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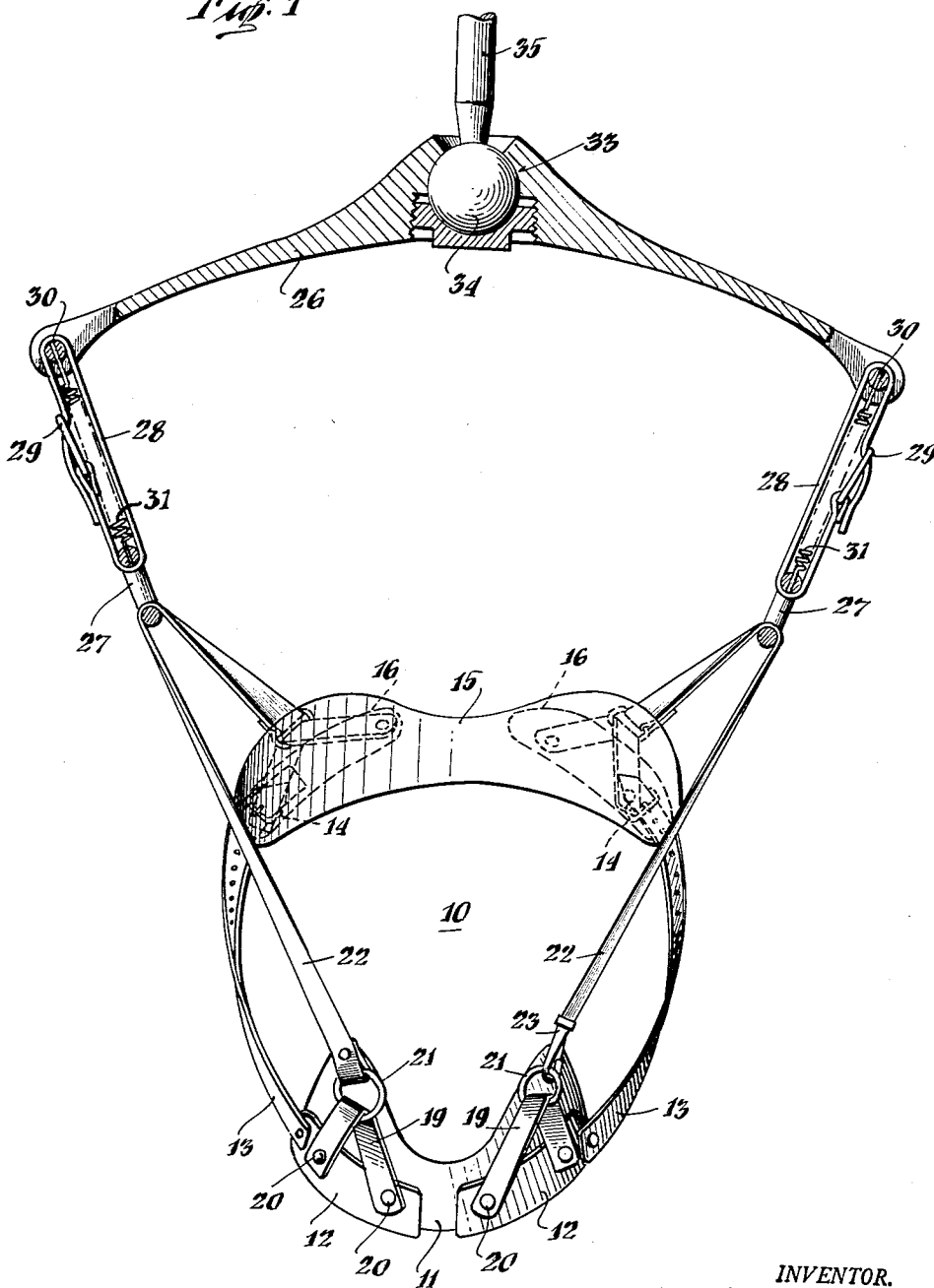
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MACHINE FOR PROVIDING INTERMITTENT CERVICAL TRACTION

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2 Sheets-Sheet 1

*Fig. 1*



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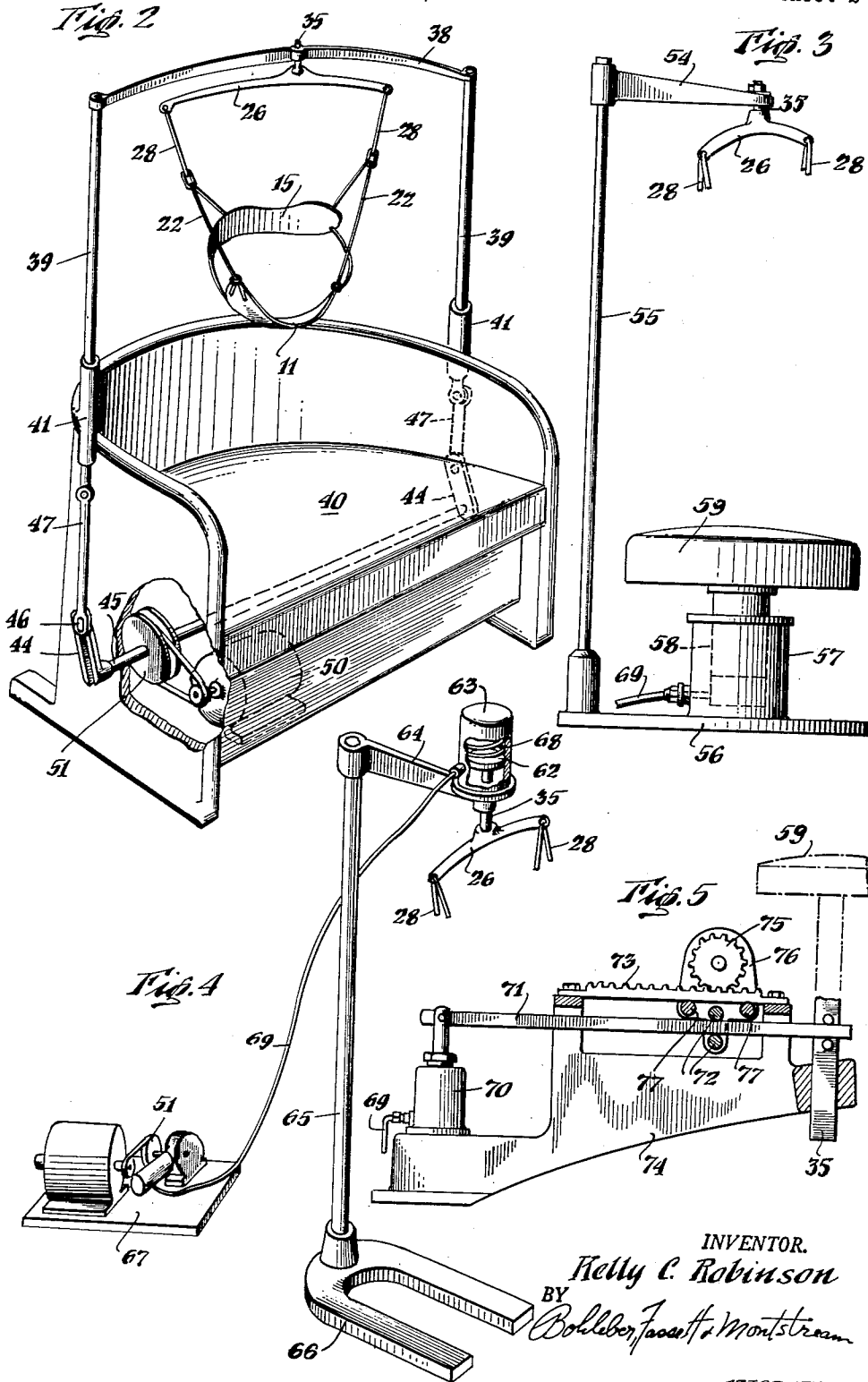
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## MACHINE FOR PROVIDING INTERMITTENT CERVICAL TRACTION

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6 Claims. (Cl. 128-75)

The invention relates to a machine for aiding in the reducing of nerve occlusion and relaxing of the muscles of the neck and body of a patient receiving manipulation, massage and the like. The effectiveness of the treatment is materially aided if the patient is completely relaxed. Muscular relaxation and nerve release are secured by slowly raising and lowering the patient while securely supported from the head and neck, preferably timed approximately at the breathing rate of the patient. The invention herein provides a machine for securing a general relaxation of muscles and nerves.

It is an object of the invention to construct a machine which raises and lowers the body of the patient while supported from the head and neck with the patient seated thereby relaxing or aiding in the relaxation of the muscles of the patient.

Another object is to construct a machine for relaxing the body muscles and nerves by raising and lowering the patient's body while supported from the head either by raising the head or lowering the seat, and which machine may be adjusted for length of stroke and/or speed of the raising and lowering operation.

Other objects of the invention will be apparent from the following description when taken in connection with the accompanying drawings illustrating some preferred embodiments thereof in which:

Figure 1 is a detailed view of the suspension means for the patient;

Figure 2 is a view of a machine with the driving motor and oscillating mechanism underneath a chair in which the patient is to be seated;

Figure 3 is a view of a machine constructed to raise and lower the chair or stool upon which the patient is seated.

Figure 4 is a view of a portable type of machine and using a hydraulic driving mechanism; and

Figure 5 shows a means for varying the stroke of oscillation for a hydraulic system.

The patient is supported from the head and neck while the machine either raises and lowers the head suspension means or the seat upon which the patient is seated during the massage or manipulation. The suspension mechanism or means for the patient includes a collar 10 which passes around the patient's neck comfortably and suspends or supports the patient during the relaxing oscillation. The collar may be of any suitable construction that illustrated includes a mandible pad 11 which is received under the chin of the patient. It may have stiffening plates 12, such as of metal, to each of which a strap 13 is attached. Preferably each strap is provided with a buckle 14 for adjusting the same to the patient's neck. The other end of the strap 14 is attached to an occipital pad 15 which receives the back of the patient's head. The occipital pad may have stiffening plates 16, such as of metal, secured thereto.

The collar is supported in any suitable manner such as by buccal straps 19 which are secured to the collar and particularly to their respective metal plates 12 such as by

rivets 20. The straps carry a ring 21 to which are secured a collar strap 22. These straps are shown as relatively long so as to pass above the patient's head. One strap may carry a snap fastener 23 for quick release thereof from its ring 21. Each collar strap 22 has a slip connection with a spaced end of a suspension arm 26. The slip connection may be of any desired form that illustrated including a link 27 over which the strap passes. The link is attached to the arm 26 in any suitable fashion that illustrated including a supporting strap 28 which may have a buckle 29 for adjustment of the length thereof, the strap passing over a dowel or pin 30 carried by the suspension arm. A tension spring 31 keeps the collar engaging the patient's chin and head.

The suspension arm 26 is mounted in any suitable fashion and preferably to permit pivoting thereto in at least one direction. For greater freedom, however, the suspension arm 26 is mounted for universal pivoting which is provided by a ball socket 33 carried centrally of the arm which receives a ball 34 carried by a rod 35.

While the patient is supported from the suspension means, he is raised and lowered about 2½ inches either by raising and lowering the suspension means or by raising and lowering the seat or stool upon which the patient sits. The raising and lowering of the patient is not of sufficient extent to lift or remove the patient from the seat, the purpose being to lengthen and shorten the muscles of the neck and body by the oscillation during the massage or manipulation. This oscillation normally will be between 3 and 40 per minute and may be any rate but preferably it is at the breathing rate of the patient. In the construction of Figure 2 the suspension means is raised and lowered through the rod 35 which is secured to a traction beam 38 which traction beam is carried by vertical rods 39 extending downwardly on each side of the chair or seat 40 and are slidably mounted in a bearing 41 carried by the frame of the chair. The lower ends of the rods are connected for oscillating the rods vertically and preferably the means is adjustable for varying the amount or extent of oscillation. The means for adjusting the length of the stroke may take many forms that illustrated including an arm 44 carried by each end of a shaft 45 journaled in the chair frame. The arm carries a crank pin 46 which is adjustable along the arm and thereby adjusts the length of the stroke. A connecting rod 47 connects the crank pin with the rod 39.

The shaft 45 is driven by a suitable motor 50 that shown being an electric motor having speed change means of any form that shown being a speed change pulley 51, so that the speed of oscillation may be varied as desired. Usually the oscillations will approximate the breathing rate of the patient.

Figure 3 shows a form of construction in which the suspension mechanism or means, the arm 26 and straps 23 thereof being shown, are attached to a frame 54 carried on a column or rod 55 which is carried by a base 56. The base carries an hydraulic cylinder 57 which receives an hydraulic plunger or piston 58 on which a seat or seat mechanism for the patient is carried. In this construction the seat is oscillated vertically and the suspension means is stationary in order to stretch and relax the muscles of the neck and body. The extent of oscillation is insufficient to remove or raise the patient from the seat. The vertical oscillation of the seat or seat mechanism may be secured in any suitable manner or by any suitable means such as that illustrated in Fig. 4 being an hydraulic pump or mechanism 67 connected by a flexible tube 69 which supplies and withdraws fluid from an hydraulic motor formed by the plunger 58 and cylinder 57. This hydraulic pump may have suitable speed change means there being illustrated an adjustable pulley 51. A lighter and more portable form of unit is shown in

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Figure 4 in which the suspension means is secured to an hydraulic motor formed by a piston 62 in an hydraulic cylinder 63 carried by a supporting arm 64 of a frame supported by a column 65 and base 66. An hydraulic pumping unit 67 of suitable construction is connected with the hydraulic motor or cylinder by flexible tubing 69 to supply liquid to and withdraw liquid from the cylinder so that the suspension means is raised and lowered. A spring 68 may be used to retract the piston in all of the hydraulic motors.

The variation or adjustment of the stroke of operation may be accomplished in many ways that shown in Figure 5 including an hydraulic motor 70 connected with an arm 71 the end of which is connected with the rod 35 of the suspension means. A movable or adjustable fulcrum 72 is provided for the arm, the movement of which may be secured such as by a rack 73 carried by the frame 74 and a gear 75 meshing with the rack and carried by a carriage 76 which also carries the movable fulcrum 72. Bars 77 engaging the underside of the rack 73 and the gear 75 supports the carriage upon the rack. The hydraulic motor 70 has a fixed stroke and by shifting the fulcrum 72 towards the bar 35 the stroke of the latter is shortened. The stroke varying mechanism of Figure 5 may be used with or substituted for the construction of Figures 2, 3 and 4.

In the constructions illustrated a suspension means or mechanism and a seat or seat mechanism is provided. Means is connected with one of these mechanisms for oscillating the same up and down thereby aiding in the relaxation of the body and neck muscles of a patient receiving treatment. The oscillating means may take many forms there being shown both mechanical and hydraulic means for this purpose. In the hydraulic form of construction the oscillating means includes the hydraulic pump and its electric motor as well as the hydraulic motor. The speed of oscillation may be varied by utilizing a variable speed motor with or without other speed adjusting means such as the variable speed pulley shown.

The invention is presented to fill a need for improvements in a machine for freeing nerve occlusion and relaxing body and neck muscles. It is understood that various modifications in structure, as well as changes in mode of operation, assembly, and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the clinical teachings of an invention. Hence, it will be understood that this disclosure is illustrative of preferred means of embodying the invention in useful form by explaining the construction, operation and advantages thereof.

What is claimed is:

1. A relaxing machine comprising a frame; suspension means carried by the frame and hanging downwardly therefrom including a suspension arm, strap means attached to the suspension arm at spaced points there-

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on, a collar attached to the strap means and means mounting the suspension means for vertical up and down movement; and oscillating means connected with the suspension means to raise and lower the same at a rate such as between 3 and 40 oscillations per minute and approximately two and a half inches; the suspension means and oscillating means being located to leave an unobstructed space at the rear of the collar, the strap means including a strap attached at its ends to each side of the collar at spaced points thereon and having a mid portion extending upwardly, and a slip connection between the mid portion of each strap and the suspension arm.

2. A relaxing machine comprising a frame; suspension means carried by the frame and hanging downwardly therefrom including a suspension arm, strap means attached to the suspension arm at spaced points thereon, a collar attached to the strap means and means mounting the suspension means for vertical up and down movement; and oscillating means connected with the suspension means to raise and lower the same at a rate such as between 3 and 40 oscillations per minute and approximately two and a half inches; the suspension means and oscillating means being located to leave an unobstructed space at the rear of the collar, a traction beam carrying the suspension means, rods carrying the traction beam and mounted in the frame for vertical movement, and the oscillating means being connected with the rods.

3. A suspension means to receive the head of a patient comprising a collar to engage the chin and back of the head of a patient, a pair of collar straps connected with the collar, an arm having two ends and each carrying an easily slidable cylindrical connection over which a collar strap passes and means to support the arm.

4. A suspension means as in claim 3 in which the means to support the arm includes a universal connection at the midpoint of the arm.

5. A suspension means as in claim 3 including a supporting stray carrying the slidable cylindrical connection and connecting each end of the arm with the collar strap, and the means to support the arm includes a universal connection at the midpoint of the arm.

6. A suspension means as in claim 5 including a tension spring between each end of the arm and the slidable cylindrical connection.

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