

March 31, 1953

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2,633,125

INTERMITTENT CERVICAL TRACTION APPARATUS (CONTROLLED)

Filed June 18, 1951

Fig. 1

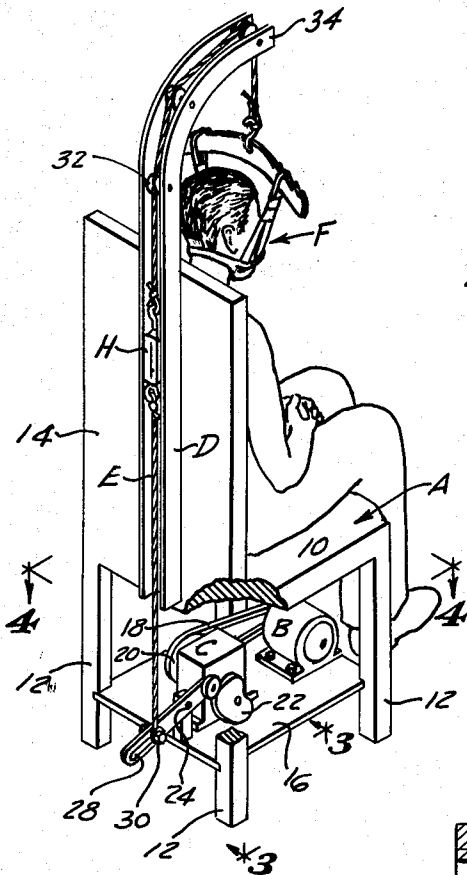


Fig. 2

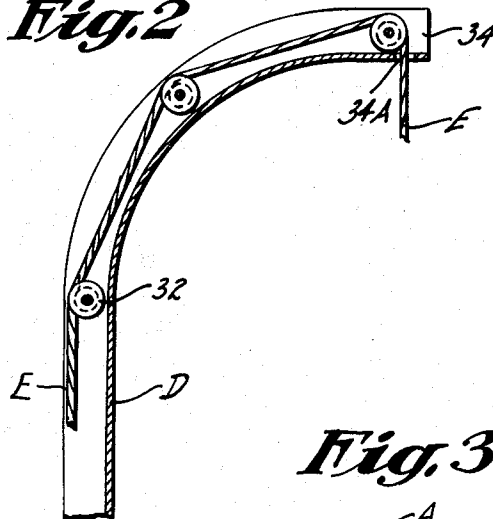


Fig. 3

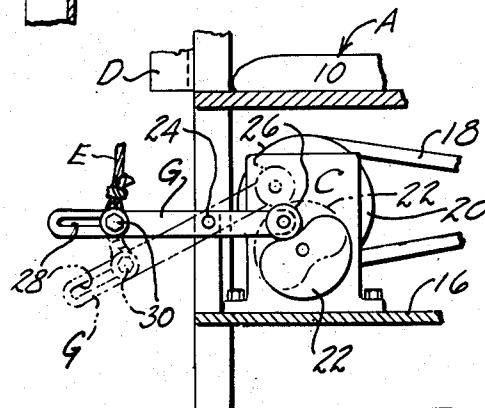
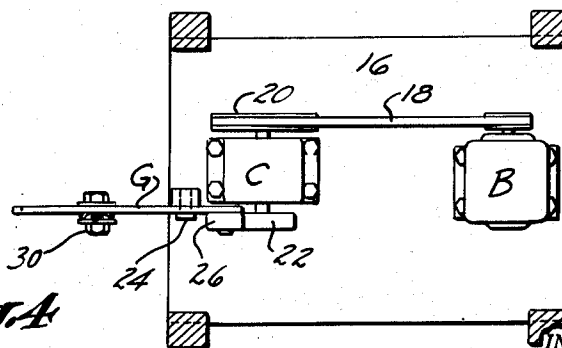


Fig. 4



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2,633,125

INTERMITTENT CERVICAL TRACTION
APPARATUS (CONTROLLED)

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Application June 18, 1951, Serial No. 232,216

4 Claims. (Cl. 128-75)

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My invention relates to traction apparatus used to relieve pain and suffering of a patient, and relates to apparatus which applies intermittent traction to the vertebra of the neck for treating persons afflicted with a ruptured or herniated cervical disc.

In my prior filed patent application Serial No. 195,766, filed November 15, 1950, I describe an "Intermittent Cervical Traction Apparatus," however, in my prior invention the traction varies as a sine curve with intermittent traction from high tension to low tension. In the present invention I am able to provide controlled traction for a controlled period of time.

Heretofore, apparatus for applying a constant traction to the neck of a patient was used and was a valuable procedure for a ruptured or herniated cervical disc. The herniation causes pressure against the ligaments and nerve roots causing intense pain to radiate through the neck, shoulder girdle, chest, and upper limb extremities. This pain is often associated with narrowing of the intervertebral interspaces which are readily discernible by the use of X-rays. The application of a constant traction to the neck increased the width of the intervertebrate interspaces and removed the pressure from the nerve roots and ligaments, and allowed the herniated disc to recede back into the interspace to assume its normal position. The prior methods were efficacious, but they caused great discomfort to the patient as the straps of the head halter usually placed pressure on the jaw and face until they ached, as well as compressing the jugular vein and causing the patient to have headaches. Therefore, many patients were unable to bear the constant pressure of the constant traction method and the apparatus had to be removed from time to time which retarded the healing of the ruptured cervical disc because as soon as the head halter or straps were removed, the cervical disc was again subjected to compression and protrusion from between the vertebra.

It, therefore, is an object of my invention to provide traction apparatus for treating persons afflicted with a ruptured or herniated cervical disc which applies a controlled intermittent traction to the neck of the patient.

Another object of my invention is to provide traction apparatus for treating persons afflicted with a ruptured cervical disc which can apply a controlled tension maximum traction or tension to the neck of the patient for a limited period of time and to relieve such traction for a shorter period of time.

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Another object of my invention is to provide traction apparatus to the neck of a patient where the traction or tension may be adjusted, and the period of application of the traction controlled.

Another object of my invention is to provide traction apparatus for treating persons afflicted with a ruptured cervical disc or where pelvic traction is needed, wherein the apparatus is substantially noiseless.

Another object of my invention is to provide traction apparatus which is hydraulically actuated in order to provide noiseless operation of the apparatus.

Other objects of my invention are to provide an improved device of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly effective in operation.

With the above and related objects in view, my invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

Fig. 1 is a perspective view of a patient being treated in a traction machine embodying my invention.

Fig. 2 is a fragmentary section view showing the cord in the upper portion of the cord guide.

Fig. 3 is a fragmentary side view of the cardioid gear and its complementary contact lever.

Fig. 4 is a sectional view taken along the line 4-4 of Fig. 1.

Referring now in greater detail to the drawing wherein similar parts are designated by similar reference characters, I show a patient support, generally designated as A, which comprises a seat 10, a plurality of legs 12, and a back rest 14. A base 16 beneath the seat 10 and generally hidden from view carries an electric motor, generally designated as B, and a speed reducing unit, generally designated as C.

Mounted upon the back of the back rest 14 is a cord guide column, generally designated as D, wherein a cord, generally designated as E, moves up and down to raise and lower a halter, generally designated as F, which is attached to the neck of the patient who is the subject of the treatment.

The electric motor B, mounted upon the base 16 drives a belt 18 which rotates a pulley 20 on the speed reducing unit C. The speed reducing unit is a gear box with meshing gears to reduce the speed of rotation of a cardioid shaped gear 22 which transmits an intermittent pull to the

cord E by way of the pivoted lever, generally designated as G.

The purpose of having an intermittent pull on the cord is that the neck of the patient is elevated for a few seconds then the neck is permitted to drop to its normal position and the cycle is repeated. That is to say the prior methods of holding the neck in extended position caused great discomfort to the patient as the straps of the head halter usually placed pressure on the jaw and face until they ached. The time of treatment therefore had to be limited under the old method of treating the patient.

The lever G is pivoted at 24 intermediate its ends; and one end of the lever carries a roller 26 which is in contact with the cardioid cam 22. A slot 28 adjacent the other end carries a slidable clamp 30 which holds one end of the cord E. The cord clamp 30 may be shifted to the extremes of the slot 28 whereby the length of the oscillations of the harness F may be varied because of the location of the sliding clamp in the slot. It should be remembered that the adjustment as to the variation of the swing of the harness is made for each patient and that the adjustment once made remains constant.

The U-shaped cord guide column D has a plurality of rollers 32, 32 over which the cord E passes so that the end 34 of the column D overlies the head of the patient and the cord drops through an opening 34A in the column.

Within the column D and at substantially eye level is placed a spring indicator, generally designated as H, in the cord E. In other words, the spring indicator H forms part of the cord and indicates the tension applied to the neck of the patient. By moving the clamp 30 further from the pivot 24 the tension on the neck of the patient is increased and by moving the clamp 30 closer to the pivot 24 the tension on the neck of the patient is decreased.

A self timer is employed to limit the time of treatment applied to the patient. That is the timer may be set so that the motor is actuated for a limited period of time.

The cycle of operation is that the motor rotates the speed reducer and rotates the cam 22. The cam 22 oscillates the lever G so that at the extreme length of the stroke the roller 26 is raised for a few seconds before it is permitted to gradually drop; thereby easing the tension on the neck of the patient; then the roller is slowly or gradually elevated.

The configuration of the cardioid shaped cam 22 is that for a major portion of the cycle of revolution the maximum pull is exerted on the head gripping harness and then the pull is reduced to a lower value which even may reach zero in order to prevent congestion of the tissue which would take place with continual contraction.

My invention is equally applicable to apply pelvic traction by pulling the pelvis from the spine periodically. A patient while lying in bed has a binder placed around his hips, with two parallel straps attached thereto and running down parallel to the patient's legs, and the ends of the straps are attached to my traction apparatus. In this manner the pelvis is pulled from the spine periodically thereby giving relief to the patient.

Although my invention has been described in considerable detail, such description is intended

as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

I claim as my invention:

1. In traction apparatus for treating persons with a ruptured or herniated cervical disc comprising a motor, a cardioid shaped cam adapted to be rotated by said motor, a lever pivotally connected intermediate its ends, one end of said lever actuated by the cam surface of said cam, a horizontally located member for seating a person, a post extending vertically of said member, a lateral extension on the upper end of said post and extending over said seat, a cord joined to the other end of said lever, said cord passing along said post and said lateral extension; and a head halter connected to the other end of said cord and being adapted to be moved up and down by the actuation of said motor, said cardioid shaped cam providing a maximum pull on said head gear for a portion of its cycle and then releasing the pull for a portion of its cycle.

2. In traction apparatus for treating persons with a ruptured or herniated cervical disc comprising a chair having a seat, a column projecting above said seat, a cord located beside said column, an electric motor, a cardioid shaped cam adapted to be actuated by said motor, head gripping harness at one end of said cord, a pivoted lever having one end engaging the cam surface of said cam and the other end connected to said cord whereby movement of said lever pulls and releases said head gripping harness, said cardioid shaped cam providing a maximum pull on said head gripping harness for a portion of the cam cycle and then releasing the pull for a portion of its cycle.

3. The invention of claim 2 whereby said cord is adjustably connected towards one end of said pivoted lever whereby the length of pull of the cord is adjustable.

4. In traction apparatus for treating persons with a ruptured or herniated cervical disc comprising a motor, a cardioid shaped cam adapted to be rotated by said motor, a cam follower connected to said cam surface, a horizontally located member for seating a person, a post extending vertically of said member, a lateral extension on the upper end of said post and extending over said seat, a cord joined to said cam follower, said cord passing along said post and said lateral extension; and a head halter connected to the other end of said cord and being adapted to be moved up and down by the actuation of said cam follower and cardioid cam, said cardioid shaped cam providing a maximum pull on said head gear for a portion of its cycle and then releasing the pull for a portion of its cycle until it reaches a zero pull to relieve congestion of the tissue of the person treated.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,786,047	Wilcox	Dec. 23, 1930
1,914,202	Henze et al.	June 13, 1933
2,315,997	Ginsberg	Apr. 6, 1943