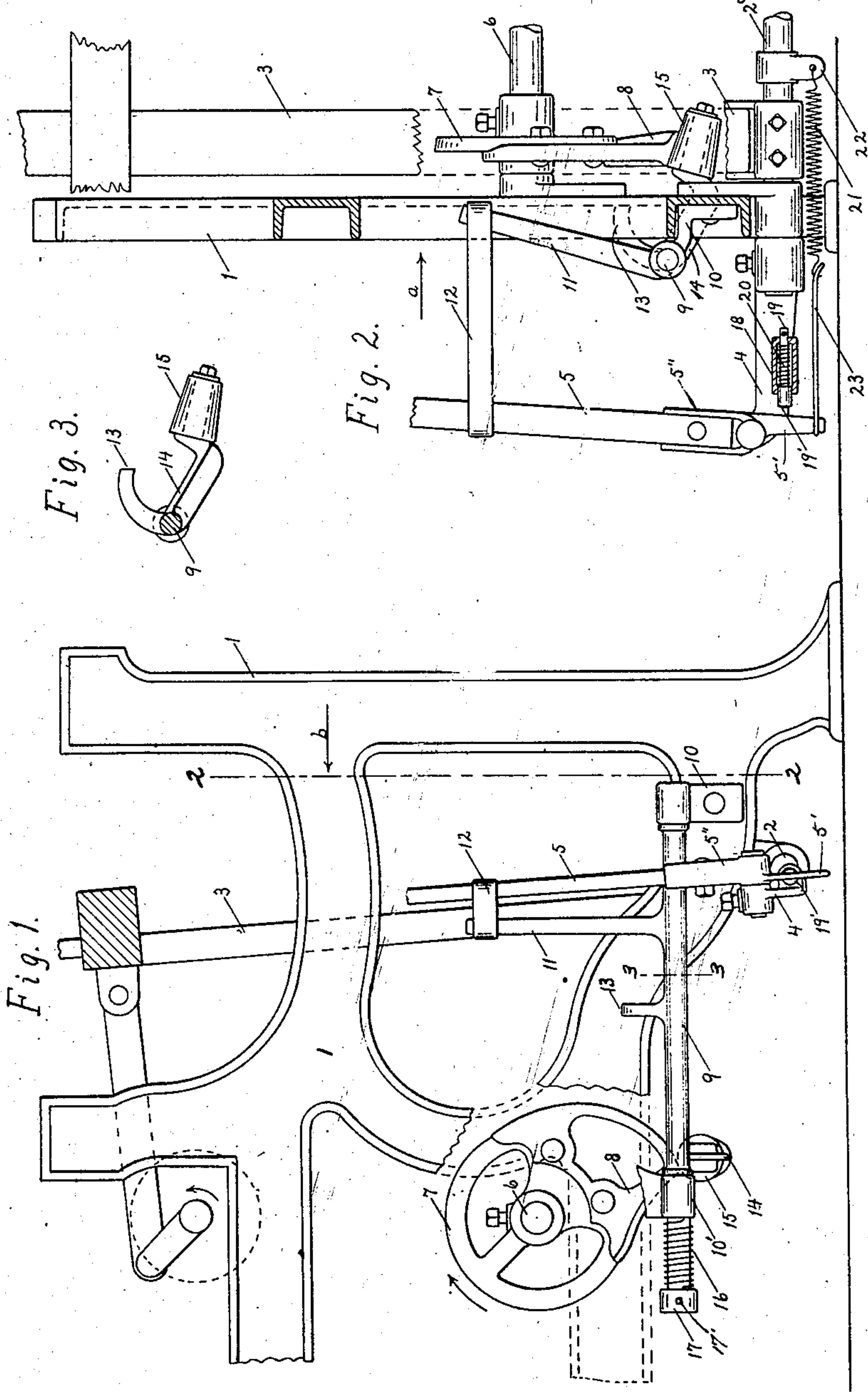


No Model.)

G. GOODLINE & J. A. CLARK.
PICKING MECHANISM FOR LOOMS.

No. 604,897.

Patented May 31, 1898.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE GOODLINE, OF PATERSON, NEW JERSEY, AND JOHN A. CLARK,
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PICKING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 604,897, dated May 31, 1898.

Application filed June 29, 1897. Serial No. 642,803. (No model.)

To all whom it may concern:

Be it known that we, GEORGE GOODLINE, residing at Paterson, in the State of New Jersey, and JOHN A. CLARK, residing at Worcester, in the State of Massachusetts, citizens of the United States, have invented certain new and useful Improvements in Picking Mechanism for Looms, of which the following is a specification.

Our invention relates to the picking mechanism of a loom—that is, the mechanism for operating the picker-stick to cause the shuttles to be thrown through the shed.

Picking-shafts as usually constructed act as a fulcrum of a lever of the first order, the shorter end of which carries a picking-roll actuated by a cam, the other end of the lever being attached to a picking-lever which actuates the shuttle when the lever is moved by the cam to throw it across the warp. In order to keep the roll in contact with the lowest part of the cam after the picking takes place and preparatory to the next action of the picking, a spring is employed, one end connected to an arm of the picking-shaft and the other end to some stationary part of the loom-frame, so that when the cam actuates the picking-shaft the spring is extended, thereby producing additional stress upon the spring. As the picking takes place, as the spring is connected to one arm of the picking-shaft and the cam which actuates the shaft is connected to another arm, it follows that considerable friction, and consequently loss of power, is expended upon the bearing of the shaft at that time, and to overcome this additional resistance the form of the cam is so shaped as to give a quicker motion to the shaft. Our invention is designed to obviate the additional friction upon the bearing of the shaft by encircling the end of the shaft with a spring having one end secured to it and the other end to a fixed part of the loom-frame. The end of the spring which is secured to the shaft may be adjustably connected thereto, whereby the stress of the spring may be properly proportioned to the resistance to be overcome to retain the roll in contact with the cam without unnecessary expenditure of power. By

this arrangement of the spring we are enabled to use a cam with an easier incline than we otherwise could do.

We have shown in the drawings only sufficient parts of a loom with our improvements applied thereto to enable those skilled in the art to which our invention belongs to understand the construction and operation thereof.

Referring to the drawings, Figure 1 is a side elevation of a portion of a loom side (the left-hand side) and our picking mechanism combined therewith, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a section on line 2 2, Fig. 1, looking in the direction of arrow *b*, same figure; and Fig. 3 is a section on line 3 3, Fig. 1, looking in the direction of arrow *b*, same figure, showing the picking-arm and roll.

In the accompanying drawings, 1 is a portion of the loom side, (in this instance the left-hand side.)

2 is the rocker-shaft, on which is secured the lower end 3 of the lay-sword, and 4 is the rocker-iron, secured on the outer end of the rocker-shaft 2 and having the picker-stick holder 5 pivotally supported thereon and carrying the picker-stick 5, which has a swinging motion at its upper end toward and away from the loom side.

6 is the bottom shaft, having the picking-cam plate 7 fast thereon and carrying the picking-cam 8, adjustably secured thereto.

All of the above parts may be of the ordinary construction employed in the picking mechanism of looms.

Extending on the outside of the loom side 1 is the picking-shaft 9, mounted to turn or rock in bearings 10 10', secured to the loom side. (See Fig. 1.) The picking-shaft 9 has an upright arm 11 fast thereon or integral therewith, which is connected with the picker-stick 5 by a strap or connector 12. An inwardly-curved arm 13, fast on the picking-shaft 9 or integral therewith, acts as a stop to strike against the loom side and limit the inward rocking motion of the picker-shaft.

The outer end of the arm 14 is fast on the picking-shaft 9 or integral therewith, near the inner bearing 10' thereof, and extends

under the lower bar of the loom side and carries on its inner end a picking-roll 15, mounted to turn thereon, which is of cone shape, with the smallest end of the cone farthest from the shaft 9. The roll 15 extends under and in the path of the picking-cam 8 on the cam-plate 7, to be engaged on its upper surface by said picking-cam 8 as the bottom shaft 6 revolves, to communicate motion to the picking-shaft 9 and through arm 11 and connector 12 to the picker-stick 5, to drive the shuttles through the shed.

The cone-shaped roll 15 is considerably longer or wider than the thickness of the picking-cam 8, as shown in Fig. 2, and the position of said roll 15 on the arm 14 relatively to the picking-cam 8 is such that the first engagement of said cam 8 with the roll 15 in the operation of the loom will be with the smaller end of said roll and the last engagement will be with the larger end of the roll—that is, the arc of the circle through which the roll 15 on the arm 14 passes is such, relatively to the picking-cam 8, that in the revolution of said cam and its engagement with said roll it will pass from the smaller end of said roll to the larger end at each pick of the loom, so that there will be a gain of movement of the roll and the roll-arm 14, and consequently of the picker-stick 5, through connections to the picking-shaft 9, corresponding to the inclination of the roll-surface 15, as will be readily understood by those skilled in the art.

A coiled spring 16 encircles the inner end of the picking-shaft 9 beyond the bearing 10' and is secured at one end to said bearing and at its other end to a collar 17, adjustable on the shaft 9 by a set-screw 17', and acts to rock said shaft and keep the picking-roll 15 in contact with the cam-plate 7 and picking-cam 8 as the same revolves. The position of the spring 16 on the picking-shaft 9 relatively to the arm 14 is such that the action of said spring on the shaft 9 is in line with or very near the point where the arm 14 is connected with said shaft, so that the action of the spring is applied directly to keep the roll 15 in contact with the cam-plate 7 and picking-cam 8 instead of at a distance.

The rocker-iron 4 is preferably provided with a tube 18 for holding the spring-actuated pin 19, having a spiral spring 20, encircling the same, to push the outer enlarged end 19' of the pin 19 out from the outer end of the tube 18 (see Fig. 2) to be engaged by the downwardly-extending end 5' of the picker-stick holder 5'' and act as a shuttle-easer, for when the point of the shuttle thrown from the opposite side strikes the top end (not shown) of the picker-stick 5 the end 5' is carried into contact with the end of the spring-actuated pin 19, and thus eases the shuttle and prevents it from rebounding.

A spring 21, secured at one end to a collar 22 on the rocker-shaft 2 and connected at its other end by a link or wire 23 with the lower

end 5' of the picker-stick holder 5'', acts to draw back the picker-stick 5 and keep the connector 12 taut and the picker-stick 5 in its outward position.

The advantages of our construction of picking mechanism above described and shown in the drawings will be readily appreciated by those skilled in the art.

The picking-shaft is supported near its back end by a bearing, and the picking-roll arm is at one side of said bearing and a coiled spring at the other side, by which construction the spring acts directly upon said arm to keep the picking-roll in contact with its cam without such friction in the bearings as results from applying a spring at the bottom of the picking-stick in the ordinary way.

It will be noticed that the vertical arm 11 will move from a vertical position, and the inwardly-curved arm 13 and the arm 14, with its picking-roll 15, will move downward when the shaft 9 is moved by the picking-cam 8 to throw the shuttle, and the spiral spring 16 can be so accurately adjusted by its collar 17 as to just overcome the gravity of the parts when the picking-roll 15 has been moved by the picking-cam 8 to return or keep the roll in contact with the cam-plate 7—that is, the spiral spring 16 will just balance the gravity of the parts and keep the picking-shaft in its normal position; but when the shaft is actuated by the picking-cam 8 the momentum of those parts above named will not be in any degree overcome by the spiral spring 16. Consequently this momentum is an important factor in throwing the shuttle, and permits the construction of the picking-cam 8 to be made of a much easier incline to throw the shuttle properly than in looms with picking-shaft as commonly constructed. In addition to this the change of diameter of the picking-roll 15 from the small part of the roll when the picking-shaft is first actuated to the larger diameter at the end of the movement is also of material advantage in producing a still easier incline on the picking-cam 8. Either of these parts materially assists the picking, and both combined give a still better result.

The arrangement of the picking-shaft on the outside of the frame with its inwardly-projecting arm 14 on the inside permits of so arranging the arm 11 as to be conveniently connected by the connector 12 to the picker-stick 5, and also to permit the cam-plate 7 to be supported in immediate proximity to the supporting-box on the cam-shaft, so as to give the greatest rigidity to the cam-plate 7 when the picking-cam 8 is operating the picking-shaft. This arrangement also permits the vertical arm 11 to be in its proper relation to the picker-stick 5, so as to draw the picker-stick forward at the proper time to throw the shuttle without interfering with the usual construction of the lathe sword or standard which supports the lay, as would be the case if the picking-shaft was inside of the frame.

It will be understood that the details of construction of some of the parts of our picking mechanism may be varied, if desired.

5 Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

10 1. In a picking mechanism for looms, the combination with the picking-cam, and means to operate it, and a picking-shaft having a picking-roll arm secured thereto, of a spring encircling said shaft, and having one end adjustably secured thereto, and the other end secured to a fixed part of the loom-frame, substantially as shown and described.

15 2. In a picking mechanism for looms, the combination with the picking-cam, and means to operate it, and a picking-shaft having a picking-roll arm secured thereto, of a spring encircling said shaft, and having one end se-

cured thereto, and the other end secured to a fixed part of the loom-frame, substantially as shown and described. 20

3. In a picking mechanism for looms, the combination with the picking-cam, and means to operate it, and a picking-shaft and bearings therefor, one end of the shaft extending beyond its bearing, and a picking-arm secured to said shaft, of a spring surrounding the extended end of the shaft, and having one end secured to the shaft, and the other end secured to a fixed part of the loom-frame, substantially as shown and described. 25 30

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