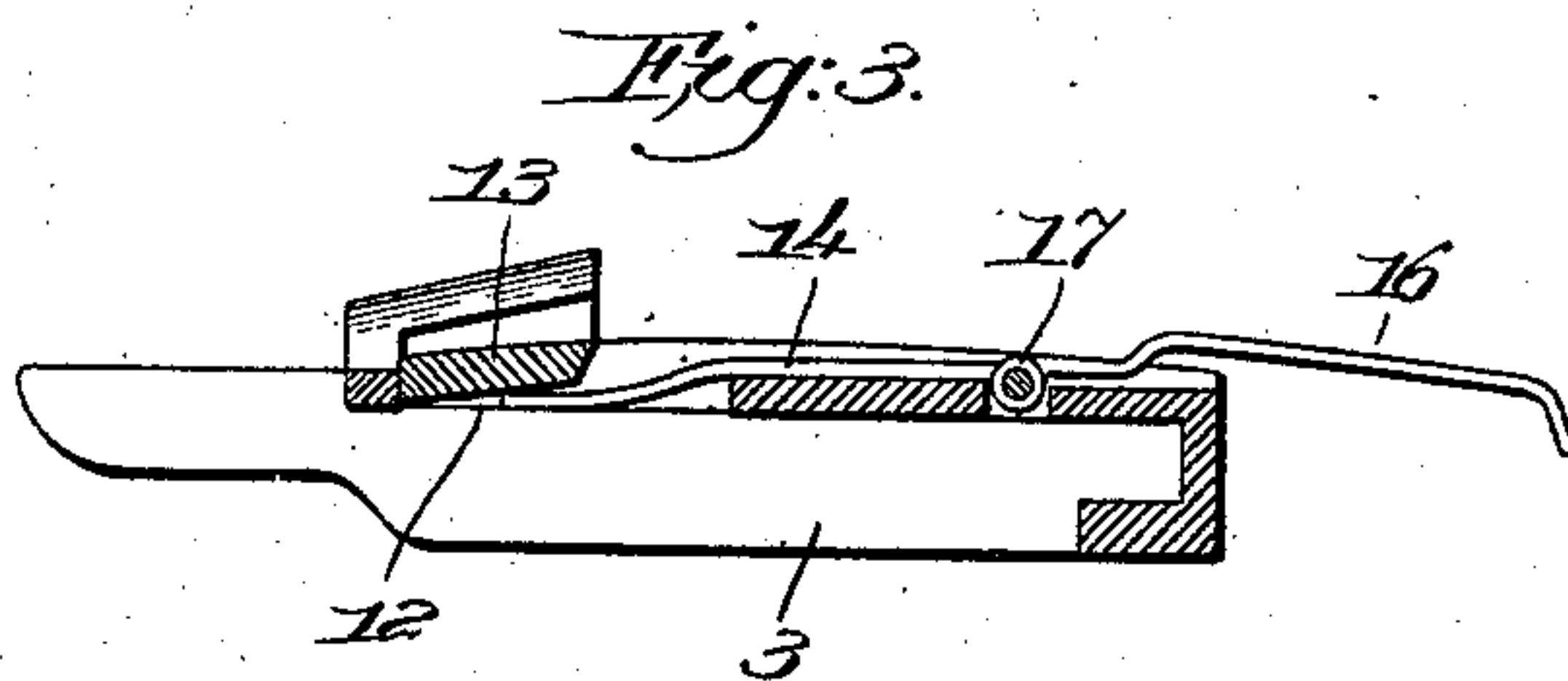
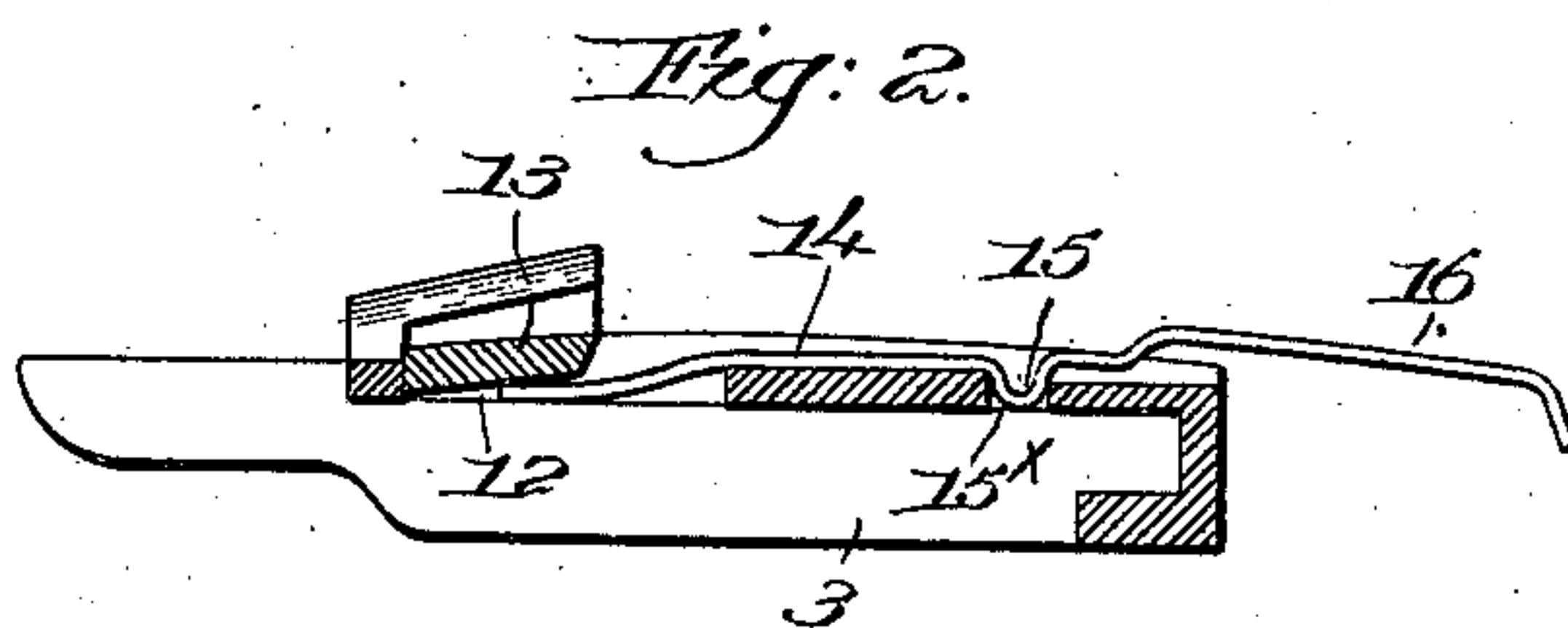
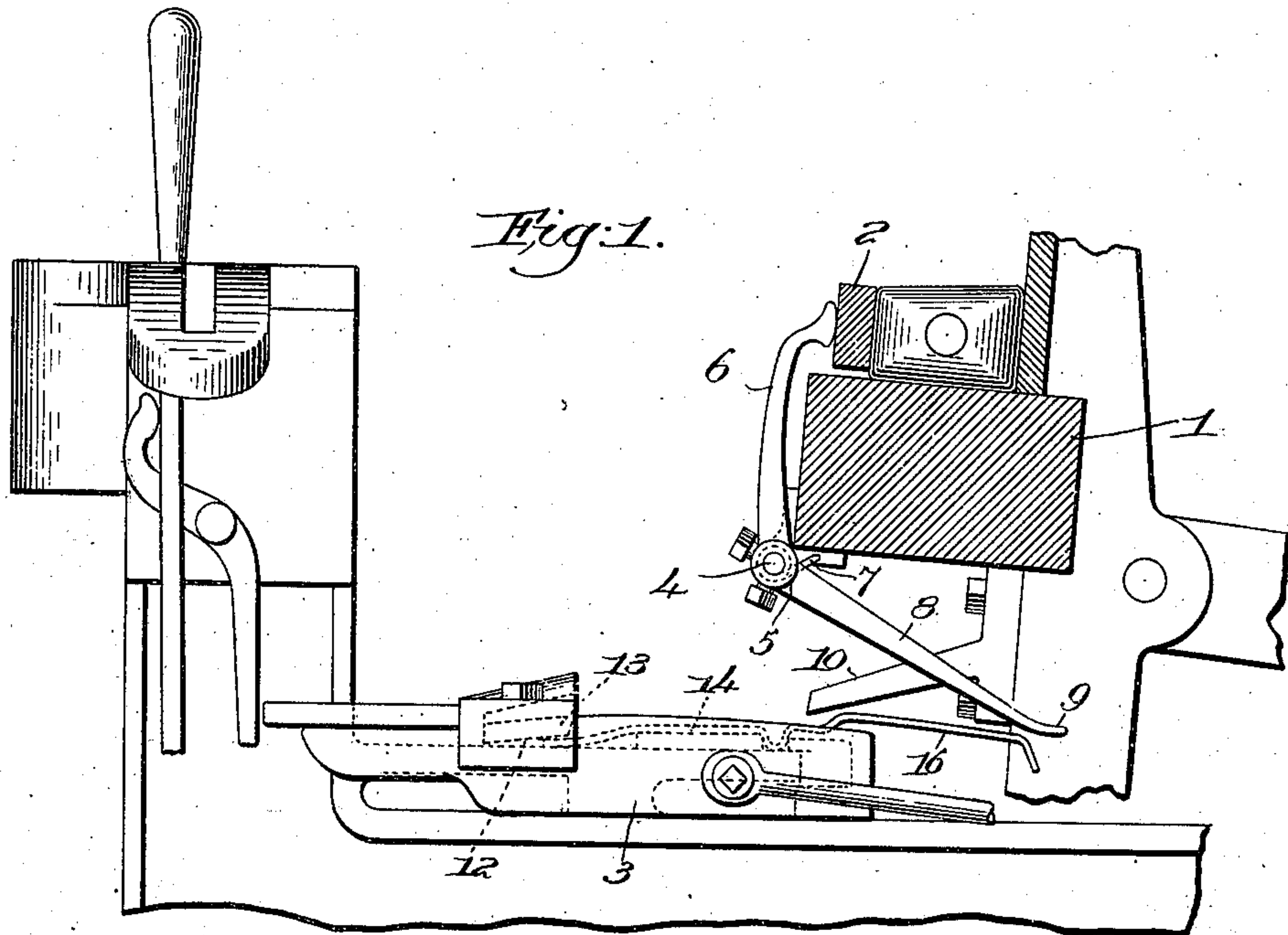


No. 847,653.

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J. V. CUNNIFF.
PROTECTOR MECHANISM FOR LOOMS.
APPLICATION FILED SEPT. 26, 1906.



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UNITED STATES PATENT OFFICE.

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PROTECTOR MECHANISM FOR LOOMS.

No. 847,653.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed September 26, 1906. Serial No. 336,266.

To all whom it may concern:

Be it known that I, JOHN V. CUNNIFF, a citizen of the United States, and a resident of Fall River, county of Bristol, and State of Massachusetts, have invented an Improvement in Protector Mechanism for Looms, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of novel and efficient protector mechanism for looms, whereby the usual or suitable stopping instrumentality is brought into action by or through improper boxing of the shuttle.

In looms wherein a loose frog is employed to effect stoppage when the shuttle is boxed improperly the protector-shaft carried by the lay and having attached binder-fingers is also provided with a bunter or dagger, which is lifted by or through proper boxing of the shuttle, so as to clear the frog. When the shuttle fails to box properly, the dagger remains lowered, engages and effects movement of the frog, and thereby causes stopping of the loom. In such looms the dagger is so short in proportion to the length of the binder-fingers that very considerable binder movement is necessary to elevate the dagger safely above the frog or the part thereon with which the dagger coöperates, and, furthermore, the protector-rod or rock-shaft must be heavy and strong in order to withstand the strain when the dagger coöperates with the frog.

By my present invention I am enabled to dispense with the heavy protector-shaft and proportionately strong binder-fingers and the usually stiff spring for the shaft, as will appear hereinafter.

In accordance with my invention the dagger or bunter is fixedly mounted with relation to the lay and under normal conditions moves back and forth very close to a member mounted on the frog and movable thereon. When the shuttle is boxed improperly, this member is moved by suitable means into the bunter-path, so that as the lay completes its beat the frog will be moved to cause loom stoppage. The two binder-fingers are attached to a light rod or rock-shaft controlled

by a spring merely strong enough to throw the binders inward when the shuttle is out of a box and to effect the actuation of the means which operatively positions the bunter-engaging member on the frog.

Inasmuch as very slight binder movement is sufficient my invention reduces wear on the protector mechanism generally, as well as on picker-sticks, pickers, and lug-straps, for the shuttle can be driven with much less force than is now requisite, it being thrown across the lay gently, comparatively speaking, and producing a better weave.

The novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation of a sufficient portion of a loom to be understood with one embodiment of my present invention applied thereto. Fig. 2 is a longitudinal sectional detail of the frog and the movable member thereon. Fig. 3 is a detail showing a modification of the device for operatively positioning the movable member carried by the frog.

The lay 1, provided with usual shuttle-boxes, each having a binder 2, (one of the shuttle-boxes being shown,) and the frog 3, slidably mounted on the loom side to effect the actuation of a loom-stopping instrumentality in usual manner, may be and are all of substantially well-known construction, save that the frog is modified in certain particulars hereinafter noted. A light rod or rock-shaft 4, mounted in suitable bearings, as 5, on the lay has attached binder-fingers 6, one for each binder, and herein I have shown a front-binder loom, the shaft 4 being controlled by a light spring 7. (See Fig. 1.) This spring serves to press the binders inward when the shuttle-boxes are empty and to depress the end of a rearwardly-extended tripping-arm 8, fast on the rock-shaft, the arm at or near its tip having a bend 9 in the present embodiment of my invention.

When the shuttle is properly boxed, it presses the adjacent binder out and through the binder-finger turns the rock-shaft 4 against its spring to elevate the tripping-arm as the lay beats up.

A "dagger" or "bunter" 10, as I shall hereinafter designate it, is mounted to move

with the lay and fixed with relation thereto, the bunter being conveniently attached to one of the lay-swords 11.

The frog is recessed at 12, Fig. 2, to receive loosely a movable member or frog-lift 13, adapted to be moved into the bunter-path when the shuttle is improperly boxed, and to effect such operative position I mount in a longitudinal recess in the frog a lever 14, its front end extending under the rear end of the frog-lift, a fulcrum-bend 15 being made in the lever to rest and slide upon the loom side, as in Fig. 1. The rear end of the lever projects under the tripping-arm 8, and I prefer to form a cam-bend 16 in said lever at or near its rear end, the bend 15 resting in a hole 15^x in the frog. Ordinarily the frog-lift lies quiescent on the frog below the bunter-path; but if the shuttle fails to box properly the tripping-arm 8 is depressed, and as the lay moves forward the bend 9 engages the cam-bend 16 and rocks the lever 14, elevating its front end and raising the frog-lift 13 to bring its rear end into the bunter-path in front of the bunter. Engagement of the bunter and frog-lift ensues, and as the lay completes its beat the frog is moved forward, and the stoppage of the loom is effected in the usual manner. As the frog moves forward the lever 14 moves with it, and the bend 16 thereof is maintained in engagement with the bend 9 of the tripping-arm. Instead of fulcruming said arm on the loom side it could be fulcrumed on the frog itself by a pin 17, (see Fig. 3;) but in either arrangement the operation is the same.

The weight of the frog-lift will restore it to its normal position when the tripping-arm is elevated out of contact with the lever 14.

It will be seen that none of the strain due to coöperation of the bunter and frog can have any effect on the rock-shaft 4, so that the latter can be made very light, with a correspondingly light controlling-spring, and as the tripping-arm 8 is long relatively to the binder-fingers the binder movement can be quite small and yet operate properly to cause the protector mechanism to act when necessary.

Having described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a loom, a lay provided with shuttle-boxes each having a binder, a rock-shaft having binder-fingers to coöperate with said binders, a bunter fixed with relation to the lay, a frog having a frog-lift movably mounted thereon, a lever fulcrumed on the frog, having one end extended under and adapted to move the frog-lift into the bunter-path, and a tripping-arm on said rock-shaft to engage the other end of and tilt the lever and thereby operatively position the frog-lift when a shuttle is improperly boxed.

2. In a loom, a sliding frog, a frog-lift movable thereon, a lever on the frog and extended rearwardly therefrom the front end of the lever extending under the frog-lift, a lay having a bunter movable therewith and fixed relatively thereto, a pivotally-mounted shuttle-binder on the lay, and a tripping-arm connected with the binder and adapted to engage and tilt the tripping-lever upon improper boxing of the shuttle to thereby rock said tripping-lever and raise the frog-lift into the bunter-path.

3. In a loom, a lay having a shuttle-box, a binder therefor, a binder-finger pivotally mounted on the lay, a tripping-arm connected with and longer than the binder-finger, whereby a slight binder movement will effect an increased angular movement of the said arm, a movable frog having a frog-lift thereon, a lever having one end extended under and adapted to operatively position the lift and having its other free end in the path of and to be moved by the tripping-arm when the shuttle is improperly boxed, and a bunter fixed with relation to the lay and adapted to engage the frog-lift and move the frog when the tripping-arm coöperates with the said lever to operatively position the frog-lift.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN V. CUNNIFF.

Witnesses:

JOSEPH MENARD,
JOHN J. KERRIGAN.