

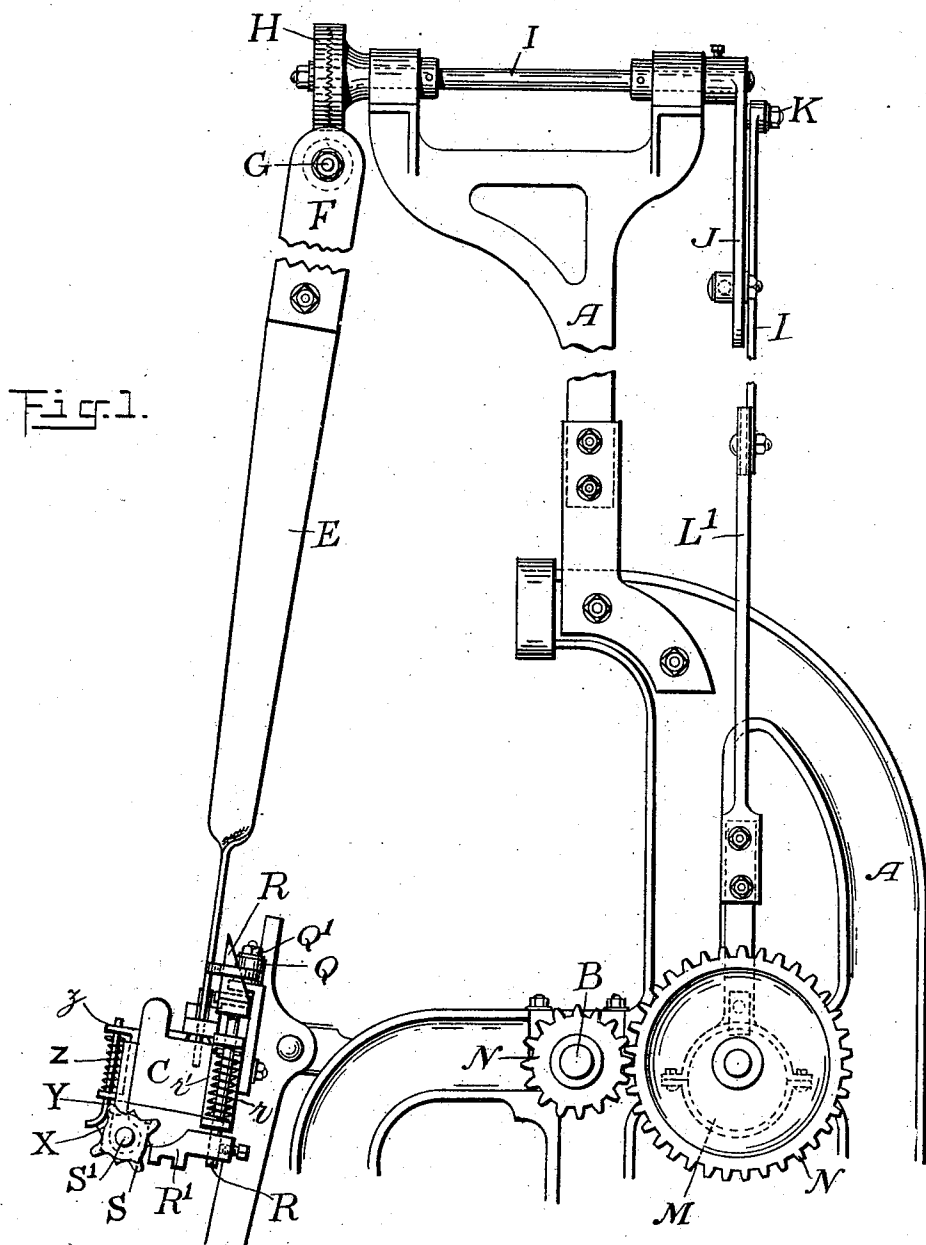
(No Model.)

3 Sheets—Sheet 1.

J. & A. MOSS.
PICKING MOTION FOR LOOMS.

No. 510,608.

Patented Dec. 12, 1893.



WITNESSES:

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INVENTORS:

James Moss & Abraham Moss.
by Herbert W. Jenner
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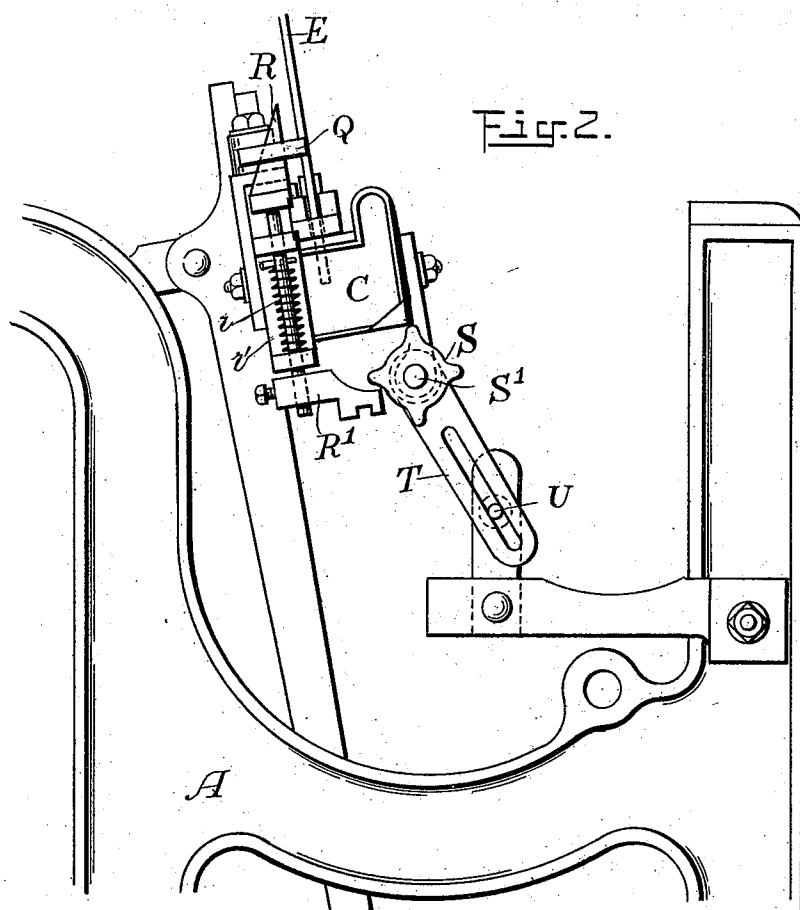
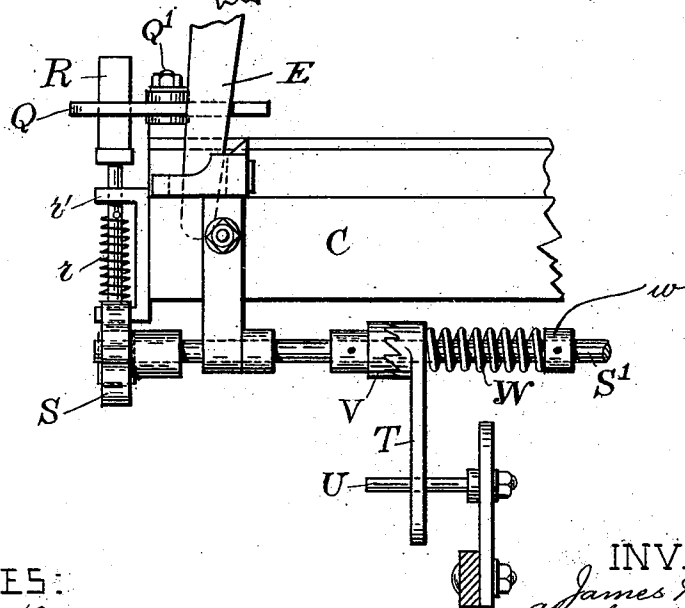


Fig. 5.



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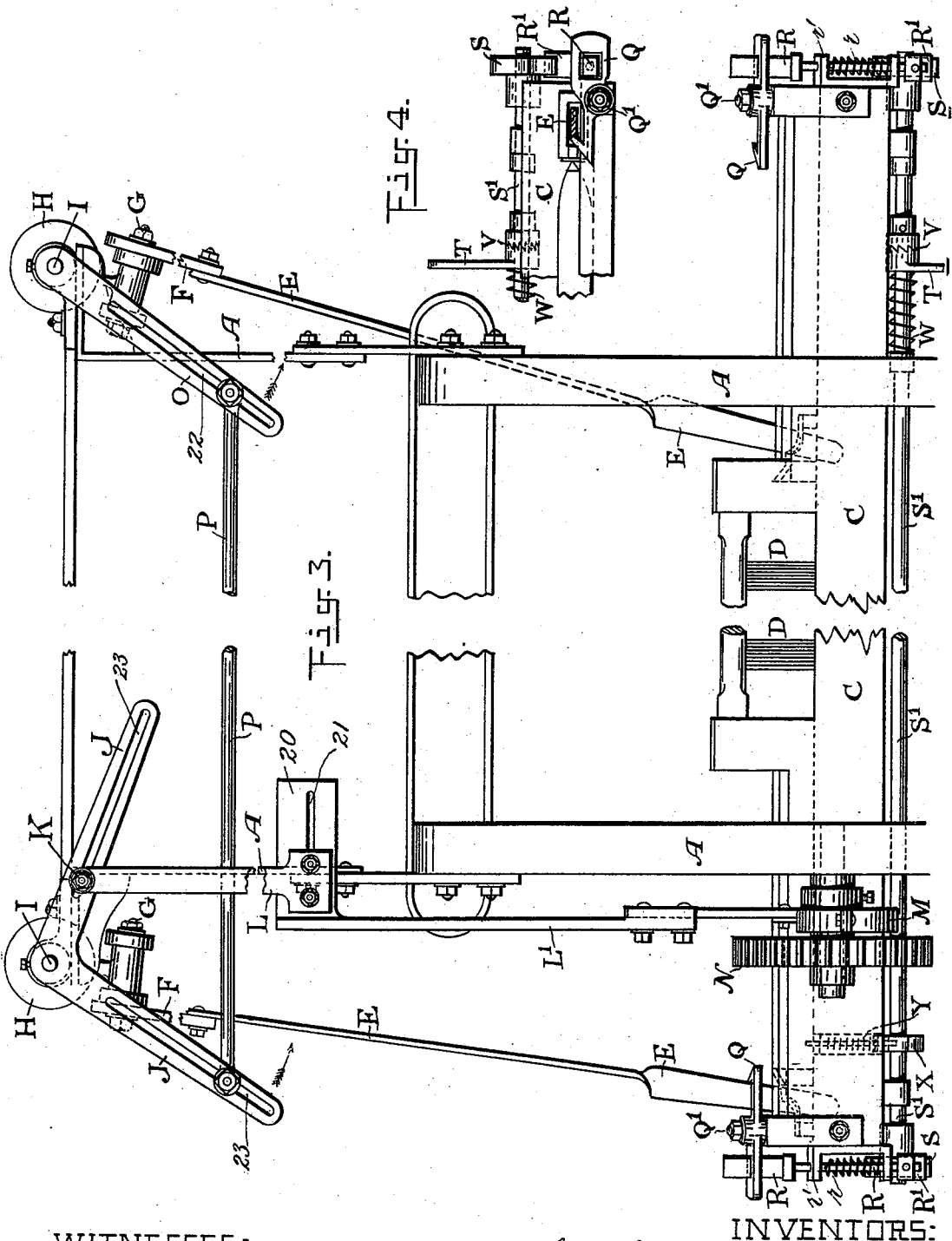
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3 Sheets—Sheet 3.

J. & A. MOSS.
PICKING MOTION FOR LOOMS.

No. 510,608.

Patented Dec. 12, 1893.



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UNITED STATES PATENT OFFICE.

JAMES MOSS AND ABRAHAM MOSS, OF HEBDEN BRIDGE, ENGLAND.

PICKING-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 510,608, dated December 12, 1893.

Application filed May 29, 1893. Serial No. 475,929. (No model.)

To all whom it may concern:

Be it known that we, JAMES MOSS and ABRAHAM MOSS, citizens of Great Britain, residing at Hebden Bridge, in the county of York, England, have invented certain new and useful Improvements in Picking-Motions of Looms for Weaving; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention refers to the picking mechanism of looms for weaving, and our improvements consist in the construction of apparatus for throwing the shuttle across the loom, and for this purpose we employ preferably overhead picking arms composed of flat spring steel so that after being bowed or bent and suddenly released they exert sufficient force as to propel the shuttle backward and forward across the loom. These spring picking arms are connected at their upper ends to short cross shafts and these are connected together by lever arms and a connecting rod so that when the cross shafts are rocked or oscillated the two picking arms are moved backward and forward in the same direction. Consequently when one picking arm is leaving the shuttle box the other picking arm is entering. The necessary rocking motion is imparted to one of the cross shafts by an eccentric and suitable arrangement of rods and levers driven from the crank shaft by toothed wheels. The lower end of each of these picking arms on being sent "home" in the shuttle box is received and taken hold of by a catch or trigger, and one of these triggers is released from its position holding the picking arm at each alternate movement of the sley board, and this is performed by a star wheel, at the end of a horizontal rod placed under the sley board, pressing onto the foot of a short vertical rod being wedge shaped at its upper end and entering a slot in the trigger so that on the star wheel pressing upon the foot of the vertical rod, the wedge descends and permits a movement of the trigger for the purpose of releasing the picking arm. The horizontal rod carrying the star wheel is rotated by means of a clutch and slotted lever riding over a fixed stud project-

ing from the loom frame, so that as the sley moves backward and forward the horizontal rod is made to rotate and so giving the necessary movement to the star wheel. The throw or power exerted by the picking arms can be regulated by a clutch to which the picking arms are connected.

Such being the nature and object of our invention we will now describe the same more fully, and for that purpose make reference to the accompanying sheets of drawings, wherein—

Figure 1 is a right hand end elevation of a portion of a loom having our improvements applied thereto. Fig. 2 is a side elevation of a portion of the opposite end of the said loom; and Fig. 3 is a back elevation. Fig. 4 is a detail plan view, from above, of the trigger-operating devices at one end of the sley board. Fig. 5 is a detail front view of the similar trigger-operating devices at the other end of the sley board, drawn to a larger scale.

A represents the framework of the loom, B the crank shaft, C the sley board, and D the reed. The picking arms are shown at E which are made of thin sheet steel so that they will bend and when released spring forward for propelling the shuttle across the loom as hereinafter more fully explained. These spring picking arms are connected to a lever arm F mounted upon a stud G carried by a clutch bracket H mounted on the cross shaft I which is made to oscillate or rock by means of a bell crank lever J, connected by stud K to vertical rods L and L' on the bottom end of which is an eccentric M driven by a pair of wheels N from the crank or other suitable shaft, the eccentric being driven at half the speed of the crank shaft so as to cause one of the picking arms to be operated when the sley is in its rear position as is now the case with ordinary picking motions. Although we show the eccentric M to be applied to one side of the loom, we would observe that there may be one at each side of the loom, and in broad looms it may be preferable to do so. The two spring picking arms are connected together by a lever arm O and connecting rod P and to the bell crank lever J, (see Fig. 3.) in order that the two picking arms may work in unison so that when one picking arm has

thrown the shuttle out of the box, the other picking arm is at the opposite end of the shuttle box ready for throwing the shuttle back across the loom. The upper part of the rod L' has a projecting plate 20 provided with a horizontal slot 21, and the arm O and the bell-crank lever J have slots 22 and 23 respectively. The function of these slots is to permit the positions of the rods L and P to be adjusted so that the oscillatory movements of the shafts I may be varied to give the arms F, which carry the spring picking arms E, more or less vibration as desired. Each time one of the picking arms arrives at its farthest outward movement in the shuttle box, it is caught hold of and temporarily retained until the reed has beaten up the last shoot of weft and this is effected by means of a catch or trigger Q capable of having a slight oscillating movement upon a stud Q'. This trigger is also made with a slot shown clearly in plan view Fig. 4 and within the slot is a vertical wedge shaped rod R the lower end of which rod is provided with a shoe or toe piece R' operated upon at the right time by a star wheel S fixed on the end of a horizontal rod S' arranged under the sley board. Therefore when the elastic picking arm is forced to its farthest outward position in the shuttle box it strikes against the trigger Q and passes the snick thereon, by which it is received and held until the weft has been beaten up, and at a proper and suitable time the star wheel makes part of a revolution pressing upon the toe piece R' at the foot of the vertical rod. The effect of this operation is to draw the vertical rod downward, in doing which the wedge on the top thereof is drawn down the slot thereby lessening the thickness of the rod within the slot. Consequently the trigger is allowed to have a slight movement on its stud Q' and as the picking arm during this time is in a bent or bowed position, the power thereof turns the trigger on its pivot; thus the picking arm releases itself from the holding catch and at once, with great force, propels the shuttle across the loom, and simultaneously with such movement the opposite picking arm is thrown backward and caught hold of and retained by a trigger Q at the opposite end of the shuttle box, and this operation is quickly performed and continued so long as the loom is at work. We would here remark that the force of the picking arm is in itself (inherent) and that it does not depend upon the speed of the loom or the motor which drives it, as is the case with ordinary looms. The shank of the rod R is carried by the bracket r' secured to the end of the sley board C, and r is a spring which surrounds the said shank and normally holds the rod R in its raised position. The star wheel S is revolved intermittently by the horizontal shaft S' which is operated in the following manner:

On one end of the horizontal shaft S' (see Figs. 2 and 5) is a lever arm T provided with a slot which rides on a stud U projecting from

a bracket suitably placed for that purpose, so that as the sley moves backward and forward the slotted lever arm, through the intervention of the said stud U, receives a pendulous motion. If the arm T were fast upon the horizontal shaft S' such shaft would simply receive a backward and forward motion, but the slotted lever is loose upon the said shaft, but gears with a clutch V fastened upon the shaft, so that when the slotted lever T is raised the clutch is moved partially around and the shaft with it. The clutch jaws are normally held connected by the spring W which surrounds the shaft S' and presses against the collar w secured to the said shaft. When the slotted lever is lowered or moved in the opposite direction the clutch teeth in the slotted lever slip over the teeth in the fast clutch and impart no motion to the horizontal shaft, the spring W, which surrounds the shaft S', allowing the slotted lever to move backward for that purpose, but the spring forces the clutches together again on the return movement of the slotted lever. In order to keep the horizontal shaft rigid, it has an eight sided disk X fixed upon it, and a bent steel spring Y pressing upon it to prevent any backward motion of the said shaft, the bent spring Y being forced upon the eight sided disk by a light spiral spring Z. The spring Y is carried by, and slides vertically in, the bracket z secured to the front of the sley board. The spring Z surrounds the shank of the spring Y and assists in keeping it in its normal position and restoring it thereto after it has been raised in the said bracket by the action of the disk X. The force or strength of the pick given by the picking arms can be regulated or adjusted by means of the picking head H being made in the form of a clutch as shown in Fig. 1. The part H of the picking head can be removed from the corresponding part and revolved or twisted on the shaft so as to give more or less torsional strain on each picking arm.

By the arrangement and combination of parts described herein and illustrated in the drawings an effective, reliable and steady picking motion is provided much cheaper in construction and taking less power to drive same; and in this loom there are no picking spindles which are objectionable when weaving light colored fabrics because of the specks of oil thrown off the spindles by the picker, while the power to operate our picking mechanism is reduced to a minimum.

We claim as our invention—

1. In a loom, the combination, with the pivoted catch trigger Q provided with a slot at one end, and an oscillatory picker arm engaging therewith of a rod provided with a wedge-shaped upper end engaging with the said slot, and tappet mechanism operating to depress the said rod periodically, to permit the trigger to turn and to effect the release of the picker arm, substantially as set forth.
2. In a loom, the combination, with the piv-

oted catch trigger Q provided with a slot at one end, the rod R provided with a toe piece and a wedge-shaped upper end normally locking the said trigger, and a spring operating to hold the said rod in its raised position; of an oscillatory picker arm engaging with the said trigger, and a revoluble star wheel adapted to strike the said toe piece on the rod R and to depress the said rod periodically, whereby the said trigger is permitted to turn and to release the said picker arm, substantially as and for the purpose set forth.

3. In a loom, the combination, with the pivoted catch trigger Q provided with a slot at one end, the locking rod R provided with a wedge-shaped upper end normally locking the said trigger, a toe piece, and the spring *r* for holding the said rod in its raised position; of an oscillatory picker arm engaging with the said trigger; the revoluble shaft S', the star wheel secured on the said shaft and operating to depress the rod R, thereby releasing the said trigger and permitting it to turn to release the said picker arm, the disk X secured on the said shaft, and a spring engaging with the said disk and operating to steady the said shaft, substantially as set forth.

4. In a loom, the combination, with an oscillatory picker arm, a pivoted catch trigger for engaging the said arm, a sliding locking rod engaging with the said trigger the oscillatory sley board, the shaft S' carried by the said

sley board, and the star wheel secured on the said shaft and adapted to move the said rod and thereby release the trigger which engages the picker arm; of the clutch V secured on the shaft S', the slotted lever T provided with ratchet-shaped teeth engaging with the said clutch, the spring W holding the said lever connected with the said clutch, and the stationary pin U engaging with the slot in the lever T, whereby the said lever is caused to revolve the shaft S' in one direction, substantially as set forth.

5. In a loom, the combination, with the two oscillatory rock-shafts I, driving mechanism for operating the said shafts, the levers secured to the said shafts, and the connecting rod pivoted to the said levers and constraining them to move in the same direction; of the adjustable clutch brackets secured to the said shafts, the lever arms F pivoted to the said brackets, and the spring picker arms secured to the said lever arms and adapted to actuate the shuttle, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES MOSS.
ABRAHAM MOSS.

Witnesses:

ARTHUR CROSSLEY,
WILLIAM H. TEMPEST,
Both of Commercial Street, Halifax.