No. 667,812. Patented Feb. 12, 1901.

P. A. WAGNER.

LOOM HARNESS.

(Application filed May 24, 1900.)

(No Model.) 2 Sheets—Sheet 1.

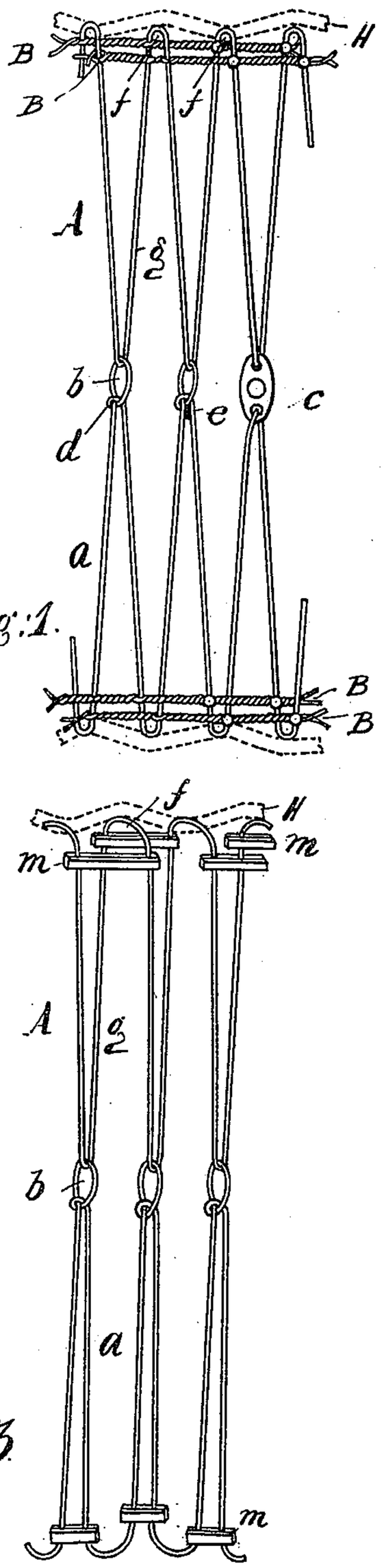

Fig. 1.

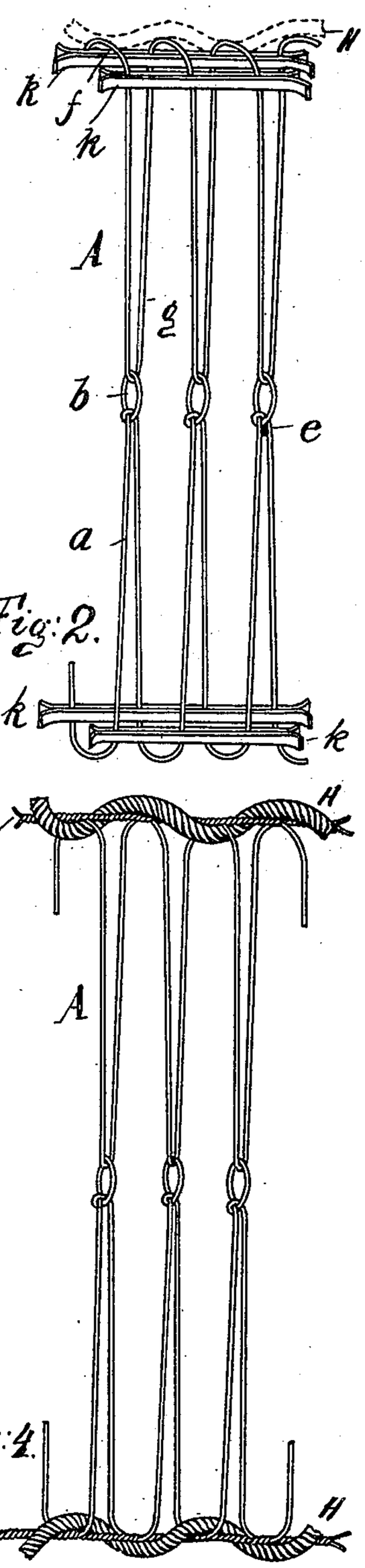

Fig. 2.

Fig. 3

Fig. 4.

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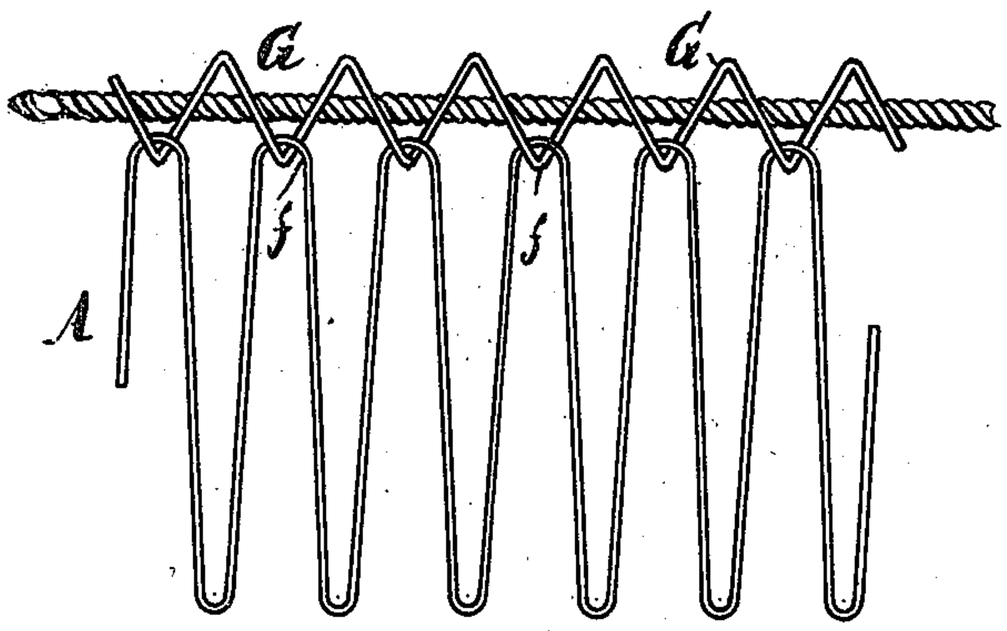

Fig. 5.

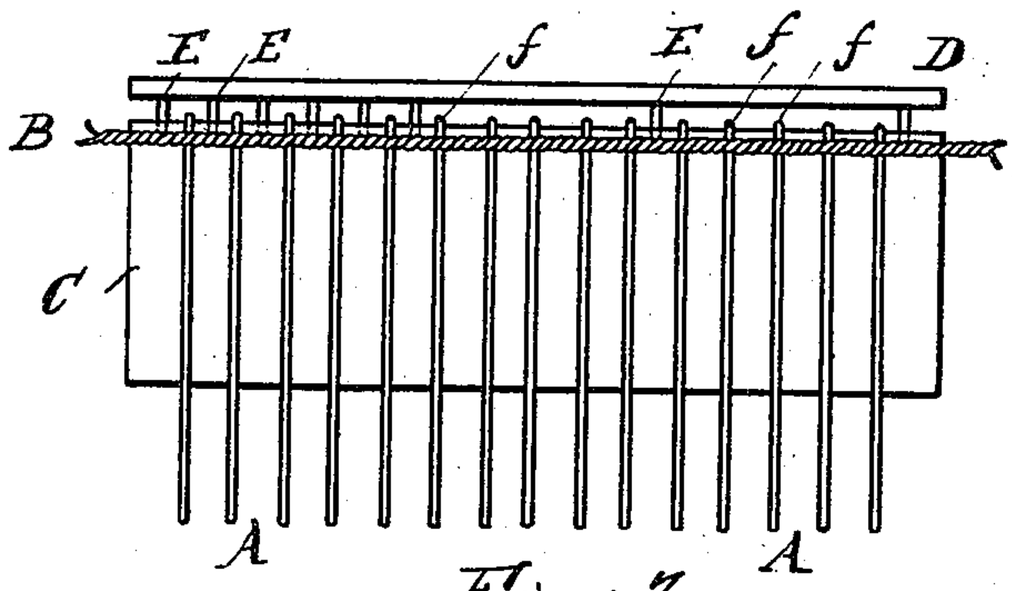

Fig. 7.

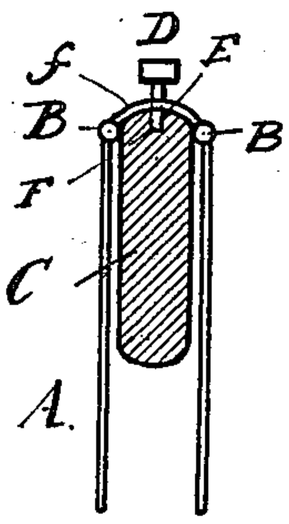

Fig. 6.

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UNITED STATES PATENT OFFICE.

PAUL A. WAGNER, OF CARLSTADT, NEW JERSEY.

LOOM-HARNESS.

SPECIFICATION forming part of Letters Patent No. 667,812, dated February 12, 1901.

Application filed May 24, 1900. Serial No. 17,786. (No model.)

To all whom it may concern:

Be it known that I, PAUL A. WAGNER, a citizen of the United States, and a resident of Carlstadt, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Loom-Harness, of which the following is a specification.

This invention relates to improvements in loom-harness.

One object of this invention is to produce a new and improved loom-harness which can be made in unlimited series and sold in bunches, say, of one thousand heddles each, more or less, and from which the weaver can readily make a harness of as many heddles to the inch as are necessary for the particular requirements, as the heddles are capable of adjustment toward and from each other on the shafts in the direction of the lengths of the shafts to a greater or less extent, and the improved harness is not apt to become tangled in handling, can be manufactured much cheaper than any other harness, and enables the weaver to build up a harness of any desired density of heddles.

A further object of my invention is to provide a ready, simple, and effective means for holding the heddles securely in place on the shaft after they have been adjusted according to the special requirements.

In the accompanying drawings, in which like letters of reference indicate like parts in all the views, Figures 1, 2, 3, 4, and 5 are diagrammatic views of different forms of loom-harness in which my invention is embodied. Fig. 6 is a vertical transverse sectional view through a shaft on which the harness shown in Fig. 1 is applied. Fig. 7 is a side view showing the heddle-fastening device.

The heddles A, which may be of any material suitable for the purpose, are united at the edges of the harness by one or more binders, which are separately attached to the heddles and are flexible, so as to permit of adjusting the individual heddles toward or from each other and so as to make a harness of any desired density of heddles—that is, to have a greater or less number of heddles to the lineal inch of harness. A piece of my improved harness of a certain width can thus be contracted or extended, according to requirements, and the binders can be severed between any two heddles without destroying the heddles or rendering the harness valueless.

Various types and kinds of binders may be used and some of them will now be described.

In the form represented in Fig. 1 the corresponding members or standing parts of the heddles are united by two continuous binders B, which are preferably formed of two fine wires twisted together or of two threads twisted together, with the standing parts of the heddles disposed at equal intervals. When this harness is applied on the shaft C, the bights *f* straddle the shaft and the binders B lie one on each side of the longitudinal central plane of the shaft a short distance from each other. The several heddles are held in place after having been adjusted by means of a locking-bar D, which has projections E, which are inserted into a longitudinal kerf F in the edge of the shaft C, such projections being arranged at greater or less intervals, as there may be one between each two bights *f*, as shown in one part of Fig. 7, or a series of bights *f* may be between two such projections, as is shown in another part of Fig. 7.

As shown in Fig. 2, the binders may each consist of double paper or fabric strips *k*, pasted together to hold the standing threads of the heddles between them, or these binders may be formed of short pieces of paper or fabric *m*, pasted together and holding corresponding parts of the heddle-threads between them alternately at opposite sides, as shown in Fig. 3.

As shown in Fig. 5, the heddles may be united by a binder formed of a single or double strip of paper G, pasted to the bights *f* and doubled or folded between them on a zigzag line, and these zigzag portions have holes through which the cord H is passed for the purpose of holding the heddles in place and on which cord the heddles can be shifted toward or from each other.

In the construction shown in Fig. 4 the heddles are connected by a single binder *t*, composed of twisted fine wires or threads, which binder lies on the top of the shaft C. The cord H is passed alternately under and over the bights, as shown in the various figures.

As represented in Figs. 1 to 5, one part of

the harness, from the middle to one outer edge, (which part will be referred to hereinafter as the "lower" part,) is formed of a single continuous thread *a*, which is looped back and forth from the middle of the harness to the outer edge, each inner bight having formed therein an eye *b*, as shown in Figs. 1 to 6, or having attached thereto an eye or mail *c*. The eye *b* is formed by means of a single knot *d* instead of two knots, as heretofore, and after the harness is formed the single knot *d* is held in place by the application of a suitable adhesive—such, for instance, as glue and as indicated by *e* on some of the knots. The bights *f* at the outer edge are adapted to engage the usual cord or the edge of the shaft or a rod supported by the shaft, as may be desired. The other part of the harness—that is, the upper part—is also formed of a single continuous thread *g*, which is looped back and forth from the outer edge of the harness to and through the eyes *b* or mail *c* of the lower part of the harness, and the bights *f* at the outer edge of this upper part are likewise adapted to engage the shaft or cord or rod.

I prefer to use two binders at each edge of the harness; but I may use one, and I prefer to make the binders of twisted wires or cords.

Although in most of the figures in the drawings the binder is represented as drawn taut, while the cord is slack, it will be understood that the parts are represented in this manner for the sake of clearness and that in practice the cord is drawn taut, while the binders are more or less slack, as the heddles are usually spaced closer to each other than the distance between such heddles on the binder.

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

1. In a loom-harness the combination with heddles, of a flexible binder made separate from and attached to the individual heddles and connecting the heddles at each shaft, separable to a greater or less extent which binder connects each heddle with its adjacent heddle at points on opposite sides of a longitudinal plane through the binder thus permitting of moving the individual heddles closer toward and farther from each other according to the number of heddles desired per inch of harness and also permitting of cutting the harness at any desired heddle without destroying any other heddle or the efficacy of the binder, substantially as set forth.

2. A loom-harness having heddles, the upper and lower parts of each heddle being composed of two threads extending independently of each other from the heddle-eye to the shaft, a binder made separate from and attached to the individual heddles and connecting the heddles near the outer edges, separable to a greater or less extent, and means independent of the harness and shaft and applied temporarily on the shaft over the heddles for holding the heddles in place on the shaft.

3. In a loom-harness, the combination with the harness-shaft, of heddles, and two binders connecting the heddles at each outer edge, separable to a greater or less extent, and which binders are disposed to rest on the harness-shafts at opposite sides of the longitudinal central planes of the shafts, a short distance from each other, substantially as herein set forth.

4. In a loom-harness, the combination with thread-heddles, of a binder connecting them separable to a greater or less extent at the outer edge of the harness and which binder is composed of wires twisted together to securely hold the individual heddles between the wires, substantially as herein set forth.

5. In a loom-harness the combination with the shaft, of heddles resting on said shaft and a heddle-retaining device made independent of the harness and applied temporarily on the shaft and extending over the heddles to hold them in place on the shaft, substantially as set forth.

6. In a loom-harness, the combination with harness-shafts having longitudinal kerfs, of heddles on said shafts and a heddle-retaining bar having projections passed into said kerfs between the heddles, substantially as herein set forth.

7. A harness for looms composed of two parts connected at the eye, and having each of said parts from the shaft to the middle formed of a single continuous thread looped back and forth and continuous throughout a series of such looped parts, the adjacent standing parts of the loops being connected together near the outer edge of the heddle and the individual heddles thus formed separable to a greater or less extent, substantially as set forth.

Signed at Carlstadt, in the county of Bergen and State of New Jersey, this 19th day of May, A. D. 1900.

PAUL A. WAGNER.

Witnesses:
H. M. FLANNERY,
OSCAR F. GUNZ.