

(No Model.)

T. H. H. MESSINGER.
METALLIC RAILWAY TIE.

No. 547,797.

Patented Oct. 15, 1895.

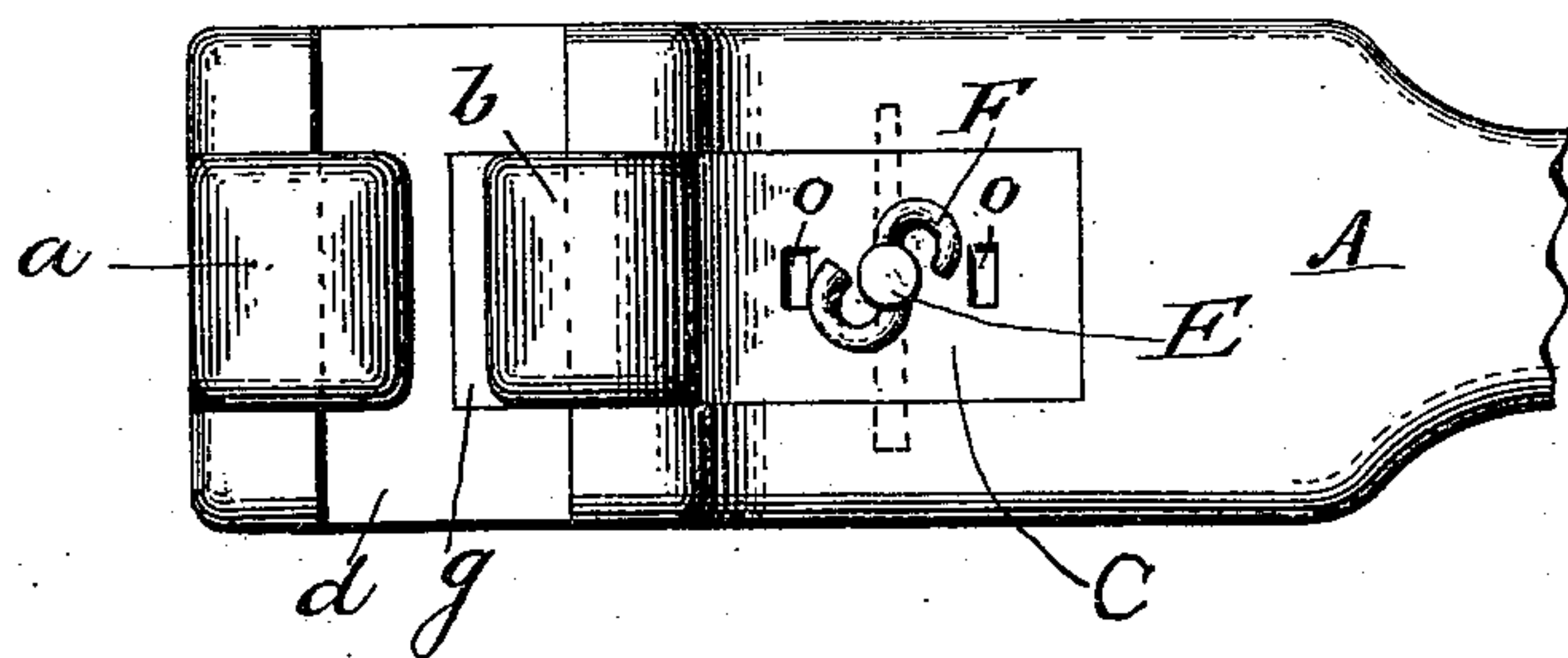
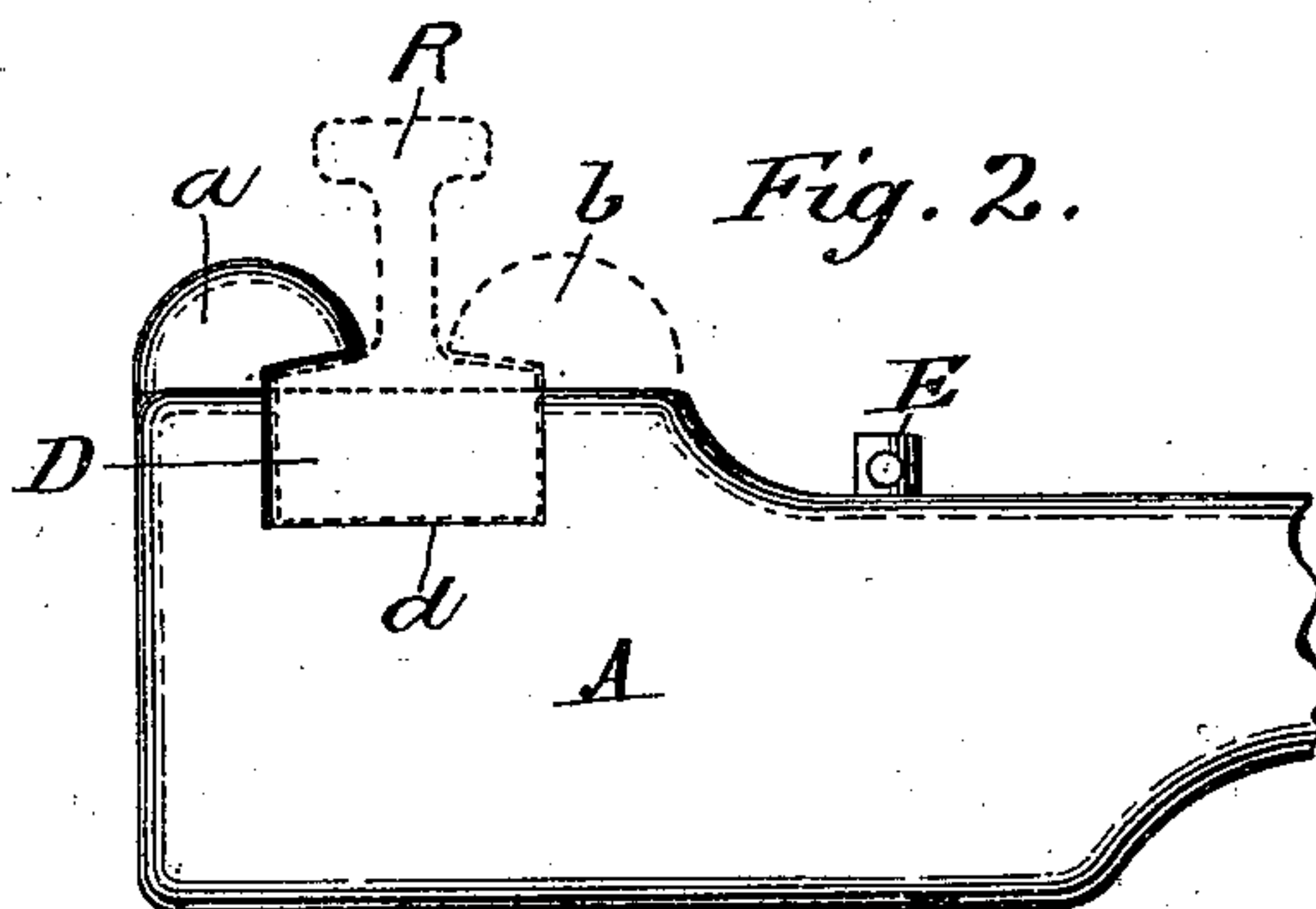
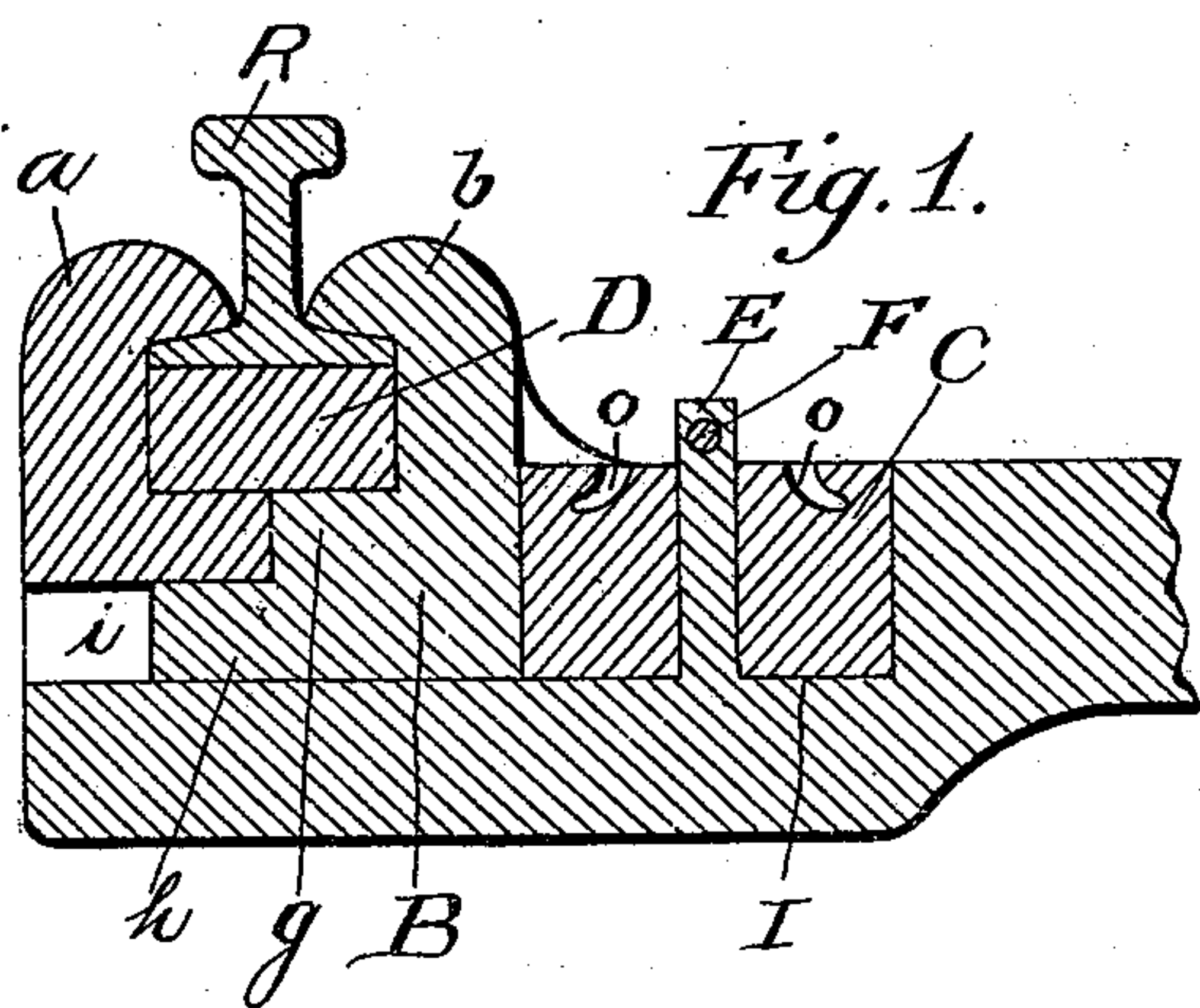
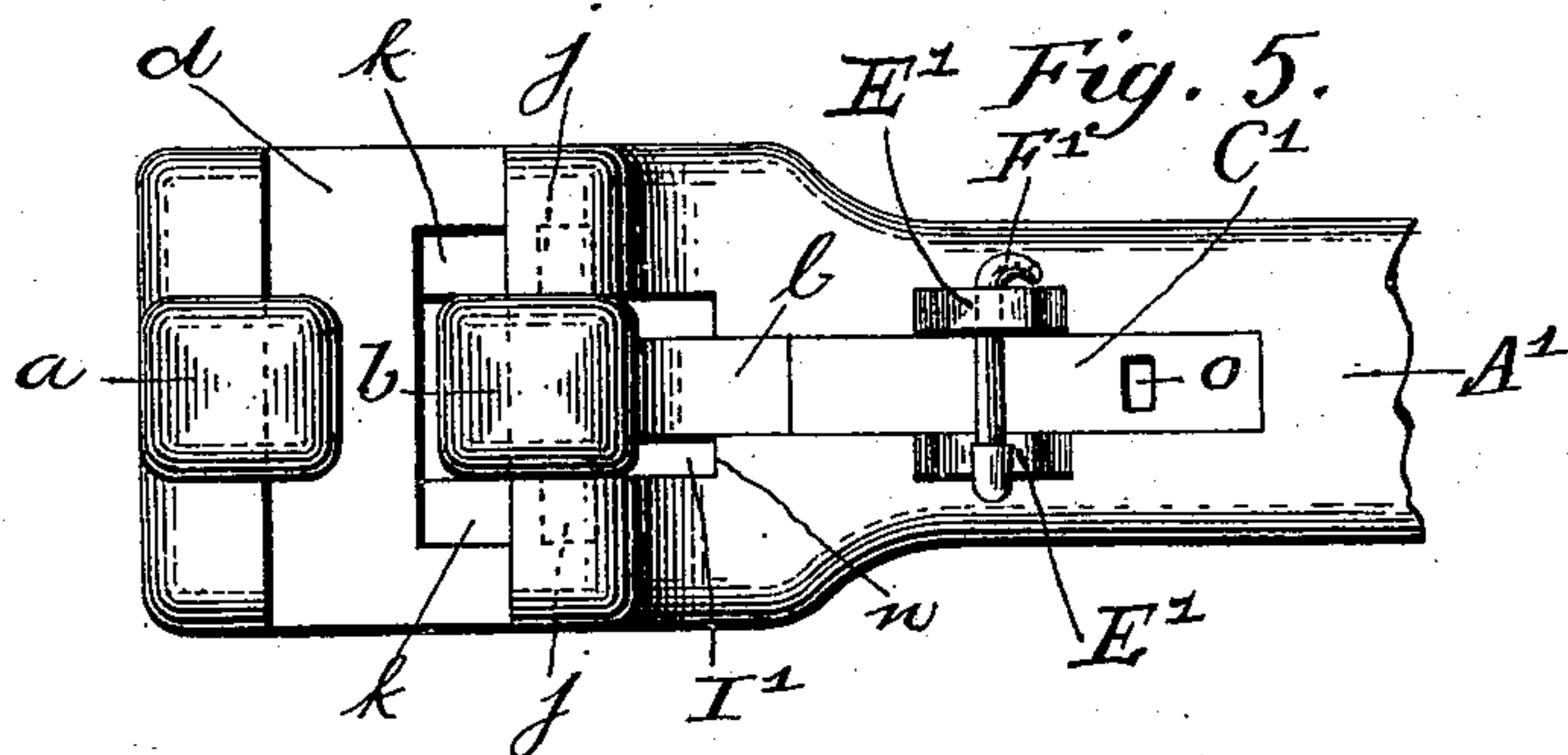
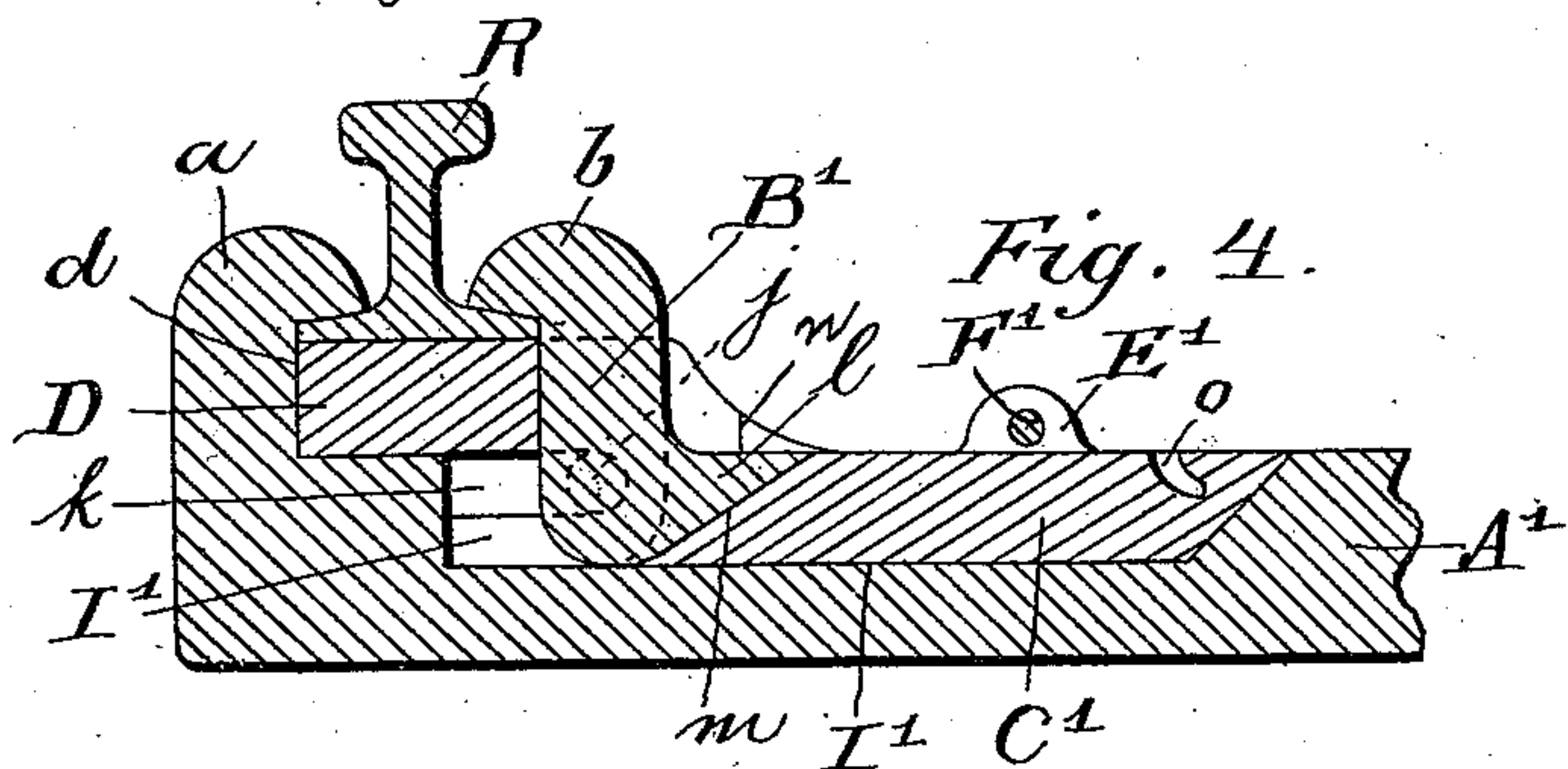


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METALLIC RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 547,797, dated October 15, 1895.

Application filed August 27, 1894. Serial No. 521,402. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. H. MESSINGER, of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Metallic Railway-Ties, of which the following is a specification.

The invention relates to metallic ties for railways; and it consists in certain improvements in the structural provisions for securing the rails to the tie, having especially in view convenience and security in fastening and practicalness in construction.

The structure embodying the present invention comprises a metallic tie, of any general type preferred, having at each end a cushioned rail-seat, a stationary overhang for the rail at one side of the rail-seat, and at the other side of the rail-seat a movable rail-clamp mounted and secured in the characteristic manner hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a central longitudinal section. Fig. 2 is a side elevation showing the integral portions of the tie in full lines and the removable portions in broken lines. Fig. 3 is a plan view with the tie-rail and rail-cushion removed; and Figs. 4 and 5 are views similar to Figs. 1 and 3, illustrating a modified construction.

The figures show one end only of a railway-tie embodying the invention, it being understood that in the complete tie both ends are similarly equipped, so as to hold the two rails in their proper relative position.

Referring first to Figs. 1 to 3, A is the metallic tie, having near its end a rectangular transverse groove *d*, which is occupied and filled by a rail-cushion D, consisting of a block of wood or indurated fiber, which forms a cushioned seat for the rail R. The cushion or rail seat D is overhung at one side by a stationary lug *a*, and at the other side by the hooked end of a movable clamp B, the two overhanging parts *a* and *b* fitting over the base-flange of the rail and holding the rail firmly and immovably upon the tie. The stationary lug *a* is at the end of the tie outside of the rail-seat D and is an integral part of the tie A. The hooked end *b* of the movable clamp is located at the inner side of the rail-seat and

corresponds in form and position to the overhanging lug *a*.

The movable hook or clamp B is arranged to slide toward and from the rail-seat, so that when said clamp is moved back the rail R can be laid upon its seat with one edge of its base-flange inserted beneath lug *a*, and the clamp B can then be moved forward, so that its hooked end will pass above the other edge of the base-flange of the rail and securely lock the rail in place. The clamping-hook B is mounted within a rectangular cavity I, formed in the upper surface of the tie A, adjacent to the rail-seat. Said cavity is of just sufficient width to accommodate the sliding hook; but its length is such that when the hook is moved up against the rail there is a considerable space left behind the hook for the reception of a locking-block C, which is formed to exactly fit said space behind the clamping-hook B. When the clamp is moved forward into position to secure the rail, the locking-block can be simply dropped into the unoccupied portion of the cavity I, thus securely locking the hook in its forward position. The locking-block cannot by any possibility become accidentally displaced, because it can only be moved from its locking position by raising it entirely out from its cavity, which can never be done except by intentional act. When the locking-block is in place within the cavity, its upper exposed surface is flush with the top surface of the tie.

For the purpose of preventing the thoughtless or malicious removal of the locking-block by meddlesome or evil-disposed persons, it is preferably retained in place by a guard-pin F, which passes above said locking-block through a rigid post E, constituting an integral or immovable part of the tie A. The post E extends vertically from the bottom of the cavity which block C occupies to above the mouth of said cavity, and the block C is centrally pierced, so that it can be dropped into place, with the post E passing through it, said post E serving incidentally as a guide for the block as it enters the cavity. The post E has a hole just above the top of the block C, and the guard-pin F passes through the hole in the post and above the block, thus preventing the block from being lifted to release the clamping-hook B. The guard-pin F may be

clined by bending in the manner illustrated, or a slightly-tapering pin might be used, fitting very tightly in the hole in the post and driven in straight, as indicated by dotted lines in Fig. 3.

In case it does become necessary to unlock the rail, the guard-pin F can be driven out or otherwise removed, and the block C is then free to be lifted. For convenience in lifting the block in such case, it may be provided with a handle of some kind—as, for example, the illustrated handle-lugs *o*, formed by recessing the upper surface of the block.

The sliding clamp B, in the form illustrated in the drawings, Fig. 1, has a vertical rear face, against which the vertical end of the locking-block C fits, while its front is stepped, forming an upper step or shoulder *g* in the plane of the bottom of cushion-groove *d*, and a lower step forming a forward-projecting tongue *h*. The tongue *h* enters a channel *i*, which constitutes a part or, more properly, an extension of the cavity I, and which extends forward to the end of the tie, as shown. The tongue *h* and channel *i*, as well as the shoulder *g*, assist in guiding the sliding clamp B, giving it an easier movement to or from the rail. The open outer end of channel *i* will also facilitate the use of a tool (in unlocking the rail) to force back the sliding clamp in case it has become bound and does not slide freely.

It will be seen that when the block C and rail-cushion D are removed there is room enough in the cavity I in front of the post E, so that when the clamp B is moved back to said post the tongue *h* of the clamp is disengaged from its channel *i* and the clamp can be removed from the tie; but while the rail-cushion D remains in its groove the clamp cannot be removed, because it extends forward beneath said rail-cushion and cannot be disengaged therefrom.

Figs. 4 and 5 illustrate a somewhat different embodiment of the present invention, wherein the movable clamp is mounted so as to swing to and from the rail, instead of having a sliding movement. In this construction the tie A' has the stationary lug *a*, groove *d*, and cushion-block D for rail R, all of which remain unmodified. The tie also has a cavity I' adjacent to the rail-seat for the accommodation of the movable clamping-hook B' and locking-block C'. The hook B', instead of being mounted to slide in its cavity, is provided near its lower end with pivot-studs *j j*, which are supported so as to turn freely at the inner ends of journal-grooves *k k* at the sides of the cavity. Said clamping-hook has also at its lower end a rearward-projecting tail *l*, having a lower inclined cam-surface, with which the locking-block C' co-operates to hold the hook B in position to secure the rail. The locking-block C' is made wedge-shaped at its forward end to form an upper inclined cam-face *m*, so that when the locking-block C' is pushed into place the cam-face

m of the block will pass beneath the lower cam-surface of the tail *l* of hook B', thus firmly pressing and holding the hook in its forward position. The tail *l* and co-operating cam-faces might be omitted and the swinging hook B' locked by a plain rectangular block fitting against the vertical rear face of the hook, as in the case of the sliding clamp first described; but in connection with the pivoted hook the cam-tail and wedge-block make a firmer securing means for the clamp. The block C' may have a handle-lug *o* for the purpose before described. The block C' may also be retained in place by a guard-pin F', passing through stationary lugs E' on opposite sides of the cavity occupied by the block, the pin F' and lugs E' having the same purpose and function as the pin and post F E in the construction first described. The tail *l* of hook B' may be of less width than the hook, and the locking-block C' may be made as narrow as said tail *l* of the hook, in which case that portion of cavity I' occupied by the locking-block is made narrower than the forward portion of the cavity where the hook B' is mounted, as shown in Fig. 5. The backward swinging movement of hook B', when it is released by the removal of locking-block C', is limited either by the shoulders *n*, formed in consequence of the narrowing of cavity I', or by the tail *l* coming in contact with the bottom of the cavity. When the rail-cushion D is removed, the hook B' can be dropped into the forward end of cavity I', with its pivot-studs *j* entering the front open ends of the journal-grooves *k k*, and the hook can then be moved back within its cavity until the pivots occupy the inner ends of said grooves, as indicated in Fig. 5 in dotted lines. The rail-cushion D can then be fitted into its groove *d*, and as long as the cushion-block remains in place the hook cannot be removed from the tie, because it is prevented from moving forward to disengage its pivot-studs from their grooves.

Both constructions which have been described, and which are illustrated in the drawings, possess the same general characteristics, and either will accomplish the general results which the present invention is designed to secure. In either case the movable clamp is locked by a locking-block, which fits in the cavity in the tie and fills the space which remains behind the clamp when the clamp is in position to secure the rail. When the locking-block is put in place behind the hook, it absolutely secures the hook without regard to the degree of care exercised by the workman engaged in laying the rail. The locking-block is located within the body of the rail, and therefore is held and holds in turn the clamp with absolute firmness, being inclosed on three sides and bottom by the solid metal of the tie, while its fourth side fits close against the hook or clamp which it locks. There is no possibility of the locking-block being accidentally displaced or loosened, because it sim-

ply drops into place from above, so that only its top is exposed, and it can only be removed or displaced by a positive lifting movement, such as could not accidentally occur. The fact that the locking-block is located entirely within a cavity in the tie also enables the use of a simple guard to retain it in the cavity, the guard playing no part in the actual securing of the rail, and hence being subjected to no strain, but merely preventing the removal of the locking-block. If the material and structure of the tie permit, instead of using a separate guard-pin for retaining the locking-block, the tie might be formed with malleable ears adjacent to the mouth of the cavity, which could be hammered down to retain the block after its insertion in the cavity. Whatever the construction of the guard may be it merely bars the withdrawal of the locking-block and is not depended upon in any way to assist in holding the rail.

The movable clamp is readily inserted into its proper position within the cavity before the rail-cushion is applied, and then when the cushion-block has been fitted into its groove the separation of the movable clamp from the tie is thereby prevented, because a portion of the cavity extends beneath the cushion-block and is covered thereby. When the tie is thus fitted with the clamp and rail-cushion, it is ready for the reception of the rail. The tie can be so fitted before it is laid and before leaving the factory, if desired, and then the only thing required to secure the rail is to move up the clamp into clamping position and insert the locking-block and its guard. When the rail is locked, the locking-block is entirely concealed within the body of the tie, except its upper surface, which is located in the plane of the top surface of the tie, and only the hooked end of the clamp and the post E or corresponding lugs E' projects from the general surface of the tie. (See Fig. 2.) This makes a very neat construction and one wherein the locking parts are not subjected to mischief or injury.

It will be seen that the present improved rail-securing devices dispense entirely with the nutted bolt, that prolific source of anxiety in railway construction.

The second described form of locking devices, (illustrated in Figs. 4 and 5,) wherein the rail-clamp is pivotally mounted so as to swing to and from the rail, is not here claimed except in its generic features; but specific claim to said construction is made in a divisional application, Serial No. 548,262, filed by me May 6, 1895.

I claim as my invention—

1. A metallic railway tie, having a rail-seat, a stationary overhang for the rail at one side of said rail-seat and a cavity formed within the body of the tie on the other side of said rail-seat, said cavity having an open mouth and a closed bottom in combination with a movable clamp for the rail mounted in but occupying only a portion of said cavity so

that when unlocked it is movable to and from the rail-seat and a locking-block placed in said cavity behind said movable clamp filling out the length of said cavity and holding said clamp in position to secure the rail, said locking-block on all sides except at the mouth of said cavity being inclosed by and in contact with the body metal of the tie and the abutting face of said clamp whereby the accidental displacement of said locking-block is rendered impossible, substantially as set forth.

2. In a metallic railway tie, a rail clamp, and a block occupying a cavity in the body of the tie adjacent to said rail-clamp for locking said clamp in position to secure the rail, said locking-block resting wholly within its cavity and fitted accurately thereto so as to hold said clamp firmly without wedging, and said block being removable in an upward direction only, substantially as set forth.

3. A metallic railway tie, having a rail-seat, a stationary overhang for the rail at one side of said rail-seat, and an open-mouthed cavity formed within the body of the tie on the other side of said rail-seat, in combination with a movable clamp for the rail mounted in said cavity, and a locking-block for said clamp placed in said cavity behind said clamp filling out the length of said cavity and holding said clamp in position to secure the rail, said locking-block being inclosed on all sides except in the direction of its insertion by the body-metal of the tie and the abutting face of said clamp, and the face of the locking block being flush with the surface of the tie, substantially as set forth.

4. A metallic railway tie, having a rail-seat, a stationary overhang for the rail at one side of said rail-seat, and a cavity formed within the body of the tie on the other side of said rail-seat, said cavity having an open mouth and a closed bottom in combination with a movable clamp for the rail mounted in but occupying only a portion of said cavity so that when unlocked it is movable to and from the rail-seat, a locking-block placed in said cavity behind said movable clamp filling out the length of said cavity and holding said clamp in position to secure the rail, said locking-block on all sides except at the mouth of said cavity being inclosed by and in contact with the body-metal of the tie and the abutting face of said clamp whereby the accidental displacement of said locking-block is rendered impossible, and a guard for preventing the intentional withdrawal of said locking-block, substantially as set forth.

5. A metallic railway tie, having a rail-seat, a stationary overhang for the rail at one side of said rail-seat and an open-mouthed cavity at the other side of said rail-seat, a movable clamp for the rail mounted in said cavity, and a locking-block placed in said cavity behind said clamp holding the latter in position to secure the rail, in combination with a guard-pin passing through a rigid part of the tie above the mouth of said cavity to prevent

withdrawal of the locking-block therefrom, substantially as set forth.

5 6. The metallic railway tie having a cavity, the removable rail-cushion overhanging a portion of said cavity and the movable clamp for the rail mounted in said cavity and retained in said cavity by said rail-cushion, so that said rail-clamp cannot be disconnected from the tie while the rail-cushion is in place, substantially as set forth.

10 7. The tie A, having lug *a*, rail-seat D, and cavity I, in combination with the sliding rail-clamp B mounted to slide in said cavity to and from the rail-seat, and the locking-block C filling said cavity behind said clamp when said clamp is in position to secure the rail.

15 8. The tie A, having lug *a*, rail-seat D, rectangular cavity I, and post E, in combination with the sliding rail-clamp B, the rectangular locking-block C, and the guard-pin E, arranged and co-operating substantially as set forth.

20 9. The tie A, having groove *d* and rail-cush-

ion D therein, lug *a* at the outside of said rail-cushion, and rectangular cavity I at the inside of said rail cushion, a portion of said 25 cavity being located beneath the rail-cushion, in combination with the sliding rail-clamp B mounted to slide in said cavity, having a forward portion extending beneath said rail-cushion and having a vertical rear surface, 30 and the rectangular locking-block C fitting in said cavity behind said sliding clamp when said clamp is in position to secure the rail, the upper face of said block being flush with the top surface of the tie, substantially as set 35 forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS H. H. MESSINGER.

Witnesses:

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JOSEPH L. CAVENDER.