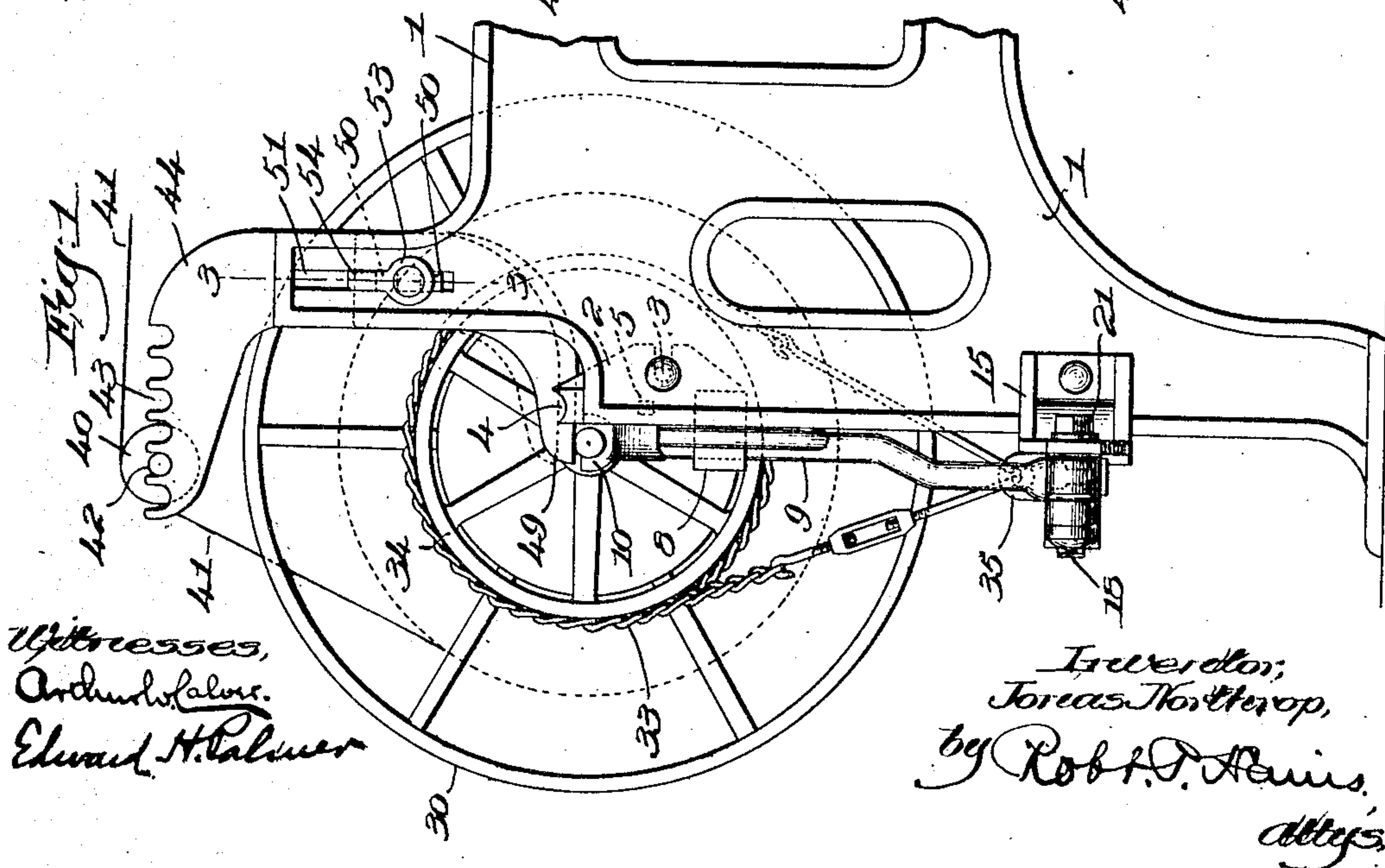
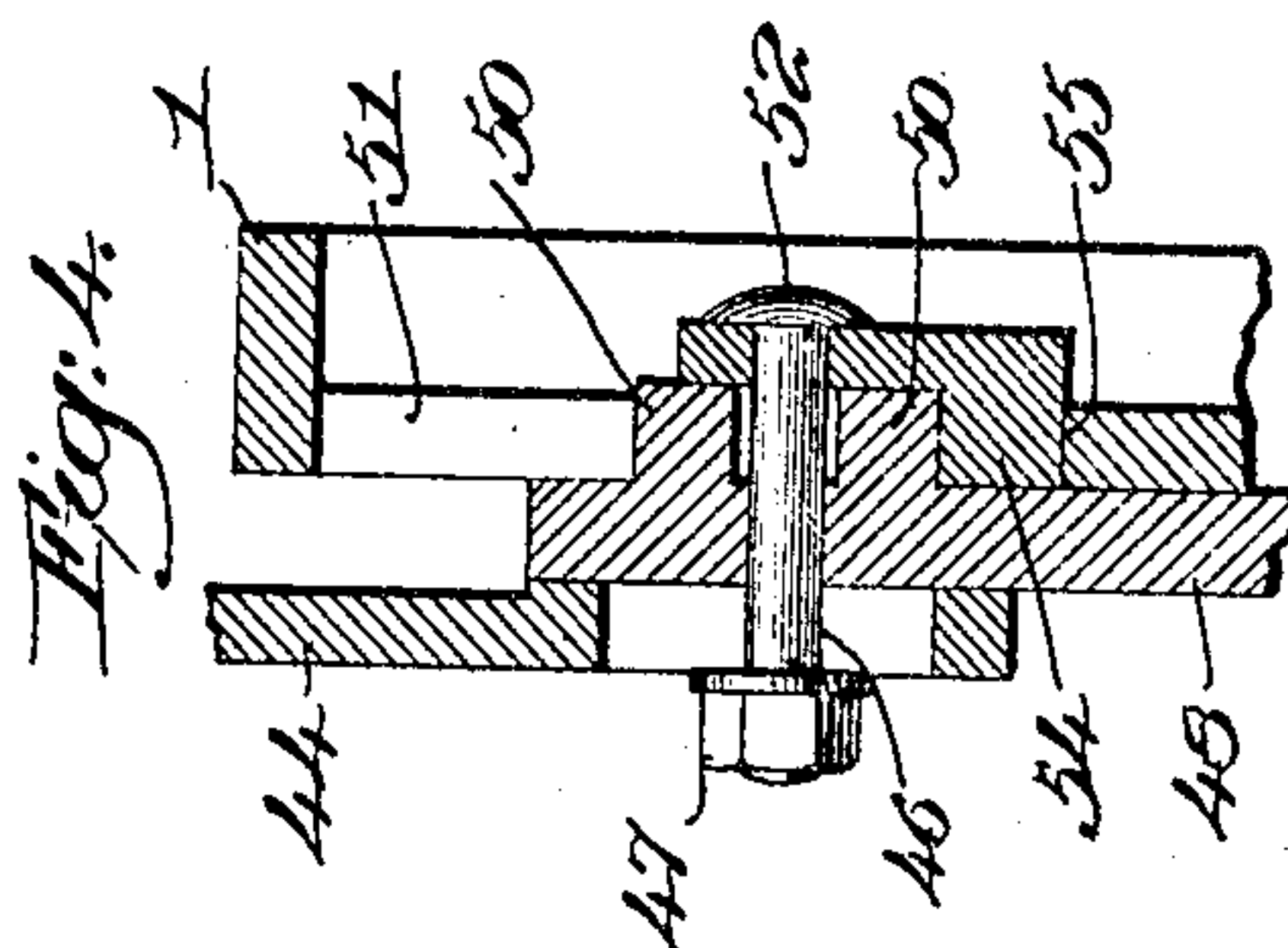
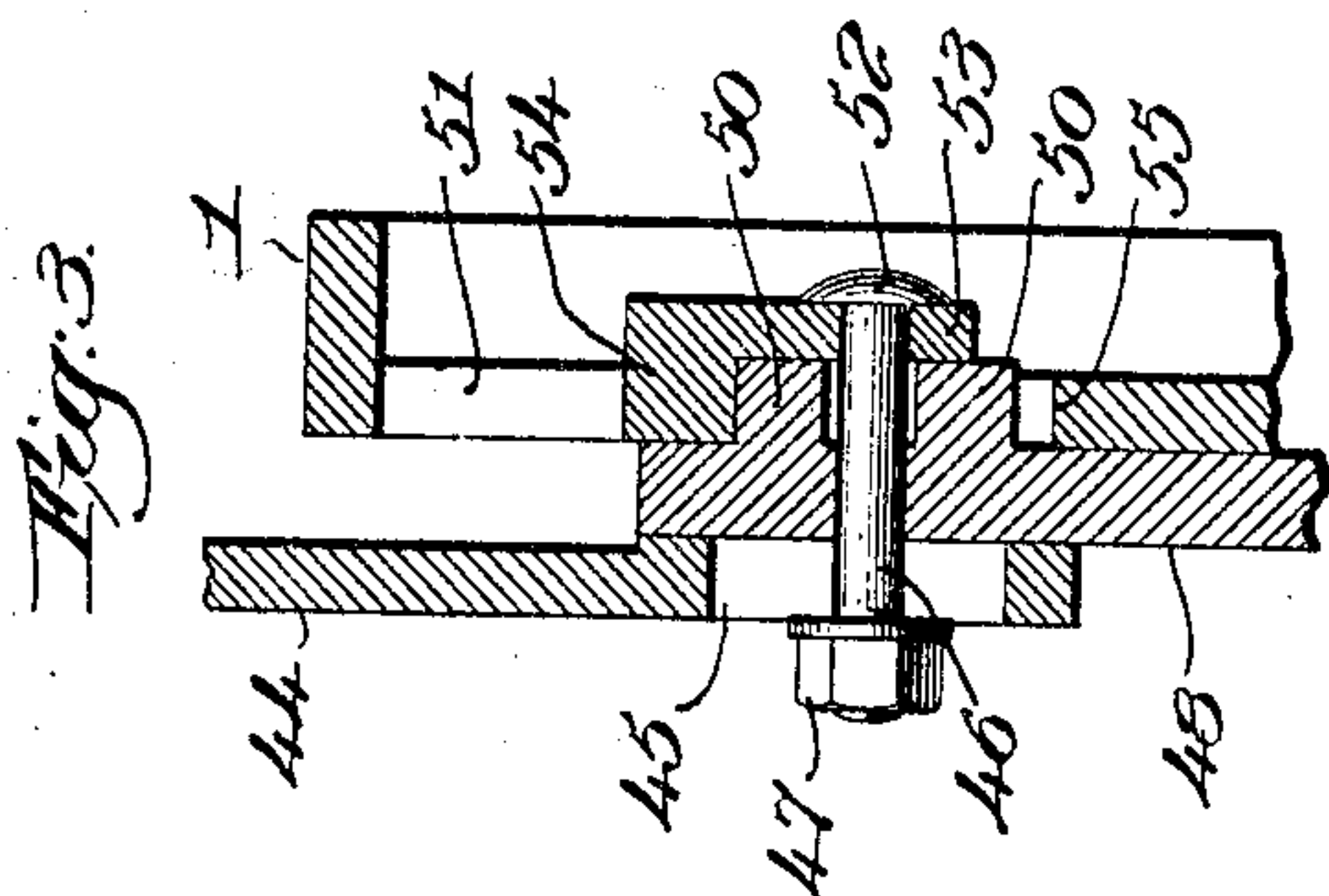
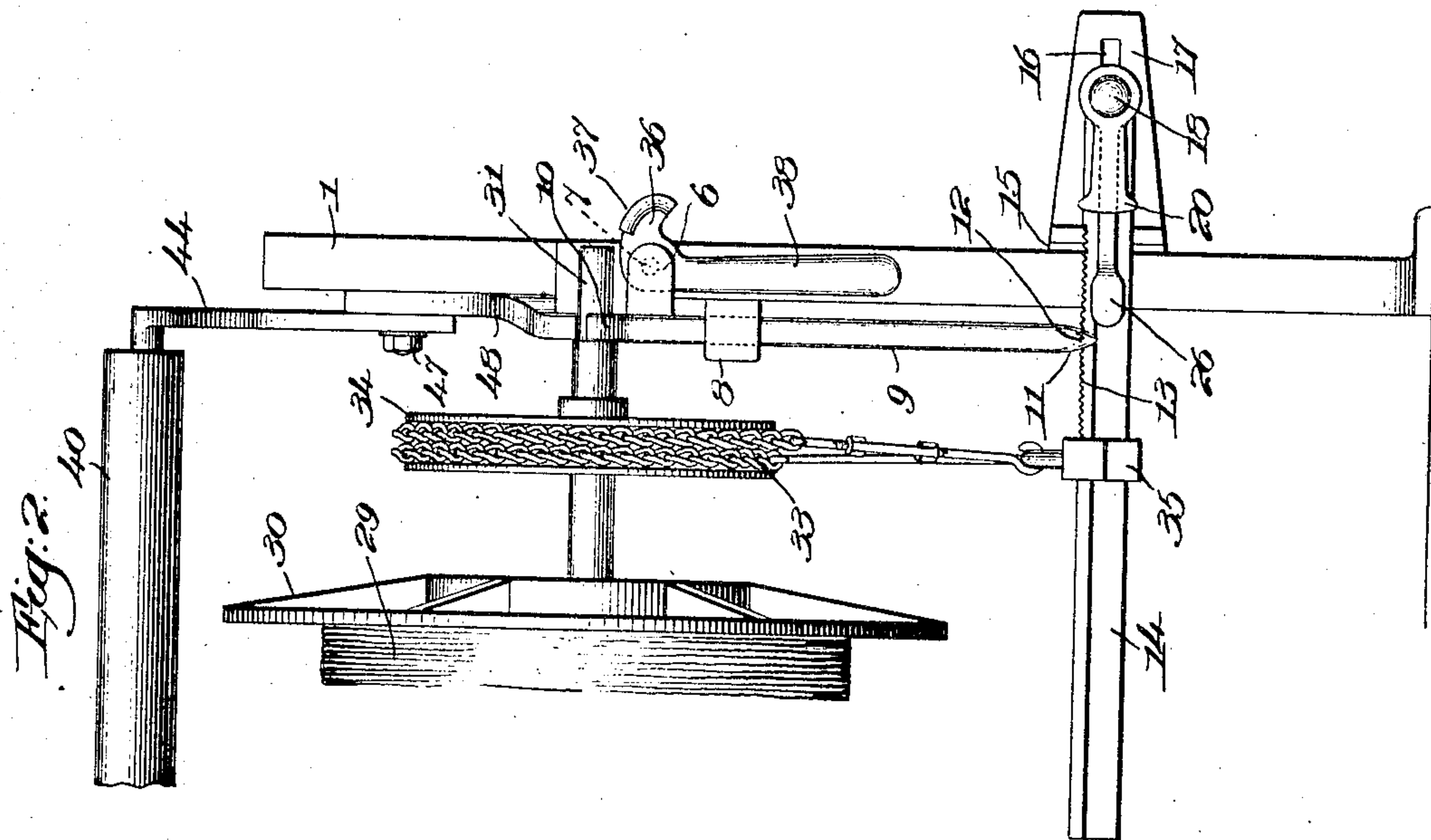


J. NORTHROP.  
LET-OFF MECHANISM FOR LOOMS.  
APPLICATION FILED DEC. 30, 1908.

912,722.

Patented Feb. 16, 1909.





# UNITED STATES PATENT OFFICE.

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## LET-OFF MECHANISM FOR LOOMS.

No. 912,722.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed December 30, 1908. Serial No. 470,039.

*To all whom it may concern:*

Be it known that I, JONAS NORTHROP, a citizen of the United States, residing at Hopedale, in the county of Worcester and State of Massachusetts, have invented an Improvement in Let-Off Mechanisms for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

The invention to be hereinafter described relates to let-off mechanism for looms and more particularly to the type known as friction let-offs.

The present invention is a development from the let-off mechanism shown, described and claimed in an application filed by William F. Draper and Everett S. Wood, Jan. 6, 1908, Ser. No. 409,459, claim being herein made to said mechanism in so far as it is combined or associated with the invention to be described.

The aims and purposes of the present invention will best be made clear by the following description and accompanying drawing of one form of means for carrying it into practical effect, the true scope of the invention being definitely set forth in the claims.

In the drawings:—Figure 1 is a side elevation of sufficient parts of a loom and let-off mechanism to illustrate the association of the present invention therewith; Fig. 2 is a rear elevation showing one end of the let-off beam, and associated parts; Fig. 3 is a section on the line 3—3 of Fig. 1; and Fig. 4 is a like section with the parts in different relation.

It will be understood that the drawings show and the following description will be directed to the devices at one end of the warp beam, those at the other end being a duplicate.

Referring to Figs. 1 and 2, the loom frame 1 has secured thereto brackets 2, held in place by suitable means, as the bolts 3, and provided with seats 4 to receive the journals of the warp beam when occasion requires.

Each bracket has on its inner face a lateral stop lug 5, and an outwardly turned ear 6 in each of which is a fulcrum stud 7 on which is mounted the cam head 36 having a seat 37 and an operating handle 38.

Each bracket 2 is provided with an open guide 8, the ear 6 being so located with relation thereto as to prevent interference with the depending elongated leg 9 of a vertically movable open bearing 10, which normally supports one of the warp beam journals.

As set forth more fully in the application mentioned, the legs 9 are vertically movable in the guides 8, and at its lower end each leg is notched at 11 and has a transverse edge to engage the toothed part 13 of a lever 14.

A stand 15 having a horizontal slot 16 in its web 17 is rigidly bolted to each side frame of the loom and a fulcrum bolt 18 affords support for one end of the lever 14 and short arm 20, said bolt being clamped in place by a nut 21.

The arm 26 supported by the bolt 18 and the parts above described are or may be as fully set forth in said application.

The warp beam 29, its heads 30, journals 31 which rest in the bearings 10 during the unwinding operation, the friction members or chains 33, the friction pulleys 34 rotatable with the warp beam, and the stirrups 35 may be as pointed out in the application mentioned to which reference may be had for a more detailed and full disclosure of the arrangement and operation of the mechanism.

Inasmuch as the weight of the beam and its load is determinative of the frictional action of the friction let-off in the manner set forth in said application, it follows that any upward force exerted on the warp beam, such for instance as a pull by the warp threads, tends to decrease the frictional resistance to its rotation. As one means of overcoming this, the present invention contemplates mechanism reacting under the pull of the warp threads to nullify any lifting movement of the warp beam, it being understood that in this respect the invention is generic and not restricted to the means illustrated as one embodiment of the invention now to be described.

Disposed in proper relation to the warp beam is the guide or whip roll 40, Figs. 1 and 2, over which the warp threads 41 pass on their way from the warp beam to the weaving instrumentalities, said guide or whip roll being preferably, though not of necessity, provided with journals 42 adapted to be seated in any one of a series of bearings



43 formed in a roll support 44, Fig. 1. The roll support 44 is movably supported by the loom frame in a manner such that a part connected thereto and standing above the journals 31 of the warp beam may react upon the journals 31 with a downward force corresponding to the upward force exerted by the warp threads in tending to lift the warp beam.

10 In the particular means illustrated for securing the characteristic result stated, the roll support 44 is provided with a slot 45, and is adjustably connected by a bolt 46 and nut 47 to a depending arm 48 having a toe 49 extending into the path of movement the journal 31 must pursue in rising from the bearing 10, the construction being such that the toe 49 may rest upon the journal 31 and be sensitive to any rising action thereof.

20 The arm 48 has guiding lugs 50 which extend into a vertical slot 51, Figs. 3 and 4, formed in the loom frame, and the bolt 46 passes through the arm 48, preferably between the lugs 50, and engages between its head 52 and said lugs 50 a washer 53, the construction being such that, while the arm 48 and connected roll support 44 may move freely in a vertical direction, said parts are guided in such movements by the lugs 50 on the arm 48. Obviously this construction may be varied between wide limits within the true scope of the invention, which is broadly characterized by a warp guide support freely movable under tension of the warp threads in a direction opposite to any movement of the warp beam tending to carry it from its journal bearings.

In weaving light fabrics the pull on the warp threads is usually not sufficient to cause any material variation in the friction let-off due to lifting action of the warp beam, but with the production of heavier fabrics such lifting action may sometimes occur, so that provision is made for rendering the tension of the warp threads effective or ineffective in preventing such lifting action of the beam with consequent variation in frictional action of the let-off. To this end the washer 53 is provided with a stop portion 54 which, when disposed below the guide lugs 50, as indicated in Fig. 4, engages the lower end 55 of the slot 51, and supports the arm 48 in position such that the toe 49 is raised above the journal 31 of the warp beam, see dotted lines Fig. 1, the tension of the warp threads as they pass over the guide or whip roll 40 being then transmitted to the loom frame. When the stop portion 54 is disposed above the guide lugs 50, however, the toe 49 is permitted to rest upon the journal of the warp beam, and tension on the warp threads, tending to lift the warp beam from its bearings 10, reacts with substantially equal force through the warp guide 40 and support 44 upon the toe 49 to nullify

any lifting movement of the warp beam, thereby maintaining the action of the friction let-off unimpaired and uninfluenced by any pull or tension on the warp threads, as will be readily understood by those skilled in the art.

Obviously, the means for selectively permitting or preventing the action of the support 44 and toe 49 upon the warp beam may be greatly varied, that described, as well as the means for transmitting the reaction of the warp tension upon the warp beam to maintain the desired frictional let-off, being only one of the variety of means to these ends.

What is claimed is:

1. In a loom, the combination of a warp beam, a friction let-off governed by the weight of the warp beam effective thereon, and means acting under warp tension to maintain the weight of the warp beam effective on the friction let-off under variation of warp tension.

2. In a loom, the combination of a warp beam, a friction let-off governed by the weight of the warp beam effective thereon, a guide over which the warp threads pass from the warp beam, and means connected to said guide and acting under warp tension to maintain the weight of the warp beam effective on the friction let-off under variations of warp tension.

3. In a loom, the combination of a warp beam, a friction let-off depending for the degree of its effective action upon the weight of the warp beam, and means reacting under tension of the warp threads for preventing decrease in effective weight of the warp beam upon the friction let-off due to warp tension.

4. In a loom, the combination of a warp beam, a friction let-off depending for the degree of its effective action upon the weight of the warp beam, a guide or whip roll over which the warp threads pass, tension on the warp threads tending to diminish the effective action of the friction let-off, and means for transmitting the tension of the warp threads from the guide or whip roll to oppose the action of the warp tension upon the warp beam.

5. In a loom, the combination of a warp beam, movable bearings therefor, a friction device connected to one of said movable bearings to govern the let-off by the weight of the warp beam, and means controlled by the tension of the warp threads for preventing movement of said bearings due to warp tension.

6. In a loom, the combination of a warp beam, movable bearings therefor, a friction device connected to one of said movable bearings to govern the let-off by the weight of the warp beam, a whip roll or guide, a support therefor movably mounted on the



loom frame, and means connected to said support to transmit warp tension to the said movable bearings.

7. In a loom, the combination of a warp beam, bearings therefor, a roll or guide over which the warp threads pass from the warp beam, a support for said roll or guide movably mounted on the loom frame, and means connected to said support for transmitting the tension of the warp threads passing over said roll or guide to the bearings of the warp beam to prevent movement thereof responsive to warp tension.

8. In a loom, the combination of a warp beam, bearings therefor, a roll or guide over which the warp threads pass from the warp beam, a support for said roll or guide movably mounted on the loom frame, and a toe connected to said movable support and projecting above the bearings of the warp beam for transmitting the tension of the warp threads exerted on said guide or roll to the bearings of the warp beam in opposition to the action of warp tension tending to lift said bearings.

9. In a loom, a warp beam, bearings therefor, a roll or guide for the warp threads passing from said beam, a movable support for said roll or guide, a member connected to said support and movable thereby towards and from a bearing of the warp beam, and means for directing the action of said support under warp tension to cause the said member to act upon the bearings of the warp beam in opposition to bodily movement of the warp beam.

10. In a loom, a warp beam, bearings

therefor, a whip roll, a support therefor, guides on the loom frame permitting free movement of said support, and a member connected to said support and having a part projecting over the bearings of the warp beam for transmitting tension of the warp threads passing over the whip roll to the bearings of the warp beam in opposition to bodily movement of the warp beam due to warp tension.

11. In a loom, the combination of a warp beam, a friction let-off governed by the weight of the warp beam effective thereon, means acting under warp tension to maintain the weight of the warp beam effective on the friction let-off under variation of warp tension, and means to render said first mentioned means operative or inoperative.

12. In a loom, the combination of a warp beam, a friction let-off governed by the weight of the warp beam effective thereon, a guide over which the warp threads pass from the warp beam, means connected to said guide and acting under warp tension to maintain the weight of the warp beam effective on the friction let-off under variations of warp tension, and means to render said first mentioned means operative or inoperative.

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

JONAS NORTHROP.

Witnesses:

EVERETT S. WOOD,  
FRED E. WOOD.