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(54) Machine for passive and active kinesistherapy

(57) The machine consists of the main machine section (fig. 1) having a motor which converts the rotary movement to reciprocal (back and forth) movement of adjustable length, a sliding regulator (fig. 1) (8) which has a motor polarity alternating switch, ensuring thus the carriage movement direction reversal, when they fall on the sliding regulator switch (8).
Special foldable footrests are placed on the carriages (fig. 1) (7) where the legs to be exercised are attached.
By mean of the end stops (12) and by assisting flexible springs, we activate the special footrest for special exercises of the ankle. By using the foldable arm (fig. 3) we transfer the movement from the carriages to the foldable handles which are located on the adjustable pair of stanchions (fig. 2) in order to exercise the hands and the nape.
The special head supporting case (of small swing shape) assists in moving the head to the left and right with a simultaneous slight lift (fig 6).
Placing the pull brace on the carriages (fig. 5) and depending on the height of the hands when we hold the handles, we exercise the waist and the spine making movements to the left and right on an arctuate path, or making bends with adjustable intensity and frequency.

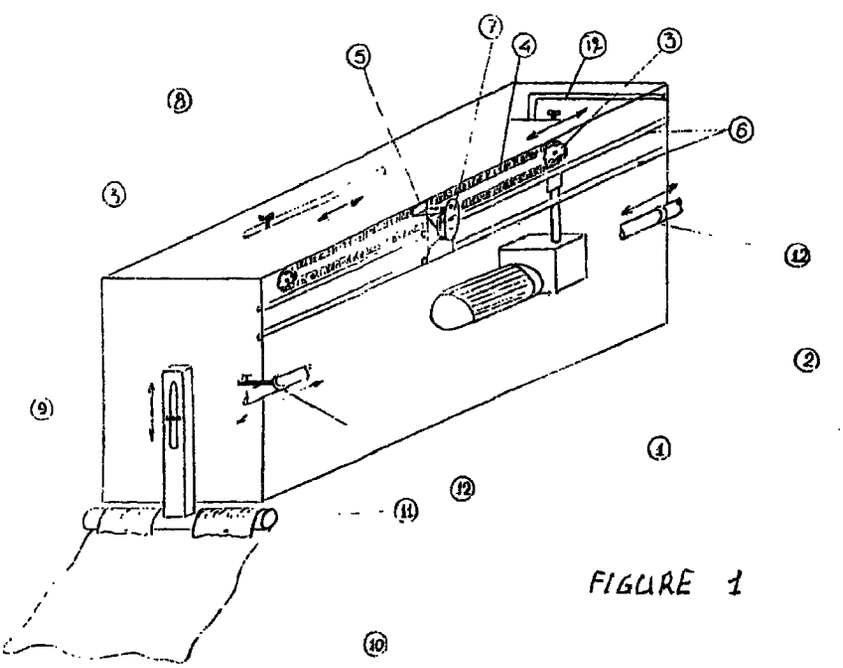


FIGURE 1

EP 0 920 848 A2

Description

[0001] The invention relates to a personal machine for passive and active kinesistherapy as well as for exercising the whole body, consisting of the main section which includes the variable speed motor and some additional auxiliary components.

[0002] Such machines for kinesistherapy are already well known in the market. Most of them are intended for professional use, are voluminous and expensive, with few exercise alternatives.

[0003] The present invention relates to a machine that exercises almost all body parts. It is of small volume, low weight and easily transportable. Because of its low cost, it can be used, apart from hospitals, old people's homes and institutions for invalids, at home as well, for the good physical status of all family members.

The movement of the machine is reciprocal, of adjustable reciprocation length and is able to exercise the ankıe to all directions, the toes, the waist by left-right arctuate movements and by bending, the hip-joints, the wrist-joints, the arm muscles, the nape, e.t.a.

[0004] The abilities of the present machine allows the exercising of bedridden persons, the prevention of the confinement to bed symptoms, the assistance of blood circulation, the prevention of an ankylosis, the strengthening of the muscles, the assistance of the muscle flexibility and elasticity.

It also acts suppressively against thrombosis, exercises persons who do not have an inclination to exercising, helps paraplegic and quadriplegic persons having suffered a stroke to be cured of an ankylosis, thanks to its capability to start with slight movements increasing them gradually, until the full recovery. By exercising the nape, there is achieved prevention of salt accumulation as well as assistance of persons suffering from nape syndrome, migraines, e.t.a.

[0005] Our invention's machine consists of the main section (figure 1) which includes the motor providing an adjustable reciprocal movements to two carriages (5) of adjustable reciprocation length and number of movements per minute. This main section of the machine exercises the lower part of the body, that is to say the toes, the ankle, the knees, the hips, up to the abdominal area. We exercise the rest of the body by various components, that are driven from the main machine section, a fact that gives the said advantages, i.e. the adjustment of the movement intensity by means of reciprocation length and movement frequency (movements per minute) regulation, which (advantages) are necessary after a surgery, a nape syndrome crisis of aged persons, e.t.a.

[0006] Figure 1 shows a front view of the machine and depicts the main components thereof: the machine base of rectangular shape (1), with a set of preferable dimensions, 22 cm width, 60 cm length, 27 cm height, the multiplication or reduction gearing (2) of the motor which drives a chain (4) supported by two sprockets (3) positioned horizontally on rotating shafts, at the two ends of the machine, when considered lenghthwise.

At the left and right sides of the machine and on the chain (4) them will be attached two carriages (5) reciprocating on the double parallel pairs of the guide rails (6). It also depicts the special mechanical footrest (7) for attaching and retaining the user's feet, the sliding electrical regulation (8) of the reciprocation length, the height adjustable legs (9), the tarpaulin for immobilizing the machine in accordance to the tension force and to the leg and arm weight when exercising on the floor, the hole (11) on the struts for the fastening to the bed in the case of bedridden persons, and the specifically adjustable impact or pull stops with flexible springs of the special footrest for exercising the ankles and the toes (12).

[0007] Figure 1A presents a perspective view of the carriage (5)(fig.1) showing the supporting and sliding points (4), (5) onto the guide rails (6) (fig. 1), the fastening point (8) to the chain, the stop pin (7) of the switch which will be incorporated to the slidably adjusting mechanism (fig. 1), the supporting bar (1) of the special footrest, the safety split pin (3), the socket (2) for fastening the pull brace (fig. 5) and the alternatively foldable arm (fig. 3) for the drive transmission from the machine to the stanchions (fig. 2)

[0008] Figure 2 depicts the stanchions comprising the ellipsoidal plate (1) having a trough hole (2) in the middle for retaining the lower part of the stanchions and allowing them to move on an arctuate path and to widen near the points (A) and (B), whenever it is necessary for servicing fat and other persons, because it will be placed under the back. There are also fasteners (4) for fastening the upper part (5) of the stanchion at the desirable height, as well as locks (7) for fastening the handles.

[0009] Figure 4 depicts one of the handles (A) (fig 2) with the hole (1) by means of which they are secured at the upper part of the stanchion (5) (fig. 2), the rotary moving joint at a 360 deg. range (2), the connecting socket (3) of the arm (fig. 3) (3) for the simple movement of the hands. We connect the arm (fig. 3) to the point (4) when we wish to exercise additionally the wrist and the hand in general, apart from the reciprocal and rotating movement. The point (5) depicts the position of the hand.

[0010] Figure 6 depicts the special head-supporting swing-like case, made of leather, cloth e.t.c., which is suspended by hooks (1) and (2) from the handles (A) (fig. 2). When we wish to exercise the nape by half turn of the head or by slight lifts - lying always on the back - or, in the case we wish a more intensive exercise, we can suspend both of the swing hooks onto the pull brace (fig. 5) achieving thus to raise our head as much as we wish by regulating the length of the reciprocal movement (8) (fig. 1).

[0011] By the use of the pull braces we are able to exercise apart for the nape, the spine as well. At the horizontal position and by holding a brace at each of our

sides, our waist will tilt to the right or left delineating an arctuate path.
Raising the hands higher, we will make forward bending movements of the waist and by crossing the handles, we will achieve, apart from the bending movements, a slight turn of the waist to the right and left. In this way we achieve a complete exercise of the whole upper body part.

[0012] In all the above exercises and other that we can improvise, with our effort being negative in relation to the exercise direction, we achieve the positive exercise.

[0013] Figures 2A and 3A show the special footrests for positioning the feet.

[0014] Figure 3A depicts the foldable four-way joint (3) and (4) up-down, right-left. The item (3) is fitted on the carriage shaft (1) (fig 1A). The item (5) is the displacing system of the special footrest for different foot sizes. The items (1) and (2) are sockets for Velcro type foot fasteners. The item (6) is a flexible or foldable part having a joint and serving to exercise the toes by using the barriers (12) (fig. 1) or by pulling by means of a flexible spring.

[0015] Figure 2A depicts the elevation view of the special footrest with the special protrusions (8), (9), (10), (11), (12), where by using various alternatives of the flexible springs that are hooked to one or more footrest and machine points or the end stops (12) (fig. 1) of the movement, we exercise the ankle at all movements he is able to do. The intensity of those exercises is a function of the reciprocation and the rate, starting from the slightest reciprocation of 3-5 cm length, up to the maximum of the machine capability, i.e. 30-50 cm.

[0016] By this exercise we can exercise the knees, the hips, and the abdominal area, if we approach the main body section near to the machine.
For those exercises it will be necessary to tie the machine onto a bed, or to be lying on the special tarpaulin (10) (fig. 1).

[0017] The multiplication or reduction gearing will be actuated by a wired remote controller with potentiometer for the increase and reduction of the movements.

Claims

1. Personal machine for passive and active kinesistherapy as well as for exercising the whole body consisting of the rectangular main machine (fig. 1) characterized by the fact that it comprises a variable speed motor which turns two gears (3) positioned horizontally at the two ends of the machine and connected to the chain (4) characterized in that it converts the rotational movement to reciprocal movement (forth and back) to move the carriages (5). This reciprocal movement can be adjusted lengthwise between a minimum of 3-5 cm and a maximum of 30-40-50 cm, depending on the size of the machine. The carriages reciprocate on two pairs of parallel guide rails (fig. 1) (6) and on them will be placed the special foldable footrests for the exercising of the legs (7), or the pull brace (fig. 5) for the exercising of the upper part of the body, or the foldable arm (fig. 3) which transmits the reciprocal movement to the special handles which are located on the pair of stanchions.

2. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 1, characterized by a pair of stanchions adjustable in height and width which receives the reciprocal movement from the main machine by the foldable arm in order to exercise the upper body part: waist, spine, nape, hands, e.t.c. Characteristic feature of those stanchions is the fact that they receive the handles (A) (fig. 2) for exercising the hands as well a special head supporting case (of the small swing shape) (fig. 6) for exercising the nape.

3. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 1, characterized by the fact that consists of special foldable footrests (fig. 2A, 3A) which allow the ankle joint to make all possible movements (right-left, up-down), characterized by the regulator (fig. 3A) (5) for the adaptation of small or big feet. The footrests are also characterized by foldable front sections for simultaneously exercising the toes and by special protrusions (fig. 2A) (8, 9, 10, 11, 12) whereby placing the flexible springs on one or more of the said protrusions and at a point or the machine or by using the stops (fig. 1) (12), the foldable joint (4) (fig. 3A) is actuated for exercising the ankle joint, the instep and the toes.

4. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 2, characterized by a handle (fig. 4) with foldable joint (2) free for rotation in 360 degrees and by the sockets (3) (4) for connecting the foldable arm, so that a rectilinear and a rotary exercising of the hand and the wrist will be achieved.

5. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 2, characterized by the special head supporting case (of small swing shape) (fig. 6) and (fig. 2) (B) for exercising the nape, made of soft and resilient material (leather, cloth, e.t.c.) in order to fully embrace the head, not to bruise it, and to be able to swing it right-left by lifting it slightly, when it is suspended by the stanchions, or to lift it a lot, when it is hooked at the pull brace.

6. Personal machine for passive and active kinesistherapy as well as for exercising the whole body by

braces for retaining the hands onto the handles (fig. 7) characterized by the fact that they are made of soft material with practical Velcro type fasteners in order to assist the invalid and aged persons to embrace the handle and to immobilize the fingers in order to execute the exercise.

7. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 1, characterized by a pull brace (fig. 5) which is fastened onto the carriages and is characterized by the transmission of the reciprocal movement from the main machine in order to exercise the upper part of the body.

8. Personal machine for passive and active kinesistherapy as wall as for exercising the whole body comprising a stanchion support of ellipsoidal shape (fig. 2) (1) characterized by the fact that it has a hole through its center, where the stanchions are supported (3), and that it becomes narrower or wider accordingly.

9. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 2, characterized by the end stops (fig. 1) (12) which are adjustably positioned at any point of the special footrest we wish to act, i.e. at the protrusions (8, 9, 10, 11 or 12) (fig. 2A) so that we can persist in the ankle bending during a movement.

10. Personal machine for passive and active kinesistherapy as well as for exercising the whole body, characterized by foldable legs (fig. 1) (9) which have a hole through the lower horizontal section for passing through a belt in order to be secured on the bed and to hold the tarpaulin, so that the user lies down when he exercises himself on the floor and to immobilize the machine against the forces exerted by the feet to the bed.

11. Personal machine for passive and active kinesistherapy as well as for exercising the whole body according to claim 1, characterized by regulation of the reciprocation length in a sliding manner.

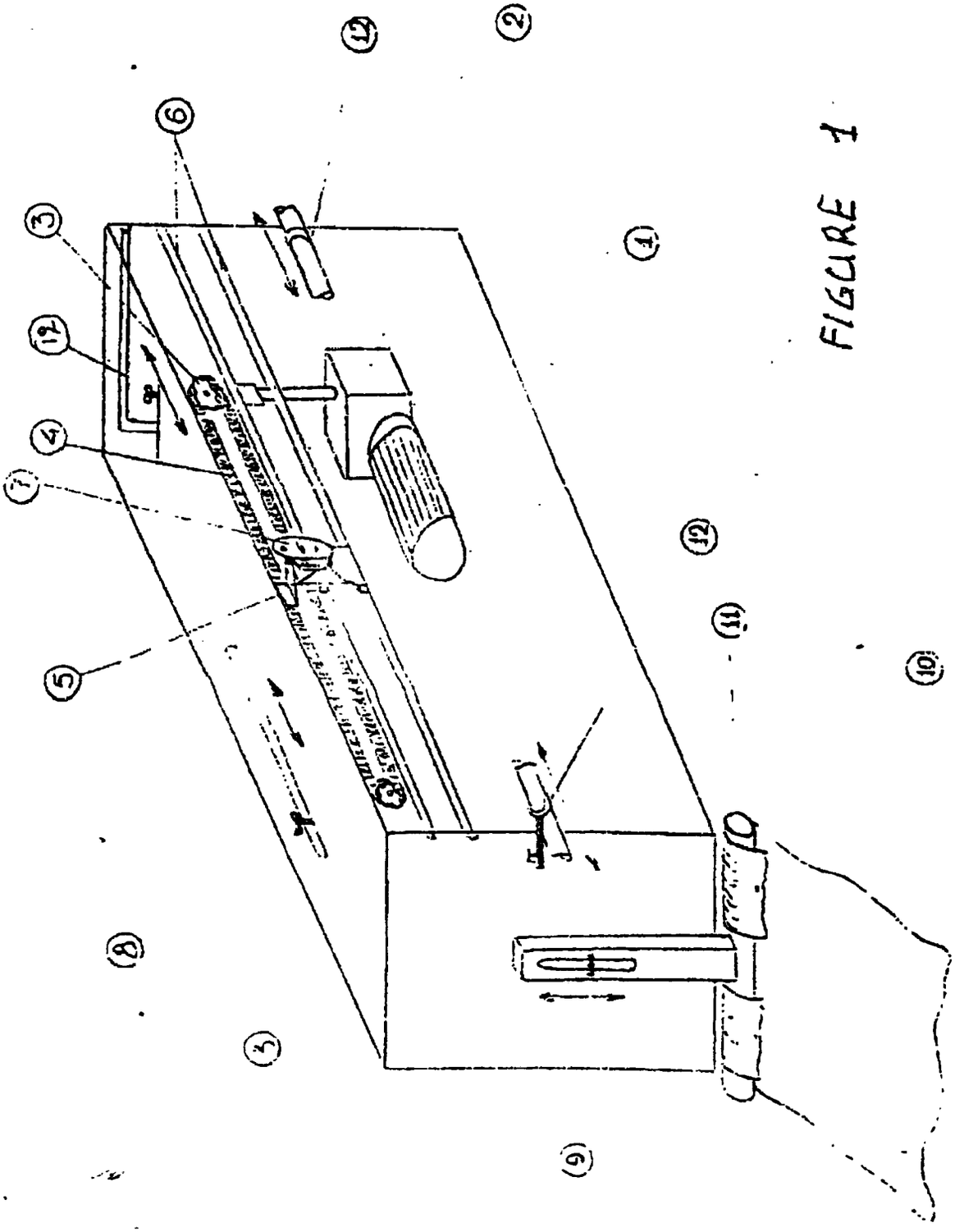


FIGURE 1

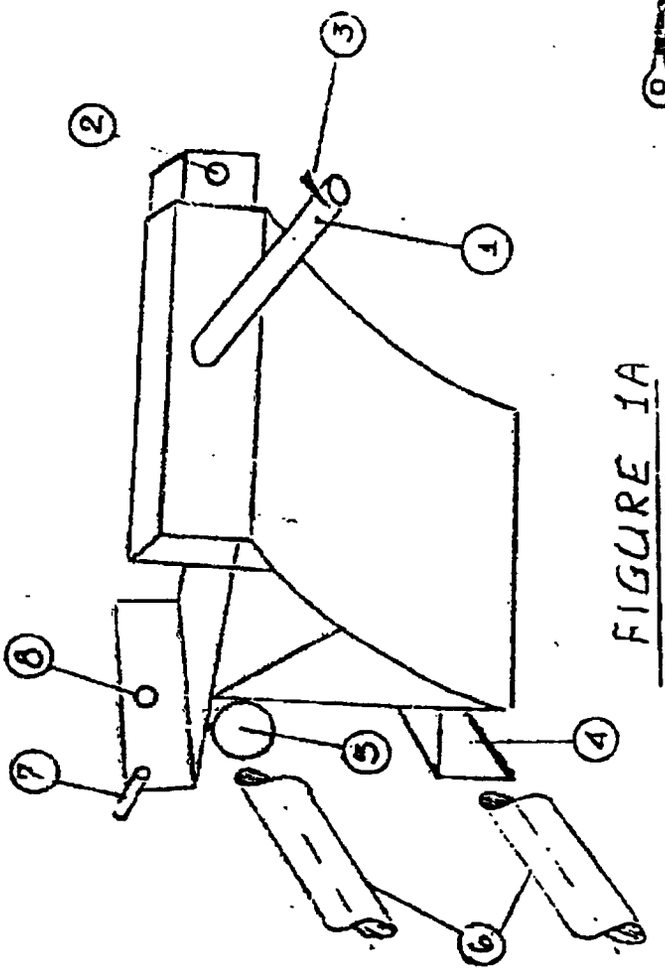


FIGURE 1A

FIGURE 5

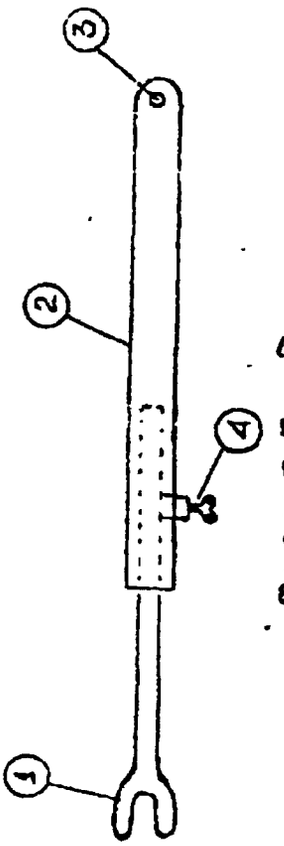


FIGURE 3

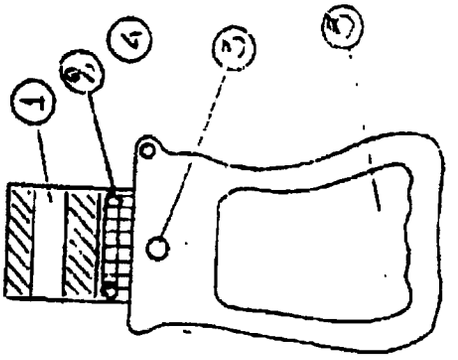


FIGURE 4

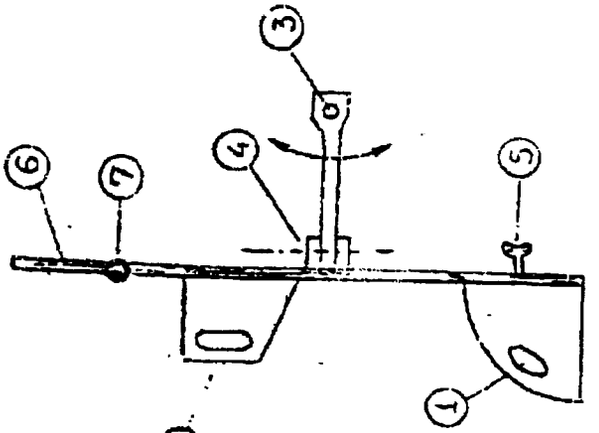


FIGURE-3A
SIDE VIEW

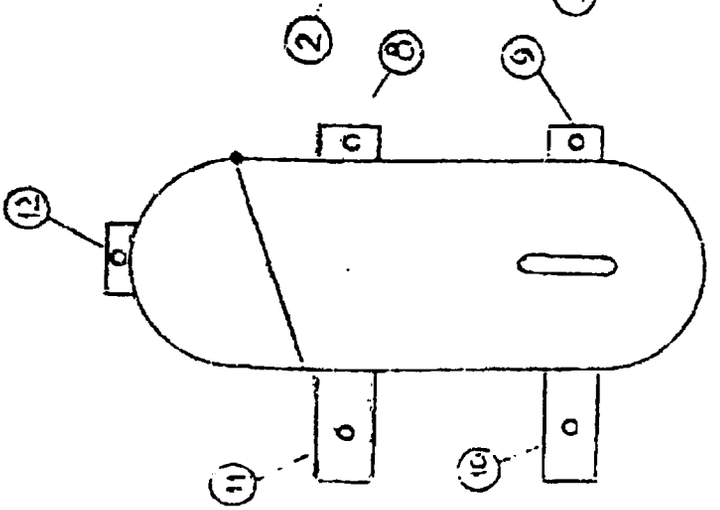


FIGURE-2A
FRONT VIEW

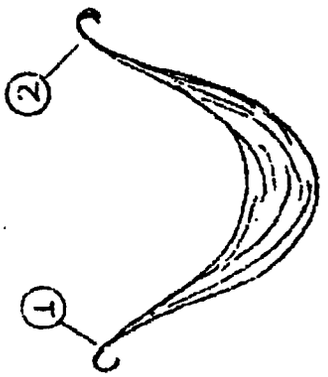


FIGURE. 6

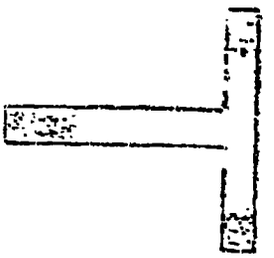


FIGURE - 7

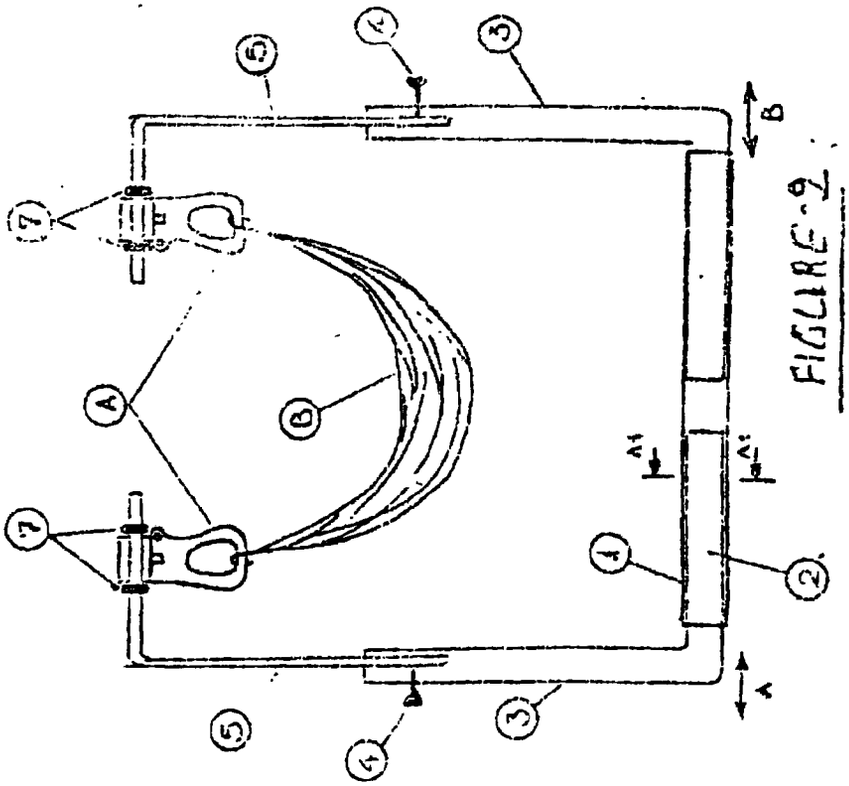
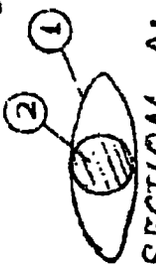


FIGURE-9



SECTION A1-A1