

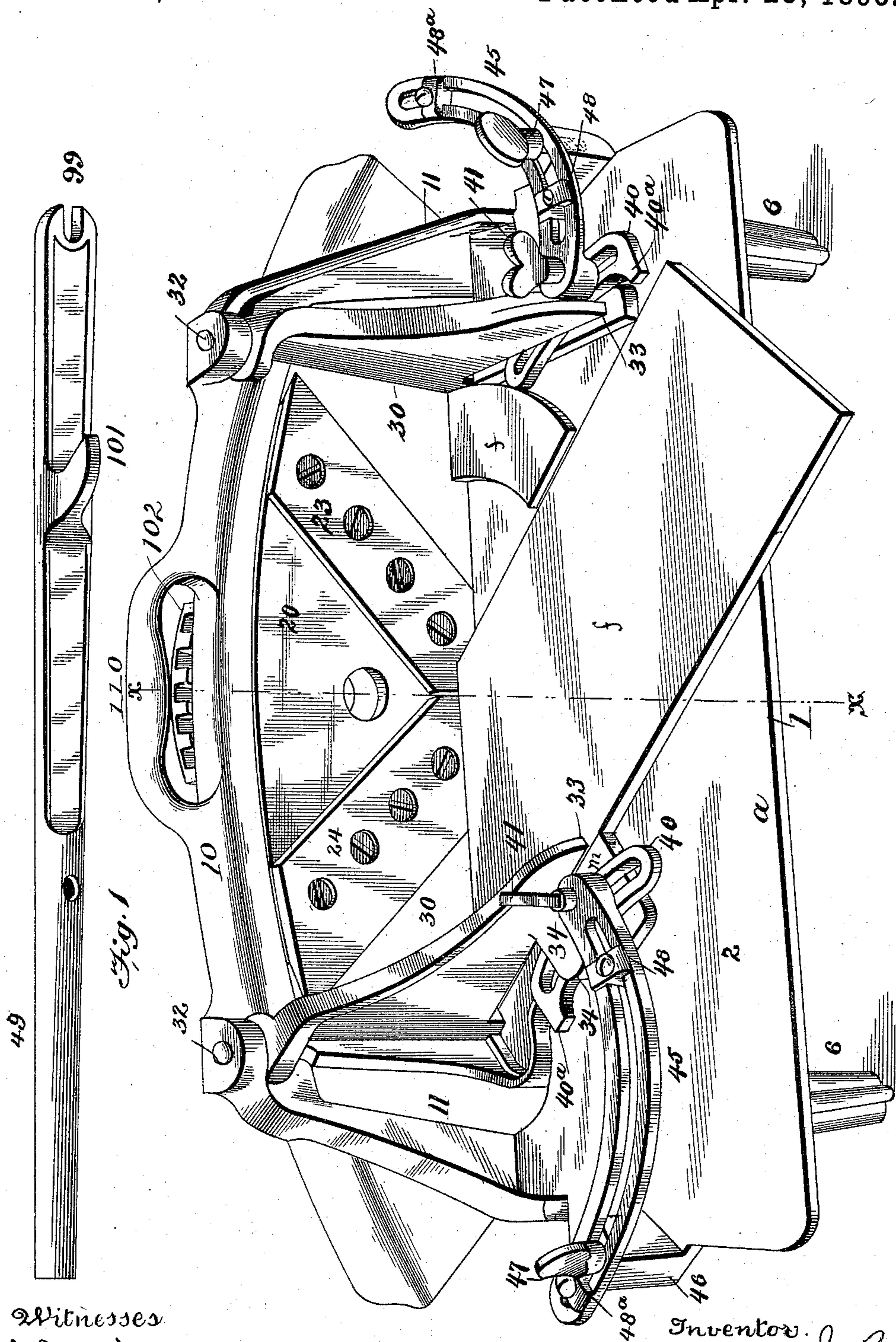
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3 Sheets—Sheet 1.

W. J. PERKINS.  
MACHINE FOR TRIMMING WOOD, &c.

No. 537,850.

Patented Apr. 23, 1895.



Witnesses

*John Irvine*  
*W. Johnson*

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Attorney

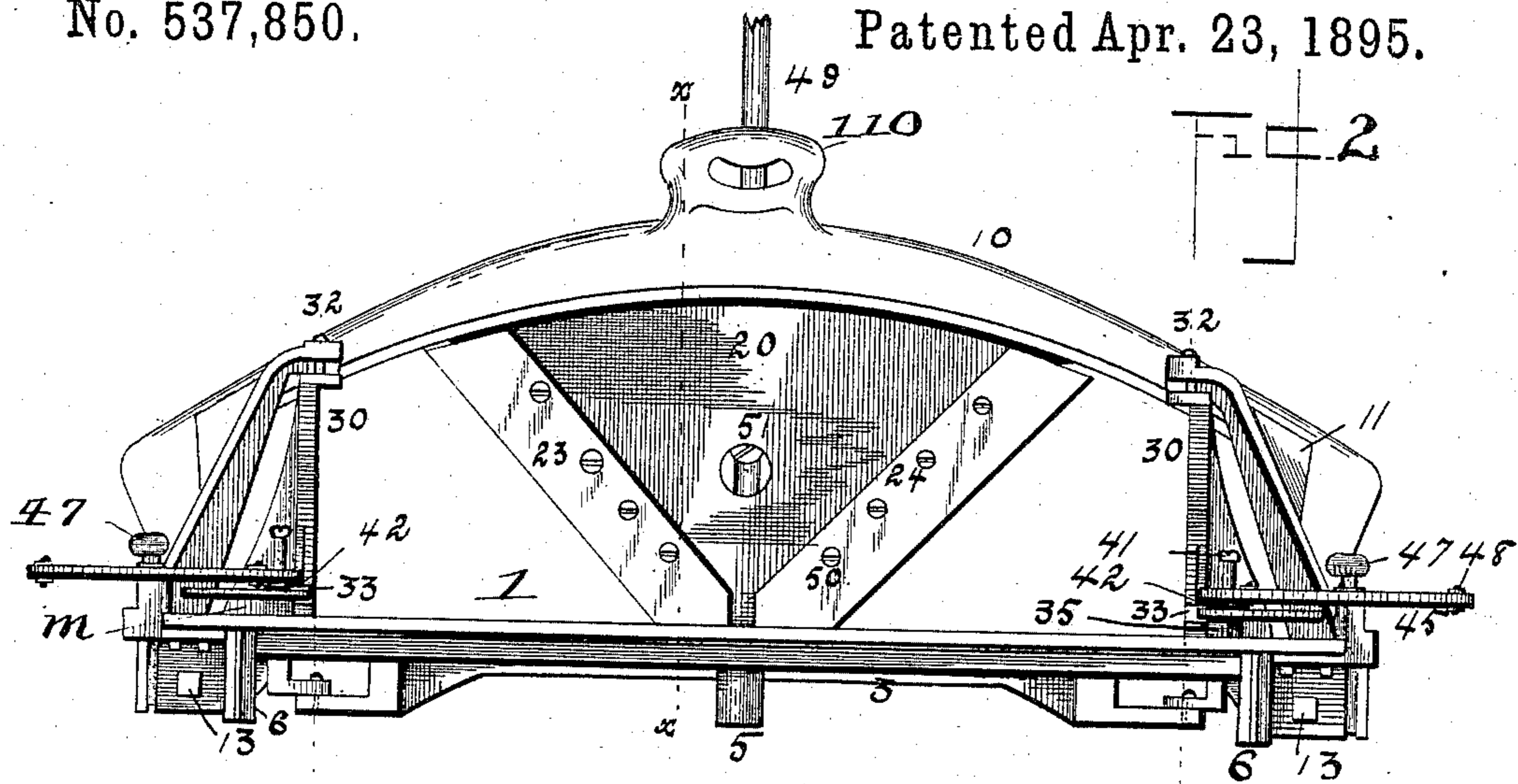
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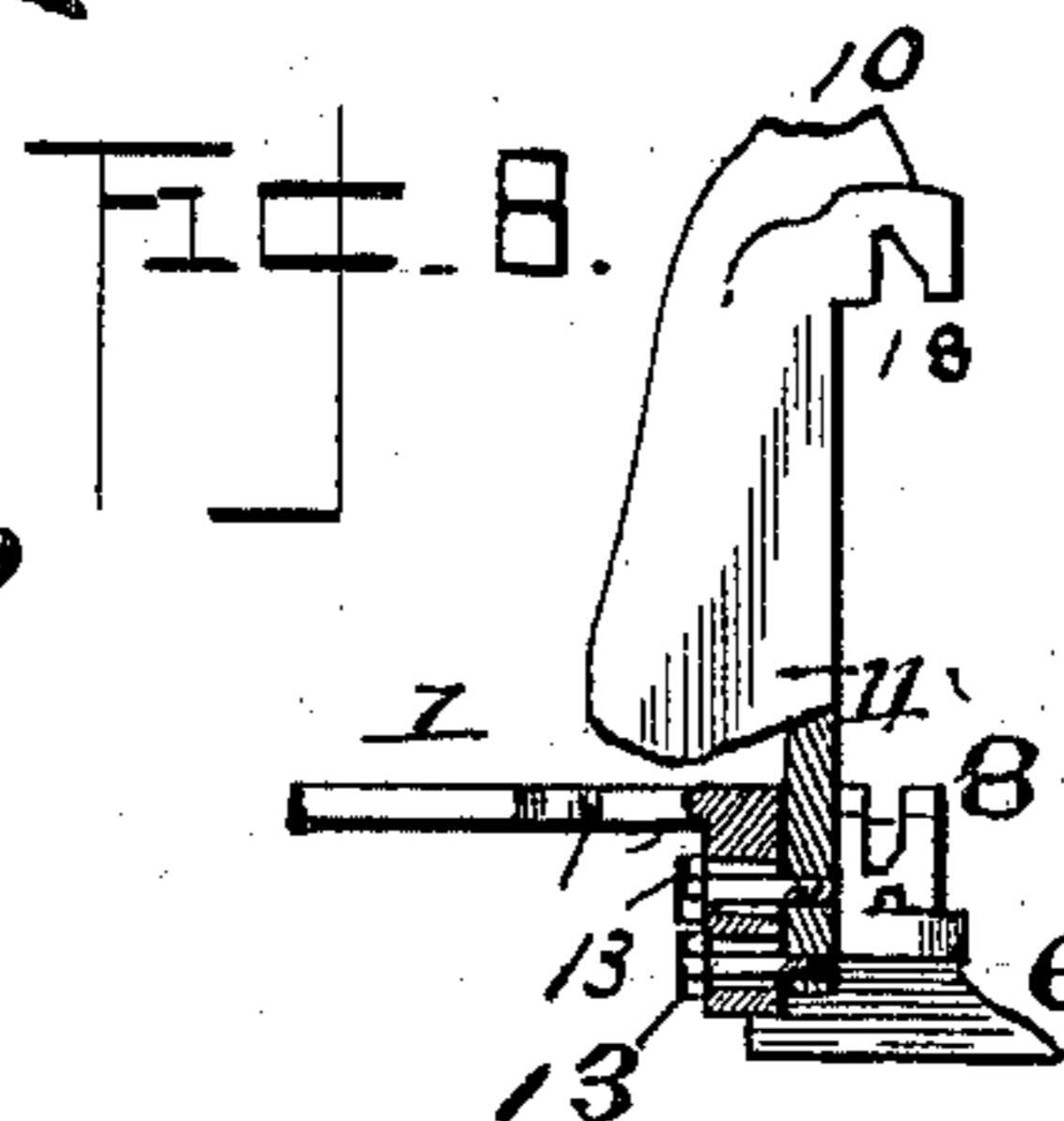
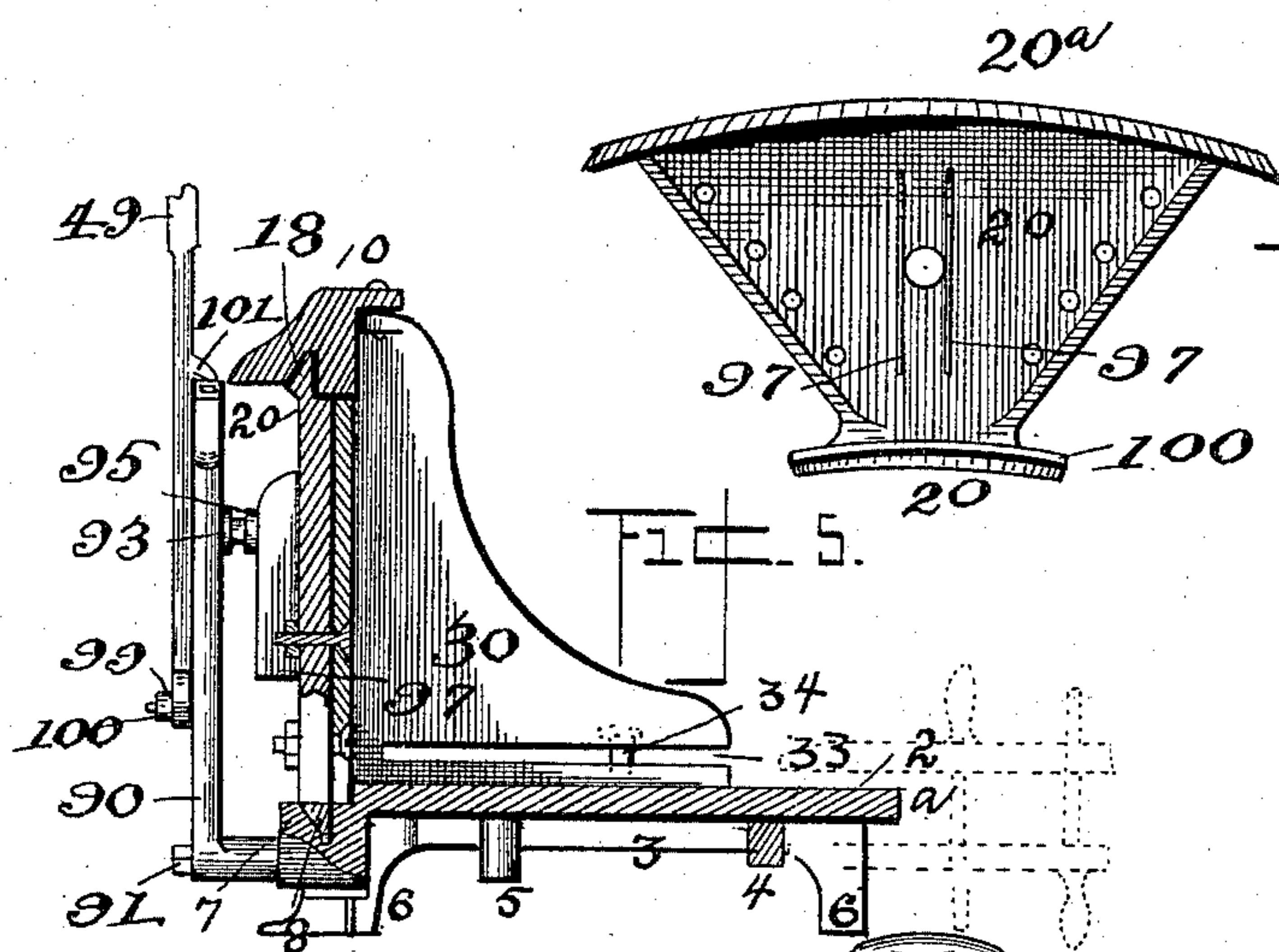
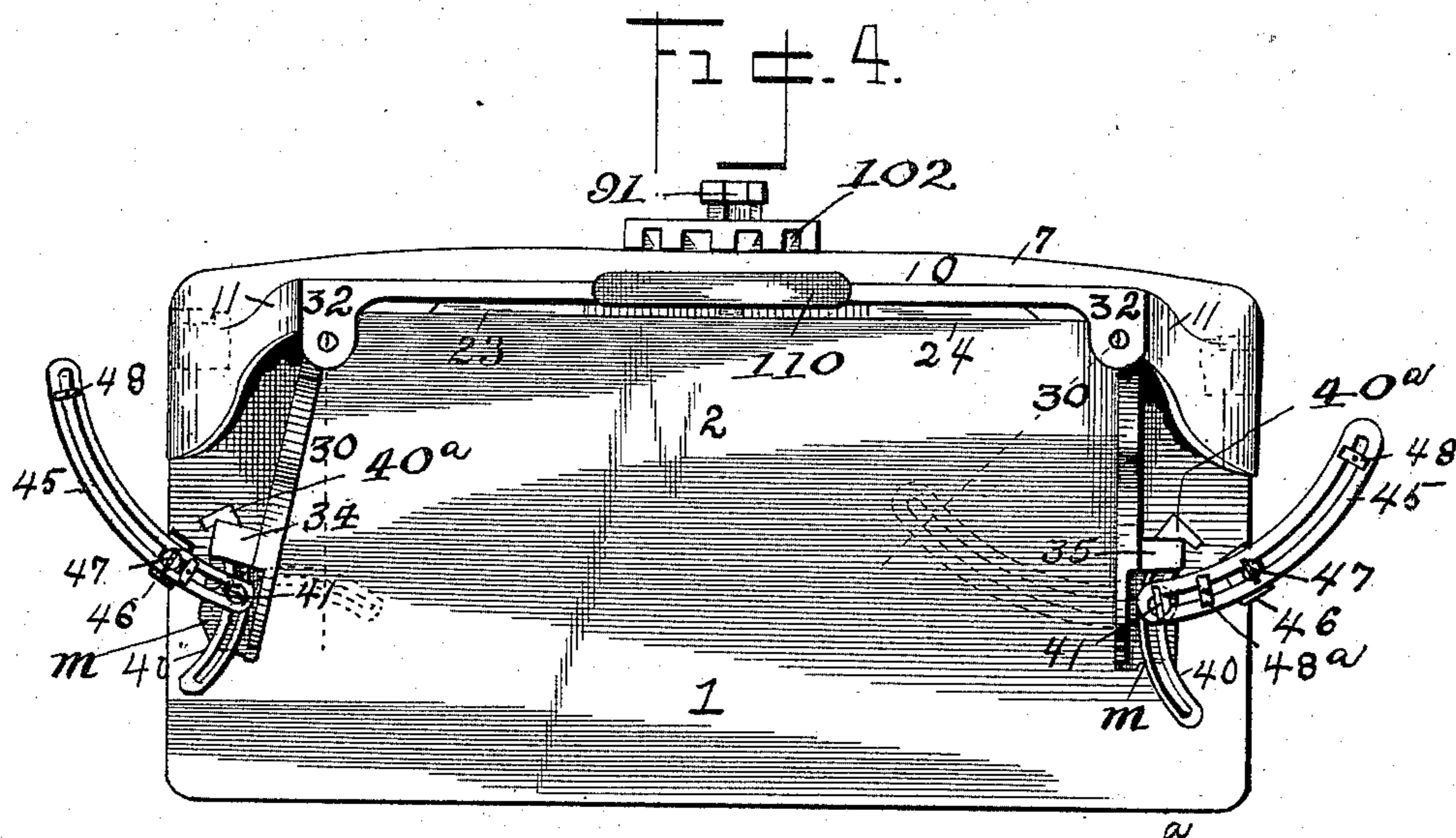
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# UNITED STATES PATENT OFFICE.

WILLIS J. PERKINS, OF GRAND RAPIDS, MICHIGAN.

## MACHINE FOR TRIMMING WOOD, &c.

SPECIFICATION forming part of Letters Patent No. 537,850, dated April 23, 1895.

Application filed November 27, 1891. Serial No. 413,293. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS J. PERKINS, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Machines for Trimming Wood and Like Material, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to machines for cutting or trimming wood or similar material, or cutting miters and bevels.

The object of the invention is to produce a machine, for wood and metal workers' use, operating uniformly, preferably with a draw cut, in which the knife carrier or head has bearings beyond the edge of the cutter, for the purpose of guiding and holding the knife firmly; also to improve the construction of the fence and work rest and increase the range of the work that may be done on the machine; also to improve and strengthen the bed, and in general to improve machines of this class in many other particulars.

25 Figure 1, is a front elevation in perspective of the trimmer, with operating lever detached and shown above the machine. Fig. 2 is a front view of the machine. Fig. 2<sup>a</sup> is a section on line *x x*, Fig. 2, with parts omitted. Fig. 3 is a broken plan of part of the machine, with one of the fences and bearer, the fence at an angle other than a right angle. Fig. 4 is a plan of the machine, with operating handle omitted. Fig. 5 is a section, reduced on line *x—x*, Fig. 1, the lever partly broken away. Fig. 6 is a detail section showing vertical adjustment of one knife carrying way with respect to the other. Fig. 7 is a rear elevation, parts broken away and part omitted. Fig. 8 is a rear view of the knife carrier. Fig. 9 is a detail of a modification showing adjustment of one guide way. Figs. 10, 11, and 12 are other modifications of guide way adjustments.

45 I will first describe the machine as constructed in its preferred form, and then indicate certain modifications I have devised.

The numeral 1 indicates the base or bed of the machine. This bed is preferably of metal having a plane surface 2 which forms a work table and preferably has strengthening ribs as 3 and 4 on its under surface and integral

with the bed. The rib 3 is set far enough back from the front face of the bed plate to permit the ready attachment of a screw clamp or holding device, or a templet, to the bed without interference with said rib. 55

The pintle 5 is cast on the lower part of the base, and is a convenient means for attaching the machine to a supporting standard or table when desirable. The legs 6—6 support the machine when it rests on a table or bench. 60

The base 1 has a heavy rib 7 on one side; and preferably a curved or arched track or guide way 8 is cut into the upper surface of this rib. The crown of the arch of this track is a little below the level, and in the rear of the plane surface of the bed, (calling the edge *a* the front of the machine.) 65

The track or guide way 10 is a heavy casting, preferably in form of an arch. Brackets 11 are either integral therewith or firmly connected thereto. These brackets 11 extend down past the base 1, and are properly secured to the base plate, 1<sup>x</sup>, by bolts or screws 13 passing through slots in the brackets and into holes in parts of the bed. The adjacent faces of the brackets and base are preferably perpendicular. 70

The knife support 10 has an arched track, 18 (or way) concentric with the way 8, and directly over the same. 80

The guide ways or grooves 8, 18, have by preference vertical faces at the side toward the bed of the machine, (although other forms may be used,) and a little in rear of the rear straight edge of said bed, and the groove is beveled at the rear or back side of the machine. (See Fig. 2.) 85

The knife carrier 20 slides in the grooves 8, 18. 90

A lever 90 is pivoted on bolt 91, near the bottom and at the rear of the frame. This lever 90 has a pintle 93, which pintle is the axis of a roller 95. The roller 95 enters a recess or slot 96 between uprights 97 at the back of the knife carrier. 95

The hand lever or operating bar 49 has a notch 99, which straddles a bolt 100 extending rearward from the lever 90. A hook 101 on the hand lever 49, may enter any desired one of the notches 102 in lever 90, so that the hand lever 49 will form a practical extension 100

of the lever 90, but may be adjusted at an angle thereto. The shifting of lever 90 to one side causes the roller 95 to press the knife carrier 20 in the same direction, thus sliding the knife carrier in its ways, and carrying the knives along their edges close against the back edge of the work table.

The knife carrier 20 is preferably a metal piece having its top surface 20<sup>a</sup> and bottom surfaces 20<sup>b</sup> beveled or otherwise shaped to correspond with and fit the curved ways 8 and 18 in the machine. The faces of the knife carrier where they have contact with ways 8 and 18 conform to said ways. Said faces of the grooves or ways 8 and 18 and the top and bottom portion of the carrier that has engagement with the ways 8 and 18 preferably project sidewise beyond the position of the knife edge on said carrier, as at 0, 0.

When by long use or otherwise the carrier 20 becomes loose in the ways, said ways may be adjusted to take up wear, by moving the top piece 10 nearer to the base 1, and securing the same by means of bolts 13. As the rear face of the ways 8 and 18 are beveled and the front faces vertical, the adjustment of top bar 10 in vertical direction will maintain the front bearing face of the carrier in the guide ways or grooves 8 and 18 always at the same distance in rear of the rear edge of the bed or table 1, and in its predetermined alignment with the fences 30. The vertical adjustment of the top bar 10 causes both a vertical and a lateral adjustment of the guide ways on the carrier.

The knife carrier 20 has two cutting blades or knives 23 and 24, firmly secured to its face, which face is toward the front of the machine. These knives have their edges inclined with reference to the table or bed plate 1 of the machine, and the knives are beveled on their rear faces, so that the cutting edge of the blade is close to the rear edge of the base or table 1. When the carrier is reciprocated in its ways, the material *f* to be acted on is projected beyond the rear edge of the table into the path of the knife and is cut or trimmed by one of the knife blades. Each blade cuts in one direction.

At each end of the work table there is a fence 30, which fence is pivoted by a pivot 31 on the bed or base. The upper end of the fence is supported by a pivot 32 preferably in the top piece 10. The centers of these pivots 31 and 32 are directly above and below the rear edge of the work table. The centers of the pivots or centers of movement are precisely in line with the corner of the fence, and the path of the cutting edge of the knives. The corner is thus maintained in its alignment with the rear edge of the work table (and of the line of cut of the knives), no matter what the position of the fence may be, in relation to its angle of adjustment with the rear edge of the table and knife travel.

The pintles or the bearings of the fences are

long enough and far enough from the sockets to permit a slight vertical adjustment of the top bar for taking up the wear of knife carrier without binding.

The fences 30 extend forward on the work table, as usual in this class of machines. Each fence has a slot 33 near its lower edge and parallel therewith, and preferably a boss or bracket 34 on the outer face of the fence extends across this slot, connecting the part of the fence which is above to that part which is below the slot. The curved link or bearer 40 has free movement in the slot 33, and is attached to the boss 34 at the outer side of the fence, and may extend through the slot 33 to form a rest or supporting gage for irregular surfaces or said link may be turned back of the fence out of the way.

The gage 40 is held to any adjusted position by the binding screw 41, which preferably passes through a slot in the gage and enters a flange *m* projecting rearwardly near the bottom of the fence. The screw 41 has a bearing on the gage. The gage 40 has a projection 40<sup>a</sup> that may be used as a stop or gage to determine sizes of duplicate pieces cut on the machine. The screw 41 forms a convenient pivot for connecting the gage 45 to the fence. This gage 45 is shown as a curved slotted link, but may be in other suitable form.

The free end of the gage or link 45 passes over a boss 46 at one end of the work table, and a thumb screw 47 passes through the slot in the link and into the boss. The gage or link 45 is provided with a plurality of stops or screw clamps, 48, 48<sup>a</sup>, one at either side of the screw 47. The clamps or stops 48, 48<sup>a</sup> are adjusted on the link or gage, as desirable, to determine its movement in either direction. The clamp or stop 48<sup>a</sup> regulates angles of adjustment determined by the inward movement of the fence, and the clamp or stop 48 those determined by the outward movement.

The gage or link 45 may have the various angles of adjustment of the fence marked thereon.

The screw 47 has engagement with the link 45, as by a shoulder bearing on said link, and may hold said link and the fence firmly in any desired position.

The fence 30 may be swung to angles of over ninety degrees with the rear edge of the working face of the bed, and the corner of the fence still remain on a line of the said edge. This is permitted by the beveling of the rear outer corner of the fence, so that the rear edge of the fence presents an acute angle.

The operator can set the fence to any desired angle and fasten it by means of gage 45, or he may set the clamps or stops on the gage to limit the fence movement, and then swing the fence to its working position, and hold the wood or other material against the fence, with one hand, while with the other hand he brings the appropriate knife toward the fence,

thus trimming the work accurately to the desired angle or bevel.

The angles determined by the inward movement of the fence may be limited by a stop 48<sup>a</sup> which is checked in the inward movement of the fence against the part 46 on the screw 47 acting as a stop, but the outward movement of the fence is not restricted by this stop, but is regulated in a similar manner by the stop 48. This adjustment permits the determining of the angle by said stop and the swinging of the fence backward out of the way of the work which is being acted upon by the knife, without liability of altering the predetermined angle. This construction increases the capacity of the machine for cutting wide stock, by the distance gained between what would be the space between the ends of the fences when both are adjusted inwardly to an angle, and the space when one is adjusted to the same angle and the other swung back out of the way.

The ability to swing the fence through an angle of more than ninety degrees, adapts the machine for use on a much greater variety of work than otherwise.

The adjustment to take up wear on the knife carrier preserves the "life and accuracy" of the machine far beyond that of any similar machine with which I am acquainted. The same adjustment may be effected in various ways, as in Fig. 9, where the standards or brackets 11<sup>a</sup> are made in two parts, and the parts adjusted by screws 65 passing through slots in one part and into suitable holes or bearings in the other part of the brackets, the top bar 10<sup>a</sup> being connected to the upper parts of the standards and being thus vertically adjusted.

In Fig. 10 the top bar 10<sup>b</sup> is left a little above the bracket 11<sup>b</sup>, and screw 67 serves to couple the adjustment. An elastic washer *e* may be interposed or the upper end of bracket 11<sup>b</sup> may be reduced in height.

In Figs. 11 and 12 the rear or beveled face of way 18 is on a separate bar 10<sup>c</sup>, which bar is moved up toward bar 10<sup>e</sup> to take up wear.

The machine may be lifted by handle 110. I do not desire to limit my claims or specifications to the precise construction shown and described, as many modifications may be made which are substantial equivalents.

It will be understood that the adjustment of the top bar in vertical direction will take up wear whether the guide ways be made straight or curved. I have illustrated the curved form as the best at present known to me. It will be seen that the form of the guide way is not necessarily one having one inclined and one perpendicular face, although such I deem preferable.

It will readily be understood by the skilled mechanic that wedges, bolts, or other fastening devices may be substituted for screws in adjusting the guide ways; also that some of the advantages of the single adjustment to take

up wear in two directions may be had, whether the groove is of the particular inclination shown or not.

The fence and its attached work support and gage enable the machine to be used for a very large class of work.

For irregular pieces the rest 40 can project in front of the fence at such an angle and to such a distance as to rest against the desired part of the work, while for plane pieces it may be turned back through the slot, where it will be entirely out of the way.

For duplicate pieces the end 40<sup>a</sup> may form a stop to determine length or distance from the knife.

The machine is used by bench wood workers, for mitering, pattern making, fitting, making joints, duplicate pieces, and the like, and must work with accuracy or it is of little value. Hence the fine adjustments are essential.

The projection of the knife carrier beyond the edge of the blade serves as a guide to the edge of the knife and assists to maintain the desired accuracy of cut. By extending the carrier as described, the knife edge is left straight if desired, so that it can be easily ground when removed from the carrier.

The plane face of the knife carrier toward the work table will be maintained parallel with the rear edge of said table by reason of the adjustment; even when the machine is much worn.

I claim—

1. In a trimming machine, a plane table, a knife carrier guided in ways to move in a direction parallel with the edge of said table, said carrier having its ends extended in the direction of its path of movement, and a knife attached to said carrier and having its edge projecting beyond the edge of the carrier save at the extended ends, all combined substantially as described.

2. The curved guide ways, the knife carrier moving in said ways and having its ends projecting in the direction of the curved ways and the blade attached to said carrier and projecting beyond the edge save at said extensions of the carrier, in combination substantially as described.

3. The combination with the trimming machine table, of the slotted fence swinging thereon substantially as described, and the work-support attached to the fence and projecting into or through the slot, substantially as described.

4. The machine table, the slotted fence swinging thereon the work support extending through the slot, and a clamp for said support, substantially as described.

5. The machine table and fence swinging thereon, the gage connected to said fence, and a stop for said gage, and an adjustable piece on the gage whereby its movement in an inward direction may be limited, substantially as described.

6. The fence piece having a straight lower

edge and a slot parallel therewith, and a connecting bracket or boss on one face of the fence passing round and connecting the two sides of said slot, substantially as described.

5 7. The combination with the work table, a reciprocating cutter at one side thereof, of a fence pivoted with one corner at right angles to the table, a gage connected to said fence a stop for said gage, and an adjustable stop on  
10 the gage whereby the movement of its free end in an outward direction may be limited.

8. The combination with the work table, a reciprocating cutter at one side thereof, of a  
15 to the table, a gage connected to said fence,

a stop for said gage, and an adjustable piece on the gage whereby the movement of its free end in an inward direction may be limited.

9. The bed, the fence, the gage connected to said fence, the adjustable block support 20 and the bolt 41 forming connection between the fence and the gage and fastening attachment for the block support.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIS J. PERKINS.

Witnesses:

ARTHUR C. DENISON,  
EDWARD TAGGART.