

Feb. 23, 1926.

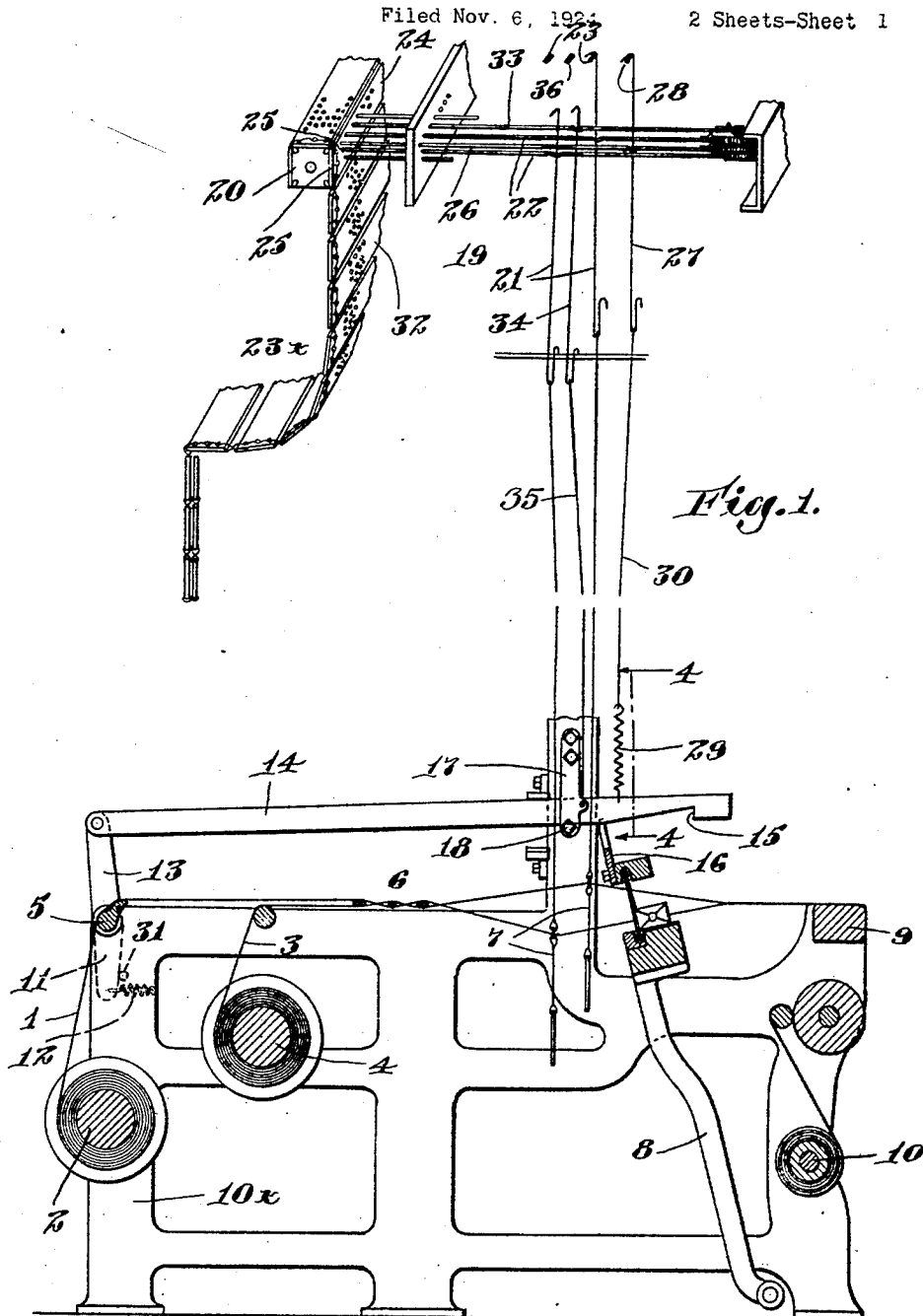
C. B. CHASE

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FABRIC AND IN LOOM EMPLOYED IN THE MANUFACTURE THEREOF

Filed Nov. 6, 1924

2 Sheets-Sheet 1



Inventor:
Charles Borden Chase,
by his Attorney,
Charles D. Richardson.

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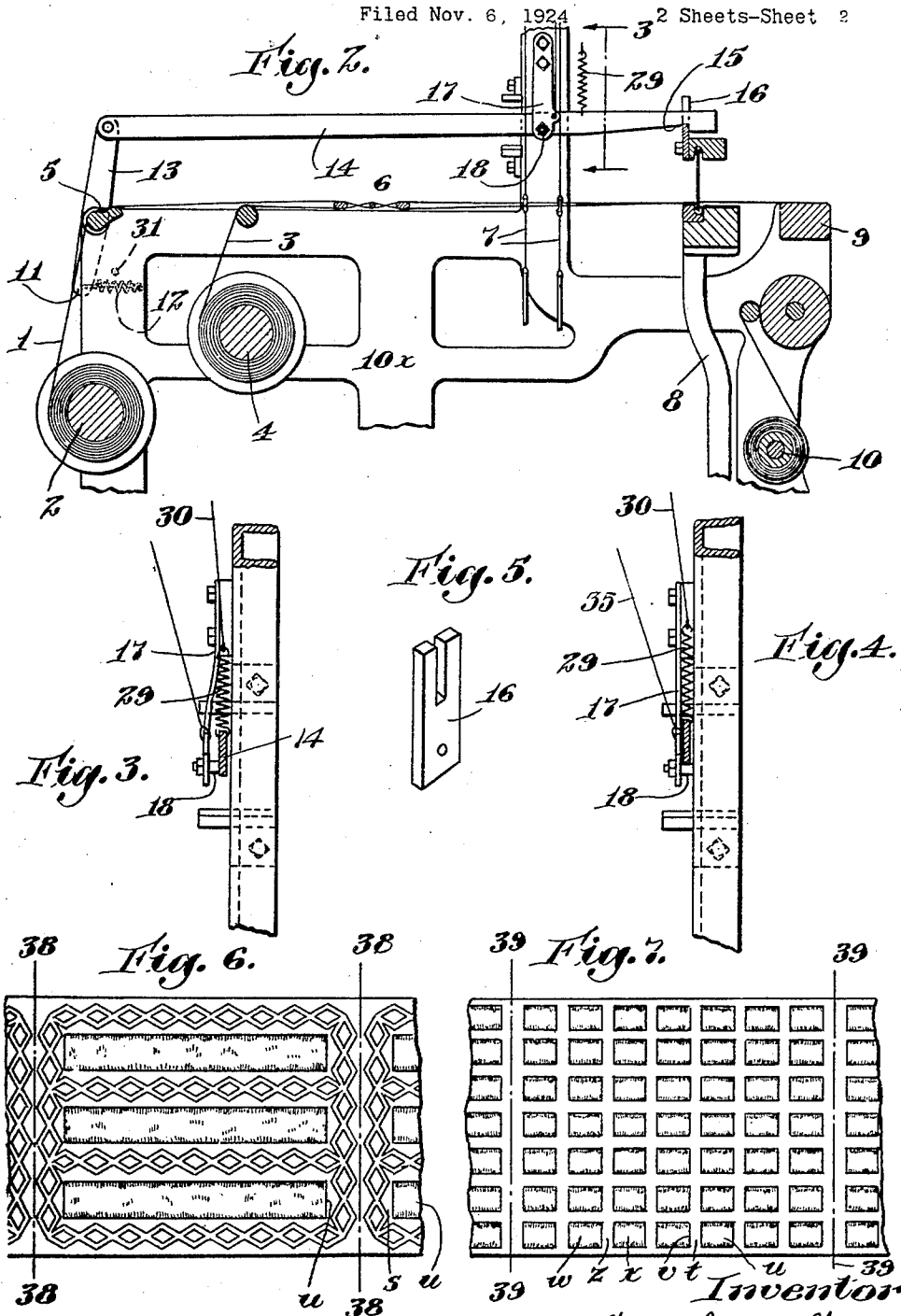
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UNITED STATES PATENT OFFICE.

CHARLES BORDEN CHASE, OF FALL RIVER, MASSACHUSETTS.

FABRIC AND IN LOOM EMPLOYED IN THE MANUFACTURE THEREOF.

Application filed November 6, 1924. Serial No. 748,059.

To all whom it may concern:

Be it known that I, CHARLES BORDEN CHASE, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Fabrics and in Looms Employed in the Manufacture Thereof, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to fabrics and the manufacture thereof, made up of a figure or a plain warp, a crinkle warp, and a weft; and particularly and broadly to a fabric that may have a longitudinal stripe of greater or less length made up of alternate sections of crinkle weave and jacquard figure, or plain weave.

To point out in a general way, the state of the art, I will refer to the bedspread art. A number of years ago, a new bedspread was developed called a "crinkle spread". It was of cotton, and made from two warps and one weft; one warp being the jacquard or figured warp: the other being a crinkled warp. It had alternate longitudinal stripes about an inch wide, of jacquard or dobby figure, and crinkle. This design extended across the fabric from selvage to selvage. The crinkle was obtained by using a vibrator, over which the crinkle warp passed. The vibrator, being attached by a long bar to the lay in the front of the loom, and to the frame at the rear of the loom by a spring, moved forward with the lay, and back by the pull of the spring, with the lay, with the result that the crinkle warp was let in faster than the other or the jacquard warp, and a crinkle or fluted effect was produced in the woven crinkle warp. These "crinkle spreads" were manufactured as piece-goods, and cut off in any desired lengths.

I have made these spreads, and also spreads with a crinkle centre or bed-top part of the spread, with a jacquard border from the pattern warp, on the sides of the quilt. Such latter spreads are made as piece-goods, and cut the desired length. But it is to be noted that such spreads have no pattern border across the ends of the spreads; that for that reason, they do not appear complete as a design; that they seem unfinished, and

to be made and sold by the yard, at so much "per".

Now the principal object of my invention is to weave a jacquard or a plain border across the end of a crinkle fabric, and I attain this object by controlling the operation of the vibrator mechanism which, as previously stated, tightens and loosens the crinkle warp, to produce the crinkle fabric. To stop the crinkle weave, I throw the vibrator out of operation, the crinkle warp at once tightening up, and thus eliminating the crinkle, and becoming the tight tension of the jacquard figure or plain warp, the loom at once beginning to weave the desired jacquard or figure or plain end-border, from what was, when loosened, the crinkle warp, but now is a pattern or plain warp. To repeat the crinkle weave, the vibrator may be thrown into operative connection with the lay, the warp ends becoming seasonably loosened and the crinkle weave immediately appearing in the woven fabric.

In short, I change, when desired, a warp from a crinkle warp into a figure or a plain warp or vice versa.

For the sake of making clear my invention, I will consider it as employed in weaving a bedspread having alternate crinkle and figured stripes, and a figured border on both sides and ends.

In the drawings illustrating the principle of my invention and the best mode now known to me of embodying the same in operative structure,

Fig. 1 is a somewhat diagrammatic drawing showing my invention in side elevation, the vibrator mechanism being disconnected from the lay of the loom;

Fig. 2 is a similar view showing said mechanism in operative engagement with the lay;

Fig. 3 is an enlarged cross-section on line 3-3 Fig. 2;

Fig. 4 is an enlarged cross-section on line 4-4 of Fig. 1;

Fig. 5 is an enlarged perspective view of guide-plate for vibrator bar;

Fig. 6 shows in plan, a bedspread having alternate crinkle and figured stripes, and a figured border on sides and ends;

Fig. 7 shows a bedspread, of lattice de-

sign, the bars of which are a plain weave, while the spaces between are a crinkle weave.

The loom here shown has the usual crinkle warp 1 and beam 2, and figured warp 3 and beam 4, vibrator 5, leaserods 6, heddles 7, lay 8, cloth breast 9 and roll 10.

The vibrator is pivotally mounted in the frame 10* of the loom, and has one arm 11 secured to a spring 12, fastened to said frame, and an opposite arm 13 having pivotally connected thereto, a vibrator bar 14 notched at 15, on its under side near its free end portion, and free to slide in a slotted guide plate 16, fast to the top of the reed fixed to the lay 8.

A spring-lock plate 17 is fixed to the arch of the frame, and has, at its lower portion, a pin 18 upon which the vibrator bar 14 rests when inoperative, as in Fig. 1.

The heddles 7 are operated by a jacquard mechanism 19 which has its usual card-cylinder 20, heddle hooks 21, needles 22, and griffblades 23 for operating the hooks; also a series of cards 23* for operating the heddles required by the design. It is to be remembered here, that through simple but well understood apparatus, not shown, the jacquard mechanism operates upon each pick.

In the end portion of each card, as 24, of the pattern design corresponding to the picks calling for a change in the design, from a crinkle weave to a plain or a figured weave, or vice versa, is punched a stop-vibrator hole 25 to receive a stop needle 26 which controls the vibrator bar hook 27, so that the latter is lifted by a griffblade 28 whenever a card, as 24, with a stop-vibrator hole 25, is presented to the needle 26; and, consequently, when the vibrator bar 14, connected to the hook by a coil spring 29 and a cord 30, is raised, the notch 15 becoming disengaged from the base of the slot in the guide plate 16 on the lay, and, when raised enough, becomes locked in raised position by a pin 18, Fig. 4, in the spring lock plate 17, the pin snapping under the bottom of the vibrator bar. But the moment the vibrator bar disengages the lay, the vibrator ceases to operate, the spring 12 pulling the vibrator arm 11 back against a stop 31, Fig. 1; and the tension in the crinkle warp becomes and remains as taut as the figure or plain warp indicated in Fig. 1; the crinkle warp disappears, and a figured or a plain weave begins, as at *s*, Fig. 6, or at *t*, Fig. 7, and continues until the design calls for a repetition of the crinkle weave, at at *u*, Fig. 6, or at *v*, Fig. 7. But the moment that call is made, a start-vibrator hole 32, Fig. 1, in the card corresponding to the new pick, receives a start-needle 33 which controls the start-vibrator bar hook 34, connected by a cord 35 to the lock-plate 17, so that the vibrator bar hook 34 is lifted by the griffblade 36, and consequently the lock plate 17, Fig. 3, with

its lock pin 18, is moved outwardly, the pin moving away from the vibrator bar, which at once drops its notched end engaging the plate 16, Fig. 2, on the lay; the vibrator alternately tightening and loosening the crinkled warp threads upon each back and forward movement of the lay, as shown in Fig. 2; and the loom again weaving the crinkle weave.

The notch 15 in the vibrator bar, and the position of the stop 31 for the vibrator arm, are so positioned that the movement of the lay moves the vibrator bar forward and back only a fraction of an inch—enough for the tension,—tight or loose—wanted.

It will be obvious that by the mechanism above described the fabric, as a bedspread, having a crinkle weave with a figured design on sides and ends, repeated as shown in Fig. 6, may be woven and later cut, as on the line 38, to form the spreads of the right length.

Further, a fabric having crinkle weave sections separated transversely by a plain section may be woven, embodied as in a bedspread illustrated in Fig. 7. This spread has plain instead of figured edges and ends, and may be cut up, as at lines 39, in such lengths as may be desired.

It will now be plain, that my purpose is to provide means whereby a plain weave or a figured weave may be changed to a crinkle weave, or vice versa, when wished, and I do so by using a jacquard mechanism to move the vibrator bar into or out of operative engagement with the lay for the purpose of causing the vibrator to loosen or to tighten the crinkle warp when required.

It is to be understood, that I do not limit my invention to using a jacquard mechanism for indicating and lifting a start hook or a stop hook respectively connected to the vibrator bar and to the spring lock plate. Any other equivalent mechanism comes within the spirit of my invention. In fact, simple manipulation of the vibrator bar could conceivably accomplish the results brought about by the above-mentioned jacquard or similar mechanisms, and a vibrator bar capable of such manipulation would embody the broad purview of my invention.

The resulting fabric is new, and its novelty resides in having a crinkle weave or stripe *u*, Figs. 6 and 7, of fabric, interrupted or followed by a different weave or figured fabric *s*, Fig. 6, or a plain fabric *z*, Fig. 7.

As the crinkle warp is let in faster than the jacquard or plain warp, to form the crinkle, obviously, inch for inch, the portion of warp used up by the crinkle weave is longer than the remaining portion used in the jacquard or the plain weave. For example, if the space *z* between the crinkle sections *w x*, Fig. 7, is one inch, then if the last inch of the crinkle *x* and the inch of

plain weave $\approx$ were woven, there would be two different weaves following from two different tensions given in sequence upon the same warp, as by the above-described mechanism.

Desiring to protect my invention in the broadest manner legally possible, what I claim is:

1. In a loom, a lay; a warp beam; a vibrator to tighten and to loosen the warp, to weave a crinkle fabric; an operative connection between said lay and said vibrator, that may be broken or completed when desired to change from a crinkle to another weave, or vice versa.

2. In a loom, a lay; a warp beam; a vibrator to tighten and to loosen the warp to weave a crinkle weave; means for connecting and disconnecting the vibrator and the lay when desired, to weave and not to weave a crinkle weave.

3. In a loom, a lay; a warp beam; a vibrator to engage the warp from the beam; a pivoted vibrator operated in one direction by a spring; a bar pivoted to the vibrator, and having a notch, to fall into engagement with said lay; a spring bolt to secure or release said bar; mechanism, not only seasonably to lift said bar out of engagement with said lay and stop the oscillation of said vibrator, and cause the crinkle weave to cease, and a different weave having a warp with tight tension to be substituted, the

spring bolt engaging the bar and holding it out of engagement with said lay; but seasonably to release said bar to fall into operative engagement with said lay and to cause the vibrator again to oscillate to cause the weave to change to the crinkle weave to repeat the design.

4. In a loom, a lay; a warp beam for a crinkle warp; a warp beam for a different warp; a pivoted vibrator over which the crinkle warp passes; a spring to operate the vibrator in one direction; a bar pivoted to the vibrator, and having a notch near its free end, to fall into engagement with said lay; a spring bolt to hold or to release said bar; mechanism not only connected to said bar to lift said bar out of engagement with said lay and into engagement with said spring bolt, stop the oscillation of the vibrator, and the tightening and loosening of the crinkle warp, and giving said latter warp the tension of the different warps for a weave different from that of the crinkle weave; but also connected with said spring bolt to release seasonably later said bar, to fall into operative engagement with said lay and cause the vibrator to renew its oscillations and cause the weave to change to the crinkle weave and repeat the design.

In testimony whereof I hereunto affix my signature.

CHARLES BORDEN CHASE.