Oct. 30, 1928. 1,689,723

E. HOLLINGWORTH

PICKING MECHANISM FOR LOOMS FOR WEAVING

Filed June 24, 1926 2 Sheets-Sheet 1

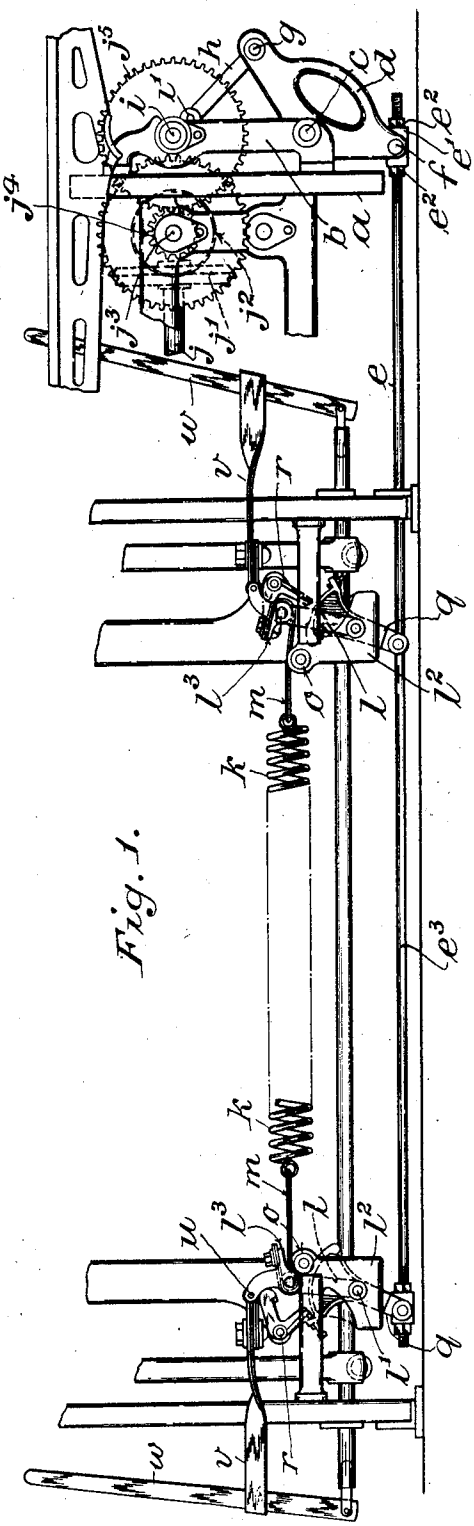


Fig. 1.

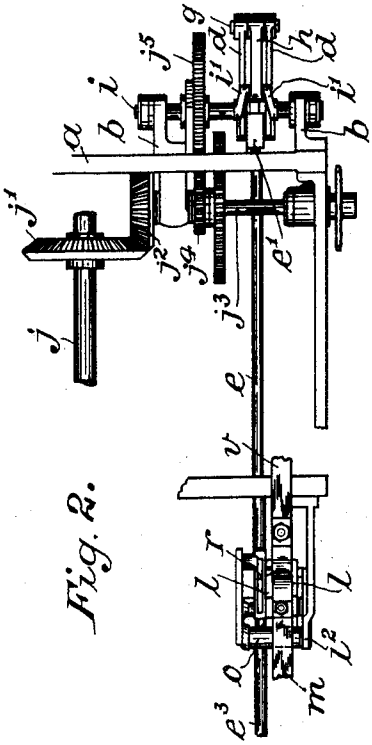


Fig. 2.

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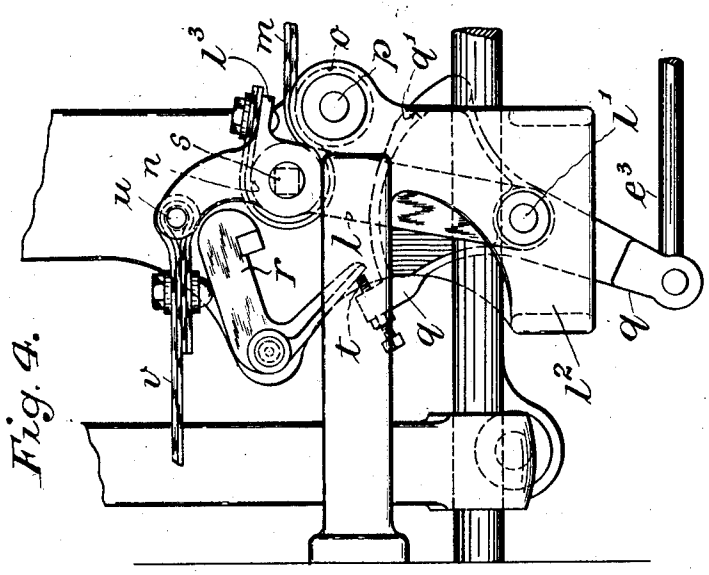


Fig. 4.

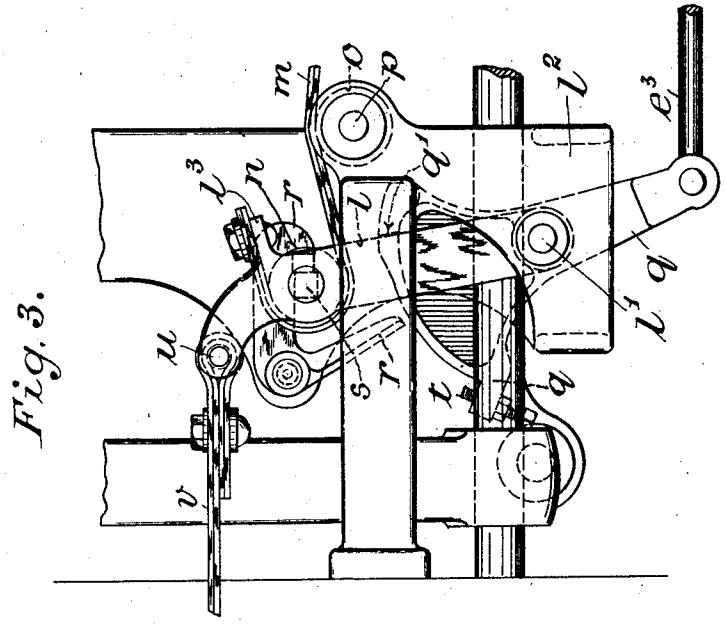


Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## PICKING MECHANISM FOR LOOMS FOR WEAVING.

Application filed June 24, 1926, Serial No. 118,313, and in Great Britain June 27, 1925.

The invention relates to picking mechanism for looms, of the type in which the picking sticks are actuated by means of a spring the particular form of such mechanism to which the invention refers being that in which there is connected to each picking stick, by means of a flexible connection, a picking lever which is also connected to one end of a coiled spring, and which is rocked in one direction by another oscillating pivoted lever to extend or "charge" the spring. When the charging lever has moved the picking lever sufficiently far to give the required extension to the spring, a pivoted catch drops over a projection on the picking lever and holds it in "charged" position until the charging lever swings in the opposite direction. At the appropriate time in such backward swing an abutment on the charging lever comes in contact wtih the holding catch and frees it from engagement with the picking lever, permitting the spring to draw back the picking lever and thus actuate the picking stick. The two oscillating levers which effect the charging and releasing, or "firing", of the spring are operated by means of a reciprocating longitudinal rod, which extends across the lower front part of the loom and has pivotal connection with the lower ends of both the levers referred to.

The present invention comprises improved means for driving, or giving reciprocatory movements to the longitudinal rod mentioned, and for connecting the respective picking levers to the ends of the spring.

The characteristic features of the invention are, first, that the driving of the longitudinal rod is effected by means of a crank and crank lever working in the same plane as the longitudinal rod and, second, that the picking levers are connected to the respective ends of the spring by means of flexible connectors which pass over respective fixed rolls, so disposed that when firing in either direction takes place, a roll on the picking lever concerned and about which the connector passes, is carried or moves somewhat below the level of the co-operating fixed roll and assists thereby in cushioning the picking lever at the end of its picking movement.

In the accompanying drawing,

Fig. 1 is a front view of the relevant parts of a loom having the improved picking motion applied thereto;

Fig. 2 is a plan view of some of the parts shewn to the right hand of Fig. 1;

Fig. 3 is an enlarged elevation of the picking lever and associated parts at the left hand side of the loom in position ready for "firing" or picking; and

Fig. 4 is a view corresponding to Fig. 3 but shewing the positions of the parts after "firing".

Referring to the drawing, I secure to the outer side of one of the side frames of the loom, in this instance the right hand side frame $a$, two brackets $b$, $b$, between which extends a shaft or spindle $c$. Upon this shaft is mounted loosely the boss of a cranked lever $d$, the lower end of which is forked to embrace a boss $e'$ through which the end of the longitudinal rod $e$ passes. A pin $f$ extending through the boss at right angles to the rod $e$ rests at its ends in openings in the fork of the lever and forms a pivotal connection between the lever and the rod. The end portion of the rod is screwed and nuts $e^2$ on this screwed portion enable adjustment to be made in the effective length of the rod.

The upper end of the crank lever $d$ is also forked, and receives on a transverse pivot stud $g$ one end of a connector $h$, the other end of which is connected to a cranked portion $i'$ of a shaft $i$ journalled in bearings in the upper parts of the brackets $b$ $b$.

Motion is conveyed to this crank shaft $i$ by suitable gearing, in the instance shewn from the crank shaft $j$ of the loom. A bevel gear $j'$ fast on the crank shaft meshes with a bevel gear $j^2$ on a shaft $j^3$, and a gear $j^4$ on this shaft meshes with a gear $j^5$ on the shaft $i$, the ratio of the gearing being such that the side crank shaft $i$ revolves at half speed of the main crank shaft $j$. This is necessary by reason of the longitudinal rod $e$ "firing" the spring $k$, referred to later, in each direction of its movement, that is to say as the rod moves in one direction it fires the spring to give a pick in one direction and during the return movement of the rod the spring is fired from the opposite end to give a pick in the other direction.

It will be observed that the crank lever $d$, the connector $h$ and the crank $i'$ are all set in the same plane as the longitudinal rod $e$, so that power is applied to said rod truly in the direction of its length.

Each picking lever $l$ is pivoted at $l'$ on

a fixed bracket $l^2$ and is forked to receive a pivotally mounted roll $n$ and above this roll the lever is provided with a laterally extending lug $l^3$. The end of a flexible connector $m$ is secured to this lug and the connector is then passed around the roll $n$ and led to the spring $k$ over a second roll $o$ mounted on a fixed stud $p$ disposed a short distance on the inner side of the inward limit of movement of the picking lever. The fixed roll $o$ is so positioned that the inward swing of the picking lever, when the spring is fired, carries the roll $n$ on the lever slightly below the level of the roll $o$ as shewn in Fig. 4, thus causing the connector $m$ to exert a slight backward pull on the spring which assists in cushioning the picking lever after each picking movement.

The charging and firing of the spring is effected in the usual way by providing in connection with each picking lever a pivotally mounted lever $q$. The rod $e$ is connected pivotally to one of these levers, and the two levers are connected by a rod $e^3$ arranged in line with and forming in effect an extension of the rod $e$. As a lever $q$ is oscillated in one direction, a stop $q'$ thereon engages the cooperating picking lever and moves it in a direction to extend the spring $k$. When the picking lever has been moved sufficiently far to extend the spring, a pivoted catch $r$ drops over a projection $s$ on the picking lever and holds it in "charged" position. As the charging lever $q$ swings in the opposite direction an abutment thereon, in the form of an adjustable screw $t$, comes into contact with the catch $r$ and frees it from engagement with the picking lever, thus permitting the spring to draw inwardly the picking lever to effect the pick.

The upper end of each picking lever is forked to receive about a transverse pin $u$ the end of a flexible connection $v$ to the respective picking stick $w$.

The details of construction and arrangement of the parts employed may vary from the particular embodiment illustrated.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a spring picking mechanism for looms having picker sticks at each end thereof, charging and firing mechanisms for each stick including pivotally mounted driving levers for each mechanism, a driving rod connecting the levers together, a pivoted actuating lever, a second rod in substantial alignment with the first named rod and pivotally connected to the actuating lever at one end and at the other end operatively connected to the first named rod, and means for giving said actuating lever a reciprocating motion, the pivot for the levers being located on the same side of said rods for all positions of the actuating lever.

2. In a spring picking mechanism for looms having picker sticks at each end thereof, charging and firing mechanisms for each stick including pivotally mounted driving levers for each mechanism, a driving rod connecting the levers together, a pivoted actuating lever, a second rod in substantial alignment with the first named rod and pivotally connected to the actuating lever at one end and at the other end operatively connected to the first named rod, a rotating member operatively connected to the actuating lever to give the latter oscillating movements, the pivots for the driving levers and the actuating lever being at all times on the same side of the substantially aligning rods, whereby all of said levers rock first in one direction together and then rock together in the opposite direction.

3. In a spring picking mechanism for looms having picker sticks at each end thereof, charging and firing mechanisms for each stick including pivotally mounted driving levers for each mechanism, a driving rod connecting the levers together, a pivoted actuating lever, a second rod in substantial alignment with the first named rod and pivotally connected to the actuating lever at one end and at the other end operatively connected to the first named rod, a rotating driving member, and connections between the driving member and the actuating lever to cause said actuating member to be oscillated as the driving member rotates, the pivots of the driving and actuating levers being on the same side of the substantially aligned rods.

In testimony whereof I affix my signature.

EDWARD HOLLINGWORTH.