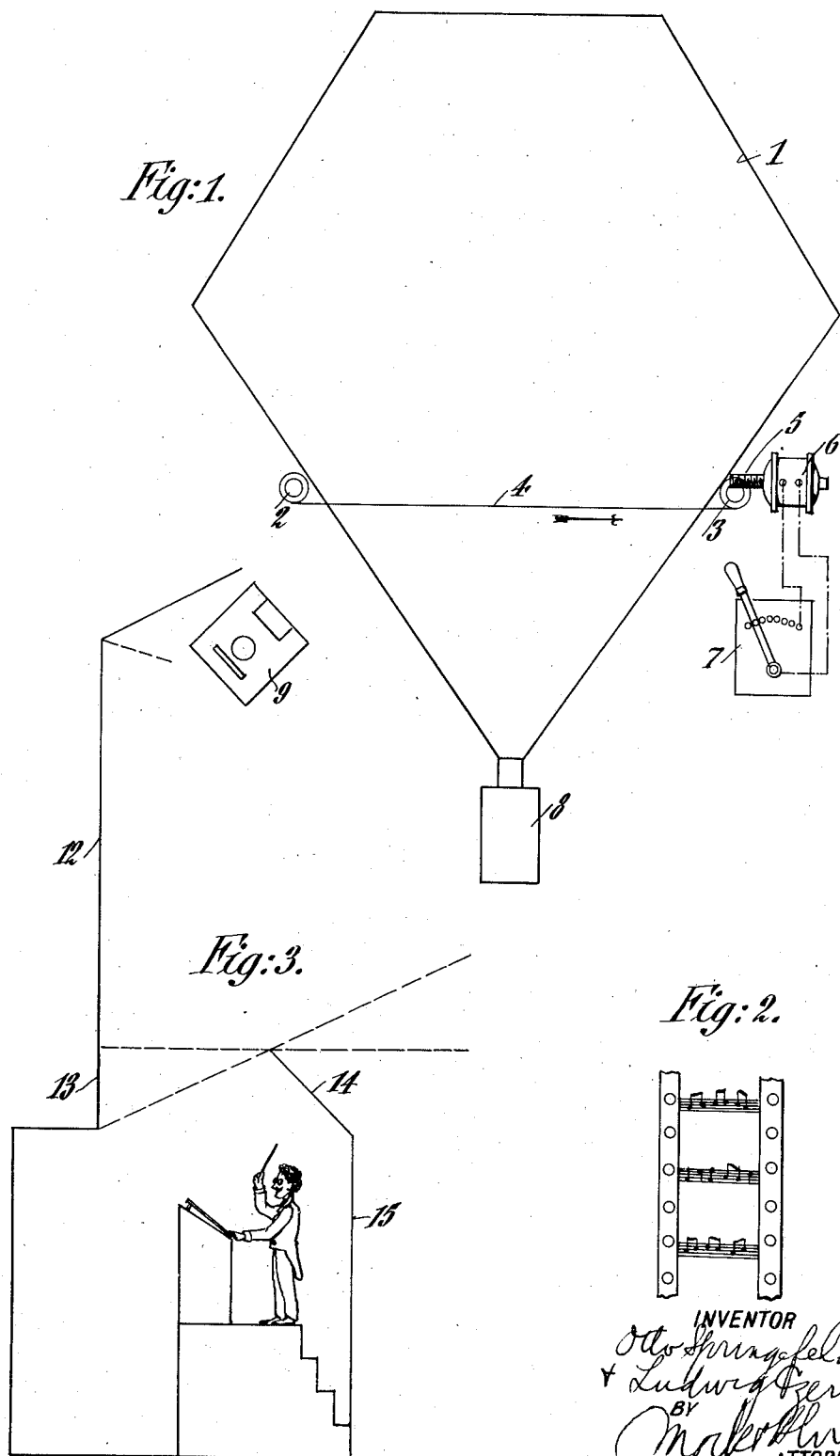


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 METHOD OF AND APPARATUS FOR TAKING AND REPRODUCING CINEMATOGRAPHIC PICTURES
 WITH MUSICAL ACCOMPANIMENT.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR TAKING AND REPRODUCING CINEMATOGRAPHIC PICTURES WITH MUSICAL ACCOMPANIMENT.

Application filed March 8, 1921. Serial No. 450,800.

To all whom it may concern:

Be it known that we, OTTO SPRINGEFELD, a citizen of the German Republic, and LUDWIG CZERNY, a citizen of the Czechoslovakian Republic, and both residents of Berlin, Germany, have invented certain new and useful Improvements in Methods of and Apparatus for Taking and Reproducing Cinematographic Pictures with Musical Accompaniment, of which the following is a specification.

The subject matter of this application is the same as that of our application for a German patent filed on February 18th, 1919. In the production of cinematographic pictures with musical accompaniment and particularly with orchestral accompaniment (for example in the cinematographic reproduction of operettas), the necessary coincidence of the events shown and of the accompanying music has hitherto not been fully attained.

It has been proposed to have the conductor of the orchestra sit in front of the screen when the film is projected so as to properly direct the orchestra. This is objectionable because the conductor located in front of the screen distracts the attention of the audience and because the synchronism of the music and the reproduction of the film cannot be properly secured, especially if the continuity of the reproduction is suddenly interrupted. Besides, the reproduction of the necessary musical notation upon a separate surface spaced from the screen serves to distract the audience and is a very unsatisfactory method of securing the desired results.

The subject of the present invention permits for the first time of continuous synchronism between the picture and the music without the spectators being disturbed by a conductor swinging his baton before their eyes and without the use of special notation appearing adjacent the picture which is also disturbing to them.

The feature of the present invention consists in an improved method of taking the cinematographic pictures with musical accompaniment and in a method of reproducing the same. In the taking of the pictures the musical accompaniment for example the melody or continuous notation or the like is displayed by suitable notation on a band adapted to be unwound from the

one roller and wound upon another roller. This band is then led across the foreground scene to be reproduced over rollers and the speed of winding of this band is regulated according to the speed of movement of the film on which the scene is recorded by a musical operator (for example a second conductor) according to the tempo given by the musical conductor of the orchestra which plays the music while the photographic reproduction is being made. The film upon which the scene has been recorded by a series of small pictures in the well known manner thus has at its bottom a photographic reproduction of the notation of the music which is to be played together with the picture. It is clear that it would be equivalent to have the reproduction of the musical notation in some other relation with respect to the photographic reproduction of the scene, as for example, above the series of pictures before mentioned, or at one side thereof.

In reproducing a film so photographed there appears at the lower edge of the picture suitable notation of the accompanying music in a synchronism with the series of pictures constituting the film proper. The lower part of the screen on which the musical notation alone appears is suitably hidden from the view of the public and is visibly only to the hidden orchestra. The orchestral leader or musician controlling the orchestra has only thus to control the time of playing according to the movement of the projected notation of the music in order to ensure absolute coincidence between the picture and the music which is necessary for a satisfactory production.

An arrangement for performance of the method is shown by way of example diagrammatically in the drawing in which Fig. 1 shows in plan the picture taking arrangements.

Fig. 2 shows a diagrammatical photographic reproduction of the musical notation and Fig. 3 diagrammatically illustrates the arrangement for reproducing the combined film proper and the musical notation.

As shown in Fig. 1, 1 denotes the scene in the foreground of which, a band 4 of such breadth as to be clearly visible and having the notation of the music indicated thereon is unwound from a roller 2 and re-

wound on a roller 3. This band 4 may be so disposed with respect to the scene which is being recorded upon the film proper that the reproduction of the notation on the film 5 4 is below the series of pictures constituting the film proper. This roller 3 may be driven for example by worm wheel 5 on the shaft of a small electric motor 6, the speed of which may be controlled by a suitable rheostat 7. Simultaneous photographing of the notation band 4, and of the scene 10 1 is effected by the cinematograph 8. 9 denotes the platform of the musician directing the musical accompaniment to the photograph. The musical operator operating the rheostat 7 and controlling therewith the speed of movement of the notation band regulates said speed of movement according to the scene but from accompanying music 20 the tempo of which during the photographing operation, as in the usual performances of operettas or the like, is given by the conductor on the platform 9. The complete film produced in this manner (Fig. 2) consists of the usual separate pictures 25 10 which may be called the film proper and below which is a separate continuous series of pictures of the accompanying music appropriate thereto in an adjacent notation strip. 30 In reproduction the projection screen 12 shown in Fig. 3 is so arranged that the notation part of the film band appears beneath the edge 13 of the projection screen and is hidden from the public by a roof 14

which may be used for separating the space 35 15 for the orchestra so that the lower part 13 of the screen is visible only to the musicians and particularly to the musical director in reproducing the music.

Having thus particularly described the 40 nature of our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

A method of recording a scene or the like and music accompanying it by means of a 45 cinematograph, which consists in having an orchestra play the said music while the operator of the cinematograph records the said scene upon the film, while simultaneously moving across the field of the lens of 50 the cinematograph, a member having the music played by the orchestra recorded thereon in suitable notation, the speed of movement of the said member being regulated according to the tempo of the said 55 music so played by the said orchestra, so that the film of the cinematograph has a continuous series of pictures relating to said scene and an adjacent continuous series of pictures recording the notation on the said member. 60

In testimony whereof we affix our signatures in presence of two witnesses.

OTTO SPRINGEFELD.
LUDWIG CZERNY.

Witnesses:

ALFRED WEHMANZ,
HEINRICH NIEDOM.