

No. 708,672.

Patented Sept. 9, 1902.

A. E. STAFFORD.

SHUTTLE GUIDE FOR WEFT REPLENISHING LOOMS.

(Application filed May 10, 1902.)

(No Model.)

Fig. 1.

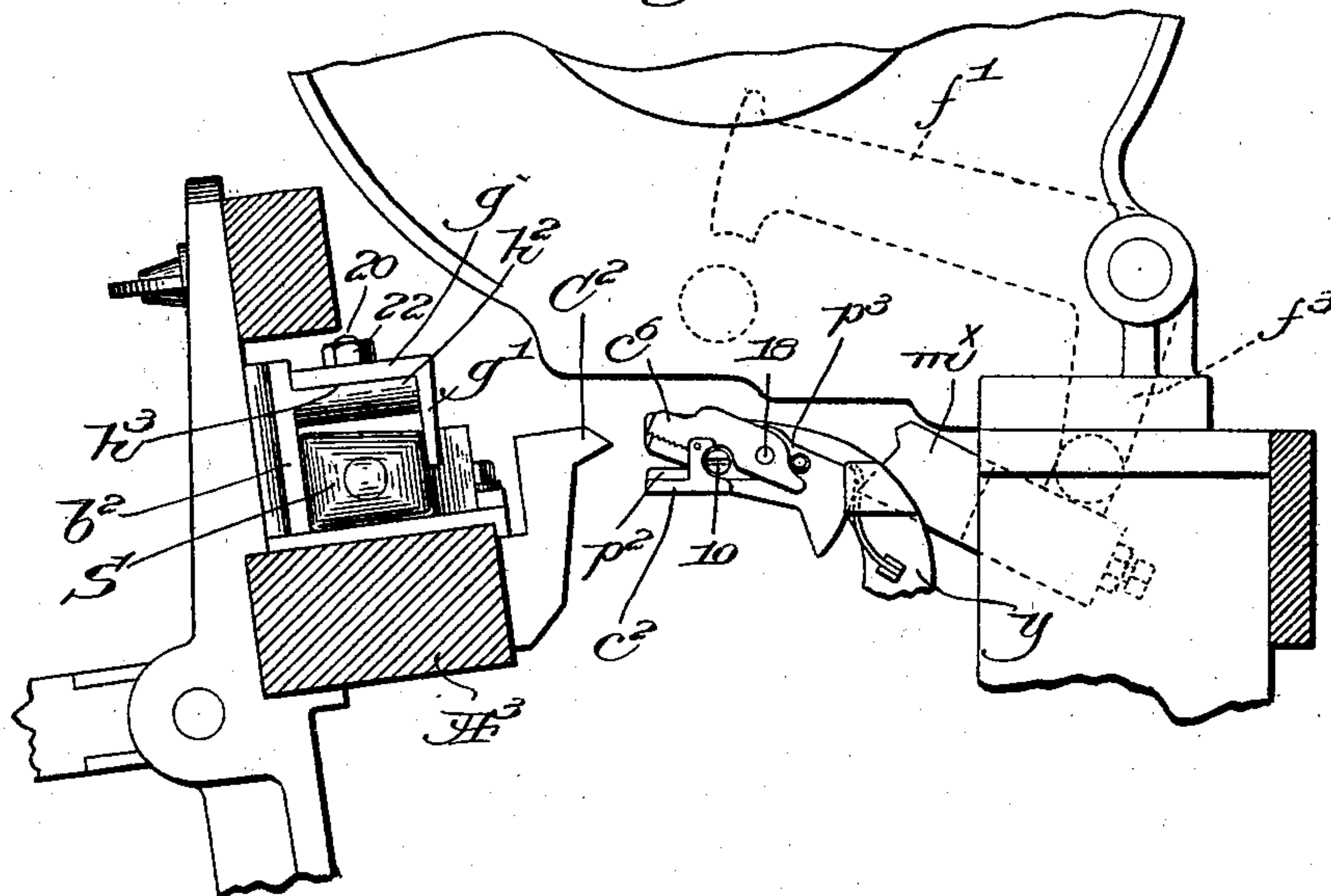


Fig. 2.

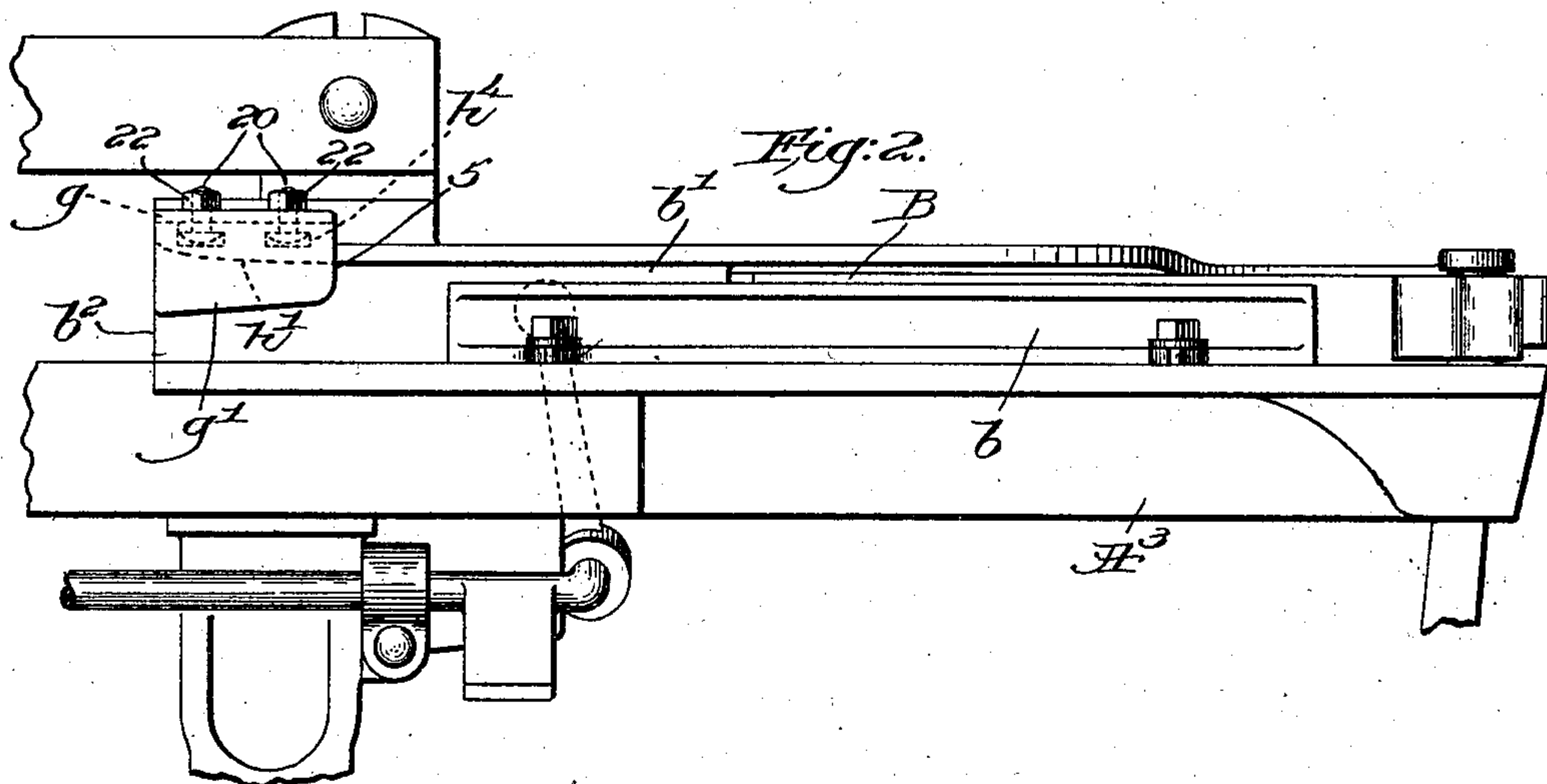


Fig. 3.

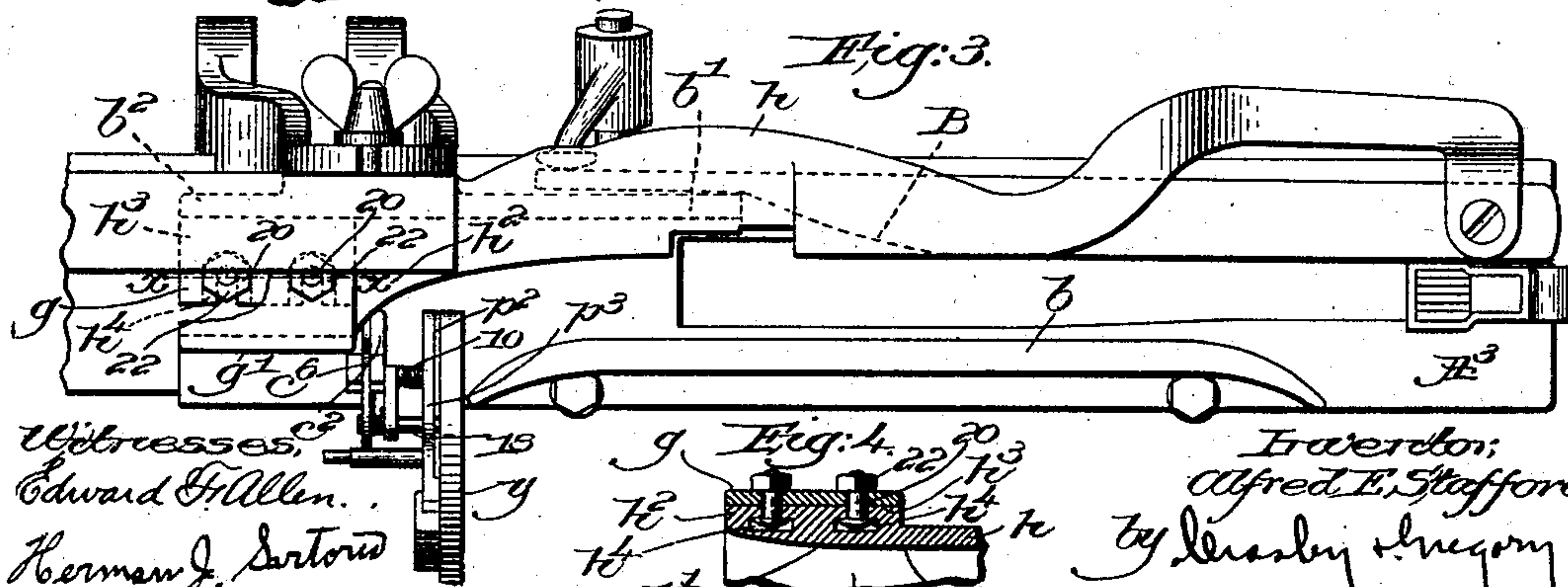
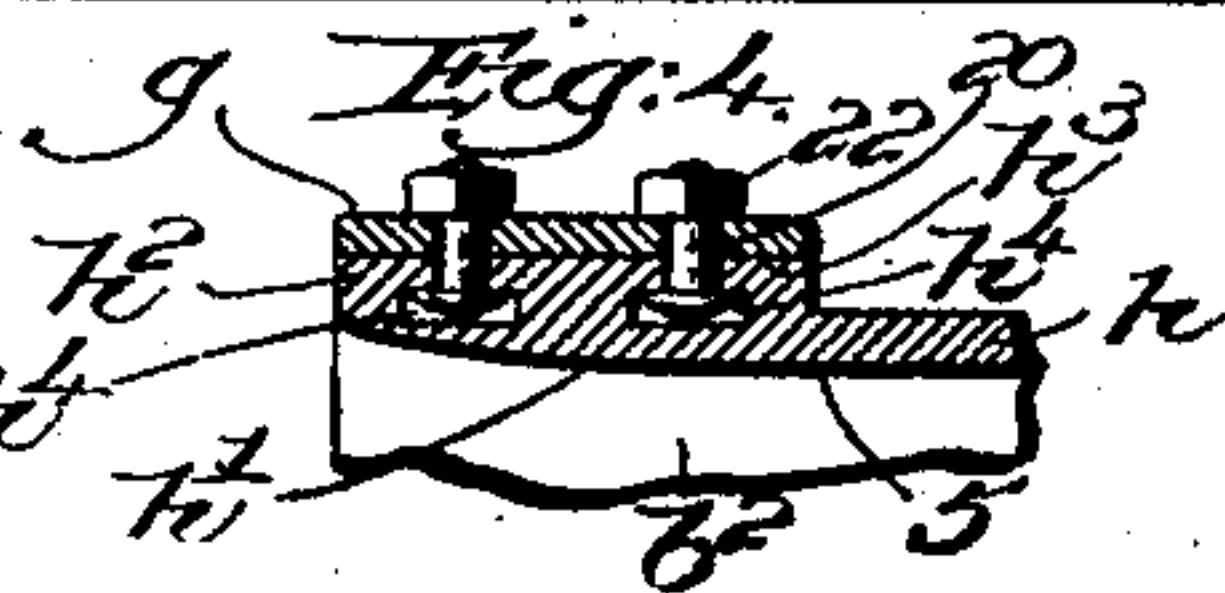


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SHUTTLE-GUIDE FOR WEFT-REPLENISHING LOOMS.

SPECIFICATION forming part of Letters Patent No. 708,672, dated September 9, 1902.

Application filed May 10, 1902. Serial No. 106,735. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. STAFFORD, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Shuttle-Guides for Weft-Replenishing Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates more particularly to automatic filling-replenishing looms wherein the shuttle-filling is automatically changed or replenished at the proper time by or through suitable controlling means and wherein a shuttle-feeler is provided to feel the shuttle when a change of filling is to be effected. At such time the shuttle-feeler is automatically moved into position at the mouth of the replenishing shuttle-box to detect improper boxing of the shuttle and to prevent the operation of the replenishing mechanism unless the shuttle is properly boxed. When the shuttle is thrown from the shuttle-box, it has a tendency to take a zigzag path—the combined result of the blow of the picker-stick and the side pressure due to the binder or swell—and when leaving the box the flight of the shuttle will be in the direction due to the action of the last force upon it unless counteracted by some means at the mouth of the shuttle-box. This may be done at the non-replenishing side of the loom by extending the back and front walls of the shuttle-box as much as desired or necessary and also by correspondingly extending the inner end of the top plate of the shuttle-box; but at the replenishing side of the loom a prolongation of the front wall of the shuttle-box would not permit the use of a shuttle-feeler such as referred to without making a large aperture in the box-wall for the feeler to enter, and it would also be necessary to so arrange the wall beyond such aperture as to prevent interference with the fresh and spent filling-threads. This would make it very difficult, if not impossible, to cast the box-wall, and if it could be cast it would have very little strength at its inner end. If an additional

or auxiliary plate be attached to the lay beyond the inner end of the usual front wall of the shuttle-box, permitting the shuttle-feeler to move between them, there is a marked tendency to catch the fresh thread around the additional plate, breaking the thread and permitting it to be carried into the cloth.

My present invention therefore has for its object the production of means for guiding the shuttle properly as it leaves the shuttle-box at the replenishing side of a loom provided with automatic filling-replenishing mechanism, so that I attain, in effect, a much longer shuttle-box, but without involving structural weakness and obviating any interference with the proper operation of shuttle-feeler or the filling-thread.

Many of the automatic looms of the type referred to are provided with a thread-cutter mounted on the shuttle-feeler and arranged to cut the thread of a filling-carrier ejected from the shuttle, the thread so cut being thereafter brought into the range of a temple thread-cutter to cut such thread adjacent the edge of the cloth. Such a loom is shown and described in United States Patent No. 641,792, dated January 23, 1900, and for convenience I have herein illustrated my invention as applied to a loom of that type, though it is to be understood that my invention is not thereby restricted to use in a loom provided with such thread-cutting devices, for it is equally well adapted for use in a loom provided with automatic filling-replenishing mechanism and a shuttle-feeler.

Figure 1 is a transverse sectional view of a portion of an automatic filling-replenishing loom with one embodiment of my invention applied thereto. Fig. 2 is a front elevation of the shuttle-box at the replenishing side of the loom, showing my invention applied thereto. Fig. 3 is a top or plan view of the parts illustrated in Fig. 2; and Fig. 4 is a sectional detail on the line *x x*, Fig. 3, showing the means for securing the guide in place.

The lay A^3 , having a bunter C^2 , the self-threading shuttle S , filling-replenishing mechanism, including the transferrer f' , having a depending arm f^3 , the notched dog m^x , mount-

ed thereon and automatically moved into position to be engaged by the bunter C^2 when a change of filling in the shuttle is to be effected, the upturned and rearwardly-extended arm y , constituting the shuttle-feeler, the fixed cutting-blade p^2 thereon and the cooperating movable blade p^3 , pivoted on the stud 10, and the stud 18, fast in the feeler-arm y and extended through a slot in the blade p^3 , and the thread-clamp, including a member c^6 , fulcrumed on the stud 18, and a fixed member c^2 on the shuttle-feeler may be and are all substantially as in Patent No. 641,792 referred to and operating as therein set forth.

The front shuttle-box wall b of the box at the replenishing side of the loom is of usual construction, the shuttle-feeler and thread cutting and clamping devices moving into operative position adjacent its inner end and above the lay, as shown in Fig. 3, and the binder B is also of usual construction and controlled in well-known manner. Herein, however, I have shown the back box-wall b' as prolonged at its inner end well beyond the mouth of the shuttle-box, as at b^3 , and the top plate or cover h is also prolonged, with its under face flat, to about the point 5, Fig. 2, which is beyond the mouth of the shuttle-box, the under face of the plate being slightly curved, as at h' , Fig. 2, and the plate is extended forward to substantially the plane of the inner face of the front wall b , as at h^2 . This forward overhang h^2 is shown as thickened, Fig. 4, to form a horizontal seat h^3 , and undercut recesses h^4 are made in the seat, Figs. 3 and 4. Upon the seat I mount the shuttle-guide. (Shown as substantially T-shaped in cross-section and comprising a flat web g and a depending flange g' at its front edge.) Bolts 20, having their heads inserted in the undercut recesses h^4 , are passed through holes in the web g of the shuttle-guide, and retaining-nuts 22 hold the latter securely in place on the seat. The guide is so located that between its outer end and the inner end of the box-wall b ample room is afforded for the movement of the feeler and thread cutting and clamping devices into operative position, and the lower edge of the flange leaves ample space (see Figs. 1 and 2) between it and the race of the lay to permit the egress of the filling-thread when pulled forward by the thread-clamp and also to let the thread of the fresh filling-supply come out as the lay goes back after filling transfer. The inner upright face of the flange is in the plane of the inner face of the box-wall b , thus practically lengthening the shuttle-box at its inner end and acting to direct the outgoing shuttle toward the reed as it leaves the shuttle-box. By extending the inner end of the top plate, as at h^2 , I not only form a top guide beyond the actual mouth of the shuttle-box to insure the movement of the shuttle along the race of the lay and prevent jumping up of the shuttle and flying out of the shed, but I also provide a firm and rigid seat for the shuttle-guide. The overhang h^2

of the top plate absolutely prevents the shuttle from entering the shed if the filling-carrier projects above the shuttle, owing to improper insertion of the filling-carrier into the shuttle, and bobbin smashes are thus prevented, for the projecting part of the filling-carrier will be engaged by the overhang and the flight of the shuttle stopped before it can enter the shed.

The overhead and upright guidance of the shuttle herein provided for effectually prevents any zigzag movement of the shuttle as it leaves the box, and it is accurately started on its flight straight across the lay, so that it will be properly boxed at the other end thereof, and this is particularly necessary in broad looms, wherein by reason of the length of the shuttle-flight a very slight divergence from the proper course at the shuttle-box will be very seriously and injuriously increased at the other side of the lay, preventing proper boxing of the shuttle thereat. By undercutting the recesses h^4 to receive the heads of the bolts 20 the smoothness of the seat h^3 is not interfered with, the recesses being made by suitable cores when the top plate is cast.

My invention is not restricted to the precise construction shown and described, as the same may be modified or changed by those skilled in the art without departing from the spirit and scope of my invention.

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

1. In a loom, the lay, a shuttle-box thereon, and a depending shuttle-guide beyond and near the mouth of the box, leaving a clearance between the race of the lay and the lower edge of the guide, the inner face of the latter being located in the plane of the inner face of the front wall of the box.

2. In a loom, the lay, a shuttle-box thereon, comprising front and back walls and a top plate, and a depending shuttle-guide mounted on the latter near and beyond the mouth of the shuttle-box, the inner face of said guide being in the plane of the inner face of the front wall of the box, a clearance being left between the front wall and the guide, and between the lower edge of the latter and the race of the lay.

3. In a loom, the lay, a shuttle-box thereon having the inner end of its top plate extended beyond the mouth of the box and above the shuttle-path, and a shuttle-guide rigidly mounted on such extension, and depending therefrom beyond the mouth of the box, to direct the shuttle as it leaves the box.

4. In a loom, the lay, a shuttle-box thereon, a top plate therefor extended beyond the mouth of the box and provided at the top of the extension with a seat, and a shuttle-guide secured to the seat and depending therefrom in alinement with the front wall of the box beyond the latter, an unobstructed thread-passage being left between the lower edge of the guide and the race of the lay.

5. In a loom provided with automatic filling-replenishing mechanism, the lay, a shuttle-box thereon, a shuttle-feeler movable into operative position across the mouth of the replenishing-box when a change of filling is to be effected, and a depending shuttle-guide fixedly mounted near the mouth of such box beyond the feeler-path, to direct the shuttle as it leaves the box, an open thread-passage being left between the lower edge of the said guide and the race of the lay.
6. In a loom provided with automatic filling-replenishing mechanism, the lay, a shuttle-box thereon, the back wall and top plate whereof are extended beyond the mouth of the box, to direct the shuttle at its back and top as it leaves the box, a shuttle-feeler movable across the mouth of the shuttle-box when a change of filling is to be effected, and a shuttle-guide mounted on the extension of the top plate and depending toward, but not to, the race of the lay, said guide being in alignment with the front box-wall and beyond the path of the feeler, to direct the shuttle at its front side when leaving the box.
- In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.
- ALFRED E. STAFFORD.
- Witnesses:
CLARE H. DRAPER,
FRANK J. DUTCHER.