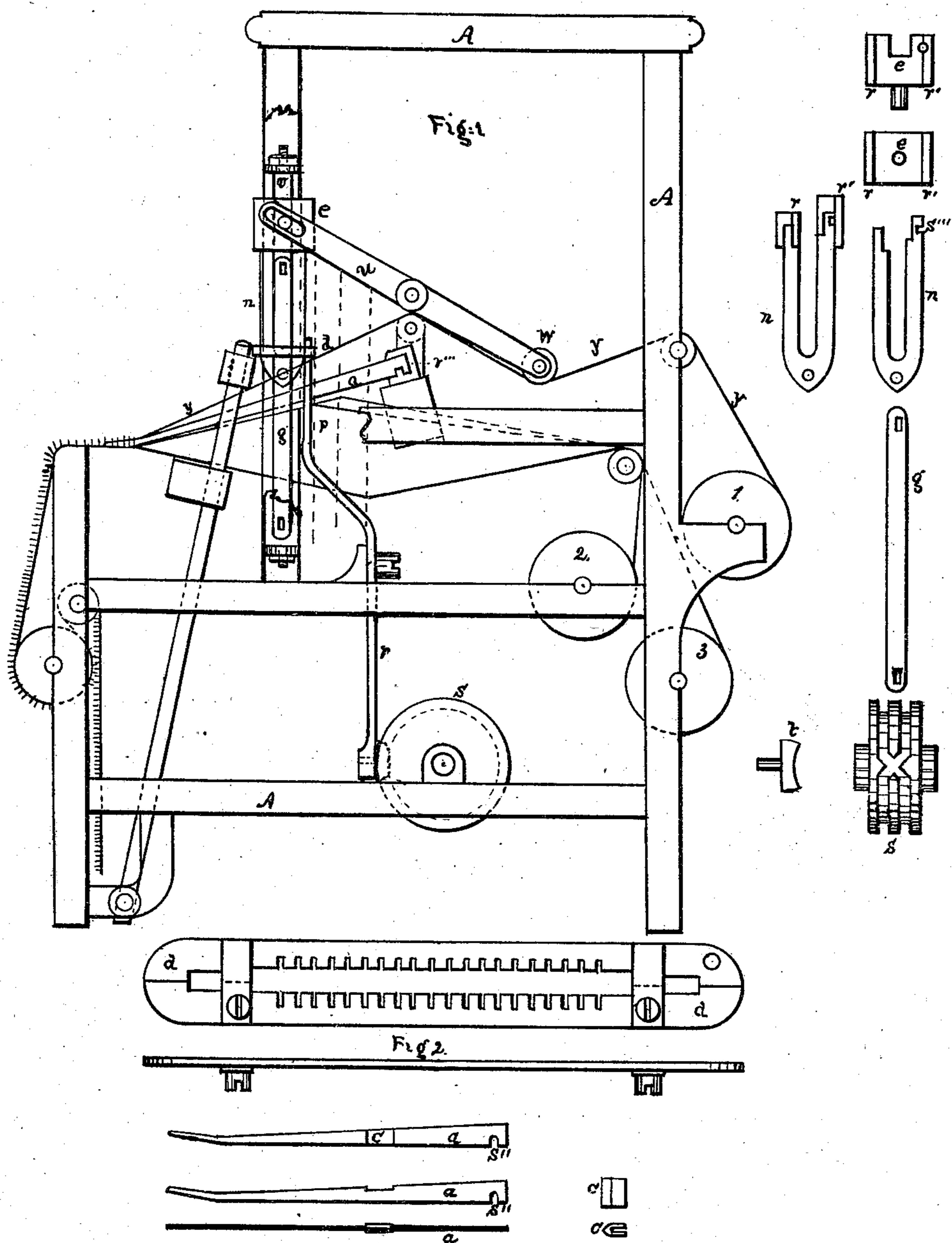


J. SHINN.
Weaving Pile Fabrics.

No. 133,676.

Patented Dec. 3, 1872.



Witnesses
William Craven
William Knowles

Inventor

John Shinn

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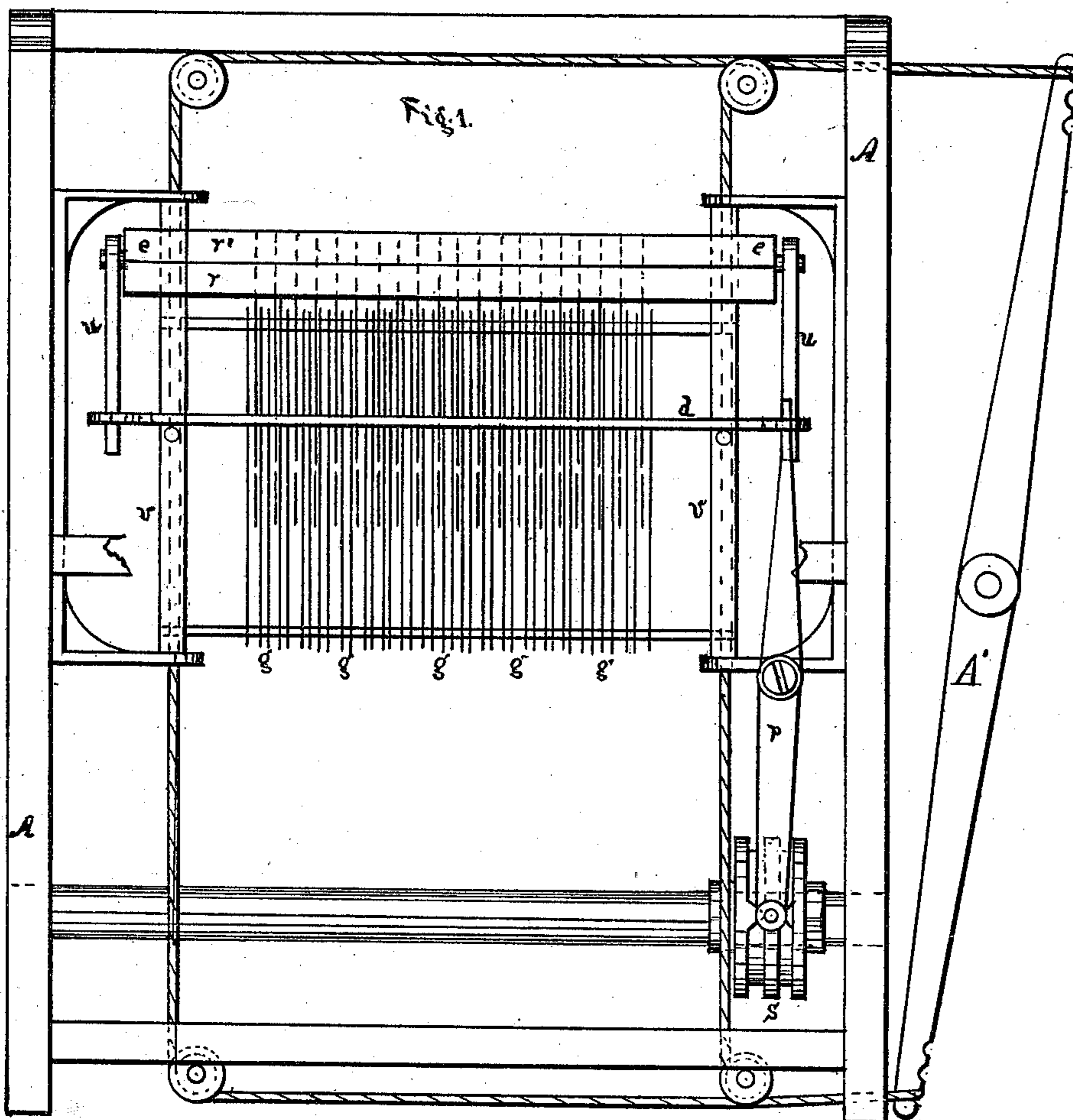
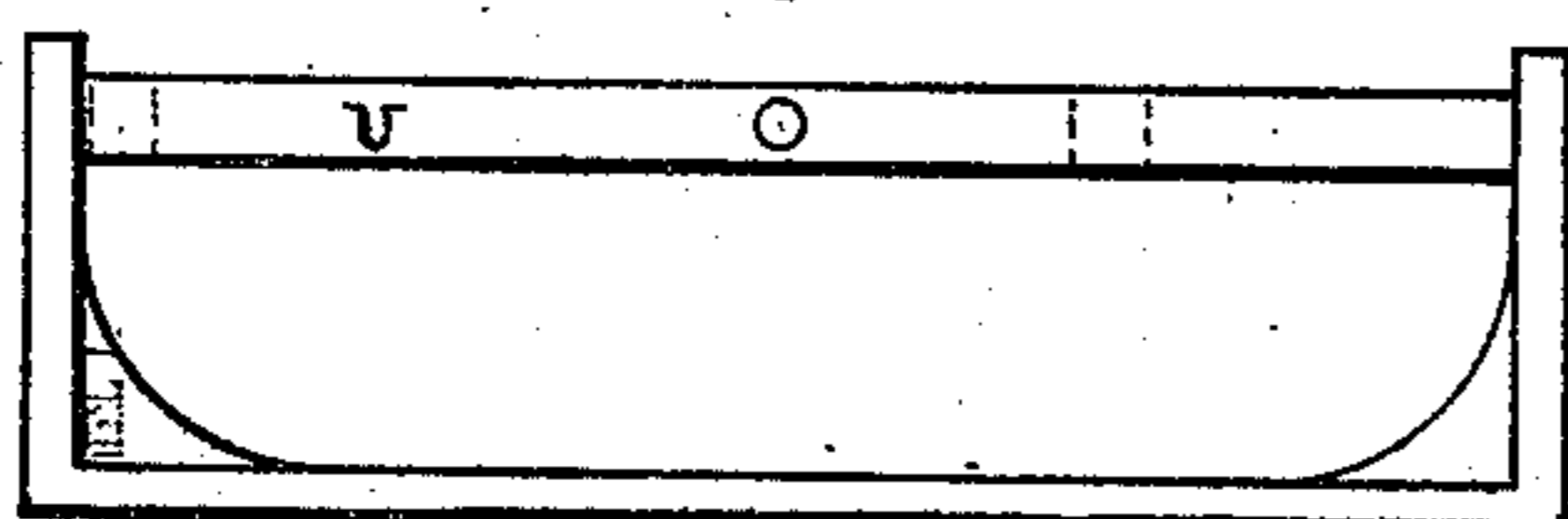


Fig. 2.



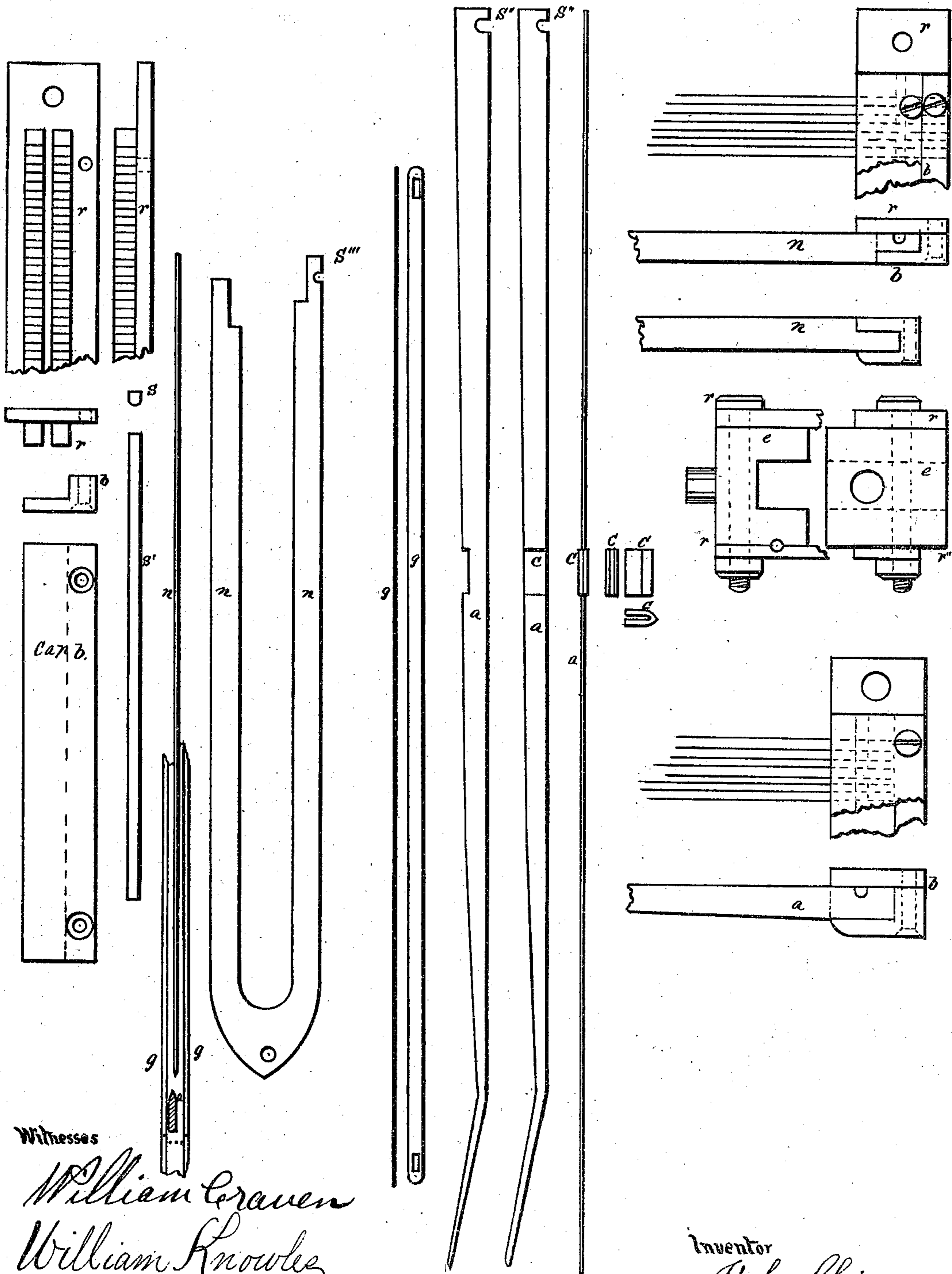
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UNITED STATES PATENT OFFICE.

JOHN SHINN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
HIS RIGHT TO JOHN DOBSON AND JAMES DOBSON, OF SAME PLACE.

IMPROVEMENT IN WEAVING PILE-FABRICS.

Specification forming part of Letters Patent No. 133,676, dated December 3, 1872.

To all whom it may concern:

Be it known that I, JOHN SHINN, of Philadelphia, Pennsylvania, have invented certain Improvements in Looms for Weaving Pile-Fabrics, of which the following is a specification:

The invention relates to looms for weaving with stationary wires running through the reed and parallel to the warp-threads, the pile being made by passing the needles which carry the pile-yarn alternately over the wires, and binding the pile-yarn by the filling or weft yarn. The loops forming the pile are drawn off the ends of the pile-wires by the take-up and the action of the reed, all of which will be described hereafter. The invention consists, first, in a needle for carrying the pile-yarn over the wires, which is constructed with two shafts, the eye and point being between the two shafts. The second part of my invention consists in the peculiar arrangement of a false reed which guides the yarn that forms the binding-warp when weaving a tapestry of velvet carpet, all of which is hereafter described, and prevents the needles from crossing and breaking it, and at the same time presents no obstacle in putting through the heddles the threads that may get broken in the process of weaving. The third part of my invention consists in a wedge-shaped piece soldered on and to the pile-wire, at the point where it passes through the false reed and where the needle passes over the pile-wire, to insure the passing of the needle alternately on each side of the pile-wire. The fourth part of my invention consists in the combination and arrangement of a roller with the cross-heads, to which are fastened the needle-bars, and operated by the cross-heads, and having a movement in unison with the needles, for the purpose of keeping the pile-yarn always at the same tension, that the loops of pile may all be of the same height.

In describing the construction and operation of my improvement, reference will be had to the accompanying drawing making part of this specification.

Figure 1, Sheet 1, is an end view of a part of a loom with my improvements. Fig. 2, Sheet 1, is a view of the needle-guide *d*, and the other views on Sheet 1 are details. Fig.

1, Sheet 2, is a front view of my improvement and part of a loom-frame. Fig. 2, Sheet 2, is a view of the guide for the cross-head for carrying the needle-bar. Sheet 3 contains views of parts of the invention in detail.

Similar letters in the drawing refer to like parts.

A represents the loom-frame. In Fig. 1 three yarn-beams are shown, marked 1, 2, and 3, which are required for weaving a tapestry carpet. No. 1 is the pile or worsted yarn; No. 2, the body-yarn; No. 3, the binding-yarn. Three heddles are used, two for the binding-yarn, and one for the body-yarn. *v v* are two vertical guides, one on each side of the loom, for the cross-heads *e e*, to which are fastened the needle-bars *r* and *r'*, and to these needle-bars are fastened the needles *n*. One of the shafts of the needle may be made a little longer than the other, that the cap *b* holding the needles in the bar *r* will project above the other, and thereby enable the screws holding the cap *b* to the bar to be removed and replaced readily. The longest arm of the needle has a small notch, *S'''*, in it, which is made to fit the feather *S'*, Sheet 3. *a*, Sheet 1, is the pile-wire, one end resting on the cloth, the other end in a rack, *r'''*, fastened to the sides of the loom, and above the body and binding warps. *C*, Fig. 2, is a small piece of sheet brass, soldered to the pile-wires, and is in the form of a wedge with the point up. The wide end of the pile-wire has a notch, *S''*, which fits into a feather in the rack. The needles and pile-wires should be made of No. 23 sheet steel, with a spring temper, and perfectly smooth. *g* is one of the dents of the false reed or guide, and should be about seven-teen inches long and five-sixteenths of an inch wide, and No. 30 wire-gage on the edge, and perfectly smooth on all parts. At each end is a small slot. The guides *v v* carry two horizontal bars, on which are strung the dents *g* forming the false reed. *d* is a guide for the purpose of shogging the needles across the pile-wires, by means of the scroll *S* and lever *p'*, which is formed in two parts, as shown in Fig. 2, Sheet 1, and at each end are slots, through which pass the guides *v v*. The guide *d* rests on pins in the guides *v v*, and at one end is a hole through which passes the upper end of

the lever *p*. In the lower end of the lever *p* is a small swivel, which works in a two-grooved scroll, *S*. *W* is a roller resting on the pile-yarn and carried by the arms *u u* pivoted on a stud fastened to stands—one on each side of the loom. The opposite end of each arm *u* has a slot in which is fitted a pin, fastened in the cross-head *e*. The other ends of the arms *u* might be slotted also, that the roller may be adjusted at a greater or less distance from the center. This tension-roller tightens the yarn *y* when the needles are up or down, but while they are moving the yarn is slack, which allows knots to more freely pass through the eyes of the needles. The cross-heads *e e* are fastened to a cord (see Fig. 1, Sheet 1) connected to the vertical lever *A'*, by which means motion is communicated to the needle-bar.

The operation is as follows: The pile-yarn *y* is passed through the eye of each needle, and the needles receive a vertical movement from the lever on the side of the loom. The guide *d* receives a horizontal or cross movement from the scroll *S* through the lever *p*. When the guide *d* moves to the left the needles will all be pressed against the dents in the false reed that are on the left of the pile-wire *a*, and the small wedge on the pile-wire will prevent the pile-wire from hugging the dent *g* and make an opening between the dent and the pile-wire, and the needle will pass down on the left of the wire, carrying the pile-yarn with it, when a shot of weft will bind it to the body of the cloth. As the needles rise the roller *W* will fall and draw the slack yarn down between the whip-roller and a small roller on the rack *r'''*, into which the ends of the pile-wires are fastened. (See Fig. 1, Sheet 1.) When the needles are drawn to their full height the guide *d* will be shifted to the right and all the needles will be drawn against the dents *g* on the right of the pile-wire, and the wedge on the pile-wire will insure their passing to the right and carrying the pile-yarn *y* on that side of the pile-wire, and a shot of weft will bind it into the body of the cloth, forming another row of loops. The needles,

at the next rise, will be shifted to the left, as before described. The false reed is arranged with two splits or dents after each needle, and the binding-warp passes between these two dents. The body pile-yarn and needle pass through the splits next those having the binding-yarn in them. The body-yarn rises and falls with the needles, and the binding-yarn being between dents, separate from the needles, these dents act as a guide and prevent the points of the needles from crossing and breaking it. The dents of the false reed are made long that they may be pressed apart in putting in any warp-ends that may be broken. When it is necessary to pass the broken ends through the heddles, needles, and false reed, the pins holding the guide *d* down are removed, so that it may be raised up to the needle-bar, and the needle and splits of the false reed may be pressed aside to get at the heddle-eye. As the loops that form the pile are made on the ends of the pile-wires they are drawn off by the take-up roller.

To make plush or cut-pile fabric, a revolving knife may be used, working at the ends of the pile-wires, and cut the loops as they pass off the ends of the wires.

Claims.

1. In a loom for weaving piled fabrics on stationary and longitudinal wires, I claim the needle *n* having two parallel shafts, with the eye and point between, as and for purposes described.

2. I claim the false reed, in combination with the needle having the point between the two shafts, as and for the purpose described.

3. I claim the wedge *C*, in combination with the pile-wire *a*, as and for the purpose described.

4. I claim the roller *W*, in combination with the cross-heads *e e* and needle-bar, as and for the purpose described.

JOHN SHINN.

Witnesses:

WILLIAM CRAVEN,
WILLIAM KNOWLES.