

(No Model.)

2 Sheets—Sheet 1.

J. GOSS & W. VARLEY.
LOOM FOR WEAVING BORDERED FABRICS.

No. 520,421.

Patented May 29, 1894.

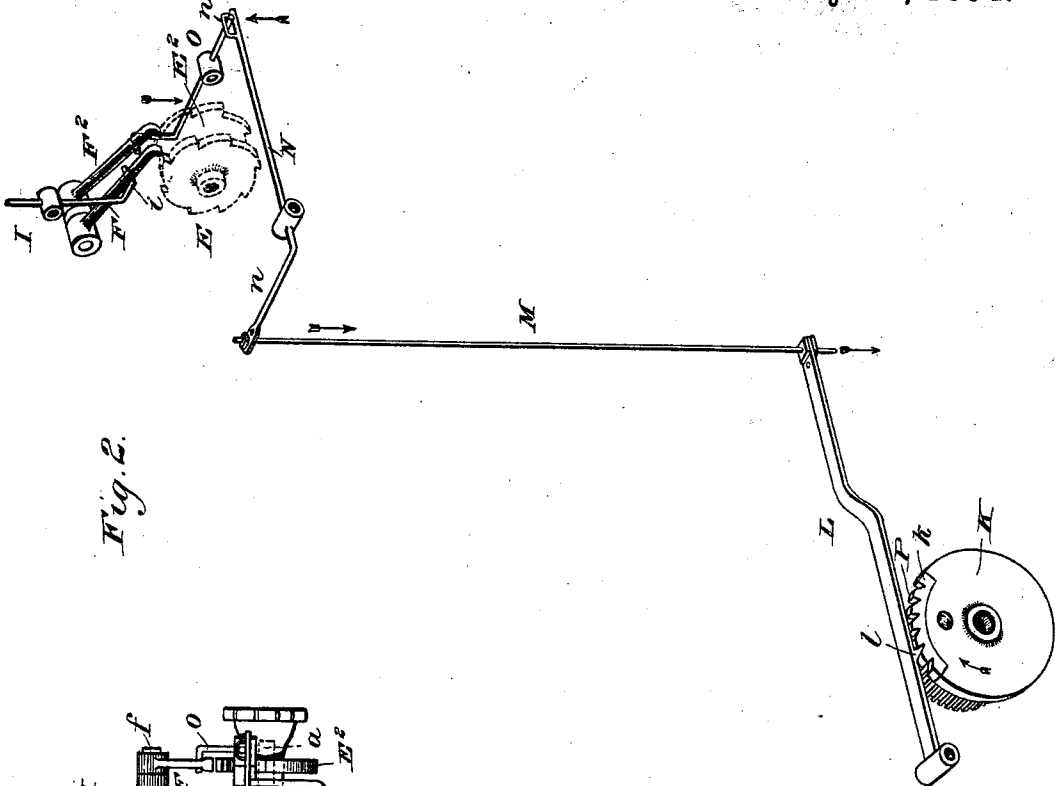


Fig. 2.

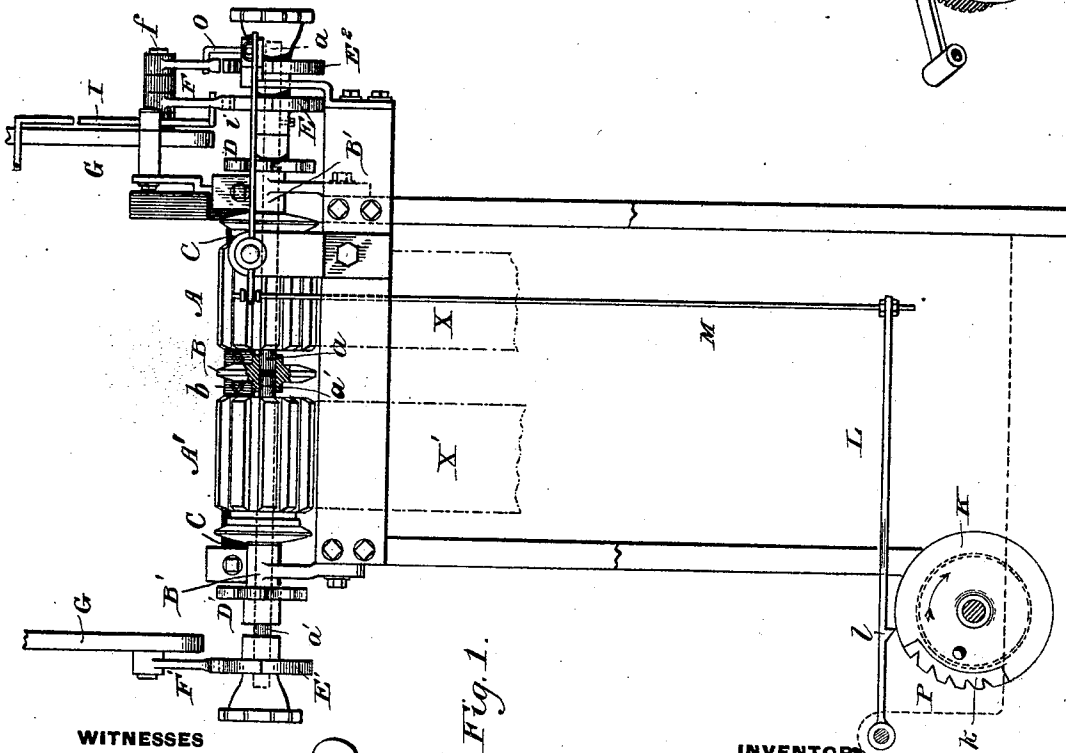


Fig. 1.

WITNESSES

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By *George W. Huntington*

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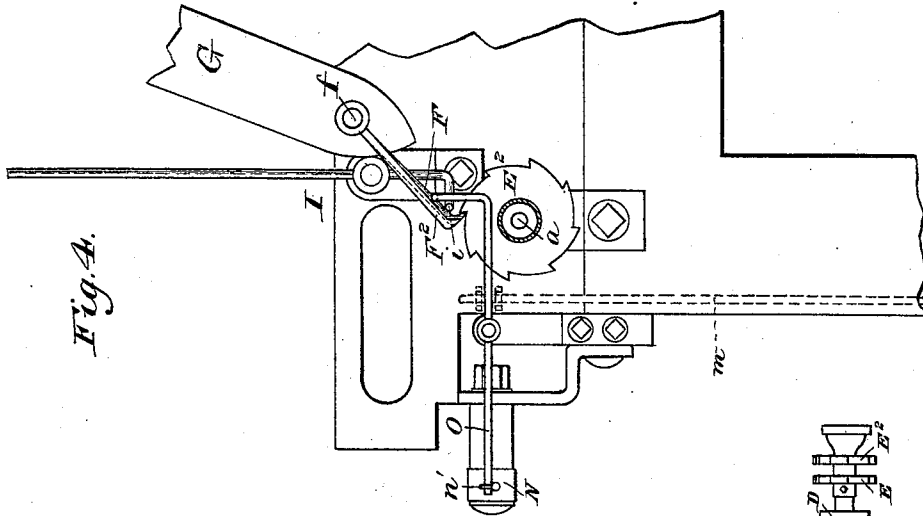


Fig. 4.

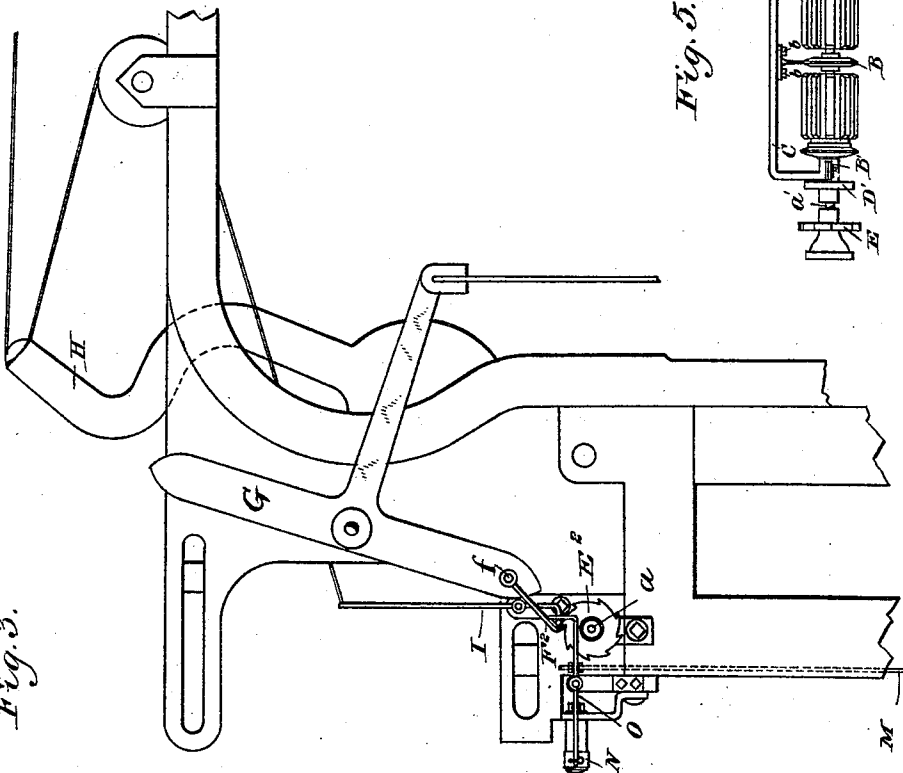
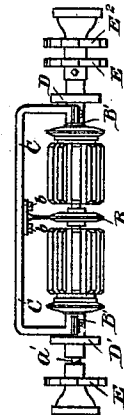


Fig. 5.

Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH GOSS AND WILLIAM VARLEY, OF FALL RIVER, MASSACHUSETTS.

LOOM FOR WEAVING BORDERED FABRICS.

SPECIFICATION forming part of Letters Patent No. 520,421, dated May 29, 1894.

Application filed December 10, 1891. Serial No. 414,608. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH GOSS, a citizen of the United States, and WILLIAM VARLEY, a subject of the Queen of Great Britain, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Looms for Weaving Bordered Fabrics; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to looms, and especially to looms that weave figured goods, or goods having a border, and the like. We have described and shown a loom of this kind in our former patent, No. 414,523, dated November 5, 1889, upon which the present invention is an improvement. In making small bordered goods, such as handkerchiefs, it is desirable to continue the same pattern all around the border. In the old style of looms this could only be done by running the pattern chain all the time, and making it long enough to provide for the plain portions, with figured margins, as well as for the transverse figured portion. In our patent we have described a loom in which the pattern chain can be automatically stopped when the plain goods are to be woven, and automatically started again when a figure is to be produced. By this arrangement however, the plain portion of the goods, being produced by the continuous operation of the same set of harnesses, can have only such pattern in the margin as can be produced by arranging the warp threads before beginning to weave, the pattern chain being inoperative during this portion of the weaving. This limits very seriously the designs that can be produced in the margin. Those portions of the goods that are controlled by the pattern chain can have of course an infinite variety of designs imparted to the figure. In order to enable the patterns in the margins to be varied equally with those in the transverse stripes, and yet be free from the necessity of continuously operating a long pattern chain, we have in-

vented the devices hereinafter described and particularly pointed out in the claims.

Our invention consists in dividing the pattern chain into two parts, or in other words, using two independent chains, one controlling one portion of the warp threads, and the other controlling the remainder of them. One of these chains we prefer to run synchronously with the loom, that is continuously. It acts to form the figure in the margins of the goods, which can thus be varied to any extent. The other chain runs intermittently, being provided with automatic stopping and starting mechanisms, preferably those formerly patented to us, whereby it effects the weaving of plain centers or other plain portions of the goods, and also the figured transverse stripes. Certain improvements in the automatic starting devices are also shown, described and claimed.

In the drawings, Figure 1 is an end view of a portion of a right-hand dobby-head loom, embodying our improvements. Fig. 2 is a perspective view of the starting mechanism. Fig. 3 is a front view on a smaller scale, and Fig. 4 a detail on a larger scale of the starting and stopping pawls, ratchet wheels and neighboring parts. Fig. 5 is a plan view of some of the parts shown in Fig. 1.

The same reference letters are used in all the figures.

To accomplish the main object of our invention, we divide the pattern chain barrel into two parts, A, A', placed preferably on the same axial line, and mounted on independent shafts *a, a'*. The abutting ends of the shafts are journaled in a common bearing B, which consists preferably of a disk with chamfered edges, having an arm provided with ears *b*, by means of which it is bolted to a bar C that extends across behind the barrels and is secured to or formed integral with the end bearings B' for the shafts. Each shaft *a, a'* is provided with the usual detent or stop wheel, D, D', and with a ratchet wheel E, E', by which it is rotated step by step to feed the pattern chains X, X'. The ratchet wheels are actuated by pawls F, F', pivoted to the rocking T-heads G of the dobby, which operate continually in a well-known manner. The barrel A' and the chain X' are intended to control the harnesses that form the figure

in the margin of the goods. This barrel then, must operate continuously, since the figure is formed throughout and near the selvage of the goods. When the loom is running, therefore, the pawl F' is allowed to actuate the wheel E' without stopping, and it follows that any desired design can be woven into the margin. The other barrel A and pattern chain X, are intended to control the harnesses that form the figure in the transverse stripes, as they are reached; so as to constitute with the margin, a figured border for the ends of the handkerchief or other article that is being woven. For this reason the barrel is provided with means for starting it automatically when a transverse stripe is to be woven, and for automatically stopping it again when the stripe has been completed, and the plain center of the handkerchief is to be woven.

The means for stopping the barrel are preferably the same as those shown in our former patent, to wit: A harness lever H operated by a special pin in the pattern chain X is connected with a lever I, the lower end of which has a finger *i* projecting under the working pawl F. When the jack is operated it moves the lever which lifts the pawl out of engagement with its ratchet wheel E, thereby stopping the chain.

The starting mechanism has been modified somewhat from the form shown in our patent. The starting ratchet E² is secured upon the shaft *a* adjacent to the working ratchet wheel E, instead of at the other end of the shaft.

The starting pawl F² is mounted upon the same stud *f* as the working pawl F, so that they lie side by side. The constantly slowly rotating cam K is the same as in the former patent, having a removable segment *k* in which are formed suitable notches P. The lever L is now arranged horizontally above the cam with its tooth or spur *l* resting on the periphery thereof, so as to drop more surely and promptly, when a notch P comes under the spur. Mounted upon a bearing secured to the frame of the loom is a lever N, having a long right-angled finger *n* on its short arm, extending to a point over the lever L. A rod M, adjustably secured by nuts in holes in the ends of the levers, communicates the action of the cam to the lever N. A series of holes provides for the variations of the effective lengths of the levers. The long arm of the lever N has an eye *n'*, which engages with one end of a third lever O, suitably mounted near the end of the starting pawl F² and having a finger lying under and normally supporting said pawl out of engagement with its ratchet wheel E², as shown in Figs. 1 and 2. When the lever L drops as shown in Fig. 2, the pawl F² is simultaneously dropped upon its ratchet wheel, and operates temporarily to start the pattern chain X as set forth in our former patent.

It will be seen that by our invention we can use very short pattern chains. The pattern chain X' is arranged to control a certain

set of harnesses that carry the warp threads in which the marginal figures are woven. Since this figure will be repeated frequently, sometimes several times in a single article, this chain can be quite short. Moreover, the other pattern chain X, is only required to move when the figure in the transverse stripe is to be woven, so that it too, can be short. That bar of the chain in which is placed the special pin, that stops the chain, has its other pins so arranged that the harnesses controlled thereby will raise and lower alternate warp-threads, thereby producing the plain goods, as described in our former patent. This chain X of course controls all the warp-threads except those in the margins, which are controlled by the chain X', as stated above.

We have for the sake of clearness, shown and described our invention applied to a dobby-head loom, such as the well known Hattersly and Hill dobby, shown in British Patent No. 1,092 of 1867.

The operation of our invention is as follows: The rocking T-heads of the dobby continuously operate the pawls F F' F² and the ratchet wheels E E'. The pawl F' and its barrel A' are allowed to run without stopping in order to form the figure in the border near the selvage of the goods. The barrel A, however, which controls the harnesses that form the figure in the transverse stripes, as they are reached, (supposing a handkerchief to be the article being woven) must be stopped when the stripe has been completed, and started again when another stripe is to be made. The stopping is accomplished by the jack H operated by a special pin in the pattern chain X and connected with the lever I, which has a finger *i* to lift the pawl F off the ratchet wheel E. The barrel now remains stationary until the spur *l* on the lever L drops into a notch on the constantly running cam K, and thereby operates the connected levers N O, the latter of which temporarily lowers the starting pawl F² into engagement with its ratchet wheel E². As soon as the barrel A is started, the special pin in the chain which controls the jack H is carried along, and the jack becomes inoperative, permitting the main driving pawl F to re-engage its ratchet. The spur *l* now rides up out of the notch in the cam K, and the lever O lifts the pawl F² away from the starting ratchet, in which position it remains until the barrel A again stops, and it becomes necessary to start it once more.

Having thus fully set forth our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a loom for weaving bordered fabrics, the combination with the dobby mechanism, of two pattern chain barrels, one of which rotates continuously and the other intermittently, each controlling a separate portion of the warp, a separate driving mechanism for each barrel, a device for disengaging the driving mechanism of the intermittently ro-

tating barrel, operating connections between said device and the dobby mechanism, a second driving mechanism for said intermittingly rotating barrel, and connected therefrom to the constantly running parts of the loom, whereby at a predetermined time said second driving mechanism is temporarily operated to start the intermittingly rotating barrel, substantially as described.

2. In a loom for weaving bordered fabrics, the combination with the dobby mechanism, of two separate pattern chain barrels, mounted on independent shafts, and each controlling its own separate portion of the warp, a ratchet wheel and pawl for driving one of said barrels continuously, a ratchet wheel and pawl for driving the other barrel inter-

mittingly, a second ratchet wheel and pawl for starting said second barrel, means connected with the dobby mechanism for automatically throwing out of engagement the driving pawl of the second barrel, and means connected with the constantly running parts of the loom for automatically and temporarily allowing said starting pawl to operate, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH GOSS.
WM. VARLEY.

Witnesses:

ARBA N. LINCOLN,
CHARLES L. FOOTE.