

(No Model.)

J. B. HILLIARD.

APPLIANCE FOR CORRECTING SPINAL CURVATURE.

No. 443,764.

Patented Dec. 30, 1890.

Fig. 1.

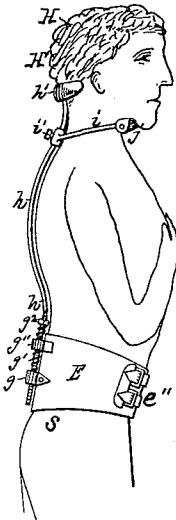


Fig. 2.

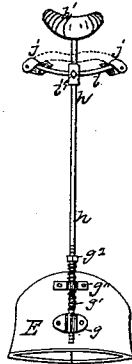


Fig. 3.

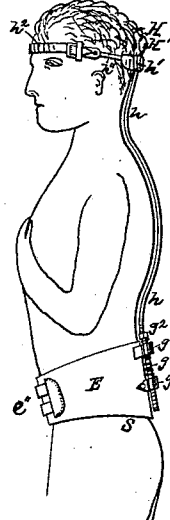


Fig. 4.

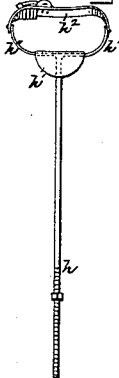


Fig. 6.

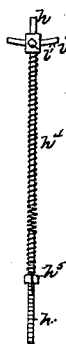


Fig. 7.

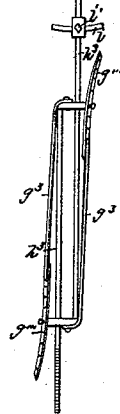
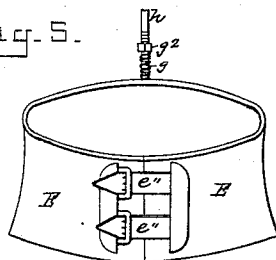


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH B. HILLIARD, OF GLASGOW, SCOTLAND.

APPLIANCE FOR CORRECTING SPINAL CURVATURE.

SPECIFICATION forming part of Letters Patent No. 443,764, dated December 30, 1890.

Application filed August 7, 1889. Serial No. 319,987. (No model.) Patented in England August 16, 1887, No. 11,173.

To all whom it may concern:

Be it known that I, JOSEPH BANKS HILLIARD, of 65 Renfield Street, Glasgow, in the county of Lanark, Scotland, a subject of the Queen of Great Britain and Ireland, have invented Improvements in and Appliances for Correcting Spinal Curvature and Weakness or Disease of the Vertebra, (for which I have obtained a patent in England, dated August 16, 1887, No. 11,173,) of which the following is a specification.

My said invention has reference to and comprises improved appliances for applying extension to the spinal column of children and persons or animals in a direct line or isolated manner not interfering with the free motion of the body, to correct or cure spinal curvature or other weakness or disease of the vertebra. These improvements will be more simple and convenient of application, requiring no binding or restricting of the chest or abdomen, and giving a more comfortable and resilient effect and feeling to the patient, with greater power of movement than has been possible with the appliances heretofore in use for the said purposes.

In the accompanying drawings, Figure 1 shows the trunk and head of a patient as fitted with my improvements as suitable for the correction of curvature of the spine. Fig. 2 is a view of the improved appliance. Fig. 3 is a view similar to Fig. 1, but containing a slight modification. Fig. 4 is a detached view of the appliance shown in Fig. 3. Fig. 5 is a front view of a portion of the improvement. Figs. 6 and 7 show modifications.

The spinal extension is applied in the direct line of the spinal column between the head H and the sacrum S to correct the spinal curvature in the following manner: A broad band E of poroplastic felt or other firm substance is fitted around the pelvis and buckled in front at e'' , as shown in Fig. 2, and to a larger scale in Fig. 5, and has fitted on the back over the pelvis a vertical metal socket g , Fig. 2, fitted with spiral spring or rubber or other equivalent buffer-spring g' above it, steadied by the bow-strap g'' on the band. Into this socket g and spiral spring g' slides and swivels the lower end of a light but rigid strong metal wire or rod or jury-mast h ,

which may move freely in a vertical direction or swivel within the socket and spring $g g'$. This rod h is threaded at its lower end and fitted with a nut g^2 to regulate the resilient tension of the spring g' on the rod h above the socket g^2 . This rod h extends straight up the patient's back and is bent to the natural shape of the back and neck in profile, as shown, respectively, in Figs. 1 and 3, and reaches up to near the occiput H' , which rests on a half-moon cushion at h' , secured on it at the top of the steel bar or mast h . A double movable or bow arm i is fitted to slide on the rod h by a socket at the back of the neck with a pinching-screw i' to secure it in any desired position, and extends forward along each jaw under the chin, as shown in Figs. 1 and 2. On or across the two front ends of these two arms i a cushion or a strap j is extended, upon which the chin rests. The bow-arms i and strap j are shown more particularly in Fig. 2. This movable arm i , when moved up the rod h , tilts or bears upon the chin and throws the occiput H' against the back cushion h' , in which position the back sliding part of the bow-arms is secured by the screw i' to the vertical rod h at the back under the head; or the head may be fixed by a buckle-band h^2 around the forehead, proceeding from two fixed arms h'' , extending from the top of the rod h at the occiput-pad h' , as shown in the modification, Figs. 3 and 4, thus dispensing with the sliding arm i and strap j under the chin, as in Figs. 1 and 2. When the head is thus fixed, the nut g^2 at the lower end of the rod h , over the spring g' and sockets $g g''$ at the sacrum S, is slowly turned, and as it descends on the rod the spring g' , acting upon the lower side of the nut g^2 , pushes up the rod or mast h until the requisite extension of the spine is arrived at. The small spiral or equivalent spring g' on the rod h , between the nut g^2 and the socket g , gives a resilient or buffer action to the rod h and prevents all jar or shock to the spine during the movement of the patient. The weight of the head H is thus lifted, leaving freedom to rotate in the sockets $g g''$, if required, and the spasmodic contraction of the spinal muscles is overcome, leaving the irritated and softened vertebra at perfect rest for nature to repair

at her leisure. The rod h should preferably be shaped approximately to the curvature of the back, but quite clear of it, leaving the back free to turn without touching the rod h .
 5 (See Figs. 1 and 3.) The extending movement of the rod h may, as shown in Fig. 7, be effected by slides h^3 , acted on by contracting or extending springs of rubber g^3 with adjustable bands g''' . Rotation may be prevented in
 10 special cases by fitting the rod h square or polygonal into a correspondingly-shaped socket g . The whole rod h from the occiput-pad h' might, as shown in Fig. 6, be in the form of a strong spiral spring h^1 , adjusted by
 15 a short screw-rod h and thumb-nut h^5 at the socket g of the waistband E, although this arrangement is not preferred to the rigid rod h described.

I claim as my invention—

20 1. An appliance for treating spinal diseases, consisting of a band to be secured around the hips, a head-support, and between the two swiveled and resilient connecting devices constantly tending to force the band and support
 25 apart while leaving the head-support free to turn, substantially as set forth.

2. An appliance for treating spinal diseases, consisting of a head-support, a band to be secured around the hips, an adjustable swiveled

rod connecting the band and the support, and 30 a spring tending to move the support and band apart from each other, substantially as set forth.

3. An appliance for treating spinal diseases, consisting of a support under the occiput and 35 means for securing it there, a band to be fastened around the hips and provided with sockets and a rod connected to the support at one end, the other end passing through the sockets in the band to allow of a turning of the head 40 or body, and a spring to move the support and back apart.

4. An appliance for treating spinal diseases, consisting of a head-support, a band to be secured around the hips, the said band being 45 provided with sockets, a rod rigidly connected to the head-support at one end, the other end passing through the sockets and provided with an adjustable nut, and a spiral spring, substantially as and for the purposes set 50 forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

J. B. HILLIARD.

Witnesses:

ROBERT E. ANDERSON,
JOHN SIME.