H. G. Davis,

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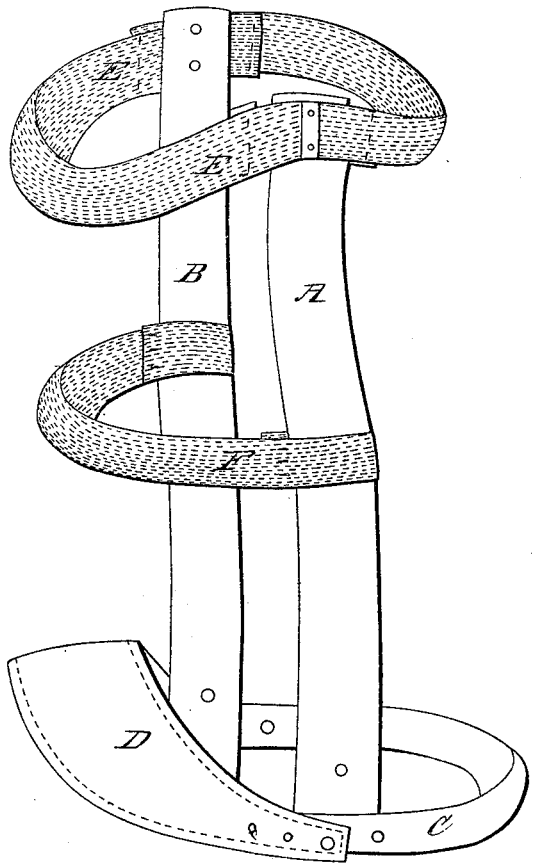
No. 6,680. Patented Aug. 28, 1849.



# UNITED STATES PATENT OFFICE.

HENRY G. DAVIS, OF MILLBURY, MASSACHUSETTS.

## SPINAL SUPPORTER.

Specification of Letters Patent No. 6,680, dated August 28, 1849.

*To all whom it may concern:*

Be it known that I, HENRY G. DAVIS, of Millbury, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Spinal Supporters, of which the following is a specification.

Before entering upon a description of my invention, I will first state what is sought to be accomplished by any apparatus for treating muscular distortions. In this class of difficulties it is necessary to return the parts to their relative and natural position, and sustain them, without in any interfering with the full, perfect, and healthy exercise of all, and especially the weaker or antagonistic muscles to those contracted. The apparatus used, if possible, should simply render sufficient aid to the weaker muscles, to enable them to bring back the parts to their natural position, and perform all their functions in this situation. In curvatures of the spine, it is desirable also, that the free, active, and full development of the thorax should in no way be obstructed, neither during treatment or by any apparatus worn after the deformity is removed to prevent its returning. So far as I am acquainted, all the apparatuses now in use for treating curvatures of the spines, fall far short of accomplishing these objects, and there are also serious objections to their employment; the most common difficulty with them is, they interfere with, if they do not entirely prevent the restoration of tone, and the balance of power among the sets of muscles connected with the spine; without which restoration of tone, a cure can never be effected. It is desirable that the apparatus should be so light in weight, of so elastic materials; that the pressure should be so applied, and so equally distributed, that it can be worn night and day without intermission; also that it should so perfectly fit the body that it can be worn beneath the ordinary dress, unperceived.

In my apparatus, I have (as I conceive), avoided the evils and obtained the most satisfactory results. It is called a curvature apparatus, and is designed for treating curvatures and other diseases of the spinal column requiring mechanical support.

It consists of two thin elastic plates of steel, or other material, one for the front (A), the other for the back of the trunk (B), and parallel with it, of such width and thickness however as may be necessary to afford the requisite support to the body, and also of such length as a given case may require, that is as the trunk to which they are applied demands. At the lower end of these plates of steel A and B I attach another similar but narrower plate of steel (C), which being united at the lower end of A by a rivet, and at right angles or nearly so, curves around the pelvis and unites with B in a similar manner at the lower end thereof keeping the said plates A and B in their proper places. The several plates are united as aforesaid by rivets whose heads project and are formed into buttons for the purpose previously mentioned. To keep A B and C in place, and to give thereby the support to the body which is designed in aid of the spine and muscles, I attach one end of a band (D), to the button of A, and carrying it around the body, opposite the plate C and over the crest of the ilium but resting thereon, fasten the other end to the button or head of the rivet in the lower end of the plate B; so that the steel plate C encircles one side of the body and the band D the other, having their ends united at the rivets, and as the band D rests on the hip, the whole machine is sustained in its place, and by the appliances herein mentioned, gives support to the weight of the trunk, and aids both the spine and the muscles which naturally perform that office.

To give the support required, and to keep A and B in place at the top, I use two elastic bands, which are marked E in the drawings. Each of these bands should be of sufficient length to pass quite around the body under the arms; near or at the center of each, to strengthen it where it is fastened to the steel plate, I stay it with leather or other suitable material. One of these bands is fastened to the top of the steel support A by one or more rivets, inserted through the stay and band; the other is confined to the top of B in a similar manner. The ends of the band upon the top of A are carried around the body, under the arms to or near to the top of B, and confined by pins, or any other convenient way to the other band E which is fastened as aforesaid to the top of B. The ends of the band E which is fastened to the

top of B are carried round the body under the arms in the opposite direction, and pinned in a similar manner to the other band E near to which it is fastened to the plate A. In this arrangement of the bands they are double almost around the body, but this is only essential so far as to give to them sufficient elasticity and strength; a single thickness possessing the requisite amount of elasticity and strength, would answer the same purpose. If but one thickness is used, there may be one short band and one long one attached to the top of the steel supports, or one short end and one long one to each band, the short end of one band, and the long end of the other being upon the same side of the body. These bands under the arms, as they are lengthened or shortened give less or more support to the body. In addition to what has been described, for the purpose of bringing force to bear directly upon the curve, in a case of curvature of the spine, I fasten by pins at a convenient point on the steel support A, one end of a band F, similar to the electric band E, which I carry around the body, over the center of the curve, upon its projecting side, and confine the other end of it to the plate B by pins. If there are more curves than one a similar band arranged in this way should be passed over each.

By the bands E under the arms, D over the hip, and F over the curve or curves, extension and support are given to the body tending to restore it to its natural posture when it is deformed. The machine is however usefully employed in the treatment of diseases of the spinal column other than those producing deformity, in such cases the band or bands F may not be required.

It should be remembered that the steel plate C should be around the side of the body, opposite to that toward which the curve in the dorsal region projects.

The steel plates A and B should as I have stated be of sufficient size and strength to sustain the superincumbent pressure upon them. I find by experience that a plate about one inch and one eighth in width and from one sixteenth to one twentieth of an inch in thickness answers well in nearly all cases which occur; but for large heavy persons, stronger ones may occasionally be necessary and so also for very light and small persons, smaller ones would be appropriate. I make the plate B about equal in length to the distance between the top of the pubis, and the top of the sturnum. The plate A about two inches shorter; these lengths I find answer well.

The plate C I make of the same thickness of A and B, but only about one half or five eighths of an inch in width. The distance between the holes through which the rivets pass should be about one half the circumference of the pelvis, where it is applied to it.

For the band D, I use as I have stated leather, which usually is about two inches wide in the center and gradually tapers to an inch and a quarter at the ends. It is also sufficiently curved to fit to the body, the broad part passing over and resting upon the top of the hip, and the whole being sufficiently strong to sustain the weight imposed on it.

For the several elastic bands I commonly use India rubber webbing; such as is often worked into suspenders, and is about two inches wide. It should however be well made and of good strong material. These dimensions of the several bands answer well in all ordinary cases, but if greater or less strength is necessary, the size may be easily conformed to the emergency.

I put not less than two holes in the lower ends of each of the plates A, B, and in each end of the plate C, the design of which is twofold. First by removing the rivets from one hole to the other, to vary the dimensions of the apparatus, as may be convenient, to accommodate it to the change produced in the individual, by the straightening of the curve or curves, or change arising from any other cause, and secondly, by the same process to increase or diminish the size of the apparatus, so as to render it applicable to persons of different dimensions. The band D, has in it a succession of holes, designed for the same twofold purpose of increasing or diminishing the support given to the body, or of increasing or diminishing the size of the apparatus. It is obvious that other materials may be used beside those specified, but I have found these to answer every purpose. The parts can be covered and ornamented to please the taste. This apparatus will admit of the addition of other parts upon the top of the plates A and B for the purpose of supporting the head and neck in those cases where such support might be useful, but it is not my design to describe any such addition. Whether steel plates or elastic or leather bands would be thought a novelty is not for me to judge; but steel plates and both elastic and leather bands being used for many purposes, some of which might be thought to be in character not very dissimilar from the use of these here described, I wish to limit my discovery to the combination and arrangement of the plates and bands as described in this specification.

I therefore claim as my invention and discovery, and ask therefor Letters Patent of the United States—

The combination and arrangement of the steel plates, A, B and C, and the bands D and E, combined as occasion requires

with a band or bands F, all the parts being so formed as to be capable of being united in the manner and for the purposes set forth in this specification, and constituting when so in union a machine which gives support to the body, when afflicted with any disease which makes such support useful.

In testimony whereof I the said HENRY G. DAVIS hereto subscribe my name in the presence of the witnesses whose names are hereto subscribed, on this the seventh day of April A. D. 1849.

HENRY G. DAVIS.

In presence of—
WM. DICKINSON,
GEO. L. ALLEN.