Feb. 5, 1952 H. DA COSTA 2,584,558

INTERMITTENT DRIVE MECHANISM

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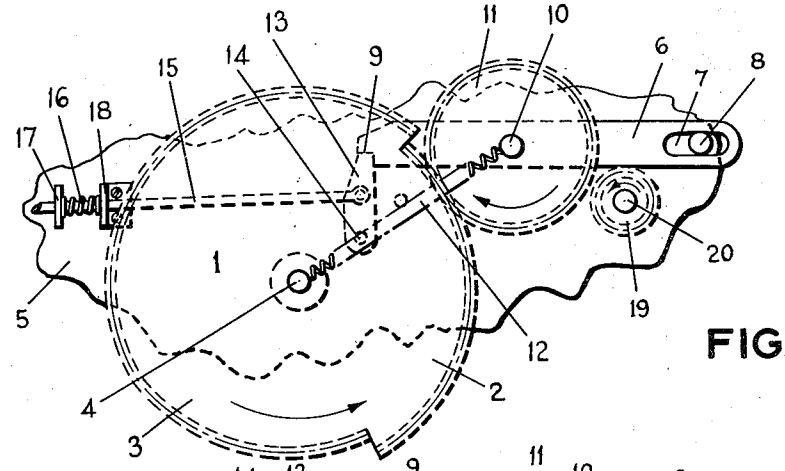


FIG. 1.

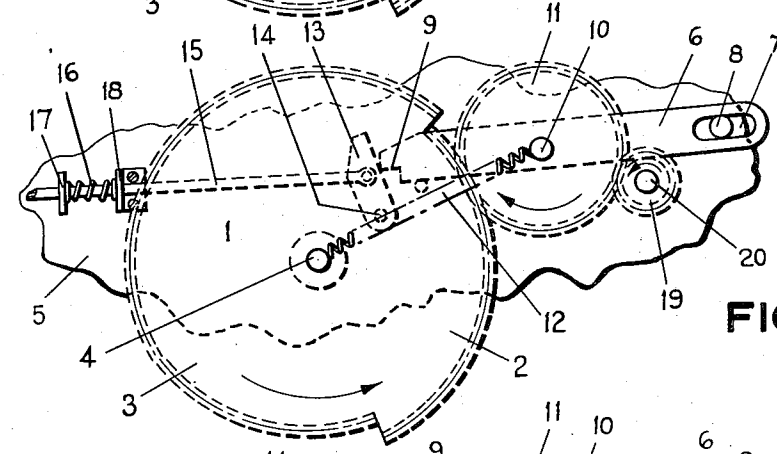


FIG. 2.

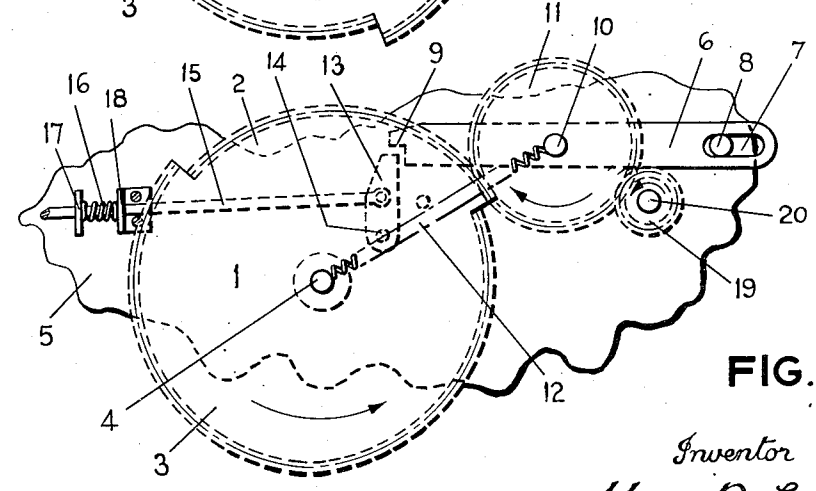


FIG. 3.

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INTERMITTENT DRIVE MECHANISM

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3 Claims. (Cl. 74—437)

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This invention relates to intermittent drive mechanism.

An object of the invention is to provide a simple and efficient mechanism which can be manufactured very cheaply for use in cases where an intermittent drive is required to perform a mechanical operation.

According to this invention a cam gear is intermittently connected to a driving gear through an idle pinion which is supported upon a displaceable member, and a trip mechanism is operatively connected to said member for holding the idle pinion out of mesh with the driving gear when the cam gear has completed an evolution.

Preferably, a fixed abutment is provided for limiting the movement of the idle gear wheel in one direction to avoid any excessive friction or interlocking of said gear between the cam gear and driven gear.

If desired, the movable member may be spring loaded to enable the cam gear and idle pinion to remain in constant mesh.

The cam gear may have one or more lobes; the actual number will depend upon the period required for the intermittent drive and the nature of the mechanical operation.

The invention will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a plan view showing the idle pinion disengaged from the driving gear.

Fig. 2 is a plan showing idle pinion released into engagement with the driving gear, and

Fig. 3 is a similar view showing the position of the pawl and liner when the idle pulley reaches the end of a lobe.

Referring to the drawings:

A toothed wheel denoted generally by numeral 1 is formed into two lobes 2 and 3 of different lengths. Said toothed wheel 1 is mounted upon a shaft 4 which in turn is supported upon a base plate 5.

A lever 6 has a slot 7 at one end to receive a pin 8 fixed to the base plate 5. The opposite end of said lever 6 is formed with a tooth or step 9 for the purpose hereinafter set forth. A pin 10 fixed at an intermediate position on one face of the lever 6 rotatably supports a pinion 11. Said pinion 11 is held in constant mesh with the lobated toothed wheel 1 by means of a helical spring 12 connected at one end to the shaft 4 and at the opposite end to pin 10 integral with lever 6. A trip mechanism consisting of a pawl 13 pivotally supported at 14 to base plate 5 is connected to a rod 15 which is moved in one direction in opposition to a helical spring 16 on rod 15 between an abutment 17 fixed to the rod 15 and a bearing support 18 fixed to the base plate

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5. The free end of the pawl 13 engages with the toothed end 9 of lever 6 as shown in Fig. 1.

A driving pinion 19 fixed to a driving shaft 20 is so arranged that when the pawl 13 is moved out of engagement with the toothed end 9 of lever 6 the pinion 11 rotates on the lobated gear wheel 1 into engagement with the driving pinion 19 as shown in Fig. 2, under the influence of the tensioned helical spring 12. Simultaneously, the lever 6 also moves; the amount of movement of lever 6 is arrested by means of a stop fixed to the base plate 5 against which said lever 6 abuts.

In operation, the normal position of the mechanism is depicted in Fig. 1 in which the pinion 11 is in the idle position and situated at the commencement of one lobe and the trip mechanism is engaged. Assuming the driving pinion is rotating in a clockwise direction, and it is desired to transmit drive over the lobe 2 of wheel 1, the rod 15 is pulled to the left either manually or automatically to release the pawl 13 from tooth 9, when the tension of spring 12 causes pinion 11 to ride on the lobe 2 into engagement with the driving pinion 19 as the lever 6 is free to move about the pin and slot connection. A drive in an anti-clockwise direction is transmitted to the toothed wheel until the pinion 11 falls off the lobe 2 on to lobe 3 when the pinion 11 is disengaged from the driving gear 19 by reason of the fact that as the idle pinion 11 approaches the end of the lobe 2 the tip of lever 6 is raised above the end of the pawl 13 whereby the tension of spring 16 causes the pawl 13 to drop into the toothed section 9 of lever 6 thus causing disengagement of the idle pinion 11 from driving gear 19, when it is in position for the next cycle; in this instant the amount of rotation imparted to lobe 3 will be greater than lobe 2.

From the foregoing description it will be readily appreciated how an intermittent drive can be transmitted to the shaft 4.

I claim:

1. In an intermittent drive mechanism, a base plate, a cam gear formed with at least two lobes rotatably mounted upon said base plate, a driving pinion carried by the base plate in off-set relation to said cam gear, a spring loaded displaceable trip lever mounted on the base plate, a jockey pinion carried by said lever in constant engagement with the cam gear, and a latch member fitted to the base plate operatively connected to the trip lever whereby said jockey pinion engages with the driving pinion when said latch member is disengaged from the trip lever.

2. In an intermittent drive mechanism, a base plate, a cam gear formed with at least two lobes rotatably mounted upon said base plate, a driving

pinion carried by the base plate in off-set relation to said cam gear, a spring loaded displaceable trip lever mounted on the base plate, a jockey pinion carried by said lever in constant engagement with the cam gear, a latch member fitted to the base plate operatively connected to the trip lever whereby said jockey pinion engages with the driving pinion when said latch member is disengaged from the trip lever, and a stop means fixed to the base plate limiting the movement of said trip lever in one direction in opposition to its spring loading to prevent excessive friction of said jockey pinion with the cam gear and driving pinion respectively.

3. In an intermittent drive mechanism, a base plate, a cam gear formed with at least two lobes rotatably mounted upon said base plate, a driving pinion carried by the base in off-set relation to said cam gear, a spring loaded displaceable lever mounted on the base plate, a jockey pinion carried thereby, said jockey pinion in constant mesh with the cam gear, said latch member has a toothed element, a pawl pivoted to the base engaging with the toothed element in said displaceable lever whereby the jockey pinion is held out of engagement with the driving pinion, a control member connected to the pawl for disengaging same from the displaceable lever thereby permitting the jockey pinion to engage with the driving pinion and a stop pin fixed to the base plate for limiting the movement of the displaceable lever when released to prevent interlocking of the gears.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,142,051	O'Connor	June 8, 1915
1,209,837	Harris	Dec. 26, 1916
2,143,236	Birk	Jan. 10, 1939
2,239,313	Beschkine	Apr. 22, 1941
2,253,270	Golber	Aug. 19, 1941