

No. 832,112.

PATENTED OCT. 2, 1906.

D. C. WOODWORTH.

KINETOSCOPE.

APPLICATION FILED OCT. 30, 1905.

2 SHEETS—SHEET 1.

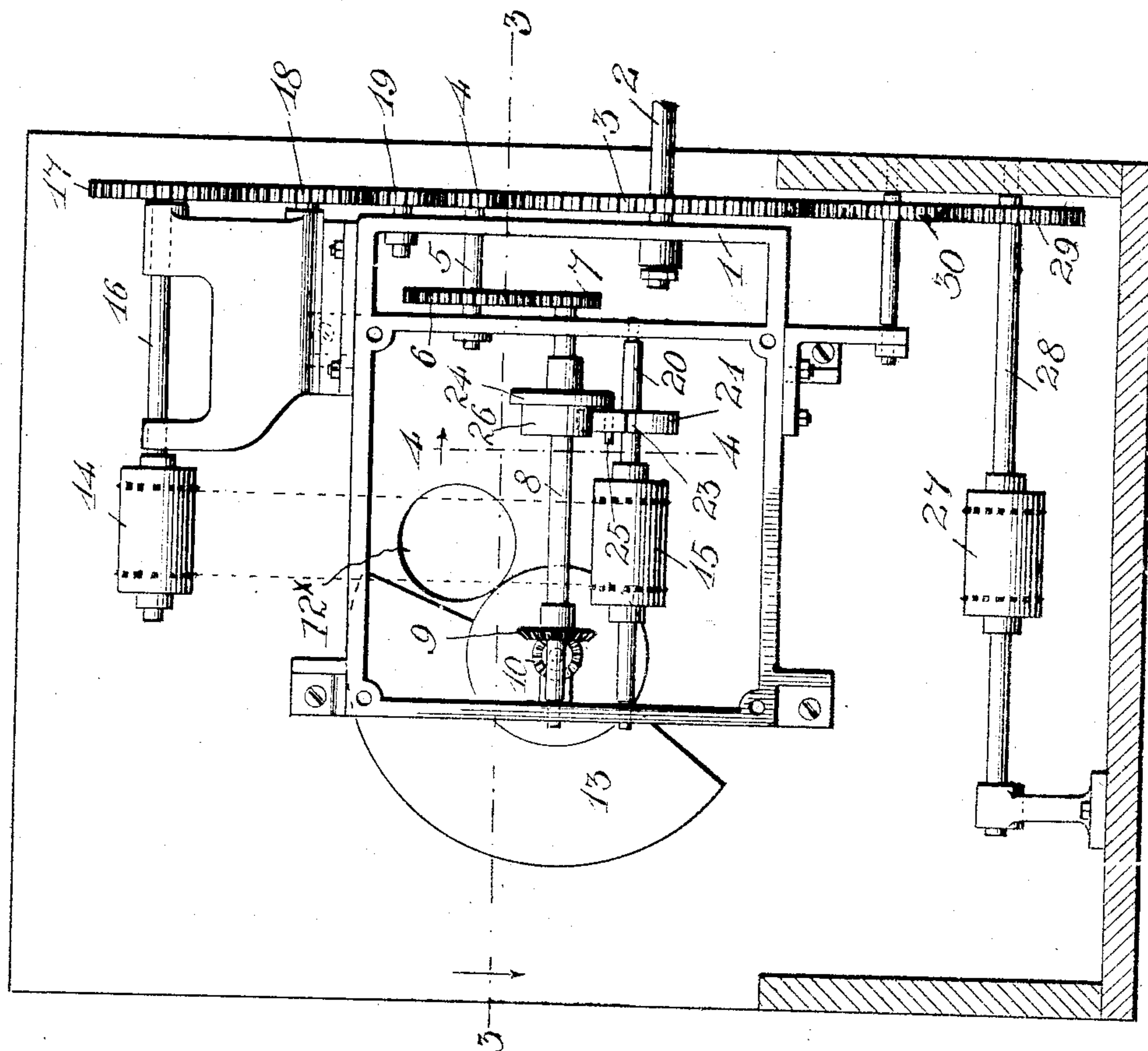


FIG. 1.

Witnesses

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2 SHEETS—SHEET 2.

FIG. 2

12x

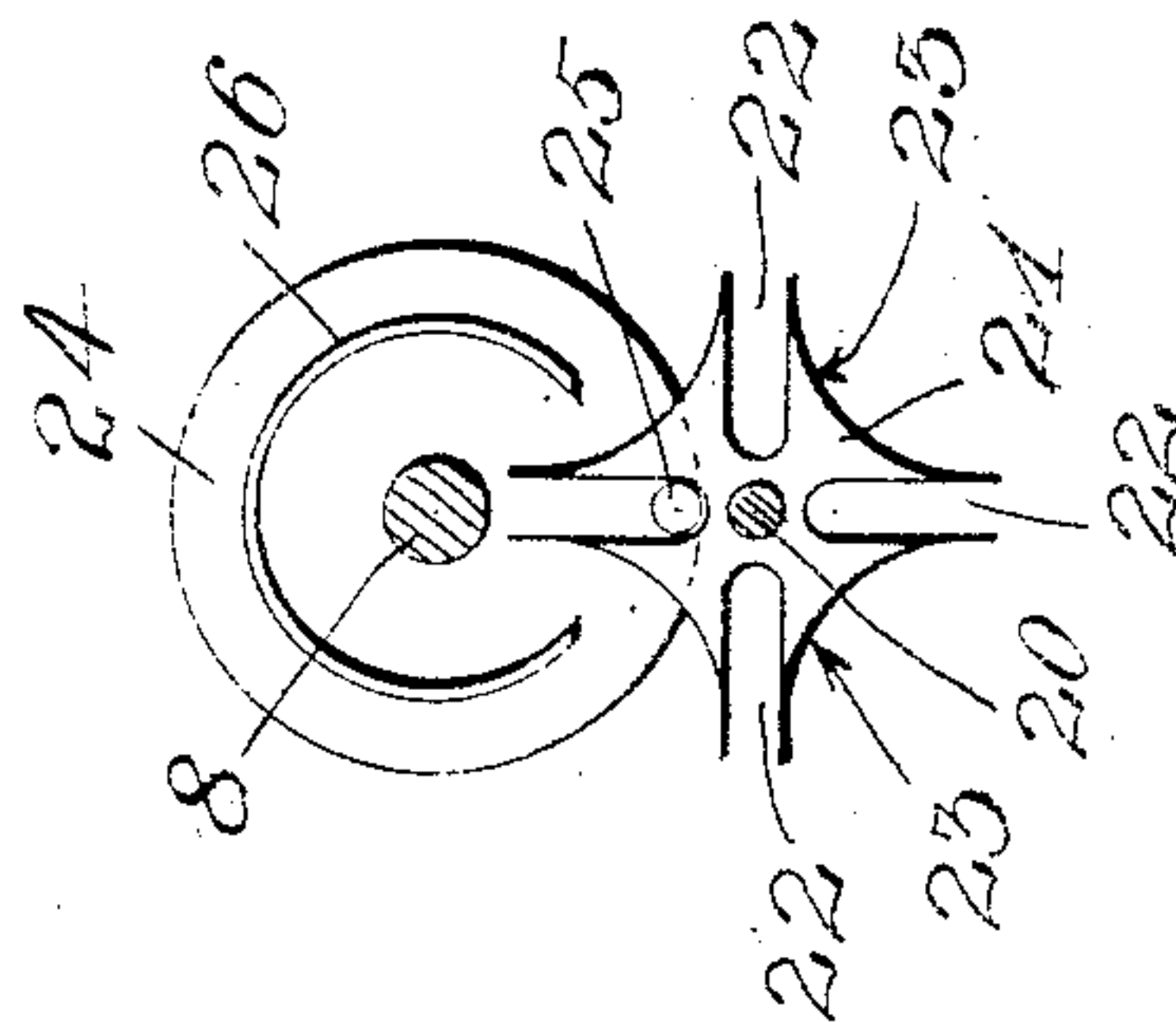
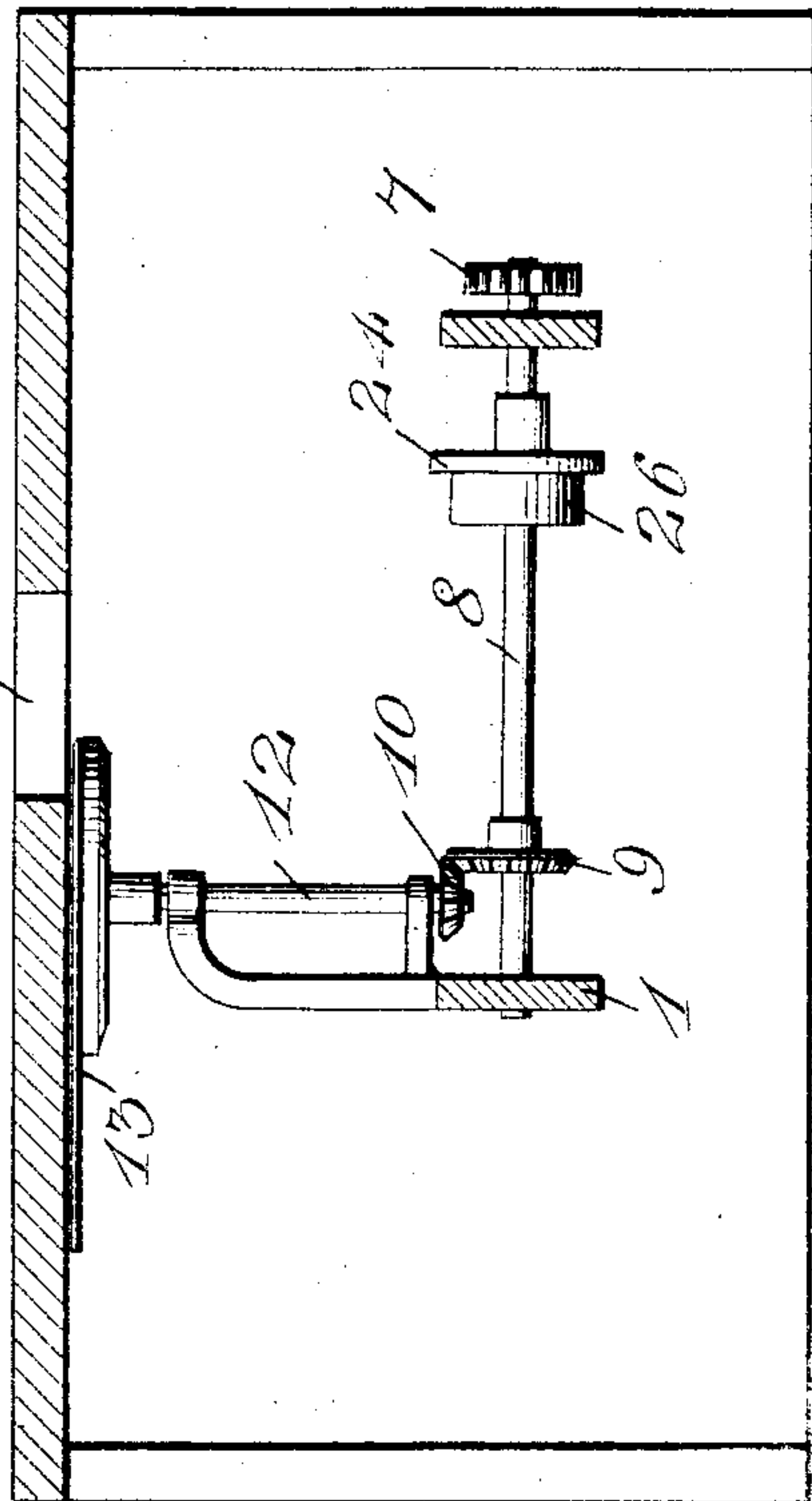
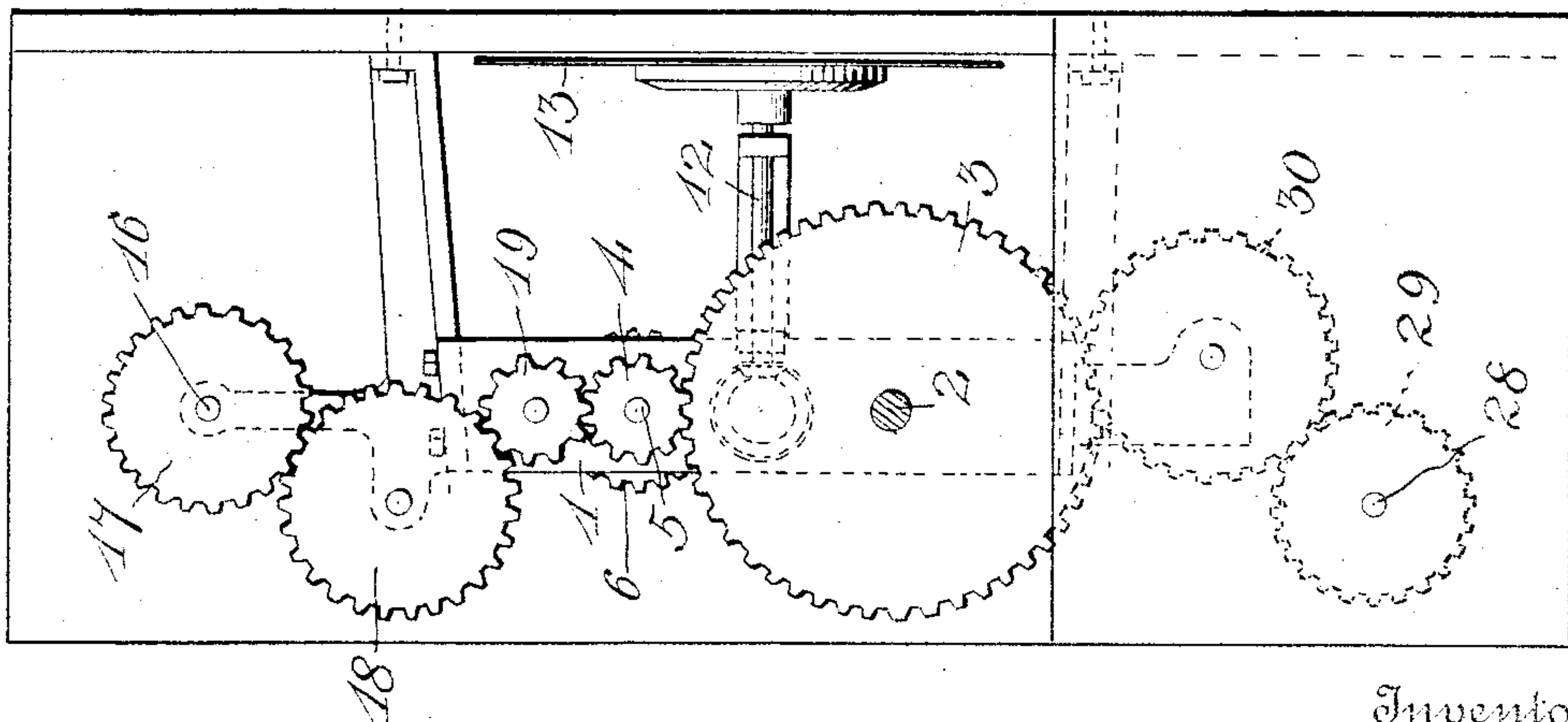


FIG. 4



Witnesses
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UNITED STATES PATENT OFFICE.

DALLAS C. WOODWORTH, OF DAVENPORT, IOWA.

KINETOSCOPE.

No. 882,112.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed October 30, 1905. Serial No. 285,099.

To all whom it may concern:

Be it known that I, DALLAS C. WOODWORTH, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Kinetoscopes; and I do 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.

This invention relates to improvements in kinetoscopes.

The object of the invention is to provide an improved operating mechanism whereby the shutter-shaft will be caused to rotate twice for each picture exposed, thereby removing the annoying and objectionable flicker produced by kinetoscopes now in use.

Another object is to provide means whereby the pictures will be brought opposite the opening in the machine twice as quickly as formerly and to cause pictures to remain stationary opposite said opening three times as long as the time required to shift said picture, whereas the machines now in use require the same length of time to shift the pictures as is given to the exposure of the pictures, thereby causing either a too rapid running of the film or else showing a marked flicker on the screen from the slow motion of the shutter.

Another object is to provide a simple and inexpensive mechanism for accomplishing the above results which may be easily applied to kinetoscopes now in use.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a rear view of a portion of the operating mechanism of a kinetoscope embodying the invention, parts of the same being broken away. Fig. 2 is a side view of the same. Fig. 3 is a horizontal sectional view on the line 3 3 in Fig. 1. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 1, showing the mechanism for intermittently turning the film-rolls.

Referring more particularly to the drawings, 1 denotes the supporting-frame on the operating mechanism of the machine, and 2 denotes the main drive-shaft, on which is mounted a spur gear-wheel 3. With the

wheel 3 is engaged a spur gear-pinion 4, which is mounted on the end of a drive-shaft 5, on the opposite end of which is mounted a spur gear-wheel 6. This wheel 6 is adapted to engage a spur gear-pinion 7, mounted on the end of an operating-shaft 8, on which, near the opposite end thereof, is fixedly mounted a beveled gear-wheel 9. The gear-wheel 9 is engaged with a bevel gear-pinion 10, mounted on the end of a horizontal right-angularly-disposed shutter-shaft 12, said pinion 10 being preferably one-half the size of the gear-wheel 9, whereby the shutter-shaft 12 will be caused to revolve twice for each revolution of the operating-shaft and beveled gear 9. On the opposite end of the shutter-shaft 12 is fixedly mounted a segmental shutter 13, which is adapted to be revolved by the shaft 12 to cover and uncover the exposure-opening 12^x of the machine.

Revolubly mounted in the frame 1 of the machine are upper and lower film-carrying rolls 14 and 15. The upper film-carrying roll is fixedly mounted upon a shaft 16, journaled in the upper portion of the frame and having on its outer end a spur gear-wheel 17, which is adapted to mesh with a spur gear-wheel 18 of slightly greater diameter than the wheel 17. Between the wheels 18 and the spur gear-pinion 4 on the shaft 5 is arranged an idle gear-pinion 19, which is adapted to mesh with the pinion 4 and wheel 18, whereby motion is imparted from the drive-shaft 5 through said wheels 17, 18, and pinion 19 to the upper film-roll shaft 16. The lower film-roll is mounted upon a shaft 20, and on said shaft is also fixedly mounted a star-wheel 21, said star-wheel being here shown as substantially in the shape of a Maltese cross having deep notches or indentations 22, between which the edge of the wheel is formed with a concave or curved surface 23. On the operating-shaft 8 immediately above the star-wheel 21 is fixedly mounted a disk 24, on the inner side of which is arranged a laterally-projecting pin or stud 25. On said inner face of the disk 24 is also arranged a segmental laterally-projecting flange 26, which extends around a greater part of the disk, the ends of said flange terminating above and at equal distances on each side of the pin 25.

In the operation of the device motion is imparted to the operating-shaft 8 through the medium of the intermediate drive-shaft and gears hereinbefore described, said mo-

tion of the operating-shaft being imparted to the shutter-shaft 12 through the beveled gears 9 and 10 to cause said shafts and shutter carried thereby to revolve at twice the speed of said operating-shaft. The motion of said operating-shaft is also imparted to the shaft 20 and the lower film-carrying roll 15 through the medium of the pin 25 on the disk 24, which as said disk revolves is adapted to be brought into consecutive engagement with the notches or indentations 22 in the star-wheel 21, thereby intermittently turning said star-wheel and the film-roll shaft 20. Between the periods of the engagement of the pin 25 with the notches of the star-wheel the flange 26 will be in engagement with the concave surfaces of said star-wheel, thereby holding the same and the lower film-roll shaft stationary, while the shutter will continue to revolve. The arrangement of the film on the rolls is such that when the cam 26 is in engagement with the star-wheel the picture on the film will be opposite the exposure-opening 12^x of the machine, in which position said picture is held during the passage of the flange 26 over said star-wheel, thus prolonging the time of exposure of said picture a considerably greater period than is given to the pictures by means now in use. After the flange 26 has passed out of engagement with the concave surface of the star-wheel the pin 25 engages one of the notches in said wheel, thereby turning the same and the film-roll shaft to quickly shift the film to bring the next picture opposite the exposure-opening. By this arrangement the picture will have an exposure the time of which is three times as great as that required to shift the film in changing the pictures. At the same time the difference in size between the beveled gears 9 and 10, which operate the shutter-shaft, is such that the shutter will be operated twice while the operating-shaft is turning once, thereby producing a very rapid revolution of the shutter, which will obviate the objectionable and annoying flicker observed in machines now in use. The difference in the size of the gear-wheel on the upper film-roll shaft over the usual size of said wheel will compensate for the decrease in the speed or movement of the film by the shifting mechanism on the operating-shaft. Revolvably mounted in the lower portion of the machine is a take-up film-roll 27, which is mounted upon a shaft 28, on the end of which is fixedly mounted a spur gear-wheel 29, the size of which is considerably greater than that used in the common form of ma-

chine, and with said wheel 29 is engaged an idle gear-wheel 30, which is also in engagement with the drive-wheel 3, whereby motion is imparted to the film-roll shaft 28 to turn said roll at the speed required by the operative parts of the machine to take up the film after the same has been shifted to expose pictures thereon.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

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

1. In a kinetoscope, the combination with an operating-shaft, of means whereby the same is driven, a revolvably-mounted shutter-shaft geared to said operating-shaft and driven thereby at twice the speed of said operating-shaft, a shutter carried by said shutter-shaft, a revolvably-mounted film-roll shaft, a star-wheel fixedly mounted on said shaft, a disk mounted on said operating-shaft, a laterally-projecting pin arranged on said disk to engage said star-wheel and turn the same at each revolution of said shaft and a laterally-projecting segmental flange arranged on said disk to engage said star-wheel and hold said film-roll stationary when not engaged by said pin, substantially as described.

2. In a kinetoscope, the combination with an operating-shaft, of means whereby the same is driven, a revolvably-mounted shutter-shaft geared to said operating-shaft and driven thereby at twice the speed of said operating-shaft, a shutter carried by said shutter-shaft, a revolvably-mounted film-roll shaft, a star-wheel fixedly mounted on said shaft, a disk mounted on said operating-shaft, a laterally-projecting pin arranged on said disk to engage said star-wheel and turning the same at each revolution of said shaft, a laterally-projecting segmental flange arranged on said disk to engage said star-wheel to hold said film-roll stationary when not engaged by said pin, and gearing for operating said star-wheel and said film-roll, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DALLAS C. WOODWORTH.

Witnesses:

ALFRED PARSONS,
W. J. BRYSON.