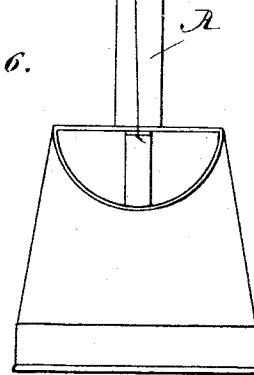
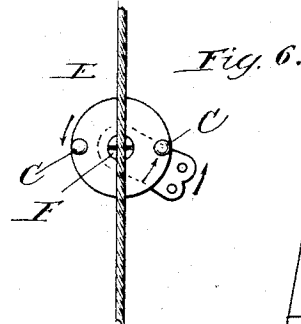
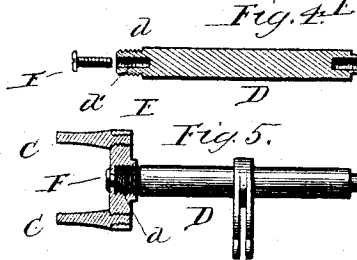
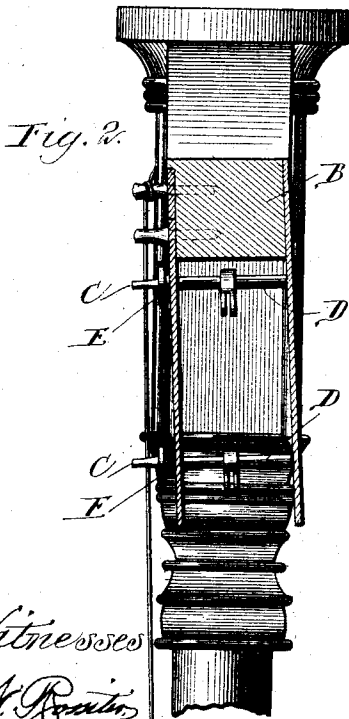
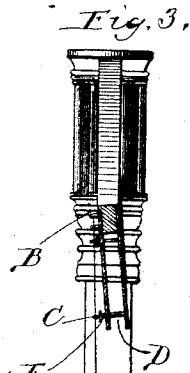
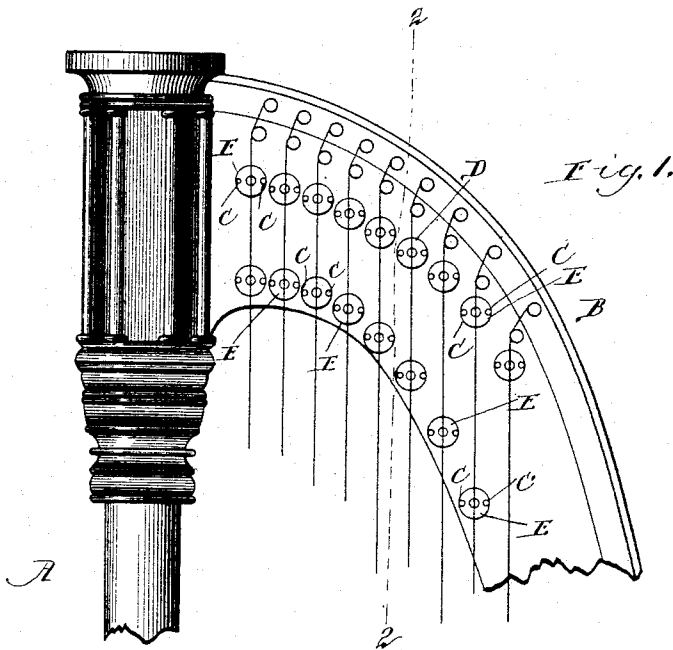


(No Model.)

G. B. DURKEE.
HARP.

No. 437,919.

Patented Oct. 7, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE B. DURKEE, OF CHICAGO, ILLINOIS, ASSIGNOR TO LYON & HEALY,
OF SAME PLACE.

HARP.

SPECIFICATION forming part of Letters Patent No. 437,919, dated October 7, 1890.

Application filed November 19, 1889. Serial No. 330,925. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. DURKEE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Harps, of which the following is a specification.

The object of my invention is threefold: first, to provide simple and efficient means for accurately effecting the individual adjustment of the flat and sharp producing members, (commonly termed the "sharpening-fingers,") so as to effect such individual adjustment of the tension of the strings as may be necessary to preserve the exact tuning of the harp in all of the required positions of its action; secondly, to permit the adjustment of the sharpening-fingers in a way to maintain them in position to properly engage the strings regardless of any warp which the neck or upper portion of the harp may incur, and, thirdly, to combine in one device means for attaining both of the said foregoing ends, so as to adapt the sharpening-fingers for individual compound adjustment.

To the attainment of the foregoing and other useful ends my invention consists in matters hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 represents, in side elevation, a portion of the neck and standard of a harp and serves to illustrate several of the strings and sharpening-fingers for engaging the same. Fig. 2 is a section on line 2 2 in Fig. 1 and shows the neck of a harp in a warped condition. Fig. 3 is a view similar to Fig. 2, but is made on a smaller scale and includes the lower portion of the harp. Said view is also partly in the nature of a diagram. Fig. 4 is a longitudinal central section through one of the spindles and includes an adjustable stop. Fig. 5 shows one of the spindles in elevation and a disk thereon in section. Fig. 6 is a face view of one of the disks.

In said drawings, A indicates the standard, and B the neck, of a harp, a portion only of the neck being herein shown. The sharpening-fingers C are arranged in pairs, as usual, and made rigid with disks or heads E, which are carried upon the outer ends of spindles D. The disks which are provided with the sharp-

ing-fingers are arranged for rotary adjustment in either direction about the axes of the spindles, and as a means for permitting such adjustment each disk has a screw-threaded connection with its allotted spindle. These screw-threaded connections between the disks and spindles are attained by threading the outer ends of the spindles, as at *d*, and providing the disks with threaded sockets adapted to receive and engage with the threaded end portions of the spindles, as best shown in Fig. 5. The threads of said members are cut, so that the pull of the strings upon the sharpening-fingers shall tend to unscrew the disks from the spindles, and as a means for checking such tendency of the disks to unscrew from the spindles I provide adjustable stops *F*, which are arranged to screw into sockets *d'* in the ends of the spindles, as best illustrated in Figs. 4 and 5, wherein as a simple form of stop I provide a screw or threaded pin having a suitable head. These screws or stops *F* and the sockets wherein they engage have their threads cut reversely to the threads of the portions of the spindles which engage in the disks. By such arrangement the tendency of the disks to unscrew from the spindles will be positively arrested by their engagement with the heads of the screw-stops, since the latter to be unscrewed from the spindles must be turned in a direction contrary to that in which the disks under pull of the strings on their fingers have a disposition to turn. It will be obvious, therefore, that the disks can be screwed either farther back upon or farther out upon spindles and there held by adjusting the screw-stops so as to set the heads thereof either more closely to or farther out upon the outer ends of the spindles. By reason of the foregoing arrangement the disks can be turned so as to give the fingers thereon two adjustments, one of which is a lateral adjustment to vary the pitch of the strings, while the other is an end-thrust of the fingers, so as to cause them to extend through such plane as the strings may be held in to an extent to maintain the fingers in proper engagement with the strings.

The object of the rotary adjustment of the disks and fingers, broadly considered, is fully set forth in my application, Serial No. 297,452,

filed on or about January 24, 1889, and hence need not be here repeated.

With regard to the adjustment of the disks or heads in a direction parallel with the axes 5 of the spindles, it may be noted that in many harps, and particularly in those of cheaper grade, the neck is in the course of time extremely liable to warp, so much so that the strings frequently slip off the ends of the 10 sharpening-fingers. This warping invariably bends the neck in a direction away from the strings, and is largely due to the pull of the strings upon one side of the neck. It will also be observed that the strings in a harp are not 15 exactly in the general plane of the frame, as illustrated in Fig. 3, wherein it will be seen that while the strings are at their lower end fastened along the middle line of the lower portion of the frame they deflect somewhat 20 from the vertical plane of the frame, (assuming the frame to be set upright,) in order that they may cross the sharpening-disks and connect with the pins on one side of the neck. Hence when the neck warps, as illustrated in 25 Figs. 2 and 3, the disks (and particularly the ones nearest the lower edge of the neck) will recede from the strings so as to bring the latter dangerously near the ends of the sharpening-fingers. By my improvement, however, 30 the disks can be adjusted out from the neck, so as to set out the fingers proportionally to

the warp of the neck, as in Fig. 2, wherein the lowest disk therein shown is represented as having been adjusted toward the outer end of its spindle.

What I claim as my invention is—

1. In a harp-action, a head provided with one or more sharpening-fingers and adjustable upon its supporting-spindle in two ways, the one being a rotary adjustment about the 40 axis of the spindle to effect a lateral shift of the sharpening-fingers, and thereby regulate the pitch of the string, and the other being an adjustment with the axis of the spindle to effect an end-thrust of the sharpening finger or fin- 45 gers, and thereby cause the same to project through the plane in which the string may be held to an extent to insure proper engagement of said finger or fingers with the string.

2. In a harp-action, a head provided with 50 one or more sharpening-fingers and arranged to screw upon its spindle, combined with an adjustable screw-stop engaging the spindle and limiting the extent to which said head can be turned in a direction to unscrew it from the 55 spindle, substantially as and for the purpose set forth.

GEORGE B. DURKEE.

Witnesses:

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