

No. 824,462.

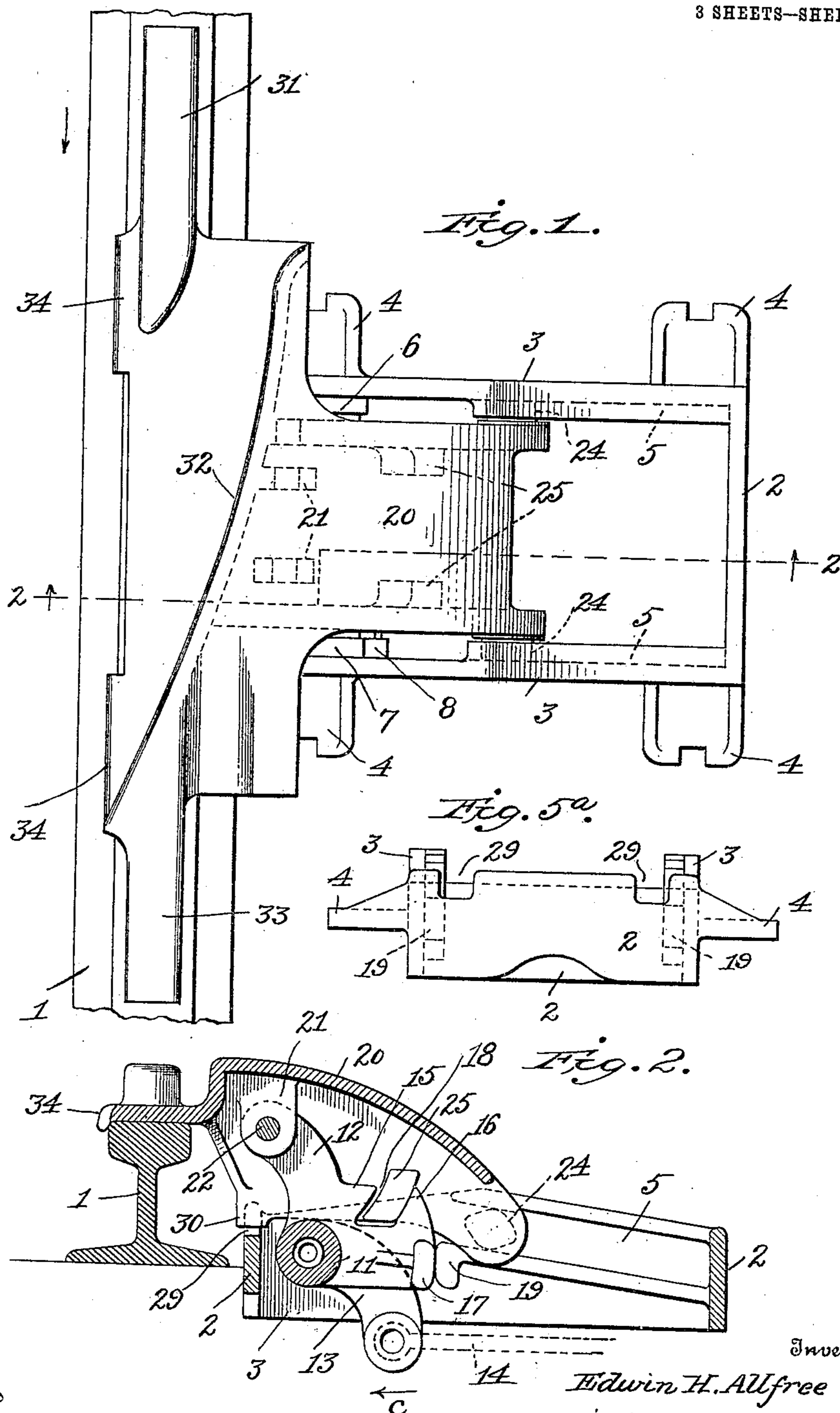
PATENTED JUNE 26, 1906.

E. H. ALLFREE & W. H. ENGLAND.

DERAILER.

APPLICATION FILED APR. 14, 1908.

3 SHEETS--SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 3.

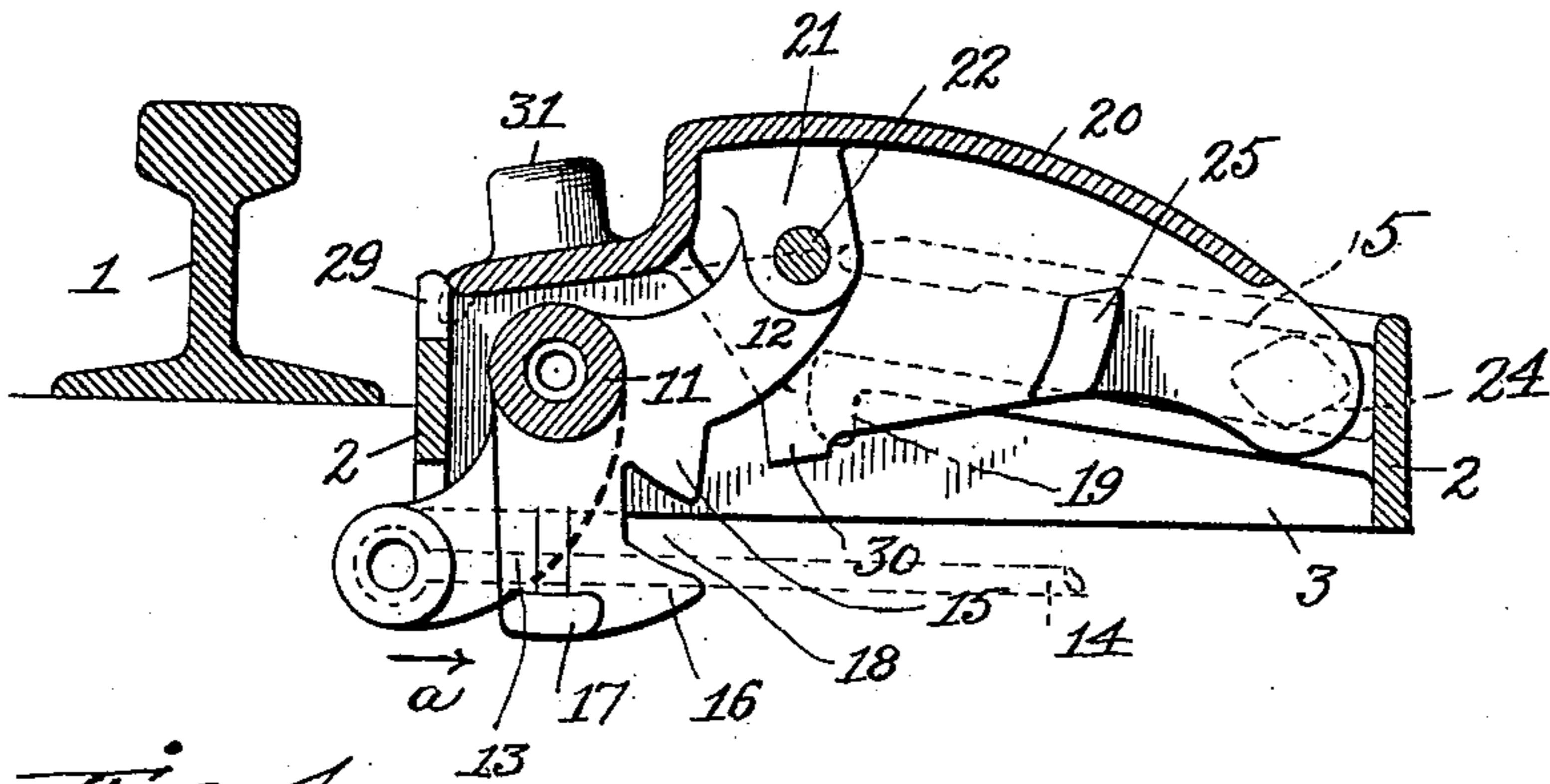


Fig. 4.

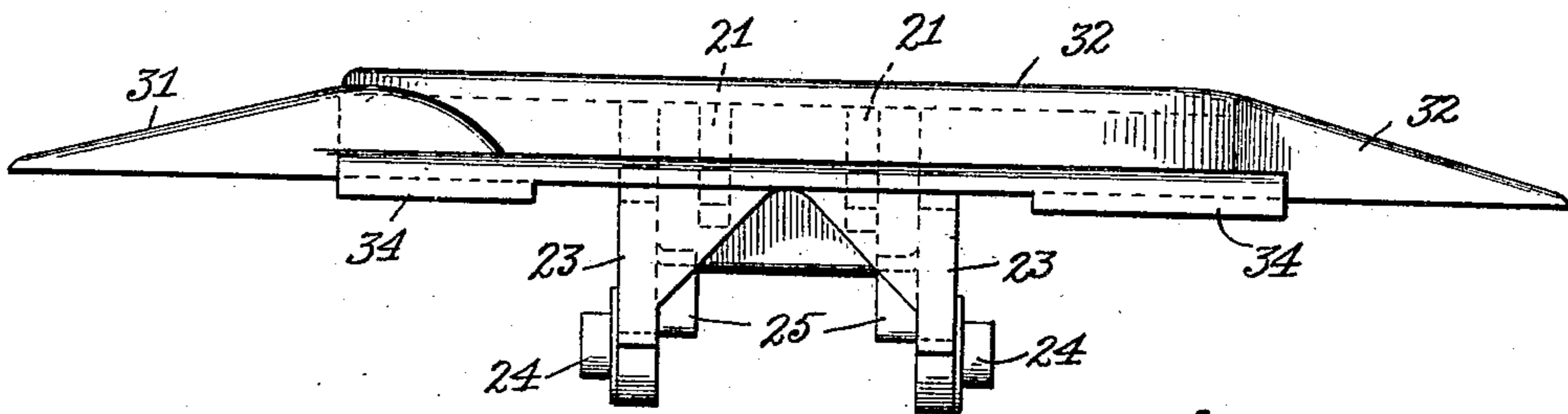


Fig. 5.

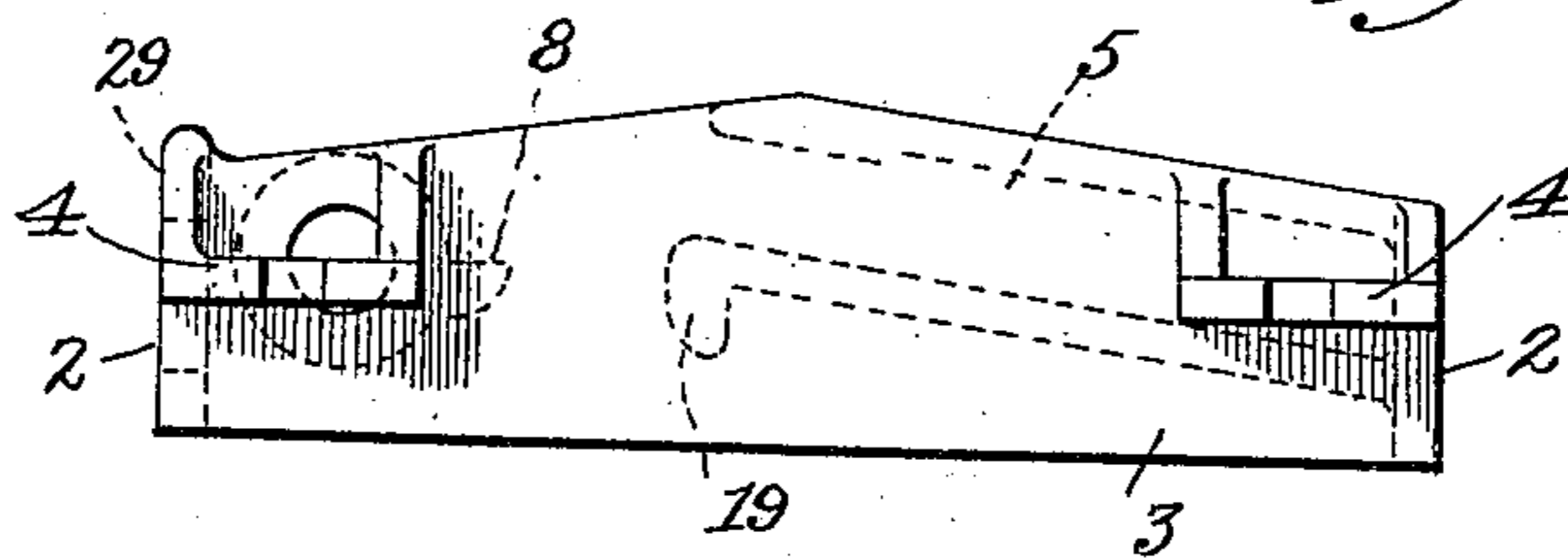
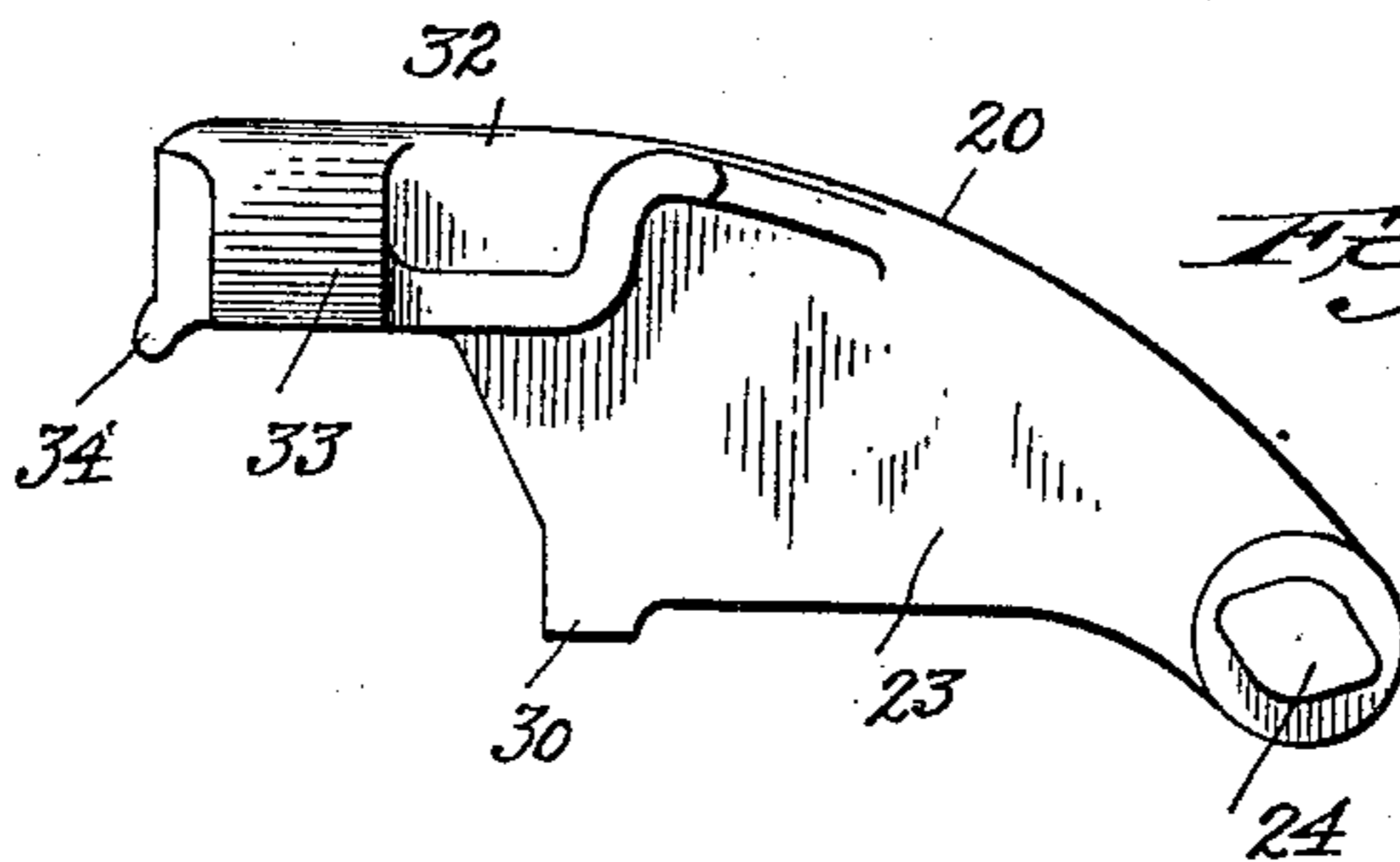


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

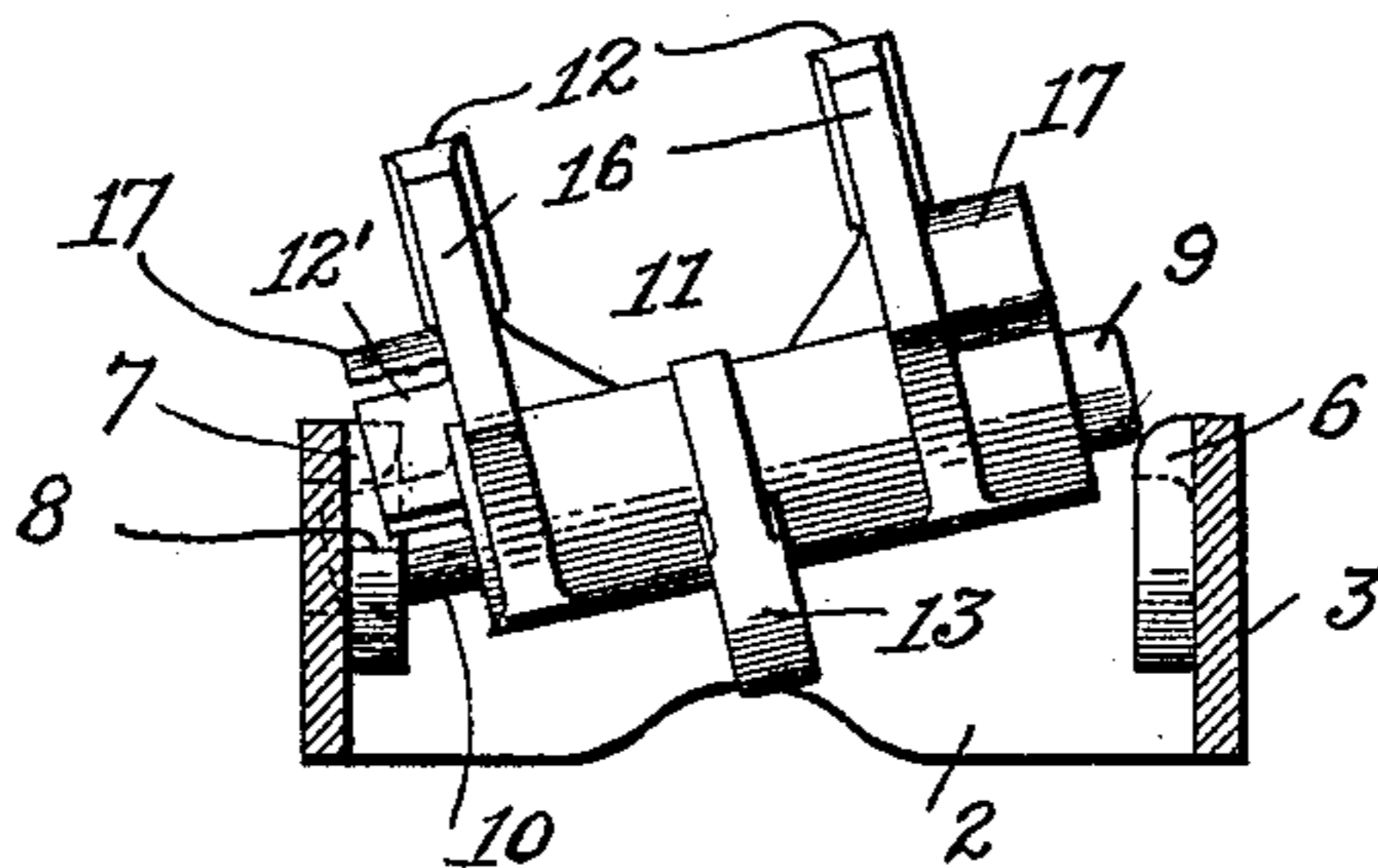


Fig. 10.

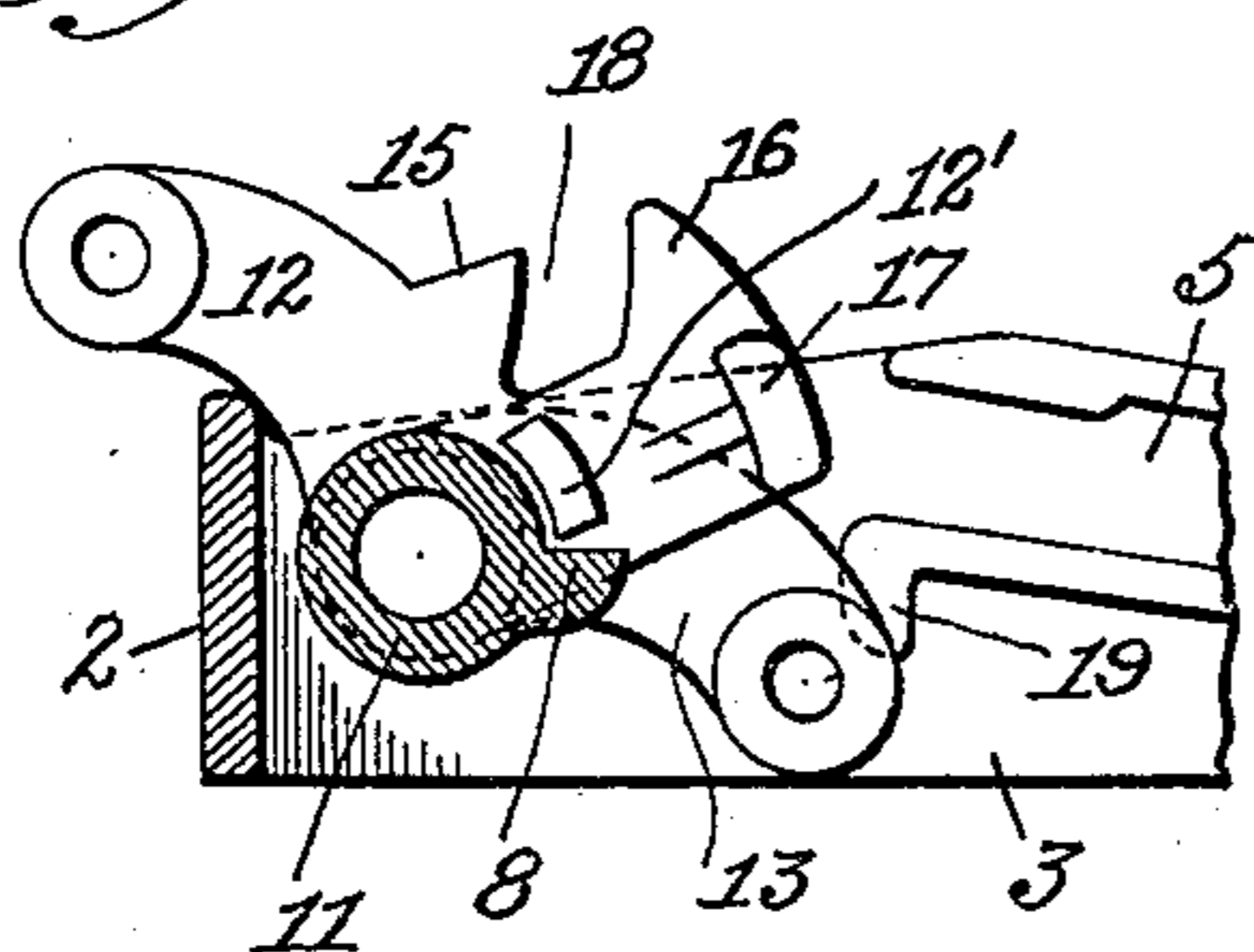


Fig. 8.

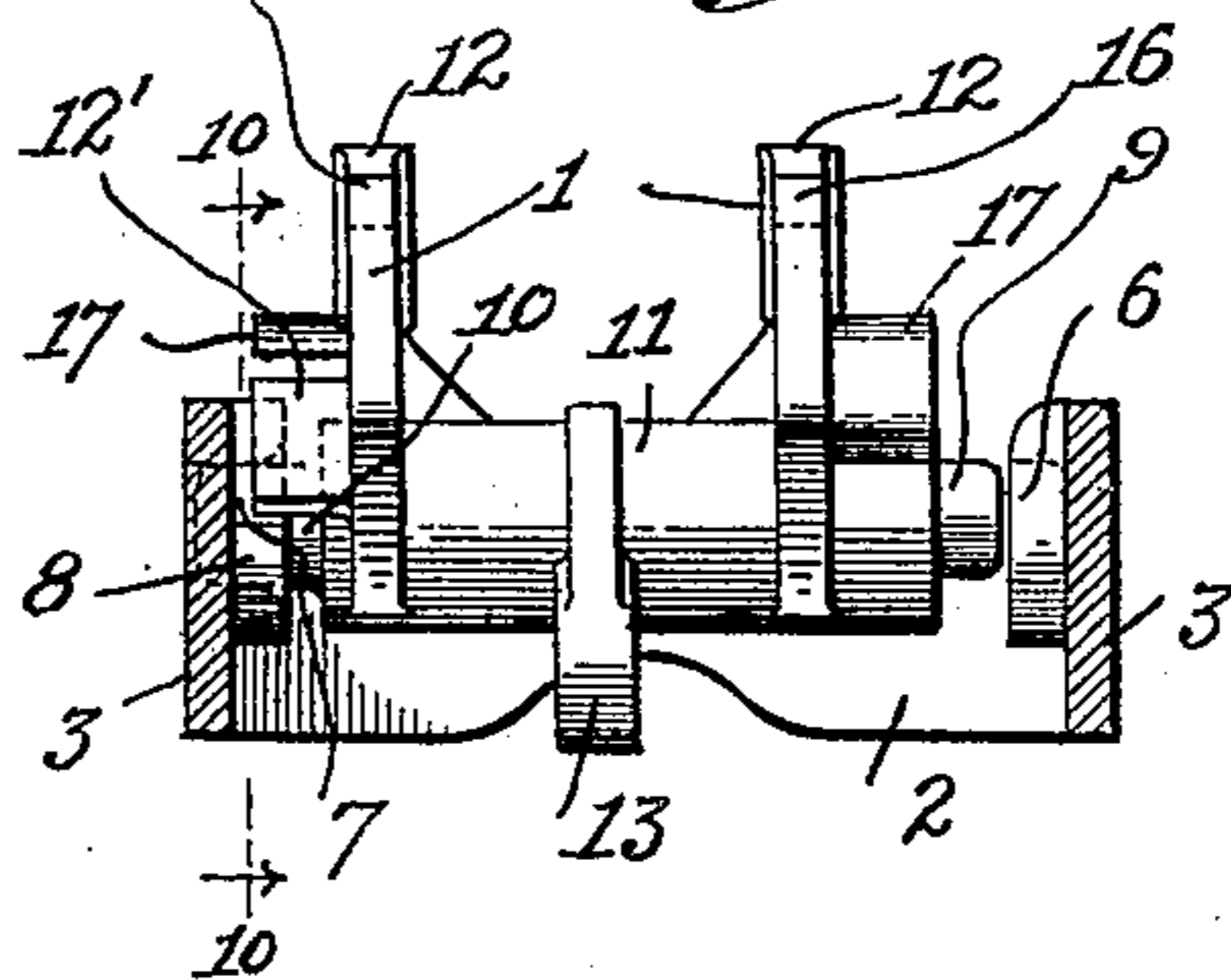


Fig. 11.

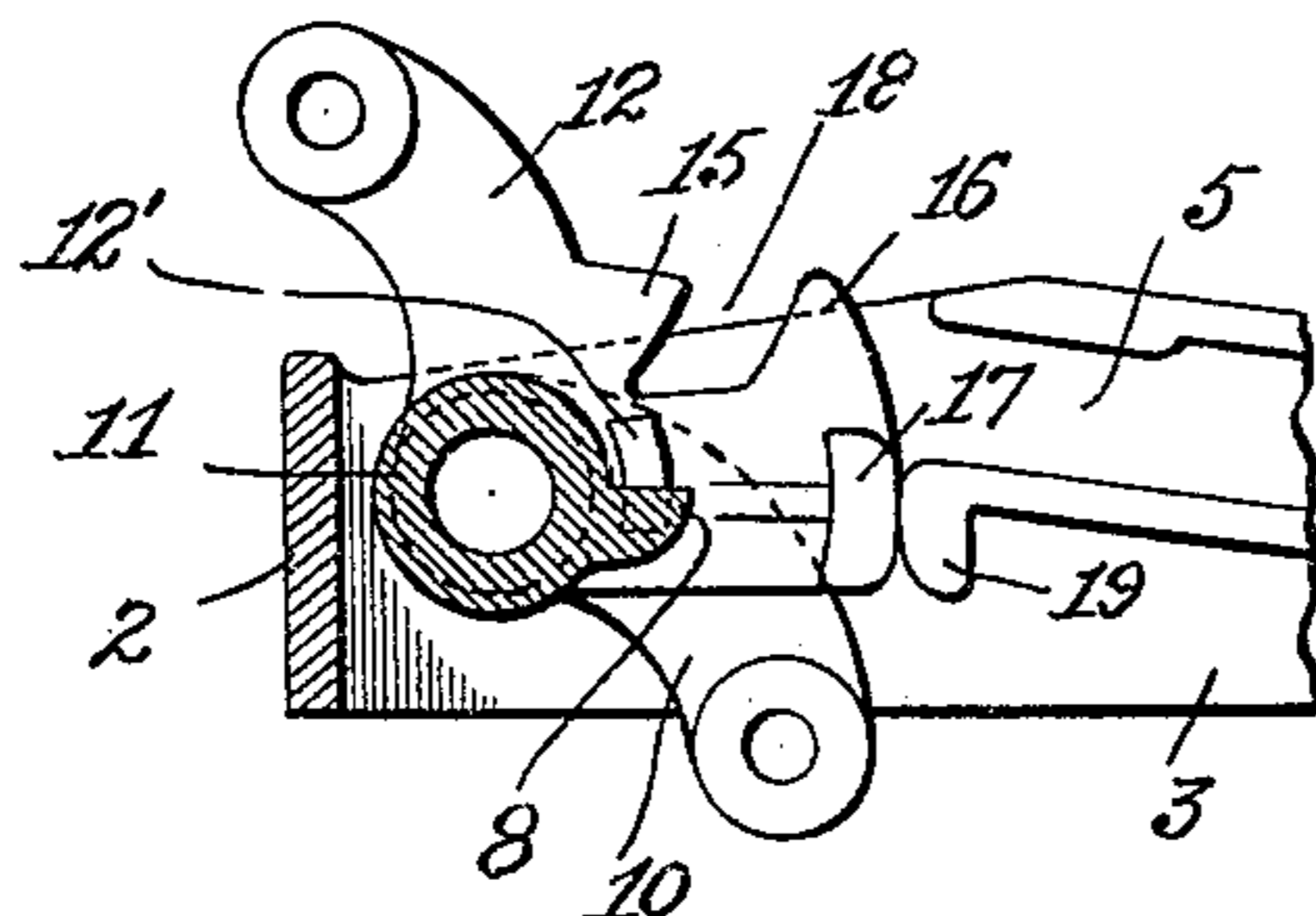
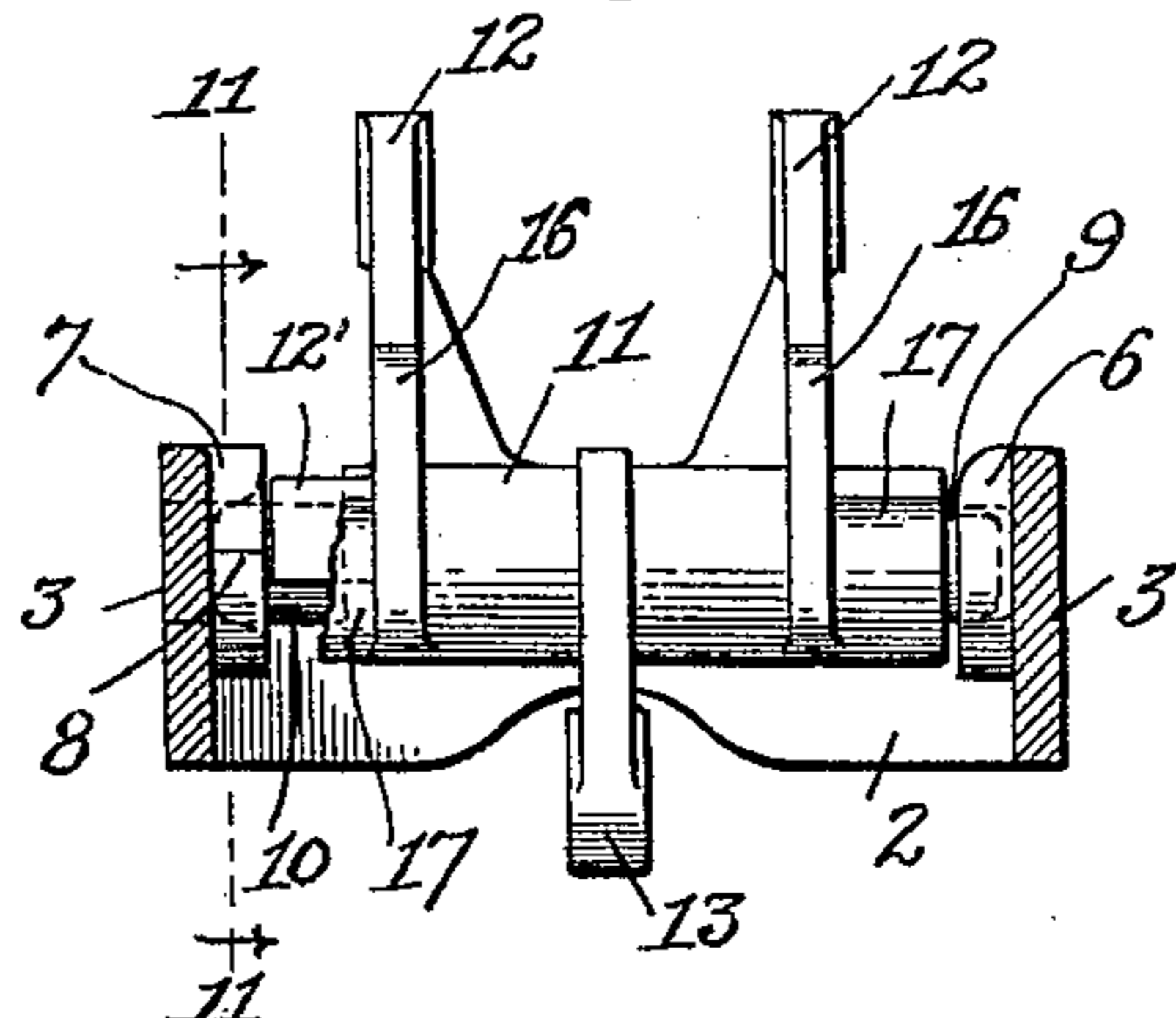


Fig. 9.



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UNITED STATES PATENT OFFICE.

EDWIN H. ALLFREE AND WILLIAM H. ENGLAND, OF CHICAGO, ILLINOIS.

DERAILER.

No. 824,462.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed April 14, 1906. Serial No. 311,638.

To all whom it may concern:

Be it known that we, EDWIN H. ALLFREE and WILLIAM H. ENGLAND, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Derailers, of which the following is a specification.

Our invention relates to improvements in derailing devices, and more especially pertains to a device of the character indicated which is adapted to lift the wheel of a car from the rail and guide it diagonally off the rail.

The objects of our invention are, first, to simplify the construction and efficiency of derailleurs and track appliances which are adapted to be moved into and out of engagement with the rail, both in the respect of their operation and the facility of installing them; second, to render the derailer entirely independent of the rail and consequently unaffected by its expansion and contraction and at the same time reduce the size and weight of such apparatus to a minimum without sacrifice of strength and durability; third, to so construct and arrange the parts of the device with self-contained interlocking means which will prevent the movable derailing-section from moving in either direction at right angles with the rail or in the direction of the line of the track when placed in operative position; fourth, to construct and arrange trunnions and lugs on a bell-crank which is adapted to operate the movable derailing-section, so that the bell-crank can be readily removed from or locked in bearings in the supporting-base; fifth, to so construct a derailer with an arrangement of parts whereby freedom and reliability of action are insured and the cost of manufacturing, installing, and maintaining the same is reduced to a minimum; sixth, other evident objects and advantages of the specific construction which will hereinafter appear from the detailed description of the invention and the manner of applying the same.

Our invention consists of structural features and relative arrangements of elements, which will be more fully and clearly described in the specification and particularly pointed out in the appended claims.

Referring to the accompanying three sheets of drawings, in which the same reference characters indicate the same parts in the several figures, Figure 1 is a plan view of the derailer

when the movable derailing-section is placed in operative position on the rail. Fig. 2 is a transverse section on line 2 2 of Fig. 1. Fig. 3 is a section on line 2 2 of Fig. 1 when the derailing-section is thrown out of operation. Fig. 4 is a side elevation of the movable derailing-section detached from the base and bell-crank. Fig. 5 is a side elevation of the base-supporting and derailing-section. Fig. 5^a is an end view of the base. Fig. 6 is a side elevation of the movable derailing-section removed from the base and bell-crank. Fig. 7 shows the first position which the movable bell-crank operating the derailing-section is made to assume while being placed in the bearings of the base. Fig. 8 is the position assumed by the bell-crank when only one of its trunnions is placed in a bearing and its locking-lug is out of engagement. Fig. 9 is the finally-adjusted position of the bell-crank when both of its trunnions are in their bearings and the locking-lug is in engagement with the base to prevent endwise movement. Fig. 10 is a section on line 10 10 of Fig. 8, and Fig. 11 is a section on line 11 11 of Fig. 9.

Referring to Figs. 1 to 6 of the drawings, 1 represents a portion of one of the rails, comprising the usual railroad-track, a base which is preferably constructed of two short sides 2 2, and two long sides 3 3, thereby forming a casting rectangular in shape which is fastened to the bed of the track by any suitable spikes or other means, engaging the lugs 4 4 and so arranged that the sides 3 3 are substantially at right angles, while the sides 2 2 are parallel to the rail of track and a short distance therefrom, as indicated. (See Figs. 1, 2, 5, and 5^a.) On the interior and extending from the middle to one end of each of the sides 3 3 of the base is formed a groove or guideway 5, while near the other end of each of the sides 3 3 is a lug forming bearings 6 and 7, as clearly shown in Figs. 7 to 9, the said bearing 7 being provided with a projection 8, (see Figs. 1, 7, and 8,) the function of which will be hereinafter described. Supported in said bearings 6 and 7 of the base 1 by means of its properly proportioned and turned trunnions 9 and 10 is a bell-crank 11, having two upper arms 12 12, one near each end, and a lower arm 13, preferably between the two upper arms, which may be connected by means of a rod, as shown in dotted lines 14, to any preferred form of operating devices. 12' is a lateral projection on the outer side of the arm 12 next to the trunnion 10 and is adapted to

coöperate or engage with the projection 8 on the bearing 7 for the purpose of locking the bell-crank 11 in operative position in bearings 6 and 7 on sides 3, as will be explained later. Extending from each of the two upper arms and preferably formed integral therewith are two projections 15 16 and a lateral projection 17, as indicated in Figs. 2, 9, and 11, said projections 15 and 16 forming a slot 18 between them, as clearly indicated in Fig. 10.

19 is a lug or stop formed on the lower side and inner end of each of the grooves 5 5 in the base 2, which is adapted to coöperate with one of the projections 17 on an arm 12 of the bell-crank, as indicated in Fig. 2, and will be hereinafter more clearly described.

20 is a movable derailing-section, (see Figs. 4 and 6,) which is provided on the inner side of its upper portion with depending and pierced ears 21 21, which are capable of being engaged and pivotally connected by means of a pin or pins 22 to the upper arms 12 12 of the bell-crank 11, as indicated in Figs. 2 and 3.

23 23 are two lateral extensions or arms on said derailing-section 20, each of which is provided at its outer end with a guiding-lug 24, adapted to slide back and forth in one of the grooves or guideways 5, as indicated in Figs. 2 and 3.

25 is a projection on the inner side of each of the lateral extensions 23 23 and is placed in such a position and of proper form to enter and fit into one of the slots 18, formed by the projections 15 and 16 on the bell-crank arms 12 12 when in the position as indicated in Fig. 2.

29 (see Figs. 3, 5, and 5^a) is an upright slot near each of the ends of the side 2 of the base placed next to the rail and is adapted to receive a corresponding projection 30 (see Figs. 2 and 6) on the bottom and inner end of each of the extensions or arms 23.

The derailing-section 20 is provided at its other end, from which the arms 23 extend, with a derailing-block portion, said block being adapted to rest on the top of the rail, and thereby raise the car-wheel and engage the flange thereof in order to guide the wheel across the rail and derail the same. This derailing-block preferably consists (see Figs. 1 and 4) of an approach or wheel-lifting incline 31, a wheel-flange guide 32, and a tail end 33, and also, if desired, with lips 34 34, which are adapted to engage the outer sides of the rail when the derailing-block is placed in position, but we wish it to be distinctly understood that the shape of this derailing-block constitutes no part of the present invention, as any approved form may be readily substituted or employed in connection with the other and novel features of our invention.

The manner of assembling our improved derailer is as follows: Having fastened the

base 2 in a proper position and relation with respect to the rail 1, the bell-crank 11 is first placed with respect to the base 2, as indicated in Fig. 7, so that the lateral projection 12' on arm 12 does not come in contact with the projection 8 on the bearing 7. This permits the bell-crank trunnion 10 to readily pass into its bearing 7 and assume the positions shown in Figs. 8 and 10. The bell-crank is then moved laterally toward the other side 3 of the base 2 until the trunnion 9 is seated in its bearing 6, when the lower arm 13 is permitted to drop and cause the projection 12' on one of the bell-crank arms 12 to engage the projection 8 of the bearing 7, as indicated in Figs. 9 and 11, thereby preventing any lateral movement of the bell-crank 11 and properly retaining its trunnions 9 and 10 in the bearings 6 and 7, respectively. After the bell-crank has been properly supported and locked, as above explained, the lugs 24 24 on the extensions 23 23 of the derailing-section 20 are placed in the guide-grooves 5 5 of the base 2, as indicated in Figs. 1 and 2, and when in this position the pin or pins 22 may be passed through the openings of the depending ears or extensions 21 21 and the upper ends of the arms 12 12, thereby pivotally connecting the bell-crank 11 with the derailing-section 20, as shown, when the device is ready for use.

The operation of the invention is as follows: Assuming that the derailer is in its retracted position, as indicated in Fig. 3 of the drawings, and it is desired to place and lock in position on the rail the derailing-block, all that is necessary is to pull on the lower arm 13 of the bell-crank 11 in the direction of the arrow *a* by any suitable means connected to the link 14, shown in dotted lines. This action causes the bell-crank 11 to turn on its trunnions 9 and 10 in the bearings 6 and 7, and the arms 12 12 by means of their pivotal connection with the derailing-section 20 first raise the derailing-block end and then move it in a direction at right angles to the rail and place, as indicated in Figs. 1 and 2, the approach or wheel-lifting incline 31 and the tail end 33 on top of the rail, while the wheel-flange guide 32 is made to assume a position diagonally across the rail and capable of being engaged by the flange of a wheel approaching in the direction as indicated by arrow *b* and readily derail the same, as is well understood by those skilled in the art. During this operation of raising and transposing the derailing-section, as above described, the lugs 24 24 slide in their guideways or grooves 5 5 in the inner sides of the base and properly hold and guide the outer ends or extensions 23 23 of the derailing-section 20, so that its derailing-block end is thereby first raised slightly above the top of the rail and then seated thereon and at the same time permit the lugs 30 to pass into slots 29 of the base,

and the lips 34 engage the side of the rail 1. The projections 15 and 16 on the upper arms 12 are so proportioned, curved, and arranged as to fit about the projections or lugs 25 25 on the inner side of the derailing-section 20 and allow the said projections 25 to be seated in the slot 18, formed by the said projections 15 and 16, as clearly shown in Fig. 2. The lugs 17 on the arms 12 engage the stops 19 on the inner and lower sides of the grooves or guideways 5, thereby securely locking the derailing-section from any movement away from the rail, while the projections 30 on the bottom of derailing-section 20, passing into the slots 29, near the ends of the inner side 2 of the base, prevent any movement in the direction of the line of the track. The lugs 24 assume the extreme inner position of their guideways or grooves 5 and are therefore firmly held against any upward or downward movement when the derailing-block receives the impact or weight of a car-wheel passing over it. When it is desired to remove the derailing-section from the top of the rail, the operation is reversed—that is, the end of the lower arm 13 is moved in a direction from right to left, as indicated by the arrow *c* in Fig. 2, when the derailing-block end is first raised and forced from the rail and then moved in a direction at right angles to the rail, and the different parts of the derailer assume the positions as indicated in Fig. 3, with the upper face of the derailing-section on a level or below the plane of the top of the rail.

It will therefore be clearly seen by reference to Fig. 2 and from the herein-described construction and arrangement of the projections, slots, and lugs on the bell-crank arms, the derailing-section, and the base we have devised a simple and inexpensive form of self-contained locking and operating means for a derailer in which all the movable parts are securely held and interlocked when in the act of derailing or the weight of the car-wheel is on the apparatus, for the reason that there is no possibility of the derailing-section or its operating mechanism moving in any direction, either at right angles to the rail upwardly or downwardly or in the same direction as the rail, and therefore there is no danger of the apparatus not effecting at all times the function for which it is designed.

From the above detailed description of the invention and mode of operating the same it will also be clearly seen that we have devised a derailer in which all the objects set out in the statement of invention are fully attained and efficiently carried out. Various changes may be made in the details of our base construction and mode of effecting the removal and locking of the bell-crank in said base, together with its interlocking lugs or projections or stops, and while we have in the foregoing specification described one form of con-

struction adapted to accomplish the results aimed at yet it will be obvious to those skilled in the art that the specific construction of the base, bell-crank, bearings, together with their cooperating lugs, projections, and slots, may be modified in many ways without changing in any way the operation of the mechanism or varying our invention. It will also be clearly seen that while it is preferable to use, as shown, two sets of slots and stop-lugs on the base and projections on the movable derailing-section and bell-crank in order to insure any possibility of displacement of the parts during the derailing operation, this is not absolutely essential, as the same operations and functions of the device could be effected by simply having one set of the stop-lugs, projections, and slots on the base and moving derailing-section.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent, is as follows:

1. A derailer comprising a base having a guideway at one end and a bearing at the other end, a bell-crank pivotally supported in said bearing, a movable derailing-section having one end sliding in the guideway of the base and its other or derailing end pivotally connected to an arm of the bell-crank whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideway while the other or derailing end is raised or lowered and moved from or returned to the base.

2. A derailer comprising a base having opposite guideways at one end and a bearing at the other end, a bell-crank pivotally supported in said bearing, a movable derailing-section having one end sliding in said guideways of the base and its other or derailing end pivotally connected to an arm of the bell-crank whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideways while the other or derailing end is raised or lowered and moved from or returned to the base.

3. A derailer comprising a base having a guideway at one end and bearings at the other end, a bell-crank pivotally supported in said bearings, means on said bell-crank for locking the same in said bearings, a movable derailing-section having one end sliding in the guideway of the base and its other or derailing end pivotally connected to an arm of the bell-crank whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideway while the other or derailing end is raised or lowered and moved from or returned to the base.

4. A derailer comprising a base having opposite guideways at one end and bearings at the other end, a stop on the inner end of each of the guideways, a bell-crank pivotally supported in said bearings and having lugs

adapted to abut against the stops in the guideways in the raised position of the bell-crank, a movable derailing-section having one end sliding in the guideways of the base and its
 5 other or derailing end pivotally connected to an arm of the bell-crank whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideways while the other or derailing
 10 end is raised or lowered and moved from or returned to the base.

5. A derailer comprising a base situated to one side of a rail and having opposite guideways in the end away from the rail and bearings at the end nearest the rail, a bell-crank
 15 pivotally supported in said bearings, a movable derailing-section having at one end lugs engaging the guideways in the base and its other or derailing end pivotally connected to
 20 an arm of the bell-crank whereby in the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideways of the base while the other or derailing end is raised or lowered and moved to
 25 or from engagement with the rail.

6. A derailer comprising a base situated to one side of a rail and having opposite guideways in the end away from the rail and bearings at the end nearest the rail, a bell-crank
 30 pivotally supported in said bearing and having locking-lugs on one of its arms, a movable derailing-section having at one end lugs engaging the guideways in the base and its other or derailing end pivotally connected to
 35 an arm of the bell-crank, and provided with a projection adapted to engage the locking-lugs of the bell-crank whereby in the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the
 40 guideways of the base while the other or derailing end is raised or lowered and locked in or out of engagement with the rail.

7. A derailer comprising a base situated to one side of a rail and having guideways in the
 45 end away from the rail and bearings at the end nearest the rail, a bell-crank adapted to be locked and pivotally supported in said bearings, a movable derailing-section having at one end lugs engaging the guideways in
 50 the base and its other or derailing end pivotally connected to an arm of the bell-crank whereby in the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideways of the base
 55 while the other or derailing end is raised or lowered and moved to or from engagement with the rail.

8. A derailer comprising a base situated to one side of a rail and having guideways in the
 60 end away from the rail and bearings and retaining-slots at the end nearest the rail, a bell-crank pivotally supported in said bearings, a movable derailing-section having at one end lugs engaging the guideways in the
 65 base and its other or derailing end pivot-

ally connected to an arm of the bell-crank and projections adapted to be seated in the retaining-slots whereby in the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideways
 70 while the other or derailing end is raised or lowered and moved into and out of engagement with the retaining slots or rail.

9. A derailer comprising a base situated to one side of a rail and having a guideway in
 75 the end away from the rail and a journal-bearing at the end nearest the rail, a movable derailing-section having one end engaging the guideway in the base, and means supported in the bearing for engaging the other or de-
 80 railing end of the movable derailing-section for moving the end away from the rail of the derailing-section back and forth in the guideway of the base while the other or derailing end is raised or lowered and moved to or
 85 from engagement with the rail.

10. A derailer comprising a base situated to one side of a rail and having opposite guideways in the end away from the rail and opposite journal-bearings at the end nearest
 90 the rail, a movable derailing-section having one end engaging the guideways in the base, and means supported in the bearings for engaging the other or derailing end of the movable derailing-section for moving the end
 95 away from the rail of the derailing-section back and forth in the guideways of the base while the other or derailing end is raised or lowered and moved to or from engagement with the rail.

11. A derailer comprising a base having a guideway at one end and a journal-bearing at
 100 the other end, a movable derailing-section having one end sliding in the guideway of the base, and operating means supported in said
 105 bearing engaging the other or derailing end of the movable derailing-section for moving one end of the same back and forth in the guideway while the other or derailing end is raised or lowered and moved from or re-
 110 turned to the base.

12. A derailer comprising a base having a guideway at one end and a bearing at the
 115 other end, a movable derailing-section having one end sliding in the guideway of the base, operating means supported in said bearing engaging the other or derailing end of the movable derailing-section for moving one end of the same back and forth in the guide-
 120 way while the other or derailing end is raised or lowered and moved from or returned to the base, and self-interlocking devices connected to the derailing-section and operating means.

13. A derailer comprising a base having a
 125 guideway at one end and a bearing at the other end, a bell-crank pivotally supported in said bearing, a movable derailing-section having one end sliding in the guideway of the base and its other or derailing
 130

end pivotally connected to an arm of the bell-crank, self-interlocking devices connected to the bell-crank and movable derailing-section whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideway while the other or derailing end is raised and locked or returned to the base.

14. A derailer comprising a base having opposite guideways at one end and a bearing at the other end, a bell-crank pivotally supported in said bearing, a movable derailing-section having one end sliding in said guideways of the base and its other or derailing end pivotally connected to an arm of the bell-crank, self-interlocking devices connected to the bell-crank, base and movable derailing-section whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideways while the other or derailing end is raised and locked or returned to the base.

15. A derailer comprising a base having a

guideway at one end and bearings at the other end, a bell-crank pivotally supported in said bearings, means on said bell-crank for removably locking the same in said bearings, a movable derailing-section having one end sliding in the guideway of the base and its other or derailing end pivotally connected to an arm of the bell-crank, self-interlocking devices connected to the bell-crank, base and movable derailing-section whereby on the oscillation of the bell-crank one end of the derailing-section is moved back and forth in the guideway while the other or derailing end is raised and locked or returned to the base.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWIN H. ALLFREE.
WILLIAM H. ENGLAND.

Witnesses:

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M. SCOTT.