K. Vogel.

Weaving Heddle.

No. 4,881. Patented Dec. 10, 1846.

UNITED STATES PATENT OFFICE.

KASIMIR VOGEL, OF LOWELL, MASSACHUSETTS.

WEAVER'S HARNESS.

Specification of Letters Patent No. 4,881, dated December 10, 1846.

To all whom it may concern:

Be it known that I, KASIMIR VOGEL, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new manufacture of weavers' harness by which it is rendered more durable and is made to pass through the warp with less resistance than under any of the ordinary modes of constructing it; and I do hereby declare that the following is a full and exact description thereof.

In describing my new manufacture of weavers' harness, I shall designate by that name the apparatus in its combined state, when prepared for use in the loom, and I shall distinguish the individual threads, or cords of which the harness is composed, by the name of heddles; I am aware, however, that this latter name is frequently used as synonymous with harness.

My improved harness has the heddles made of cord, or twine, but in forming them I do not take cord or twine, that has been doubled and twisted to compose the strands thereof, but I take the yarn as it has been wound on bobbins preparatory to its being double and twisted, and I effect the doubling and twisting in the process of manufacturing the heddles for the harness; and this I manage in such a way as that the eyes, or loops in the heddles through which the threads of warp are to be passed shall be made by the doubling and twisting process without the tying of a knot or the joining of the cords by their looping into each other. Each heddle, as made by me, consists, throughout the greater part of its length, of a double strand of twisted cord, and each cord usually of three strands of yarn, although this number may be varied without altering the principle upon which I proceed but I am not aware that this increase of number will ever be necessary or advantageous; I shall therefore throughout my description consider each cord as consisting of three threads of yarn; but as the cords are double throughout the whole length of the heddles excepting at the parts where they are combined to form the loop where the six yarns are interlocked, each heddle, of course, consists of six threads of yarn.

In the accompanying drawing the four strands *a*, *a*, *a*, *a*, represent those of a finished heddle, each strand consisting of three yarns, doubled and twisted in the ordinary manner; the loop, or, eye, *a'*, *a'*, consists of two similar strands continued to such length only as is necessary to form that part; at the points *a''*, *a''*, above and below the eye, the six yarns which compose the two strands are made to cross and recross, and thereby become interlocked, so as to form the ends of the eye, the portion *a'*, *a'*, being similar to the portion *a*, *a*, that is to say, consisting of cord formed by the doubling and twisting of three threads of yarn. I have invented a machine for the making of harness composed of heddles of the kind herein referred to, and for which I have applied for Letters Patent of the United States simultaneously with this present application; but as such heddles may be formed without the use of said machine I do not, in the manufacturing of them intend to limit myself to the use of said machine.

Every one familiar with cotton machinery will readily understand the following description of the procedure by which said heddles may be formed. Let there be two sets of spindles, with their spools of yarn consisting of three each so arranged as to double and twist two of the strands marked *a*, *a*, these two sets of spindles and spools being in proximity with each other. After the two strands *a*, *a*, have been formed of sufficient length, the spindles which constitute one set are to be made to cross over, in quick succession, and to change places with those that constitute the other set, after a slight turn of twisting the yarns and to be again crossed as before; the six yarns will by such crossing and recrossing become interlocked, and will be united together as firmly at the points *a''*, *a''*, as by tying a knot of any kind. The doubling and twisting is then to go on in the ordinary way sufficiently far to form the eye part *a'*, *a'*, the sets of spindles are then again made to change places crossing and recrossing over, as before; the yarns will be thereby again interlocked, and the opposite end of the eye *a''*, formed, after which the necessary length is to be given to the other section of *a*, *a*. The two strands are, by this procedure, united together above and below the eye, to an extent not produced by the usual modes of forming the eye, and by this means the durability of the harness will be increased, as it not infrequently happens that a heddle is destroyed by the wearing through of the cord from the continued action of the warp upon it; but when formed in

the manner above indicated the strands might be cut in to some depth without destroying the heddle.

It will be seen from the foregoing description that one characteristic of my heddles is that they consist of continued strands of yarn, from one end of them to the other, united together by continuous doubling and twisting.

Having thus fully described the manner in which I form my improved heddles, to be used in my new manufacture of weaver's harness, what I claim therein as new, and desire to secure by Letters Patent is—

The making of said heddles by the doubling and twisting of yarn, by two sets of spools, each of which will form a cord of three or more strands; and the combining of such strands of yarn, so as to form the ends of the eye, by causing the spindles and spools constituting each set to cross and recross so as to change places for the purpose of interlocking the yarn and obviating the necessity of tying a knot, or of forming a loop of the ordinary kind; and this I claim whether the crossing and recrossing of the spindles be effected by hand, or by special machinery adapted to that purpose.

KASIMIR VOGEL.

Witnesses:
THOS. P. JONES,
EDWIN L. BRUNDAGE.