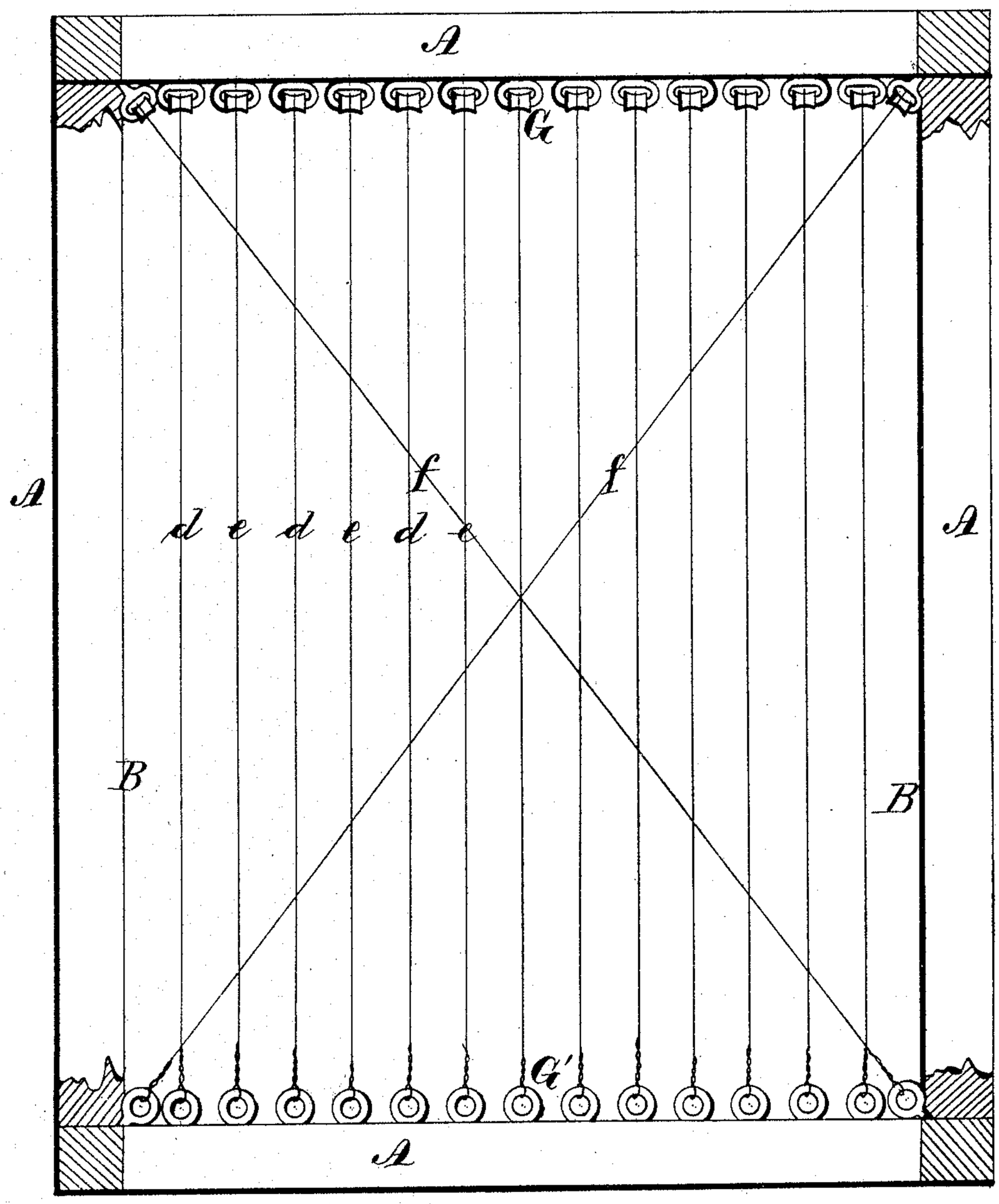
2 Sheets--Sheet 1.

W. B. CARLOCK.

Means for Preventing Reverberations in Public Halls.

No. 165,916. Patented July 27, 1875.

Fig. 1.



WITNESSES

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2 Sheets--Sheet 2.

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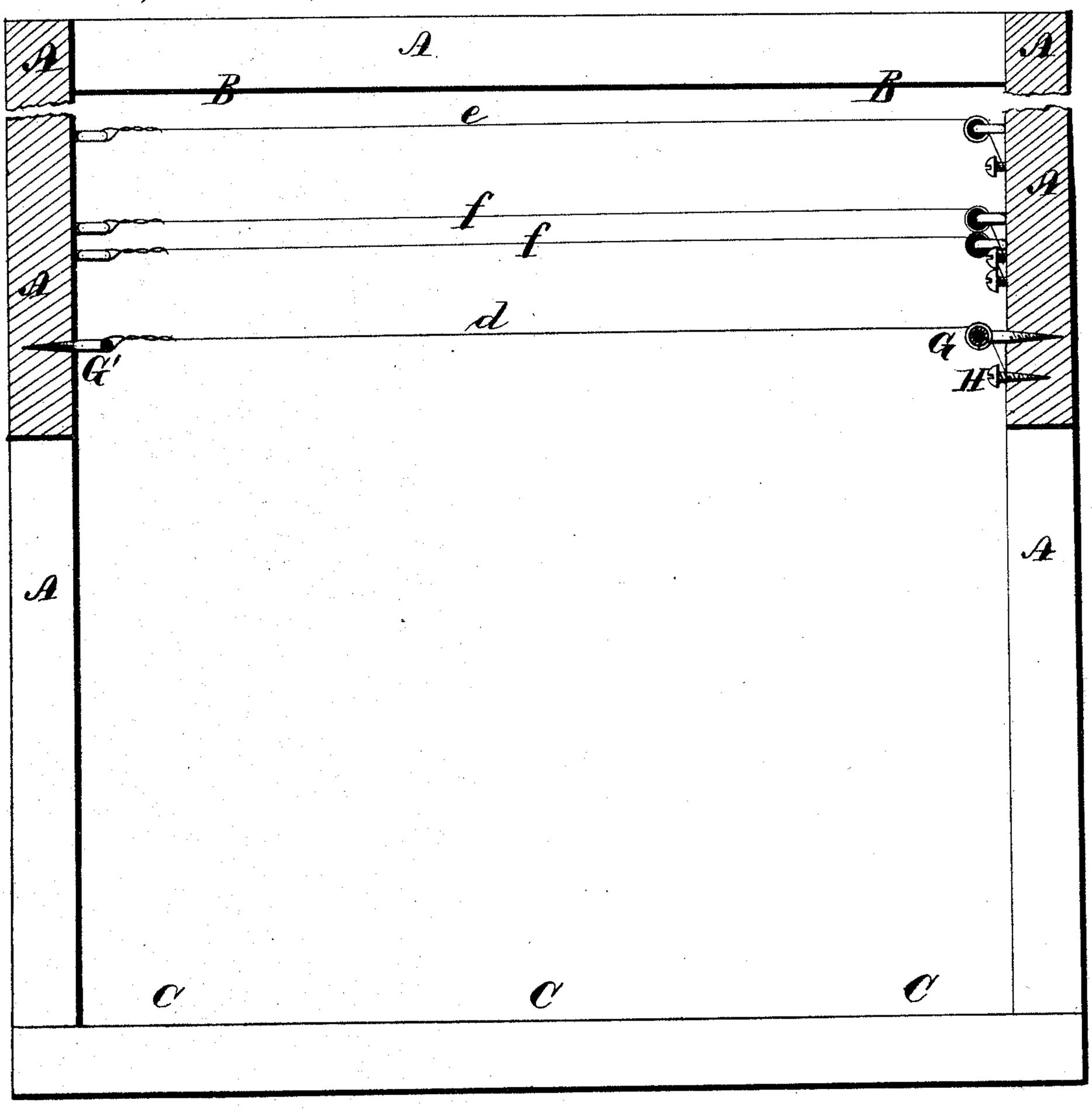
Fig 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM B. CARLOCK, OF BLOOMINGTON, ILLINOIS.

IMPROVEMENT IN MEANS FOR PREVENTING REVERBERATIONS IN PUBLIC HALLS.

Specification forming part of Letters Patent No. **165,916**, dated July 27, 1875; application filed January 21, 1874.

To all whom it may concern:

Be it known that I, WILLIAM B. CARLOCK, of Bloomington, county of McLean, State of Illinois, have invented a new and Improved Method of Preventing Echo or Faulty Reflection of Sounds in Halls, Churches, &c.; and I declare the following to be a full, clear, and exact description thereof, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings.

My invention relates to a new and improved method of correcting bad acoustic properties of halls, churches, &c., such as echo, faulty reflection of sound, &c.; and consists in wires stretched in any suitable manner, so as to form a barrier between the point or points from which the sounds emanate and the surfaces from which the sounds are echoed or reflected.

In the drawings, Figure 1 is a plan view of an apartment, showing an arrangement of the wires. Fig. 2 is a view in section and elevation of the same.

A A are the walls. B B are assumed to be such surfaces as may, at their different points, because of faulty construction or faulty arrangement, create an echo of the sounds that may emanate from one or more points, C, in the apartment beneath the wires. *d e f* are the wires, that are stretched so as to form a barrier between the echoing or reflecting surfaces B and any point or points C from which the sounds emanate.

It is well known that public halls, churches, court-rooms, &c., by reason of a faulty construction or arrangement of their parts, are often very obnoxious because of echo or faulty reflection of the sounds—for instance, in some churches it is almost impossible to understand a word that is spoken by the minister, and in some court-rooms it is difficult to make out what is being said by a judge, an attorney, or a witness.

I have discovered that if a barrier of wires be adjusted in such an apartment between the echoing surfaces and the place or places from which the sounds emanate, this echo or faulty reflection of the sounds will be practically overcome. I was led to this discovery by observing the effect of rows of piles in breaking up waves of water, and upon the generally accepted theory of wave-motion as the medium by which sounds are propagated, I thought that if the waves of sound emanating from the person speaking could be broken up before reaching the reflecting-surfaces the echo would be practically prevented. Whether the effect is due to the breaking up of sound-waves, of course, I am not prepared to say, but I know that the echo, or faulty reflection, is corrected by employing the wire barrier, as described.

It is immaterial, so far as my invention is concerned, how the wire barrier is made or erected, so that the effect is produced of interposing a barrier of wire strands between the speaker and the reflecting or echoing surfaces. Thus, in a public hall or court-room, where the sounds may emanate from any part of the room, I deem it best to make the barrier extend the whole length and breadth of the room, so it may be sure to be interposed between the reflecting or echoing surfaces and the place or places from which the sounds emanate. In churches, however, where the sounds usually emanate from a single point, as the pulpit, it is only necessary to interpose the wire barrier between that point and the reflecting-surfaces.

In the drawings, the wire barrier is represented as extending the length and breadth of the room, and is constructed substantially as follows: I take, preferably, small wire and stretch it pretty tight in a series across the room, so that the strands in each series will be about equidistant from each other. The distance between the separate wire strands need not be invariable, but may vary considerably, from very close together to a foot or more apart, but should the desired effect not be produced the wires should be placed closer together.

In order that the wires may be properly stretched, there should be a tightening device of some suitable nature.

In the drawings, the strands are represented as attached at one end to stationary staples G′, and at the other end are passed over the rollers of staples G, and are then secured to screws H in such manner that by turning the screws H the strands will be stretched tight.

It is evident that various devices may be employed for this purpose, as, for instance, the well-known method of cording up bedsteads, &c., but I lay no claim to any special method.

In the drawings is shown a second series of wires, *e e*, and two diagonal wires, *f f*, above the lower series, placed at least so far above the lower series that the wires may not touch each other.

I find the upper and diagonal series effective, but do not regard them as essential.

I do not confine myself to a barrier of the form and arrangement shown—the effect is produced by interposing the barrier of wires between the reflecting-surfaces and the point or points from which the sounds emanate, and any arrangement of the wires by which such a barrier is formed will produce the desired result, and it is evident this may be done in an endless variety of ways, by altering the direction of the wires, their relative arrangement, &c., and dependent in a great measure upon the relative positions of the reflecting-surfaces, and the point or points from which the sounds emanate, and it must be understood that my invention is, broadly, the prevention of echo, by interposing a barrier of wire strands, or their equivalent, between the echoing or reflecting surfaces and the point or points from which the sounds emanate; and

What I claim is—

The method of preventing echo, &c., by interposing a barrier of wire strands between the echoing or reflecting surfaces and the point or points from which the sounds emanate.

In testimony that I claim the foregoing, I have hereunto set my hand this 8th day of October, 1874.

WILLIAM B. CARLOCK.

Witnesses:

WOLF GRIESHEIM,

GEORGE W. HOOVER.