

(No Model.)

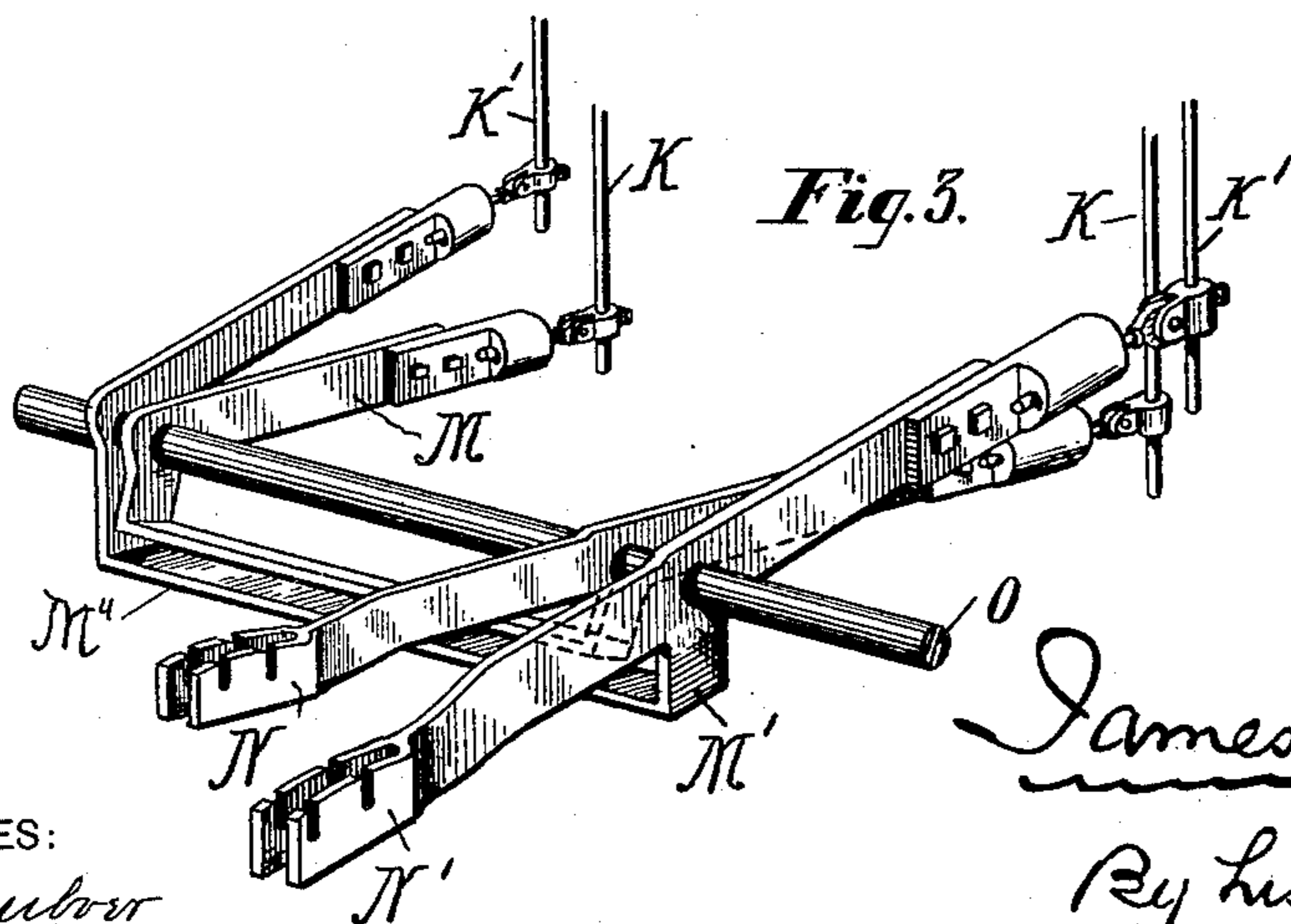
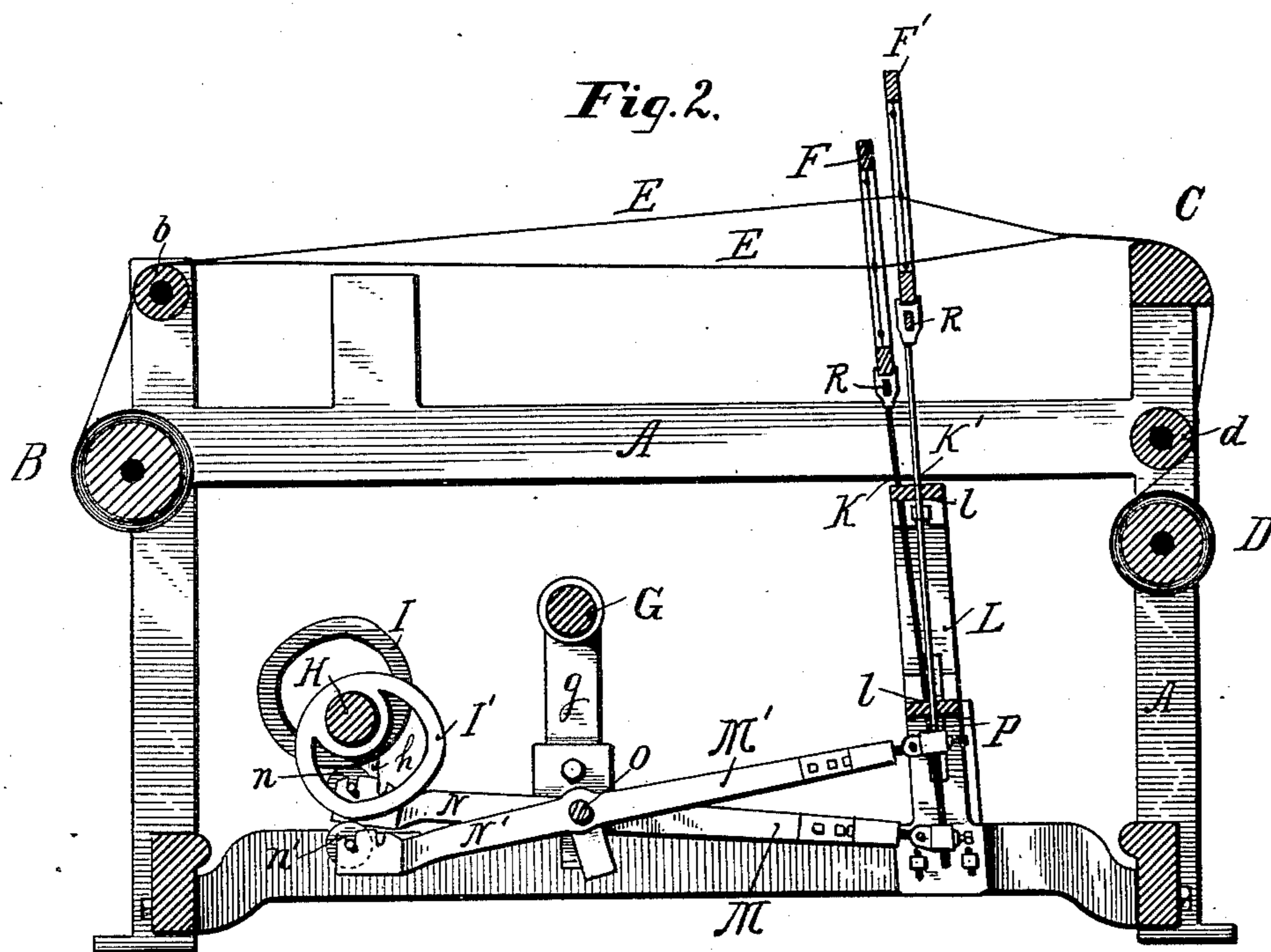
2 Sheets—Sheet 2.

J. ROBERTS.

HEDDLE SUPPORTING AND OPERATING MECHANISM FOR LOOMS.

No. 318,658.

Patented May 26, 1885.



WITNESSES:

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JAMES ROBERTS, OF PHILADELPHIA, PENNSYLVANIA.

HEDDLE SUPPORTING AND OPERATING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 318,658, dated May 26, 1885.

Application filed February 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROBERTS, a subject of the Queen of Great Britain, residing in the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Heddle Supporting and Operating Mechanism for Looms, of which the following is a specification.

My invention comprehends an improved means of removably supporting the heddle-frames of a loom, and an improved means for operating said heddle-frames from below as contradistinguished from above. I am not the first to make a heddle-frame removable, nor yet to operate the heddle-frames from below. What I have invented is the specific means for accomplishing the said results, which are hereinafter described and claimed.

In the accompanying drawings I have represented so much of the frame of a loom as is necessary for the complete understanding of my improvements.

In the drawings, Figure 1 is a front elevation of the apparatus, parts, however, being broken away to more clearly exhibit the construction. Fig. 2 is a side sectional elevation of the same, section being supposed in a vertical plane projected on the line *a a* of Fig. 1, and sight being taken from the right hand of said Fig. 1. Fig. 3 is a perspective detail of the rocker-frames and their levers removed from the frame of the loom. Fig. 4 is an illustrative detail in front elevation of my improved means for removably connecting the heddle-frames to the framing-bar. Fig. 5 is an inside end elevational view of one of the heddle-brackets.

Similar letters of reference indicate corresponding parts.

In the drawings, A is the frame of the loom, which may be of any preferred description, according to the character of the loom itself.

B is the warp-beam, C the breast-beam, and D the cloth-beam, of said loom.

b is a roller over which the warp-threads E are passed before they are carried through the two healds or heddle-frames F F' represented.

d is a fluted roller for securing the spreading of the cloth upon the cloth-beam.

G is the low shaft suitably journaled in bearings *g*, to which shaft motion is imparted in any common manner.

H is a cam-shaft suitably supported in bearings *h*, upon which are mounted in the two heddle-frame apparatus represented two cams, I I'.

The toothed wheels J J', respectively mounted upon the low shaft and cam-shaft, serve to transmit motion from said low shaft to said cam-shaft. The heddle-frames are respectively mounted upon upright rods K K', which I term the "heddle-carriers," and which are supported and adapted to be moved in an approximately vertical direction within a carrier-frame, L, fixed to or forming a part of the frame of the loom, and provided with slide-bearings *l* for said heddle-carriers.

M M' are rocker-frames journaled upon a rocker-shaft, O, fixed in the frame-work, and respectively provided with or formed into levers N N', which in the mounting of the parts stand in the path of the cams and conveniently contain anti-friction rollers *n n'* to ease the thrust of said cams against said levers. The rocker-frames (represented in perspective in Fig. 3) are connected at their forward extremities with the heddle-carriers, so that the thrust of the cams operating against the levers occasions the rocking of their connected rocker-frames and the consequent lift or drop of the heddle-carriers and their supported heddles.

It will be observed by reference to Figs. 2 and 3 that all of the rocker-frames, which have each one rearwardly-extending lever and two arms for connection with the heddle-carriers K, are mounted upon a common shaft, and are of such construction and relative proportions as to lie in a nest, or one within the other, the points of bearing of each frame upon the common shaft being widely separated—a mode of application rendered possible by the form of the depending connecting cross-bar M' of each frame. Each of the levers N N' is, moreover, upon the same side of the frames, the right-hand side being selected in the apparatus shown, by which location of application of the levers the placing of the cams close together upon their shaft is ren-

dered possible. This construction and application of the frames give excellent results in the matter of compactness and simplicity.

P is an idler-pulley suitably housed in the frame, around which pass, or to which are connected, the straps Q, respectively connected to the two heddle-frames as shown in Fig. 1.

The heddle-frames F F' are each supported upon a framing-bar, R, which latter is the device to which the upper extremities of the heddle-carriers are represented as connected, and said heddle-frames are secured to said framing-bar by the heddle-brackets S, Figs. 4 and 5, the latter being as to their socket portions *s* adapted to slide endwise on the framing-bar, and as to their upturned flanges *s'* being provided with mortises *s''*, in which respectively are adapted to be entered tenons *f* or other projections formed as a part of the heddle-frame.

When the heddle-brackets are in place upon the framing-bar and engaged as to their mortises with the tenons of the heddle-frames, they are adapted to be fixed in such position by set-screws T or kindred fastening devices.

It is obvious that upon the loosening of the fastening devices the heddle-brackets can be slid apart upon the framing-bar which carries them, and the heddle-frame be removed, while conversely the application of the frame can be effectuated by the sliding together of the heddle-brackets so that their mortises engage the tenons of the frame.

It is obvious that the operation of the heddle-frames and their contained heddles is occasioned by the rotation of the cam-shaft and the consequent thrust of its cams against the levers of the rocker-frames, to the end, through the instrumentality of the heddle-carriers, of raising or lowering with a positive motion the heddle-frames, the straps serving to draw down one frame and keep the lever with which the rocker-frame of said heddle-frame is connected against the acting face of its actuating-cam while the other frame is being lifted.

The set of the cams upon the cam-shaft and the configuration of their acting faces are such as to effectuate the proper relative rise and fall of the respective heddle-frames.

It is obvious that by enlarging the number of the levers, rocker-frames, and heddle-carriers the invention may be adapted for use with looms provided with a larger number of heddle-frames than two.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In combination, a heddle-frame, F, pro-

vided with tenons *f*, a framing-bar, R, heddle-carriers K, means for operating the said heddle-carriers, a pair of heddle-brackets, S, provided with sockets *s*, by means of which the brackets are mounted and adapted to have a longitudinal movement upon the framing-bar, and likewise provided with mortised flanges *s'' s'*, for engagement with the tenons of the frame, and means for securing the said brackets S to the framing-bar R, substantially as described.

2. In combination, a heddle-frame, F, provided with tenons *f*, a framing-bar, R, heddle-carriers K, means for operating the said heddle-carriers, a pair of heddle-brackets, S, provided with sockets *s*, by means of which the brackets are mounted and adapted to have a longitudinal movement upon the framing-bar, and likewise provided with mortised flanges *s'' s'*, for engagement with the tenons of the frame, and set-screws T, for securing the said brackets in given positions upon the framing-bar R, substantially as described.

3. The combination of the heddle-frames F F', the heddle-carriers K K', means for connecting said heddle-frames to said heddle-carriers, means for operating the said heddle-carriers, the straps Q, the idler-pulley P for said straps, the carrier-frame L, the rocker-frames M M', provided with levers N N', the rocker-shaft O, the cams I I', adapted to tread upon the levers N N', the cam-shaft H, and means for actuating said cam-shaft, substantially as set forth.

4. The combination of a series or nest of rocker-frames, M M', each of which is provided with two arms for connection with the heddle-carriers, with two widely-separated points of bearing upon a common rocker-shaft and with a rearwardly-extending lever, all of which levers are upon corresponding sides of the said frames, a rocker-shaft, O, common to all of said frames, a cam-shaft, H, and cams I I' upon said shaft, which tread separately upon the respective levers of the frames, with heddle-carriers K K', heddle-frames F F', means for connecting the said heddle-frames to said heddle-carriers, the straps Q, the idler-pulley P, and the carrier-frame L, substantially as set forth.

In testimony whereof I have hereunto signed my name this 28th day of January, A. D. 1884.

JAS. ROBERTS.

In presence of—

J. BONSALE TAYLOR,
W. C. STRAWBRIDGE.