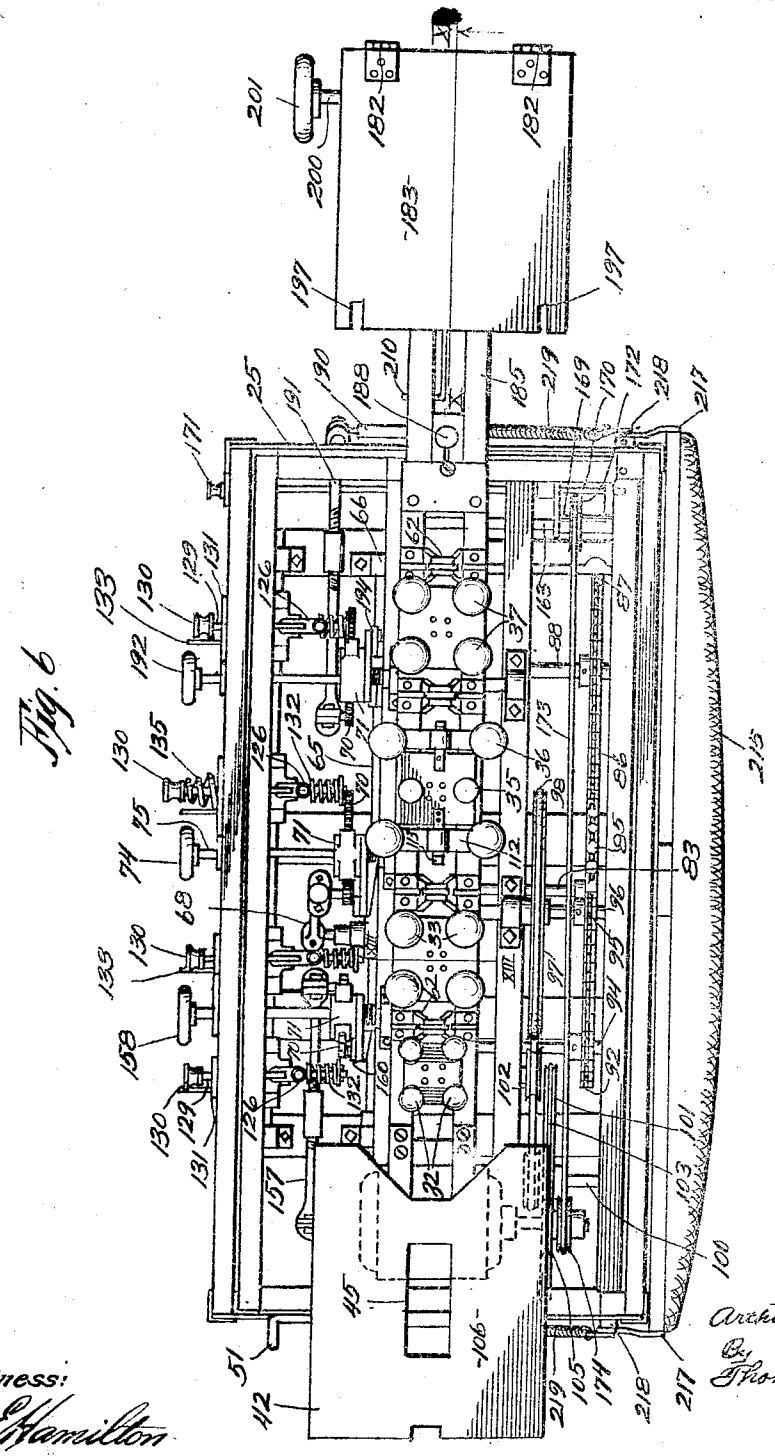


Fig. 6

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AUTOMATIC TREATING TABLE

Filed Jan. 9, 1922 7 Sheets-Sheet 5

Fig. 7.

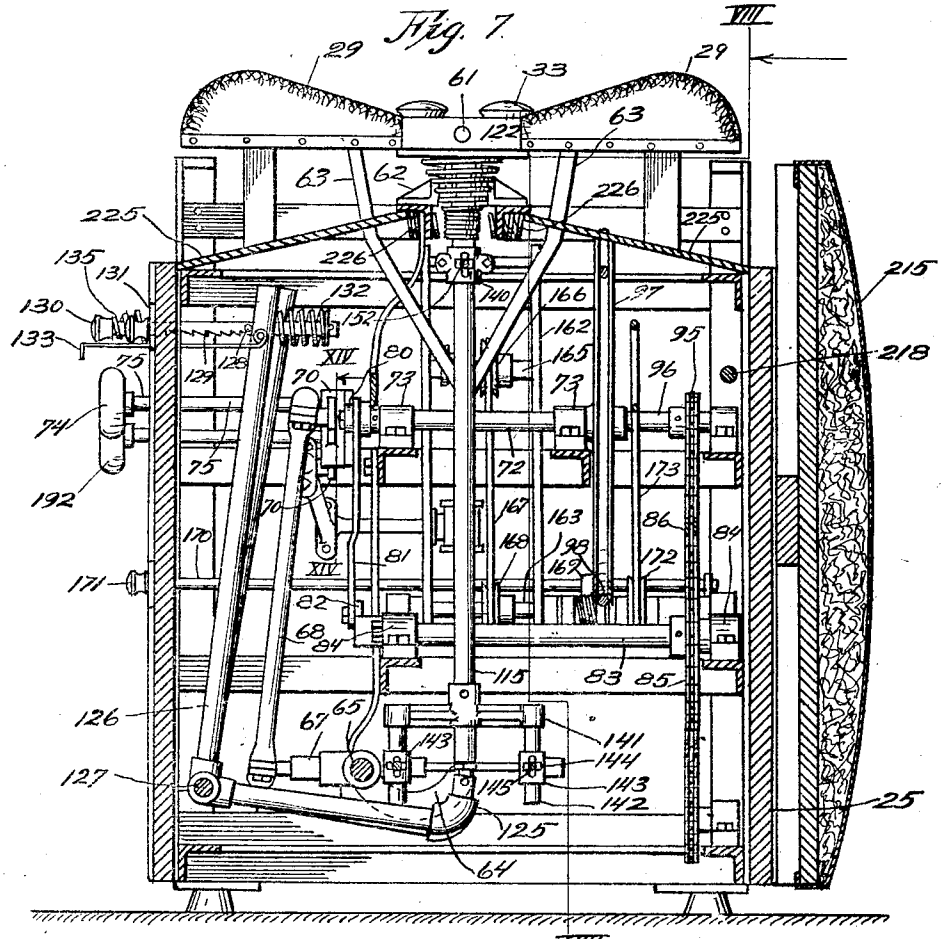


Fig. 13

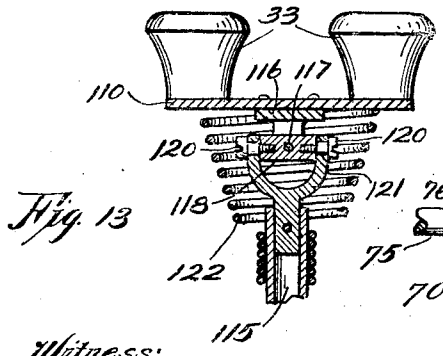


Fig. 15

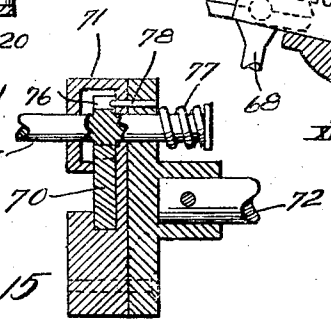
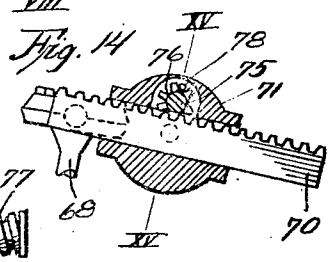


Fig. 14



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1,529,872

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AUTOMATIC TREATING TABLE

Filed Jan. 9, 1922

7 Sheets-Sheet 6

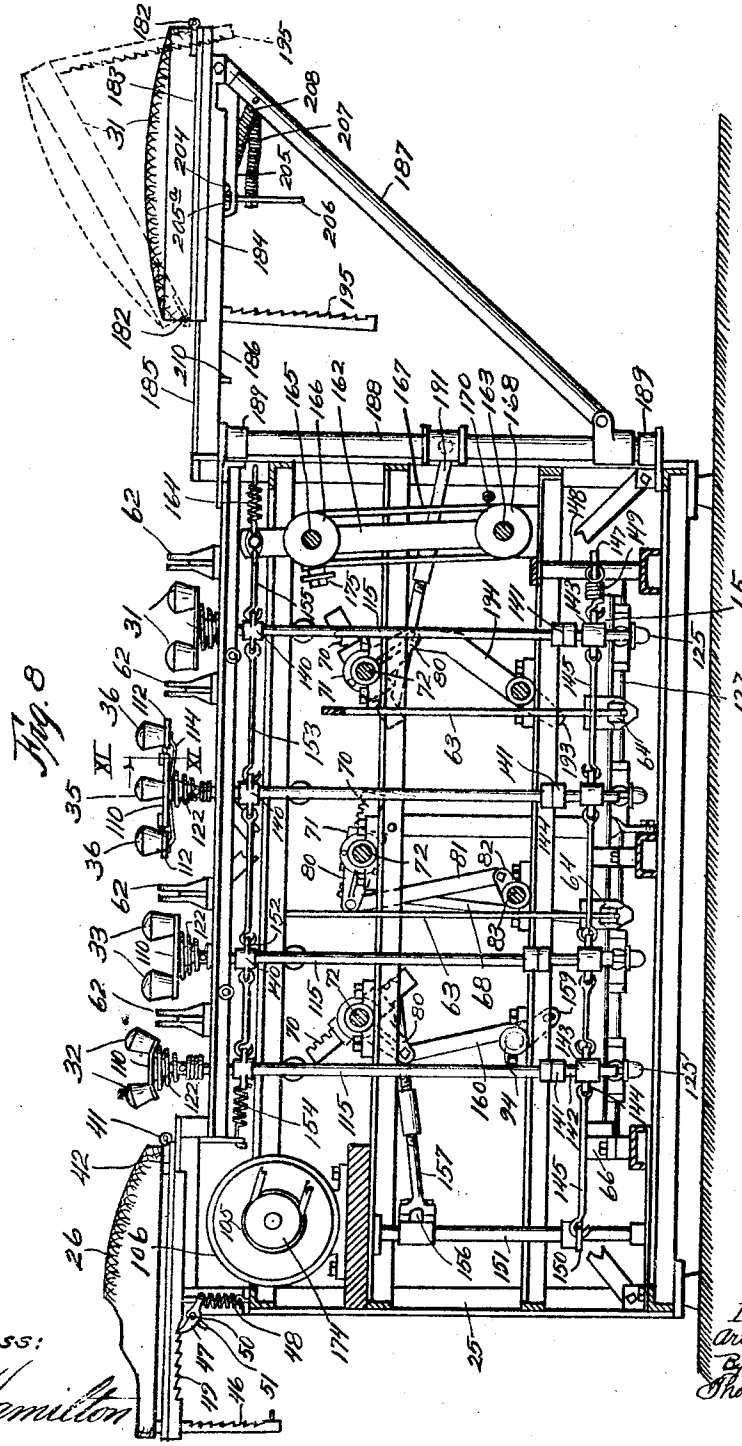


Fig. 8

Witness:
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Attorneys.

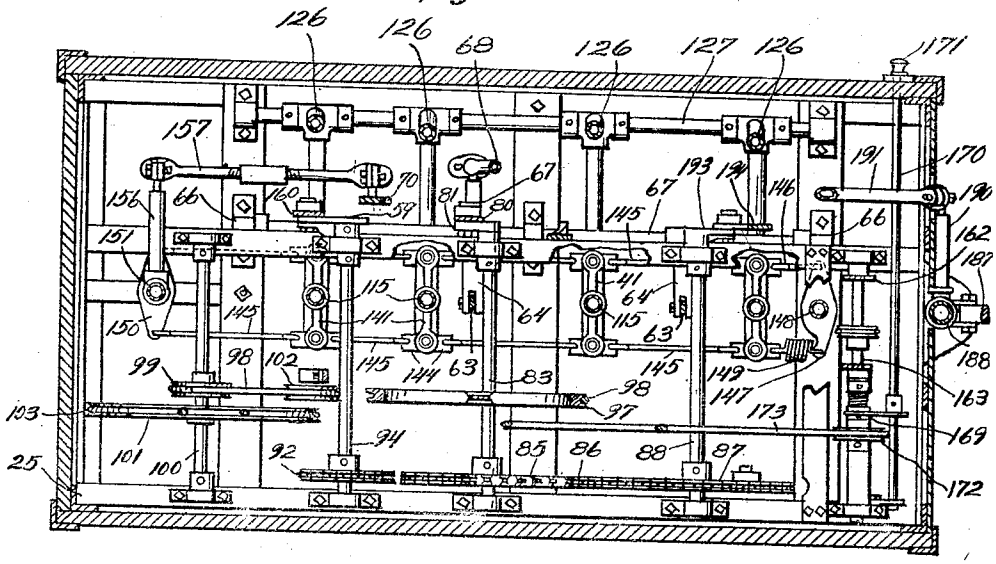
March 17, 1925. 1,529,872

A. S. CRAIG

AUTOMATIC TREATING TABLE

Filed Jan. 9, 1922 7 Sheets-Sheet 7

Fig. 9



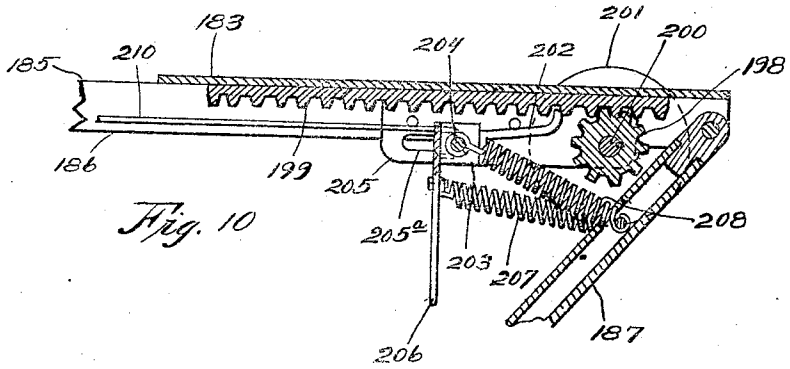


Fig. 10

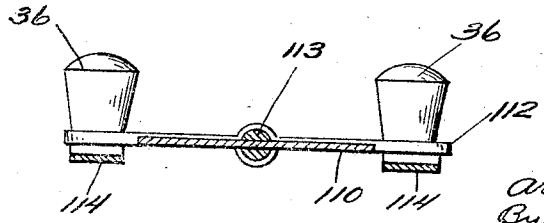


Fig. 11

Witness:

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Patented Mar. 17, 1925. 1,529,872

UNITED STATES PATENT OFFICE.

ARTHUR STILL CRAIG, OF KANSAS CITY, MISSOURI.

AUTOMATIC TREATING TABLE.

Application filed January 9, 1922. Serial No. 527,962.

To all whom it may concern:

Be it known that I, ARTHUR S. CRAIG, a citizen of the United States, and resident of Kansas City, county of Jackson, State of Missouri, have invented a certain new and useful Improvement in Automatic Treating Tables, of which the following is a complete specification.

The present invention relates to treatment tables, such as those used by osteopaths, chiropractics, surgeons or others administering mechanical treatments, and aims to provide a novel, efficient and unitary form of treating table for performing automatically a great many of those treating operations peculiar to osteopathic and chiropractic methods which have heretofore required to be carried out laboriously by hand.

Accordingly, one of the primary objects of the invention is to devise a treating table or couch having its upper portion formed of segments or treating devices adapted for the comfortable support of a patient, together with suitable operating mechanism for imparting different varieties of motion to one or more of such treating devices, according to the different modes of treatment required; to this end, provision is made for effecting treating movements of varying amplitude, combinations of movements of different character, such as various types of twisting movements, combined tractive or stretching and twisting movements, alternating tractive and relaxing movements, combined twisting or tractive and vibrating movements, etc.

It is a further object to devise a treating table of this general character in which the framework of the apparatus incloses the motor and driving mechanism for the treating appliances in a neat and compact form, together with a supplemental plain table top which may be conveniently swung into or out of operative position over the automatic treating devices, so as to convert the apparatus into a plain top table for carrying out the customary manual treating.

With these general objects in view, as well as minor objects as will hereinafter appear, the invention will now be described with reference to the accompanying drawings illustrating one practical and efficient form of apparatus which has been devised for embodying the proposed improvements, after which the novel features therein will be particularly set forth and claimed.

In the drawings—

Figure 1 is a side elevation showing a treating table constructed in accordance with the present invention, with the plain table top let down into inoperative position, and broken lines representing different positions of adjustment of the head and foot rests:

Figure 2 is a plan view of the table with the parts occupying positions as represented in Figure 1;

Figure 3 is an end elevation of the table, looking at the same from the foot of the table, with broken lines illustrating the inoperative position of the plain table top member;

Figure 4 is an end elevation of the table, looking at the same from the head end of the same;

Figure 5 is an enlarged side elevation of the table, looking at the same from the opposite direction from that illustrated in Figure 1, and with the side panels removed for disclosing the interior operating mechanism;

Figure 6 is a plan view of the table omitting both of the top panels and with the various upholstered pad members omitted;

Figure 7 is a transverse section taken on the line VII—VII of Figure 5, but showing the shoulder rests or pads in position;

Figure 8 is a vertical section taken on the line VIII—VIII of Figure 7, but omitting the shoulder rests or pads;

Figure 9 is a section on line IX—IX of Figure 5;

Figure 10 is an enlarged detail section taken on the line X—X of Figure 6;

Figure 11 is an enlarged detail section taken on the line XI—XI of Figure 8;

Figure 12 is a detail sectional view of the weight device forming a part of the vibrator mechanism;

Figure 13 is an enlarged detail section taken on the line XIII—XIII of Figure 6;

Figure 14 is a detail section taken on the line XIV—XIV of Figure 7; and

Figure 15 is a detail section taken on the line XV—XV of Figure 14.

Referring now to the drawings in detail, these show the improved apparatus as comprising a main frame structure 25 adapted to form suitable supporting means for the various elements proper of the treating mechanism, as well as an inclosure or housing for the driving and adjusting means

whereby the treating mechanism is operated and regulated.

Arranged longitudinally of the main frame is a series of supports and treating devices, comprising a head rest member 26, a shoulder rest 27, fixed abdominal rests 28, a hip rest 29, a fixed rest 30 principally for supporting engagement with the thighs, and a leg and foot rest member 31, all of said rests being suitably cushioned or upholstered as shown. The head rest 26 and foot rest 31 are adapted for various manual adjustments, while the shoulder and hip rests 27 and 29, and also the foot rest 31 have imparted thereto certain automatic movements by mechanism hereinafter described, the extent or amplitude of which movements may be suitably regulated and controlled. Intermediate the head and shoulder rests is mounted a set of vibrator or applicator pads 32 for operative engagement with the neck of a patient; a similar set of pads 33 is mounted in an opening 34 formed in the middle of the shoulder rest 27, for engagement between the shoulders of the patient; between the fixed rests 28 is a third set of applicator pads 35 and 36, for engagement with the lumbar and abdominal regions of the patient; and a fourth set of applicator pads 37 is mounted in an opening 38 provided in the middle of the hip rest 29, for engagement with the sacral region. All of these sets of applicator pads are mounted for both oscillatory and vibratory movement, imparted thereto automatically, and provision is further made for suitably regulating the extent and force of such movement and for adjusting the operative positions of the pads, in a manner hereinafter described.

The middle portion of the head rest 26 is formed with a depression surrounding a longitudinal opening 40, this depression comfortably accommodating the head of the patient in either prone or supine position, while the object of the opening 40 is to remove any obstruction to the breathing of the patient when in prone position. The front margin of the head rest is hinged, as indicated at 41 (see Figure 8) to the forward edge of a plate 42 which is provided with guides 43 for sliding travel along fixed longitudinal tracks 44 supported by the main frame of the machine. This plate 42 is formed with an opening 45 in position corresponding to the opening 40 in the head rest. The hinge connection between said plate and the head rest allows the latter to be adjusted into different inclined positions as represented by the broken lines in Figure 1; and for retaining the head rest in any of its tilted positions the free end thereof is provided with a swinging ratchet member 46, the teeth of which may be variously engaged with the outer edge of the plate 42. The plate 42, with the head rest carried thereby, may be freely slid backward along the tracks 44, for extending the rest, but is automatically latched against sliding movement in the opposite direction by a dog 47 actuated by a spring 48 normally into engagement with a ratchet 49 carried by the under face of the plate 42. The dog 47 is secured to one end of a shaft 50 journaled in fixed bearings on the main frame, the opposite end of the shaft 50 having a handle 51 whereby the shaft may be rotated to disengage the dog 47 from the ratchet 49, when desired to shift the plate and its head rest forwardly along the tracks 44. The head rest is also provided with a comfortable band or strap 52 for engagement with the chin or occiput of the patient when he is undergoing tractive or stretching treatments upon the table.

The opposite ends of the shoulder rest 27 are provided with padded brace arms 55 for engagement around underneath the arm pits, each having a horizontal stem 56 slidingly adjustable in posts 57 projecting upward from the rest 27 and clamped thereto by thumb screws 58. These arms are for use under certain conditions for maintaining the patient in proper position on the rest, and brace him against longitudinal traction exerted in the direction of the foot rest, as will be later explained. A strap 59 and buckle 60 are provided on the hip rest 29 for convenient use in also helping to maintain the patient in position. Each of the rests 27 and 29 also rocks or oscillates on alined pivots 61 in brackets 62 fixed to the main frame of the machine, along the central longitudinal line thereof, the pivotal points 61 being located at opposite sides of the middle portion of each of said rests. For oscillating the hip and shoulder rests, a link 63 is pivotally connected to each rest, the link connection to the shoulder rest 27 being made at one side of the axis of rocking movement, and to the hip rest 29 at the other side of said axis (see Figures 2 and 7). The lower ends of the links 63 are pivoted to oscillating arms 64 secured to a rocker shaft 65 journaled longitudinally in bearings 66 on the main framework. One of the arms 64 is formed with an operating extension 67 to the opposite side of the shaft 65, where the extension connects by a universal joint with a link 68 extending upward and connected by a similar joint with an adjustable fulcrum device which is illustrated in Figure 7, and in more detail in Figures 14 and 15. This device comprises a rack plate 70 to which said link 68 is connected, and operating slidingly in a fulcrum block 71 carried by one end of an oscillating shaft 72 journaled in bearings 73 on the machine frame. The position of the rack plate 70 is adjusted in the block 71 by means of an ex-

terior hand wheel 74 on the outer end of a shaft 75, the inner end of which carries a cog 76 for engagement with the teeth of the rack plate 70. A slight axial movement is permitted the shaft 75 against the action of a coil spring 77 on its inner end, to disengage the cog 76 from a pin 78 which serves to normally latch the parts in any position of adjustment. By this construction, it is obvious that the amplitude of oscillating movement imparted through the link 68 to the shaft 65, and hence to the shoulder and hip rests, is conveniently controlled and regulated so that said movement may be varied from stationary condition (corresponding to the completely retracted position of the sliding rack 70) to the maximum amplitude of movement permitted the structure and corresponding to the extreme projected or extended position of the rack 70.

The fulcrum block 71 is formed with an arm 80 pivotally connected by a link 81 to a crank 82 on one end of a shaft 83 journaled transversely of the machine in bearings 84 (see Figure 7), the other end of which shaft carries a sprocket wheel 85 driven by a chain 86 which is trained about a sprocket wheel 87 on a transverse shaft 88, a takeup idler sprocket 89 (carried by an adjustable bearing plate 90 held by screws 91), thence around an idler sprocket 92, a sprocket wheel 93 on one end of a transverse shaft 94, and a small sprocket 95 on the outer end of a short transverse shaft 96, the other end of which carries a belt pulley 97. This pulley is driven by a belt 98 trained around a small pulley 99 on a transverse shaft 100 journaled on the main frame, and carrying also a large pulley 101,—an adjustable takeup pulley 102 being provided for the belt 98 between said pulleys 97 and 101. The pulley 101 is driven by a belt 103 passing around an idler takeup pulley 104 and also one of the drive pulleys 105 of a suitable electric motor 106 carried by the machine frame (see Figures 5 and 6), a conveniently located switch 107 being provided for controlling said motor (see Figure 4).

The vibrator pads or applicator 32, 33, 35 and 37 are similarly mounted upon plates 110, whereas the pads 36 are mounted on the ends of rocker bars 112 pivoted on pins 113 projecting from opposite sides of the plate 110 carrying the pads 35, and in the direction of the longitudinal axis of the machine; leaf springs 114, carried by said plate, with the free ends of said springs engaging underneath the bars 112, tend to hold the latter yieldingly in normally horizontal position (see Figure 11). Each of the plates 110 is yieldingly supported for universal rocking movement upon the upper end of an upright post or rod 115, by means of a structure illustrated in detail in Figure 13 and comprising a yoke-shaped element 116 secured to the under face of the plate 110 and pivoted, as indicated at 117, to the middle of a block 118, in turn pivotally supported by pins or screws 120 within a yoke 121 carried by the post 115, with the pivot axis of said screws extending at right angles to the pivot axis 117. A coil spring 122 of suitable strength is mounted on the upper end of each post 115 in engagement with the corresponding plate 110 for maintaining the latter normally in horizontal position. The lower end of each post 115 is slidingly supported in a cup 125 formed on the inner end of a bell crank lever 126 journaled upon a longitudinally fixed shaft 127, and the upper end of each lever 126 is slidingly engaged by an adjusting ratchet bar 129 provided with a knob or handle 130 for operation from the exterior of the machine in the adjustment of the elevation of the sets of pads or applicators. The teeth of the ratchet bars 129 engage exterior face plates 131 for holding the bars retracted to any desired position. The movement of each post 115 takes place between a stop pin 128 and a coil compression spring 132 carried by the inner end of each of bar, whereby it is apparent that the application of each set of vibrator pads or applicators is backed by a yielding pressure transmitted thereto from the corresponding compression spring 132 and through the supporting structure of each group of pads. A gage rod or bar 133 is connected to each post 115 and extends out through the corresponding face plate 131, parallel to the ratchet bar, the movement and position of such gage rod or bar roughly indicating the degree of compression of the spring 132, and hence the pressure or thrust being exerted by the corresponding set of pads, as will be readily understood.

I also contemplate the use from time to time, as required, of a coil compression spring 135 on the outer end of the ratchet bar 129 which is associated with the vibrator pads 35 and 36, in such a manner that the spring is compressed between the handle 130 and corresponding plate 131 by the inward pull of the bar 129 in response to a downward thrust upon the corresponding pads 35 and 36. This double spring structure is especially adapted for use in the chiropractic special thrust operation, carried out manually without reference to any of the automatic functions of the machine; in this operation, the outer spring 135 serves to maintain the ratchet bar 129 disengaged from the plate 131 (eliminating its latching function) and the provision of this additional spring 135 affords a greater amplitude of movement of the supporting lever 126, since this movement is not limited to the excursion of the spring 132 alone, but that of the two springs 132 and 135 combined.

The construction whereby the sets of vibrator pads or applicator are oscillated about the vertical axes, and also have imparted thereto a vibratory action, will now be described. The upper end of each of the posts or rods 115 operates slidingly in a split sleeve 140, and adjacent to the lower end of each of said posts or rods is secured the middle portion of a cross-arm 141 from the ends of which depend a pair of posts 142 slidingly engaging collars 143. These collars are formed with lugs 144 for pivotally connecting the series of collars 143 at each side of the posts 115 by means of links 145; one of the collars 143 of the posts 115 carrying the vibrator pads 37 is connected by a link 146 to one end of a cross lever 147 secured to a vertical fulcrum post 148 pivoted in the frame work of the machine (see Figure 8), the other end of said lever being connected by a coil spring 149 to the companion collar of said post 115. At the opposite end of the series, the collars 143 of the post 115 carrying the pads 32 are connected by links 145 to the opposite ends of a cross lever 150 secured to a vertical fulcrum post 151 (see Figure 9). The coil spring 149 just referred to thus serves to hold all the link connections in a proper taut condition. The upper sleeves 140 are similarly provided with lugs 152 connected by links 153, and the sleeve on the post 115 carrying the pads 32 is connected to a coil spring 154 attached to the framework of the machine; the sleeve 153 on the post 115 carrying the pads 32 is connected by a link 155 to the vibrator mechanism hereinafter described. The whole purpose of this arrangement of connections is to enable all the sets of vibrator pads to be oscillated as well as vibrated, in unison, while the pad supporting posts are maintained in operative relation to the vibrating and oscillating mechanism and at the same time permitted the desired vertical adjustment as regards the proper elevation of the pads.

Secured to the upper end of the fulcrum post 151 is an arm 156 having a universal joint connection to one end of a link member 157 (see Figures 5 and 8), the other end of which is connected to an adjustable fulcrum device, in all respects similar to that described above for adjusting the degree of movement of the hip and shoulder rests, and regulated by a hand wheel 158. In this case the function of the fulcrum device is to regulate and vary the amplitude of the oscillation imparted to the vibrator pads from a crank arm 159 carried by the shaft 94, which arm 159 is connected by an arm 160 with the fulcrum device controlled by the hand wheel 158.

The means for imparting the vibrating action to the pads or applicators comprises a frame 162 pivoted near its lower end upon a transverse shaft 163 journaled in bearings in the machine frame, the upper end of said frame 162 being connected to the link 155 already referred to, and also by coil spring 164 to the machine frame, thereby cooperating with the spring 154 in maintaining the pad supporting posts 115 yieldingly in upright position. In the upper portion of the frame 162 is mounted a transverse shaft 165 carrying a pulley 166 driven by a belt 167 from a pulley 168 on the shaft 163. This shaft is provided with a suitable sliding clutch 169 operated by a slide rod 170 having an exterior knob or handle 171 (see Figures 5, 6 and 8), whereby said shaft may be driven from a pulley 172 loose on the shaft and provided with a belt 173 driven by a pulley 174 on the shaft of the motor 106. Also secured to the upper shaft 165 is a rotating vibrator device comprising a suitable weight, such as a plug 175 adjustably screwed into a socket member 176 keyed to said shaft: the rotation of this device imparts a pulsating movement to the frame 162 and thence to the supports for the vibrator pads or applicators, the force of which pulsating action may be suitably varied by adjustment of the plug 175 relatively to the socket member 176.

Referring now to Figures 1 to 3, the foot rest member 31 is formed with suitable depressions 180 for comfortably accommodating the limbs of the patient and also with straps or foot holds 181 for retaining engagement with the feet. One of the edges of the foot rest 31 is hingedly connected, as at 182, with the edge of a supporting slide plate 183, the under face of which is provided with guides 184 for sliding travel along tracks 185 formed as a part of a triangular supporting frame comprising a horizontal portion 186, provided with said tracks, a downwardly inclined rod portion 187, and a vertical pivot post portion 188 journaled in upper and lower bearings 189 at the foot of the machine frame 25. Projecting from the midportion of the pivot post 188 is an arm 190 connected by a universal joint to one end of an operating link 191, the other end of which is connected to an adjustable fulcrum device, in all particulars identical with those described above for adjusting the degree of movement of the hip and shoulder rests and of the vibrator pads or applicators, and controlled and regulated by means of a hand wheel 192 at the exterior of the machine. In this case the function of the fulcrum device is to control and regulate the amplitude of the oscillation of the swinging frame for the foot rest as imparted thereto from a crank arm 193 carried by the shaft 88, which arm 193 is connected by a link 194 with the fulcrum device controlled by said hand wheel 192.

The free edge of the foot rest member 31

is provided with pivoted ratchet bars 195 pending in position for latching engagement with notches 197 formed in the corresponding edge of the plate 183 (see Figure 6) and with which they are normally engaged by the action of a spring 196, thereby maintaining the foot rest member in any desired inclined position. The plate 182, and hence the foot rest member 31 carried thereon, are also adapted to be moved into any desired position along the tracks 185 by means of a cog wheel 198 meshing with a rack 199 secured to the under face of the plate 183 between said tracks (see Figure 10). The cog wheel 198 is secured to a shaft 200 journaled in the horizontal frame portion 186 and provided on its outer end with a hand wheel 201. The plate 183 is yieldingly retained in any set position by a latch member 202 carried by a block 203 supported both pivotally and slidingly by a transverse pin 204 in slots 205^a formed in plates 205 carried by the horizontal frame portion 186. A handle 206 depending from the block 203 affords the means for operating the latch 202, which is held normally engaged with the rack 199 by the action of a spring 207 attached at its opposite ends to said handle and the inclined frame member 187, respectively. A second spring 208 is attached at one end to said frame member 187 and at its other end to the pin 204 supporting the block 203, from which it is apparent that under a certain degree of pull or traction, as determined by the strength of the springs 207 and 208, the foot rest 31 and its supporting plate 183 will yield and be caused to move in the direction of the pivot post 188 about the axis of which the foot rest structure is being swung or oscillated. The provision of the hand wheel 201 and its connection to the plate also enables the operator to apply additional traction manually to the plate and foot rest, when deemed advisable.

For the convenience of the operator in estimating the approximate degree of pull or traction being exerted upon the springs 207 and 208, a gage device may be used, such as an indicator arm 210 projecting outward from the block 203, so that the travel of the free end of said arm relatively to some other part (such as the frame 186) may be readily observed.

In certain cases it is desirable to reverse the inclination of the foot rest member 31 (as, for example, in what are called hyperextension operations), and this may readily be brought about in the present construction by simply removing the foot rest member and reapplying it in reversed position upon the tracks 185, whereupon the latching, adjusting and all the other operative movements will take place the same as before.

I also adapt the improved apparatus to be substantially converted into an ordinary form of plain top treating table by providing an upholstered top member 215 mounted for swinging movement into inoperative position at one side of the apparatus, and as illustrated in Figures 2 and 7 (and by broken lines in Figure 3), or into operative position upon top of the apparatus, as represented by the full line in Figures 3 and 4. In this latter position, the top member 215 is supported in firmly fixed relation upon metal corner pieces 216 at opposite sides of the head rest member 26 and the lower pad rest 30 (see Figure 2). For supporting the top member 215 for this swinging movement, its opposite ends are pivotally connected to the ends of a pair of levers 217 carried by the opposite ends of a longitudinal rock-shaft 218, and the other ends of said levers are connected to strong coil springs 219 attached to the framework of the apparatus, for yieldingly taking up the load of the top member 215 in the swinging operation of the latter.

For use with the foot rest member 31 when the top member 215 is in position, so as to build the foot rest up higher, on a level with the top 215, as well as to increase the height of the foot rest in any of its inclined positions, I employ a supplemental foot pad 220 of the same general dimensions as the rest 31, but tapering longitudinally in thickness, as shown in Figure 5, and provided at its thinner edge with a depending lip portion 221 for retaining engagement with the elevated edge of the rest member 31.

For enclosing the operating mechanism at the top of the apparatus, I employ a pair of cover panels 225, extending beneath the various upholstered pads and applicators, and carrying the padded rests 28. These panels 225 are adapted to fit between the upper side edges of the framework 25 and the middle portion of said framework which carries the brackets 62, where the inner edges of the panels are engaged and retained in position by means of coil springs 226 (see Figure 7).

The various functions of the different sets of treating devices and mode of operation and adjustment or control of the same have been referred to and explained in each case, in the course of the foregoing description, but a general summary of the operation may be added. When the patient occupies a supine position upon the apparatus (with the supplemental plain top member 215 let down into inoperative position at the side of the table), the head of the patient is supported upon the head rest 26, his shoulders and hips upon the padded rests 27 and 29, respectively, and his lower limbs upon the pads 30 and 31. The principal function served by the pads 28 is to facilitate the patient in mounting and positioning himself upon the apparatus, after which they serve

no supporting or treating function, since they are lower than the pads or applicators 35 and 36; in addition to this, the pads 28 serve as convenient handles for inserting and removing the cover panels 225. When in this supine treating position, the sets of vibrator pads may be adjusted for elevation by the knobs 130 to obtain the desired pressure of the pads at the different points along the spine, the pads 32 engaging the back of the neck, the pads 33 the intrascapular region between the shoulders, the pads 35 and 36 the lumbar region, and the pads 37 the sacral region between the hips. The head rest 26 and the foot rest 31 may both be adjusted longitudinally and also tilted upward, to meet the individual requirements of different cases. The straps 52 and 181 applied to the head and lower limbs, respectively, cooperate in holding the patient against tractive or stretching action, in addition to which the braces 55 for the arm pits may also be brought in use, if desired. With the several controlling means the mechanism for actuating the treating devices may now be set in operation; the hand wheel 74 starts the oscillation of the hip and shoulder pads or rests, and at the same time varies the amplitude of their movement, for imparting a rotary or twisting movement to the spine and neck; and the hand wheel 192 starts the lateral swinging of the foot rest 31, and also varies the amplitude of its movement, for swinging the lower part of the body laterally in both directions, thereby producing a lateral bending of the spine. By proper adjustment of the head and foot rests away from each other, it is apparent that the body may be subjected to an alternate stretching and relaxation, as the foot rest swings back and forth past center, at which intervals there is an increase in the pull exerted on the springs 207 and 208, and a corresponding increase in the stretching action exerted, and transmitted separately through each leg of the patient, and the degree of pull or force thus exerted may be roughly estimated by observing the movement of the indicator 210; and further, the attendant, by manipulating the hand wheel 201, may at any time vary the pull or traction, as in gaging or ascertaining the degree of force suited to the patient. It is also to be noted that the stretching and relaxing movements resulting from the combined operation of the foot rest and the hip and shoulder supports are of a most varied character, due to the fact that there is no time relation between the driving mechanisms for producing the described movements, so that all possible relative positions of the supported portions of the body are obtained,—within the limits of movement provided for. The efficiency of this phase of the treating function of the apparatus is, therefore, of a most pronounced type, and the benefits derived from its operation correspondingly great. In this connection it may also be pointed out that different degrees of extension and flexion are to be obtained by the provision made for variously tilting the foot rest upon its swinging support.

The vibratory treatment is designed to be employed either alone or in conjunction with the other treatments, and is set in operation by simply throwing in the clutch 169 by means of the knob 171. All of the vibrator pads are actuated by the vibrating mechanism simultaneously or in unison, but the several sets are individually adjusted for elevation and pressure, as above stated, and in addition are simultaneously regulated as to the amplitude of their oscillatory movement by manipulation of the hand wheel 158. Thus a most effective vibratory treatment is provided for massaging the different portions of the spine, covering practically its entire length, and the degree of pressure exerted during the treatment may be approximately ascertained by observing the gages 133. The force of the vibrations may also be varied by adjustment of the weight element 175 on the vibrating frame. The manner of mounting the sets of vibratory pads or applicators for universal pivoted movement, and the mode of imparting the vibratory impulses thereto, at points just below their universal supporting connections, are such as to cause not only lateral but vertical vibratory thrusts to be produced by the vibrating mechanism, by virtue of the various positions assumed by the applicators under the pressure of the body.

Referring further to the tilting adjustment of the foot rest or support 131, the upward tilting of this foot rest, when the patient is in supine position, enables the force of the stretching or tractive action to be exerted to a greater extent along the whole length of the leg of the patient instead of confining it principally to the foot, and hence to eliminate the curves of the back so as to distribute his weight more evenly upon the apparatus. The reversible character of this foot rest is of advantage because it provides for a tilting of the same in an opposite direction, when the patient is placed in prone position with either his thighs or chest upon the foot rest for treatment in what is known as hyper-extended position.

When in prone position, with the abdomen of the patient over the vibratory pads 35 and 36, an effective abdominal massage may be administered by means of this set of vibratory devices, which treatments may also be combined with the movements of the oscillating hip and shoulder rests and the swinging foot rest. As already explained,

this group of pads 35 and 36 is also especially designed for administering the chiropractic special thrust, in which treatment the supplemental exterior spring 135 is applied to the outer ends of the rack bar 129 corresponding to this set of pads.

It is thus apparent that I have devised an apparatus of the character described which is most practical and efficient in its construction and operation, and while I have illustrated and described what I now regard as the preferred form of construction for embodying my invention, I desire to expressly reserve the right to make all such changes or modifications as may properly fall within the scope of the appended claims.

What I claim is:

1. In an apparatus of the character described, the combination of a head rest, and supporting means for the body of a patient including a supporting member for engagement with the shoulders, and automatically operated means for imparting an oscillating motion to said supporting member about a horizontal axis extending longitudinally of the apparatus.

2. In an apparatus of the character described, the combination of a head rest, supporting means for the body of a patient including a supporting member for engagement with the hips, and automatically operated means for imparting an oscillating motion to said supporting member about a horizontal axis extending longitudinally of the apparatus.

3. In an apparatus of the character described, the combination of a head rest, supporting means for the body of a patient including supporting members for engagement with the hips and shoulders, respectively, and automatically operated means for imparting an oscillating motion to said supporting members in opposite directions about a horizontal axis extending longitudinally of the apparatus.

4. In an apparatus of the character described, the combination of body supporting means, including a supporting member for engagement with the shoulders of a patient, means for imparting an oscillating motion to said supporting member about a horizontal axis extending longitudinally of the apparatus, and means for adjusting the amplitude of said oscillating motion.

5. In an apparatus of the character described, the combination of body supporting means, including a supporting member for engagement with the hips of a patient, means for imparting an oscillating motion to said supporting member about a horizontal axis extending longitudinally of the apparatus, and means for adjusting the amplitude of said oscillating motion

6. In an apparatus of the character described, the combination of body supporting means, including supporting members for engagement with the hips and shoulders, respectively, of a patient, means for imparting an oscillating motion to said supporting members in opposite directions about a horizontal axis extending longitudinally of the apparatus, and means for adjusting simultaneously the amplitude of the oscillating motion of both of said supporting members.

7. In an apparatus of the character described, the combination of body supporting means, including supporting members for engagement with the hips and shoulders, respectively, of a patient, said supporting members being each provided with an opening in its middle portion, means for imparting an oscillating motion to said supporting members in opposite directions about a horizontal axis extending longitudinally of the apparatus, and vibrating mechanism operating through said openings to treat the regions of the body between said hips and between said shoulders.

8. In an apparatus of the character described, a main framework for supporting the body and limbs of a patient for treatment, and a head rest structure comprising a plate longitudinally adjustable with reference to said framework and provided with an opening through its middle portion, and a head supporting pad pivotally connected to said plate and adjustable into various inclined positions, said pad being formed with an opening opposite the opening in said plate.

9. In an apparatus of the character described, the combination of body supporting means, a supporting member for engagement with the lower limbs of the patient, and automatically operated means for imparting a lateral swinging motion to and fro to said supporting member.

10. In an apparatus of the character described, the combination of body supporting means, a supporting member for engagement with the lower limbs of the patient, automatically operated means for imparting a lateral swinging motion to and fro to said supporting member, and simultaneously exerting a tractive or stretching action upon said lower limbs of the patient.

11. In an apparatus of the character described, the combination of body supporting means, a supporting member for engagement with the lower limbs of the patient, automatically operated means for imparting a lateral swinging motion to and fro to said supporting member, said means being operative to exert an intermittent yielding pull or stretching action upon said lower limbs of the patient.

12. In an apparatus of the character described, the combination of body supporting means, a supporting member for engagement with the lower limbs of the patient,

means for imparting a lateral to and fro swinging motion to said supporting member and simultaneously exerting an intermittent yielding pull or stretching action upon said lower limbs of the patient, and automatic gage means for indicating the degree of said stretching action.

13. In an apparatus of the character described, the combination of body supporting means, a supporting member for engagement with the lower limbs of the patient, means for imparting a lateral to and fro swinging motion to said supporting member and simultaneously exerting an intermittent yielding pull or stretching action upon said lower limbs of the patient, and manually operable means for varying the degree of said pull or stretching action.

14. In an apparatus of the character described, the combination of body supporting means, a supporting member for engagement with the lower limbs of the patient, automatically operated means for imparting a lateral swinging motion to and fro to said supporting member, and manually controlled means for varying the amplitude of the swinging motion of said supporting member.

15. In an apparatus of the character described, the combination of a body supporting structure including a movable supporting member for supporting engagement transversely of the body of a patient, a second movable supporting member for engagement with the lower limbs of the patient, and automatically operated means for imparting an oscillating motion to said first supporting member about an axis extending longitudinally of the apparatus, and also producing a lateral swinging motion to and fro of said second supporting member.

16. In an apparatus of the character described, the combination of a body supporting structure including a movable supporting member for supporting engagement transversely of the body of a patient, a second movable supporting member for engagement with the lower limbs of the patient, means operating automatically to oscillate said first supporting member about an axis extending longitudinally of the apparatus, and means operating asynchronously with reference to said first means to produce a lateral to and fro swinging movement of said second supporting member.

17. In an apparatus of the character described, the combination of a body supporting structure including movable supporting members for engagement with the shoulders and hips, respectively, of a patient, a swinging supporting member for carrying the limbs of the patient, automatic means for oscillating said first supporting members in opposite directions about a horizontal axis extending longitudinally of the apparatus, and means operating automatically and asynchronously with reference to said first means for producing a lateral to and fro swinging movement of said limb supporting member.

18. In an apparatus of the character described, the combination of a body supporting structure including a movable supporting member for supporting engagement transversely of the body of a patient, a second movable supporting member for engagement with the lower limbs of the patient, automatic means for oscillating said first supporting member about an axis extending longitudinally of the apparatus, and means operating automatically and asynchronously with reference to said first means to produce a lateral to and fro swinging movement of said second supporting member and also exerting a yielding pull or stretching action upon said lower limbs of the patient.

19. In an apparatus of the character described, the combination of a body supporting structure including movable supporting members for engagement with the shoulder and hips, respectively, of a patient, a swinging supporting member for carrying the limbs of the patient, automatic means for oscillating said first supporting members in opposite directions about a horizontal axis extending longitudinally of the apparatus, and means operating automatically and asynchronously with reference to said first means for producing a lateral to and fro swinging movement of said limb supporting member, said last named means being constructed and arranged to exert a yielding intermittent pull or stretching action upon said lower limbs of the patient.

20. In an apparatus of the character described, the combination of a main framework for supporting the body of a patient for treatment, a laterally swinging frame attached to one end of said framework for supporting the lower limbs of the patient, a sliding plate mounted for longitudinal adjustment upon said frame, and a foot rest hingedly connected to said plate and adjustable into various inclined positions thereon.

21. In an apparatus of the character described, the combination of a main framework for supporting the body of a patient for treatment, a laterally swinging frame attached to one end of said framework for supporting the lower limbs of the patient, a plate mounted slidingly on said frame, a foot rest hingedly connected to said plate and adjustable into various inclined positions thereon, and manually operable means for effecting sliding adjustment of said plate on said frame.

22. In an apparatus of the character described, the combination of a main frame-

work for supporting the body of a patient for treatment, a laterally swinging frame attached to one end of said framework for supporting the lower limbs of the patient, a sliding plate carried by said frame and adapted to be reversed in position, end for end, upon the frame, and a foot rest hingedly connected to one end of said plate and adjustable into various inclined positions thereon.

23. In an apparatus of the character described, the combination of a main framework for supporting the body of a patient for treatment, a laterally swinging frame attached to one end of said framework for supporting the lower limbs of the patient, a sliding support mounted for longitudinal adjustment upon said frame, and yielding means for retaining said support in any position of adjustment while yielding under an excess of traction to allow movement of the support in the direction of said main framework.

24. In an apparatus of the character described, the combination of a main framework for supporting the body of a patient for treatment, a laterally swinging frame attached to one end of said framework for supporting the lower limbs of the patient, a sliding support mounted for longitudinal adjustment upon said frame, means for latching said support in different positions upon said frame, and yielding means associated with said latching means and cooperating therewith in retaining the support in any position of adjustment while yielding under an excess of traction to allow movement of the support in the direction of said main framework.

25. In an apparatus of the character described, the combination of a main framework for supporting the body of a patient for treatment, a laterally swinging frame attached to one end of said framework for supporting the lower limbs of the patient, a sliding support mounted for longitudinal adjustment upon said frame, manually operable means for adjusting and latching said support in different positions upon said frame, and yielding means associated with said adjusting and latching means and cooperating therewith in retaining the support in any position of adjustment while yielding under an excess of traction to allow movement of the support in the direction of said main framework.

26. In an apparatus of the character described, a main framework provided with supporting members for holding a patient in treating position and arranged to leave the course of the spine exposed for vibratory treatment, a longitudinally arranged series of vibratory pads adapted for engagement with the body of the patient along the spine, and automatically operated means for simultaneously oscillating said pads about vertical axes.

27. In an apparatus of the character described, a main framework provided with supporting members for holding a patient in treating position and arranged to leave the course of the spine exposed for vibratory treatment, a longitudinally arranged series of vibratory pads adapted for engagement with the body of the patient along the spine, and automatically operated means for imparting simultaneously vibration to said pads and also oscillating the same about vertical axes.

28. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, and automatically operated means for vibrating said pads and simultaneously oscillating the same about a vertical axis.

29. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, automatically operated means for vibrating said pads and simultaneously oscillating the same about a vertical axis, and means for regulating the degree of oscillation of said pads.

30. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, automatically operated means for imparting a vibratory action to said pads, and manual means operable at will during the vibrating action of said pads to regulate the elevation thereof.

31. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, resilient means for causing the pads to apply a yielding pressure on engagement with the body, automatically operating means for imparting a vibratory action to the pads, and means for regulating the action of said resilient means and thereby varying the degree of pressure exerted by the pads.

32. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, adjustable resilient means for causing the pads to exert a yielding pressure upon the body, automatically operated means

for imparting a vibratory action to the pads, and gage means adapted to register the variation in pressure exerted by the pads.

33. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, adjustable supporting means for regulating the elevation of said pads, resilient means associated with said supporting means, and regulated by the adjustment thereof, for causing the pads to apply a yielding pressure upon the body, and automatically operated means for imparting a vibratory action to the pads.

34. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, automatically operated means for imparting a vibratory action to said pads, and means whereby the impulse of said vibratory action may be varied.

35. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, a supporting structure adapted to permit universal rocking movement of the pads while maintaining the same yieldingly in an approximately horizontal plane overlying the supporting structure, and automatically operated means for imparting a substantially horizontal vibratory action to said pads.

36. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, a supporting structure adapted to permit universal rocking movement of the pads while maintaining the same yieldingly in an approximately horizontal plane overlying the supporting structure, certain of said pads being also mounted for oscillating movement about a horizontal axis with reference to the remaining pads, and automatically operated means for imparting a substantially horizontal vibratory action to said pads.

37. In an apparatus of the character described, a main framework adapted to support a patient's body in position for vibratory treatment, a set of vibratory pads adapted for engagement with a part of said body, a vertical supporting member carrying said pads and adjustable to prevent the same at the different elevations, means for latching said supporting member in different adjusted positions, resilient means cooperating with said latching means and supporting member for causing the pads to be applied with a yielding pressure against the body, and a supplemental resilient device adapted for use with said latching means and to displace the latching function thereof and permit an increased amplitude of movement of the pads in response to a downward thrust thereon.

38. In an apparatus of the character described, a main framework provided with supporting members for holding a patient in treating position and arranged to leave the course of the spine exposed for vibratory treatment, a plurality of sets of vibratory pads arranged in a longitudinal series for engagement with the body of the patient along the spine, automatically operated means for simultaneously actuating all of said pads and imparting a vibratory action thereto, and means for separately regulating the elevation of each set of said pads.

39. In an apparatus of the character described, a main framework provided with supporting members for holding a patient in treating position and arranged to leave the course of the spine exposed for vibratory treatment, a plurality of sets of vibratory pads arranged in a longitudinal series for engagement with the body of the patient along the spine, automatically operated means for simultaneously actuating all of said pads and imparting a vibratory action thereto, and also oscillating each set of pads about separate vertical axes, and means for simultaneously varying the amplitude of oscillating movement of said sets of pads.

40. In a treating apparatus of the character described, a main framework provided with a series of supporting and treating devices, automatic mechanism within said framework for actuating said devices to effect the treating operations, and a supplemental plain top member pivotally connected to said framework and adapted to be swung into inoperative position at one side of said framework or into operative position overlying said supporting and treating devices.

41. In a treating apparatus of the character described, a main framework provided with a series of supporting and treating devices and also with a limb supporting member attached to the foot of the framework and carrying a tiltable foot rest approximately on a level with said devices, automatic mechanism within said framework for actuating said devices to effect the treating operations, a supplemental plain top member pivotally connected to said framework and adapted to be swung into either inoperative position at one side of said framework or into operative position overlying said supporting and treating devices, and a supplemental cushion of tapered cross-section applicable to said foot rest for

providing a supplemental limb supporting surface on a level with the surface of said top member when the latter is in operative position.

42. In an apparatus of the character described, a main framework provided with supporting members for holding a patient in treating position and arranged to leave the course of the spine exposed for vibratory treatment, a plurality of sets of vibratory pads arranged in a longitudinal series for engagement with the body of the patient along the spine, automatically operated means for simultaneously actuating all of said pads, and imparting a vibratory action thereto, and manual means operable at will for rendering any one of said sets of pads operative or inoperative in response to the action of said first means.

In witness whereof I hereunto affix my signature.

ARTHUR STILL CRAIG.