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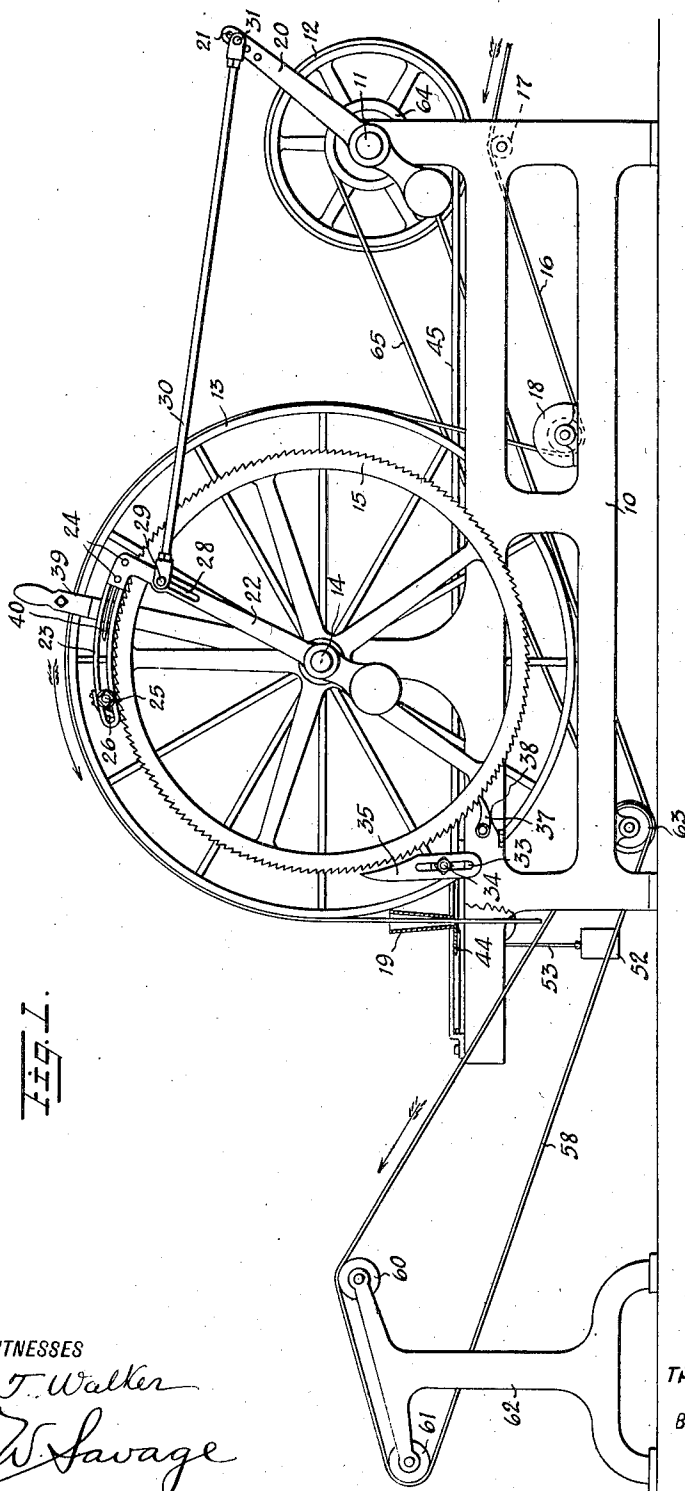
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T. HAWTHORNE

VARIABLE INTERMITTENT WEB FEED

Filed March 3, 1923

3 Sheets-Sheet 1



WITNESSES
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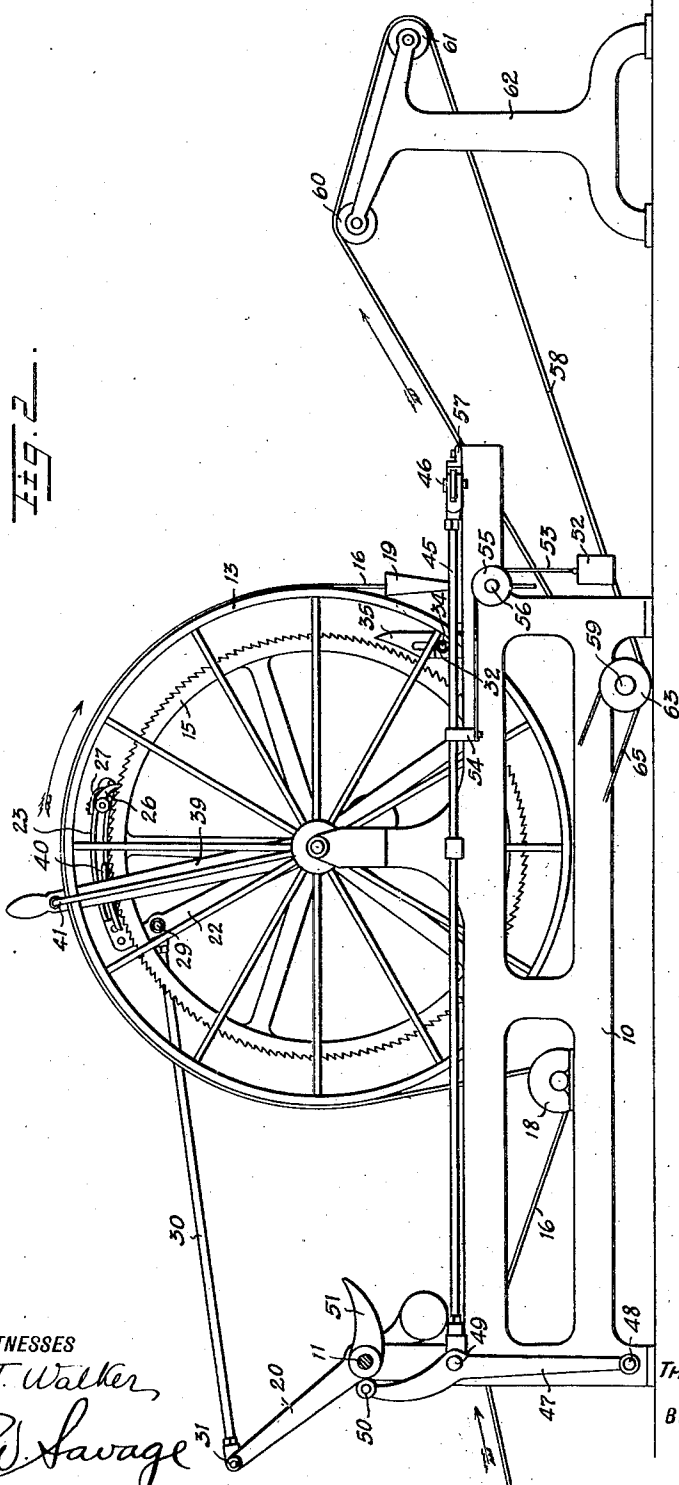
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3 Sheets-Sheet 2



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS HAWTHORNE, OF CHARLOTTE, NORTH CAROLINA.

VARIABLE INTERMITTENT WEB FEED.

Application filed March 3, 1923. Serial No. 622,626.

To all whom it may concern:

Be it known that I, THOMAS HAWTHORNE, a citizen of the United States, and a resident of Charlotte, in the county of Mecklenburg and State of North Carolina, have invented new and useful Improvements in Variable Intermittent Web Feed, of which the following is a full, clear, and exact description.

This invention relates to fabric cutters and was primarily designed for cutting towels.

The general object of this invention is the provision of a simply constructed and easily operated device provided with means for periodically feeding any desired length of fabric and for operating a cutting member to cut said length of fabric from the fabric body.

This object is accomplished by providing a cylindrical member for feeding a fabric, associating with said cylindrical member means for giving it an intermittent motion, and providing cutting means actuated by the means provided for operating the feeding member to cut the fabric.

This and other objects of the invention will be more clearly understood from the following detailed description and accompanying drawings.

Figure 1 is a side elevation of the fabric cutter;

Figure 2 is a vertical section along the line 2—2, Figure 3, showing the construction of the fabric cutter;

Figure 3 is a top plan view of the fabric cutter;

Figure 4 is an end elevation of the fabric cutter.

Referring to the above-mentioned drawings, the invention includes a frame 10 provided with bearings for supporting a shaft 11. Fixed to one end of the shaft 11 is a pulley 12 so that the shaft may be driven from any prime mover by means of a belt or any other power transmission device. A second shaft 14 is rotatably mounted in bearings carried by the frame 10. Fixed to the shaft 14 is a drum 13 for feeding the fabric to the cutting member. This drum 13 is provided with a surface which frictionally engages a fabric 16, serving to draw the latter forward over the rollers 17 and 18.

The drum 13 is given an intermittent motion so as to periodically feed a desired

length of the fabric 16 to the cutting member. The device for giving the drum 13 the intermittent motion for periodically feeding the desired lengths of the fabric to the cutter includes a ratchet wheel 15 fixed to the shaft 14. Loosely mounted on the shaft 14 is an arm 22 carrying a curved guide 23 fixed thereto by means of pins 24. Slidably mounted in the curved guide 23 is an axle 25 on which a pawl 26 is loosely mounted. The axle 25 projects over the ratchet wheel 15, supporting the pawl in alignment with the ratchet wheel. A spring 27 is mounted on the curved guide and engages the pawl 26, normally retaining it in engagement with the teeth of the ratchet wheel 15.

An arm 20 provided with a plurality of openings 21 is fixed to the shaft 11. The arm 20 is attached to a connecting rod 30 by means of a pin 31 which projects through any one of the openings 21. The other end of the connecting rod 30 is attached to the arm 22 by means of a set screw 29 projecting through a slot 28 in the outer end of the arm. This slot 28 is provided so that the end of the connecting rod may be connected to the arm 22 at different distances from the axis about which the arm rotates. By varying the distance of the connection between the connecting rod and the arm 20 from the axis of the shaft 11 the linear motion of the connecting rod may be varied. Further, by shifting the position of the connection between the arm 22 and the connecting rod 30 the distance through which the connecting rod rotates the arm 22 may be changed. Thus two means are provided for varying the limits of the angular movement of the arm 22.

Mounted on the frame 10 is an angle iron 32 carrying a bolt 34. A plate 35 having an elongated slot 33 is attached to the angle iron in a vertical position by means of the bolt 34 projected through the slot 33. This plate 35 is so positioned that it will engage a pin 36 fixed to the pawl 26, serving to disengage the pawl from the ratchet wheel as the latter is rotated counterclockwise. The plate 35 may be adjusted on the bolt 34 so as to set it for engaging the pin 36 to disconnect it from the ratchet wheel 15 to set a limit for the periodic angular movement of the latter. Attached to the frame 10 is a dog 37 retained in engagement with the ratchet wheel 15 by means of a spring 38

also attached to the frame 10 for preventing backlash when the arm 22 is rotated clockwise, drawing the pawl 26 over the teeth of the ratchet wheel. In order to control the
 5 time at which the pawl 26 engages the ratchet wheel 15 a lever 39 is loosely mounted on the shaft 14 and carries a curved prong 40 which engages the pin 36 of the pawl 26, retaining it out of engagement
 10 with the ratchet wheel. The lever 39 is manually operated and may be set in any desired position. The lever is retained in the different positions to which it is moved by means of a rod 41 also mounted on the shaft and
 15 serving to project the lever against adjacent members to cause frictional engagement with them.

The cutting means provided includes an arm 42 loosely mounted on a vertical post
 20 43 carried by the frame 10. A cutting blade 44 is fixed to the arm 42 and swings in a horizontal plane as the arm 42 swings about the post 43. A connecting rod 45 is connected to the outer end of the arm 42 by a
 25 pin 46 allowing them to swing relative to one another. An arm 47 loosely mounted on a post 48 fixed to the frame 10 is connected to the other end of the connecting rod 45 by a pin 49. Mounted on the upper end of the
 30 arm 47 is a roller 50. A cam plate 51 is fixed to the shaft 11 and located in alignment with the roller 50 so that upon the operation of the shaft 11 the cam plate 51 periodically engages the roller 50, projecting
 35 the arm 47 to the left, as viewed in Figure 2. A weight 52 is attached to the connecting rod 45 at 54 by a cable 53, the latter passing over a pulley 55 loosely mounted on a pin 56 fixed to the frame 10. This weight serves to
 40 return the connecting rod to its normal position after it has been drawn to the left, as viewed in Figure 2, by the operation of the arm 47. Referring to Figure 2, the movement of the connecting rod 45 to the right
 45 is limited by a stop block 57 mounted in the frame 10. A hopper 19 is provided for receiving the fabric 16 as it is fed forward by the drum 13. This hopper is so located that the cutting blade 44 passes across its lower
 50 end, clipping off the portion of the fabric 16 that has been projected below the hopper by the feeding drum 13. A conveyor 58 is carried by a roller 59 mounted on the frame 10 and rollers 60 and 61 supported on a frame
 55 62. This conveyor passes beneath the hopper 19 and receives the pieces of fabric as they are severed from the main body. The conveyor is operated by a pulley 63 driven from a pulley 64 fixed to the shaft 11 through a belt 65.

The operation of this device is as follows: The connecting rod 30 is connected to the
 60 arms 20 and 22 at the desired distance from the axis about which the arms rotate to give the required angular movement of the arm

22. By setting the plate 35 and the lever 39 the points at which the pawl 26 will be disconnected from the ratchet wheel 15 are determined. The fabric 16 is placed on the
 70 feeding roller 13 and the pulley 12 is then set in motion. Upon the rotation of the pulley 12 the shaft 13 is rotated, swinging the arm 20 about its axis. Referring to Figure 1, as the arm 20 rotates counterclockwise the connecting rod 30 is given a linear move-
 75 ment and the arm 22 an angular movement. As the arm 22 swings counterclockwise the pawl 26 when released from the prong 40 engages the ratchet wheel 15, rotating it counterclockwise with the arm 22. The pin
 80 36 is engaged by the plate 35, disengaging the pawl 26 from the ratchet wheel 15, thus limiting the movement of the ratchet wheel 15 for each rotation of the arm 20. When the connecting rod 30 begins its movement
 85 in the opposite direction, the arm 22 is rotated in a clockwise direction about the axis of the shaft 14, drawing the pawl 26 over the teeth of the ratchet wheel into engagement with the prong 40. During the counter-
 90 clockwise movement of the arm 22 the dog 37 engages the ratchet wheel 15 and prevents backlash. The feeding drum 13 being fixed to the same shaft as the wheel 15 is thus given an intermittent movement. After the pawl 26 has been disengaged from
 95 the ratchet wheel by the plate 35 the cam 51 operates the arm 47, swinging the cutting blade 44 in a horizontal plane across the bottom of the hopper 19, cutting off a length of the fabric 16. After each cutting stroke of the cutting blade 44 it is returned to its
 100 original position by the weight 52. The length of the fabric fed through the hopper 19 will depend on the angular movement of the drum 13. The length of the fabric severed from the main body of the fabric will be conveyed from the machine by the conveyor 58.

I would state in conclusion that while the
 110 illustrated example constitutes a practical embodiment of my invention I do not limit myself strictly to the exact details herein illustrated since manifestly the same can be
 115 considerably varied without departing from the spirit of the invention as defined in the appended claims.

Claims:

1. In a fabric cutter of the character described including a cylindrical member for
 120 feeding the fabric, means for giving the cylindrical member an intermittent partial rotary motion, comprising a ratchet wheel fixed to the cylindrical member, a pawl and
 125 pawl carrying member mounted for oscillation relative to the ratchet wheel, said pawl idly engaging the ratchet wheel when oscillated in one direction and operatively engaging the same when oscillated in the op-
 130 posite direction, adjustable means for oscil-

lating the pawl carrying means through different angles, and means for disengaging the pawl from the ratchet wheel to limit the movement of the ratchet wheel.

- 5 2. In a fabric cutter of the character described including a cylindrical member for feeding the fabric, means for giving the cylindrical member an intermittent partial rotary motion comprising a ratchet wheel fixed
10 to the cylindrical member, a pawl carrying member mounted for oscillation relative to the ratchet wheel, adjustable means for oscillating said pawl carrying means through any desired angle relative to the ratchet

wheel, a pawl adjustably mounted in the 15
pawl carrying means and riding on the ratchet wheel to attach the latter to the former when the pawl carrying means is oscillated in one direction, means for dis-
engaging the pawl from the ratchet wheel 20
to limit the movement of the latter, manually operated means for controlling the engagement of the ratchet wheel by the pawl, and means co-operating with the
ratchet wheel for preventing retrograde 25
movement of the feed member as the pawl rides loosely over the ratchet wheel.

THOMAS HAWTHORNE.