

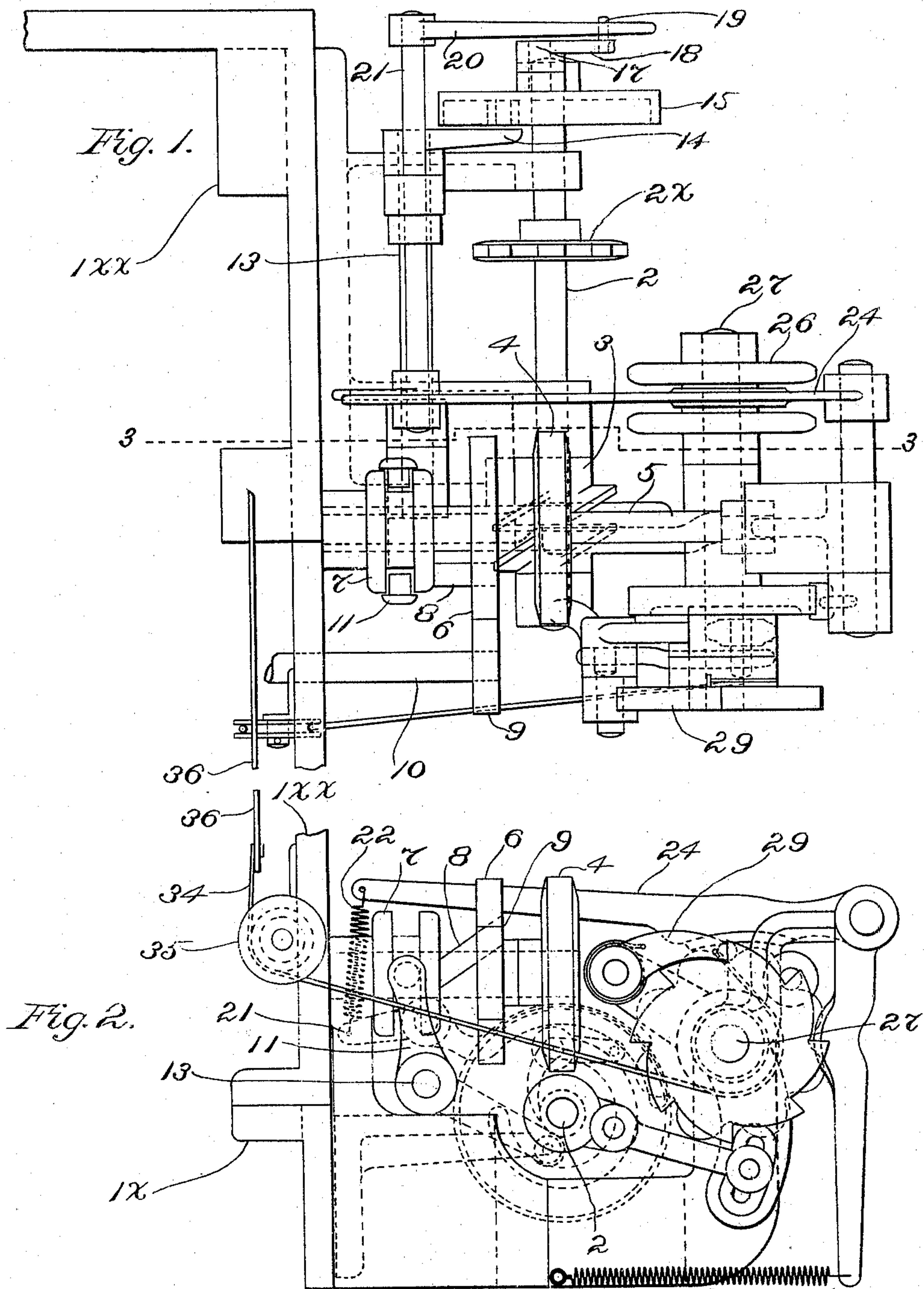
(No Model.)

2 Sheets—Sheet 1.

A. R. PATTEN.  
PATTERN MECHANISM FOR LOOMS.

No. 584,747.

Patented June 15, 1897.



Witnesses:  
Oscar F. Will  
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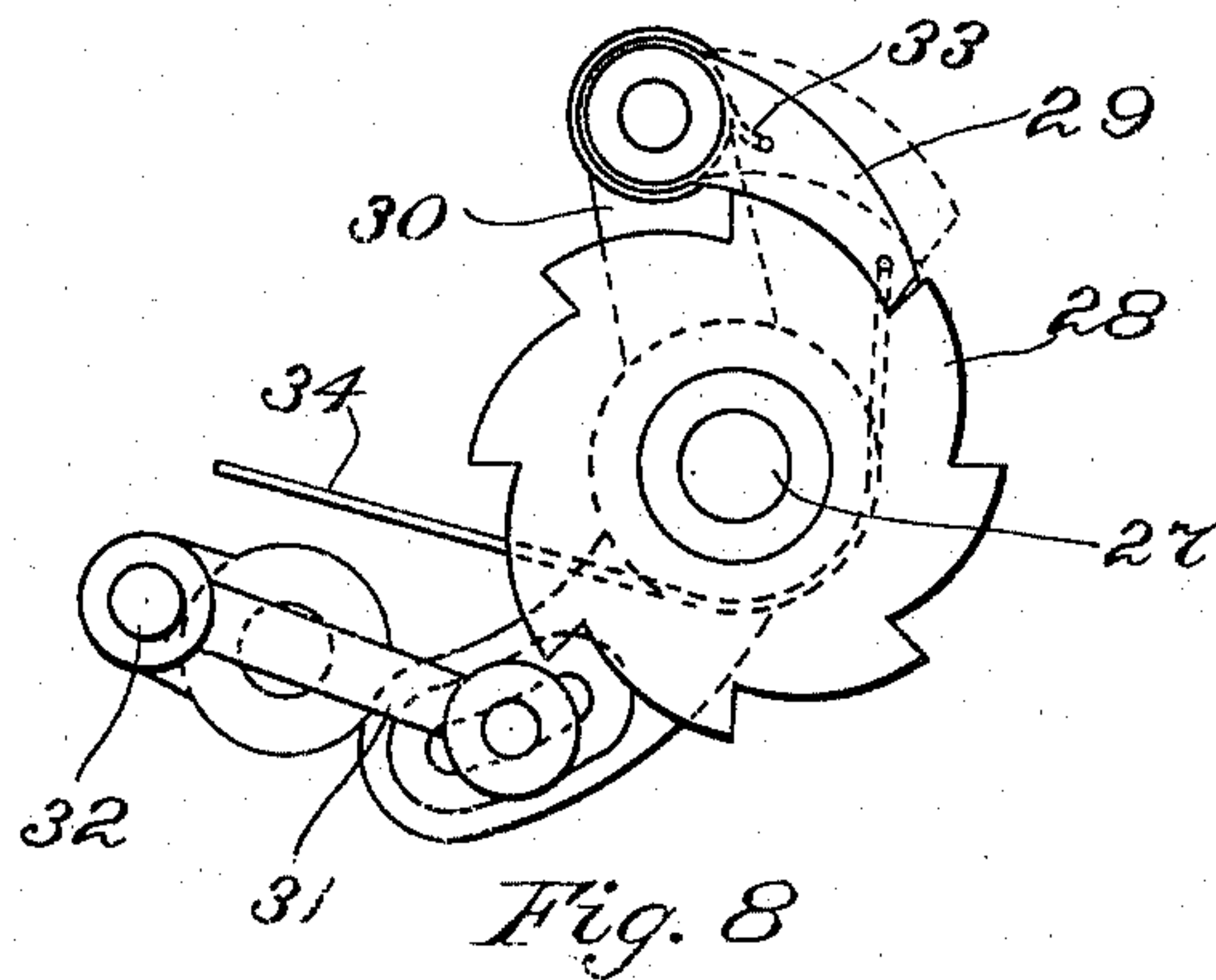
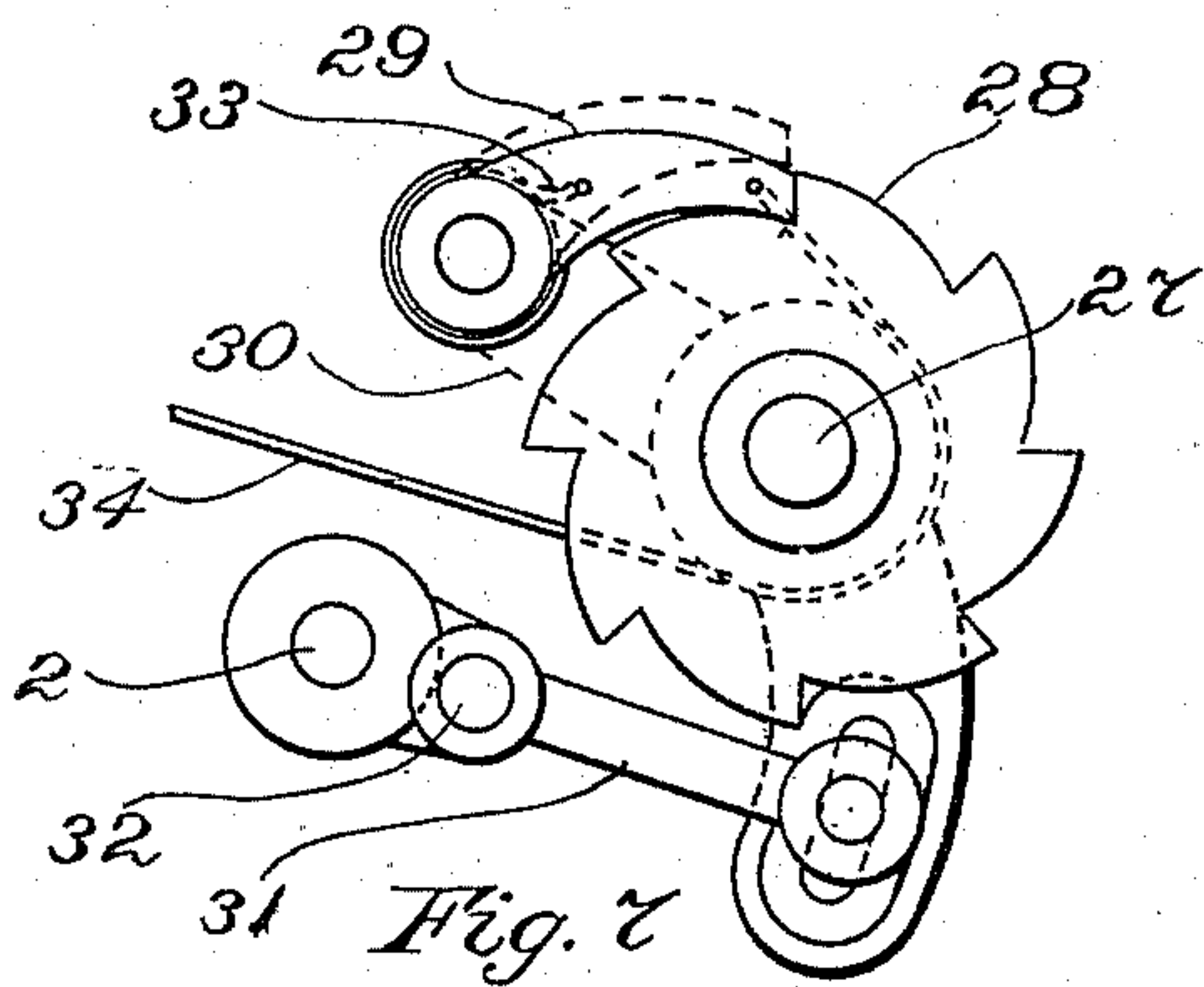
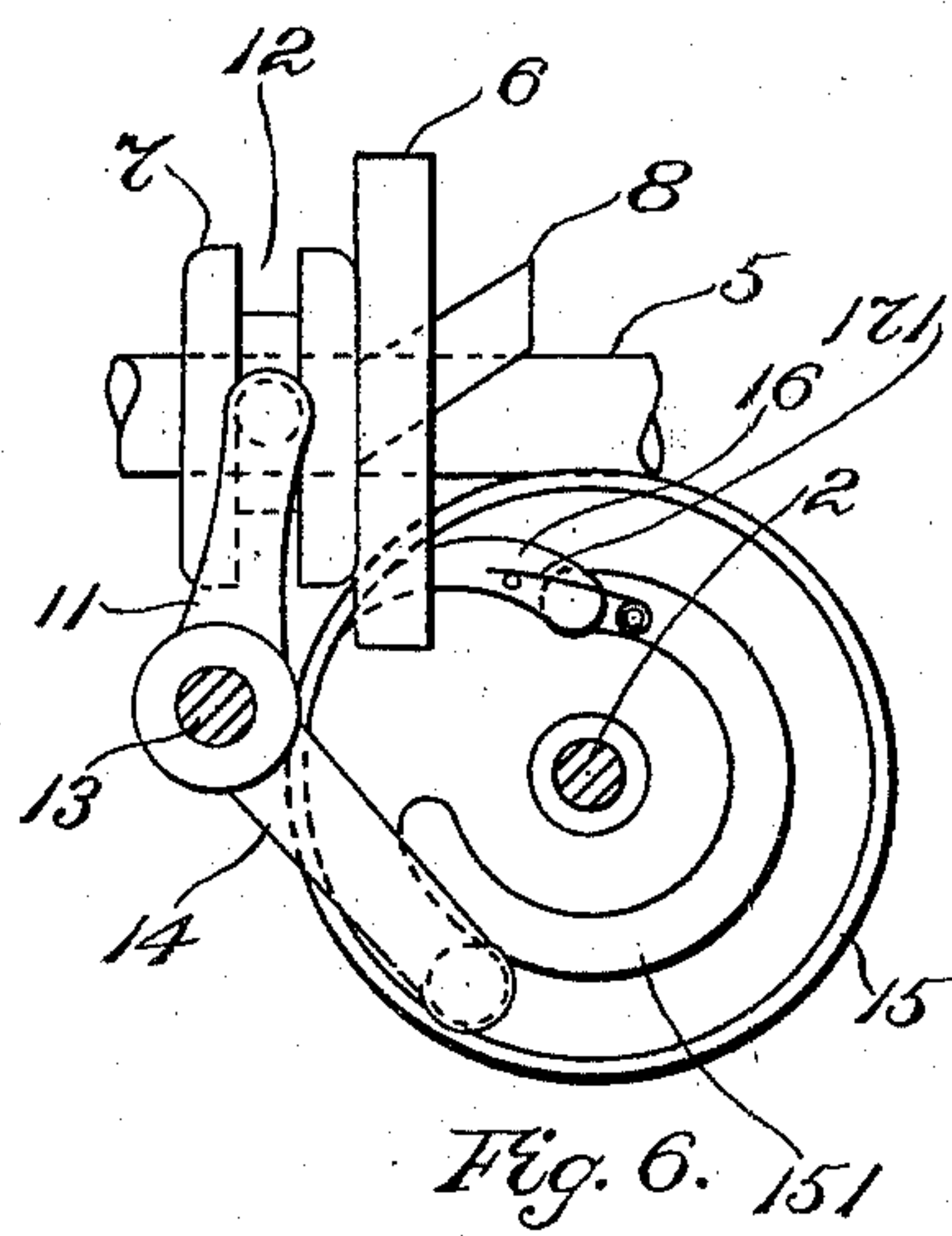
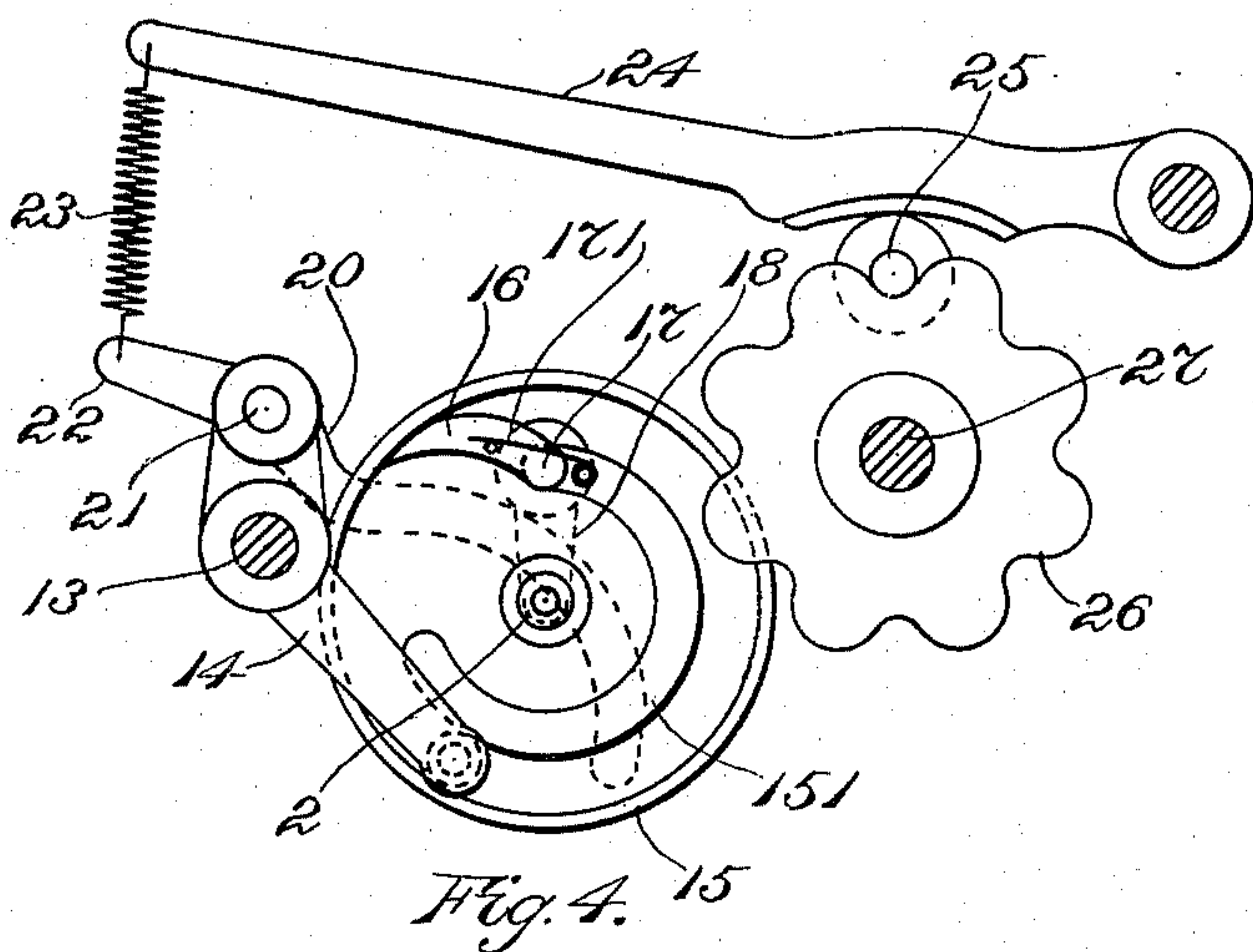
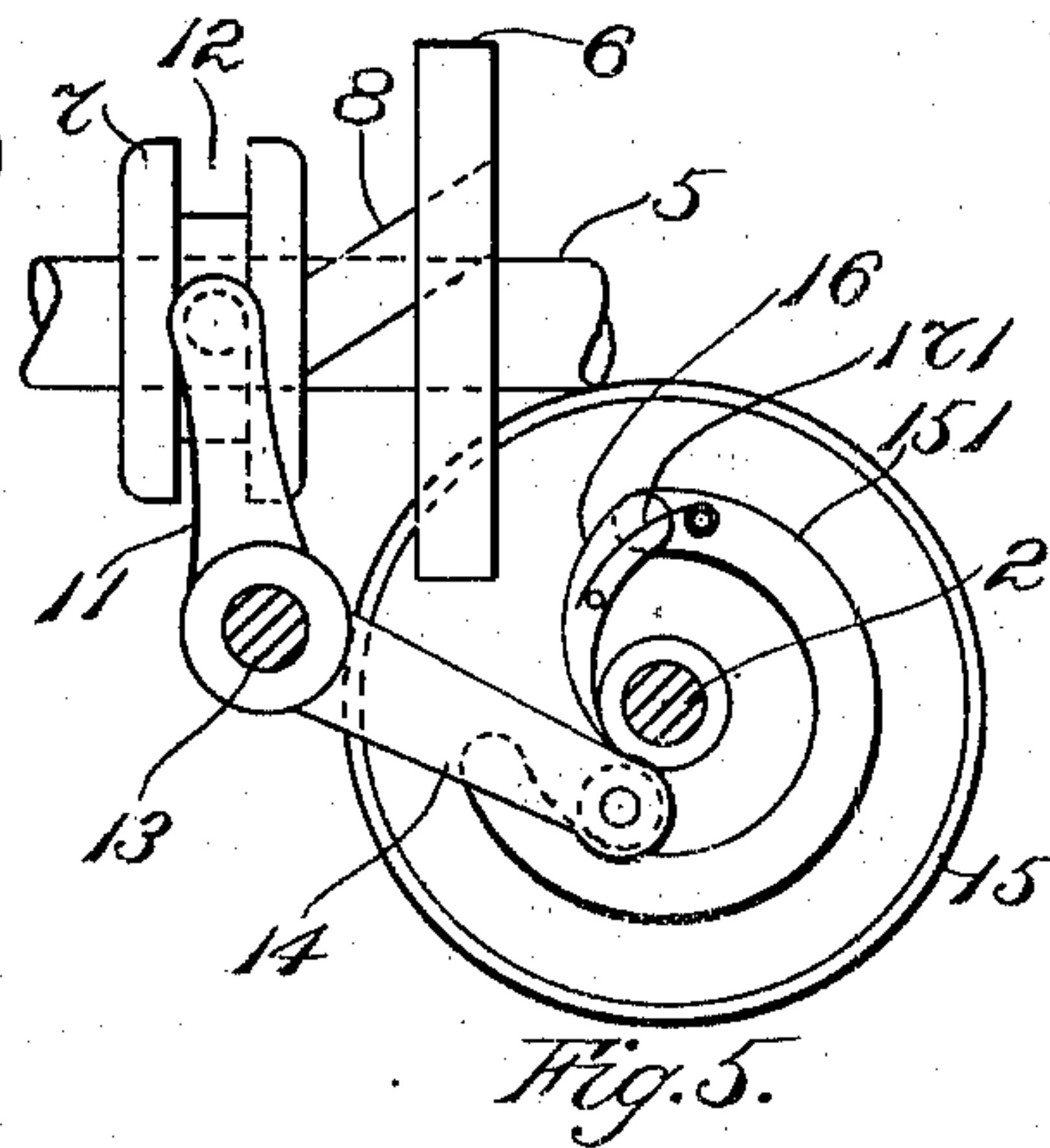
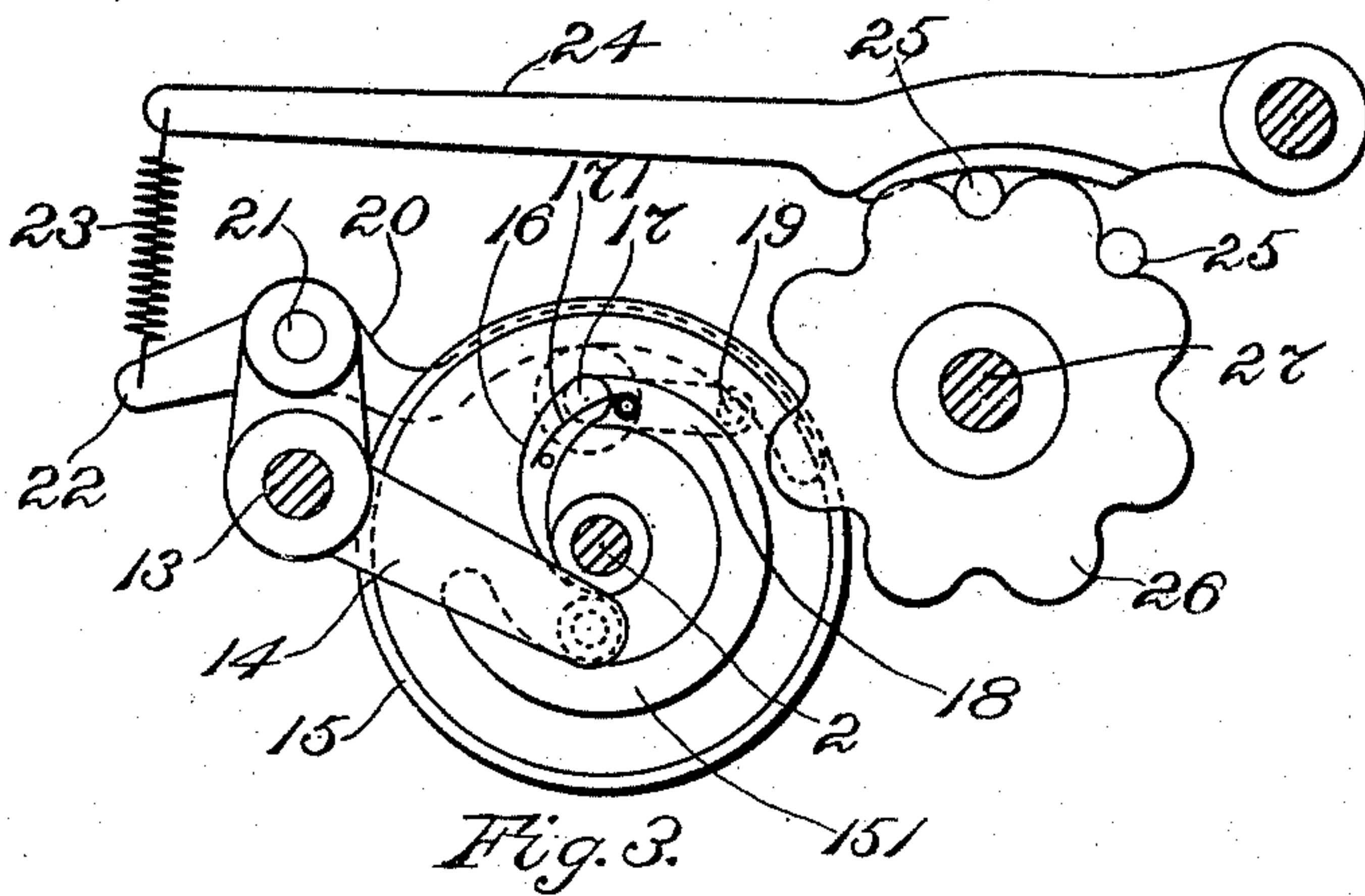
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2 Sheets—Sheet 2.

A. R. PATTEN.  
PATTERN MECHANISM FOR LOOMS.

No. 584,747.

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Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## PATTERN MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 584,747, dated June 15, 1897.

Application filed March 30, 1897. Serial No. 629,962. (No model.)

*To all whom it may concern:*

Be it known that I, ALONZO R. PATTEN, a subject of the Queen of Great Britain, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pattern Mechanisms for Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has for its object to provide improved devices for application to the pattern mechanism which is employed in looms for weaving, more especially to the pattern mechanism by means of which the shedding of the warp-threads is controlled.

The invention consists in devices which are capable of being applied in the form of an attachment to dobbies and other varieties of shedding mechanism, and whereby the use of pattern-chains having the successive lines of indicators of two different patterns or weaves alternately disposed upon the bars thereof is facilitated.

One special aim of the invention has been to provide an attachment capable of being applied to an ordinary dobby and used in connection with the working parts of the latter without necessitating any alteration or change in the interior working parts of the dobby.

The invention will be described first with reference to the accompanying drawings, in which latter I have illustrated the best embodiment thereof which I have yet contrived, and afterward the distinguishing characteristics thereof will be particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1 of the drawings is a view in plan, illustrating my invention and the manner of combining the same with a dobby. Fig. 2 is a view in front elevation of the parts and features which are illustrated in Fig. 1. Figs. 3 and 4 are views of certain of the working parts which are located above the dotted line 3 3 in Fig. 1, showing the said parts in different positions. Figs. 5 and 6 are similar views of the transmitting-gear 6 and certain parts which are utilized in effecting an angular shift of the said gear. Figs. 7 and 8 are similar views of certain of the actuating devices for the master-pattern.

Having reference to the accompanying

drawings, 1 designates the framework of my attachment.

1<sup>x</sup> designates the usual bracket on the loom side on which the dobby-frame is supported. As shown, framework 1 is attached to the said bracket 1<sup>x</sup>.

1<sup>xx</sup> designates part of a dobby-frame mounted on bracket 1<sup>x</sup> and shown only in Fig. 2.

2 is a rotating shaft which I mount in bearings in the framework 1 of the attachment.

2<sup>x</sup> is a sprocket-wheel fast on shaft 2 and driven by a sprocket-chain (not shown) that is actuated in any suitable manner not necessary to be presented.

3 is a worm fast on the said shaft 2.

4 is a worm-gear that is engaged and rotated by the said worm 3.

5 is a shaft on which the worm-gear 4 is mounted.

6 is a spur-gear that is fitted loosely on the shaft 5, but is caused to rotate in unison therewith by the clutch-hub next to be mentioned.

7 is a clutch-hub that is splined on the shaft 5, it having a laterally-projecting tooth 8 passing through a hole in the spur-gear 6, which hole is shaped properly for the reception of the said tooth.

9 is a spur-pinion that is engaged and driven by the spur-gear 6.

10 is a shaft on which the spur-pinion 9 is mounted.

Through the agency of the connections which have been described shaft 10 is driven from the shaft 2. The shaft 10 is the shaft of the usual cylinder of the dobby for the pattern-chain.

The clutch-hub 7 and its tooth 8 act in one respect to couple the spur-gear 6 to the shaft 5, so as to cause the said gear to rotate in unison with the said shaft. The said tooth 8 is inclined or obliquely placed, as shown in Figs. 5 and 6, and it fits an oblique or inclined hole made through the spur-gear 6, as shown in the said figures. In other words, one of said parts has a cam-shaped portion engaging with the other. The result of this is that when the clutch-hub 7 is moved from the position which it occupies in Fig. 5 into that which it occupies in Fig. 6, or vice versa, an angular movement is communicated to the said spur-gear 6 relatively to the shaft 5—that is to say, the said spur-gear is caused



to rotate partially upon the said shaft 5. Should the shaft 5 happen to be standing still at the time of this lateral movement of the clutch-hub taking place, then it would follow  
 5 that a slight movement of partial rotation in one direction or the other, this depending on the direction of the lateral movement that is given to the clutch-hub, would be transmitted to the shaft 10. Should the shaft 5 happen  
 10 to be rotating at the time when the clutch-hub is moved laterally, then during the continuance of the lateral movement of the clutch-hub either a slight acceleration or a slight retardation in the transmitted rotation  
 15 of the shaft will temporarily occur. This will produce a variation in the extent of movement of shaft 10 when next advanced.

For the purpose of producing automatically at the required times in the operation of a  
 20 loom the lateral shift of the clutch-hub the following devices are employed: 11 is a clutch-fork, its arm having pins which enter the groove 12 of the clutch-hub. This fork is mounted upon a rock-shaft 13, the latter carrying an arm 14, provided with a roller that  
 25 enters and plays in the groove of a cam 15. The said rock-shaft, with its arm and clutch-fork, constitutes a shifter for the clutch-hub. The said cam has outer and inner paths for  
 30 the said roller, which paths are separated by the rib 151, at one end of which latter is the pivotally-mounted switch 16. This switch, in the revolution of the cam, serves to divert the roller on the arm 14 into either the outer  
 35 or the inner path of the cam, and thereby moves said arm 14, the rock-shaft 13, and the fork 11 in one direction or the other, according as it is required to shift the clutch-hub 7.

For the purpose of operating automatically the switch 16 the following devices are employed: 17 is a pin or shaft passing through the cam 15 and having the switch 16 mounted on one end thereof. 17' is a spring which  
 45 acts to hold switch 16 normally in the inner position in which it is represented in Fig. 3. 18 is an arm that is secured on the other end of the said pin or shaft. 19 is a pin or projection that is carried by the said arm 18. 20  
 50 is a curved arm extending in position to engage with the pin 19 as the cam rotates. 21 is a rock-shaft on which the said arm 20 is mounted. 22 is a short arm that is fast on the said rock-shaft 21. 23 is an elastic or  
 55 yielding connection constituted by a spiral spring. 24 is a pattern-finger to which one end of the said connection 23 is attached, the other end thereof being attached to the arm 22. 25 are pattern-indicators which act upon  
 60 the pattern-finger 24, and 26 is a pattern drum or cylinder around which passes the master-pattern chain carrying the said pattern-indicators 25. 27 is the shaft on which the said pattern-cylinder is mounted. 28 is a ratchet-wheel that is fast on the said shaft 27. 29 is  
 65 a pawl to engage and actuate the said ratchet-wheel 28. 30 is a pawl-carrying lever. 31 is

a rod or link having one end thereof joined to the said pawl-carrying lever. 32 is a crank  
 70 fast on the shaft 2 and having the other end of the said rod or link 31 connected therewith. 33 is a spring which is connected with the pawl-carrying lever 30 and with the pawl 29 and which acts upon the said pawl in a  
 75 manner to hold it normally out of engagement with the teeth of the ratchet-wheel. 34 is a cord, strap, or other flexible connector having one end thereof connected to the pawl 29, the said connector passing around the hub  
 80 of the ratchet-wheel and also around a sheave 35. 36 is a movable part with which the other end of the said connector is connected. In practice this movable part is one of the usual  
 85 pattern-fingers which are actuated by the indicators of the main-pattern chain, the said main-pattern chain passing around the chain-cylinder on the shaft 10.

Normally the spring 33 holds the pawl out of engagement with the teeth of the ratchet-wheel 28 and no movement is communicated  
 90 to the shaft 27, pattern-cylinder 26, and master-pattern chain. Consequently for the time being the pattern-finger 24 and the connected parts to and including the arm 20 remain in the position which is given thereto by the indicator 25, which is in contact with the pattern-finger 24. Should a low indicator be in  
 95 position to act on the pattern-finger 24, the arm 20 will be raised, as in Fig. 3, and the switch 16 will be permitted to pass inwardly toward the center of the cam 15, so that the roller on the arm 14 will be caused to travel in the outer path of the said cam, which will tend to shift the clutch-hub 7 to the right in the drawing and hold it at the right, as in  
 100 Fig. 6.

Should a high indicator be in position to act upon the pattern-finger, as in Fig. 4, then the curved arm 20 will be held in position to carry the pin 19 and arm 18 inwardly toward  
 110 the center of the cam, thereby swinging the switch 16 outwardly and causing the roller on the arm 14 to follow the inner path of the cam, which will operate to move the clutch-hub 7 to the left in the drawing, as in Fig. 5. At this time it is more or less of a common  
 115 practice to apply the successive lines of indicators pertaining to two different weaves or patterns upon the alternate bars of a pattern-chain. For example, it is common to place the successive lines of indicators pertaining to the body-weave of a towel, handkerchief, or the like upon the odd-numbered bars of the pattern-chain and the successive  
 120 lines of indicators pertaining to the border thereof upon the even-numbered bars of the pattern-chain. In the course of the working of the loom so long as the body-weave is being produced the pattern-chain is fed or advanced to the extent of two bars thereof at a  
 125 time, so as to present the bars containing indicators pertaining to the body-weave in proper succession to the devices in the dobby which are controlled by such indicators.



During the weaving of the border the bars carrying the indicators pertaining to the border are presented in regular succession to the said devices. This necessitates the employment of means whereby during the regular working of the pattern mechanism the pattern-chain shall be fed forward two bars at a time, so long as no change from body-weave to border-weave, or vice versa, is desired to occur, and also whereby when the change should occur an alteration in the extent of feed of the pattern-chain is made to take place, so that at the next movement of the said pattern-chain a bar pertaining to the other weave shall be presented in position for action, and thereafter only the bars of such weave until the time when the next change is due.

In the case of my present invention the gearing intermediate the rotating shaft 2 and the shaft 10 of the pattern-chain barrel is such that at each movement of the said shaft 10 it will be moved the distance required for advancing the pattern-chain two bars. When it is required to shift from the bars of one weave or pattern to the bars of the other weave or pattern, a movement of the clutch-hub 7 from the position in which it is shown in Fig. 5 to the position in which it is shown in Fig. 6, or vice versa, is caused to take place through the action of the master-pattern and devices under the control thereof. The lateral shift of the said clutch-hub effects, as hereinbefore stated, an angular shift of the gear 6 upon the shaft 5. This angular shift is sufficient in itself to impart a movement of rotation to the shaft 10, which will produce the change from one bar to the next upon the pattern-chain. Thus when it is required to change from the bars pertaining to one pattern or weave to the bars pertaining to the other pattern or weave the said clutch-hub is moved longitudinally of the shaft 5, and the angular movement of the spur-gear 6 relatively to the said shaft 5 which thereby is occasioned will effect the necessary change in the presentation of the pattern-bars to the indicator-fingers or other parts which are controlled by the indicators on the said pattern-bars.

It has been pointed out that in the normal working of the devices each advance of the shaft of the pattern-chain barrel is sufficient to feed forward two bars of the pattern-chain. When the shift of the clutch-hub 7 takes place, the resulting angular shift of the spur-gear 6 either adds to this movement of the shaft 10 a movement sufficient to advance the pattern-chain to the next bar (it pertaining to the other pattern) or it reduces the extent of movement of the shaft 10 by the distance between two bars of the pattern-chain, thereby securing the change from the bars of one pattern or weave to the bars of the other pattern or weave by subtracting from the amount of movement given to the shaft 10. Whether the angular shift of the spur-gear 6 shall add

to or shall diminish the extent of movement of the shaft 10 of the pattern-chain barrel is determined by the direction in which the clutch-hub 7 is slid lengthwise of the shaft 5. When the said clutch-hub is slid in one direction, the extent of movement of the shaft 10 is increased, and when the said clutch-hub is slid in the other direction the extent of the said movement is decreased.

I claim as my invention—

1. The combination with the shaft 10 of a pattern-barrel, of the driving-gear therefor, the hub 7, one of such parts having the inclined cam portion engaging with the other, and means to move the said hub laterally to vary the extent of the movement of the shaft 10 when next advanced, substantially as described.

2. The combination with the shaft 10 of a pattern-barrel, of the driving-gear 6, the hub 7, one of such parts having the inclined cam portion engaging with the other, a shifter for said hub, the two-path cam to actuate said shifter and provided with a switch to divert the cam-follower from one path to the other, and pattern devices for actuating said switch, substantially as described.

3. The combination with the shaft 10 of a pattern-barrel, of the driving-gear 6, the hub 7, one of such parts having the inclined cam portion engaging with the other, the shifter for said hub, the two-path cam to actuate said shifter and provided with a switch to divert the cam-follower from one path to the other, a master-pattern, devices controlled thereby and serving to determine the position of said switch, an actuating pawl and ratchet for said master-pattern, an indicator-finger operated by indicators on the main-pattern chain, and connections whereby the engagement of said pawl with said ratchet is determined by said indicator-finger, substantially as described.

4. The combination with the shaft 10 of a pattern-barrel, of the driving-gear 6, the hub 7, one of such parts having the inclined cam portion engaging with the other, the shifter for the said hub, the two-path cam to actuate said shifter and provided with a switch to divert the cam-follower from one path to the other, a master-pattern, devices controlled thereby and serving to determine the position of said switch, the actuating pawl and ratchet for said master-pattern, a spring to hold said pawl out of engagement with said ratchet, an indicator-finger operated by indicators on the main-pattern chain, and connections between said indicator-finger and said pawl whereby to cause the latter to engage and actuate the ratchet, substantially as described.

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

ALONZO R. PATTEN.

Witnesses:

F. H. PEMBER,  
JOE MOSS.