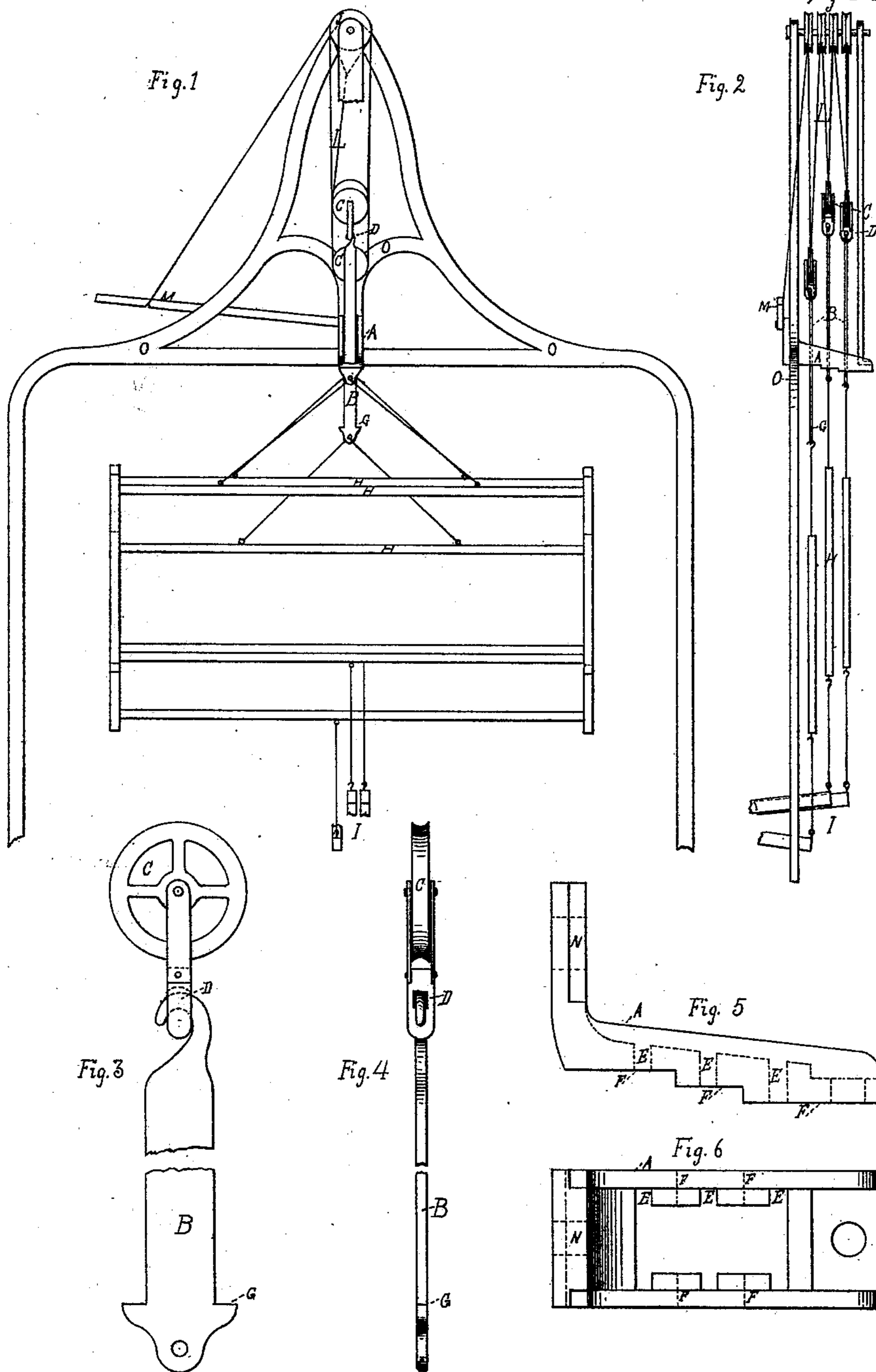


J. M. BROWN.
Harness Mechanism for Looms.

No. 221,662

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WITNESSES:

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JOHN M. BROWN, OF SWARTHMORE, PENNSYLVANIA.

IMPROVEMENT IN HARNESS MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. **221,662**, dated November 18, 1879; application filed July 7, 1879.

To all whom it may concern:

Be it known that I, JOHN MORTON BROWN, of Swarthmore, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Harness Mechanisms for Looms, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front view of the device, showing its connection with other parts of the loom. Fig. 2 is a side view of the same; and Figs. 3, 4, 5, and 6 show the essential parts in detail.

Harness mechanism may be divided into three great classes, namely: first, those in which the harness-frames are moved with a positive motion in closing as well as in opening the shed; second, those which act upon the shed positively when it opens, but not when it closes, the latter operation being performed by weights or springs; and, third, those harness mechanisms in which the positive motion imparted to one or more harness-frames has the effect of moving the rest of the harness-frames in the opposite direction.

This third class, and to which my invention relates, is provided, in addition to the harness-operating mechanism proper, with an equalizing device, consisting either of one or more rollers having their axes parallel with the harness-frames, of a series of levers to which the harness-frames are connected, or of a system of movable and stationary pulleys over which a cord passes in successive convolutions, as indicated in Figs. 1 and 2 in the annexed drawings.

The object of my invention is to furnish a more convenient and durable means of connecting the harness-frames with the equalizing device by interposing a bar, which does away with the cords, straps, and other easily-destroyed connections heretofore in use, and at the same time acts, in combination with its guide, as a stop to limit the vertical movement of the heddles. The guide for the bars also performs another function—namely, that of keeping the heddle-frames at proper distance from each other, and also steadies them in their vertical motion. By constructing the bar

and guide thus, and by combining the two in such a manner that each performs several functions, great economy is attained, while at the same time durability and perfect action of the heddles are secured.

In the accompanying drawings the equalizing device heretofore mentioned is represented by the series of pulleys J, which have their axes stationary, and the series C, whose axes are movable. A cord, L, passes alternately and successively over a pulley in the series J and over one in the series C until as many movable pulleys hang suspended in the loops of the cord L as there are heddle-frames, when one loose end of the cord L is fastened to the tension device M, which serves to regulate the length of the loops for the pulleys C, and the other at J, Fig. 1.

It is evident that so long as the number of descending heddle-frames is equal to the number of those which ascend at the same time, and so long as the amount of vertical motion of these heddle-frames is equal, the tension device M is neutral, and does not perform any function but that of supporting one end of the cord L, because the length of the cord given up by the shortening of the loops of the ascending heddle-frames is equal to that required for the elongation of the loops of the descending heddle-frames, and therefore the end of the cord attached to M may remain stationary. When, however, the number of the ascending heddle frames does not equal that of the descending frames, or when the amount of motion of the heddle-frames in one direction is not equal to that of the heddle-frames which move in the opposite direction at the same time, then the difference in the length of the cord L required for that purpose has to be given up or taken up by the motion of the tension device M. A weight or a spring is usually employed to act upon the tension device for that purpose.

Between the movable pulleys C of the equalizing device just described and the heddle-frames H, which are both old devices, I interpose the bar B, Figs. 1, 2, 3, and 4, primarily for the purpose of securing a ready and convenient method for connecting and disconnect-

ing the equalizing device and the heddle-frames H. For this end the bar B is provided at one end with a hook, which may be readily introduced into the eye of the frame of the pulley C. An eye upon the opposite end of the bar B serves to attach it to the heddle-frame H.

For the purpose of limiting the upward motion of the bar B and heddle-frame H, the bar B is provided with shoulders G, which come in contact with the side F of the guide A, Figs. 1, 2, 5, and 6, when the bar B has arrived at the uppermost limit of its motion.

The guide A, through which the bars B pass, secures to the latter a steady, vertical, rectilinear motion, which is also transmitted to the attached heddle-frames H.

In order to keep the heddle-frames their proper distance from each other, the interior of the guide A is provided with recesses E E wide enough to admit the bars B, said recesses being made such a distance from each other as is desired in the heddle-frames H.

It is customary to give to the heddle-frames a gradually-increased amount of motion the

farther they hang from the front of the loom, in order that all the warp-threads may have, when the shed is open, the same angle, whose vertex is at the point where the cloth is formed. In order to secure this graduation in the height to which the heddle-frames are to be raised, I provide the lower surface of the guide A with steps F F F, of which the one nearest the frame of the loom, and the farthest one from the front, permits the harness-frames to rise the highest.

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

The combination of the bars B, provided with the hook D and shoulders G, with the guide A, having a graduated surface, F F F, and recesses E E E, acting and operating with the pulleys C, pulleys J, and mechanism for operating the harness or heddle frames H H H, substantially as and for the purpose set forth.

JOHN MORTON BROWN.

Witnesses:

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