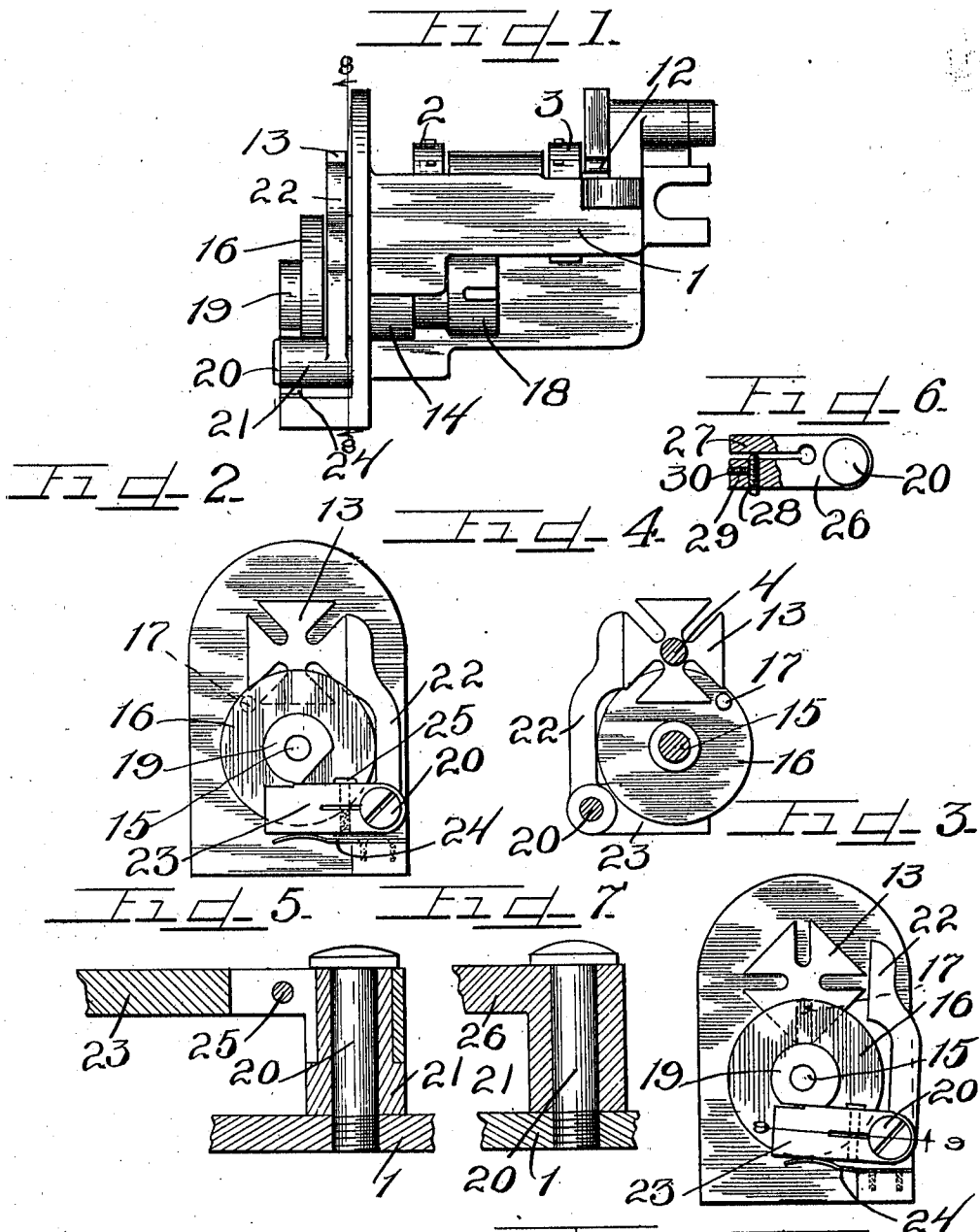


J. B. REIMUND.
 GENEVA GEAR.
 APPLICATION FILED JUNE 24, 1909.

982,874.

Patented Jan. 31, 1911.



WITNESSES

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GENEVA GEAR.

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To all whom it may concern:

Be it known that I, JOHN B. REIMUND, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Geneva Gears; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

It is an object of the invention to afford a Geneva gear timing mechanism and in connection therewith a positive stop therefor adapted to exactly position the gear independent of any slight journal wear that might be present.

It is also an object of the invention to afford in connection with a device of the class described a lever controlled timing mechanism from which wear is practically eliminated and which is adapted to operate at a very high rate of speed with the utmost accuracy.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a top plan view of the device showing the same attached to a film moving machine. Fig. 2 is a view in elevation of the timing end of the machine with parts omitted, and showing the same turned upon its side. Fig. 3 is a similar view illustrating the operation of the timing mechanism. Fig. 4 is a section taken on line 8—8 of Fig. 1. Fig. 5 is an enlarged fragmentary section on line 9—9 of Fig. 3. Fig. 6 is a view in elevation and partly in section of one form of the adjusting arm for the stop lever for the Geneva gear. Fig. 7 is a section similar to Fig. 5, and showing the adjusting arm (such as shown in Fig. 6) constructed integrally with the stop lever.

As shown in the drawings: The device embodying this invention is shown for convenience in connection with a moving picture machine which comprises in part a frame 1, and feed sprockets 2 and 3, such as heretofore in use. Said frame may be of the usual or any suitable form or construction to permit of ready adaptation to the projector and to afford bearings for the parts, and journaled therein is a Geneva gear shaft 4, see Fig. 4.

On the outer end of the gear shaft 4, is a Geneva gear 13, which, in the construction shown, is square in form, having (because of such form) four flat faces, each arranged at a right angle with its adjacent faces. The throws or slots in said gear extend diagonally thereinto, one from each corner, and to near the center. Said gear may be integrally secured upon the gear shaft 4, or in any suitable manner to afford a rigid attachment therewith.

Journaled in the frame is a driving shaft 15, parallel with the gear shaft 4, and having rigidly secured on its outer end a disk or wheel 16, having set in the face thereof a pin 17, which affords the male member for the Geneva gear and acts to rotate said gear by engaging in the successive slots thereof. On the inner end of said driving shaft 15, is a female coupling member 18, adapted to afford engagement for the driving shaft of the motor or source of power from whence the machine is operated. Also rigidly secured on the driving shaft and desirably integral with the disk 16, is a cam 19, which, as shown, comprises a wheel or disk concentric with the shaft and circular except for a short distance on its periphery where it is cut away to afford a relatively short flat surface, directly opposite the pin 17.

Pivoted on a stud shaft 20, set in the frame is a stop lever having a relatively long hub or fulcrum through which said stud shaft extends. Said lever 22, extends conveniently horizontally over the Geneva gear and is provided with a flat face adapted to bear on the flat peripheral faces of the gear, as shown in Fig. 6, to afford a positive bearing for the entire length thereof. An adjusting lever 23, is adjustably secured and rigidly clamped or engaged on the hub 21, of the stop lever and extends at substantially a right angle with the stop lever into position to be engaged at all times by the cam 19. As shown also, a spring 24, is secured on the frame and bears against said adjusting arm or lever 23, to hold the same at all times yieldingly against said cam. Any suitable connection may be used in securing the adjusting arm or lever 23, on the stop lever 22, to enable said adjusting arm to be fitted into positive bearing against the cam when the stop lever is firmly engaged against the Geneva gear, as shown in Fig. 2, and in the construction illustrated in Figs.

3 and 5, the inner end of said lever or arm is slotted longitudinally and apertured to fit over said hub and a set screw 25, is engaged transversely the slot and when set up acts to rigidly engage said adjusting arm with the hub.

The construction illustrated in Figs. 6 and 7 (which, in some respects may be preferable) shows the adjusting arm and stop lever as integrally constructed. The adjusting arm 26, in this instance is longitudinally slotted from its outer end to afford a relatively thin and resilient portion 27, which may be adjusted radially to the cam by means of a set screw 28, which is seated in the broader outer portion 29, of said arm and bears against the thinner portion 27, and permits said thinner or resilient portion to be sprung inwardly to adapt the same to the cam and, as shown, a set screw 30, is provided to rigidly secure the set screw 28, in adjusted position.

The operation is as follows: As the driving shaft 15, is rotated the pin 17, engages in one of the diagonal slots in the Geneva gear and just at the moment of engaging therein the flattened side of the cam reaches a position (as shown in Fig. 2) at which the flattened side thereof is turning onto the adjusting arm 23. The spring 24, causes said adjusting arm to follow the cam, thus throwing the stop lever out of engagement with the Geneva gear and permitting the Geneva gear to turn free therefrom. Continued rotation of the driving shaft (as illustrated in Fig. 3) causes the Geneva gear to turn 90 degrees, and, as the flattened surface of the cam is leaving the adjusting arm the stop lever swings back to instantly engage the flat face of the Geneva gear at the moment the pin clears the slot.

To facilitate the instantaneous reengagement of the stop lever with the gear, the adjusting arm is cut away on its upper surface in the construction shown in Figs. 2, 3 and 5. In the construction shown in Figs. 6 and 7, the utmost accuracy of adjustment of the stop lever and adjusting arm relatively the cam 19, is possible, thus obviating the long and tedious labor of accurately fitting Geneva gears, as heretofore constructed.

I am, of course, aware that the particular form and construction of the automatic stop for the Geneva gear may assume many other forms. I therefore purpose claiming broadly any automatically operating mechanical means independent from the male element for instantly stopping, accurately positioning, and, at the proper moment, instantaneously releasing a Geneva gear.

I claim as my invention:

1. The combination with a Geneva gear having flattened peripheral sides, of a male element for actuating said gear, and inde-

pendent mechanism wholly disconnected from the gear and said male element and adapted to positively stop and position the gear when released by the male element and instantaneously release the gear when engaged by the male element.

2. In a device of the class described a substantially square Geneva gear having diagonal slots therein, a driving shaft, a male element carried by the shaft to rotate the gear and automatic mechanical means independent from said male element and gear and acting to accurately position the gear for its period of rest.

3. The combination with a Geneva gear having a plurality of flat sides of radial slots in said gear, a driving shaft, a male element carried on said shaft and adapted to successively engage in the slots to rotate the gear and a mechanically operated stop mechanism unconnected with the male element and acting synchronously therewith to engage and to release said gear.

4. A Geneva gear embracing a combination with a slotted gear and its male element for actuating the same, of a lever stop mechanism acting to position and hold the gear between movements.

5. A Geneva gear having flat faces and slots between said flat faces, a member for engaging in the slots to rotate the gear and a lever adapted to successively engage the flat faces to accurately stop and position the gear.

6. A Geneva gear having flat faces and slots between said flat faces, a member for engaging in the slots to rotate the gear, a lever adapted to successively engage the flat faces to accurately stop and position the gear, and a spring for operating the lever to clear the gear when the member rotates the same.

7. In a device of the class described a Geneva gear having flat faces and radial slots, a member for intermittently advancing the gear and oscillating means for successively engaging the flat faces to accurately stop the gear.

8. In a device of the class described a Geneva gear having flat faces and radial slots, a member for intermittently advancing the gear, oscillating means for successively engaging the flat faces to accurately stop the gear, a coacting cam and a spring for oscillating said means to clear the gear when it advances.

9. The combination with a Geneva gear and actuating member of a stop mechanism independent thereof for engaging and releasing the gear between each actuation.

10. The combination with a Geneva gear and rotatable element for actuating the same of means independent of the actuating element for locking the Geneva gear from movement between actuations.

11. In a device of the class described, a Geneva gear having flat faces, a rotatable element for actuating the same, an oscillating stop mechanism for engaging the flat faces and means rotatable with the actuating element for timing the operation of the oscillating stop mechanism.

12. In a device of the class described, a Geneva gear, an actuating element, mechanism for stopping the Geneva gear after each actuation and coacting spring and cam for operating the mechanism.

13. The combination with a Geneva gear and actuating mechanism of an oscillating mechanism for stopping the Geneva gear independently of the actuating mechanism.

14. The combination with a Geneva gear and actuating element of automatically operating means independent of the actuating element for instantly stopping and accurately positioning the Geneva gear.

15. The combination with a Geneva gear and male actuating element of automatically operating mechanism independent of the male actuating element for stopping and accurately positioning, and instantly releasing the Geneva gear.

16. In a device of the class described, a Geneva gear, a rotatable actuating element, a cam rotatable therewith, a member adapted to stop the Geneva gear, and a member adjustably connected therewith and bearing against the cam.

17. In a device of the class described, a Geneva gear, a rotatable actuating element, a cam rotatable therewith, a member adapt-

ed to stop the Geneva gear, a member adjustably connected therewith and bearing against the cam, and a spring for holding the member against the cam thereby actuating the stop element to stop and release the Geneva gear.

18. In a device of the class described, a Geneva gear, a member for stopping and holding the same and then releasing the Geneva gear and mechanism for actuating the Geneva gear and actuating said member.

19. In a device of the class described, a Geneva gear having flat faces and slots, a rotatable actuating element provided with a pin for engaging in the slots and rotating the gear, a member for bearing against the flat faces of the gear, a member connected therewith, a cam against which the last named member bears, and a spring for holding said member against the cam.

20. The combination with a Geneva gear and actuating element of mechanism other than said element for automatically controlling the operation of said Geneva gear.

21. The combination with a Geneva gear and male actuating member and mechanism controlled by the actuating member for stopping, positioning and releasing the Geneva gear.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JOHN B. REIMUND.

Witnesses:

JOSEPH W. KYLE,
CHARLES W. HILLS.