No. 617,435. Patented Jan. 10, 1899.

H. CASLER.

REEL.

(Application filed Dec. 10, 1896.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.

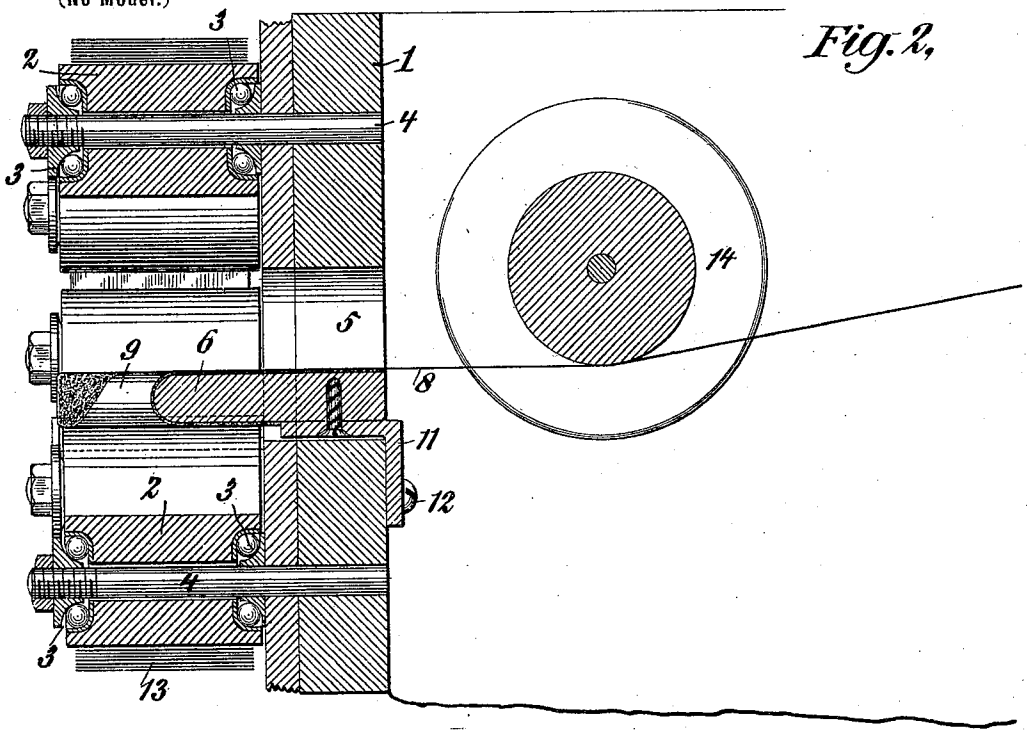
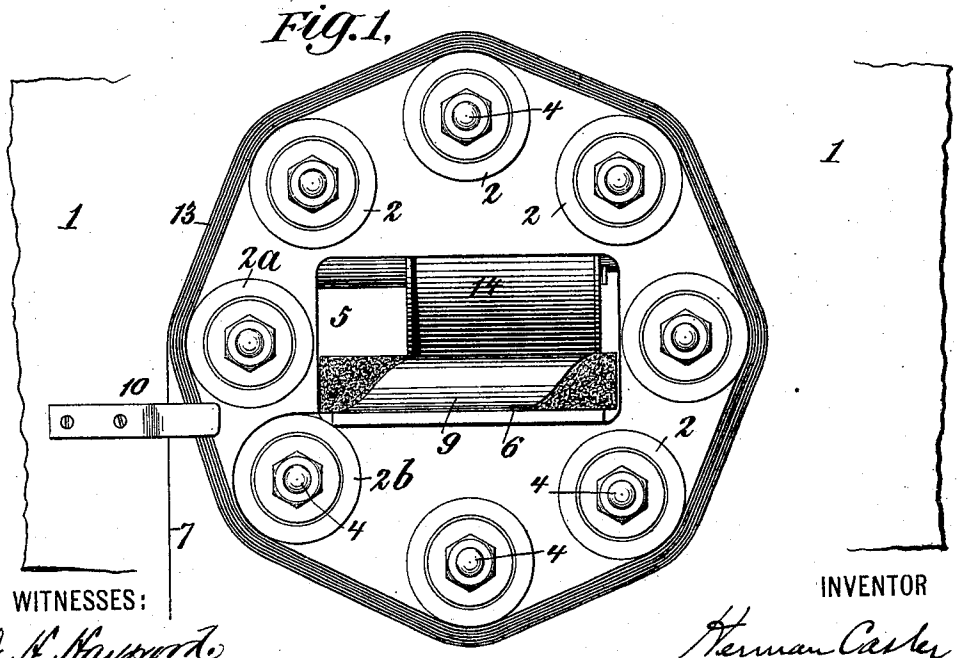


Fig. 1.



WITNESSES:

D. F. Hayward

N. C. Sawtelle

INVENTOR

Herman Casler

BY P. Van Reinsdale

his ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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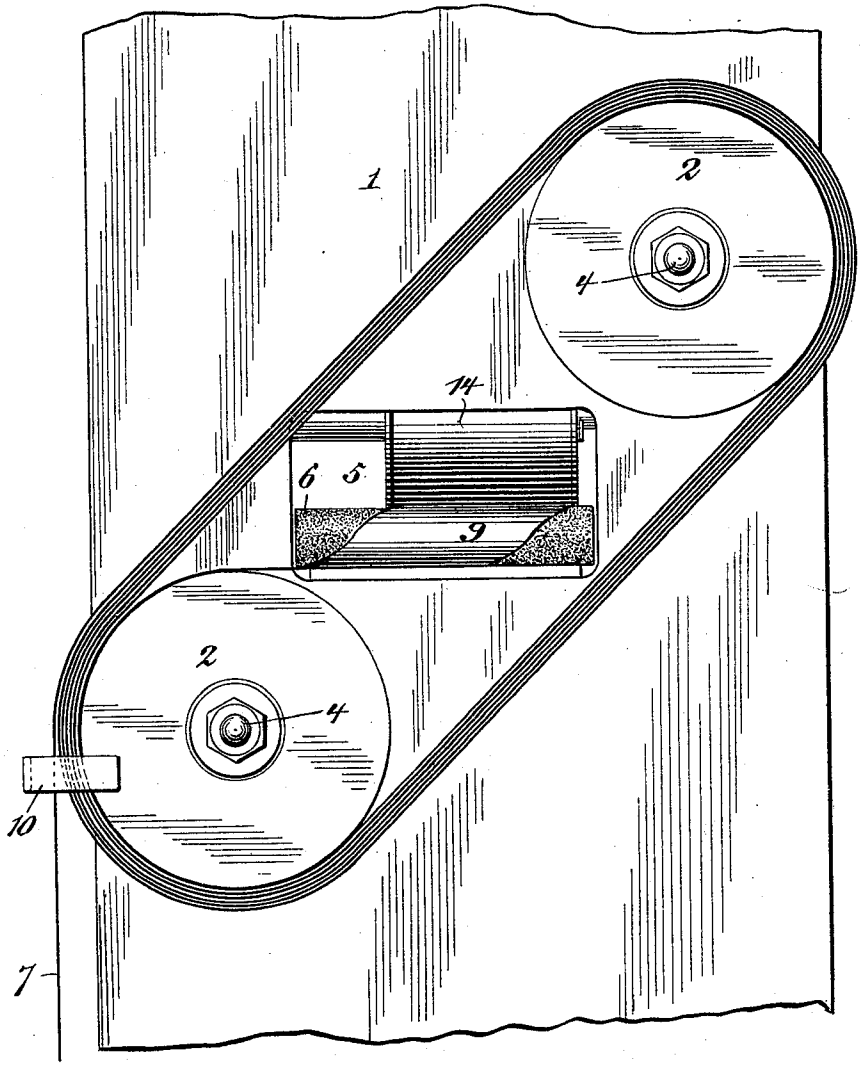
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(No Model.) 2 Sheets—Sheet 2.

Fig. 3,



WITNESSES:

D. N. Mayo

H. A. Lee

INVENTOR

Herman Casler

BY E. M. Marble & Son

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HERMAN CASLER, OF CANASTOTA, NEW YORK, ASSIGNOR TO THE AMERICAN MUTOSCOPE COMPANY, OF NEW YORK, N. Y.

REEL.

SPECIFICATION forming part of Letters Patent No. 617,435, dated January 10, 1899.

Application filed December 10, 1896. Serial No. 615,188. (No model.)

To all whom it may concern:

Be it known that I, HERMAN CASLER, a citizen of the United States, residing at Canastota, in the county of Madison and State of New York, have invented certain new and useful Improvements in Reels, (Case No. 6;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to mechanisms in which a great length of moving band or belt of any description is employed and must be taken care of.

It consists of a simple and compact form of reel for carrying such moving band.

The preferred form of my apparatus is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a side view or elevation, and Fig. 2 is a section on lines 2 2 of Fig. 1. Fig. 3 is a view similar to Fig. 2, but showing a modified form of reel in which but two rollers are used.

Throughout the drawings like reference-figures refer to like parts.

1 represents a portion of the frame on which the reel is mounted.

2 2, &c., represent a plurality of rollers whose axes 4 4, &c., are each parallel or substantially parallel to the others. The rollers I have shown mounted on ball-bearings 3, although they are not necessary. These rollers may be located in any way with reference one to the others so long as their axes form points in a closed figure which has no reëntrant angles; but I prefer to arrange them in a circle, as shown. 5 is an opening in the frame within said circle.

There are various classes of mechanism in which my invention may be employed; but I have especially designed it for handling the long bands of photographic films which are used in machines for projecting a series of pictures on a screen with such rapidity and in such manner that they produce upon the eye of the observer the effect of motion in the objects depicted. The bands of film are each many yards in length, and it has heretofore required a great deal of space and many rollers or their equivalent apparatus to take care of all that portion of the band which may be out of use at any one moment, but which is continually in motion.

While my invention is applicable to any form of band, it is most advantageously employed on a continuous or endless band.

13 represents a spiral of any number of turns of the moving band, which is so disposed about the rollers that the same side of the band is always presented to the rollers. The approaching portion 7 of the band is conducted by 10 or other form of guide to the roller 2^a, and is tangential thereto, or, more strictly speaking, is tangential to a circle having the axis of 2^a for a center, and is also approximately tangential to the circle in which the rollers 2 2, &c., are located.

6 is a guide located within the circle and which conducts the receding portion 8 of the band from one of the rollers, as 2^b, and also deflects it from the plane of the circle in which the rollers are set to a separate roller 14 or other similar device. As shown, the deflection at 9 amounts to ninety degrees, so that the band may pass through the opening 5. Evidently it might be more or less than ninety degrees, according to the direction desired. The guide 6 I have shown mounted on the frame 1 by means of the angle-iron 11 and the screw 12.

The mode of operation of my invention is as follows: The reel carries all the idle portion of the band except that which is passing through the working mechanism. (Not shown.) After leaving that mechanism the portion 7 of the band approaches the reel, being guided by the device 10 or its equivalent. It passes through the spiral 13 from the outermost to the innermost coil and from the innermost coil goes to the guide 6, by which its course is deflected, so that it may pass on and out of the plane of the spiral and of the rollers on which the spiral is carried over the roller 14 to its work again.

The advantages are, first, compactness. Six or eight or even two or three rollers can thus be made to do the work of scores, occupying many cubic feet of space, as heretofore arranged. Then there is a reduction of friction. Only the inner spiral rubs on the roll-

ers. The outer ones are carried on this inner one. The only friction is the slight sliding of the band upon itself due to the difference in length between the innermost and outermost spirals. In practice when high speeds are used the sections of the spiral fly out by centrifugal force, so that all but the inner one are practically traveling in the air without friction of any kind. By using a continuous band any number of repetitions of the operation of the machine employing the band can be had without stopping.

Of course various changes could be made in the details of my invention without departing from the spirit and scope thereof. The number of rollers might be varied. They might be arranged in a square or a triangle instead of a circle, and Fig. 3 shows how a reel having but two rollers might be constructed. Other forms of guides might be employed. The guides 6 and 10 might be rollers. The rollers 2 might be differently mounted, and so on throughout all the mechanical details of the apparatus without changing the the principle thereof.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination of the frame, a plurality of rollers whose axes are substantially parallel, each to the others, mounted on said frame, and a guide located within the area limited by a band traveling around said rollers and adapted to receive said traveling band and deflect it from the plane of said rollers, substantially as described.

2. The combination of the frame, a plurality of rollers whose axes are parallel each to the others and which are set in a circle in said frame, a guide located within said circle of rollers and substantially in the plane thereof so as to receive a moving band from one of said rollers and deflect its line of travel away from said plane, substantially as described.

3. The combination of the frame, a plurality of rollers whose axes are parallel each to the others and which are set in a circle in said frame, a guide which delivers the approaching portion of a moving band tangentially to one of said rollers and to the circle in which they are set, and a second guide which receives the receding portion of said band from one of said rollers and deflects its line of travel from the plane of said circle, substantially as described.

4. The combination of the frame, a plurality of rollers whose axes are set in said frame parallel each to the others and disposed to carry a spirally-arranged moving band in such manner that the same side of the band in the spiral will always be turned toward the rollers, means for guiding the approaching portion of the band to the outer spiral and means for guiding the inner portion of the spiral out of the plane thereof, substantially as described.

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

HERMAN CASLER.

Witnesses:
GEO. B. RUSSELL,
GRACE ROSE.