

No. 723,049.

PATENTED MAR. 17, 1903.

E. E. SHELTERS & H. T. HUNNEWELL.  
THIN PLACE DETECTOR MECHANISM FOR LOOMS.

APPLICATION FILED MAY 29, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

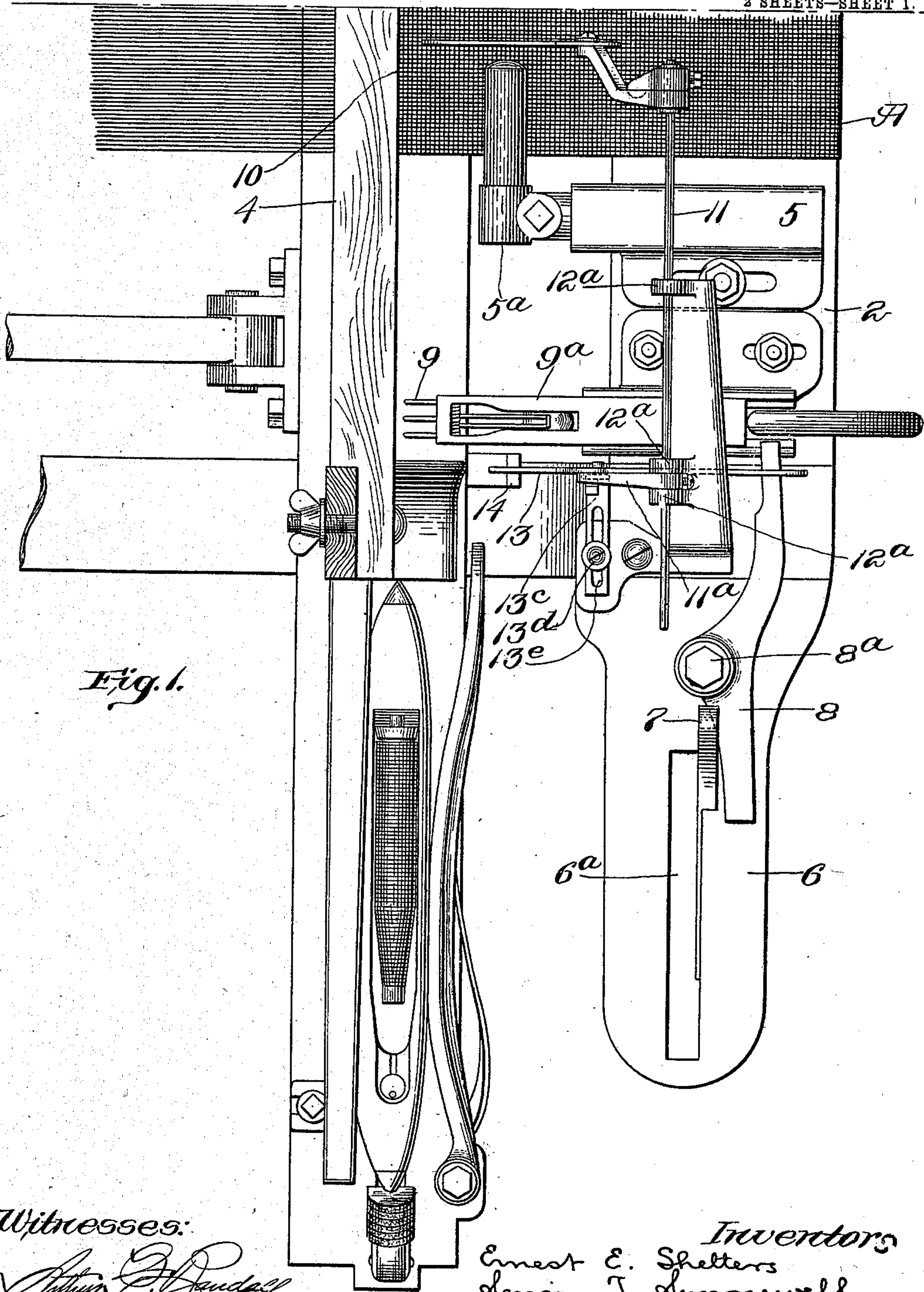


Fig. 1.

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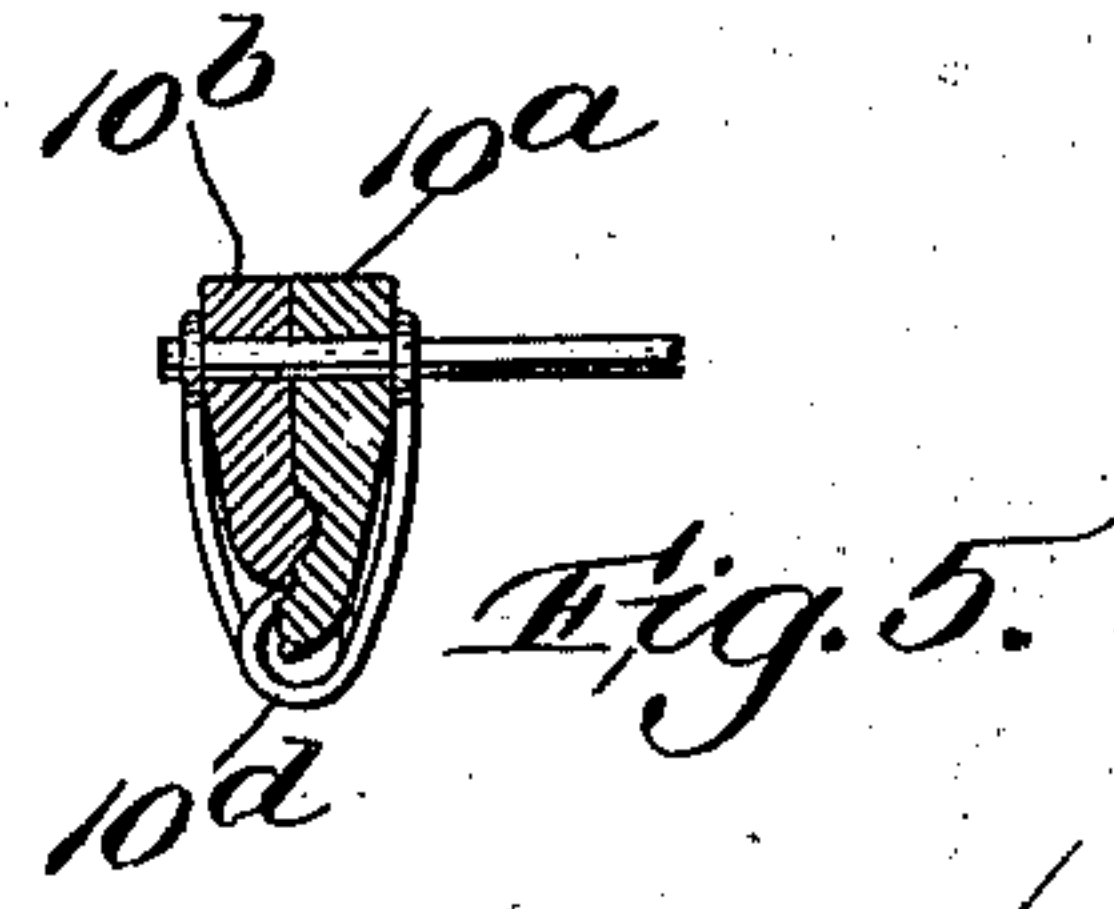
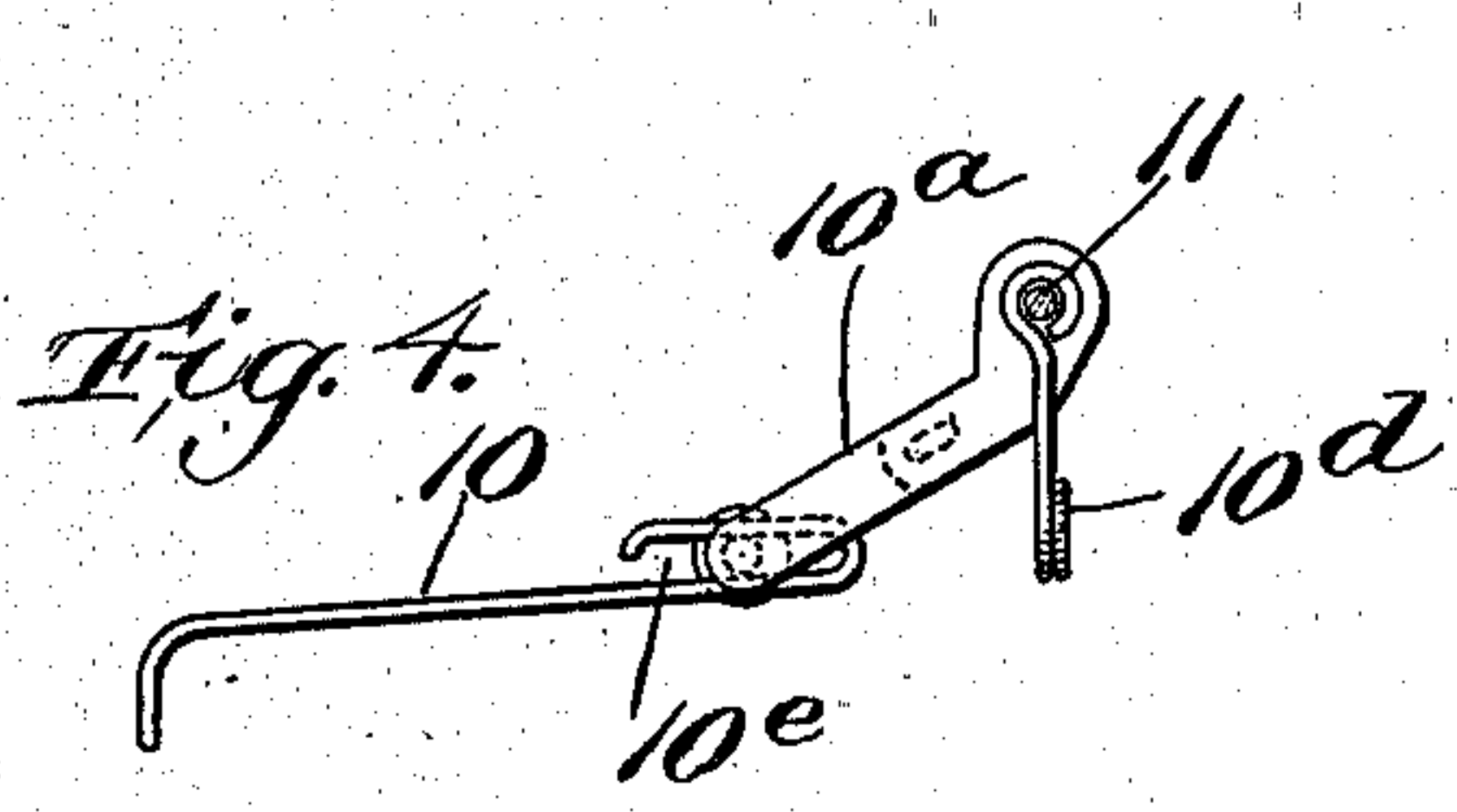
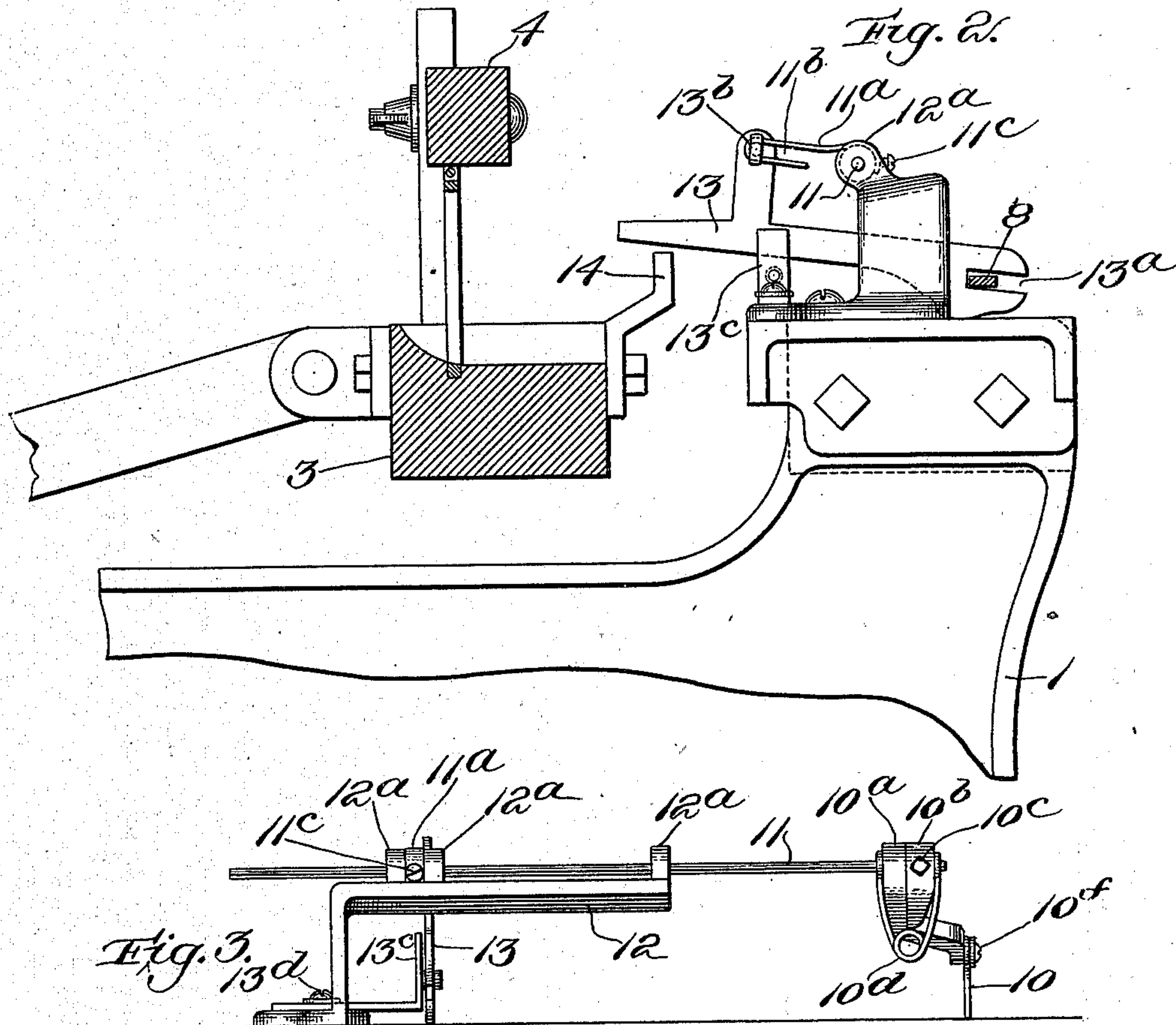
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# UNITED STATES PATENT OFFICE.

ERNEST E. SHELTERS AND HENRY T. HUNNEWELL, OF LOWELL, MASSACHUSETTS.

## THIN-PLACE-DETECTOR MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 723,049, dated March 17, 1903.

Application filed May 29, 1902. Serial No. 109,433. (No model.)

*To all whom it may concern:*

Be it known that we, ERNEST E. SHELTERS and HENRY T. HUNNEWELL, citizens of the United States, residing at Lowell, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Thin-Place-Detector Mechanisms for Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in an improved mechanism for use on looms for the purpose of detecting thin places in the webs being woven, resulting from absence of weft.

Our invention in the form thereof which has been employed by us in practice is illustrated in the accompanying drawings, in which—

Figure 1 shows in plan portion of a loom having the invention applied thereto, only such of the usual parts of the loom being shown as are required for the purpose of making clear the nature, relations, and mode of operation of the parts that are involved in the invention. Fig. 2 is a partly-sectional side elevation of certain of the features of Fig. 1. Fig. 3 shows in front elevation the detector and its connected parts. Fig. 4 shows the detector in side elevation. Fig. 5 shows the detector in vertical section.

In the drawings portion of one side frame of a loom is intended to be indicated at 1, the breast-beam at 2, and the lay-beam at 3.

4 is the lay-cap.

5, Fig. 1, is the temple-stand pertaining to one side of the loom, and 5<sup>a</sup> is the corresponding temple.

6, Fig. 1, is the usual plate or bracket projecting outwardly in line with the breast-beam at the driving end of the loom and provided with the slot 6<sup>a</sup>, in which works the shipper-handle 7.

8, Fig. 1, is the usual knocking-off lever, and 8<sup>a</sup> is the pivot by which the said knocking-off lever is connected with the said plate or bracket.

9 is the weft-fork, and 9<sup>a</sup> the slide on which the weft-fork is mounted.

The foregoing parts are usual features of looms and are presented chiefly for conven-

ience in making clear the relations, &c., of the invention itself.

Having reference now to the parts which are involved in the invention itself, at 10 is a feeler which is caused to bear against the web A of cloth in process of being woven, the contact of the feeler with the said web being at a place closely adjacent the fell. The said feeler is mounted upon a rod 11, which has the length thereof disposed parallel with the lay, the said rod being fitted to bearings in lugs 12<sup>a</sup> 12<sup>a</sup> 12<sup>a</sup> of a stand 12, attached to the breast-beam. The feeler 10 extends rearwardly from the said rod toward the lay. An arm 11<sup>a</sup> also extends rearwardly from the rod 11 and is loosely engaged with a knocking-off piece 13. The latter is located in position to coact with the inner arm of the knocking-off lever 8, its forward end being slotted at 13<sup>a</sup> and the slot receiving the said arm, as indicated in Figs. 1 and 2. The rear portion of the knocking-off piece 13 is controlled in position by the arm 11<sup>a</sup> of the rod 11, the said arm having a loop or longitudinal opening 11<sup>b</sup>, in which is received a pin or other projection 13<sup>b</sup>, extending from the knocking-off piece 13. Knocking-off piece 13 coacts with a suitable going part of the loom, which part when permitted to engage with the said knocking-off piece moves the latter in such manner as to operate the knocking-off lever 8 and dislodge the shipper-handle 7, thereby unshipping the loom. In the present instance the said going part is constituted by the lay, the lay-beam 3 having attached thereto a suitable striker, as 14, intended to encounter the knocking-off piece 13 when the latter is caused to enter the path of said striker and actuate said knocking-off piece, so as to effectuate the unshipping. Any suitable provision may be made for causing the feeler 10 to bear against the surface of the web A. In the illustrated embodiment of the invention the gravity of the rearwardly-extending feeler and arm 11<sup>a</sup> and of the knocking-off piece 13, suspended from arm 11<sup>a</sup>, is sufficient for the purpose.

The action of the invention will be obvious. So long as the end of the feeler 10 rests against properly-woven portions of web A the



feeler is maintained in an abnormal position by such portions of the said web, and the knocking-off piece 13 will be held out of the path of movement of the striker 14. When, however, a thin place in the web presents itself to the feeler 10, the feeler will move into its normal position and the end of the same will enter such thin place. Thereby the rod 11 will be permitted to turn, and the knocking-off piece 13 will be permitted to enter the path of movement of striker 14. The resulting engagement of knocking-off piece 13 by the striker 14 will cause knocking-off lever 8 to be actuated to dislodge the shipper-handle and bring about the unshipping of the loom, so as to arrest the working of the latter.

In order that the feeler may not inconvenience the weaver when the latter is engaged in remedying the fault in the web, the feeler is mounted with capacity for being shifted out of the way when required. Thus in the present instance it is carried by an arm 10<sup>a</sup>, which last is hung loosely upon the rod 11. A second arm 10<sup>b</sup> is mounted upon rod 11 at the side of arm 10<sup>a</sup> and is made fast therewith by means of a clamping-screw 10<sup>c</sup>, Fig. 3. Arm 10<sup>a</sup> is pressed against arm 10<sup>b</sup> by means of a spring 10<sup>d</sup>. One of the said arms is formed with a projection and the other with a depression to receive the said projection, as shown in sectional detail in Fig. 5. Thereby the arm 10<sup>a</sup> is yieldingly locked to arm 10<sup>b</sup>, so as to cause arm 10<sup>a</sup> and attached feeler 10 to turn in unison with rod 11 ordinarily. When, however, it is desired to swing the feeler 10 out of the way, the feeler and arm 10<sup>a</sup> may be turned upward independently around the rod 11.

In order to enable the feeler to be adjusted in a direction widthwise of the loom—as, for instance, to accommodate different widths of web—the rod 11 is made capable of sliding lengthwise through its bearings in the lugs 12<sup>a</sup> 12<sup>a</sup> 12<sup>a</sup> of the stand 12. For the purpose of holding the feeler in place after being adjusted two of the said lugs are located close together, and the space between them is occupied by the hub portion of the arm 11<sup>a</sup>, the latter being clamped to the rod by means of a screw 11<sup>c</sup>. After loosening this screw the rod 11 may be slid lengthwise to the extent required and held in the adjusted position by tightening up the screw again. In order to enable the feeler to be adjusted in a direction toward or from the lay, it is formed with a loop or slot 10<sup>e</sup>, through which is passed the stem of the screw 10<sup>f</sup>, by means of which the feeler is clamped to arm 10<sup>a</sup>.

At 13<sup>e</sup> is shown a guide for steadying the knocking-off piece 13 in its movements, the said guide being constituted by the vertically-upturned inner end of a plate that is secured in place upon the base of the stand 12 by means of a clamping-screw 13<sup>d</sup>, having its stem passed through a longitudinal slot 13<sup>c</sup> in said

plate, such slot providing for transverse adjustment of the guide when required.

What we claim is—

1. In thin-place-detector mechanism, in combination, a going part, the feeler to bear against the web, the rod on which the feeler is mounted, bearings in which the said rod is arranged to turn, the knocking-off piece operatively connected with the said rod and movable in unison therewith into and out of position for engagement by the said going part, and a shipper device operated by movement of said knocking-off device when the latter is engaged by said going part.

2. In thin-place-detector mechanism, in combination, a going part, the feeler to bear against the web, the rod on which the feeler is mounted, bearings in which the said rod is arranged to turn, an arm on said rod, the knocking-off piece 13 controlled in position by the said arm and movable in unison therewith into and out of position for engagement by the said going part, and shipper devices operated by movement of said knocking-off piece when the latter is engaged by said going part.

3. In thin-place-detector mechanism, in combination, the feeler to bear against the web, the rod on which the feeler is mounted, bearings in which said rod is arranged to turn, an arm on said rod, the knocking-off piece 13 controlled in position by the said arm and movable in unison therewith into and out of position for engagement by the said going part, the knocking-off lever, the shipper-handle, and the lay provided with a striker to move said knocking-off piece and effectuate the dislodgment of the shipper-handle.

4. In thin-place-detector mechanism, in combination, the feeler to bear against the web, the rod on which the feeler is mounted, bearings in which the said rod is arranged to turn, an arm, on said rod, the knocking-off piece 13 controlled in position by the said arm, shipper devices under operative control of said knocking-off piece, a going part adapted to engage with said knocking-off piece, and means to adjust the position of the feeler transversely of the loom.

5. In thin-place-detector mechanism, in combination, the feeler to bear against the web, the rod on which the feeler is mounted, bearings in which the said rod is arranged to turn, an arm, on said rod, the knocking-off piece 13 controlled in position by the said arm, shipper devices under operative control of said knocking-off piece, a going part adapted to engage with said knocking-off piece, and means to adjust the rod in the direction of its length.

6. In thin-place-detector mechanism, in combination, the feeler to bear against the web, the rod on which the feeler is mounted, bearings in which the said rod is arranged to turn, an arm, on said rod, engaging with said bearings to prevent lateral displacement of



the arm, means for locking said arm and rod together, the knocking-off piece 13 controlled in position by the said arm, shipper devices under operative control of said knocking-off piece, and a going part adapted to engage 5 with said knocking-off piece to occasion unshipping of the loom.

7. In thin-place-detector mechanism, in combination, the feeler and its carrying-arm, 10 the rod 11 on which said arm is mounted loosely, the arm fixed to said rod at the side of said carrying-arm, said arms being constructed for interengagement as described,

means to press said arms into engagement with each other, the construction enabling 15 the feeler to be swung into inoperative position when required, and unshipping mechanism under control of the said rod.

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

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Witnesses:

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