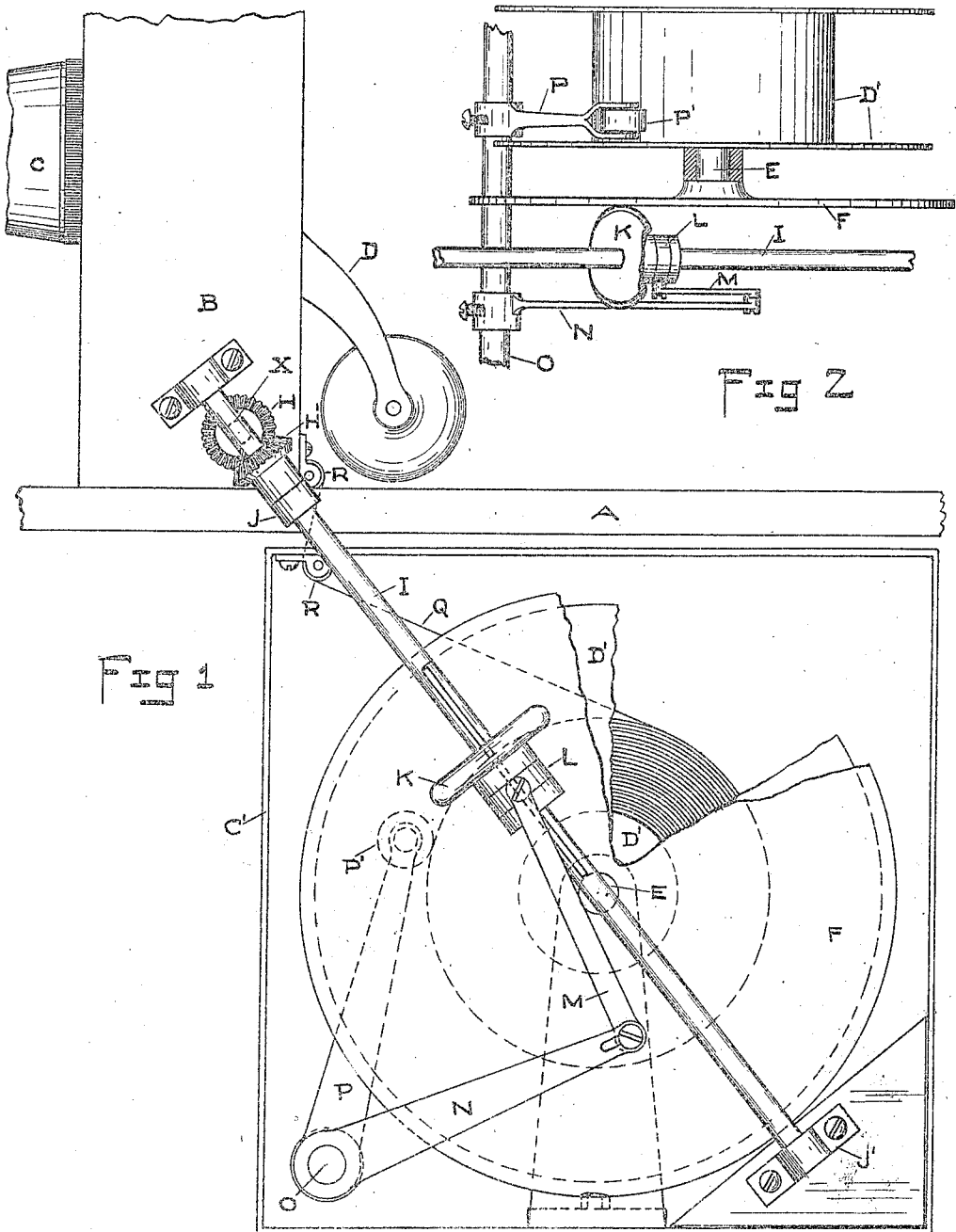


C. F. JENKINS.
MOTION PICTURE APPARATUS.
APPLICATION FILED MAY 10, 1911.

1,047,528.

Patented Dec. 17, 1912.



WITNESSES:
A. S. Jenkins
H. Craig Greene

INVENTOR
C. Francis Jenkins
BY
H. C. Hall
ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES FRANCIS JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA.

MOTION-PICTURE APPARATUS.

1,047,528.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed May 10, 1911. Serial No. 626,396.

To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Motion-Picture Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to devices for avoiding serious tension upon moving picture film as it is rewound after leaving the projecting apparatus. Practically it is found necessary to wind the films which are often many
15 hundreds of feet in length, but as the film is delivered at a constant rate by the projecting devices and as the roll upon the drum necessarily increases in diameter the film drum necessarily tends to take up the
20 film more and more rapidly, the rate with long films increasing many fold. Obviously this must be compensated or the use of the method is impossible. A common expedient is to drive the winding drum by devices
25 allowing slip of the parts whenever a low tension upon the film is exceeded. But as the roll increases this slip-causing tension acts through an increasing lever arm always equal to the radius of the growing roll, and
30 hence the pull necessary to cause slipping at one stage of the winding is many times that required at another time, whence it follows that during a part of the winding period, it being impracticable to vary the force needed
35 to produce slipping, there is undesirable tension upon the film. Film is at best short lived, and since tension upon it is principally exerted in pulling the film edges, at two perforations, against the faces of two
40 narrow sprocket drum teeth, such tension as has been described seriously shortens the life of the expensive film while also causing unpleasant results in the pictures on the screen as soon as any wear or injury results.

45 To provide a simple and convenient means for avoiding the difficulty is the object of this invention, and this object is attained by providing devices which automatically wind the film at precisely the rate of its delivery
50 no matter what the diameter of the roll.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a projecting apparatus involving my novel devices.

Fig. 2 a detail view of a portion of the roll
55 driving devices.

In these figures, A represents a suitable

support, B the casing of a portion of common projecting apparatus provided with a lens C and a driving crank D, and C' the casing for the film winding drum D mounted
60 upon a shaft E. Upon this shaft is also fixed a large disk F. One of the shafts of the film feeding apparatus within the casing B, for example the shaft X of the usual
65 lower sprocket drum, projects from the casing and bears a bevel gear H which engages a similar gear H' upon a slender shaft I
70 extending downward alongside the disk, parallel thereto and at a short distance therefrom. The shaft is mounted in any
75 suitable bearings, as J, J'. Upon the central portion of this shaft is splined a small preferably rubber faced wheel or roller K the
80 edge of which presses firmly against the disk and the hub of which bears, in an annular groove, a loose but non-rotating ring
85 L to which is pivoted one end of a link M. The other end of this link is pivoted to the free end of a rigid arm N fixed to a rock
90 shaft O mounted in the casing or in a support therein. This shaft bears a second
95 rigid arm P in the plane of the film roll and having at its free end a roller P', to rest upon the periphery of the latter against
100 which it is held by gravity alone, usually.

The film strip Q passes out of the casing B, around suitable rollers R, R, and to the film drum, upon which the roller P' at first rests while the point of contact of the wheel
105 K upon the disk lies in line with a surface element of the drum. The proportion of the parts is such that the wheel K rotates the disk and drum shaft just fast enough to take up the film delivered by the projecting
110 apparatus. As the film winds upon the drum, increasing its diameter and the length of film wound at each turn, the roller P' is pushed away from the drum's axis, rocking the shaft and swinging the other arm, thus pushing the wheel upward on its shaft where it travels in a larger circle on the disk and thus moves the drum through a smaller
angular distance for each of its own rotations. The rate of rotation of the drum is thus in inverse proportion to the circumference of the roll and, whatever the diameter of the latter, the film is wound as fast as it is delivered and without being injuriously
pulled against the sprocket teeth of the film feeding devices within the casing B. In
other words, the devices secure a slight, practically constant, and uniform tension

upon the film coming from the projecting devices.

What I claim is:

1. The combination with a projecting machine and a film box alongside the same, of a film drum mounted in the box, a friction disk mounted on the drum shaft, a shaft in geared connection with said machine and provided with a drum-driving friction roller impinging on said disk and arranged to slide on the shaft without rotating thereon, and two rigidly connected pivoted arms, one normally pressing toward the periphery of the drum and the other connected by a link to said roller to slide the same on its shaft.

2. The combination with a projecting machine having an external rotating gear, of a film box, a film drum mounted in the box,

a friction disk on the drum shaft, a rockshaft parallel to the drum shaft, an arm projecting from the rockshaft and having a terminal roller normally resting on the drum, a second arm projecting from the rockshaft, a link pivotally connected to the free end of the latter arm, a shaft parallel to a diameter of the disk and provided with a pinion engaging said gear, a friction roller sliding on the shaft, rotating therewith, in contact with said disk, and revolvably connected to the free end of said link, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES FRANCIS JENKINS.

Witnesses:

JAMES L. CRAWFORD,
R. CRAIG GREENE.