

No. 648,085.

Patented Apr. 24, 1900.

C. F. DE REDON.  
ELECTRIC RAIL BOND.

(Application filed Aug. 24, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

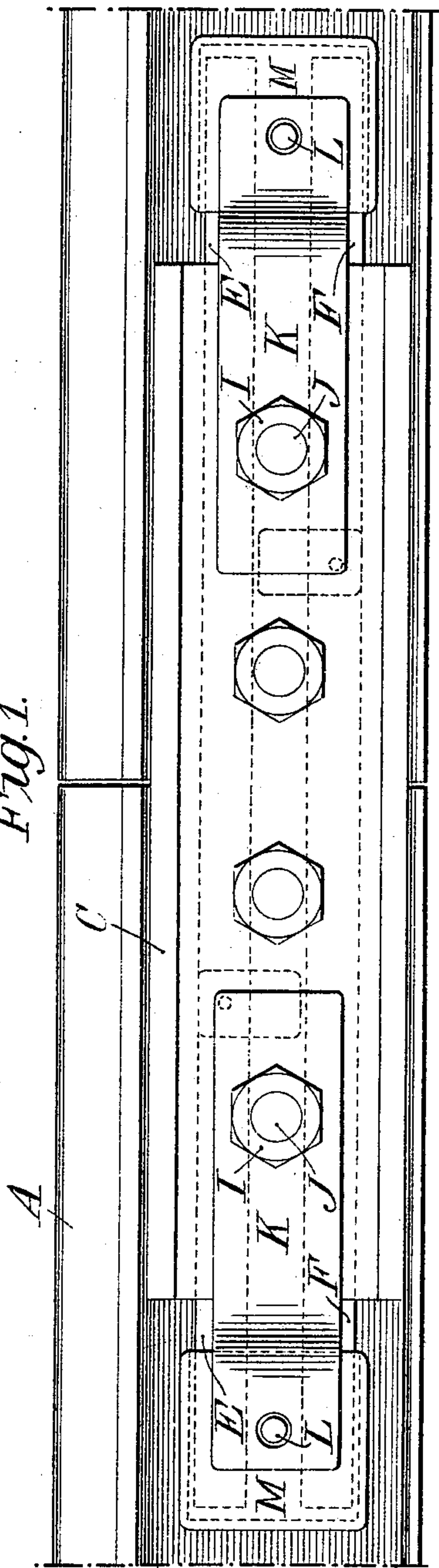


Fig. 3.

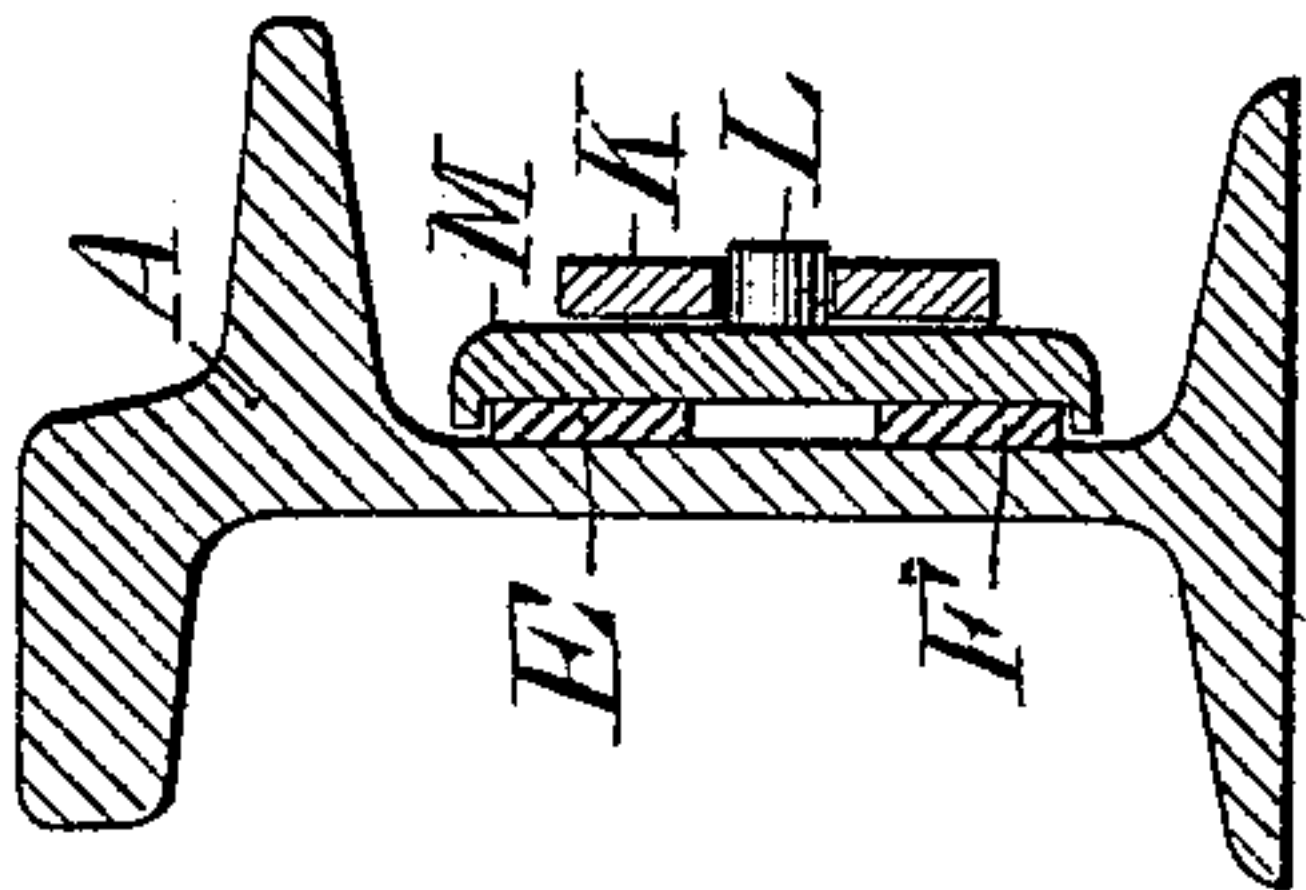


Fig. 2.

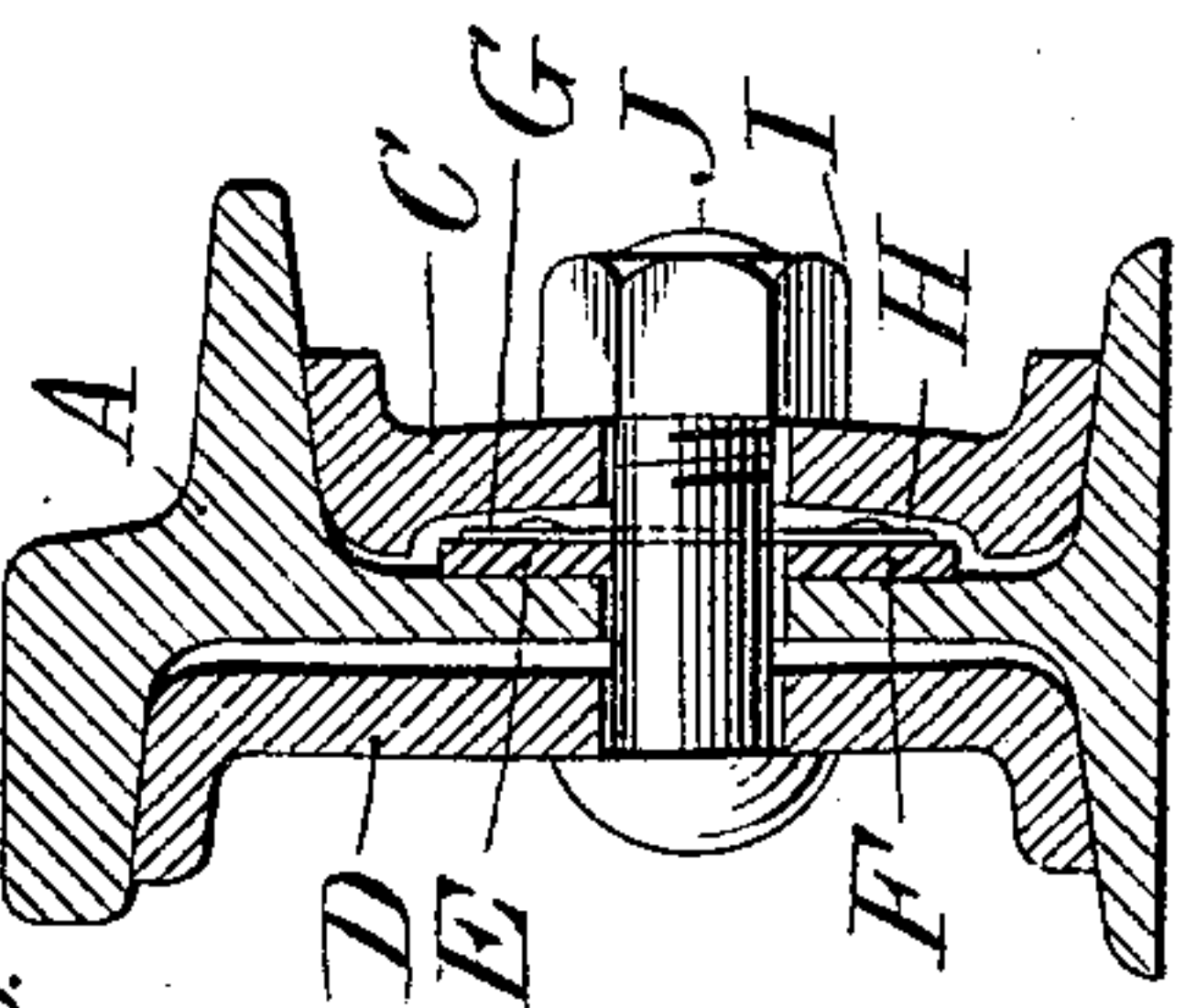
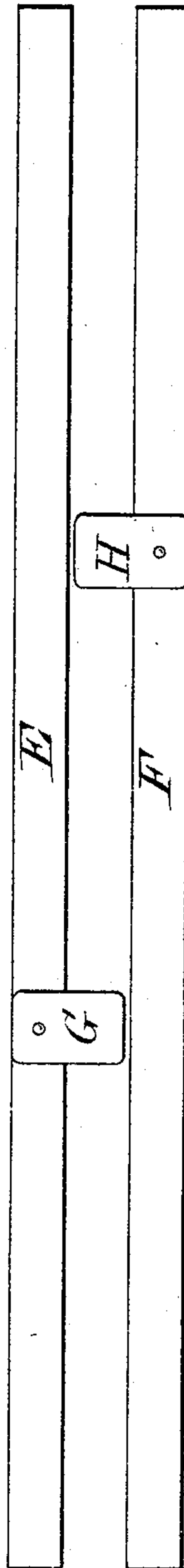


Fig. 4.



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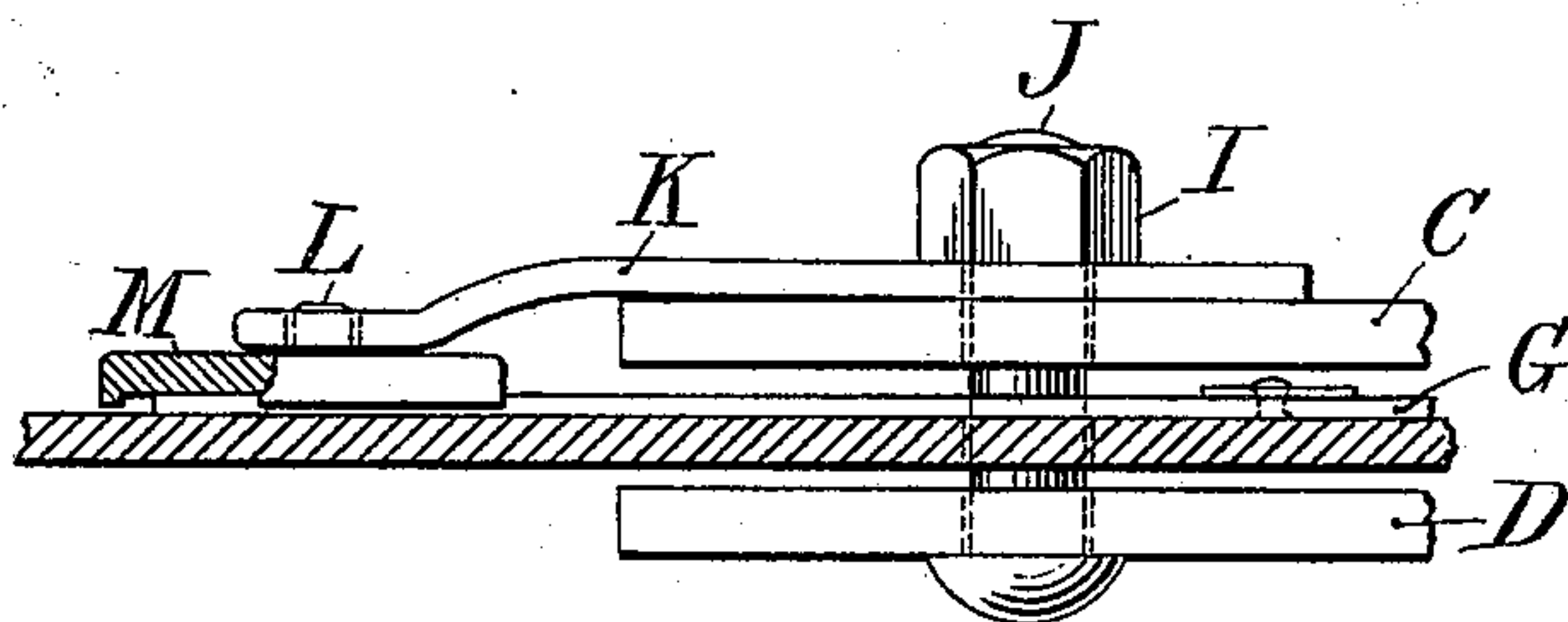
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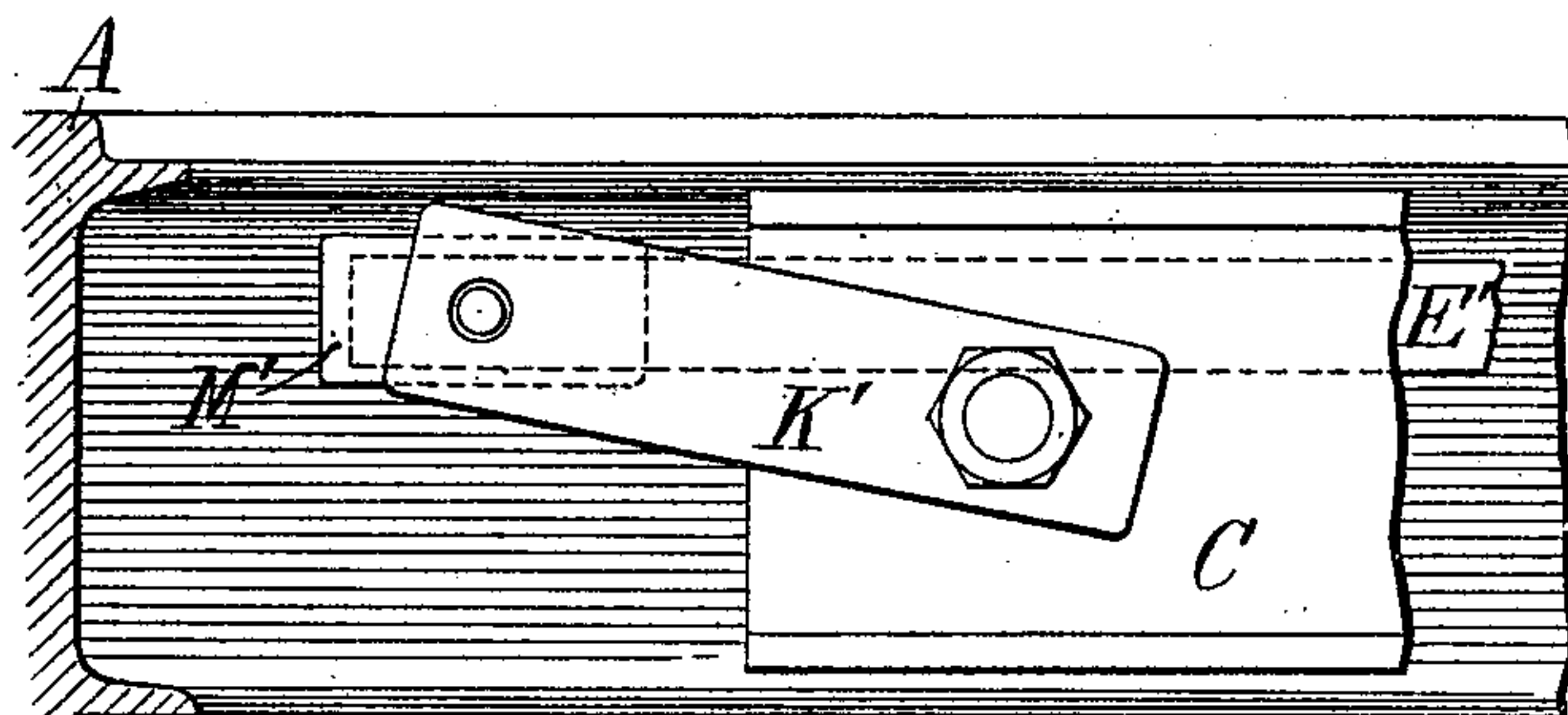
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*Fig. 5.*



*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

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## ELECTRIC RAIL-BOND.

SPECIFICATION forming part of Letters Patent No. 648,085, dated April 24, 1900.

Application filed August 24, 1899. Serial No. 728,258. (No model.)

*To all whom it may concern:*

Be it known that I, CONSTANT F. DE REDON, a citizen of the Republic of France, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Electric Rail-Bonds, of which the following is a specification.

In order to make my rail-bond (the principle of which is to supply good electrical connection between adjacent rails, which connection shall always allow free movement between the parts thus connected) applicable to all the conditions that are likely to arise in the electric-railway service, I have devised various forms of the said rail-bond, the same being capable of application in a great variety of ways. For example, it sometimes happens that the fish-plates at rail-joints are so applied as to leave considerable space between the main body of the fish-plate and the rails. My present invention concerns itself with locating the rail-bond conductors in the space between the fish-plates and the rail ends, as will presently appear. While this arrangement has the advantage of meeting the conditions of railway-service when fish-plates of the kind described are employed, it has also the additional advantage of enabling me to prevent the easy withdrawal of the rail-bond conductors. Since these conductors are usually of copper, considerable trouble has been experienced heretofore by reason of the bonds being stolen. When the copper bond-conductors are placed in an exposed position, this danger always exists. When, however, the removal of the copper conductor would require the removal of a fish-plate with its four or more (usually six) large bolts, as is the case with my present invention, there is little likelihood of the copper being stolen, inasmuch as persons attempting to steal the copper would know that they were liable to cause a railway accident, and the ordinary thief would be thereby prevented from making the theft. Besides that, the amount of time required to remove the copper conductor would increase the likelihood of detection in case any one should attempt to purloin it. In other respects the present invention has the advantages which appertain to my rail-bonds in

general—that is to say, the connection between the conductor and the rail is a comparatively-free one, while the contact is always maintained firm and good.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the ends of two adjacent railway-rails having my bond applied thereto. Fig. 2 is a vertical section of a rail having my railway-bond applied thereto. Fig. 3 is a similar section through the rail and through the special spring contact devices at one end of my rail-bond. Fig. 4 is a detail view of the railway-bond copper conductors. Fig. 5 is a longitudinal section of a rail to which my bond is applied, and Fig. 6 illustrates a modification.

The adjacent railway-rail sections are shown at A and B, and fish-plates at C and D. It will be seen that there is a considerable space left between the fish-plate D and the web of the rails A and B, and in this space I locate copper conductors E and F, which are somewhat longer than the fish-plate C and project at each end beyond the same. To the conductors E and F, I secure plates G and H, respectively, which may be of any strong and rigid material. These plates G and H project far enough inward in opposite directions to be in range with the bolts which join the fish-plate to the rail when the said bolts are in place. Manifestly these plates act to prevent the withdrawal of the copper conductors until several of the fish-plate bolts have been removed. I may apply a number of such plates to the copper conductors, so as to require the withdrawal of all the fish-plate bolts except one. This is a matter of detail and admits of being varied at will.

The copper conductors E and F being in place, the problem now is to press them against the webs of the rails with sufficient firmness to secure good contact. This I accomplish by removing the last nut I at each end of the fish-plate C and placing over the bolt J, to which said nut is secured, a spring-plate K, of steel. This plate is provided with an opening near its outer end to receive a lug or pin-  
The said cap or head is of metal or some other rigid material, and it is so shaped as to rest



flatly upon the ends of the copper conductors E and F. If now the spring K is put under tension by the tightening of the nut I, the said cap or head M will be very firmly pressed against the conductors E and F, where perfect electrical connection between said conductors and the rails A and B will be secured.

In Fig. 6 I illustrate a modification wherein a spring K' presses a cap M' against a single copper conductor E'. In other words, the construction is practically the same as that already described. The object of the modification is to meet the conditions which exist in some instances when the fish-plate and the rail are so joined as to leave a considerable space in, say, the upper portion between the fish-plate and the rail, but not enough space for two good-sized copper conductors, as illustrated in Fig. 1. Manifestly a similar arrangement could be made in case such a space were left in the lower portion instead of the upper. It is also true that a single bonding-conductor might be employed with the construction illustrated in Fig. 1, and for this reason it is not thought necessary to illustrate any other forms of fish-plate except that which appears in Fig. 1.

The invention claimed is—

1. The combination with a pair of adjacent railway-rails, of a fish-plate mechanically joining said rails, a bonding-conductor bridging the ends of the rails, and a spring pressing said bonding-conductor against the rails, the bonding-conductor being located in the space between the fish-plate and the rails.

2. The combination with the ends of adjacent railway-rails and the fish-plate joining the same, of a spring-pressed bonding-conductor located between the fish-plate and the rail ends, the said bonding-conductor extending beyond the fish-plate at each end and being held in contact with the rails.

3. The combination with the ends of adjacent railway-rails and a fish-plate connecting the said ends, of a bonding-conductor located between the fish-plate and the rails, and a spring at each end of the fish-plate for pressing the bonding-conductor against the rail.

4. The combination with the ends of adjacent railway-rails and a fish-plate connecting the said ends, of a bonding-conductor located between the fish-plate and the rails, and a spring at each end of the fish-plate for pressing the bonding-conductor against the rail, the said spring being bolted to the fish-plate by one of the usual bolts and being adapted to press at its free end against the bonding-conductor.

5. The combination with the ends of adjacent railway-rails and a fish-plate joining the said ends, of a bonding-conductor located in the space between the fish-plate and the rails, a head or cap of rigid material adapted to rest against the said conductor, and a spring at each end of the fish-plate adapted to press against the said cap.

6. The combination with the ends of adjacent railway-rails and a fish-plate joining the said ends, of a bonding-conductor located in the space between the fish-plate and the rails, a head or cap of rigid material adapted to rest against said conductor, and a spring at each end of the fish-plate adapted to press against the said cap, the said spring being attached to the fish-plate by one of the usual bolts.

7. The combination with a pair of adjacent railway-rails, a fish-plate therefor, of a bonding-conductor located between the fish-plate and the rails, the said bonding-conductor being provided with a catch or detent which prevents its withdrawal from position when the fish-plate is bolted in place.

8. The combination with the ends of adjacent railway-rails and a fish-plate connecting the said ends, of one or more bonding-conductors located between said fish-plate and the rails, and one or more springs for pressing the said bonding-conductor against the rails.

Signed by me at New York city, New York, this 4th day of August, 1899.

CONSTANT F. DE REDON.

Witnesses:

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