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C. SAURER

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PICKING MECHANISM FOR LOOMS

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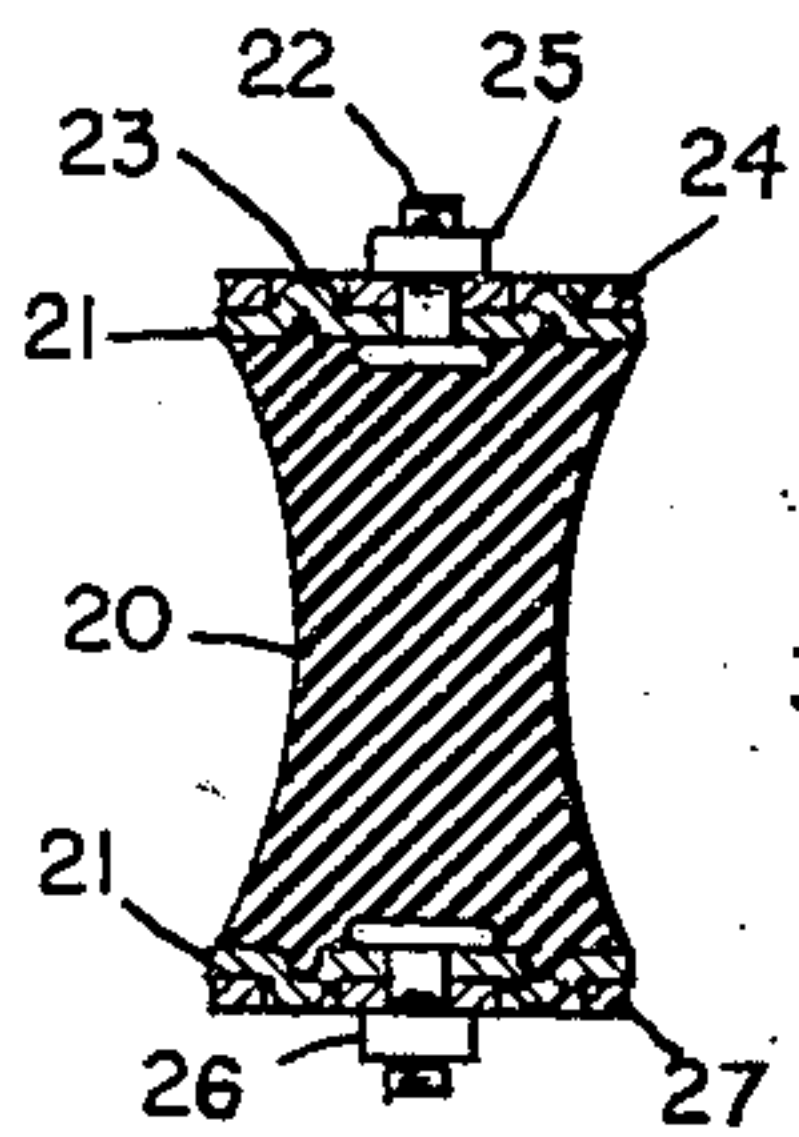


Fig. 5

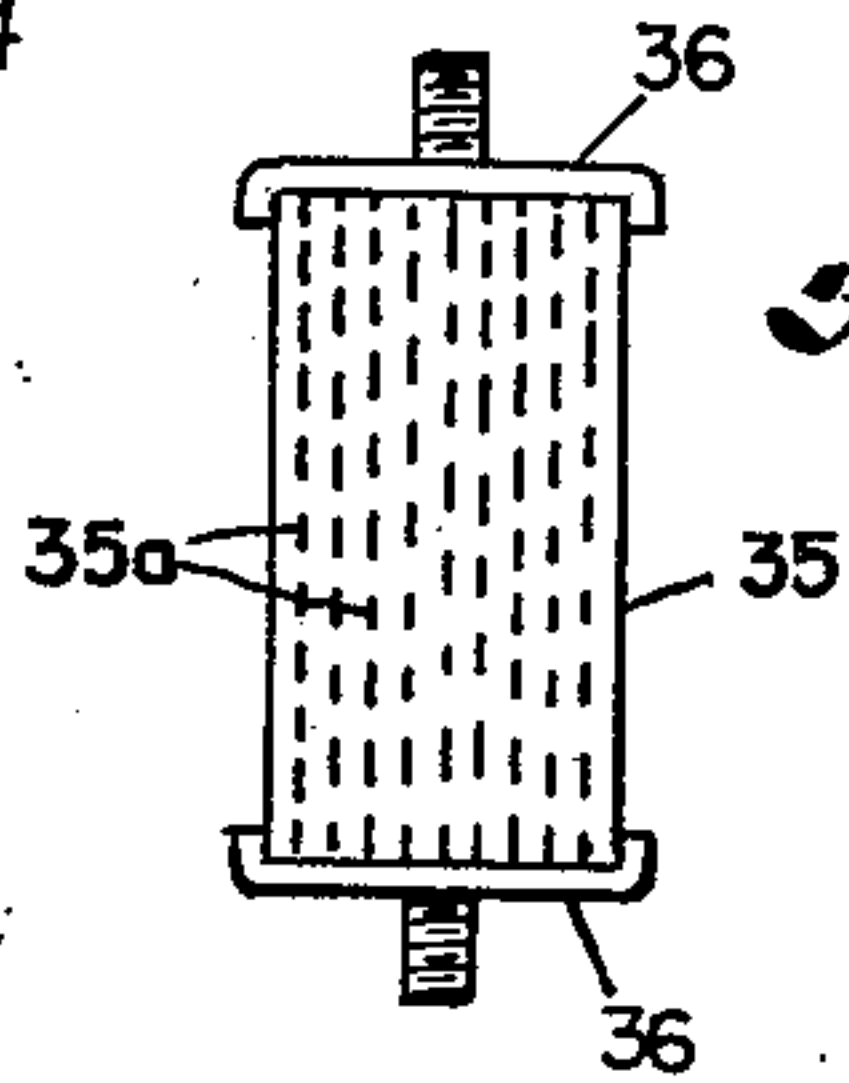


Fig. 6

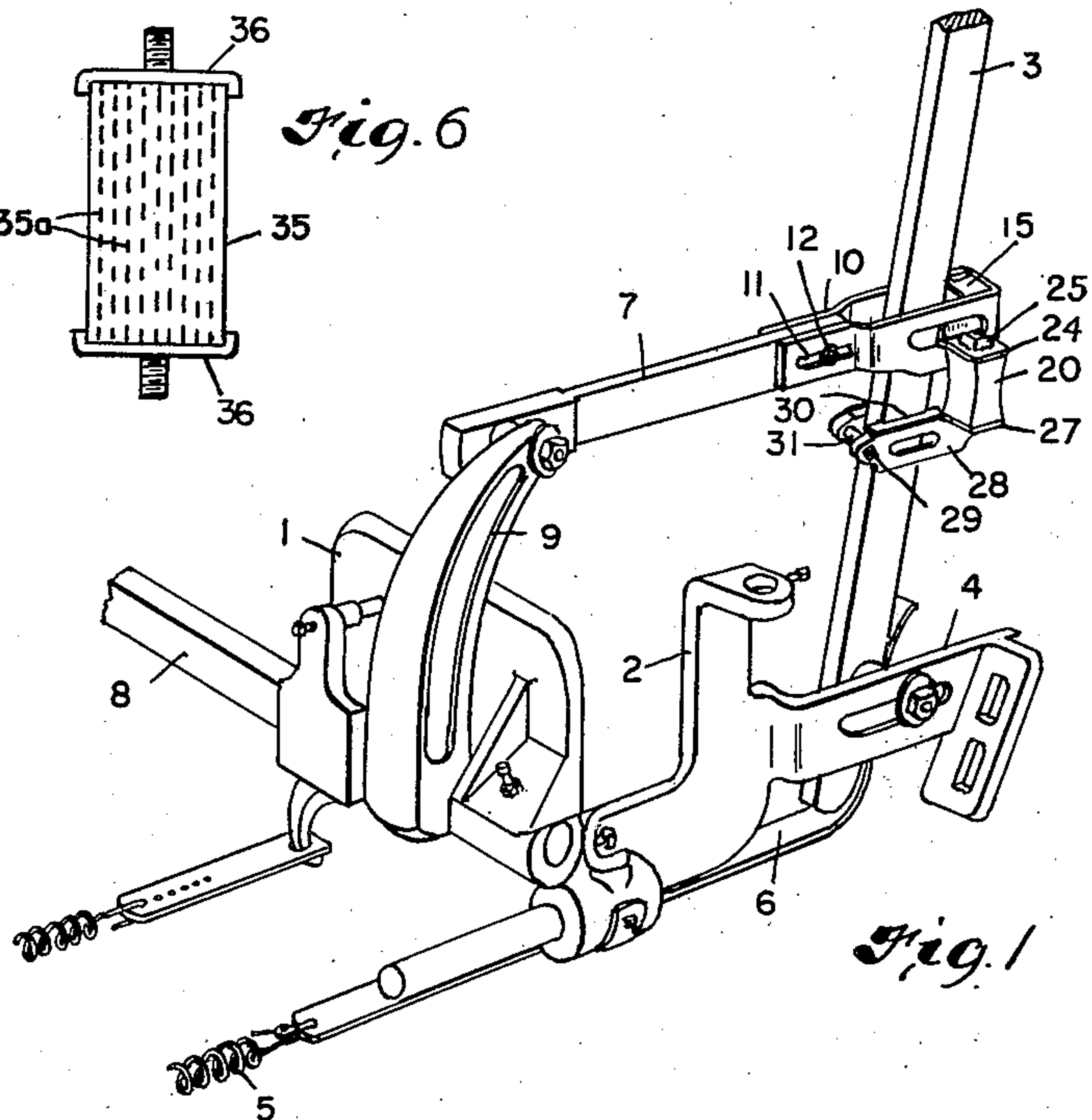


Fig. 1

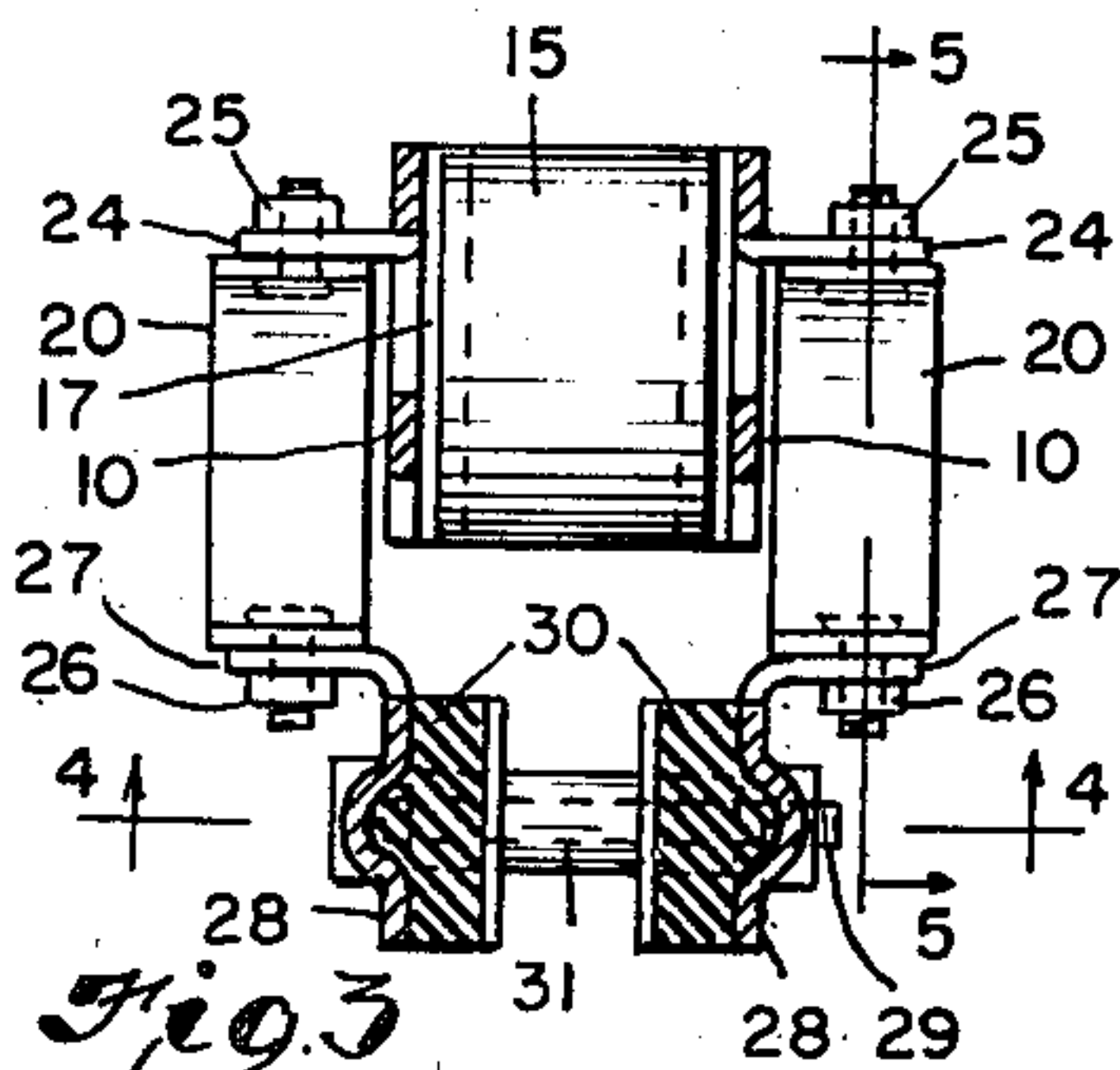


Fig. 3

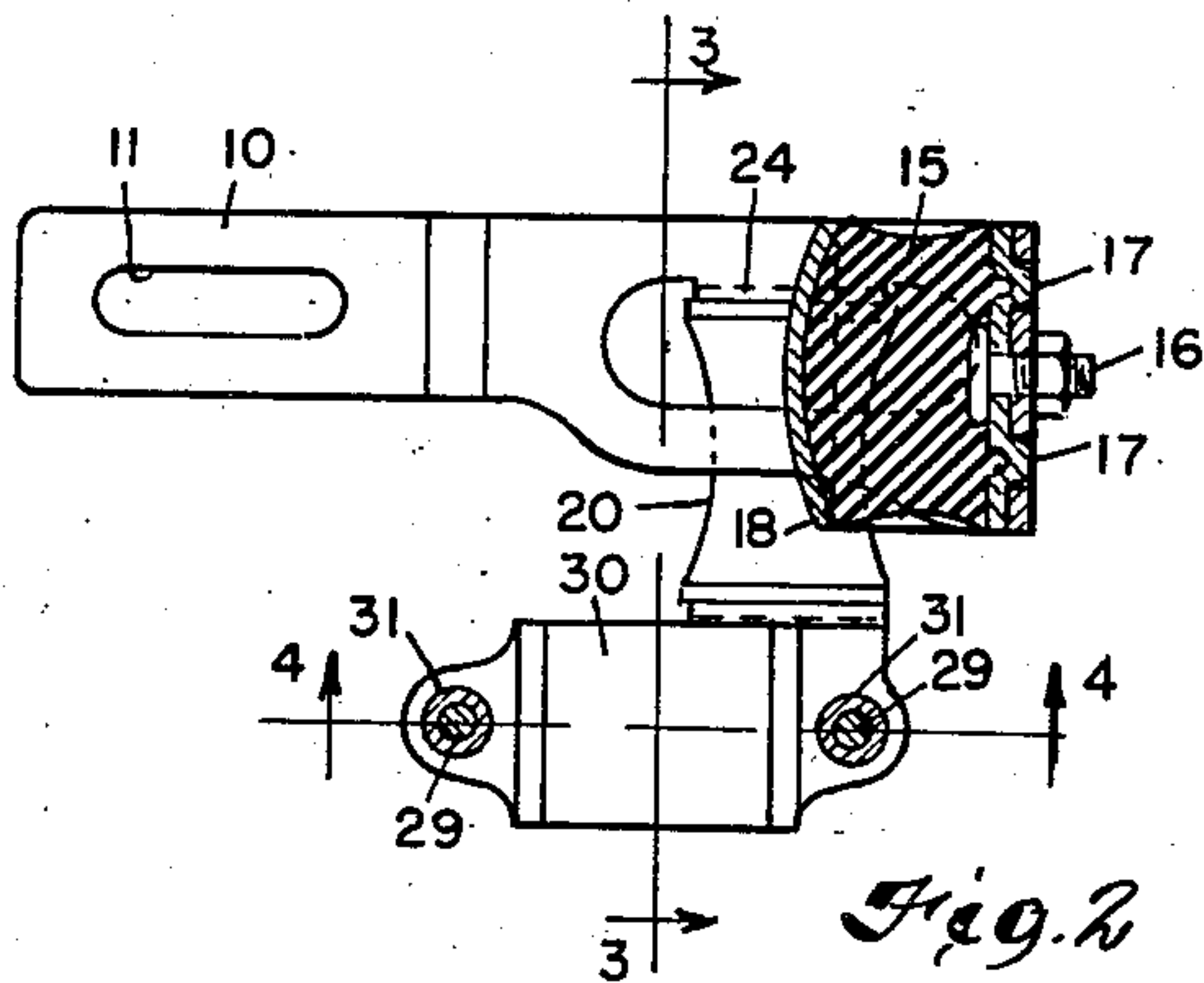


Fig. 2

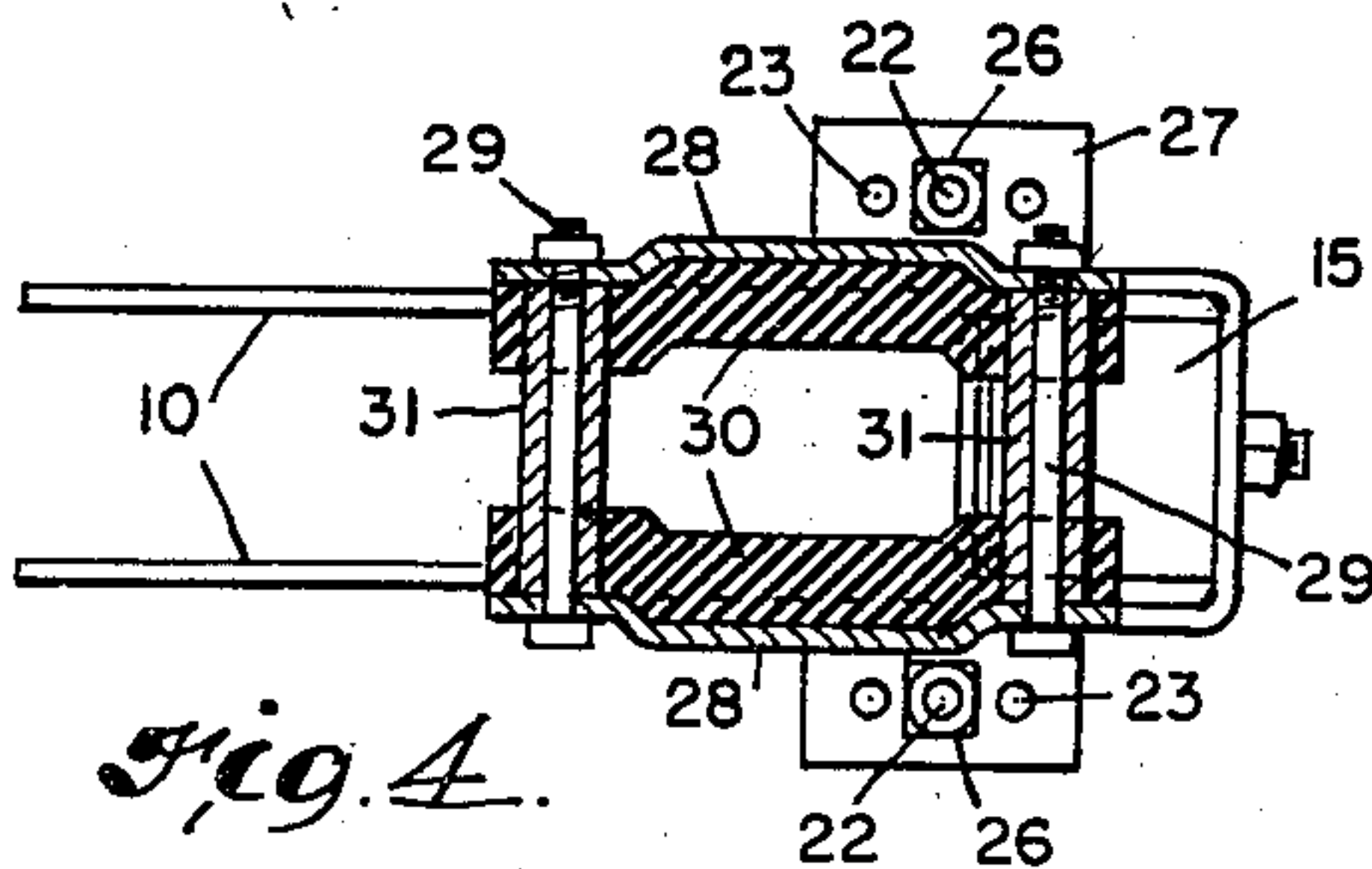


Fig. 4

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PICKING MECHANISM FOR LOOMS

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The present improvements, relating as indicated to picking mechanism for looms, have more particular regard to the means provided for connecting the sweep stick with the picker stick.

In power looms the picker stick as heretofore constructed has regularly been made of wood, which material has well recognized advantages as well as disadvantages. Principal among the latter is the rapid wear to which such stick is subjected by the means employed thus to connect the same with the sweep stick and thus with the actuating mechanism irrespective of the particular type of motion employed in the latter. As is well known, the connection in question comprises a leather strap, formerly made of elephant hide, which is looped about the picker stick at a point intermediate of its ends and is attached to the adjacent end of the sweep stick. While it is customary to provide a pad in the outer looped portion of such strap, the rapidity and sudden character of the motion which requires to be imparted to the picker stick tends to wear the latter quite rapidly at the point of connection thus provided with the actuating motion.

The general object of the present invention is to provide connecting means which will be substantially free of abrading and wearing action on the picker stick at the point of attachment thereto. Another object is to provide connections which will at all times have close contact with the picker stick, i. e. be free from play between the parts. A further object is to provide connecting means which will in themselves be simple, compact and durable.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a more or less diagrammatic perspective view of a typical picker stick and actuating mechanism therefor, including the present improved connecting device;

Fig. 2 is a longitudinal cross-section through such device and the adjacent portion of the picker stick;

Fig. 3 is a transverse section of the same, the plane of the section being indicated by the line 3—3 Fig. 2;

Figs. 4 and 5 are respectively a horizontal section and a vertical section, the planes thereof being indicated by section lines 4—4 and 5—5 on Figs. 2 and 3; and

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Fig. 6 is a sectional view corresponding with Fig. 5 but showing a modification in construction.

Referring to Fig. 1 of the drawing, it has been deemed unnecessary to show any part of the loom frame beyond the picking shaft bearing 1 and the bracket 2 to which the oscillatory picker stick 3 is pivotally attached at its lower end by means of a stud 4. Such picker stick is normally swung to the outer limit of its oscillatory movement by means of a tension spring 5 connected with the lower end thereof by a flexible band or strap 6. Oscillation of the picker stick is produced by the action of a reciprocable sweep stick 7 connected therewith by the device of present interest, such sweep stick being reciprocally mounted and in turn actuated by any suitable mechanical means such as an oscillatory shaft 8 and lever 9, the free end of which is pivotally connected to the inner end of the sweep stick.

Since the manner in which the upper end of the picker stick engages with the picker forms no part of the present invention, a showing thereof has been omitted from the drawing.

For the purpose of connecting the outer end of the sweep stick with the picker stick, instead of a leather lug strap a rigid metallic strap 10, on the order of a clevis, is employed (see Figs. 2, 3 and 4), the sides of such strap being provided with longitudinal slots 11 to permit adjustment of the strap to the desired position lengthwise of the sweep stick whereupon it is held in place by means of a clamp nut 12 which passes through such slots. The outer looped end of the strap passes around the picker stick 3 at the usual distance above the axis of oscillation of the latter but without having direct contact with any edge or side of such stick. Located within the outer looped portion of the strap is a cushion bumper 15 in the form of a rubber pad provided on its outer face with a threaded stud 16 and adjacent locating studs 17 whereby such pad may be detachably yet firmly secured to the strap. The inwardly directed face of the pad is curved lengthwise of the picker stick and is faced with a metallic plate 18 which forms the face of the pad that is adapted to contact with the adjacent face of said stick. The four lateral faces of the pad, on the contrary, are of hollow concave form whereby an added degree of flexibility in corresponding lateral directions is imparted to the pad. The curvature of the forward face of the pad as defined by plate 18 is such as to provide for rolling contact of such face with the juxtaposed outer edge or face of the stick.

Instead of the strap being more or less loosely fitted to the picker stick, flexible members 20 are provided, attached at one end to the respective sides of said strap and at the other to said picker

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stick at corresponding points spaced lengthwise thereof from said strap. Each of these flexible members is in the form of a rubber block concavely curved on the opposite sides which lie in the plane wherein said member moves incidentally to oscillation of the picker stick, said members lying for the most part in approximately the same horizontal plane with the cushion bumper 15.

For the purpose of attaching the rubber blocks which constitute the flexible members 20 to the strap and to means presently to be described for clamping the same to the picker stick, each end of the block has firmly vulcanized thereto a plate 21 of corresponding dimensions from which projects centrally a threaded stud 22 and two adjacent locating studs 23. Such stud 22 on the one end is designed to be received in a suitable opening formed in a laterally projecting ear 24, preferably stamped out of the corresponding side wall of the lug strap, and to be firmly secured in place by means of a nut 25. The threaded stud on the opposite or lower end is adapted to be received in and secured by means of a nut 26 to a similar ear 27 that projects laterally from one of two similar padded clamp plates 28 that are adapted to be drawn together by means of transverse bolts 29 passing therethrough. The pads 30 wherewith said clamp plates 28 are provided will be desirably formed of rubber firmly vulcanized thereto and of such resilience and thickness as to permit the plates to be drawn together sufficiently to insure firm engagement with the stick without, however, unduly compressing the material of the latter. In order to insure against undesirable compression of the latter spacing sleeves 31, which surround the clamp bolts 29, are desirably interposed between the plates.

In describing certain parts of the device as made of rubber, it will be understood that this term is intended to connote not only the product resulting from the vulcanization of natural rubber, but also neoprene and other synthetic rubbers or rubber substitutes which are now available.

From the foregoing description it will be seen that the strap with its appurtenant parts, in addition to being adjustable longitudinally of the sweep stick, may also be adjusted vertically of the picker stick and then firmly secured to the latter through the medium of the padded clamp plates last referred to. The longitudinal adjustment of the sweep stick will be such as to bring the curved inner face of the cushion pad 18 into close rolling contact with the outer edge face of the stick. Due to the concave form of the four exposed sides of the rubber pad which forms the main part of the cushion, the latter will not only yield in the direction of movement of the sweep stick, but be capable of slight lateral flexure so that plate 18 will at all times bear evenly upon such picker stick face. The form and construction of the flexible members 20 is such as will thus maintain the cushion bumper in contact with the picker stick in the manner described, at all times during the oscillation thereof. Such members, of course, also permit necessary rotative movement between the sweep stick and picker stick. The curvature of the oppositely directed concave faces of the rubber blocks is such as to limit flexure thereof to their central portions so as not only to increase their flexibility but also the period of their useful life.

As a result, impact on the picker stick is minimized and at the same time motion of the latter

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accelerated in a uniform movement which prevents the premature breaking of the stick and allows the loom to be run much faster with less stress. Actual tests have shown that by using lug straps as described picker sticks will last four to five times longer than with lug straps of conventional construction.

The modified construction of flexible element illustrated in Fig. 6 instead of comprising a rubber block 20 having concavely curved faces as described, consists of a rectangular block 35 of molded rubber, the ends of which are vulcanized as before to plates 36 provided with attaching studs. Incorporated in the rubber body 35 are layers of fabric 35a which lie in a plane transverse to that in which the member moves incidentally to oscillation of the picker stick.

While my improved form of flexible connecting means between the picker stick and lug strap and improved form of bumper carried by the latter will desirably be used conjointly, as described, they may also be used individually with correspondingly advantageous results. In other words, such bumper will desirably replace the type of bumper at present in use in conventional lug straps and my improved connecting means will provide a much superior action of the picker stick even though the lug strap carry the present type of bumper.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, and resilient flexible members attached at one end to the respective sides of said strap and at the other end to said picker stick at points spaced lengthwise thereof from said strap.

2. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, clamp plates engaging opposite sides of said picker stick at corresponding points spaced lengthwise thereof from said strap, and resilient flexible members attached at one end to the respective sides of said strap and at the other end to said clamp plates, respectively.

3. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, rubber padded clamp plates engaging opposite sides of said picker stick at corresponding points spaced lengthwise thereof from said strap, and resilient flexible members attached at one end to the respective sides of said

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strap and at the other end to said clamp plates, respectively.

4. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, and flexible members attached at one end to the respective sides of said strap and at the other end to said picker stick at points spaced lengthwise thereof from said strap, each of said members being in the form of a rubber block concavely curved in the plane wherein said member moves incidentally to oscillation of said picker stick.

5. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, clamp plates engaging opposite sides of said picker stick at corresponding points spaced lengthwise thereof from said strap, and flexible members attached at one end to the respective sides of said strap and at the other end to said clamp plates, respectively, each of said members being in the form of a rubber block concavely curved in the plane wherein said member moves incidentally to oscillation of said picker stick.

6. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, resilient flexible members attached at one end to the respective sides of said strap and at the other end to said picker stick at points spaced lengthwise thereof from said strap, and a cushion bumper held in the outer portion of said strap in approximate alignment with said flexible members and adapted to contact with the adjacent face of said picker stick.

7. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, resilient flexible members attached at one end to the respective sides of said strap and at the other end to said picker stick at point spaced lengthwise thereof from said strap, and a cushion bumper held in the outer portion of said strap in approximate alignment with said flexible members, said bumper having a face convexly curved lengthwise of said picker stick adapted to contact with the adjacent face thereof.

8. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, clamp plates engaging opposite sides of said picker stick at correspond-

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ing points spaced lengthwise thereof from said strap, flexible members attached at one end to the respective sides of said strap and at the other end to said clamp plates, respectively, each of said members being in the form of a rubber block concavely curved in the plane wherein said member moves incidentally to oscillation of said picker stick, and a cushion bumper held in the outer portion of said strap in approximate alignment with said flexible members, said bumper in the form of a rubber pad adapted to be detachably secured in the outer portion of said lug strap and having a face curved lengthwise of said picker stick adapted to contact with the adjacent face thereof, the lateral faces of said pad being concave.

9. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, and resilient flexible members attached at one end to the respective sides of said strap and at the other end to said picker stick at points spaced lengthwise thereof from said strap, said flexible members comprising blocks of rubber having vertically disposed fabric incorporated therein.

10. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, and means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, and flexible members attached at one end to the respective sides of said strap and at the other end to said picker stick at points spaced lengthwise thereof from said strap, each of said members being in the form of a rubber block.

11. In picking mechanism for looms, the combination of a picker stick oscillatorily supported adjacent its lower end, a reciprocable sweep stick for actuating said picker stick, means connecting the former with the latter, said means comprising a lug strap attached to the end of said sweep stick adjacent said picker stick and looped around the same, and resilient flexible members directly attached at one end to the respective sides of said strap, and at the other end to said picker stick at points spaced lengthwise thereof from said strap.

CURT SAURER.

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