This invention relates to apparatus for producing oscillating frequencies in electrical circuits, with particular reference to apparatus for the transmission of radio movies.

Hereafter, the method of producing oscillating circuits in electrical picture transmitting apparatus has been to locate a "light chopper", that is, a perforated rotating disc, in front of the light-sensitive cell. The resulting pulsating current output can be amplified in transformer coupled units, the amplifier preferred by radio engineers.

However, as the oscillating frequencies possible with a mechanical light-chopper are very limited, and can not at all approach the 250,000 per second oscillating frequency required in radio vision and radio movies, it has been found desirable to use a gas-cell light-valve of the type shown in my co-pending application Serial No. 200,782, filed June 12, 1927.

With this and other objects in view the invention consists in the novel combination of parts hereinafter described, and more particularly pointed out in the claims.

Fig. 1 shows one preferred manner of utilizing the invention.

Fig. 2 shows a detail of the light valve of Fig. 1.

In the drawing, accompanying this specification, A is a source of light; B a condensing lens; C a motion picture film; D a sprocket for continuously advancing the film across the light; E a rotating lens-disc for imaging the successive frames on the picture film, and sweeping them across the gaseous light-valve F, located in front of the aperture in the cell enclosing box G. This apparatus is disclosed and claimed in United States Patent 1,550,437. H is the light-cell.

The light-valve F consists of a tubular cathode F₁, insulated by a glass sleeve from the enclosing anode. When alternating current circuits of suitable high frequency are connected to this cathode-anode cell, the cathode fills with a gaseous glow which blocks the entrance to the light-cell on every positive phase, and permits the light to pass on the opposite phase.

This action of the light-valve produces a pulsating current in the output circuit of the cell, which can be amplified in transformer amplifiers.

As this type of light-valve has a frequency limit approaching infinity, it is obviously suitable for the purpose here shown.

Of course, I do not wish to limit myself to this particular valve, as any fluid light-valve which permits the whole light to pass at the required high frequencies would answer.

What I claim is—

1. In combination, picture-image producing means, a light-sensitive cell upon which the light of said picture-image may fall, and a gaseous discharge light-valve located between said image producing means and said light-sensitive cell and operable at radio frequencies with minute currents generally available in radio work.

2. In combination, a modulated light beam, a light-sensitive cell and a gaseous light-valve located in the path of said beam to periodically permit light access to said cell and operable at radio frequencies with minute currents generally available in radio work.

3. In combination, a motion-picture film, means for scanning successive frames of said film, a light-sensitive cell upon which the image of said picture frames may impinge, and a gaseous light-valve located to periodically intercept the light from said film impinging on said light-cell and operable at radio frequencies with minute currents generally available in radio work.

4. The method of transmitting an image electrically which comprises collecting the light from successive elemental areas of the image, passing said light through a gaseous discharge light valve, and producing photo-electric currents under control of the light after it passes said valve.

5. The method according to claim 4, in which the light valve is continuously operated by high frequency currents.

6. The method of transmitting an image electrically at radio frequencies which comprises collecting the light from successive elemental areas of the image, passing said light through a gaseous discharge valve, varying the intensity of the said discharge in accord-
ance with the high frequency current and producing photo-electric currents correspond-
ing to the light which passes said valve.

7. In a system for electrically transmitting images, the method of producing a carrier current and simultaneously modulating same by a light beam which comprises continually operating a gaseous discharge light valve by alternating current, passing a modulated light beam through said valve, and project-
ing said modulated beam after passing through said valve, upon a photo-sensitive device.

8. In an image transmission system the combination of means for analyzing success-
seive elemental areas of the image to produce a correspondingly modulated light beam, a substantially inertialess gaseous discharge valve, means for continually operating said valve by alternating current, said valve be-
ing positioned in the path of said beam and a photo-sensitive device energized by said beam after passing through said valve.

9. A system according to the preceding claim in which the light valve is of the recti-
ifying type.

In testimony whereof I have affixed my signature.

CHARLES FRANCIS JENKINS.