Aug. 14, 1945. L. DEL RICCIO 2,382,616

PHOTOGRAPHIC METHOD

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Fig. 1.

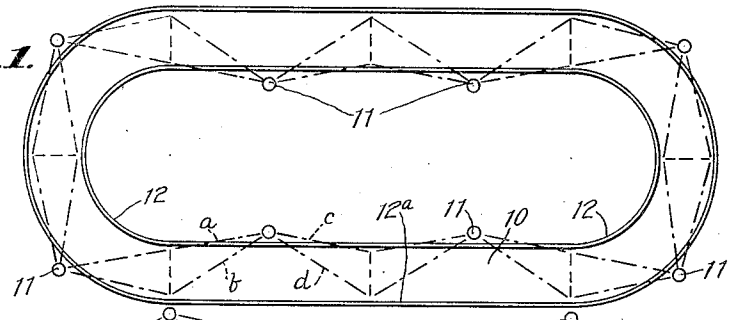


Fig. 2.

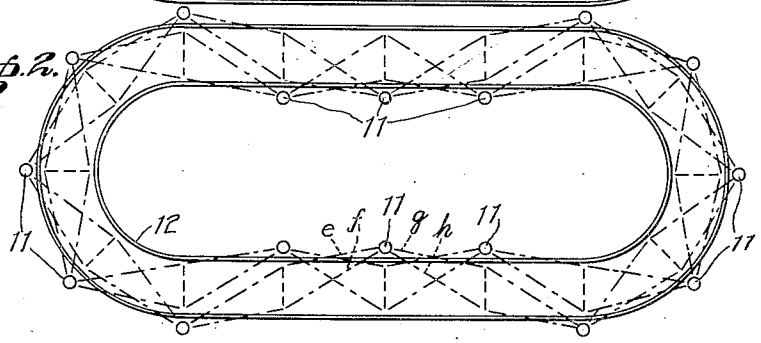
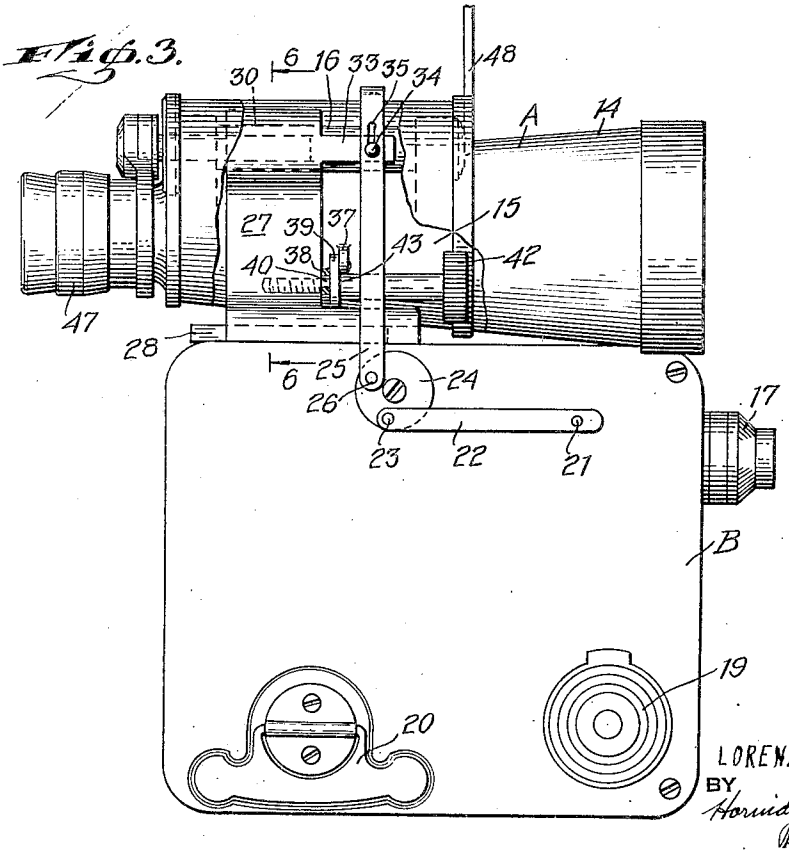


Fig. 3.



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Fig. 4.

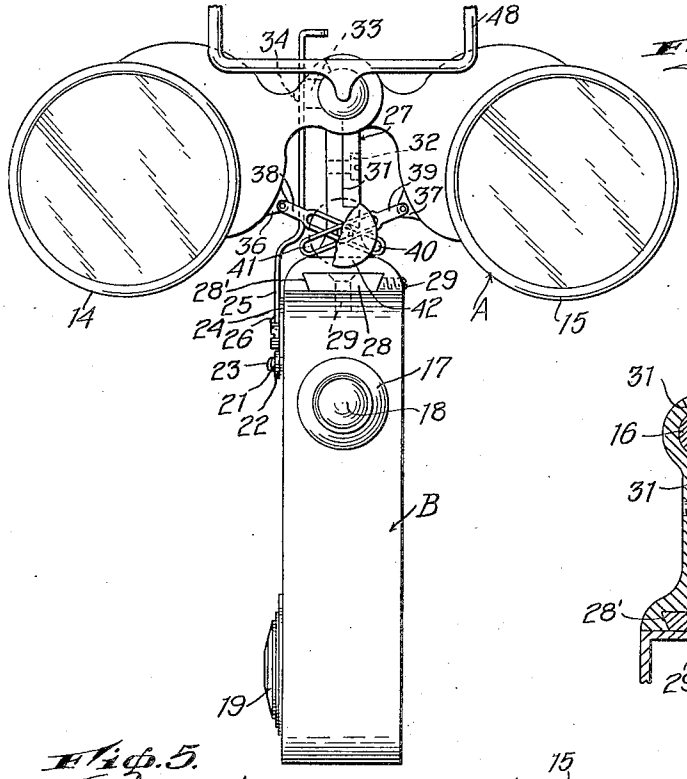


Fig. 6.

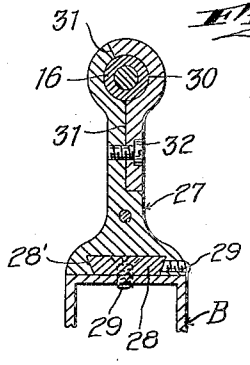


Fig. 5.

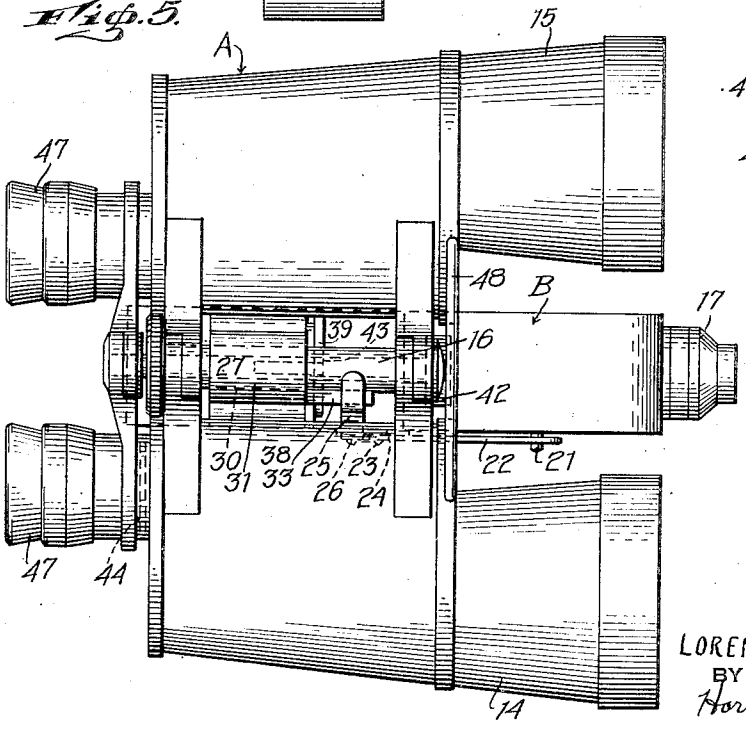
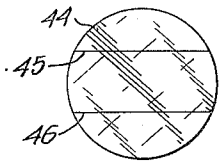


Fig. 7.



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PHOTOGRAPHIC METHOD

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Application May 29, 1941, Serial No. 395,705

4 Claims. (Cl. 88—16)

In the field or sport of horse racing, which is ordinarily carried on upon an oval shaped track of about a mile in length around, it is important that the horses and their jockeys be kept under observation as much as possible during the running of a race to guard against infractions of the rules and improper practices on the part of one jockey against another and his horse or with respect to his own horse.

Due to the size of such a track and the remoteness of much of it and the angle of view from either the grandstand or the judges' stand, located respectively in the vicinity of and at the finish line of the race, neither the said judges nor the spectators can, even with the use of binoculars, notice many serious infractions of the rules or unfair and improper acts on the part of the jockeys which may be committed at, for instance, either of the curved ends or in the back stretch of the track. Consequently, it has been the practice to station a number of inspectors or patrol judges, as they are called, within the field enclosed by the track at suitable intervals along the course and adjacent the inner rail of the track, and it is their duty to watch closely the race as it progresses over the several divisions of the course within their respective fields of view and report any infractions of the rules or other improprieties to those having authority over the race, as well, also, as to convey valuable information about other things observed by them, such as the performance of a horse at particular stages in the progress of the race.

Since the reports made by such patrol judges are naturally the result of personal observation and the judgment of the individual patrol judge in a particular division, the decision on a disputed question of fact may ofttimes be erroneous or unsatisfactory and hence it is an object of my invention to provide a method whereby what each patrol judge observes through a pair of binoculars as the horses travel over his particular division of the course, may be recorded photographically in the form of a length of motion picture film to which reference may be made on all questions as to what took place during each particular portion of the race.

To secure this result in the case of a race for the full one mile length of the track, I station such patrol judges at intervals of one-eighth of a mile apart along the course, four of them within the field enclosed by the track and two of them on the outside of the track at each of the two curved portions. Each of the patrol judges is placed in a somewhat raised position above the level of the horses and their jockeys and close to the inner and outer rails respectively, of the track so that he may have a satisfactory view of the horses as they approach and recede from him, the line of such view being such as to include some space alongside the individual horses.

To each of such patrol judges I assign, for observation and simultaneous photographing, a division of the course extending for one-sixteenth of a mile on either side of him and each of the patrol judges will begin to observe and photograph the oncoming horses when they have approached a distance one-sixteenth of a mile away from him and he will continue to do so until they have passed him and reached a point one-sixteenth of a mile away from him, when the next patrol judge will begin and continue with the photographing in like manner.

The individual strips of film comprising the photographs taken by the eight successive patrol judges are, after development, assembled into a single strip and there is thus obtained a complete photographic record of the race, for purposes of a study of the race or of the facts as reported by any one or more of the patrol judges, the views for each one-sixteenth of a mile being alternately oncoming and receding views of the horses.

A modification of this method may be made involving the use of sixteen patrol judges spaced apart one-sixteenth of a mile along the track for a one mile race, each of whom will in a similar way photograph the horses as they travel over a one-eighth mile portion of the course. In this way there will be two observations and two photographic records by two different patrol judges of each one-sixteenth mile portion of the race, one being of the horses coming towards each successive patrol judge and the other being of the horses receding from him, a photographic record being made from each of two points of view, front and back, for the entire distance of the race. In stationing the sixteen patrol judges about the track I find it advantageous to place some of them also along the outside rail of the track at the curved ends thereof to secure a better angle of view. The strips of film for each one-sixteenth mile portion of the race may, after development, be assembled in consecutive order into a single length of film, or they may be arranged into two separate lengths, one consisting of consecutive oncoming views of the horses for the successive one-sixteenth mile portions of the race and the other consisting of consecutive

receding views of the horses for the same portions of the race. These two lengths of film may be run simultaneously in two projectors alongside of each other and any questioned occurrence in the race can be easily determined by means of both a front and rear view of the horses at the point of the race in question.

The foregoing description is illustrative of my invention and not to be understood to be limited to the distances given since conditions at different race tracks and races of different lengths will alter the number of patrol judges required, and the spacing of the patrol judges need not be exactly uniform, so long as each patrol judge begins to photograph the horses at a point in their travel where the preceding judge has finished photographing them, or, in accordance with the aforesaid modification of the method, so long as the portion of the race photographed by each patrol judge is also photographed partly by the immediately preceding and partly by the next succeeding patrol judge.

For the carrying out of the foregoing method, I have provided a novel form of apparatus comprising in combination a pair of binoculars and a motion picture camera so arranged that the two component devices may be used by the patrol judge with the same facility as a pair of binoculars alone and that while the patrol judge is observing the race through the binoculars in the customary way, the simultaneous photographing of the race as viewed through the binoculars may be carried on with a minimum of effort and attention on the part of the patrol judge.

These results and advantages, as well as others, will be readily seen from the following description of the apparatus taken in connection with the annexed drawings in which

Fig. 1 is a diagrammatic view of a race track showing the positions and fields of view of the eight patrol judges;

Fig. 2 is similar to Fig. 1 but showing the modification using sixteen patrol judges;

Fig. 3 is a side view, with parts cut away, of the apparatus used to perform the method of my invention;

Fig. 4 is a front view of the apparatus shown in Fig. 3;

Fig. 5 is a plan view of the apparatus shown in Figs. 3 and 4;

Fig. 6 is a sectional view on the line 6—6 of Fig. 3, and

Fig. 7 is a lined transparent disc placed in front of one of the eye pieces of the binocular portion of the apparatus.

Referring to the drawings, 10 (Fig. 1) is a race track, the course of which is about a mile in length. 11 represents the several stations of the eight patrol judges occupying positions an eighth of a mile apart around the field enclosed by the track. Such stations are preferably somewhat elevated, the better to observe the horses, and are placed close to the inner rail 12 and outer rail 12a respectively so that the angle of view of each patrol judge, as indicated by the broken lines *a*—*b* and *c*—*d*, will remain as satisfactory as possible throughout the period of running the one-eighth of a mile under his observation.

Fig. 2 shows the modification of my method, involving the use of sixteen patrol judges, whose stations are also designated by the numeral 11, and their several angles of view are indicated by the broken lines *e*—*f* and *g*—*h*, so that two photographic views may be made, one from the front and the other from the rear, of the horses for each one-sixteenth mile of the race, as hereinbefore described.

Figs. 3 to 7 relate to the viewing and recording apparatus used to perform the method of my invention in which similar numerals indicate similar parts. A is a pair of binoculars which may be of standard design comprising two parallel telescopic members 14 and 15, known and referred to as monoculars, pivotally mounted about an intermediate parallel center post 16 so as to be adjustable to conform with the distance between the eyes of the individual used. The longitudinal axes of the monoculars are preferably at a lower plane than that of the center post so as to bring the axes of the telescopic members 14 and 15 closer to the axis of the lens of the camera and thus minimize the parallax between them. B is a 16 mm. motion picture camera of rectangular shape and made preferably of light weight metal. 17 is the lens mount of said camera, containing the lens 18 which is of about one inch focal length. With a lens of short focus I find that with an aperture of f. 3.5 the lens may be positioned at a fixed focus. 19 is the film footage indicator and 20 the winding key for the spring motor within the camera to actuate the mechanism whereby the film is driven from a feed reel intermittently past an aperture in the focal plane of the lens where it is exposed by a suitable shutter and is thereafter wound upon a take up reel, all of which is well known to those skilled in the art and need not be particularly described since no claim is made to any invention in the internal mechanism of the camera. It is advantageous, however, that said mechanism and film reels be so arranged as to minimize the thickness of the camera and that the general shape of the camera as shown in the drawings with the lens and its associated exposure aperture positioned at a level towards the top of the camera be preserved so that the camera may be attached close to and suspended from the center post of the binoculars midway between the two monoculars and not be in the way of the hands of the user when the binoculars are grasped and held to the eyes in the usual way and at the same time minimize any parallax between the lens of the camera and those of the binoculars. The pin 21 when pushed forward releases the camera mechanism and permits it to operate so as to make a series of intermittent exposures on the film in the camera. The respective ends of the horizontal link 22 are pivotally connected to the said pin 21 and to pivot pin 23 on the rocker plate 24, and the vertical push rod 25 is connected to the pivot pin 26 on said plate and extends upwards to a convenient level above the binoculars so as to enable the operator, while holding the binoculars to his eyes, by a downward finger pressure upon the rod 25 to cause the horizontal link 22 to push the pin 21 forward and thus set in motion the mechanism of the camera. Release of pressure upon the rod 25 will stop and lock the camera mechanism against further operation, the pin 21 being normally held in a rearward position by means of a spring (not shown).

The camera B is united to the binoculars A by the standard 27. A plate 28 is rigidly attached to the top of the camera B by means of screws 29 and has its opposite side edges bevelled downwardly and inwardly to receive the standard 27, the bottom of which is provided with two flanges complementarily bevelled to slide over said plate and be held thereto by a dovetail joint as at 28. A set screw 29 serves to lock the standard on said plate.

The plate 26 is attached to the top of the camera B at a position fore and aft so that the center of gravity of the whole apparatus will lie substantially in the plane of the forearms of the user when holding the binoculars to the eyes in the usual way. The upper portion of the standard 27 is enlarged laterally and is provided with a longitudinal bore 30 to receive the center post 16 of the binoculars. Said standard is split longitudinally into two parts as at 31 to permit the entry of the center post 16 into the bore and the two parts are held together by the screw 32 whereby the center post 16 is tightly clamped within the bore 30. A forward extension 33 of the standard 27 in which is rigidly set the headed pin 34 provides a support and guide for the vertical push rod 25 which is provided with a slot 35 to receive the shank of said pin.

There are binoculars which permit the pivotal movement of one or both of the two monoculars about the center post in order to accommodate them to users whose eyes are spaced apart differently and in ordinary use it is of no importance in making such adjustment whether one or both of the monoculars is moved or whether both are moved different arcuate distances, since both of them when in use are held to the level of the eyes, but in the present apparatus it is important that in making such adjustment both monoculars 14 and 15 be moved the same arcuate distance in order that the camera B which is rigidly suspended from the center post 16 shall remain in a position perpendicular to the common plane of the two monoculars. To secure this and to maintain the camera in such perpendicular relation, I provide each of the monoculars 14 and 15 with a pair of lugs 36 and 37 and between each pair is pivotally mounted a flat link 38 and 39 provided with a slot 40 and 41, both of which links are held in crossed relationship by means of the thumbscrew 42 extending through the slots 40 and 41 and threaded into the front face of the standard 27. These crossed links provide a definite guide in adjusting the monoculars about the center post so that each of them will be given the same degree of arcuate movement and the camera maintained vertical between them and when the thumbscrew 42 has been tightened so as to compress said links between the said face of the standard 27 and a shoulder 43 on the thumbscrew 42, such relationship of the binoculars and camera will be rigidly maintained, the links 38 and 39 then serving as braces to add further rigidity to the clamped attachment of the camera to the binoculars.

An important feature is that the angle of view of the binoculars A is substantially less than that of the camera B. This is in order to assure that when the operator has a view of the running horses through his binoculars those horses will be photographed at the same time upon the film in the camera, and to allow for some movement of the image of the running horses into and out of the field of vision of the binoculars due to the natural difficulty of the patrol judge holding constantly the image of the fast running horses in the field of view of the binoculars as the horses race at high speed along the course. For this purpose I have found that an angle of view for the binoculars of about three-fifths of that of the camera is satisfactory.

Another and important feature is that in order to fix the time when the patrol judge shall start the operation of the camera, which, for instance, may be when the oncoming horses have reached a point distant one-sixteenth of a mile from his place of observation, I have provided the transparent disc 44 (Fig. 7) which is marked with two horizontal lines 45 and 46 extending across it, which disc is mounted in one of the monoculars, for instance 14, at a suitable location therein, preferably adjacent the inner side of the eye-piece 47. The spacing of the lines 45 and 46 is such as to define the combined height of a horse and its jockey at a distance of one-sixteenth of a mile away when viewed through said binoculars. The extent of such spacing may be arrived at experimentally or by known means of calculation.

From the foregoing description it will be apparent that I have also provided an apparatus whereby a picture record may be made of at least a portion of a horse race with a very minimum of conscious effort on the part of the patrol judge whose efforts will be employed chiefly in merely holding the binoculars in the usual way to his eyes and following the horses through them as they approach and recede, the only further effort on his part being merely to set the suspended camera in operation by finger pressure on a lever located adjacent the normal position of one of his fingers when holding the binoculars to his eyes and to do this at a time indicated to him by the view of the leading horse and its jockey with respect to the defining lens, the camera and the binoculars being united in such an arrangement that their respective axes remain parallel and the camera is suspended conveniently in a position close to and between the two monoculars so as not to interfere with the normal way in which binoculars are held to the eyes with the hands clasping the respective monoculars.

It may naturally occur as the oncoming horses reach a position close to the patrol judge and where a satisfactory view of them may be had with the naked eye, that the patrol judge will bring down the binoculars from the level of his eyes, in which case I have nevertheless provided means whereby the horses may be held in the field of view of the camera until they have passed him and are on their way beyond him when he will again bring the binoculars to his eyes. These means consist of the rectangular wire frame 48 having the same shape as the exposure aperture in the camera but giving a much smaller field of view than the camera similarly to the smaller field of view of the binoculars and for the same reason, namely, to assure that the horses visible through either the binoculars or the said frame 48 will be vertical upon the film in the camera.

It is obvious that changes may be made in the embodiment of my invention hereinabove described without departing from the spirit of the invention as defined in the appended claims.

What I claim is:

1. The method of making a photographic record of a race, which includes photographing the contestants with each of a plurality of motion picture cameras positioned in spaced relation along the race course, said photographing being done with each camera while said contestants travel between two points located adjacent the positions of the immediately preceding and next succeeding cameras respectively, and assembling the motion picture photographs thus obtained into two strips, one comprising the successive views of the contestants as they travelled from the points adjacent the positions of each of the photographing cameras to the points adjacent the positions of each of the next succeeding cameras, respectively, and the other strip comprising the successive

views of the contestants as they travelled from the points adjacent the positions of each of the immediately preceding cameras to the points adjacent the positions of the photographing cameras, respectively.

2. The method of reproducing photographically a horse race, which includes photographing the contestants with each of a plurality of motion picture cameras positioned in spaced relation along the race course, said photographing being done with each camera while said contestants travel between two points located adjacent the positions of the immediately preceding and next succeeding cameras respectively, and assembling the motion picture photographs thus obtained into two strips, one comprising the successive views of the contestants as they travelled from the points adjacent the positions of each of the photographing cameras to the points adjacent the positions of each of the next succeeding cameras, respectively, and the other strip comprising the successive views of the contestants as they travelled from the points adjacent the positions of each of the immediately preceding cameras to the points adjacent the positions of the photographing cameras, respectively, and projecting said two strips simultaneously in juxtaposed relation.

3. The method of making a photographic record of a race about a track having a straightaway and arcuate curved ends, which method comprises positioning a plurality of motion picture cameras in spaced relation on the inside of the track along the straightaway thereof and on the outside of the track at the arcuate ends thereof, photographing the contestants with each of said cameras, said photographing being done with each camera while said contestants travel between two points located adjacent the positions of the immediately preceding and next succeeding cameras respectively.

4. The method of making a photographic record of a race about a track having arcuate ends and intermediate straightaways, which method comprises positioning a plurality of motion picture cameras in spaced relation along one side of each of the straightaways and on the outside of the arcuate ends, photographing the contestants with each of said cameras successively, said photographing being done with each camera while said contestants travel between two points located adjacent the positions of the immediately preceding and next succeeding cameras respectively, each of said cameras during the greater part of the time of its operation being positioned so as to include within its field of view a space between at least two of said contestants.

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