

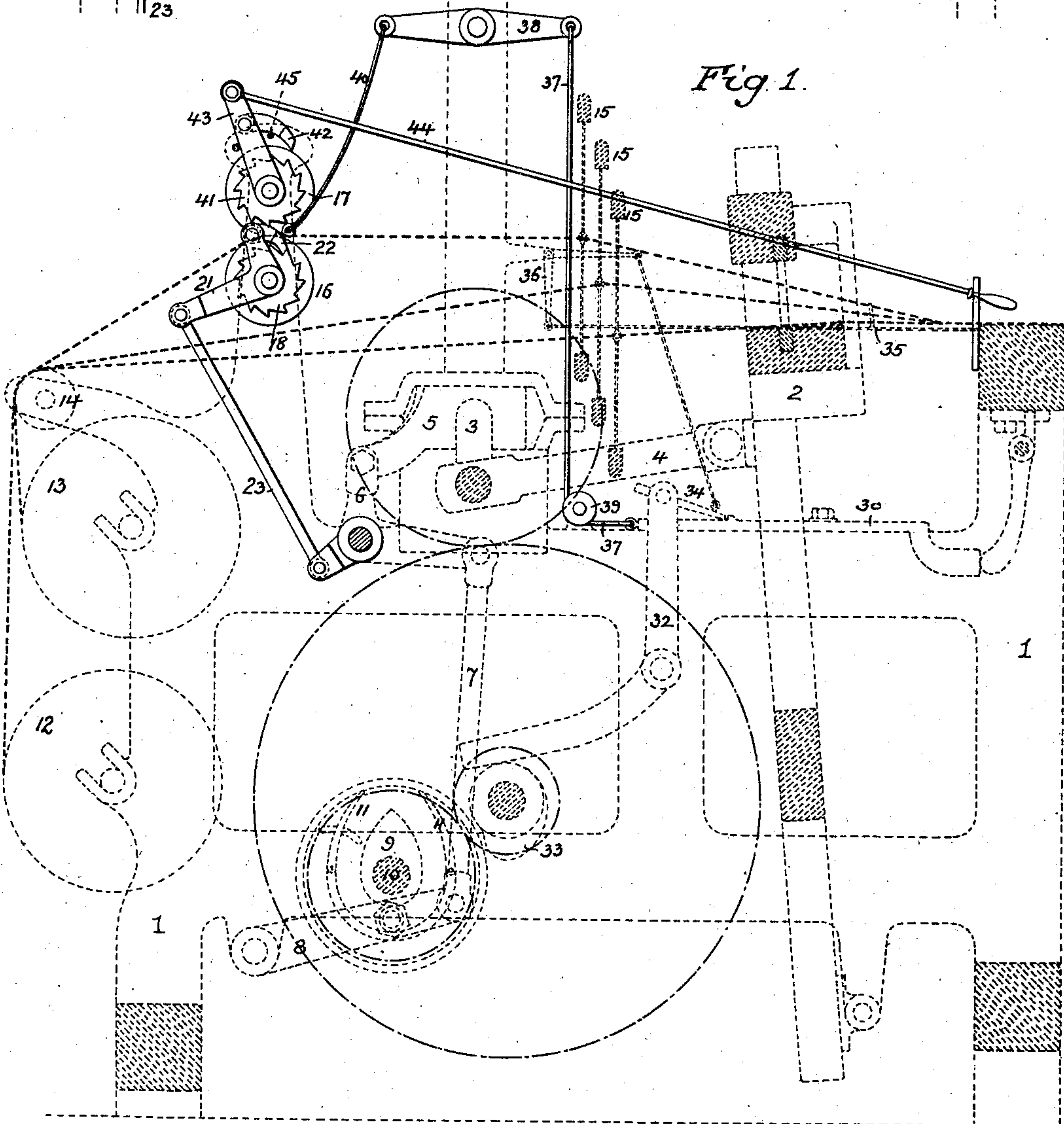
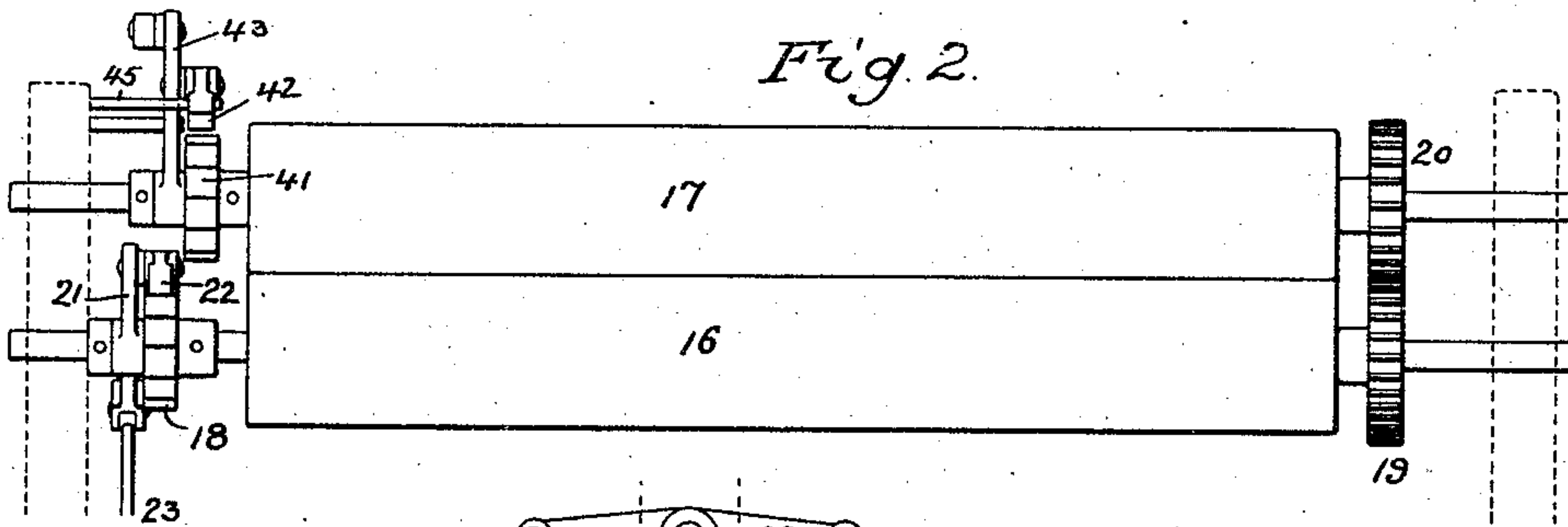
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J. H. CROWLEY.

TERRY LOOM.

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# UNITED STATES PATENT OFFICE.

JOHN H. CROWLEY, OF CHARLOTTE, NORTH CAROLINA.

## TERRY-LOOM.

SPECIFICATION forming part of Letters Patent No. 785,595, dated March 21, 1905.

Application filed January 20, 1904. Serial No. 189,900.

*To all whom it may concern:*

Be it known that I, JOHN H. CROWLEY, a citizen of the United States, residing in Charlotte, North Carolina, have invented certain  
5 Improvements in Terry-Looms, of which the following is a specification.

My invention relates to that class of terry-  
looms in which the lay has a differential beat—  
that is to say, a partial beat while a number  
10 of picks of ground weft-thread are being inserted and then a full beat, whereby these weft-threads are driven up against the web of cloth with the effect of looping the terry warp-  
15 threads which before extended between said web and the partially beaten-up weft-threads. In this class of looms the ground warp-threads are under heavier tension than the terry warp-threads in order that they will not be looped on the full beat of the lay, and much difficulty  
20 is experienced in properly regulating the tension upon the terry warp-threads so that the proper looping of the same on the full beat of the lay will be permitted, while the tendency of the terry-warp beam to overrun because of  
25 the sudden pull or jerk upon the terry warp-threads at such full beat will be prevented.

In order to overcome these objections, I provide the loom with a positive let-off for the terry warp-threads, this let-off being operative only at the time that the full beat of  
30 the lay is being effected. Hence a positive and definite amount of terry warp-threads can be delivered at each full beat of the lay, and terry-pile of a uniform character can be pro-  
35 duced, because of the uniform size of the loops of terry warp-threads which results from such positive let-off of the same.

My invention also comprises means for throwing the let-off for the terry warp-threads  
40 out of operation when the weft stop mechanism acts to stop the loom and means for taking up any slack in the terry warp-threads before the loom is again started.

In the accompanying drawings, Figure 1 is  
45 a longitudinal sectional view of sufficient of a terry-loom to illustrate my present invention, the ordinary mechanism of the loom being shown by dotted lines and those parts to which my invention relates being shown by full lines;

and Fig. 2 is a side elevation of certain parts 50 of said mechanism.

1 represents part of one of the fixed side frames of the loom, and 2 the swinging lay, which is vibrated by means of a crank 3 on the main shaft of the loom through the medium 55 of a connecting-rod 4.

The crank-shaft has its bearing at each end in a sliding box 5, suitably mounted on the fixed frame of the loom and connected with one arm of a bell-crank lever 6, the other arm 60 of which is connected by a link 7 to a lever 8, which is acted upon by a cam 9 on a shaft 10, the latter being driven at a lesser rate of speed than the crank-shaft, dependent upon the number of partial beats of the lay to be made be- 65 tween successive full beats. For instance, if there are to be two partial beats of the lay for every full beat the shaft will make three turns for every turn of the shaft 10, the cam 9 being so constructed that the crank-shaft boxes 70 5 will be projected to cause the full beat of the lay and retracted to cause the partial beats of the same. The cam 9 is also provided with adjustable switches 11, so that the crank-shaft boxes can, if desired, be held in a projected 75 position for any desired length of time—as, for instance, in weaving plain borders upon terry fabrics.

Any desired construction of terry-motion 80 may be used in place of that shown and described, which is selected only as an example.

The ground-warp beam of the loom is shown at 12 and the terry-warp beam at 13, the warp-threads from these beams passing over the roller 14, but being then separated, the ground 85 warp-threads extending directly to the heddles 15, but the terry warp-threads being directed from the roller 14 to a pair of rolls 16 and 17, which may be of any desired material and may have either smooth surfaces or sur- 90 faces which are roughened, ribbed, or corrugated, the only essential feature being that they shall have a firm and unyielding grip upon the terry warp-threads. The shaft or spindle of the lower roll 16 is provided with a 95 ratchet-wheel 18 and is preferably geared, by means of spur-wheels 19 and 20, to the shaft or spindle of the upper roll 17, so that both of



said rolls may be rotated in unison, although, if desired, only one roll may have positive movement imparted to it, the other roll being weighted or acted upon by suitable springs  
 5 so as to press the terry warp-threads firmly into contact with said positively-rotated roll.

Mounted so as to swing upon the shaft of the roll 16 is a lever 21, provided with a pawl 22, which engages with the ratchet-wheel 18  
 10 on said shaft, and said lever 21 is connected by a link 23 to an arm projecting from one of the bell-crank levers 6 or from the rock-shaft to which said levers are secured, so that forward movement of the crank-shaft boxes of  
 15 the loom will be attended by forward movement of the rolls 16 and 17, whereby on every full beat of the lay an amount of terry warp-threads will be delivered equal to that required to form the terry-loops, said terry  
 20 warp-threads being at other times properly held, so that the necessary let-off of said terry warp-threads will be effected without any care or attention on the part of the weaver. When the crank-shaft boxes are held in the project-  
 25 ed position for a considerable length of time—as, for instance, in weaving plain borders upon the terry fabric—there is no positive operation of the let-off rolls 16 and 17, but the latter are free to turn as the terry warp-  
 30 threads are drawn between them by the action of the ordinary take-up devices of the loom.

In order to prevent any delivery of terry warp-threads by the let-off devices when the loom is being stopped by the weft stop-mo-  
 35 tion, I connect the knock-off slide of said weft stop-motion to the pawl 22 in such manner that said pawl will be raised from engagement with the teeth of the ratchet-wheel 18, when said slide is moved so as to operate the knock-  
 40 off devices.

In Fig. 1 of the drawings, 30 represents the knock-off slide, 32 the lever for actuating the same, 33 the cam for vibrating said lever, 34 the pawl for engaging the slide, 35 the weft  
 45 stop-fork, and 36 the lever connected thereto and to the pawl 34, all of these parts operating in the usual manner. The knock-off slide 30 is joined by a cord, wire, or other flexible connection 37 to a lever 38, mounted on a suit-  
 50 able fixed bearing on the loom, said cord or wire 37 passing around a sheave or pulley 39 or being otherwise suitably guided. The lever 38 is joined by another flexible connection, 40, to the pawl 22, so that when the knock-off  
 55 slide is moved forwardly the pawl will be lifted and any further operation of the let-off rolls prevented until the parts have been again restored to their normal position. In order, however, to take up any slack which may  
 60 have been accidentally formed in the terry warp-threads in advance of the let-off rolls, the shaft of the upper roll 17 has a ratchet-wheel 41, which can be engaged by a pawl 42, hung to an arm 43, which is free to vibrate  
 65 on the roll-shaft and can be so vibrated by a

rod or wire 44, leading to the front of the loom, where it is easily accessible to the weaver. The pawl 42 is normally held out of engagement with the teeth of the ratchet-wheel 41 by engagement with a pin 45 or  
 70 other fixed stop on the loom, so that there is no interference with the movement of the roll 17 in letting off the terry warp-threads. By pulling upon the rod or wire 44, however, the arm 43 may be caused to swing forward, the  
 75 pawl 42 first dropping into engagement with a tooth of the ratchet-wheel 41 and then moving the same so as to turn the let-off rolls backward, it being understood that at this time the pawl 22 is held out of engagement  
 80 with the ratchet-wheel 18 by reason of its connection with the knock-off slide 30. When the parts again resume their normal operation, the arm 43 will be backed off by the ratchet-wheel 41 until the pawl 42 has been  
 85 again lifted out of engagement with the said ratchet-wheel by the action of the pin 45.

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

1. The combination, in a terry-loom, of  
 90 means for imparting alternate partial and full beats to the lay, with a positive let-off device for the terry warp-threads operative on each full beat of the lay, but inoperative on the short beats or during the weaving of plain fab-  
 95 rics, substantially as specified.

2. The combination, in a terry-loom, of mechanism for imparting alternate partial and full beats to the lay, with a positive let-off device  
 100 for the terry warp-threads of the loom, and a connection between said let-off device and the mechanism which governs the beat of the lay, whereby said let-off device is operative on each full beat of said lay, but is inoperative on the short beats or during the weaving of plain fab-  
 105 ric, substantially as specified.

3. The combination in a terry-loom, of mechanism for imparting alternate partial and full beats to the lay, let-off rolls acting upon the  
 110 terry warp-threads, ratchet-and-pawl mechanism for imparting intermittent forward movements to said let-off rolls, and a connection between said pawl-and-ratchet mechanism, and the mechanism which governs the beat of the lay, whereby the desired let-off of  
 115 terry warp-threads will be effected on each full beat of the lay, there being no positive let-off of terry warp-threads on the short beats of the lay or during the weaving of plain fabric, substantially as specified.  
 120

4. The combination, in a terry-loom, of means for imparting alternate partial and full beats to the lay, a positive let-off for the terry warp-threads, a weft stop-motion device and  
 125 connection between said let-off device and the weft stop-motion device, whereby the former will be rendered inoperative, when the latter stops the loom, substantially as specified.

5. The combination in a terry-loom, of means for imparting alternate partial and full  
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beats to the lay, a terry-warp let-off having as elements a ratchet-wheel and pawl, a weft-stop knock-off slide, and a connection between said slide and the pawl, whereby the latter will be freed from engagement with the ratchet-wheel when the slide moves to stop the loom, substantially as specified.

6. The combination, in a terry-loom, of means for imparting alternate partial and full beats to the lay, a positive let-off for the terry warp-threads, and means for backing off the same to take up slack, substantially as specified.

7. The combination in a terry-loom, of means for imparting alternate partial and full beats to the lay, a positive let-off for the terry warp-threads, a weft stop-motion device, a connection between the same and the let-off whereby the latter is rendered inoperative

when the stop-motion operates, and means for backing off the let-off rolls to take up slack, substantially as specified. 20

8. The combination of the let-off rolls, ratchet-and-pawl mechanism on the shaft of each roll, means for rendering inoperative the mechanism of one roll, and a device for automatically lifting the other pawl out of engagement with its ratchet-wheel when the pawl-carrier moves backward, substantially as specified. 25

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 30

JOHN H. CROWLEY.

Witnesses:

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