RECEIVER FOR REMOTE CONTROLLING
A SHUTTER OF A CAMERA

Inventors: Kenichi Narita, 3-4-4 Fuji-cho,
Hoya, Tokyo; Shunji Yoshizawa,
Toei-Tokyoaido-Daichijutaku-
Minami 102-2, Shimizu Oaza,
Higashi-Yamato, Tokyo, both of
Japan

Filed: Oct. 2, 1972
Appl. No.: 294,155

ABSTRACT
A remotely controlled photographic system embodying a camera mounted on a lifting member forming part of an adjustable tripod, the leg members of which are electrically connected through the lifting member to the input of a receiver also carried by the lifting member, the output of the receiver actuating a shutter-release mechanism of the camera.
RECEIVER FOR REMOTE CONTROLLING A SHUTTER OF A CAMERA

This invention relates to a receiver for remote controlling a shutter of a camera by means of a radio signal, wherein the receiver is installed in the tripod to enable the user to carry such receiver together with the tripod, and the tripod is designed to function as an antenna to receive the radio signal.

A first and general object of the present invention is to provide a receiver for remote controlling a shutter of a camera by means of a radio signal, wherein the receiver is installed in the upper or lower portion of a lifting member for adjusting the universal head of the tripod, the lifting member and the leg members of the tripod are electrically connected to each other, so that each of the leg members may serve as an antenna to receive the radio signal.

A second object of the present invention is to provide a receiver for remote controlling a shutter of a camera by means of a radio signal, wherein a housing for the receiver is provided with an internal thread at its lower portion to receive an external thread extending vertically upwardly from the fixture provided on the upper end of the lifting member, and an external thread at its upper portion to screw it into the internal thread provided in the lower portion of the universal-head, so that the receiver may suitably be installed in the upper portion of the lifting member of the tripod.

A third object of the present invention is to provide a receiver for remote controlling a shutter of a camera by means of a radio signal, where a housing for the receiver is made from a metal and is designed to have a cylindrical configuration, the upper portion of the housing is provided with an internal thread to receive an external thread provided on the lower end of the lifting member of the tripod, an antenna connecting terminal is provided with the housing, leg members of the tripod and the lifting member being electrically connected to each other, so that each of the leg members may serve as an antenna to receive the radio signal.

The nature of the present invention will become more fully apparent from a consideration of the following exemplary embodiments thereof, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a front view of one embodiment of the receiver according to the present invention, illustrating the manner in which the receiver is used;

FIG. 2 is a front view, partly in section, of the receiver according to one embodiment of the present invention shown in FIG. 1;

FIG. 3 is a section of a shutter releasing means taken along the line III—III of FIGS. 1 and 4;

FIG. 4 is a front view of another embodiment of the receiver according to the present invention, illustrating the manner in which the receiver is used; and

FIG. 5 is a partial section of the receiver according to FIG. 4.

In the drawings like reference numerals are used to designate like parts.

Referring now to FIGS. 1 to 3, in which one embodiment according to the present invention is shown, reference numeral 1 designates generally a tripod and 7 a receiver. A housing 7' of the receiver 7 is provided at its base center portion with an internal thread 12 to receive an external thread 11 extending from a universal-head 4 upwardly coaxially with the axis of a lifting member 5 of the tripod 1, said lifting member 5 passing through the bore of a tripod top 2 to which each of leg members 3 is connected. The housing 7' of the receiver 7 is further provided at its upper center portion with an external thread 14 to be screwed into an internal thread 13 provided in the fixture 6' of a universal-head 6. One side of the housing 7' is connected via a conductor 26 to a shutter releasing means 10 adapted to release a shutter 9 of a camera 8 by means of a signal generated from a transmitter.

An antenna-connecting terminal of the receiving circuit installed within the housing 7' is connected via a conductor 15 to a terminal 16 of the tripod 1, of which the leg members 3 as well as the lifting member 5 are made from an electro-conductive metal, so that the tripod 1 per se will function as an antenna. An insulating cap 17 is mounted on each end of the leg members 3 in order that they may be prevented from grounding.

The shutter releasing means 10 is composed of a sole-noid and is connected to the outside of the housing 7' by means of a conductor 26. As will be seen from FIG. 3, the shutter releasing means 10 is provided with a construction which can be easily mounted on the external thread 22 adapted to connect a cable release thereto of the camera 8, wherein a lower end 21 of a cylindrical member 20 to pass an actuator 19 of non-magnetic substance therethrough, said actuator being a part of a movable core 18 in the solenoid, is designed to receive the external thread 22 of the camera 8. Accordingly, when the electric current is applied to a coil 24 within a yoke 23 from the receiver 7, the movable core 18 will be moved downwardly simultaneously with such application of the electric current to release the shutter 9. A return spring 25 is installed so that the movable core 18 is forced back to its original position after the shutter 9 has been released.

Description as to in which manner the receiver 7 and the camera 8 are arranged relative to the tripod 1 according to an embodiment of the present invention referred to above will be as follows:

The receiver 7 is mounted on the universal-head fixture 4 of the tripod 1 through the cooperative engagement between the internal thread 12 provided in the base portion of the housing 7' and the external thread 11 extending upwardly from the universal-head fixture 4, the external thread 14 extending upwardly from the housing 7' being received by the internal thread 13 provided in the universal-head 6; the camera 8 is mounted on the universal-head 6 through the cooperative engagement between the external thread 27 provided rotatably in the universal-head 6 and the internal thread (not shown) provided in the base portion of the camera 8.

The receiver 7, the camera 8, the tripod 1 and the shutter releasing means 10 mounted on the shutter release button 9 of the camera, which are so arranged as specified above will thus be able to release the shutter 9 of the camera 8 by means of a radio signal generated from a distant transmitter.

As was referred to previously, the receiver 7 can be mounted on the tripod 1 and be a part thereof, and the tripod per se is designed to function as an antenna, so that the receiver according to the present invention is advantageous in that it is very handy to carry, excluding the necessity of provision of an independent antenna which will otherwise be a prerequisite instrument.
3,805,281

FIGS. 4 and 5 show another embodiment according to the present invention, wherein a receiver designated generally by a reference numeral 28 is mounted on the lower end of the lifting member 5 of the tripod.

In this embodiment, as is specifically shown in FIG. 5, a housing 29 of the receiver 28 is provided at its upper center portion with an internal thread 30 whilst the lower end of the lifting member 5 of the tripod 1 is provided with an external thread 33 extending downwardly so that the housing 29 may freely be mounted on the universal-head lifting member 5. The housing 29 is designed to present a slender cylindrical configuration so that it may not be a barrier to the smooth and neat folding of the legs 3 of the tripod 1, said housing being wholly or partially (i.e. only the upper end portion thereof in which the internal thread 30 is formed) made from a metal.

Alternatively, the lower end of the housing 29 is provided with an internal thread 35 thereby to allow the user to carry the tripod together with a transmitter 36 installed in a housing 37 of which the upper portion is provided with an external thread to be screwed into the internal thread 35 of the housing 29.

The leg members 3, the tripod top 2 and the lifting member 5 of the tripod 1 are made from an electro-conductive metal, all of said members being designed to electrically connect to each other, and each end of said leg members 3 being covered by the insulating cap 17 in order to prevent them from being shorted.

Within the housing 29 of the receiver 28, there are provided a receiving-circuit substrate 41 and dry cells 42, an insulating member 43 being arranged so as to prevent both the substrate 41 and the dry cells 42 from being contacted by the metal portion of the housing 29.

An antenna-connecting terminal 44 of the receiving-circuit substrate 41 is connected to the metal portion of the housing 29, said terminal 44 being further connected electrically, via the lifting member 5 on which said housing 29 is mounted, to each of the leg members 3.

An output terminal 45 of the receiving-circuit substrate 41 is connected via the conductor 26 to the coil 24 of the shutter releasing means 10.

The housing 37 of the transmitter 36 is equipped at its exterior surface with a shutter releasing switch 47 whilst within interior thereof equipped with a transmitting-circuit substrate and a dry cell which are employed to generate a radio-frequency signal to release the shutter of a camera, a conductor of a prescribed length which is to be a transmitting antenna being connected to the antenna terminal of said transmitting-circuit substrate, said conductor (not shown) being extended to the exterior of said housing 37.

As was fully described, the receiver according to the present invention is capable of releasing the shutter of a camera by means of a radio signal. It does not require an independent antenna which will otherwise be a prerequisite instrument to receive the radio signal, because the leg members of the tripod are designed to function as the antenna. It can easily be mounted on the tripod and be a part thereof, so that the user may carry the receiver together with the tripod without any difficulties.

While the foregoing description sets forth the principles of the invention in connection with specific embodiments, it is to be understood that the description is made only by way of example and not as a limitation of the scope of the invention.

What is claimed is:

1. A remotely controlled photographing system comprising a tripod having a vertically adjustable lifting member, a receiver adapted to receive a radio signal generated by a transmitter and mounted to said lifting member, said receiver having an input terminal and an output terminal, the leg members of said tripod being electrically connected through said lifting member to the input terminal of said receiver and thereby serving as an antenna, a camera mounted on said lifting member, means associated with said camera for releasing the camera shutter, and an electrical connection from the output terminal of said receiver to said shutter-releasing means, whereby, upon reception through said leg-member antenna by said receiver of a radio signal generated by said transmitter, said shutter-releasing means is actuated.

2. A remotely controlled photographing system comprising a tripod having a vertically adjustable lifting member, a receiver adapted to receive a radio signal generated by a transmitter and mounted to the lower end of said lifting member, said receiver having an input terminal and an output terminal, the leg members of said tripod being electrically connected through said lifting member to the input terminal of said receiver and thereby serving as an antenna, a camera mounted on said lifting member, means associated with said camera for releasing the camera shutter, and an electrical connection from the output terminal of said receiver to said shutter-releasing means, whereby, upon reception through said leg-member antenna by said receiver of a radio signal generated by said transmitter, said shutter-releasing means is actuated.

3. A photographing system, according to claim 2, in which one of said lifting member and said receiver is provided with an externally threaded portion and the other with a cooperating internally threaded portion, whereby said receiver can be threadedly mounted on said lifting member.

4. A photographing system, according to claim 3, which includes means associated with said receiver to enable the transmitter to be detachably mounted on said receiver when said transmitter is not in use.