To all whom it may concern:

Be it known that I, FRIEDRICH STALLFORTH, architect, a citizen of the German Empire, and residing at 1 Emmersstrasse, Wiesbaden, Germany, have invented a certain new and useful Improvement in Concert-Halls and like Edifices, and do hereby declare that the following is a full, clear, and exact description of the same.

The object of the invention is to provide a concert hall or the like edifice or auditorium or other room of exceptionally good qualities respecting acoustics and a means for concentrating the waves of sound reflected in such a manner that they do not disturb those waves arriving directly at the ears of the auditors within the auditorium in question, and a further object of my invention is that the waves reflected may even be reproduced by means of tele- or microphones or gramophone to be heard by persons being outside or even far from the auditorium.

On the accompanying drawing, by way of example, there is shown an auditorium according to the present invention. Figure 1 being a vertical section through the longest axis of it and Fig. 2 a horizontal section in the height in which the vault is set on to the vertical walls.

Similar characters of reference indicate corresponding parts throughout the drawings.

In the case shown on the drawings the auditorium is constructed upon an elliptical base. Upon the vertical walls a is set a vault b of the shape of a quite rigid semi-ellipsoid, the inner concave surface of which is coated with a very hard and polishable material reflecting the waves of sound as perfectly as possible. The construction of the vault may be of any kind, for instance it may be reinforced with structural supports on the exterior as shown in Fig. 1, thus guaranteeing the rigidity of the vault required. Below the one focus, c, of the ellipsoid or, to say so in the one vertical focus axis of the elliptical cylinder of the hall, there is arranged a platform h which may be varied in order to bring the mouth of the man producing the tones, speech or song, exactly into the base of the semi-ellipsoidal vault, into the focus c of the same. Of course there may be used also a mechanical means for producing the tones and the like, for instance a gramophone.

The seats g of the auditors are arranged on the inclined flooring and on circles or balconies as shown in the drawings or in rows or circles parallel to the elliptical walls like in an amphitheater. The parts of the vertical walls not covered by the inclined flooring nor the seats nor the auditors themselves are coated with materials distributing or absorbing the waves of sound striking thereagainst, for instance with rough cast or coarse grained materials or with carpets, rugs, gobelins, and the like. In the other focus, d, of the ellipsoid, on a platform h, there is arranged a suitable device adapted to absorb the waves emitted from the other focus c against the reflecting concave surface of the semi-ellipsoid and reflected, according to the well known laws of physics, into the focus d.

By reason of the structure herein described and illustrated the auditorium will not be disturbed by sound waves other than those emanating directly from the source of sound located at the focus c. In other words, there will be no echo nor will any sounds originating at sources other than that located at c be heard by them and for this reason those sounds emanating from the source located at the focus c will be distinct and clear throughout the auditorium. Furthermore, the device for absorbing the tones reflected into the focus d may be such as not only absorbing them from the auditorium but on the contrary, for making use of them for instance by telephone transmitting them abroad or by a gramophone for drawing them up and giving thus the possibility to reproduce them at any other place and time as is well known. The base or socket of the platform h supporting said apparatus is to be coated with carpets and the like as shown with the vertical walls, for the purpose set forth. The hall may also be constructed as a complete ellipsoid, the longest axis being arranged horizontally or vertically.

Having now particularly described the nature of my invention and the manner in which it is to be performed I declare that what I claim is:

1. A concert hall or the like edifice comprising a base portion having an elliptical contour, a semi-ellipsoidal vault disposed on said base and having the foci thereof located in the plane of the top portion of said base, an adjustable platform located at one
focus of said semi-ellipsoidal vault and a fixed platform located at the other focus.

2. A concert hall or the like edifice comprising a base portion having an elliptical contour, a semi-ellipsoidal vault disposed on said base and having its major axis coincident with the major axis of the said base, adjustable platforms in said base one being located directly beneath each focus of said semi-ellipsoidal vault.

3. A concert hall or the like edifice comprising a base portion having an elliptical contour, a semi-ellipsoidal vault disposed on said base and having its major axis coincident with the major axis of the said base, platforms in said base one being located directly beneath each focus of said semi-ellipsoidal vault.

4. A concert hall or the like edifice comprising a base portion having an elliptical contour, a semi-ellipsoidal vault disposed on said base and having its major axis coincident with the major axis of the said base, an adjustable platform in said base and located directly beneath one focus of said semi-ellipsoidal vault, and a fixed platform located in said base and having the top plane thereof lying in the plane of the other focus of said semi-ellipsoidal vault.

5. A concert hall or the like edifice comprising a semi-ellipsoidal vault having an inner surface adapted to reflect sound waves, an adjustable platform located at one focus of said vault and adapted to support a source of sound, and means fixed at the other focus of said vault and adapted to absorb the sound waves emanating from said source of sound.

6. A concert hall or the like edifice, comprising a base portion having an elliptical contour, a semi-ellipsoidal vault disposed on said base and having its major axis coincident with the major axis of said base, a platform in said base and located at one focus of said semi-ellipsoidal vault, and a microphone or the like located at the other focus.

FRIEDRICH STALLFORTH.

Witnesses:

WILLIAM W. BURT,
CHARLES L. BORQUEY.