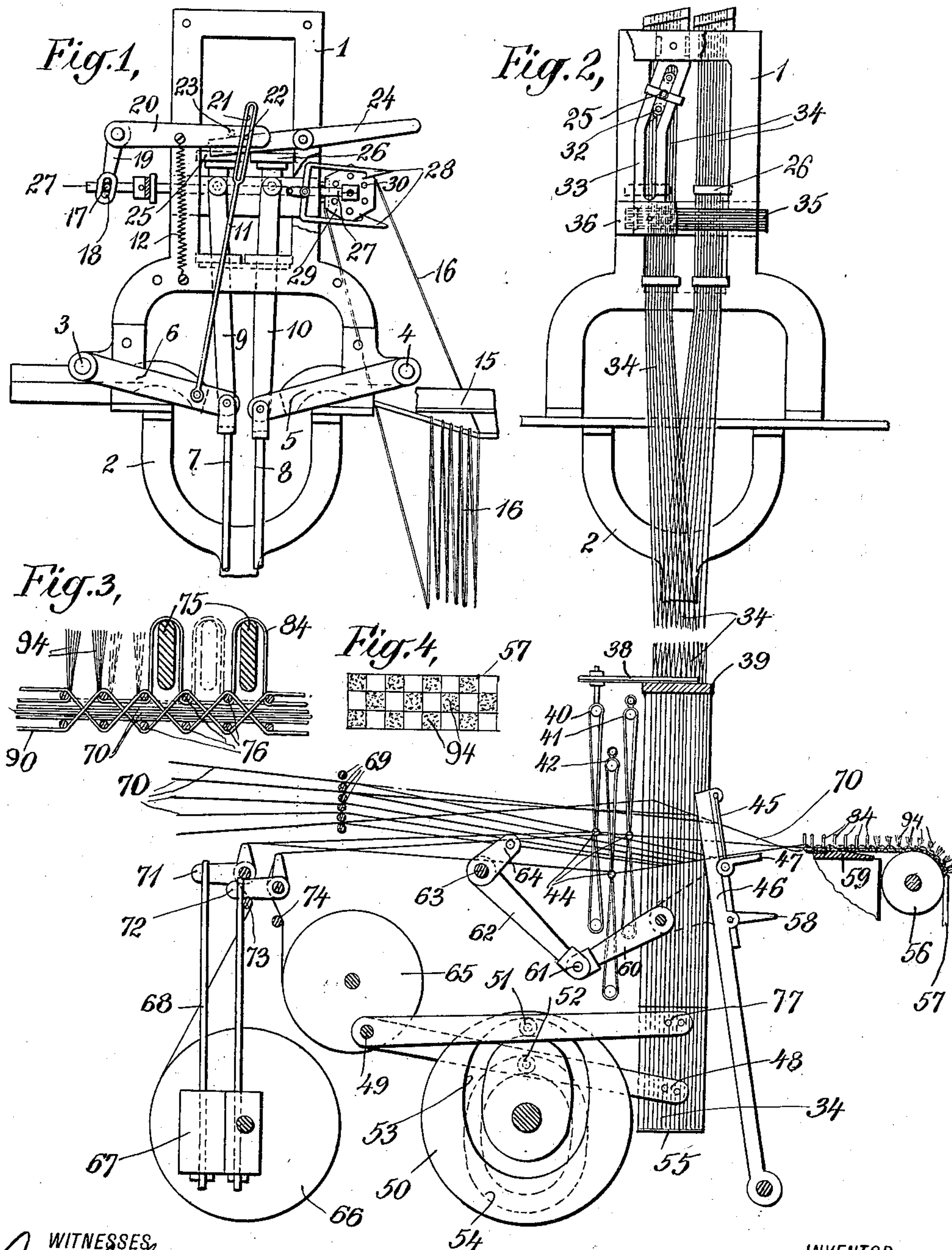


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JACQUARD LOOM.  
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981,766.

Patented Jan. 17, 1911.



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# UNITED STATES PATENT OFFICE.

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## JACQUARD LOOM.

981,766.

Specification of Letters Patent.

Patented Jan. 17, 1911.

Application filed December 6, 1909. Serial No. 531,483.

*To all whom it may concern:*

Be it known that I, JOSEPH JAGGER, a citizen of the United States, and a resident of Poughkeepsie, in the county of Dutchess and State of New York, have made certain new and useful Inventions Relating to Jacquard Looms, of which the following is a specification, taken in connection with the accompanying drawing, which forms part of the same.

This invention relates to Jacquard looms and relates especially to Jacquard looms suitable for weaving velvet carpet or other fabric in which a plurality of selectively operated lifting boards are used in connection with the usual card actuated needles to control the pattern warps.

In the accompanying drawings showing in a somewhat diagrammatic manner an illustrative embodiment of this invention, Figure 1 is a partial side elevation. Fig. 2 is a similar view, parts being broken away. Fig. 3 is an enlarged carpet section; and Fig. 4 is a plan view thereof.

In the illustrative embodiment of this invention shown in the drawings, the head frame 1 may be mounted upon a suitable yoke 2 on the frame of the loom which may comprise a lay 46 provided with the usual reed 45 and operated by any desired means as by the batten arms 60, 62, pivoted together by the pin 61, the arm 62 being secured to the pivot 63 carrying the arm 64. The cam 50 on the cam shaft may be provided with a plurality of cam grooves 53, 54 with which the cam rolls 51, 52 cooperate so as to alternately raise the cam levers 77, 48 pivoted about the pin 49. It is of course unnecessary to show or describe in detail all the usual operating mechanism of the loom which may as indicated comprise the series of guides 69 over which the creel warps 70 pass to the shedding mechanism. The binder warps may pass through the guides 44 controlled by the usual binder heddles 41, 42 and the delivery of the binder warps from their drum 66 may be controlled by any desired tension devices, such as the tension lever 71 over which the warps pass after leaving the guide 73, the weight 67 having its rod 68 in engagement with the lever. The drum 65 of stuffer warp may be provided with a similar tension lever 72 and the stuffer warps after passing over the guide 74 and tension lever may pass through the guide or eye 44 controlled by the stuffer

heddle 40 secured by the arm 38 to the comber board 39 operated in the usual way.

The jacquard needles 35 may be mounted in the usual way in their guide frame 36 and may be actuated as usual by the cards 16 passing over the card cylinder 29 which may be mounted at the end of the cylinder slide 27. As this slide is reciprocated the catch 28 which is in operative position engages one of the pins 30 as the cylinder moves away from the needles so as to bring up another card from the box 15 so that a fresh card is brought into cooperation with the needles when the cylinder again moves toward them. The cylinder slide may be operated by the slide lever 20 pivoted in the frame and normally drawn down by its control spring 12, the arm 19 of this lever being preferably provided with a slot 18 in which the pin 17 on the cylinder slide is adapted to move. The pin 23 in the slide lever may be raised by the cooperating hand lever 24 so that the cards may be manually moved around to the desired extent. The cylinder and slide lever are however normally operated by the cylinder rod 11 provided with a suitable slot 21 in which the pin 22 on the slide lever operates so as to permit sufficient backlash between these parts. This cylinder rod 11 is pivoted as indicated at its lower end to the lifting lever 6 mounted upon the pin 4 and operated by the lifting rod 7 from the cam lever 77 so that each time this lifting lever is completely raised the slide lever and connected cylinder slide are oscillated, although this cylinder slide and jacquard cylinder are normally yieldingly held against the needles by the control spring 12.

Instead of having a single lifting board to control the harness connections 34 a plurality of lifting boards may be employed which are selectively or alternately operated. As indicated in the drawings two such lifting boards 25, 26 may be used, the back lifting board 25 controlling in this instance the even numbered pattern warps while the harness is so tied that the front lifting board 26 controls all the odd numbered pattern warps. The lifting board 25 may be lifted by any suitable device, such as the lifting link 9 pivoted to the lifting lever 6 and the lifting board 26 may be similarly raised by the connected lifting link 10 pivoted as indicated in Fig. 1 to the lifting lever 5 mounted about the pin



4 and operated by the lifting rod 8 connected to the corresponding cam lever 48 so that the two lifting boards may in this instance be alternately raised. Each sectional lifting board may also be tilted as it is raised by providing thereon the rolls 32 which may cooperate with a suitably shaped tilting guide 33 so that when the board has reached its upper position it may be tilted to the extent indicated to properly form the shed and by bringing all the warp threads in line secure the maximum amount of room for the shuttle with a given lift. While when the lifting board is in its lower position indicated in dotted lines in Fig. 2 the rolls engage the vertical portion of the guide.

Under these circumstances when the loom is operating each jacquard card remains in engagement with the needles for a number of picks during which time one of the lifting boards is first raised and then lowered and then the other lifting board raised and returned to its lowered position, completing a single cycle. Thus in this case one-half the desired pattern threads throughout the width of the fabric are raised by one board to form the pattern loops and pile tufts and then thereafter the intermediate or even numbered pattern warps of similar colors are raised into the pile in the next row of the fabric. As indicated in Fig. 3 the odd numbered pattern warps may be brought up to form the loops 84 around the pile wire 75 and these loops may be subsequently severed to form the pile tufts 94. The even numbered pattern warps which are raised by the other lifting board are brought up in the next row of the fabric so as to form the diagonally arranged pile tufts 94 in the fabric 57 indicated in Fig. 4, although it is of course understood that in the completed fabric the pattern warps forming the pile are sufficiently tufted out to constitute a practically even uninterrupted surface. The filling threads 76 may if desired be so arranged in the completed fabric that a plurality of the upper filling threads engage each pattern warp between two consecutive pile tufts to more securely hold it in position and these filling threads are of course securely held together and upon the stuffer and inoperative pattern warps 70 by the binder warps 90 in the usual way. It is of course understood that after the pile wires have been withdrawn as the fabric passes over the support 59 shown in Fig. 2 the fabric 57 passes over a suitable guide roll 56 to be wound upon its drum and subsequently clipped and finished in the case of cut velvets.

Having described this invention in connection with an illustrative embodiment thereof comprising a number of illustrative forms, proportions and arrangements of

parts, to the details of which disclosure the invention is not of course to be limited, what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. The Jacquard loom for weaving cut velvet carpets which comprises a plurality of lifting boards, lifting means whereby the said boards are raised and lowered in succession, guides having an inclined portion cooperating with said lifting boards and engaged by rolls on said boards to tilt said lifting boards as they are raised, jacquard needles and cards, a card cylinder to bring said cards into cooperation with said needles when all of said lifting boards are down and thereby select the pattern threads for all of said lifting boards simultaneously, a cylinder slide on which said cylinder is mounted and means to operate said cylinder slide connected with the lifting means for one of said lifting boards, the harness connections controlled by one of said lifting boards governing the odd numbered pattern threads across the fabric and the harness connections controlled by the other of said lifting boards governing the even numbered pattern threads to alternately raise one-half of the selected pattern threads into the pile in one row and to raise the other half of the selected pattern threads into the pile in the next row of the fabric.

2. The Jacquard loom for weaving cut velvet carpets which comprises a plurality of lifting boards, lifting means whereby the said boards are raised and lowered in succession, means to tilt said lifting boards as they are raised, jacquard needles and cards, a card cylinder to bring said cards into cooperation with said needles when all of said lifting boards are down and thereby select the pattern threads for all of said lifting boards simultaneously, means to operate said cylinder connected with the lifting means operating one of said lifting boards, the harness connections controlled by each of said lifting boards governing a portion of the pattern threads across the fabric to successively raise the portions of the selected pattern threads governed by the corresponding lifting boards into the pile in successive rows of the fabric.

3. A Jacquard loom for weaving pile fabrics which comprises a plurality of lifting boards, lifting means whereby the said boards are raised and lowered in succession, means to tilt said lifting boards as they are raised, jacquard needles and cards, a card cylinder to bring said cards into cooperation with said needles when all of said lifting boards are down and thereby select the pattern threads for all of said lifting boards simultaneously, means to operate said cylinder connected with the lifting means for one of said boards, the harness connections con-



trolled by one of said lifting boards governing the odd numbered pattern threads across the fabric and the harness connections controlled by the other of said lifting boards  
5 governing the even numbered pattern threads to alternately raise one-half of the selected pattern threads into the pile in one row and to raise the other half of the selected pattern threads into the pile in the next row  
10 of the fabric.

4. The Jacquard loom for weaving pile fabric and which comprises a plurality of lifting boards, lifting means whereby the said boards are raised and lowered in succession, jacquard needles and cards, means  
15 to bring each of said cards in coöperation with said needles and hold the same in coöperation therewith while both of said lifting boards are operated and thereby select  
20 the pattern threads for all of said lifting boards simultaneously, the harness connections controlled by one of said lifting boards governing the odd numbered pattern threads across the fabric and the harness connections  
25 controlled by the other of said lifting boards governing the even numbered pattern threads to alternately raise one-half of the selected pattern threads into the pile in one row of

the fabric and to raise the other half of the selected pattern threads into the pile in the  
30 next row of the fabric.

5. The Jacquard loom for weaving pile fabrics which comprises a plurality of lifting boards, lifting means whereby the said boards are raised and lowered in succession,  
35 jacquard needles and cards, means to bring each of said cards in coöperation with said needles and hold the same in coöperation therewith while both of said lifting boards are operated and thereby select the pattern  
40 threads for all of said lifting boards simultaneously, the harness connections controlled by each of said lifting boards governing a portion of the pattern threads across the  
45 fabric to successively raise the portion of the selected pattern threads governed by the corresponding lifting board into the pile in one row of the fabric and to raise the other portions of the selected pattern threads into the pile in the adjacent rows of the  
50 fabric.

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Witnesses:

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