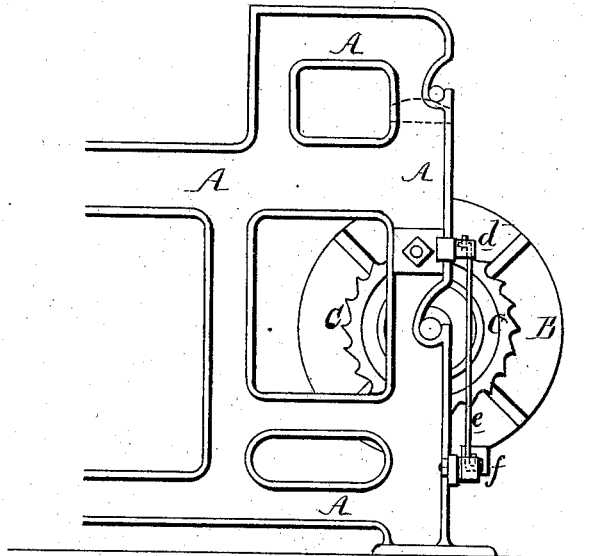


J. BELICARD.  
Let-Off Mechanisms for Looms.

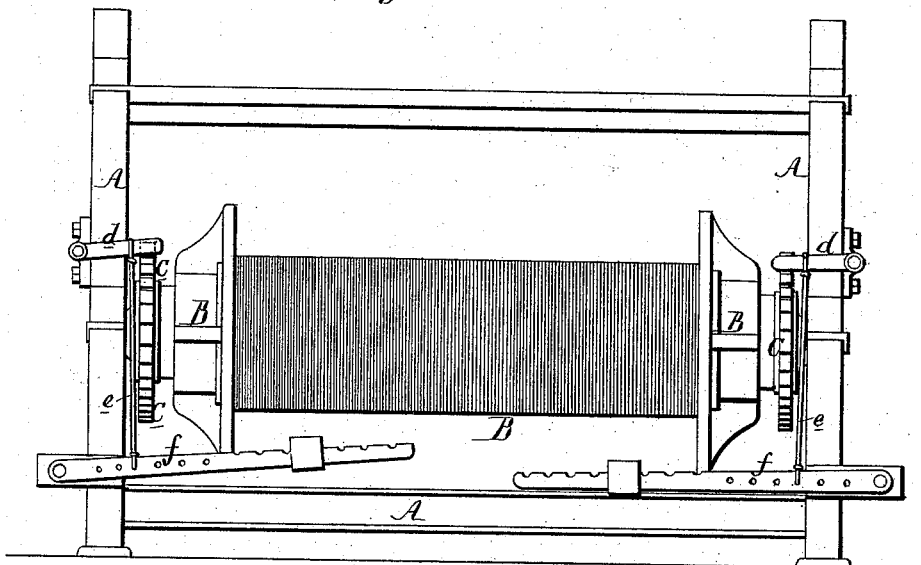
No. 209,217.

Patented Oct. 22, 1878.

*Fig. 1*



*Fig. 2.*



Witnesses  
*John W. Deussen*  
*Thomas McNamee*

Inventor,  
*Jules Belicard*  
by his attorneys  
*Howson and Son*

# UNITED STATES PATENT OFFICE.

JULES BELICARD, OF MÂCON, FRANCE.

## IMPROVEMENT IN LET-OFF MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. **209,217**, dated October 22, 1878; application filed March 7, 1877; patented in England, November 6, 1874.

*To all whom it may concern:*

Be it known that I, JULES BELICARD, of Mâcon, in the Republic of France, have invented a new and useful Improvement in Let-Off Mechanisms for Looms, of which the following is a specification:

The object of my invention (for which an English patent, No. 3,835 of 1874, completed May 5, 1875, was granted to myself and Robert Roberts) is to so construct the let-off mechanism for the yarn-beam of a loom that the warp-threads will be kept at a uniform tension, and will be let off evenly and with regularity. This object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a side view of sufficient of a loom to illustrate my invention; Fig. 2, an end or back view of the loom.

A A represent part of the frame of the loom, and B B the yarn-beam mounted in bearings in the frame. Attached to or forming part of each end of this beam is a wheel, C, having teeth or notches with inclined surfaces, to which is adapted the end of a pawl, *d*, pivoted to the frame. Each pawl *d* is connected by a cord or wire, *e*, to a weighted lever, *f*, pivoted to the lower part of the frame.

If desired, two pawls, both connected to the same lever *f*, may be adapted, one above the other, to each wheel. As the yarn is taken up in weaving, the slow revolution of the yarn-beam, due to the "pull" on the yarn, will cause the inclined teeth to gradually raise the pawls and corresponding weighted levers, and as each pawl is raised to a certain height it is

withdrawn from a tooth of the ratchet and falls onto the next tooth.

The teeth at opposite ends of the beam are so arranged alternately with regard to each other that by the time one pawl at one end is raised to its highest point the other pawl is only raised about half-way, Fig. 2, and consequently the full tension is maintained on the warp by the latter pawl, while the pawl at the other end is being released from its tooth and lowered onto the next tooth, and so on alternately at opposite ends of the beam. In this manner the let-off is in exact proportion to the pull on the warp, and the tension produced by the friction of the pawls (connected to the weighted levers) on the teeth of the wheels of the yarn-beam is maintained uniform and regular.

I claim as my invention—

The combination of a toothed or notched wheel or wheels, attached to or forming part of the ends of the yarn-beam of a loom, with a pawl or pawls, *d*, adapted to the teeth or notches of said wheels, and connected to weighted levers on the lower part of the frame, whereby the tension on the warp is due to the frictional contact of the pawls on the said wheels, all substantially as described.

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

JULES BELICARD.

Witnesses:

GEORGE DAVIES,  
JNO. HUGHES.