# United States Patent

[11] 3,603,673


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## [54] METHOD OF INSERTING MUSIC AND LYRICS INTO A DRAMATIC MOTION PICTURE

6 Claims, 4 Drawing Figs.


[52] U.S. Cl. ..... 352/5
[51] Int. Cl. ..... G03b 31/02
[50] Field of Search ..... 352/5



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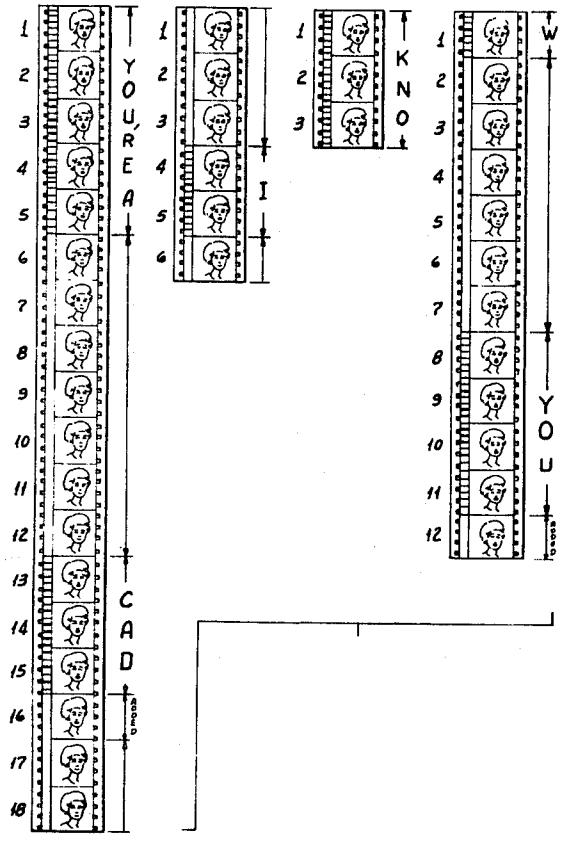
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**ABSTRACT:** A dramatic motion picture or parts thereof is divided into sections in which the words and pauses form an approximate rhythmic pattern. Film techniques are then employed to alter the pauses or words or both to provide the rhythmic pattern with a convenient common denominator of a comparatively low number which can serve as a common denominator for the time signature of a musical composition. A musical composition is then composed with an appropriate time signature to provide an easy or listenable rhythm using the common denominator thus achieved. The composition is provided with lyrics and an accompaniment in synchronism with the rhythm built into the film by film-editing techniques. A new soundtrack is photographed with the artists performing the musical composition at a tempo corresponding to the tempo at which the film is to be shown. A composite print is then made of the action and the words and music which will appear in synchronism with the lip movements and action of the dramatic motion picture.

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SHEET 1 OF 4

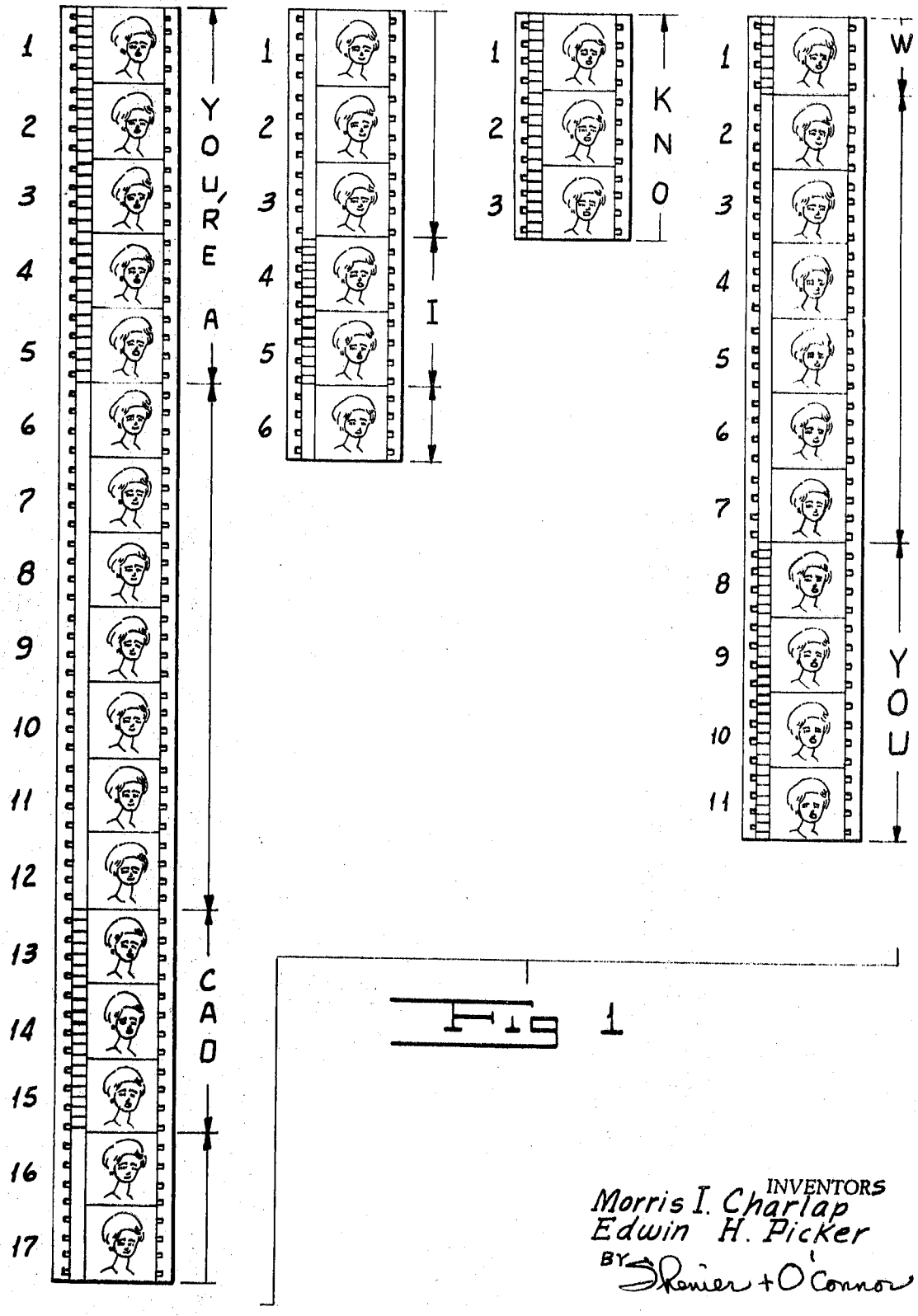



FIG 1

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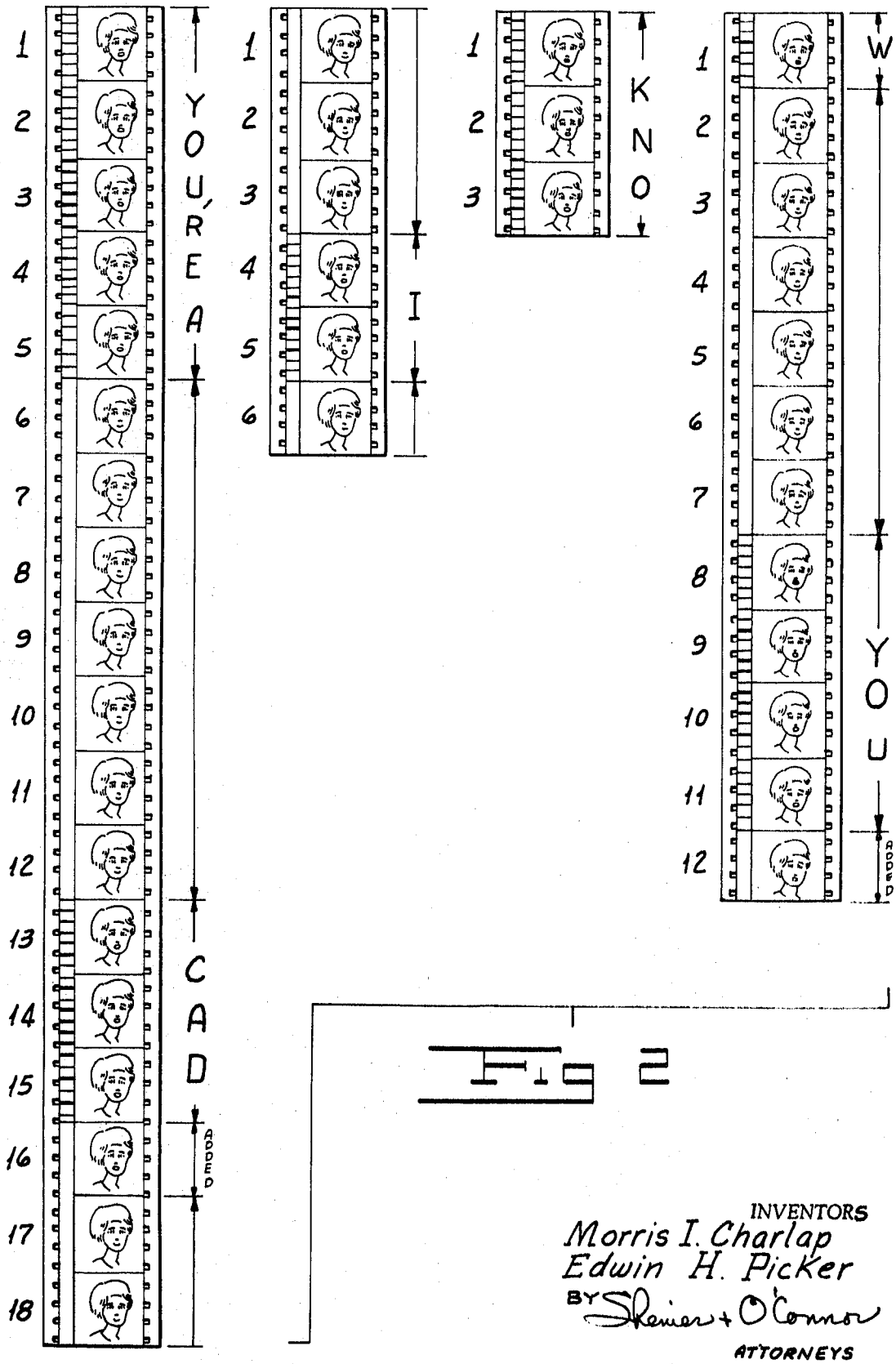
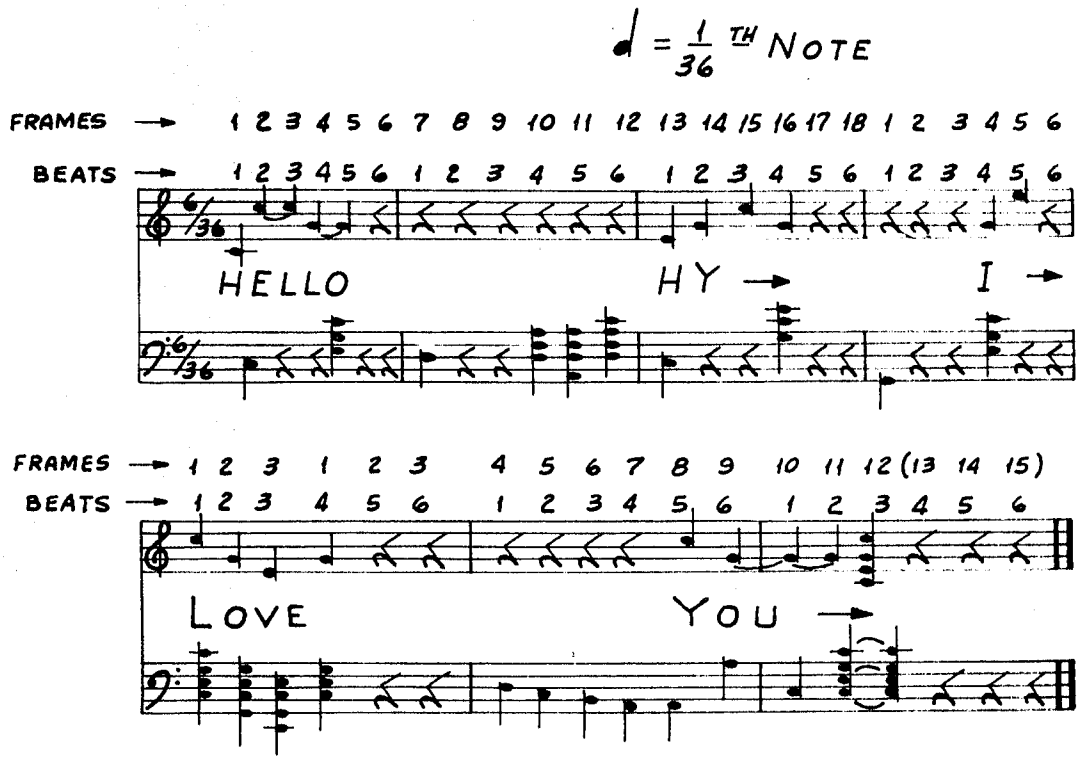



FIG 2

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# Fig 3




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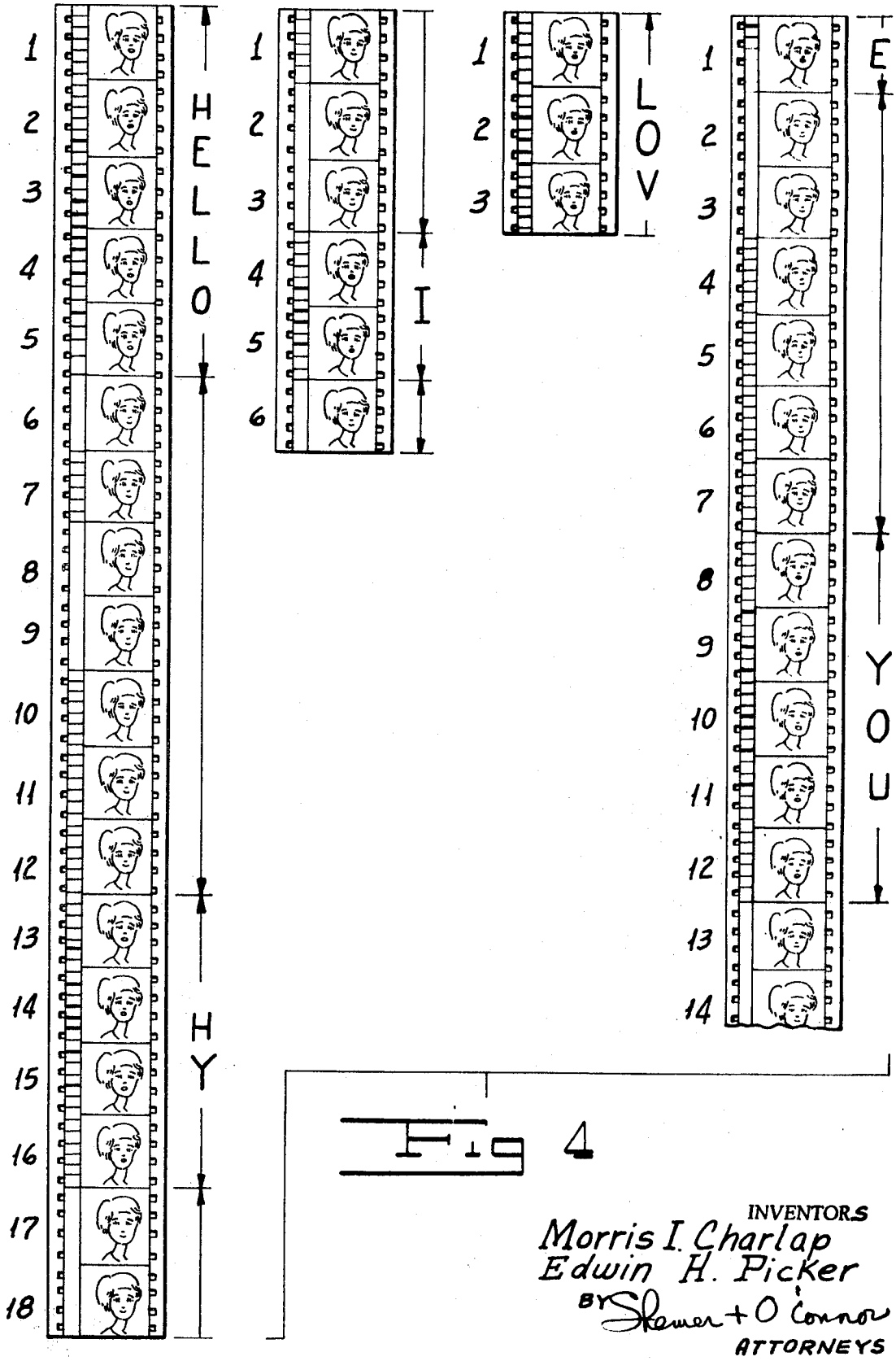



Fig 4

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# METHOD OF INSERTING MUSIC AND LYRICS INTO A DRAMATIC MOTION PICTURE

## BACKGROUND OF THE INVENTION

Our invention relates to a method of inserting music and lyrics into dramatic motion pictures. The production of musical motion pictures is very expensive. The cost of filming "Hello Dolly" was about $21 million. Even the juvenile musical "Chitty Chitty Bang Bang" cost the producers about $14 million to film. Many dramatic motion pictures are embellished with scenes requiring one or more of the actors to sing. A song of about 3 minutes' duration in a dramatic motion picture frequently requires about five days of filming at an approximate cost of $50,000 per day.

The technique of removing the sound track from a foreign film and dubbing in another in a different language is well known. The synchronism of the spoken word in English and the speech in a foreign language may be approximate without destroying the illusion that it was filmed in English owing to the fact that there is no predetermined rhythm in the spoken word. No special problem, therefore, arises in dubbing in spoken words of one language for spoken words of another language.

In the art of animation, one method employed has been to analyze a previously produced sound track and then make drawings to synchronize with such track. This is shown in U.S. Pat. to Fleisher No. 1,909,339. In another form of animation, a chart is prepared of a desired musical score and then pictorial representations are drawn, synchronous with the musical score. This method is shown in Disney et al., U.S. Pat. No. 1,941,341.

The task of inserting a musical composition into a previously photographed and preexisting motion picture presents a formidable problem.

## SUMMARY OF THE INVENTION

One object of our invention is to provide a method of inserting music and lyrics into a previously filmed motion picture.

Another object of our invention is to provide a method of converting an antecedently filmed dramatic motion picture into a musical film.

A further object of our invention is to insert a song and its musical accompaniment into a portion of an existing dramatic motion picture in synchronism with both the action and the lip movements of the dramatic film in place of the spoken words thereof.

Other and further objects of our invention will appear from the following description.

In general, our invention contemplates the viewing of a film and arranging the dramatic words and pauses into an approximate rhythmic pattern. We then employ film editing techniques to alter the pauses or words or both so the rhythmic pattern has a common denominator which can be conveniently employed as a denominator of the time signature of a musical composition. We then compose a tuneful and appropriate song in an easy or listenable rhythm in which the composition has rests during the pauses of mouth movements of the actors in the film and words in synchronism with the mouth movements. We then compose lyrics in synchronism with the musical composition and have an artist sing the song at a tempo which corresponds to film showing speed, usually 24 frames per second.

In a time signature the numerator determines the number of beats to the measure, while the denominator determines the value of the note which receives a beat. The music and lyrics are recorded on a tape or on a track negative. The edited film is rephotographed to make a new negative, preferably an interpositive. A new film is then produced by a composite print of the new negative and the track negative in which the music and lyrics will appear in precise synchronism with the words and pauses of the original dramatic film which has been processed as outlined above.



## BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings which form a part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

FIG. 1 is a section of a dramatic motion picture in its original form laid out, for purposes of easier understanding, in an approximate rhythmic pattern with the dramatic words and pauses shown.

FIG. 2 is a view similar to FIG. 1 in which frames have been added by film editing techniques to produce a series of numbers having a least common denominator of 36.

FIG. 3 is a composition written with a time signature of 6/36, the denominator being more simple than that shown in FIG. 1 and in which a numerator of the time signature provides that a quarter note will receive 1 beat. The lyrics are also inserted and the frames of the edited variation shown in FIG. 2 are indicated in synchronism with the music.

FIG. 4 shows a composite print in which the lyrics and the music appear with the original dramatic action and in which the finished film containing the words and music is presented with the film cut in sections to show the approximate correspondence of the finished film with the original as shown in FIG. 1.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, it will be observed that in FIG. 1 the action shows an actress saying the following lines in dramatic fashion: "You're a cad. I know you." One viewing the film, the viewer preferably being a composer, may have in mind a rhythm having six beats to the measure or some similar rhythm. The film is then marked to depict an approximate rhythmic pattern, which the composer has chosen, in this case, one containing a factor of 6. In FIG. 1, the film is marked so that the section which is shown in FIG. 1 is segmented into portions having 17 frames, 6 frames, 3 frames and 11 frames respectively. It will be observed that the speech and pauses occupy sequentially 5 frames, 7 frames, 3 frames, 5 frames, 2 frames, 1 frame, 4 frames, 6 frames, and 4 frames. The lowest common denominator of this sequence is 840. It is not feasible to write a listenable rhythm which has a time signature denominator of 840.

Referring now to FIG. 2, it will be seen that we added a frame following frame 15 so that the original segment is now 18 frames long. We have also added a frame 12 following the eleventh frame of the last segment of the film. The film segments now are 18, 6, 3 and 12 frames respectively. The lowest common denominator of these segments is 36. This compares with the 1,122, which is the lowest common denominator of the segments in FIG. 1. Obviously, no listenable rhythm could be derived from a musical composition having this large denominator in its time signature. It will be further observed that two frames could have been dropped from the first segment; two frames could have been added to the second segment; one frame could have been added to the third segment, and four frames could have been added to the last segment. This would give the lowest common denominator of 16, in which in the time signature a listenable rhythm could be composed. The adding and subtracting of frames is done by film editing techniques which are well known to the art. Frames may be deleted. Additional frames can be added by blowing up a portion of a previous frame. Frames may be added by repositioning of the scene and shifting it in whole or in part. Additional frames may be added by dollying in or zooming in or by panning out within the confines of the frame lines. Added frames can be achieved by panning across, up or down. Frames may be added by double printing or by "freeze frame" printing. Frames may be removed by frame skip printing. A frame may be rotated within the limits of frame lines. All these techniques are well known to the art and form no part of our invention. For the purposes of explanation, the example has been made simple, but it is understood that there is no limitation on the number of frames which may be added. The artis-

try involved in adding frames has been well developed by film editors.

After a comfortable or listenable common denominator has been achieved, as shown in FIG. 2, a composer composes music which has the desired rhythm. By reference to FIG. 2, it will be seen the time signature has a denominator of 36. A convenient numerator is 6. By reference to FIG. 2, it will be observed that the first measure of the composition will have six beats of which the first five are sounds and the sixth is a rest. The second measure comprises six beats rest. The third measure comprises four beats sound and two beats rest. The fourth measure comprises three beats rest, two beats sound and one beat rest. The fifth measure comprises four beats sound and two beats rest. The sixth measure, which spans the last two segments shown in FIG. 2, comprises four beats rest and two beats sound, while the seventh measure comprises three beats sound with a third beat rest. The three last beats needed to complete this measure are not shown on the drawing but appear in the composition *per se*, as shown in FIG. 3. The composition in FIG. 3 indicates the frame numbers shown in the segments in FIG. 2, and it will be observed that the sounds and the action, as indicated by the lip movements of the performer shown in the film, are in synchronism. When the performer's mouth is open, she is sounding a note. When the performer's mouth is closed, there is a pause or silence. Of course, it is understood that the accompanying music may continue during the pause, as will be observed by the bass notes and chords in the composition.

The lyrics are also written to accompany the music. In FIG. 3 it will be noted that the lyrics are "Hello. I love you." The lyrics are then sung to accompanying music at a tempo at which the film is to be shown. In the case of a 35 mm. film, this is usually 24 frames per second. A recording is made of this performance together with any sound effects which may be desired, and this recording is used to make a track negative to be employed with the finished film musical. The edited film is used to make a new negative, and the new negative and the track negative are printed in synchronism to make a new positive containing the action and the words and music plus the sound effects.

The mouth movements and the action will be rhythmic and in complete synchronism with the music and lyrics and will appear as if they were being originally photographed as a musical instead of having been dubbed into an antecedently made dramatic film. We have discovered that small variations may be made from the basic rhythm without detection by a listener. For example, if the original time signature was 6/36 in a section of the film and synchronism is difficult to get, the time signature may be changed to 7/38, 7/40 or 6/35 or 6/37. This change may be effected from measure to measure, or from phrase to phrase without disturbing the rhythmical feeling of the music. This, of course, is known in the musical world as, for example, in Gregorian chants and in hymns, where the time signature may change from time to time throughout sections of the music.

The important steps of our process comprise determining an approximate rhythmic pattern in a preexisting dramatic film followed by the altering of the pauses and words in the preexisting film to obtain a musically easy common denominator for the approximately determined rhythm. This common denominator may then be used to compose an easy or listenable rhythm so that the mouth movements are in synchronism and yet are rhythmically musical. If desired, a known composition may be adapted to the desired time signature once it has been determined from the dramatic action present in the film. The time signature of the composition may change at the pleasure of the composer to get rhythmic effects which will appear perfectly normal to the ear and which appear perfectly natural to the eye of an observer.

Referring now to FIG. 4, in which the finished product is shown, the original composition, which was not rhythmical and not tuneful, is now presented as a musical in which the performer sings in rhythm and uses lyrics which are different from the dramatic words appearing in the original film.

Our invention differs from Fleisher U.S. Pat. No. 1,909,339, which teaches only the simple art of animation. Fleisher involves making a series of drawings having an appropriate relation to the particular sound with which they are to be projected and then synchronizing the sounds and the drawings. Our invention also differs from Disney et al. U.S. Pat. No. 1,941,341, which involves synchronizing an animated cartoon with an antecedently written musical score. In Fleisher the animation is simple, since there is no rhythm involved. In Fleisher the drawings are synchronized with an action which is neither musical nor rhythmical nor which has been antecedently filmed. In Disney *et al.* preexisting sounds guide the cartooning of the frames. We are enabled through our method to determine first an approximate rhythmical time signature generally corresponding to the action in an antecedently filmed motion picture. We then alter the film to produce a rhythm in accordance with the time signature and then compose or adapt music and lyrics to conform with that time signature. Instead of starting with a predetermined sound track and then animating that sound track, be it dramatic or musical, we start with a dramatic film with one sound track to produce a modified film having a predetermined rhythm, compose or adapt a song to the predetermined time signature, and then synchronize the words and music with the dramatic action in the film.

It will be seen that we have accomplished the objects of our invention. We have provided a method of inserting music and lyrics into a previously filmed motion picture and thus converted a dramatic motion picture into a musical film either in whole or in part. The music, including the words and accompaniment, will appear in synchronism both in the action and lip movements which took place in the dramatic film instead of the spoken words which appeared there originally in the original film.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. It is further obvious that various changes may be made in details without departing from the spirit of our invention. It is, therefore, to be understood that our invention is not to be limited to the specific details shown and described.

We claim:

1. A method of inserting music and lyrics into an antecedently filmed dramatic motion picture including the steps of arranging a section of a film into segments forming an approximate rhythmic pattern of the lip movements and pauses in the dramatic film, editing the film to alter the film length of the lip movements and pauses to revise the rhythmic pattern to produce a common denominator of a musical time signature providing a listenable rhythm, composing music in accordance with said time signature, writing lyrics conforming to the music, making a track negative of the music and lyrics, producing a new negative from the edited film and then making a composite print of the new negative and the track negative in which the music and lyrics will be in synchronism with the lip movements and pauses in the original dramatic film.

2. A method as in claim 1 in which said editing step includes adding frames to prolong the lip movements in the original film.

3. A method as in claim 1 in which said editing step includes adding frames to prolong the pauses between the lip movements in the original film.

4. A method as in claim 1 in which said editing step includes removing frames from the lip movements of the original film.

5. A method as in claim 1 in which said editing step includes removing frames from the pauses between the lip movements in the original film.

6. A method as in claim 1 in which said composing step includes varying the time signature slightly through sections of the music.