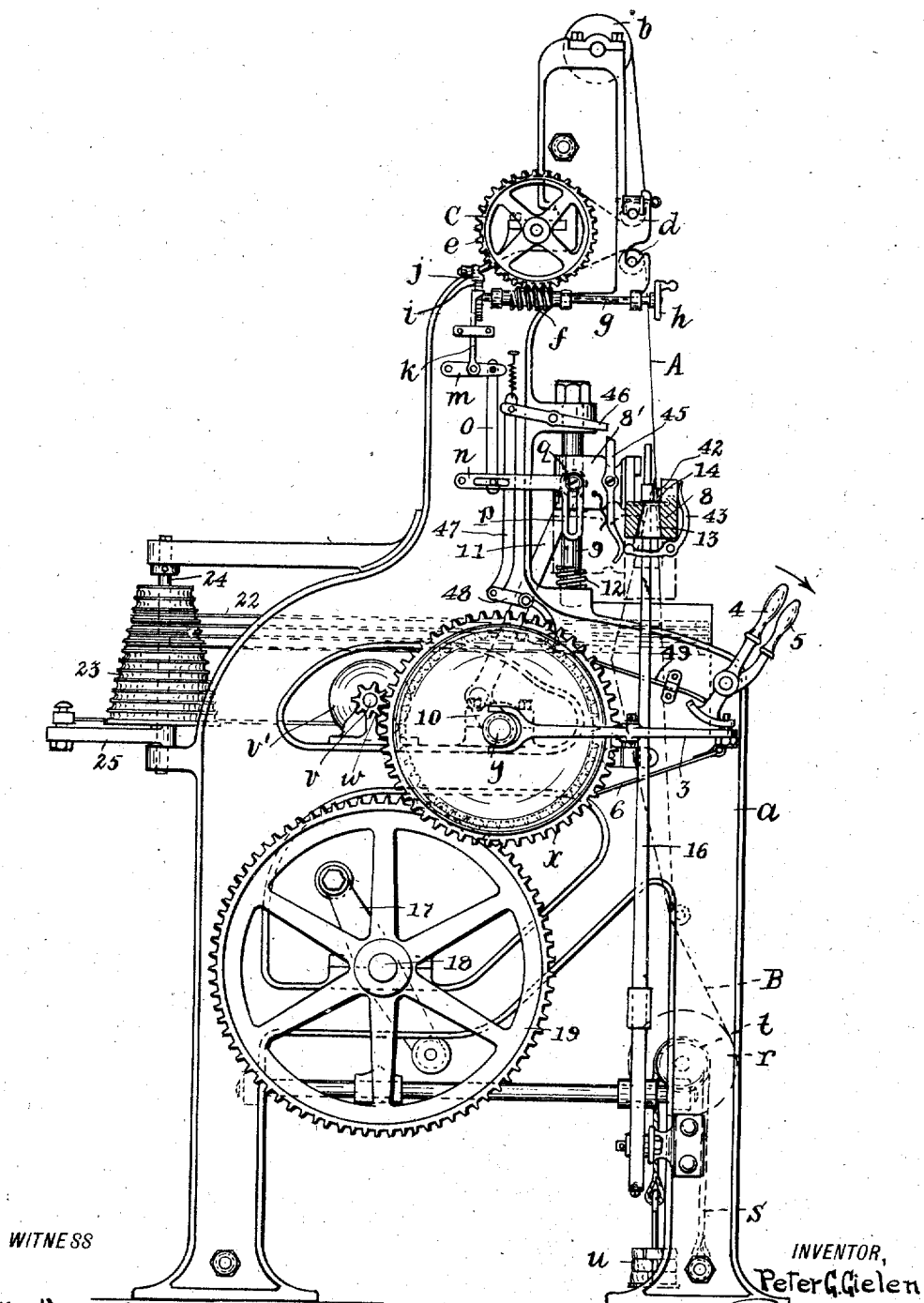


1,362,287.

P. G. GIELEN.
LOOM.
APPLICATION FILED AUG. 25, 1919.

Patented Dec. 14, 1920.
2 SHEETS—SHEET 1.



WITNESS
Wm. Drzell.

Fig. 1.

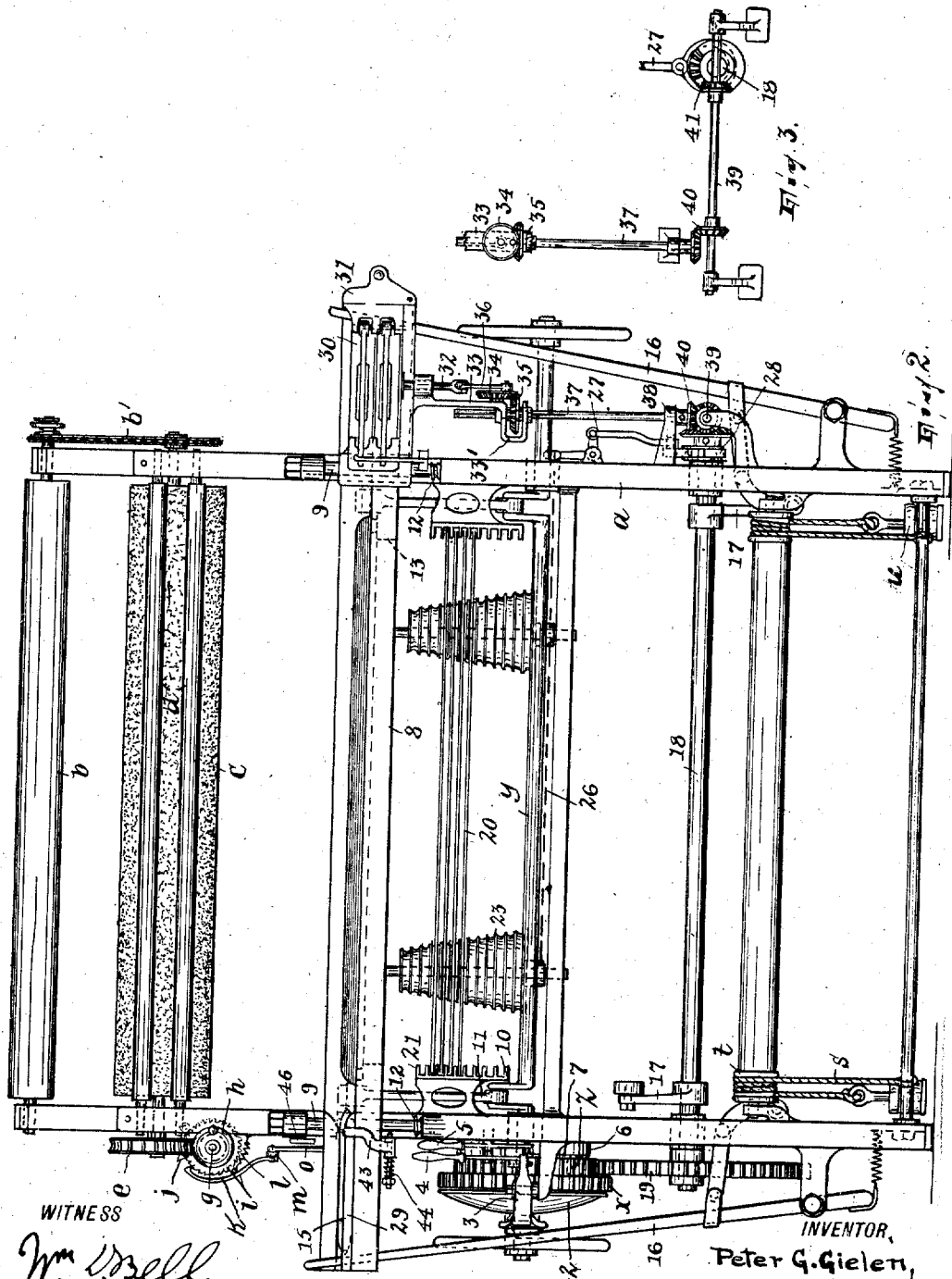
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PETER G. GIELEN, OF PATERSON, NEW JERSEY.

LOOM.

1,362,287.

Specification of Letters Patent. Patented Dec. 14, 1920.

Application filed August 25, 1919. Serial No. 319,722.

To all whom it may concern:

Be it known that I, PETER G. GIELEN, a citizen of the Republic of France, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Looms, of which the following is a specification.

This invention relates to looms, and particularly to the type of looms that are designed for weaving in an upright plane, which is very desirable in the weaving of certain fabrics, as georgettes, in order to prevent any possibility of the shuttle abrading the warps, and also because it enables the woven goods to be positioned so that it is in plain sight of the weaver and easily accessible. According to this invention the batten is arranged to reciprocate vertically, being suitably guided for that purpose, and in order to prevent the intermittent shock incident to the change from the down stroke to the up stroke of the batten and so insure a smoother action of the loom I provide resilient means to assume the down thrust of the batten. Another feature of the present invention consists in providing the batten structure with a shuttle box structure comprising a plurality of boxes shiftable for changing shuttles not in a plane transverse to that of the movement of the batten for beating up, as in the ordinary loom, but up and down, substantially in the same direction as the batten moves for beating up, suitable connections between said shuttle box structure and the means in the frame for shifting it being provided so that its movements take place regardless of the movements of the batten structure.

In the accompanying drawings,

Figure 1 is a side elevation of the improved loom;

Fig. 2 a front elevation; and

Fig. 3 a fragmentary side elevation of a part of the box operating means.

At the top of the frame *a* is arranged the cloth beam *b*, and below this beam is arranged the sand roller *c*, forward of which are two guide rollers *d*, over and under the lower and upper ones of which the fabric *e* respectively extends at points in front of the sand roller *c*. The beam *b* is driven from the sand roller *c* through a sprocket-and-chain connection *b'*, and the sand roller has a worm wheel *e* on one end thereof which meshes with a worm *f* on a transverse horizontal shaft *g* provided with a handle *h* for

turning it at will and with a ratchet wheel *i* which is engaged by a holding pawl *j* and also by an actuating pawl *k*, the latter movable up and down and held against the ratchet wheel by a spring *l*. The up and down movement of the pawl *k* is effected by a lever *m* from a lever *n*, both fulcrumed in the frame and connected by the pitman *o*, the lever *n* having a vertically slotted arm *p* with the ends of the slot of which a stud *q* on the batten structure engages near the ends of its up and down strokes. The foregoing constitutes the take-up means of the improved loom.

Near the base and at the front of the loom is arranged the warp beam *r*, *s* being a suitable let-off means consisting, say, of a rope fastened at one end to the frame and having frictional contact with a drum *t* on the beam and provided with a weight *u* at its other end. The warp is indicated at *B*, and it will be seen that the sheet of woven material and warp extends in an upright plane.

v designates the drive shaft and *v'* may be a motor, a belt pulley or other medium for rotating it. Shaft *v* has a pinion *w* which meshes with a gear *x* free to rotate on the crank shaft *y* of the loom but adapted to be fast on the shaft when clamped between another gear *z* on said shaft and a clutch disk 2 splined on the shaft and movable to and from gear *x* by the lever 3. There is a control lever 4 which, when moved in the direction of the arrow and to the limit indicated in Fig. 1 through lever 3 causes the clutch disk 2 to secure gear *x* fast on shaft *y* so that said shaft will be driven, and which when moved in the opposite direction disestablishes the connection thus effected, a brake lever 5 which the lever 4 controls then drawing taut the brake strap 6 which embraces the brake drum 7 (Fig. 2) on the crank shaft; it is unnecessary to describe this mechanism more in detail, as it has no bearing on my invention and any other well-known means for causing the starting and stopping of the loom may be provided.

The batten 8 is arranged to move up and down and has fixed thereon rearward carriers 8' which slide up and down on fixed vertical shafts 9 mounted in the loom frame. The batten structure is connected with the cranks 10 on the crank shaft *y* by the pitmen 11. Due to the weight of the batten structure and to the change in the direction of its movement from down to up

as the cranks 10 pass under the shaft *y* a considerable shock is produced in looms of this character on every revolution of the crank shaft. Where there are a large number of looms on a floor this becomes a serious objection whenever the beats of the looms happen to occur in the same cadence, and of course it is injurious to the loom itself and more or less spoils the quality of the fabric being woven. To eliminate this shock I interpose springs 12, preferably coiled about the shafts 9, between the frame and the under side of the batten, in the preferred form leaving a space between the batten, when up, and said springs, so that the latter will be effective as a cushion at the downward end portion of the throw. This very considerably eases the action of the batten and practically entirely eliminates the shock and vibration referred to.

The batten has a vertical opening 13 (see Fig. 1, and also indicated in dotted lines in Fig. 2) through which the sheet A B extends, and on the batten over this opening is fixed, horizontally, the reed 14. The shuttle 15 travels from end to end of the batten structure over the dents of this reed as a race, its movements being caused by any suitable means, picker sticks 16 adapted to be actuated by tappets 17 on the tappet shaft 18 driven by a gear 19 from the gear *z* being illustrated by way of example.

Any suitable harness motion for forming the sheds may be provided. In the illustrated construction I have shown a set of harness frames 20 arranged to slide in horizontal ways 21 in the frame *a* and all assumed to be normally held forward by springs (not shown), the same having rearwardly projecting flexible connections 22 which pass around and are secured to conical sheaves 23 (conical sheaves being employed, obviously, so as to obtain the desired convergence in the warp shed) whose shafts 24 are journaled vertically in the frame and have cranks 25 which are connected by a suitable connection 26 (see Fig. 2) with suitable operating means 27 actuated from an eccentric 28 on the tappet shaft 18. The arrangement of the sheaves and the connections 22 is a well known one: that is, the frames 20 are grouped in two sets, and one end of each connection 22 is attached to a frame in one set and the other to a frame in the other set, so that when the sheds are oscillated the sets of frames will be reciprocated in opposite directions.

The present loom is designed for the operation of two shuttles. At one end of the batten 8 (Fig. 2) is a single box 29. At the other end is a box structure 30 including, in the present case, two shuttle boxes arranged one above the other, the same sliding vertically in a framing 31 forming an extension of the batten structure. Box structure 30

has a fixed depending rod 32. Framing 31 has a depending bracket 33 in which are journaled intermeshing bevel gears 34—35, the former of which is connected with rod 32 by the pitman 36 and the latter of which is confined to move up and down with the bracket by being housed in a bend 33' thereof. Bevel gear 35 is splined on and movable vertically of a rotary shaft 37 which is journaled in bracket 33 and a fixed bracket 38 on frame *a*, said shaft having no vertical movement and being connected with a horizontal shaft 39 by bevel gearing 40, and shaft 39 being connected with the tappet shaft by bevel gearing 41 (see Fig. 3). The construction is such that due to the extensible connection (permitted by the spline between 35 and 37) between the tappet shaft and the box structure 30 the box structure may partake of the general up and down movements which characterize the batten and yet it has imparted to it by said connection up and down movement of its own in the batten structure, so as to bring first one shuttle box and then the other in line with the shuttle race.

The front wall of the shuttle box 29 has a yielding shuttle actuated piece 42 which, if the shuttle is properly boxed imparts movement to a lever 43 normally held by a spring 44 (Fig. 2) pressing said piece inwardly, so that lever 43 moves a spring-pressed dagger 45 out of position, when the batten rises, to engage a lever 46 and so through a spring elevated rod 47 oscillate a lever 48 for imparting a thrust to a suitably guided rod 49 which impinges the control lever 4 to shift the same and stop the loom; obviously, if the shuttle fails to box properly lever 43 will not actuate the dagger and so the loom will be stopped.

The general operation is quite similar to that of ordinary looms. Gearing *z*—19 being 1 to 2 and the tappets 17 diametrically oppositely arranged on shaft 18, the pickers (first one and then the other) are actuated on every reciprocation of the batten structure, while the two sets of harness assume their limits of movement, one forward and the other back, on every such reciprocation, thus to form the sheds, because eccentric 28 is arranged on shaft 18, which performs a half revolution to every full revolution of shaft *y*. Every time a shuttle is thrown across the loom from its box in structure 30 and back again said structure is shifted up or down from shaft 18, it being noted that the gear of gearing 41 which is on the shaft 18 has all but a few of its teeth absent.

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

1. A loom of the class described including, with the frame structure and a batten

structure guided for up and down movement in the frame structure, a rotating actuating member, means to reciprocate the batten structure from said member including a pitman connecting the former with an eccentric point on the latter, and means to oppose yielding resistance to the batten structure at the end of its down stroke including an elastic impact cushion interposed between parts of said batten and frame structures.

2. A loom of the class described including, with the frame and a batten structure guided for up and down movement in the frame and means to reciprocate the batten structure, of a shuttle box structure confined to move up and down in the batten structure, an actuating member in the frame with reference to which the batten reciprocates, and extensible means, connecting said member and the box structure, for transmitting movement from the former to the latter.

3. A loom of the class described including, with the frame and a batten structure guided for up and down movement in the frame and means to reciprocate the batten structure, of a shuttle box structure confined to move up and down in the batten structure, an actuating member in the frame with reference to which the batten reciprocates, and extensible means, connecting said member and the box structure, for transmitting movement from the former to the latter comprising rotary members splined together for movement one up and down with reference to the other.

4. A loom of the class described including, with the frame and a batten structure guided for up and down movement in the frame and means to reciprocate the batten structure, of a shuttle box structure movable up and down in the batten structure, and means to reciprocate said box structure.

In testimony whereof I affix my signature.

PETER G. GIELEN.