Dec. 19, 1933. G. LANE 1,940,424

MOTION PICTURE FILM

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Fig. 1.

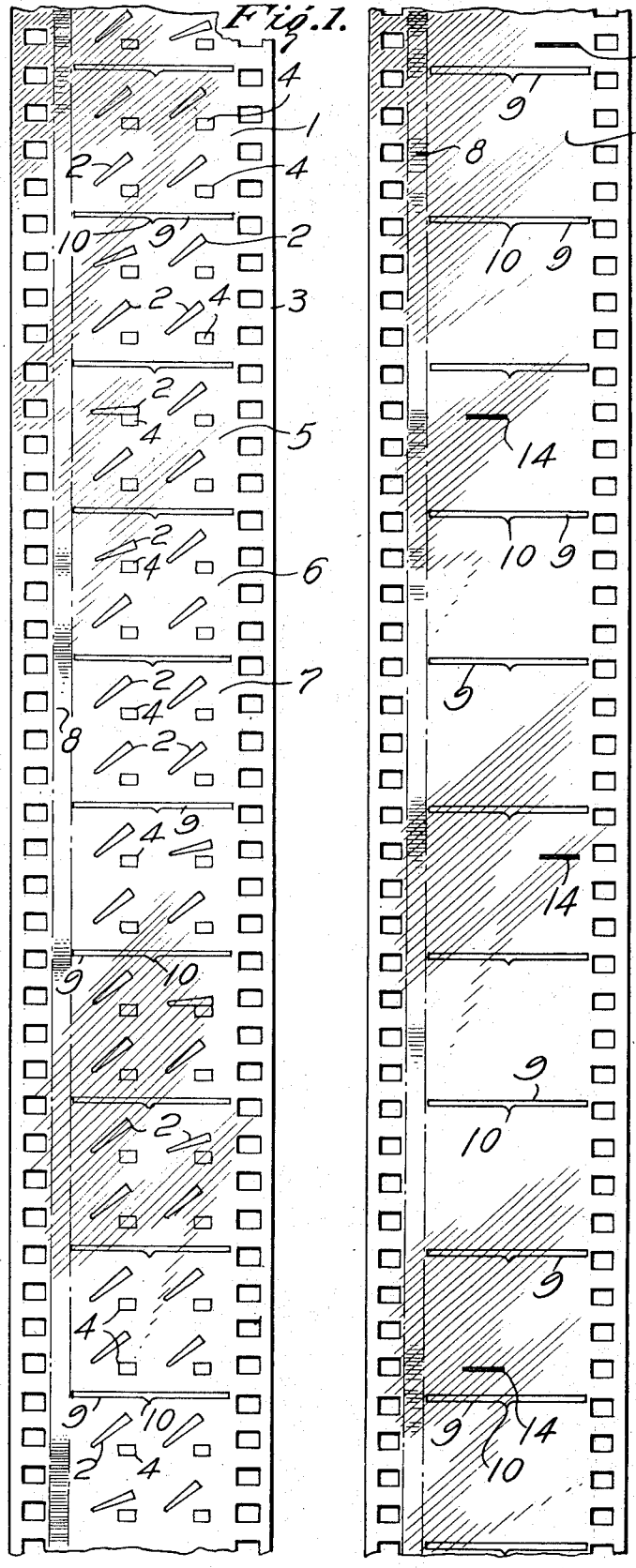
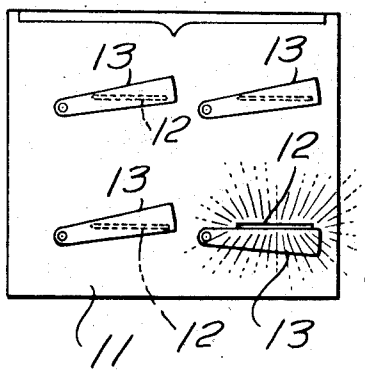


Fig. 3.

Fig. 2.



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MOTION PICTURE FILM

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7 Claims. (Cl. 88—16.2)

This invention relates to a motion picture film for use in the preparation of sound pictures of which hand-drawn cartoons or the like are a type.

In the production of sound motion pictures, it is usual to record the sound on one film strip and the corresponding picture on another film strip, the mechanism for feeding the films being synchronized so that both films feed at exactly the same speed in order that when both records are printed on the same film strip and the resulting strip projected, the two will be timed correctly. How accurately such pictures and sound must be synchronized to produce a most pleasing effect may be judged from the fact that in actual projection, only two frames out of synchronism, that is, if either the picture or the sound lag behind or are in advance of the other, this maladjustment is plainly noticeable.

The above difficulty is particularly acute in the synchronization of sound with drawn cartoons, where a figure or figures must assume a particular position or posture corresponding to a certain definite beat or beats of the accompanying sound, whether such sound be music, articulate speech or other audible noise.

The principal object of the invention is to make possible the accurate combination of sound and picture records so that when the two are projected, they will be synchronized as intended, and particularly to assist the artist in arranging his drawn figures so that they will correspond with the proper portion of the sound record and thus produce a pleasing effect.

It has been the practice heretofore for the artist to draw his series of pictures, trying to keep roughly in mind the music which is to accompany the same, and to photograph these cartoons onto a film strip. This film was then projected on a screen while the orchestra or other source of sound recorded their music or sound, making every attempt to adapt their tempo to the projected picture. It has been found that upon simultaneous projection of these two records, many inaccuracies exist. These inaccuracies or malsynchronized portions of the sound then had to be corrected with consequent excessive waste of film, delay and added cost in production. It also has the disadvantage of requiring the artist to arrange his figures according to a very regular or even tempo in order to assist the musicians in following the projected series of pictures. As a result, it is not possible to play the music with correct musical feeling, for in many instances the tune to accompany the pictures must have portions of increased or retarded tempo if maximum desirable effects are to be produced.

The present invention contemplates the reversal of this prior practice by first recording the music, played without exact relation to the pictures which are to be later associated therewith, the music or sound being played or made according to correct musical feeling. Simultaneously with the playing of this music, the invention contemplates photographically recording on another or the same film strip on which the music is being recorded, visual synchronous indications of the beat or beats of such music, together with the number or position of each particular beat in its musical measure. There is thus produced as a result of this procedure a single film or two films as the case may be, containing not only a sound track record of the music but visual indications of the beats of such music or sound and the position in a musical measure of any and all of such beats. Thus, by viewing this beat film, a cartoonist is able to draw his picture so that a figure or figures will assume the desired position or posture corresponding to a particular beat of the music as it actually occurs on the film, and arrange the same or other figures in between these landmarks or beat positions to properly fill the gap. The cartoonist or artist is, therefore, enabled to accurately position his figures on a film strip so that they correspond exactly to a given beat or sound without any of the inaccuracies in synchronism heretofore existing.

The invention, therefore, contemplates a single film strip containing visual indications of sound beats and the position of such beats in a musical measure. This film may or may not contain the film track record of the music corresponding to any particular beat.

In the drawing:

Fig. 1 shows diagrammatically a film produced according to this invention.

Fig. 2 is a diagrammatic front view of a device for producing the film shown in Fig. 3.

Fig. 3 shows a modified form of film.

Referring now with particularity to the film shown in Fig. 1 and its method of production, there is provided a board or background upon which are arranged a series of semaphore or movable arms, each adapted to be moved independently of the other to and from what may be termed a beat position. These arms may preferably be of a color contrasting photographically

with the background over which they move and in the beat position to be located adjacent or contiguous to a color area preferably photographically the same as the color of the arm. There may be provided as many semaphore arms as there are beats in the measure of the music being recorded, although this is not essential. As the instrumentalities of the semaphore arms and their operating mechanism may take many forms, it is not thought necessary to show this structure in detail, particularly as no claim is made thereto in this application.

The semaphore board having been set up in proximity to a moving picture camera, the orchestra plays the music to be associated with the pictures in proximity to a sound recording device synchronized with the moving picture camera for photographing the semaphore board. It is to be understood that the visual recordation of these sound beats, that is, of the semaphore arms in their different positions, and the recording of the sound may be made on a single film simultaneously and synchronously, which film is shown in Fig. 1, or they may be taken on separate films and later combined.

The orchestra or other source of sound plays its music, the beat indicator operator keeping accurate time synchronously therewith, by proper movement of the semaphore arms. It is contemplated, in order to facilitate the reading of the film by the artist, that the movement of each arm will be restricted to the indication of corresponding beat positions in different musical measures, although this is not essential, nor is it necessary that there be the same number of semaphore arms as there are beats in a measure of the music being recorded.

Fig. 1 shows a portion of a film made by photographing a semaphore board where one of the semaphore arms has been moved to and from a beat position. In the frame indicated at 1, the semaphore arm of which the image is shown at 2 is in a non-beat position. The second frame indicated at 3 shows the arm 2 approaching a color area or stop 4 and indicates an intermediate position or incomplete beat, while frame 5 shows the arm 2 adjacent or contiguous to the stop 4 and in the completed beat position. The arm may be made to move over this restricted path by any suitable mechanism. Frame 6 indicates the arm 2 as having left the color area or stop 4 on its return stroke and frame 7 shows the arm 2 returned to its initial or non-beat position. In the particular modification shown, the music has been faithfully recorded on the sound track 8, while the arm was being operated.

When this film is developed, the artist by consulting the same and the music which is to be combined with the pictures, knows that in the particular measure represented by frame 5 that the fourth beat, for instance, was complete at that point. If in his picture story he desires to have, for instance, a man hit over the head with a club in synchronism with the sound at that beat, he knows that at that particular frame he must draw a picture showing a club and the head of the man adjacent each other. He knows that this relationship of the drawn figures must not exist either at frame 3 or 6, for the beat is not complete at either of those points. By closely consulting the following portions of the film, similarly taken, he then goes to beat 1 of the next measure, beat 2, beat 3, beat 4 and so on. To assist him in determining whether the intermediate position of the arm 2 and its color area 4 as shown in frame 3 is approaching a completed beat position or leaving the same, the line 9 is provided on the semaphore board which has a pointer 10 arranged thereon which indicates to him that his eye should follow the film in the direction of the pointer 10, in order to find the next completed beat. As an artist frequently has to work with a film in which the end is not visible, this permits him to move the film in a proper direction to find the next or any particular beat. This line 9 also indicates which symmetrical group of arms lie within a single frame.

In Fig. 3 a semaphore board is diagrammatically illustrated, showing a modified form of indicating a beat. This instrumentality may consist of a board 11 having a series of slits 12 therein, back of which a permanently burning light is located, these slits being normally covered by arms 13. As shown, upon suitable movement of the appropriate arm 13, one of these slits may be uncovered with the result that the light back of the same will show up on the film of Fig. 2 as a contrasting patch 14. This form of mechanism may be desirable in some instances as much less movement of a semaphore arm will cause the uncovering and recovering of a slit. This results in minimizing the intermediate beat positions on a film and may even be restricted to a single frame as shown in Fig. 2, the other frames at which the beat was not complete being without any indications whatever, whereas in moving an arm such as shown in Fig. 1 to a position contiguous to its stop or color record, due to the greater extent of movement, mechanical difficulties prevent this movement from the non-beat to the completed beat position being instantaneous.

Various positions of the arms, the arms themselves and the indication 14 may either be made by lights, contrasting patches of color or in any way to produce a visual photographic effect on the film.

In determining the exact frame number in a length of film where any particular beat occurs, the film is usually run through a device having a Veeder counter, all of which is well known. In this way, the artist may see, for instance, that the indication 14 on the film of Fig. 2 occurs at frame 1234 as indicated by the counter and he may, therefore, provide a picture numbered 1234 in its location on the picture strip showing the appropriate position of the figures corresponding to that particular beat and that particular beat position in the musical measure.

While in Figs. 1 and 2 a distance between non-beat and full beat positions is shown to be three frames, yet actually any number of frames may exist between these two extremes, depending upon the speed of the camera or the instantaneousness of the beat indicator.

I claim:

1. A motion picture film having on each of certain frames thereof a photographically recorded mark in a definite predetermined position, indicating a sound beat, and other photographically recorded marks in other definite predetermined positions in the same frame indicating with the first mark the number of beats in a musical measure of which the first mark indicates one.

2. A motion picture film having on each of certain frames thereof two photographically recorded marks in definite predetermined relation to each other, indicating a sound beat, and other photographically recorded marks in other definite predetermined positions in the same frame indicating with the first marks the number of beats in a musical measure of which the first marks indicate one.

3. A motion picture film having on each of certain frames thereof two photographically recorded marks contiguous to each other, indicating a sound beat, and other photographically recorded groups of two separated marks, indicating with the first marks the number of beats in a musical measure, of which the contiguous marks indicate one.

4. A motion picture film comprising a group of successive frames including one frame having thereon a photographically recorded mark in a definite- predetermined position indicating at that position the completion of a sound beat, and other marks in definite predetermined positions, indicating with the first the number of beats in a musical measure of which the first mark is one, and other frames in the group showing said mark approaching and leaving said predetermined complete sound beat position.

5. A motion picture film comprising a group of successive frames including one frame having thereon a photographically recorded mark in a definite predetermined position indicating at that position the completion of a sound beat, and other marks in definite predetermined positions, indicating with the first the number of beats in a musical measure of which the first mark is one, and other frames in the group showing said mark approaching and leaving said predetermined complete sound beat position, and a photographic sound track record of the musical tones created at that beat, at the side of said frames.

6. A motion picture film comprising groups of successive frames, one group including a frame having thereon a photographically recorded mark in a definite predetermined position indicating at that position the completion of a sound beat, and other marks in definite predetermined positions, indicating with the first mark the number of beats in a musical measure of which the first mark is one, and other frames in the group showing said first mark approaching and leaving said predetermined sound beat position, and succeeding groups of frames showing the first mark moved to another position, and succeeding other marks moved into predetermined sound beat position.

7. A motion picture film comprising groups of successive frames, one group including a frame having thereon a photographically recorded mark in a definite predetermined position indicating at that position the completion of a sound beat, and other marks in definite predetermined positions, indicating with the first mark the number of beats in a musical measure of which the first mark is one, and other frames in the group showing said first mark approaching and leaving said predetermined sound beat position, and succeeding groups of frames showing the first mark moved to another position, and succeeding other marks moved into predetermined sound beat position, and a photographic sound track record of the musical tones created at each beat, at the side of said frames.

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