J. Coulter.

Let-Off Motion.

No. 3,057. Patented Apr. 25, 1843.

Fig. 1.

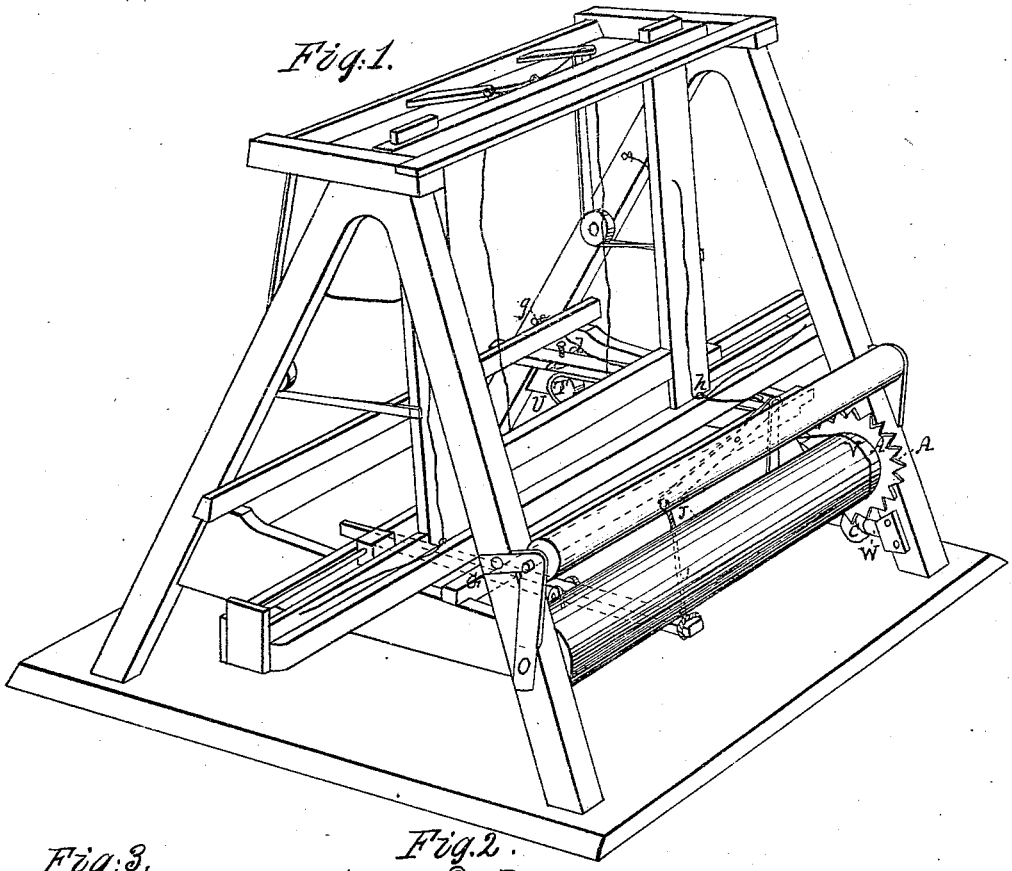

Fig. 3.

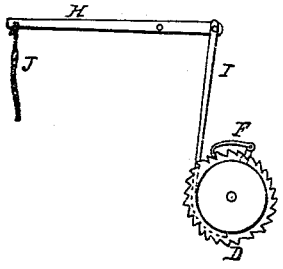

Fig. 2.

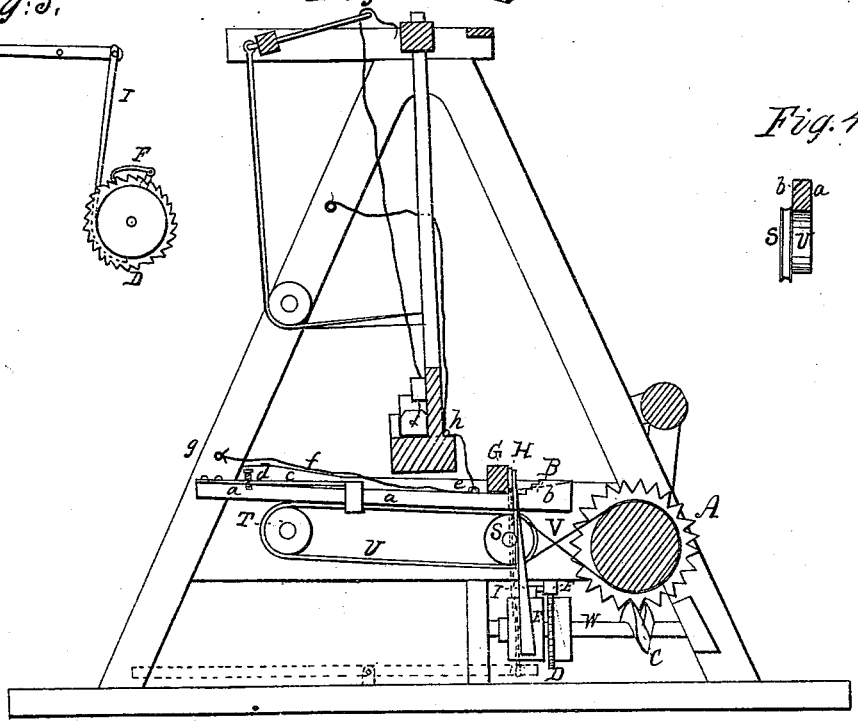

Fig. 4.

UNITED STATES PATENT OFFICE.

JOHN COULTER, OF XENIA, OHIO.

MODE OF DELIVERING WARP IN LOOMS.

Specification of Letters Patent No. 3,057, dated April 25, 1843.

To all whom it may concern:

Be it known that I, JOHN COULTER, of the town of Xenia, county of Greene, Ohio, have invented a new and Improved Mode of Graduating the Delivery of the Warp from the Yarn-Beam of the Common Loom; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the loom; Fig. 2, a longitudinal view of the graduating apparatus. Fig. 3 section of the roller D. Fig. 4 section of the double pulley.

The nature of my invention consists in providing the loom with a combination of apparatus by which the delivery of the warp from the yarn beam of the loom is graduated to the size of the filling more perfectly than by any other mode yet known. But before I proceed to describe the construction and operation of my invention it will be necessary to describe the mode by which the warp is delivered from the yarn beam. And first upon the end of the yarn beam is confined a metal cog wheel A 13 or 14 inches in diameter. Directly below this wheel A is a horizontal shaft W that lies along the side frame of the loom and apparatus in two brackets confined in the side frame for that purpose; upon this shaft W is an endless screw C that operates in the cogs of the wheel A and prohibits the beam from turning save when the screw C is in operation. Upon this same shaft W a few inches from the screw C is a ratchet wheel D. Upon this same shaft W is a loose roller E that operates close to the ratchet D to which roller is attached a catch F that operates upon the ratchet, D. G, a light transverse beam that lies across the loom between the yarn beam and harness, and a little below the warp, and is supported by the side frame of the loom on either side. H, a lever attached to the said transverse beam G, and extends a little more than half across the loom. I, a strap attached to the side lever H near the end that lies next the side frame of the loom which strap I descends and is attached to the roller E. J, a small cord attached to the end of said lever that lies toward the middle of the loom which cord J, descends and is attached to the treadle. Now when this treadle is borne down by the weaver the end of the lever H, to which the strap I is attached is raised—and by means of the strap I the roller E is put in operation. And by means of the catch F attached to said roller the ratchet D with the screw C is put in operation which permits the yarn to turn and let off the warp. And when said treadle raises the end of the said lever to which the strap I is attached sinks with the strap I which permits the roller E to fall back and the catch F to renew its hold upon the ratchet D. Thus by the power of the treadle the warp is delivered from the yarn beam. The spread of which delivery will be in proportion to the extent of the space in which the end of the lever to which the strap I is attached is permitted to operate. Now in order to graduate that delivery of the warp to accord with the going in of the filling, the space in which the end of the said lever operates must vary as the size of the filling may require, and in order to offset that variation I have provided the loom with the aforesaid graduating apparatus (which apparatus is represented in Fig. 2) and have attached them to the inside of the side frame of the loom directly under the end of the aforesaid lever, so as to permit the end of the said lever to rest upon the upper edge of the regulator, the construction and operation of which apparatus I will proceed to describe referring to the parts by letters as I proceed. S, a double pulley two inches long, one inch of which is turned down to about one and a half inches in diameter while the diameters of the other part is left three or more inches in size. In the large end this pulley has a groove for the reception of a band. This pulley is attached to the inside of the side frame of the loom by a bolt or a screw upon which it is permitted to turn, and lies directly above the roller E, with the small end next the side frame of the loom.

T is a similar pulley except the large end which has no groove and is confined in a similar manner to the side frame near the front post. U an endless strap that passes around these two pulleys and operates close to the side frame of the loom upon the small end of these pulleys. B the regulator which has *a* the stock 2 or 3 feet long made of wood and about one inch square. This stock *a* is laid flat upon the strap U and

close to the side frame of the loom. *b* a block of wood or metal plate 3 or 4 inches long and 2 or 3 inches wide and is attached to the stock near the end that lies over the pulley S with the end of the aforesaid lever to which the strap *i* is attached resting upon the edge of said block or plate *b*. The end of this block or plate *b* that lies toward the middle of the stock *a* is either sloped as represented by the dotted line upon the block *b* of said regulator in Fig. 2 or formed into one or two slopes or rectangular notches that raise in the order of steps from the stock *a* to the upper edge of the block or plate *b*. The notches is preferred. *c* a thin metal spring that is confined to the upper edge of the stock *a* near the end that lies over the pulley T and extends along the upper edge of the stock *a* some eight or ten inches and then turns down the side of the stock and passes under the strap U, in order to press the strap and stock together. *d*, a screw that passes through the spring *c* and stops against the stock *a* for the purpose of regulating the power of the spring upon the strap U and regulator B. This spring is for the purpose of insuring the operation of the regulator B with the strap U. *e*, a small staple or loop of leather attached to the stock near the block or plate *b*. *g*, A screw pin that operates in the side frame of the loom near the front post and a little above the end of the stock of the regulator B. *f*, a small cord attached to this screw pin *g* and extends along above the regulator B to the staple or loop *e* and passing through it returns and is attached to the under ball of the lay at *h*. V, a band that operates in the groove of the pulley S and crossing passes around the yarn beam near the wheel A. Now when the loom is put in operation by the weaver and the yarn beam permitted to turn as before stated the graduating apparatus is put in operation by means of the band V, that lies around the yarn beam and operates in the groove of the pulley S which gradually moves the block or plate of the regulator B from under the end of the aforesaid lever which gradually increases the space in which the end of the said lever H operates by permitting it to rest upon a lower notch of the said regulator and thus the delivery of the warp is gradually increased but so soon as the delivery of the warp is in the smallest degree greater than the going in of the filling requires the space in which the under ball of the lay moves is increased which causes the cord *f* to counteract the effect of the band V by slipping back the regulator B upon the strap U which brings a higher part of the block or plate under the end of the said lever H which lessens the space in which the end of said lever operates and thereby slackens the delivery of the warp and thus by means of the graduating apparatus which is represented in Fig. 2 and attached to the inside of the side frame of the loom, the delivery of the warp is more perfectly graduated to the size of the filling than by any other mode yet known.

What I claim as my invention and desire to secure by Letters Patent is—

The method of regulating the delivery of the warp to correspond with the size of the filling by means of the block or plate *b*, operated by the lathe and the strap U, which receives its motion from the warp beam, whether it be constructed as herein described or in any other manner substantially the same in principle.

JOHN COULTER.

Witnesses:
L. WRIGHT,
EZRA BENNET.