J. H. CROWELL.

Machines for Making Weavers' Harness.

No. 144,320. Patented Nov. 4, 1873.

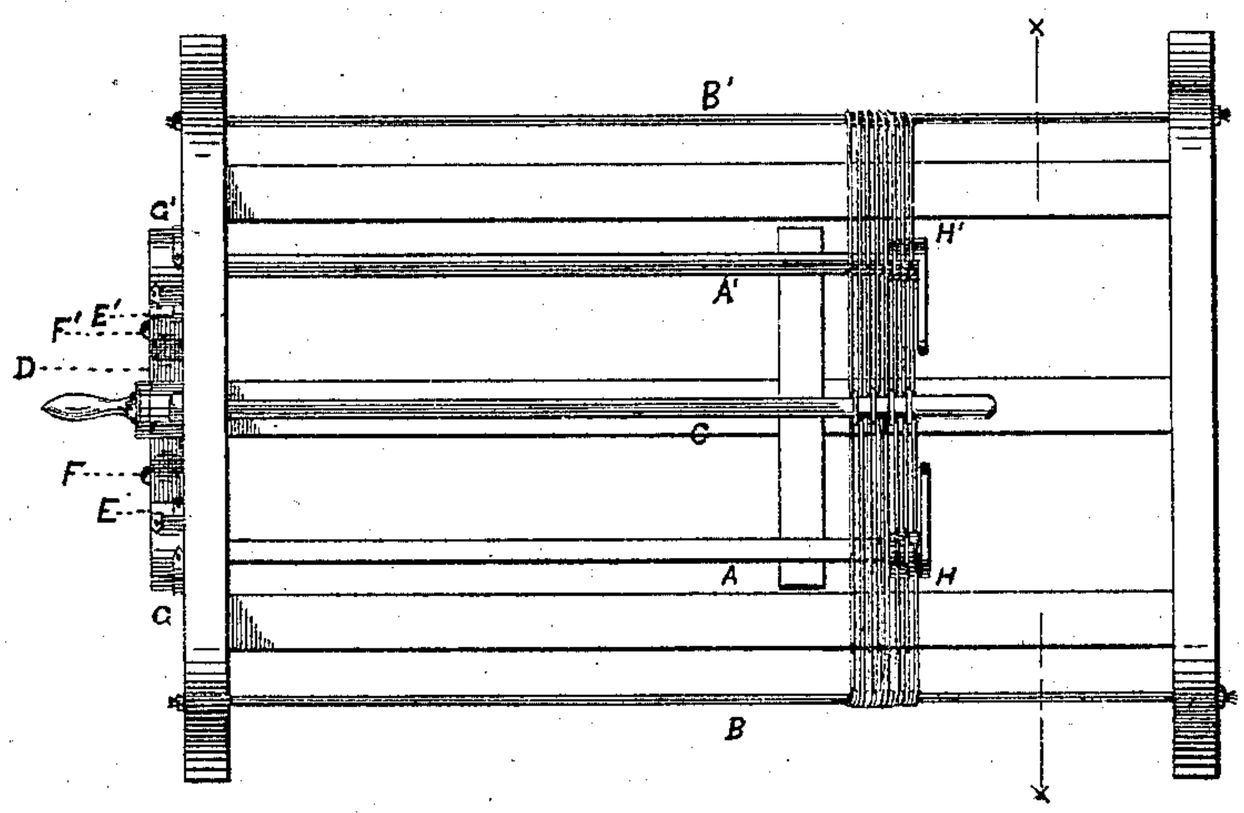

FIG. 1.

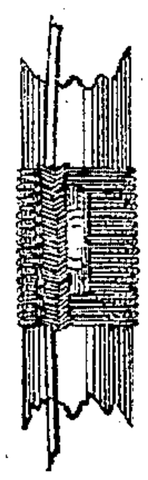

FIG. 3.

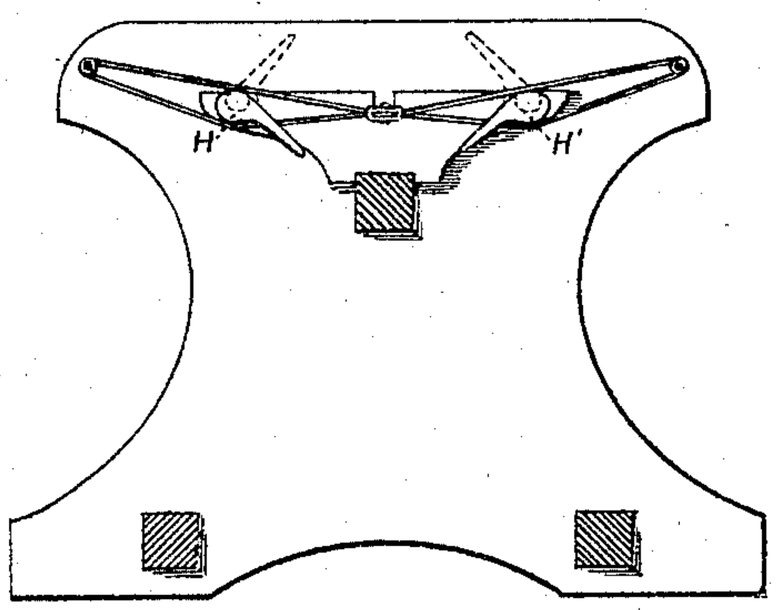

FIG. 2.

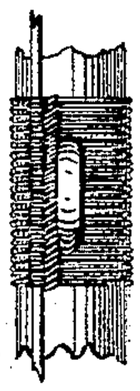

FIG. 4.

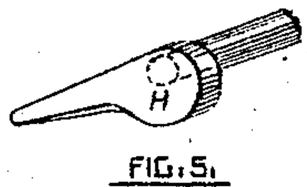

FIG. 5.

WITNESSES.

Samuel Ames

Thomas F. Cosgrove

INVENTOR.

John H. Crowell

AM. PHOTO-LITHOGRAPHIC Co. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

JOHN H. CROWELL, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO HIMSELF, JOHN KENDRICK, AND JOSEPH H. KENDRICK, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING WEAVERS' HARNESS.

Specification forming part of Letters Patent No. **144,320,** dated November 4, 1873; application filed June 26, 1873.

To all whom it may concern:

Be it known that I, JOHN H. CROWELL, of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Machines for Making Weavers' Harness; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a plan of so much of a machine for making weavers' harness as is necessary to show my improvement. Fig. 2 is a transverse vertical section in the plane of a line drawn between the points *x* and *x*, Fig. 1. Fig. 3 shows the side band as displaced by the shaft-eye from its natural position on the shaft, as in harness heretofore generally made. Fig. 4 shows the side band in its natural relation to the shaft in harness, made upon machinery with my improvement. Fig. 5 is a view in perspective of my improvement.

My invention is for the same purpose as that described in the Letters Patent granted to me July 25, 1871, No. 117,389; but is applicable to a different type of machine than that to which my above-mentioned improvement was adapted.

The complicated mechanism for weaving the harness is not shown in the drawing; but machinery like that shown and described in the Letters Patent granted to Joseph Sladdin, August 4, 1868, numbered 80,774, and his improvement of November 28, 1871, numbered 121,258, is employed, and to which machinery my present improvement can readily be applied, for causing the heddles to be so secured to the side bands that the twines upon one side of the heddles will be longer than upon the other side, so that when the harness is mounted on its shafts the bands will be in the relation to the shafts shown at Fig. 4.

B B′ in the drawing represent the side bands or cords to which each heddle, as it is formed, is secured. C represents the stationary needle or twine carrier of the machine. A A′ are the two rods for producing the leese in the harness. Said rods are located and operated as described in said Letters Patent of November 28, 1871, numbered 121,258, and are to be understood as having a reciprocating rotary or rocking motion, the rod A having two motions to one of the rod A′, although in illustrating my improvement the rods A A′ in the drawing are shown as rocking simultaneously by devices which constitute no part of the invention, but are introduced only to show that a rocking movement is intended to be given. The rods A A′ are each furnished with protuberant pieces H H′, eccentric to their longitudinal axes. Motion is given to the cam D in any convenient way which will enable the rods A A′ to be operated at proper times relatively to the motions of the devices for carrying the harness-twines to the side bands. When the twines are being carried by the twine-carriers to the side bands B B′, and are there being secured, the rods A A′ are moved, as described in the Letters Patent of the said Sladdin, thus disposing the twines alternately above and below the rods A A′, in the proper order to form the leese of the harness. The twines that are disposed below the rods are made to take a lower position of about three-eighths of an inch by the protuberant pieces H H′. By this means the twines from side band to side band, below or (if the cam-pieces H H′ be reversed on the rods) above the rods A A′, are made longer than those upon the opposite side, and consequently the harness, when mounted on the shafts, will have its side bands stand at one side of the central longitudinal axes of the shafts, as shown at Fig. 4, to give room for the insertion of the eyes to which the treadle-cords are attached.

What I claim as my invention, and desire to secure by Letters Patent, is—

The rocking leese-rods A A′ of a machine for making weavers' harness, having eccentric protuberances H H′ for the purpose of making the heddles longer upon one side than the other, substantially as described.

JOHN H. CROWELL.

Witnesses:

SAMUEL AMES,

THOMAS F. COSGROVE.