

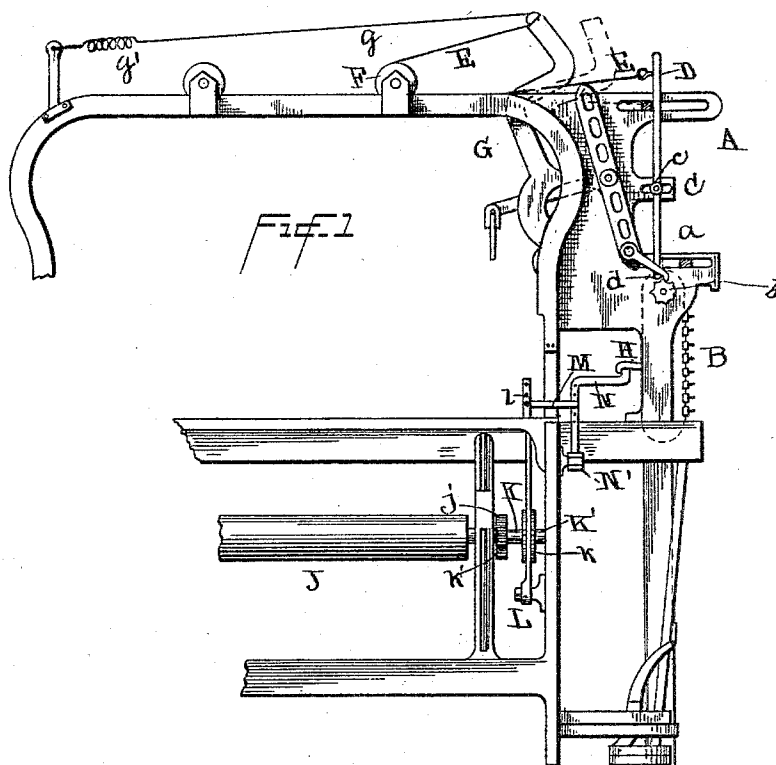
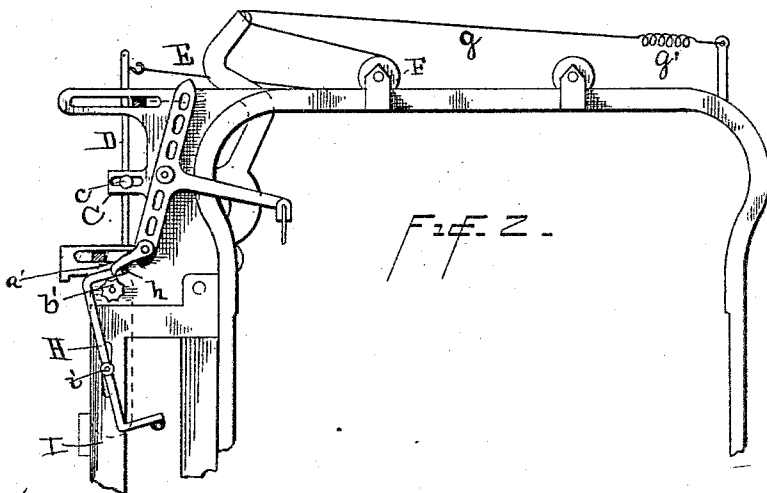
(No Model.)

2 Sheets—Sheet 1.

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

No. 414,523.

Patented Nov. 5, 1889.



WITNESSES—

Thomas A. Clark
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INVENTORS.

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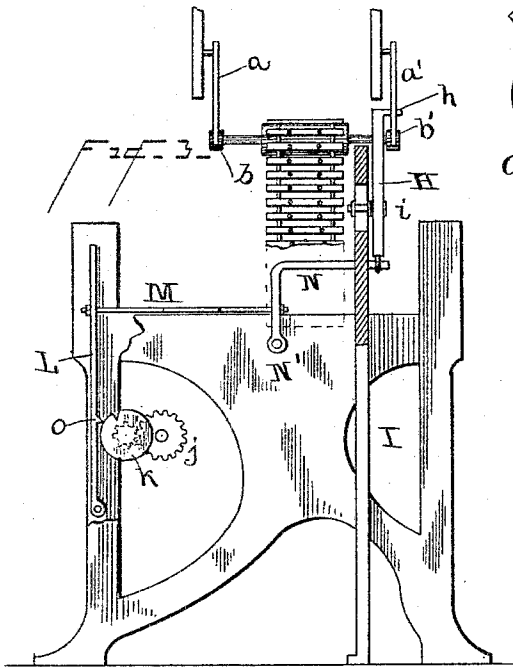
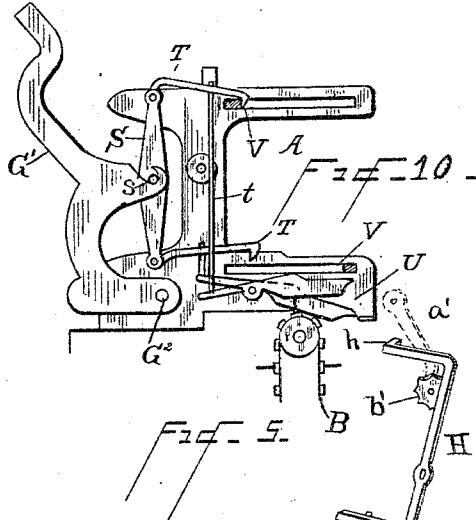
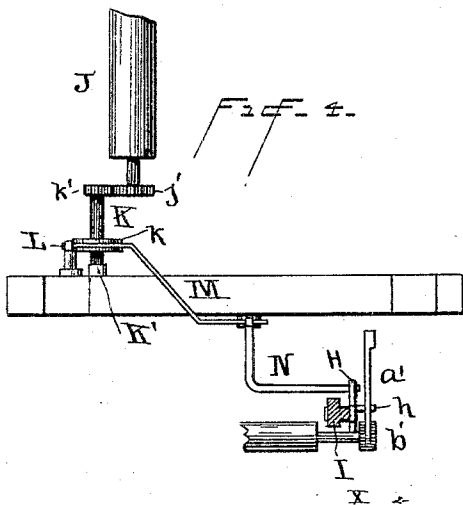
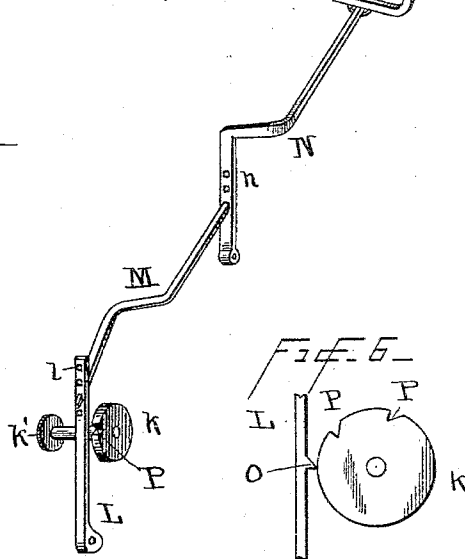
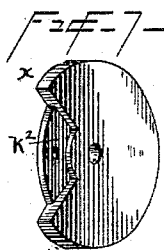
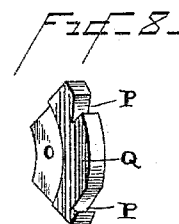
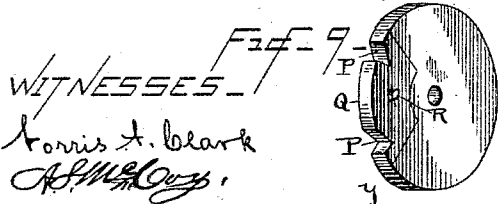
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2 Sheets—Sheet 2.

J. GOSS & W. VARLEY.
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No. 414,523.

Patented Nov. 5, 1889.



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

LOOM FOR WEAVING BORDERED FABRICS.

SPECIFICATION forming part of Letters Patent No. 414,523, dated November 5, 1889.

Application filed November 1, 1888. Serial No. 289,715. (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, both 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 and figures of reference marked thereon, which form a part of this specification.

Our invention relates to looms, and especially to looms adapted to weave figured goods or goods having a border and the like. In these looms the harnesses are ordinarily controlled by a dobbie-head, and the ordinary pattern-chain used in them is fed through the dobbie-head continuously and must be long enough to provide for the plain portions of the goods as well as for the figured portions, since the chain-feed is operated synchronously with the rest of the loom. In the weaving of goods which are for the most part plain—such as handkerchiefs with a border—the pattern-chain must have as great a length and the dobbie-head is subjected to as much wear as in the case of goods having a far greater figured portion.

Our invention aims to save this wear and reduce the length of the chain, which we accomplish by automatically stopping the pattern-chain while the loom is weaving plain goods and automatically throwing it into action again when the figured portion is to be woven. The preferred form of mechanism by which this result is attained is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of part of a right-hand dobbie-loom, showing our improvements. Fig. 2 is a rear elevation of parts of the same. Fig. 3 is a partial end view, and Fig. 4 is a detail plan. Fig. 5 is a perspective view of the starting mechanism detached. Fig. 6 is a detail view; and Figs. 7, 8, and 9 show a modified form of cam. Fig. 10 is a sectional view of a dobbie-head suited to the carrying out of our invention.

The same reference-letters are used in all the figures.

A is a dobbie-head provided with the pattern-chain B, driven by the ratchet-wheel *b* and pawl *a*, as usual. The frame of the dobbie is provided with a bracket C, having a slot in which is adjustably secured a stud *c*, on which is fulcrumed a lever D. The stud may be rendered adjustable in any well-known manner, as by a screw-threaded shank projecting through the slot and provided with a washer and lock-nut. The lower end of the lever has a finger or hook *d* projecting out under and near to the pawl *a*. To the upper end of the lever is attached a cord E, which passes around a grooved wheel F and is fastened to the end of a jack G. A cord or wire *g*, provided with a spring *g'* and attached at one end to the jack G and at the other to the frame of the loom, keeps the jack normally in the position in which it is shown in Fig. 1. This jack is similar to those used for lifting the harnesses, and may be especially inserted in the dobbie, or may be selected from those already there. It is evident that when the jack is thrown into the dotted-line position the lever D will be moved, causing the finger *d* to lift the pawl *a* from the ratchet-wheel *b*, thereby stopping the feed of the pattern-chain.

To operate the jack and stop the chain feed, a special stop-pin is inserted in the chain, arranged to actuate only the jack G. The chain can then be stopped at any given point in its progress through the dobbie-head, and when so stopped the loom will weave plain until the chain is started again, which will allow the jack to resume its normal position and drop the pawl *a* into engagement with the ratchet-wheel *b*. The chain will then continue to operate until the stop-pin once more comes up and again stops it.

The dobbie which by preference we use, which is the well-known Hattersly and Hill dobbie, such as is shown in British Patent No. 1,092 of 1867, employs a lever or connector jointed to each harness-lever, hooks pivoted to the opposite ends of the said connectors, needles for controlling the position of the said hooks, and levers acted upon by the pattern-chain and determining the position of the said needles. The sectional view of the dobbie-head, Fig. 10, will

render this plain. A connector S is fulcrumed at *s* to the jack G'. To each end of the connector is pivoted the hook T, which is normally held up by a weighted lever U, connected with the hooks by a needle *t*. The levers U are arranged to be lifted by certain pins in the pattern-chain B, and when so lifted they drop the hooks upon the vibrating lifter-bars V, which cause the ends of the connector S to swing outward alternately, thereby vibrating the jack G' upon its fulcrum G² and lifting the harness connected with the jack. In order to provide for plain weaving in a dobbie of this construction, we arrange the pins in that bar which carries the pin throwing into action the disengaging device for the actuating-pawl in such manner that at each outward movement of the lifter which acts upon the lower side of the jacks alternate harness-frames—as, for instance, one or more of the odd-numbered frames—shall be raised, while at each outward movement of the lifter which acts upon the upper series of the jacks one or more of the remaining harness-frames—for instance, the even-numbered ones—shall be raised.

To start the chain and draw the stop-pin away from its operative position in the dobbie-head, we provide certain mechanism, preferably arranged as follows: We place a ratchet-wheel *b'* on the other end of the shaft of the chain-feed roller corresponding with the ratchet-wheel *b*. To properly distinguish them, the ratchet-wheel *b* may be termed the "working-ratchet" and the ratchet-wheel *b'* the "starting-ratchet." On the rear rock-arm of the dobbie is pivoted a starting-pawl *a'*, which is reciprocated continuously as the dobbie-head operates, but is normally held out of engagement with the starting-ratchet by means of a finger *h*, projecting under it from the upper end of the lever H. This lever is preferably bent, as shown, having an elbow at each end. It is adjustably fulcrumed at *i* in a slot in the standard I of the dobbie-head and on the rear side thereof by means of a bolt passing through the slot and provided with a washer and lock-nut. The purpose of the starting-pawl is to rotate the feed-roller far enough to withdraw the stop-pin and allow the working-pawl to engage with the ratchet-wheel. The starting-pawl is dropped upon its ratchet-wheel by the following means: On the shaft of the sand-roller J is secured a gear-wheel *j*, with which meshes a pinion *k'* on a short hollow shaft K, mounted on a stud K', secured to the inside of the end of the loom. The shaft K carries a cam *k*, against which presses a lever L, fulcrumed at one end to the frame of the loom. The free end of the lever L is provided with a series of holes *l* for the adjustable connection with a rod M, which is extended toward the rear of the loom, being suitably bent to cross over the frame and engage with a lever N, fulcrumed at N' to the end of the loom and provided with a series of holes *n* for the

adjustment of the rod M. The lever N is bent twice at right angles, in order to clear certain parts of the machinery not shown in the drawings, and its free end is loosely attached to the lower arm of the lever H. On the lever L is a tooth or spur O, one face of which is preferably perpendicular to the lever L. The point of the spur bears upon the periphery of the cam *k*, and is held in close contact therewith by the weight of the rod M and lever N. The periphery of the cam is circular with the exception of one or more drops or notches P, one edge of which is preferably radial, as shown in Fig. 6. When the notch P is brought around to the spur O, the latter drops to the bottom of the notch instantly, thereby allowing the lever N to fall and pull down the lever H, which causes the starting-pawl *a'* to engage with its ratchet-wheel *b'* and start the chain-feed. By the time the figured portion of the goods has been woven the notch P has passed from under the spur O and the starting-pawl has been again lifted out of engagement with its wheel. It is therefore evident that the starting-pawl can be instantly brought into operation at any predetermined point in the weaving and then thrown out of operation again until wanted. The cam may be provided with as many drops as necessary, and its speed of revolution can be regulated by changing the gear-wheels *j* and *k'*. By varying the distance between the drops the space between the figured portions of the goods can be altered. In order to do this without removing the cam from its shaft and also to avoid the expense of providing a separate cam for every change, we have devised the cam shown in Figs. 7, 8, and 9. It is preferably made in two pieces, one of which is integral with the hub and is adapted to have the other piece attached to it. The removable piece contains the drops, and is large enough to provide for any probable change in the space between the figured portion of the goods. Between two points *x y* on the periphery of the cam the material is cut out to or nearly to the hub, leaving on one side a web *k²*, extending part way to the circumference and of a thickness about half that of the cam. The piece Q is made to fit the cut-away portion of the cam and restore it to its disk-like shape. A bolt R, passing through holes in the piece Q and web *k²*, fastens the parts firmly together. In the edge of the piece Q are cut the drops P. Several pieces Q are provided having the drops differently spaced. When it is desired to change the cam, the bolt R is removed, the piece Q taken off, and a different one substituted.

By means of the above-described mechanism we are enabled to stop the pattern-chain when plain portions are to be woven and to instantly start it again when figured portions are to be produced; and these operations can be performed successively so long as the loom is running.

The relative lengths of plain and figured

goods can be varied at pleasure, and the chain need be only long enough to produce the figured portion.

The cam, whether made solid or adjustable, constitutes a valuable feature of our invention. It is far superior to any device which employs pins or projections to move the lever, for the reason that the drops operate instantly and always at the same point in the weaving, thereby producing perfect regularity and similarity in the goods.

We do not confine ourselves to the specific mechanism shown and described, since this may be considerably varied without departing from the spirit of our invention.

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

1. The combination, with the pattern-chain-feed mechanism having ratchet-wheel *b* and working-pawl *a*, of the slotted bracket *C*, the lever *D*, having the finger *d* and fulcrumed on the bracket, the jack *G*, and the cord *E*, uniting the jack and the lever, substantially as described.

2. The combination, with a pattern-chain-feed roller provided with a working ratchet-wheel and a starting ratchet-wheel, each having a pawl to actuate it, of a lever adapted to engage with the working-pawl and throw it out of gear, a jack connected with the lever, a special stop-pin in the pattern-chain to actuate the jack, and means for holding the starting-pawl normally out of engagement with its ratchet-wheel and automatically throwing it into temporary engagement with the ratchet-wheel, all substantially as described.

3. The combination, with a pattern-chain-feed mechanism provided with means for automatically stopping it at a predetermined point, of a starting ratchet-wheel on the shaft

of the pattern-chain-feed roller, a starting-pawl, and automatic mechanism for temporarily throwing said pawl into engagement with its ratchet-wheel, substantially as described.

4. The combination, with a pattern-chain-feed mechanism, of a starting ratchet-wheel, a starting-pawl adapted to engage therewith, and means, substantially as described, for holding the pawl normally out of engagement with the ratchet-wheel, as and for the purpose set forth.

5. The combination of a starting ratchet-wheel and a starting-pawl with a lever having a finger adapted to hold the pawl normally away from the ratchet-wheel, a cam deriving motion from the loom, and intermediate mechanism whereby the cam is adapted to actuate the lever and allow the pawl to operate, substantially as described.

6. The combination, with the cam *k*, having the notch *P*, of the lever *L*, having the spur *O* bearing against the periphery of the cam, a starting-pawl *a'*, and intermediate mechanism whereby the pawl is allowed to operate when the spur *O* drops into the notch *P*, substantially as described.

7. The combination, with the starting-pawl *a'* and the ratchet-wheel *b'*, of the lever *H*, engaging with the pawl *a'*, the cam *k*, the lever *L*, controlled by said cam, the rod *M*, and the lever *N*, connected with said rod and with the lever *H*, substantially as described.

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

JOSEPH GOSS.
WILLIAM VARLEY.

Witnesses:

ARBA N. LINCOLN,
ALFRED H. HOOD.