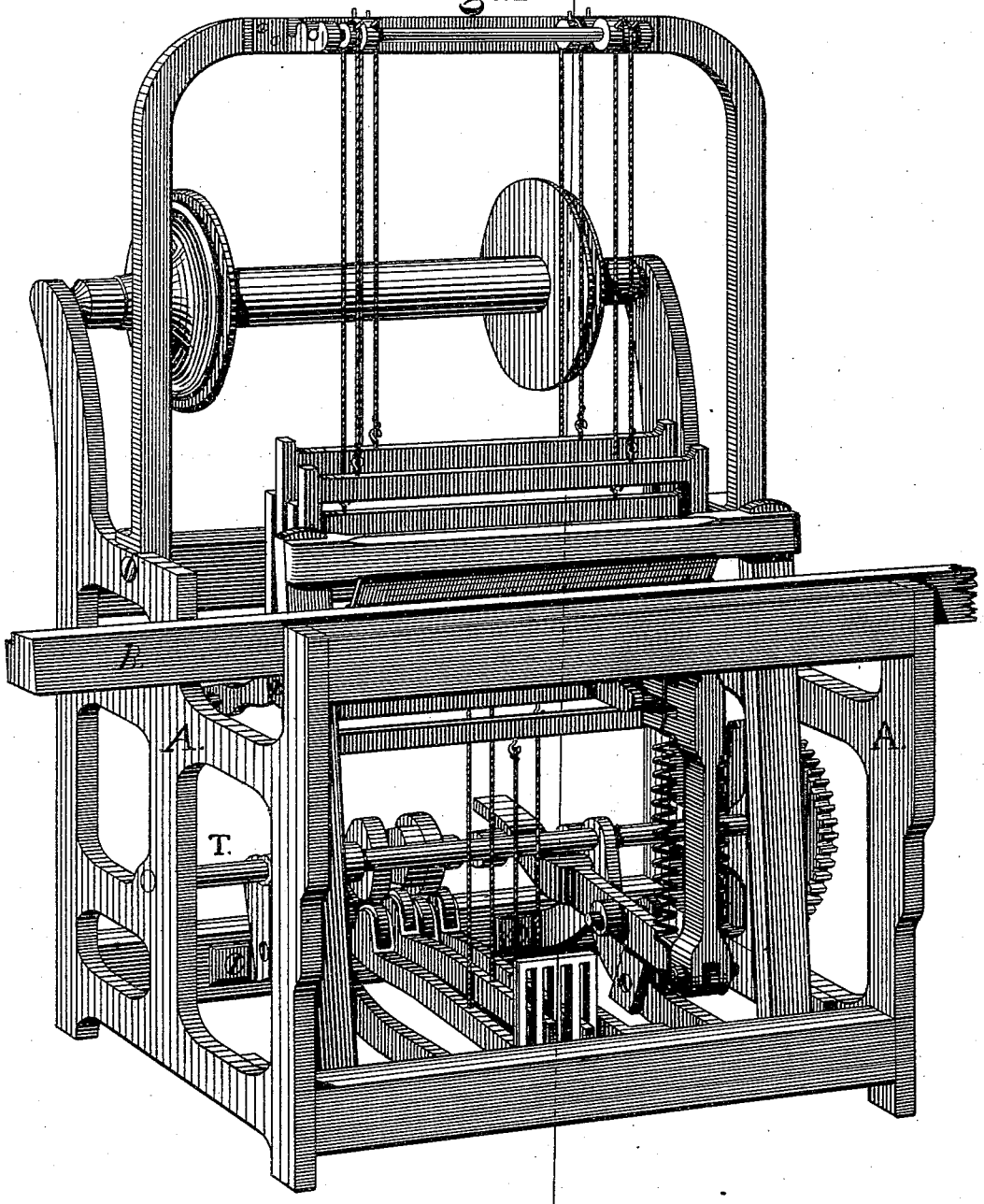
2 Sheets—Sheet 1.

J. ROTHWELL.

LOOMS FOR WEAVING LOOPED OR PILE FABRICS.

No. 192,659. Patented July 3, 1877.

Fig. 1



Witnesses

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2 Sheets—Sheet 2.

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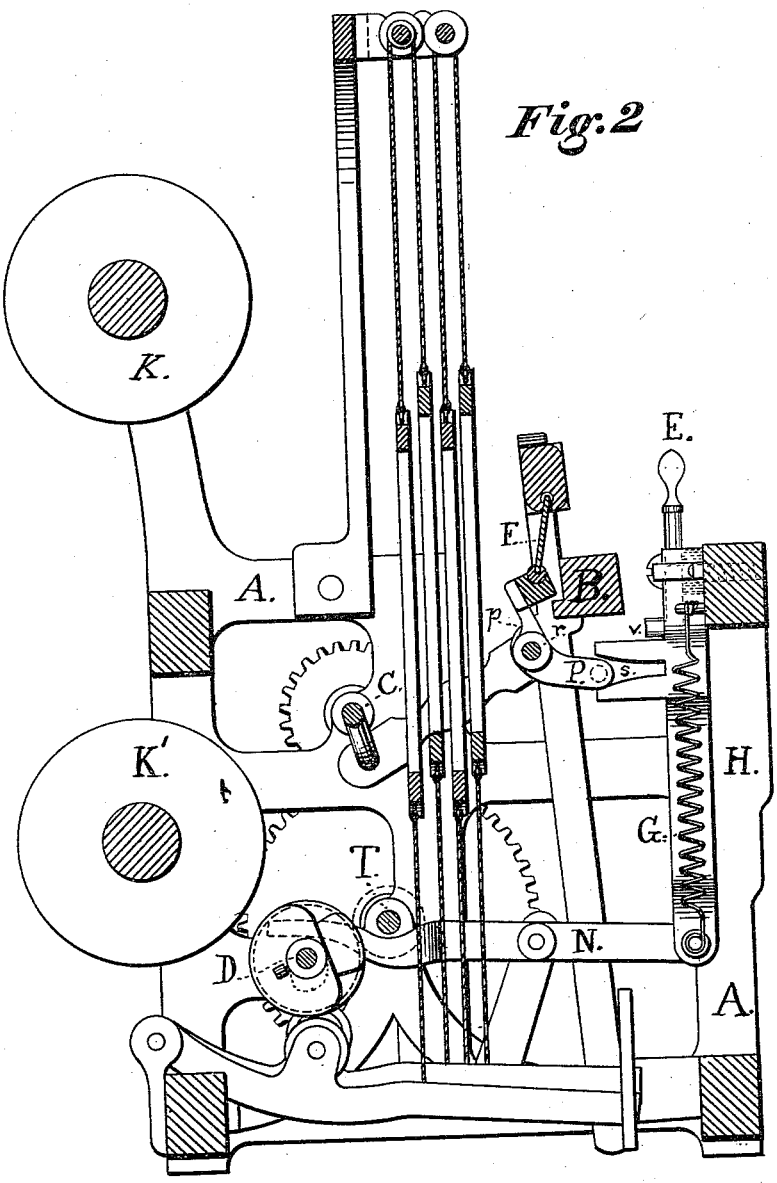
No. 192,659. Patented July 3, 1877.

Fig. 2



Witnesses

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By

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UNITED STATES PATENT OFFICE.

JOHN ROTHWELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO BRIDESBURG MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN LOOMS FOR WEAVING LOOPED OR PILE FABRICS.

Specification forming part of Letters Patent No. **192,659**, dated July 3, 1877; application filed May 9, 1877.

To all whom it may concern:

Be it known that I, JOHN ROTHWELL, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Looms for Weaving a Pile or Loop Fabric known as "Turkish Toweling;" and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification.

My invention belongs to a class of looms for weaving a looped fabric, and in the production of which fabric two separate series of warps are required, one for making the body, called the body-warp, and one for making the loops, called the terry-warp, the body-warp being weighted with more friction than the terry-warp, and the loops are formed by partially beating up certain picks of weft-threads, and afterward further beating up or driving home those picks in order to cause the terry-warp threads to be drawn off faster than the body-warp threads, and causing them to pucker up from the body in loops, weaving a fabric which is principally used for towels, napkins, dish-cloths, and other like articles that are woven with a looped body and plain borders.

First, my invention consists in a vertical sliding bar, upon which is a forked jaw for operating what is known as a loose or spring reed, and which loose or spring reed is locked automatically by said bar at each two or more shots of filling. The locking of the reed drives home the filling, and forms, from the terry-warp threads, loops on both sides of the fabric.

Second, combining with the vertical sliding bar a hand locking device, which shall, at the will of the weaver, lock the reed when it is desired to weave a plain fabric, as will be hereinafter described.

It will be well to state that a spring-reed is not new, and the forming a looped fabric by arresting the forward movement of the lay or reed, and afterward driving it home, is old and well known. Heretofore this has been done in the hand-loom, the lay being operated by hand, in which case the reed was kept out by the operator not drawing the lay home against the finished fabric, except when forming the loops, or weaving plain cloth to form the borders. It has also been attempted in power-looms, by an arrangement of slides and racks complicated and unsatisfactory in results. My purpose is to produce a simple mechanism to accomplish this result, and one which shall be under the control of the weaver, and at will shall be made to weave looped or plain fabrics.

The nature of my invention will be clearly set forth in the following specification and clauses of claim:

To enable others skilled in weaving this class of fabrics, and in the construction of looms to make and use my invention, I will describe its construction and operation.

In the drawings, Figure 1 is a perspective view of my loom; Fig. 2, a cross-section on the line *x y*, Fig. 1.

Similar letters in the drawings refer to like parts.

A is the frame or side of the loom; B, the lay; C, the crank-shaft which operates cam-shaft T, by means of the usual intermediate gear-wheels. D is a back shaft, upon which is fixed the cams for working the heddles, and upon which is also fixed a wiper-cam for operating the lever N, which in turn operates the vertical bar G. The shaft D is geared by spur-wheels to shaft T in the usual manner. F is the reed of the lay. The lower part of the reed is fitted in a grooved bar, which is fastened to two stands, *p*, on a rod, *r*, to which is fastened an arm, P. (This method of hanging the reed is well known as a spring-reed, and by which means the reed is made to swing in the lay.) On the end of arm P is a roller, which at each forward motion of the lay enters the jaw S on the sliding bar G.

I make the jaw S sufficiently wide in the mouth that, in the extreme movements of the roller on arm P, in locking and unlocking the reed, it will not, as the lay beats up, strike the ends or lips of the jaw S, and the roller on arm P when acting against the upper lip will lock the reed, and against the lower lip unlock it.

H is a spiral spring for keeping the bar G elevated at such times when the reed is to be thrown out previous to forming the loops. E is the handle on a lever pivoted on the breast-

beam. On the bottom end of this lever is an arm or pin, V, which can be forced (at the will of the weaver when the bar G is down) by the handle E, over the top of jaw S, on bar G, which pin will prevent the bar G from rising, and the loom will weave plain cloth. K is the yarn-beam for the terry-warp, and K′ the yarn-beam for the body-warp. All other parts of the loom shown in the drawings are constructed as is usual in power-looms.

The operation is as follows: The yarn on beam K′ is more tightly weighted than the yarn on beam K. The yarn from one beam passes through one pair of heddles, and the yarn from the other beam through the other pair. This is well understood by weavers. The wiper-cam on shaft D is made by the gears to operate the lever N, which in turn operates bar G every third shot of filling—that is, for two shots of filling the spring H will hold up the bar G and jaw S, which will, by its lower lip, through the arm P, prevent the reed F from being forced to the cloth-making line, and at each third shot of filling the wiper-cam on shaft D will, through lever N, draw down bar G, and this will, by the arm P and the upper lip of jaw S, lock the reed, and that stroke of the lay force that and the two previous shots of filling home, and the slack yarn on beam K will be drawn off faster than the yarn from beam K′. This will cause the terry-yarn to pucker from the body of the cloth and form loops on both sides. This will continue, forming loops at every third shot of filling, when, after weaving a sufficient length with loops, the weaver desires to weave plain cloth, to form the border at the beginning and end of each towel, the weaver, without stopping the loom, presses the handle E to the right, and at the first shot that the reed is driven home the pin V will lock on top of the jaw S, and the bar G will be held down, and the loom will continue to weave plain cloth; and after weaving sufficient plain cloth for border of the towel just finished and the one next to be woven, the handle E, without stopping the loom, will be forced to the left, and this will relieve the pin V from the jaw on bar G, and the bar will be at liberty to rise and fall by the action of the wiper on shaft D and spiral spring H, and the loom will weave a looped fabric, as before described, and which at the will of the weaver can be changed to weave plain or looped fabrics.

Should it be desired, the loops may be formed at the third, fourth, or fifth shot of filling, and if desired the loops may be all woven on one side of the cloth, all of which will be governed by the method of drawing the terry-warp in the heddles, and the method of "treading," which is well understood by those skilled as weavers.

If desired, the wiper-cam for operating the lever N may be placed on the shaft T, and the heddle and lever N operated by what is known as the scroll-cam, all of which will be readily understood by those skilled in constructing and operating power-looms.

I claim—

1. The combination of lever N, bar G with jaw S, arm P, swing-reed F, and mechanism adapted to operate the same automatically, as described, and for the purpose specified.

2. The combination of lever E, pin V, bar G having jaw S, with the loose reed F holding bar and arm P, for the purpose of changing at the will of the weaver from looped to plain fabrics, as described.

JOHN ROTHWELL.

Witnesses:
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