

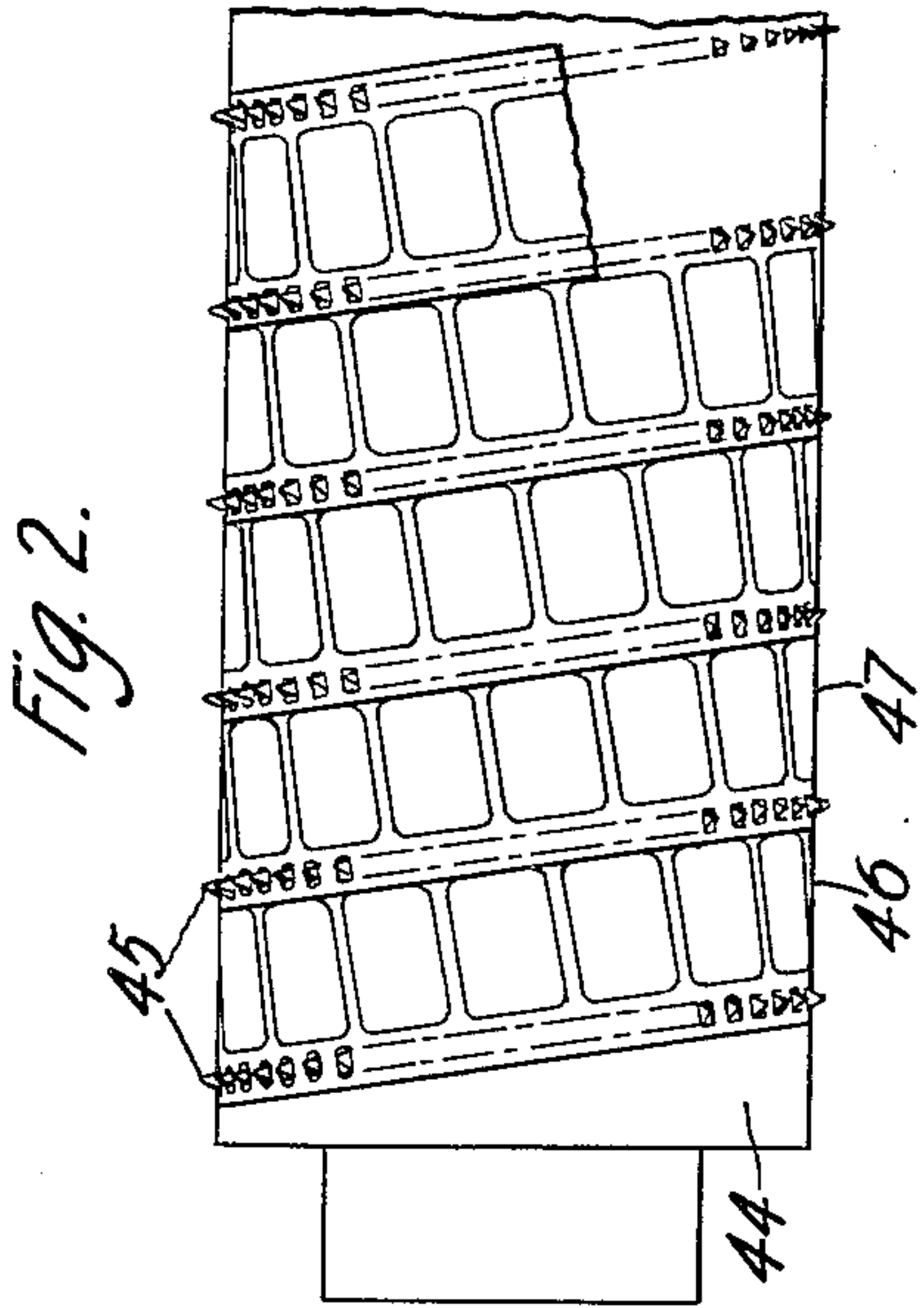
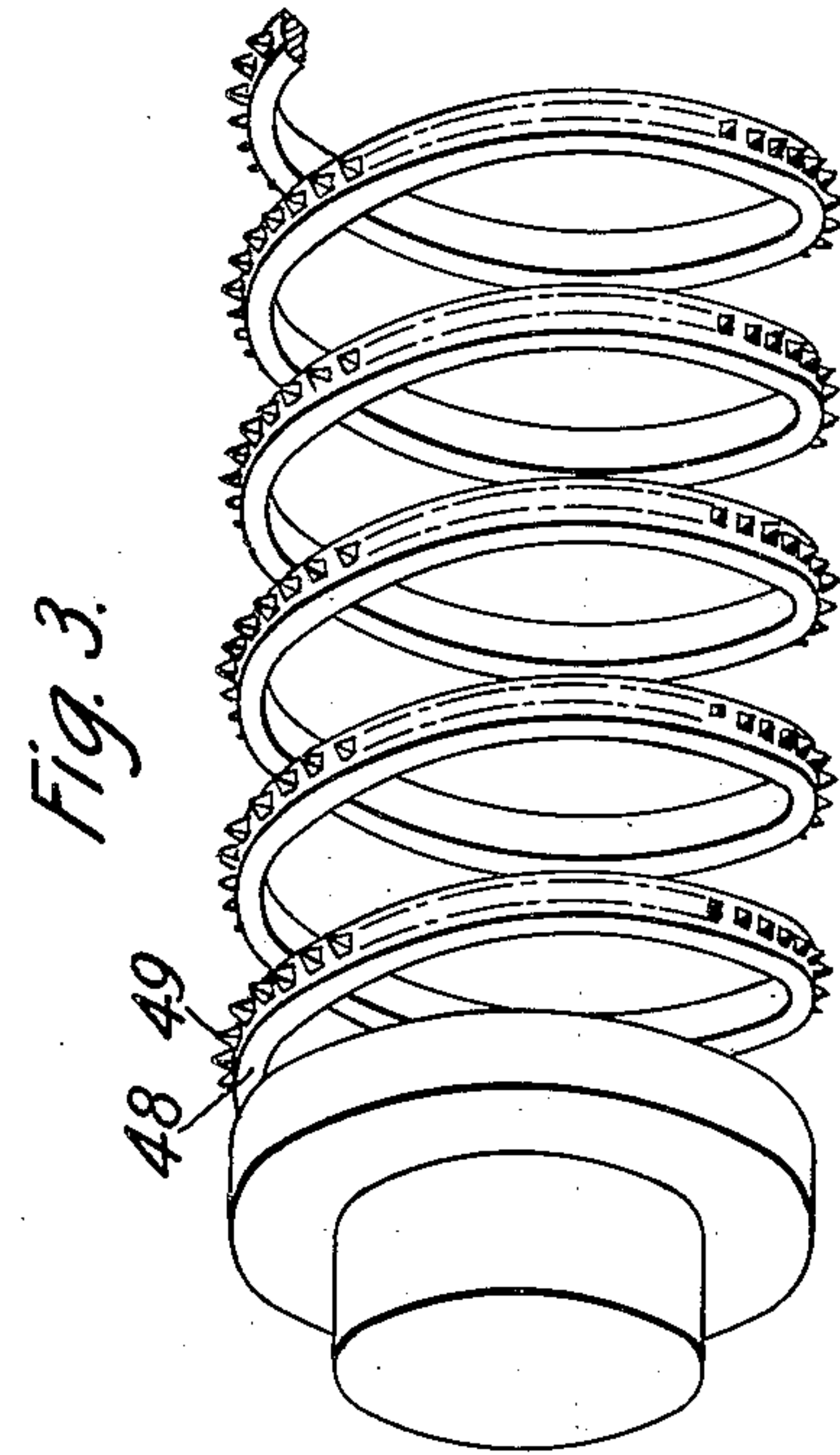
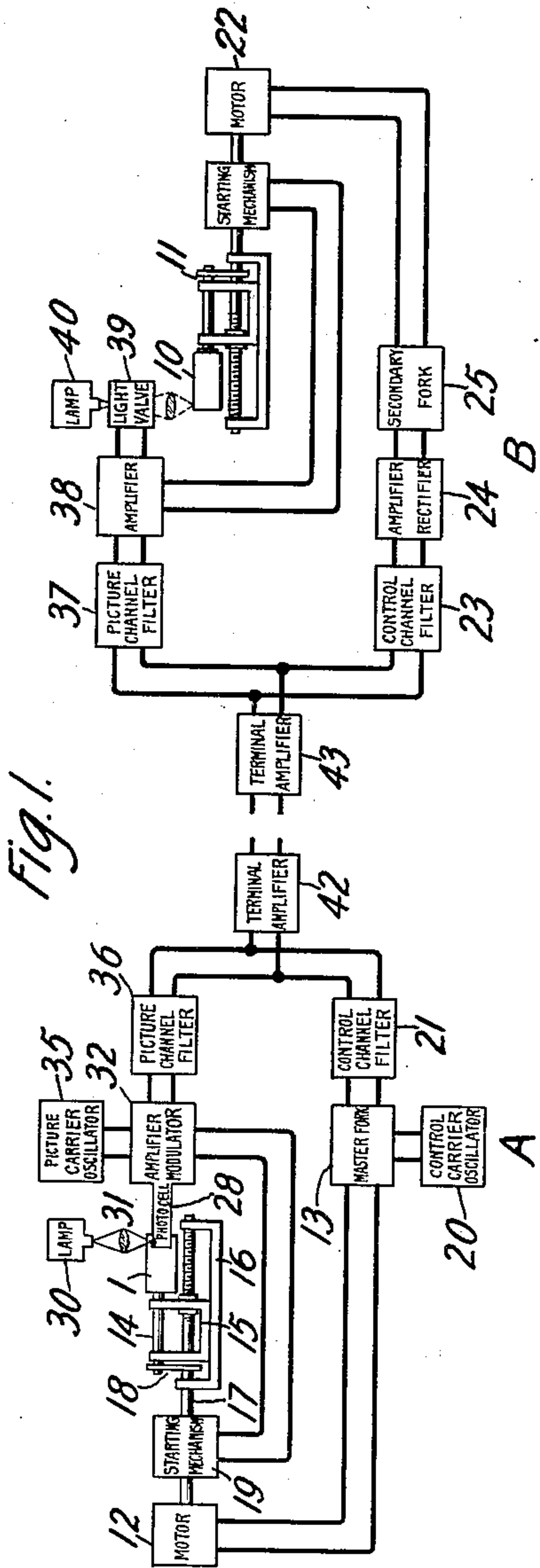
Sept. 24, 1929.

H. G. STOKES

1,728,986

PICTURE TRANSMISSION SYSTEM

Filed July 8, 1926



Inventor:
Howard G. Stokes.

by

g e f o l a

Att'y.

UNITED STATES PATENT OFFICE

HOWARD G. STOKES, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN TELEPHONE
AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK

PICTURE-TRANSMISSION SYSTEM

Application filed July 8, 1926. Serial No. 121,213.

This invention relates to transmission systems and particularly to systems for the transmission of pictures electrically.

An object of the invention is to improve the method of an apparatus for transmitting pictures and concerns more especially the transmission of pictures in the form of a continuous film.

In accordance with the present invention there is provided a system using a cylinder of such a type that a continuous strip of film may be wound on it and the picture transmitted to the distant station, where a corresponding length of motion picture film is wound on a similar cylinder. This device will obviate the necessity of making numerous patches in a piece of film of given length.

The system disclosing the invention comprises a transparent cylinder having a set of sprockets in spiral form for holding the strip of film. One set of sprockets is used to hold the outer and inner edges of adjacent portions of the film when wound in a helix on the cylinder. A modification of this device comprises a strip of metal carrying suitable sprockets and formed in the shape of a helix with these members suitably spaced to fit the motion picture film. These drums may be used interchangeably at either the sending or receiving ends. A more clear conception of the objects and operation of the invention may be had from the following description and drawings, in which:

Fig. 1 shows in schematic form the system used for picture transmission;

Fig. 2 shows a cylinder of transparent material having sprockets spirally positioned with a piece of film in place;

Fig. 3 discloses a modification of Fig. 2 showing a helical strip of any rigid substance having sprockets on its outer face.

The picture transmission system shown schematically in Fig. 1 has been described in detail in Patent No. 1,606,227, Nov. 9, 1926, of Joseph W. Horton, Herbert E. Ives, and Maurice B. Long. In general, this system is arranged for transmitting the picture characteristics from a sending terminal A to a reproducing terminal B as modulations of a voice frequency wave. Revolvable drums 1

and 10 of the type embodying this invention are used at the terminals for mounting the films. The sending drum 1 upon which is mounted the film of the picture to be transmitted is rotated and moved axially by the motor 12 the speed of which is determined by the master tuning fork 13. The drum 1 is connected to a shaft 14 mounted in a carriage 15. This carriage is moved along the frame 16 by the rotation of shaft 17 that is threaded in bearings on this carriage. The shaft 14 is rotated through gears 18 from shaft 17 which is coupled to the motor 12 through a starting mechanism 19 controlled by the circuit arrangement of the system. The tuning fork 13 also coacts with the synchronizing carrier wave oscillator 20, the output carrier wave of which is transmitted through the control channel filter 21 to the line leading to the terminal B. This control carrier wave is employed to control the operation of the motors 12 and 22 at the two terminals in synchronism and passes for that purpose at terminal B through a control channel filter 23 and amplifier-rectifier 24 to control a secondary tuning fork 25 which in turn regulates the speed of motor 22 to that of motor 12.

Within the drum 1 is mounted a photoelectric cell 28 having a small clear glass window to allow the entrance of light from the lamp 30. Light from this lamp is projected through lens 31 upon the surface of the film on drum 1 to illuminate an elemental area thereof. The tone value of this elemental area determines the amount of light incident upon the photoelectric cell and as the drum rotates successive elemental areas of the film are illuminated to affect the photoelectric cell according to the various tone values.

The photoelectric cell is connected to the input circuit of an amplifier which is coupled to a modulator, both of said devices being designated with the numeral 32. The modulator is associated with a picture carrier wave oscillator 35 that supplies, as its name indicates, the picture carrier wave which is modulated by the picture characteristics as identified by the photoelectric cell. This modulated picture carrier wave is now transmitted through the picture channel filter 36 to the

terminal B where it is received through various apparatus such as the picture channel filter 37, amplifier 38 and the light valve 39. This valve 39 is affected by the modulated picture carrier wave that determines the amount of light that is to be projected from the light source 40 on the picture receiving film mounted on drum 10. Both the picture carrier wave and the synchronizing carrier wave may be amplified through terminal amplifiers such as 42 and 43.

The cylinder 44 shown in Fig. 2 of glass or any other transparent material has molded or set thereon by any suitable means sprockets 45, these sprockets are so placed that they will accommodate the holes on any standard piece of motion picture film. As is shown in this figure, the holes in the right hand margin of section 46 of the film are overlapped by the holes in the left hand margin of section 47, thereby saving space on the cylinder. Transparent material is used for this cylinder to allow the light from the scanning source to pass through to a photoelectric cell, as is described in the above mentioned application.

As shown in Fig. 3, the cylinder has been modified by doing away with the glass and using a piece of material 48, of any rigid substance formed in a helix with sprockets 49 on its outer face, the film being wrapped about it in the same manner as described above for a glass cylinder.

A sensitive film is wrapped about a cylinder of either the glass or metal type at the receiving station and pictures transmitted by this method are exposed to the incoming record in a manner well known to the art.

For a disclosure of one form of sending cylinder such as has been used heretofore reference is made to the patent to C. H. Haynes, No. 1,545,897, issued July 14, 1925.

What is claimed is:

1. The method of obtaining an image of a motion picture by electrical transmission which comprises winding the motion picture film spirally on a transmitting cylinder, scanning said film, and producing by said scanning electrical impulses characteristic of the pictures on said film and from which said image may be produced.

2. The method of obtaining an image of a motion picture by electrical transmission which comprises wrapping the motion picture film on a cylinder spirally, scanning the film by elemental areas of linear dimensions smaller than the pitch of the spiral wrapping of the film, and transmitting an electric current representing the tone values of the elemental areas of said film.

3. In a system for obtaining an image of a motion picture by electrical transmission, a sending device comprising a holder with means thereon for fastening strip pictures thereto in a spiral form, and means to scan said strip in a path which is not parallel to

a spiral path having the same pitch as the spiral of the picture strip.

4. In a system for obtaining an image of a motion picture by electrical transmission, a sending device comprising a cylindrical member with means thereon for securing strip pictures thereto in spiral form, and means to scan said strip in a path which is not parallel to a spiral path having the same pitch as the spiral of the picture strip.

5. In a system for obtaining an image of a motion picture by electrical transmission, a sending device comprising a transparent hollow cylinder with sprockets thereon in a spiral form for fastening a motion picture film thereon.

6. In a system for obtaining an image of a motion picture by electrical transmission, a sending device comprising a hollow glass cylinder with sprockets thereon in a spiral form for fastening motion picture film thereto.

7. In a system for obtaining an image of a motion picture by electrical transmission, a receiving device comprising a transparent hollow cylinder with sprockets thereon in a spiral form for fastening motion picture film thereto.

8. In a system for producing an image of a motion picture by electric transmission, a film holding device comprising a rigid support, and helically arranged sprockets on said support for positioning a motion picture film thereon.

9. In a system for producing an image of a motion picture by electrical transmission, a film holding device comprising a rigid support, and sprockets on said support in the form of a single helix for fastening the motion picture film thereto with overlapping edges.

10. In a system for producing an image of a motion picture by electrical transmission, a film strip having perforations along opposite edges, a supporting surface on which said strip is wound in spiral form with overlapping edges, and sprockets on said surface protruding through the perforations in the overlapping edges.

In testimony whereof, I have signed my name to this specification this first day of July, 1926.

HOWARD G. STOKES.