(No Model.)

2 Sheets—Sheet 1.

D. SCOTT.

LAPPET LOOM.

No. 567,923. Patented Sept. 15, 1896.

FIG. 1.

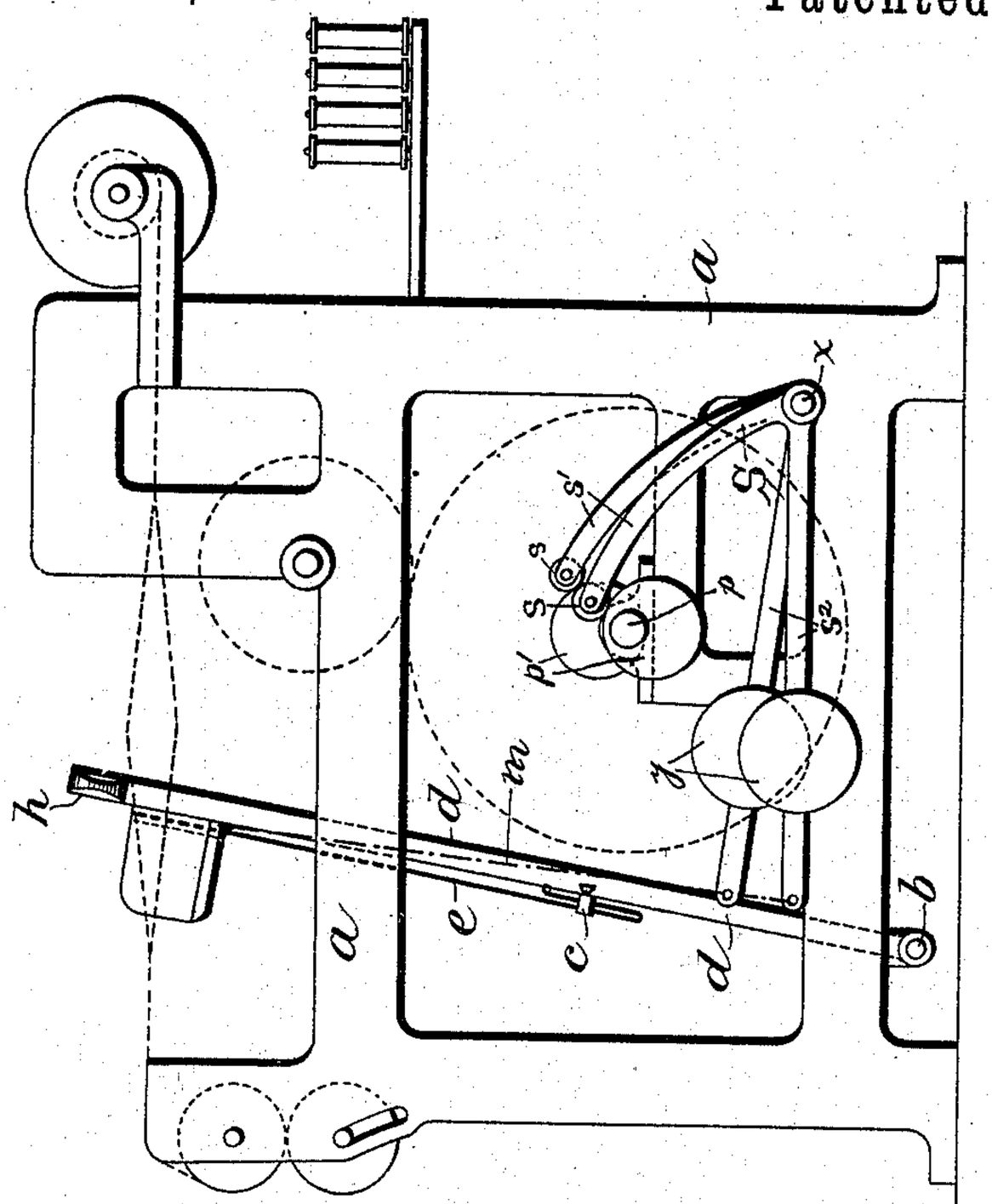


FIG. 5.

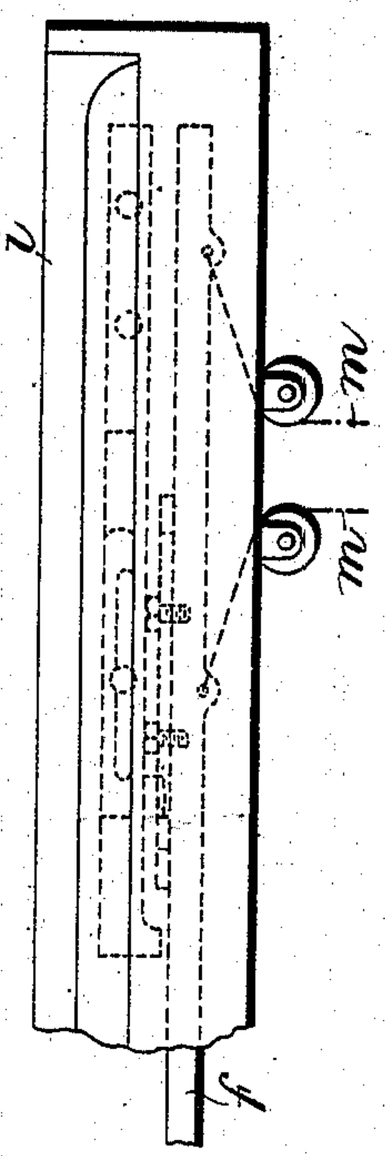
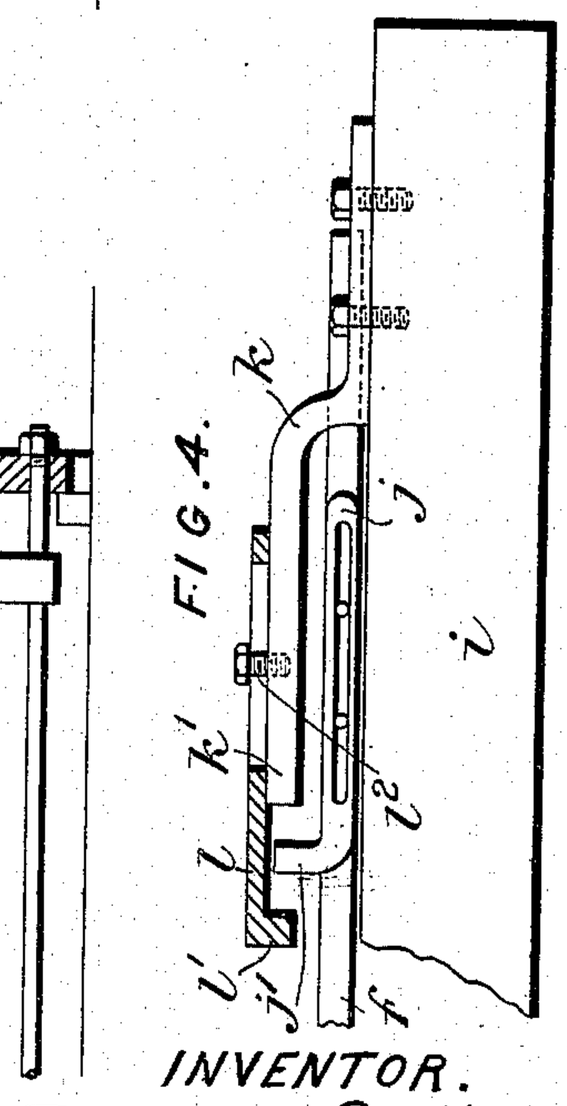


FIG. 2.

FIG. 4.



WITNESSES.

John C. Wilson.

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INVENTOR.

Dugald Scott,

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Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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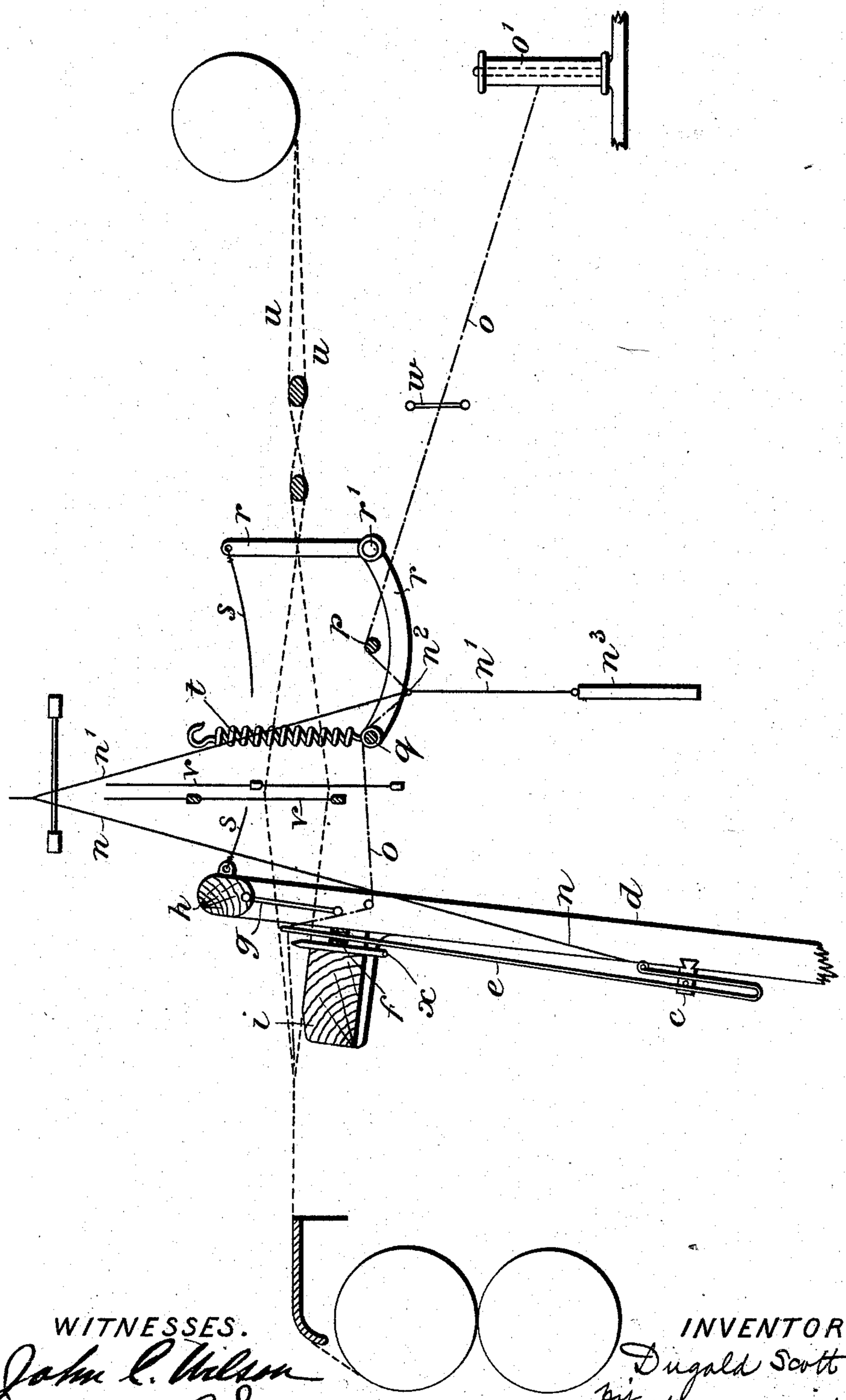
LAPPET LOOM.

No. 567,923. Patented Sept. 15, 1896.

FIG. 3.



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UNITED STATES PATENT OFFICE.

DUGALD SCOTT, OF MANCHESTER, ENGLAND, ASSIGNOR TO JONES BROTHERS & CO., OF SAME PLACE.

LAPPET-LOOM.

SPECIFICATION forming part of Letters Patent No. 567,923, dated September 15, 1896.

Application filed May 14, 1895. Serial No. 549,301. (No model.)

To all whom it may concern:

Be it known that I, DUGALD SCOTT, merchant and manufacturer, a subject of the Queen of Great Britain, residing at 12 York Street, Manchester, in the county of Lancaster, England, have invented Improvements in Lappet-Looms, of which the following is a specification.

This invention relates to improvements in lappet-looms, and has for its object the providing of such novel attachments and combination of parts as will render that class of looms to which the invention relates capable of producing designs upon woven fabrics in such a manner as will be hereinafter more fully described.

The lappet-needles of the loom herein described are each independently connected to one of the hooks of a jacquard.

The lappet ends are brought to the needles from a creel or bobbins or from beams, and each end is passed over two tension-rods, one of which is carried at each end by a bell-cranked lever, and through a lingo or heald between the rods, the said lingo being raised by the same hook which raises its corresponding lappet-needle in order to slacken the tension on the lappet end when it is raised, each end having thus a separate tension.

The bell-crank levers which carry the above-named tension-rods are connected, say, by cords or otherwise to the slay or other equivalent part, so that as it beats up the said tension-rod is depressed, (because all the needles pass under the woven fabric,) and as soon as the slay returns and the needles rise again the tension-rod is returned by springs to its former position and takes up the slack.

The traverse of the bar through which the needles work is or may be obtained and regulated by means hereinafter referred to and described.

In order that my present invention may be easily understood and readily carried into practice, I will proceed to further describe same with reference to the drawings hereunto annexed.

Figure 1 is a side view of a loom with independent lappet-needles. Fig. 2 is a "local" or partial front elevation showing the independent needles in position. Fig. 3 is a diagram showing the independent lappet-needle and course of the lappet end thereto, and also illustrating the tension device or arrangement for tightening and slackening the lappet end. Fig. 4 shows the means for regulating the "shog" or means for limiting the end motion to be imparted to the needle-bar. Fig. 5 is a diagram showing the ordinary means of imparting the traverse or shog motion to said needle-bar.

Similar letters of reference indicate corresponding parts throughout.

a is the ordinary loom-frame, of any suitable form, in which the ordinary slay-frame swings or is rocked on the axis *b*, and is operated in the ordinary or any suitable manner, this not forming any part of my present invention.

c is the grid fixed to the slay-sword *d*, through which grid each of the lappet-needles can freely and independently rise. In the case illustrated this grid is dovetailed in the slay-sword *d*, so that it may, if desired, be capable of movement endwise and thereby impart side motion or "slue" to the points of all the lappet-needles *e* simultaneously.

f is the needle bar or rail, through which the needles *e* can freely rise, which bar *f* in the case illustrated is arranged and adapted to receive endwise motion, as hereinafter explained.

g is the reed.

h is the ordinary hand-rail.

i is the slay.

j is a slotted bar capable of being adjustably fixed to the needle-bar *f*, as shown in Fig. 4, and having the projection *j'* thereon, which operates between the fixed bracket *k*, carried on the slay *i*, and the adjustable bracket *l*, which has turned-over end *l'* thereto and is slotted and adjustable upon the fixed bracket *k* by means of the clamping-screw l^2 or other suitable means.

m m are the ordinary weighted cords or straps for imparting to-and-fro movement to the needle-bar *f*. The means for imparting motion to the cords *m m*, through which to-and-fro motion is transmitted to the needle-bar, consists of the following mechanism: Mounted on the shaft *p* are two eccentrics *p'*, and fulcrumed at *x* are two levers S. Now,

on the ends of the arms s' of each of the levers is a roller s. By the action of the weight y, attached to the arms s^2 of the levers, these rollers are kept in constant contact with the periphery of the eccentrics p', and as the shaft p revolves, noting that the eccentrics are mounted diametrically opposite each other, it will be readily seen that an up-and-down motion will be imparted alternately to the ends of the weight-arms of the respective levers. The cords m m being connected to the ends of the weight-arms of the levers and to the needle-bars, a to-and-fro horizontal motion will be necessarily imparted to the needle-bars as the weight ends of the levers ascend and descend. A similar movement may be imparted to the "grid" by a similar mechanism. When endwise motion is thus imparted to the bar f, the extent of such motion is limited by the distance of the end l' from the end k' of said bracket k, which limits the travel of the device j', fixed to the bar f, while the adjustment of the device j upon the bar f permits the exact adjustment of the needles to any desired point.

n is a cord or connection from each needle e to the hook of any suitable pattern-producing apparatus—advantageously a Jacquard machine—a separate and independent cord n being brought from each needle e to a separate and independent hook in such apparatus, or several of these cords n may be connected up to one hook in such apparatus.

n' is a separate cord or equivalent connected to the same hook as the cord n, and carries an eye n^2, through which the lappet end o is led on its way from the reel or bobbin o' to the needle e, and this cord n' carries the lingo n^3 or is otherwise suitably weighted. Thus each lappet end o is independently led through an eye n^2, independently connected, together with its corresponding needle e, to the hook of the jacquard or equivalent, and by passing this end o over two bars or supports p q the lingo n^3 causes a depression in the end o, as shown in Fig. 3, while directly the jacquard simultaneously lifts the cords n and n' the eye n^2 is correspondingly raised with the needle to which it guides the lappet ends o and thus slackens the latter corresponding to the amount of rise imparted to the said needle and again simultaneously takes up the slack when the needle falls. In order to again slacken the lappet end o, at the moment when the needle goes under the fabric at the "beat up" the whole of the lappet ends are passed over the bar or support q, which extends across the loom to include all the warp ends (and passing under all the lappet ends o) and is carried at each end by the bell-crank levers r, pivoted at r' to the frame of the loom. s is a cord or connection from the slay-frame to the free end of said bell-crank levers r at each end of said bar q, the length of this cord s being such that same only tightens just before the needles e pass under the fell of the cloth, and thus it will readily be seen that the bar q is lowered and thereby slackens the whole of the lappet ends o, while on the return movement of the slay-frame the spring t, connected to the bar q, lifts the same up as the cord s is slackened and thereby takes up the slack in the ends o caused by the rearward movement or return of the slay as the needles come from under the fell of the cloth.

u u are the warp ends, controlled by the shafts or healds v, operated in the usual manner to produce a plain cloth, or the warp ends may be guided or controlled in any other desired and suitable manner.

w is a coarse reed through which the lappet ends o are guided and kept separate as they come from the reel o' or from any other suitable device, creel, bobbin, beam, or the like.

x is a false reed ordinarily used in lappet-weaving machines for guiding the shuttle.

It will thus be seen that by the employment in lappet-looms of such a tension device as has been described above and the combination therewith of a set of independently-actuated lappet-needles carried in the novel manner described will render the looms embodying these improvements capable of producing a great variety of ornamental effects in a very efficient manner.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a tension device for lappet-looms the combination of a slay provided with a rail h, two bell-crank levers, a rod r to which they are fulcrumed, a flexible connection between one of the arms of each of said levers and the rail h, a tension-rod q carried by the other arms of said levers, a spring acting on said last-named arms to turn the bell-cranks in opposition to their connection with the rail h, cords n', provided with eyes n^2 and weights n^3, lappet-needles carried by the slay and means for operating the needles and cords n'.

2. The combination with a lappet-loom, of a needle-bar f capable of horizontal movement; a slotted stop j adjustably mounted on said needle-bar; the fixed bracket k mounted on the slay and extending alongside and in front of the slotted stop j; and adjustable bracket l provided with a slot and attached to the bracket k by means of screws through said slot, the ends l' and k' of the movable and fixed brackets adapted to act as stops in arresting the horizontal motion of the needle-bar, and the means for imparting horizontal motion to the said bar, substantially as described.

DUGALD SCOTT.

Witnesses:
ARTHUR C. HALL,
JOHN W. THOMAS.