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W. C. J. GUILFORD.
ABDOMINAL MASSAGE IMPLEMENT.
APPLICATION FILED MAY 18, 1916.

Patented Jan. 15, 1918.
2 SHEETS—SHEET 1.

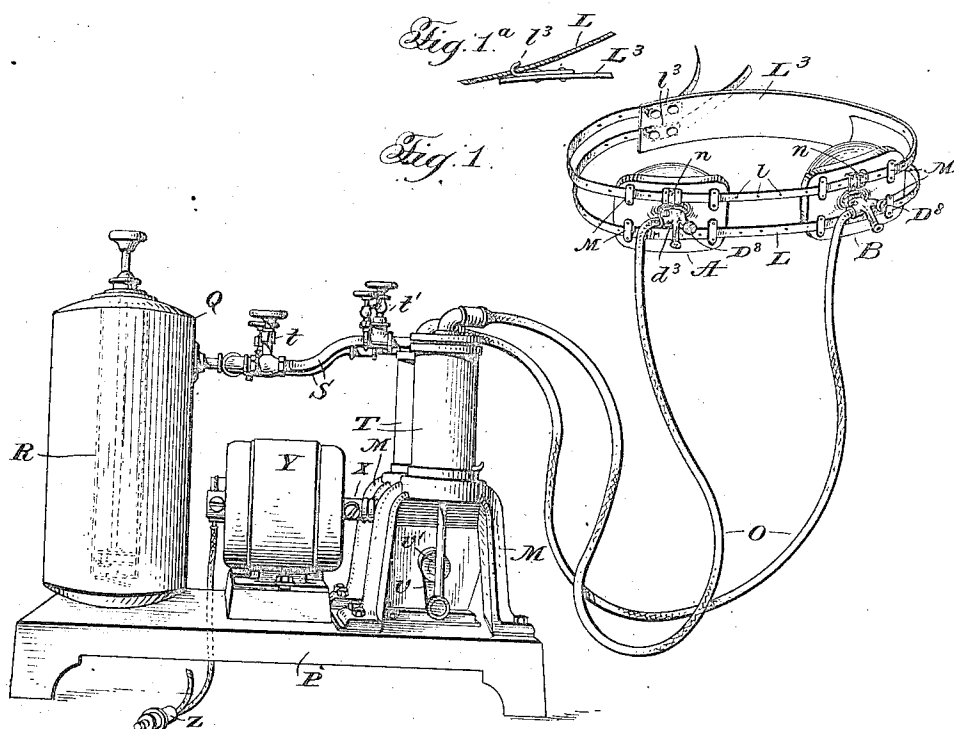
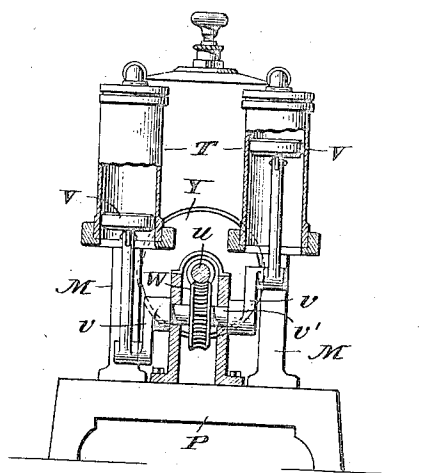


Fig. 2.



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2 SHEETS--SHEET 2.



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ABDOMINAL-MASSAGE IMPLEMENT.

1,253,233.

Specification of Letters Patent.

Patented Jan. 15, 1918.

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To all whom it may concern:

Be it known that I, WILLIAM C. J. GUILFORD, a citizen of the United States, residing at Harrison, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Abdominal-Massage Implements, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to improvements in methods and apparatus for massaging, and has for its primary object the provision of a method and apparatus helpful in carrying the method into practical effect, adapted to
15 secure a passive massaging of substantially any portion of the human body as distinguished from a mere vibration or surface agitation of the parts treated in keeping with the usual practices now in vogue. In
20 medical circles it has long been known that many ailments may be overcome, relieved, and portions of the body otherwise benefited, if a suitable way and means could be devised to passively manipulate or exercise
25 the parts desired to be treated. Manual massage has probably proven the most efficacious known to science prior to the conceptions herein to be specifically disclosed, but such manual effort is limited in its operation
30 to the capacity of physical endurance, nature of the hands and relatively slow capability of action of the masseur.

To secure the best results it is desirable to secure, in many instances, a substantial uniformity of action, in some cases by relatively slow manipulation, while in other instances by relatively rapid manipulations; and it is of material advantage to secure the manipulation of the part being treated in a to and
40 fro fashion, that instead of relying altogether on the normal, natural restoration of the part being treated when moved by a massaging action in one direction, to supplement said action by a similar action in an
45 opposite direction whereby the fleshy, muscular or other tissues are passively shifted back and forth regulated as to manner and time to sequence consistent with the nature of the ailment or exercising deemed expedient.
50

The desiderata just above outlined are obtainable by a practice of my improved method especially when carried forward

through the medium of my improved apparatus, as will be more readily understood 55 from the detailed description hereinafter given or read in connection with the accompanying drawings forming part hereof and wherein a preferred embodiment of the invention, so far as its mechanical aspects are 60 concerned, is illustrated.

Figure 1 is a perspective view of the apparatus complete;

Fig. 1^a is a detail sectional view.

Fig. 2 is a vertical elevation partly in section of the actuator. 65

Fig. 3 is a longitudinal sectional view through one of the massaging implements.

Fig. 4 is a transverse sectional view; and

Fig. 5 is an inner face view, parts being 70 broken away.

Referring more specifically to the drawings wherein like reference letters designate corresponding parts in the several views, A and B represent companion massaging 75 elements adapted to be intimately associated to the extent that they are capable of manipulating or exercising the same portion of the body desired to be treated, for example, the abdominal region. 80

Each of the massage elements comprises a base or supporting member of curved contour to present a longitudinally concaved inner face conforming generally to the contour of the body. This base is represented at C 85 and has passing therethrough preferably centrally thereof an opening D through which a pipe coupling section E may be inserted and secured as illustrated,—to wit, by means of a threaded stem *d* having a transversely rounded flange or head *d'* at its inner end to provide a smooth inner surface, said stem,—threaded interiorly as shown,—receiving the correspondingly threaded end *d''* of a valved nipple *d³*. The exterior of the stem *d* is also threaded as at *d⁴* for the reception of a lock nut *d⁵* having an integral laterally extending flange *d⁶* arranged to impinge upon the outer surface of the base member C when binding the inner flat 100 face of the rounded head *d'* against the inner surface of the base. This will effectively lock the parts in position and furnish an airtight joint, suitable packing being introduced between the rounded head and the 105 surface of the base, or between the lock nut

and the base, if desired, as suggested at d' , Fig. 4. The valve of the nipple section is shown at D^s , and when this valve is closed there is a normal open passage way through the nipple portion E and through the base to the expansible member G, but when said valve is opened to afford communication with the outlet portion F, air will exhaust from said passage way through said outlet, as will be obvious.

On the inner face of the base is provided a sheet of rubber constituting an expansible member G, the latter being secured marginally thereof over the curved inner face of the base by a clamping frame H, said frame being in the nature of a continuous, flat spring metal strip hinged at one end as at h to the adjacent end of the base member C so as to close upon the base and be forced into binding relation with the expansible sheet around the marginal portion of the latter, or circumferentially of the frame by a latch member J at the opposite end of the base member. The latch member comprises a rigid metal bar of suitable length approximating a J shape in cross section, the longer arm overlying the outer surface of the base and the shorter arm being adapted to engage over an outwardly offset flange or tongue h' at the relatively free edge of the clamping member. The tendency of the clamping frame is to occupy a normally straight position or plane indicated by the dotted lines in the drawing, but its springy nature affording an adequate degree of flexibility or deflection enabling the latch member J when forced home by thumb screws j passing freely there-through into complementary threaded metal sockets j' in the edge of the base member C, to not only lock the frame against opening movement on its hinge, but, as an incident to the pressure exerted to cause the frame to curve into its binding and seating relation to the base member and expansible sheet introduced between the inner face of the base member and said frame. In this way by a very simple construction the parts are fastened in a sealed relation to constitute an air tight space between the expansible sheet and the base member permitting the sheet to expand to the extent desired through the open interior of the frame. The device also has the characteristic of affording quick renewal of the expansible sheet when occasion may require.

The outer faces of the massage elements are grooved near the opposite ends thereof as at K to receive adjustable strap members L' , confined in the grooves by detachable plates M bridging the grooves, the lower strap L being adapted to play in the grooves to be self-adjustable to the wearer whereas the upper strap is positively held in adjusted positions by spring pressed tongues

L^2 carried on yokes n passing around and through slotted edge portions on a plate n' grooved on its inner face to constitute an intermediate guide for the strap L' , the outer or exposed portion of the yoke n constituting a thumb or finger piece adapted to be depressed against the pressure of the spring n'' to release the tongue from the apertures l of the strap when the latter is being adjusted. The straps are connected to a band L^3 at the end of which are secured hooks l^s adapted to engage the perforated end portions of the straps to retain the massage elements in position on the body.

O are pipe connections leading from the nipples that feed into the space behind the flexible sheet or diaphragm of the massage elements, said pipe connections being conveniently flexible and of rubber or the like leading to an actuator, such for example as illustrated in either of my companion applications, executed of even date herewith respectively entitled Hand operating massaging apparatus, Serial No. 98350, and Power operated massaging apparatus, Serial No. 98351.

The actuator is here illustrated as comprising a base P to which is secured an air storage tank Q projecting upwardly from the base and having therewithin a charging pump R, the upper portion of the tank feeding through branch pipes S to the corresponding upper ends of similarly positioned cylinders T, the branch pipes having controlling valves t and the exhaust valves t' located between the controlling valves and the cylinders. The upper ends of the cylinders are in communication with the adjoining ends of the flexible pipe connections O, the bottoms of the cylinders being supported in suitable brackets M. Pistons V are mounted in the cylinders and connected to cranks v on the common shaft v' having a worm wheel W receiving motion from a complementary worm u on the main drive shaft X from a motor Y receiving its energy from any suitable electric source and having a manual switch control Z.

The cranks and pistons devoted to the cylinders are alternately disposed so that as one piston is progressing in its cylinder the other is receding in its cylinder so that alternate pulsations are created or expansions are created in the massage elements with respect to each other, at the rapidity desired, dependent upon the speed of the motor, or other rotation of the power shaft, the resultant effect being that the two massage elements acting from opposite directions upon the same portion of the body being treated will expand and contract back and forth in unison correspondingly passively manipulating or exercising the same member or part under treatment, the expansion of one of the massage elements

moving the tissues, muscles, or the like in one direction as the other member contracts, and said tissues, etc., being moved in the opposite direction by the subsequent expansion of the contracted massage element and contraction of the first mentioned expanded element.

From the foregoing description, it is believed that the operation of my method will be understood without further discussion, but it may be added that, as shown, it is carried into practical effect by subjecting the parts to be treated to pulsating pressures, preferably in rapid succession, from adjacent but opposite points of application, and alternating the pressure so that by such alternation the fleshy, muscular or other anatomical part will be passively manipulated or exercised in a back and forth direction. The operation of the apparatus assisting in the foregoing end is obtained by initially filling the cylinders and conducting pipes behind the expansible elements, cutting off the air supply from the tank to the cylinders so as to confine the air in the latter to constitute what may be termed air pistons or columns, and then operating the motor to reciprocate the pistons in the cylinders and coincidentally therewith the columns of air, the displacement of which columns of air will correspondingly expand and contract the expansible elements, and in the alternating relation set forth, at a speed or sequence determined by the speed of rotation of the motor.

While I have herein disclosed one embodiment of the mechanical phase of my invention, capable of enabling satisfactory performance of my improved method, it will be understood by persons skilled in the art that various changes and embodiments may be resorted to as may be within the scope of the hereto appended claims.

What I claim is:

1. A massaging device of the character described comprising an expansible member having a base part, a flexible sheet on said base, the base having an air passage leading behind the sheet, and means for confining the sheet to the base comprising an open frame hinged to the base at one edge and provided with a latch therefor at the opposite edge of the base, substantially as described.
2. A massaging device of the character described comprising an expansible member having a curved base part, a flexible sheet on said base, the base having an air passage leading behind the sheet, and means for confining the sheet to the base comprising an open frame hinged to the base at one edge and provided with a latch therefor at the opposite edge of the base, substantially as described.
3. A massaging device of the character

described comprising a curved base, an expansible sheet thereon, the base having an opening leading behind said sheet, and means for retaining the sheet on the base including a flexible frame and means engaging the opposite edges of the frame to deflect the same, to conform to the curvature of the base, substantially as described.

4. A massaging device of the character described comprising a curved base, an expansible sheet thereon, the base having an opening leading behind said sheet, and means for retaining the sheet on the base including a flexible frame and means engaging the opposite edges of the frame to deflect the same to conform to the curvature of the base, said last mentioned means including a hinged connection at one edge of the frame and an adjustable pressure and latch device at the other edge thereof, substantially as described.

5. A massaging device of the character described comprising two associated expansible elements adapted to operate from opposite directions on approximately the same anatomical part, and flexible strap connections between the massage elements extending thereacross and adapted to be fastened around the body, means for confining one of the straps to the base members for permitting freedom of movement thereof, and means for fastening the other strap member against movement relative to the base members, substantially as described.

6. A massaging device of the character described, comprising two associated expansible elements adapted to operate from opposite directions on approximately the same anatomical part, and means for flexibly connecting the massage elements including a pair of connections one capable of relatively free movement with reference to the expansible elements and the other having provision for securing the same against movement with reference to the expansible elements, substantially as described.

7. In a massaging apparatus, a pair of pneumatic massage devices provided with flexible faces adapted to engage the part to be treated and substantially rigid backings for said flexible faces, means for securing said backings against the part to be treated with the flexible faces therebetween, and preventing the backings from yielding when the flexible faces are working, said flexible faces being disposed to contact opposite portions of said part to be treated so that the rigid backing of one may oppose the movement of the flexible face of the other, and means for causing relatively alternating expansive and contractive actions of the flexible faces so that one face will contract toward its fixed backing when the other face expands without shifting its fixed backing.

8. The method of massaging which con-

sists in applying fixed backings against opposite portions of the part to be treated, introducing between said fixed backings and the part to be treated pulsating passive pressure, and alternating said pressure on the opposite sides of said part to be treated so that the movement of the tissue of the part to be treated under the pulsating pressure

from one side is resisted by the fixed backing at the opposite side thereof. 10

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM C. J. GUILFORD.

Witnesses:

CHARLES A. LEAVITT,
JOHN W. SHIELDS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."