

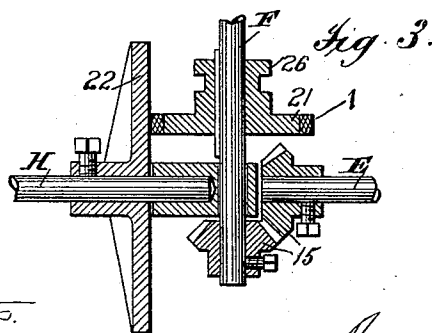
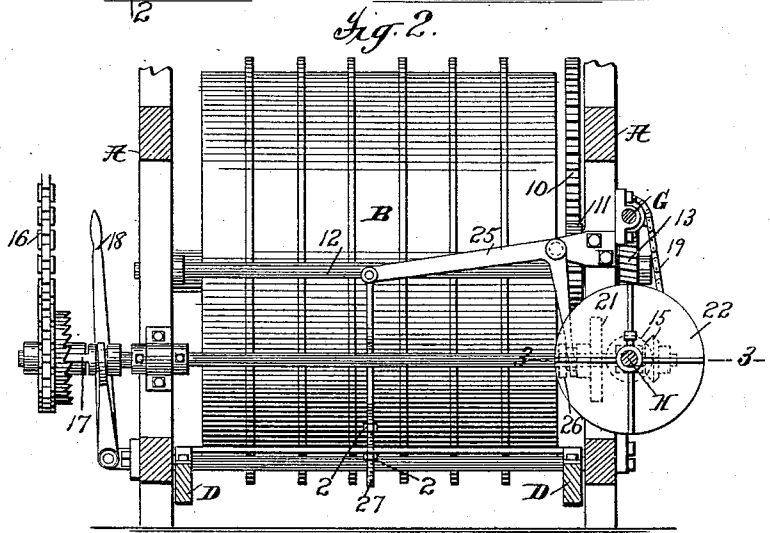
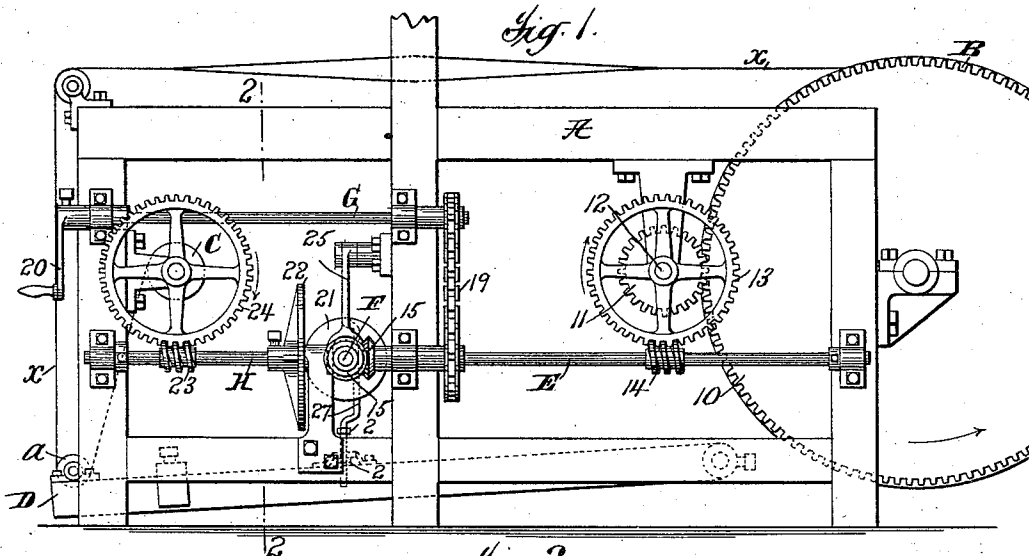
(No Model.)

F. G. CHAMBERS.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

No. 532,312.

Patented Jan. 8, 1895.



Attest:
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UNITED STATES PATENT OFFICE.

FRANK G. CHAMBERS, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE NEW JERSEY WIRE CLOTH COMPANY, OF TRENTON, NEW JERSEY.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 532,312, dated January 8, 1895.

Application filed February 2, 1894. Serial No. 498,892. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. CHAMBERS, a citizen of the United States, residing at Syracuse, county of Onondaga, and State of New York, have invented certain new and useful Improvements in Let-Off and Take-Up Mechanism for Looms, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The invention is of general application in various classes of looms, but is more especially designed for use in looms for weaving wire fabrics.

The object of the invention is to provide a let-off and take-up mechanism which shall be more simple and efficient than those heretofore in use, and especially to provide a construction in which the movement of the take-up roll shall be continuous but varied in speed to secure the proper action, as distinguished from the looms for weaving wire cloth heretofore in use, in which the movement of the take up roll has been intermittent, the driving mechanism for the roll being thrown into and out of action by a clutch controlled by the fabric.

For a full understanding of the invention, a detailed description of a construction embodying the invention in the preferred form as applied to a wire loom of common construction, will now be given in connection with the accompanying drawings forming a part of this specification, and the features forming the invention specifically pointed out in the claims.

In the drawings—Figure 1 is a side elevation of such portion of a loom as is necessary to illustrate the invention. Fig. 2 is a section on the line 2 of Fig. 1 looking to the right. Fig. 3 is a detail section on the line 3 of Fig. 2.

Referring to said drawings, A is the loom frame; B, the let-off or warp roll; C, the take up or cloth roll; D, a gravity frame carrying a roll α around which the fabric α passes to the take-up roll so that the frame D is supported at the free end in a loop of the fabric and thus controlled by the latter, all these parts being of any common or suitable construction, and the frame D may be mounted

in any other position and put under tension by other means than gravity, if desired.

The let-off roll B is driven by a gear 10 thereon which meshes with a pinion 11 on a stud 12 mounted in the frame, which stud carries a larger gear 13 engaging a worm 14 carried by a horizontal shaft E extending longitudinally of the loom and driven from a horizontal transverse shaft F through bevel gears 15, the shaft F being driven from the main driving shaft by means of a sprocket wheel and chain 16 or other suitable means.

It is desirable that means be provided for disconnecting the shaft F when the let-off and take up rolls are to be stopped or reversed, and any suitable construction may be used for this purpose.

As shown the sprocket wheel is loose on shaft F and carries a ratchet with which a pawl 17 carried by a sleeve splined on the shaft and controlled by a handle 18 makes a one way clutch. When this clutch is thrown out the shaft E may be actuated by a sprocket chain 19 connecting shaft E to a parallel shaft G provided with a handle 20 for rotation by hand, or other suitable means may be used for this purpose.

The shaft F carries a friction disk 21 preferably provided with a friction edge 1 of leather or other suitable material engaging the face of a larger friction disk 22 which may have a metal face and is carried by a shaft H extending longitudinally of the loom at the take up end and carrying a worm 23 which engages a gear 24 on the shaft of the take-up roll C. The disk 21 is splined on the shaft F so as to move longitudinally thereon while rotating therewith, and is shifted on shaft F so as to engage the disk 22 at different distances from its center and thus vary the speed of rotation of the shaft H and take up roll C, by connections to the frame D. These connections between the disk 21 and gravity frame may be of any suitable form, but the construction shown will be found a simple and efficient one. In this construction, one arm of a bell crank lever 25 engages a sleeve 26 on the disk 21, and the other arm is connected to a vertical rod 27 which passes through a cross bar on the frame D and is provided with stops 2 above and below the

cross bar, preferably made adjustable, these stops being shown as formed simply by nuts screwed on the rod 27.

The operation of the construction will be understood from a brief description in connection with the drawings.

The let-off roll and take-up roll are both rotated continuously during the operation of the loom, but the speed of the take up roll C is varied and controlled by the fabric. When the fabric is being taken up too rapidly, the frame D is raised by the fabric and as the cross bar on the frame strikes the upper stop 2 it rocks the lever 25 and shifts the friction disk 21 outward from the center of the disk 22, thus decreasing the speed of rotation of the latter and shaft H and consequently that of the take up roll C. If the fabric is not taken up by the roll C as rapidly as the warp is let off by roll B the frame D falls, preserving the proper tension on the fabric, and when the cross bar on the frame D strikes the lower stop 2 on the rod 27, the bell crank 25 is rocked in the opposite direction and shifts the friction disk 21 toward the center of the disk 22, thus increasing the speed of rotation of the latter and shaft H and consequently of the take-up roll C. When the shaft F is disconnected from the driving shaft by shifting clutch pawl 17, and the rolls B, C are actuated in either direction by handle 20, the speed of the take up roll C is similarly controlled by the fabric.

It will be seen that my invention provides a very simple and efficient let-off and take-up mechanism, in which the movement of the take-up roll is continuous and controlled by the fabric so as to be varied to secure the proper feed and tension. It is evident that this feature of the continuous rotation of the take-up roll at a varying speed controlled by the fabric may be secured by means differing widely from that shown, and it will be understood that I am not to be limited to the construction illustrated as embodying the invention, although certain features of this special construction form parts of the invention.

What I claim is—

1. In a loom, the combination with a continuously driven let-off roll, of a continuously driven take-up roll, a tension frame supported by a loop in the fabric, and means actuated by said frame for varying the speed of the take-up roll, substantially as described.

2. In a loom, the combination with a continuously driven let-off roll, of a take-up roll, a shaft driving said take-up roll, a friction disk on said shaft, a driving shaft having a friction disk, the rim of one of said friction disks engaging the face of the other disk and

movable thereon to vary its distance from the center of said disk, a tension frame supported by a loop in the fabric, and means actuated by said frame for shifting said movable disk to vary the speed of the take up roll, substantially as described.

3. In a loom, the combination with a let-off roll, of a take-up roll, a shaft driving said take-up roll, a friction disk on said shaft, a driving shaft having a friction disk, the rim of one of said friction disks engaging the face of the other disk and movable thereon to vary its distance from the center of said disk, a tension frame supported in a loop of the fabric, and means actuated by said frame for shifting said movable disk to vary the speed of the take-up roll, substantially as described.

4. In a loom, the combination with a continuously driven let-off roll, of a take-up roll, a shaft driving said take-up roll, a friction disk on said shaft, a driving shaft having a friction disk, the rim of one of said friction disks engaging the face of the other disk and movable thereon to vary its distance from the center of said disk, a tension frame supported in a loop of the fabric, and means actuated by said frame for shifting said movable disk to vary the speed of the take-up roll, substantially as described.

5. The combination with let-off roll B, and means for actuating said roll, of take-up roll C, shaft H and connections to said take-up roll, friction disk 22, on said shaft, cross shaft F and friction disk 21 splined thereon, tension frame D and connections between said frame and disk 21 for shifting the latter, substantially as described.

6. The combination with let-off roll B, and means for actuating said roll, of take-up roll C, shaft H and connections to said take-up roll, friction disk 22 on said shaft, cross-shaft F and friction disk 21 splined thereon, tension frame D, and connections having lost motion between said frame and disk 21, for shifting the latter, substantially as described.

7. The combination with let-off and take-up rolls B, C, shafts E, H, and positive driving connections between said shafts and rolls, of friction disk 22 on shaft H, cross driving shaft F geared to shaft E and having friction disk 21 splined thereon, tension frame D and connections between said frame and disk 21 for shifting the latter, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK G. CHAMBERS.

Witnesses:

K. F. CASSIDY,

A. A. SCHENCK.