

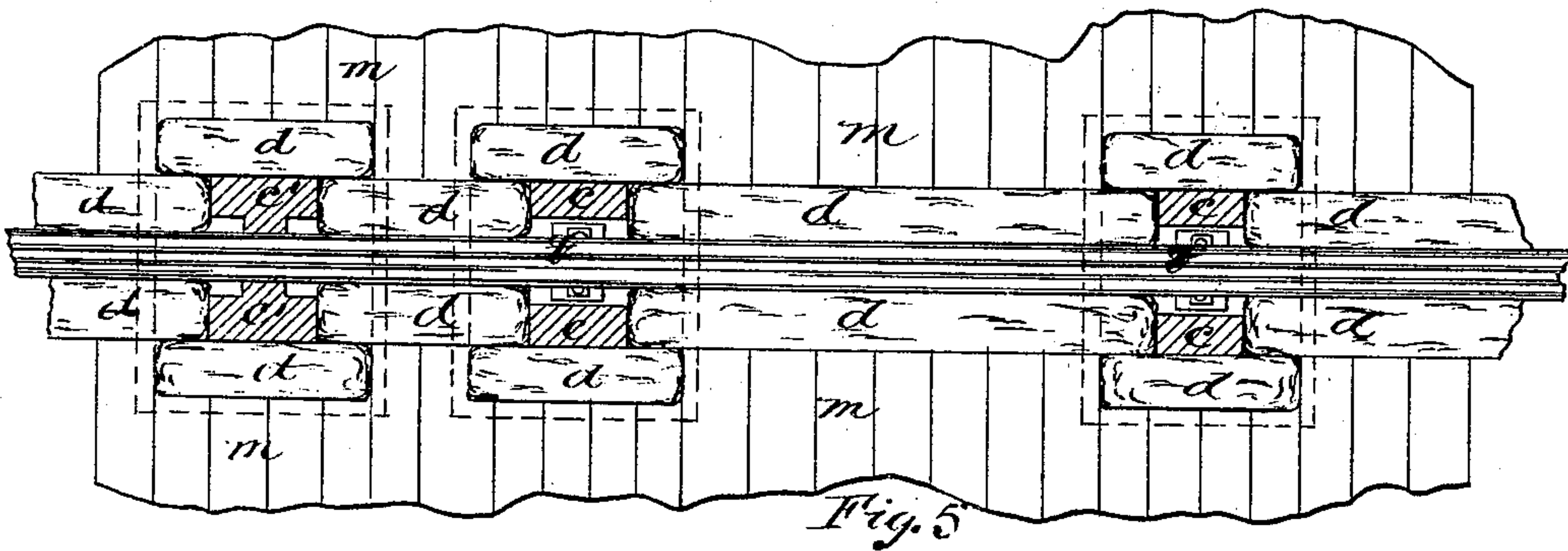
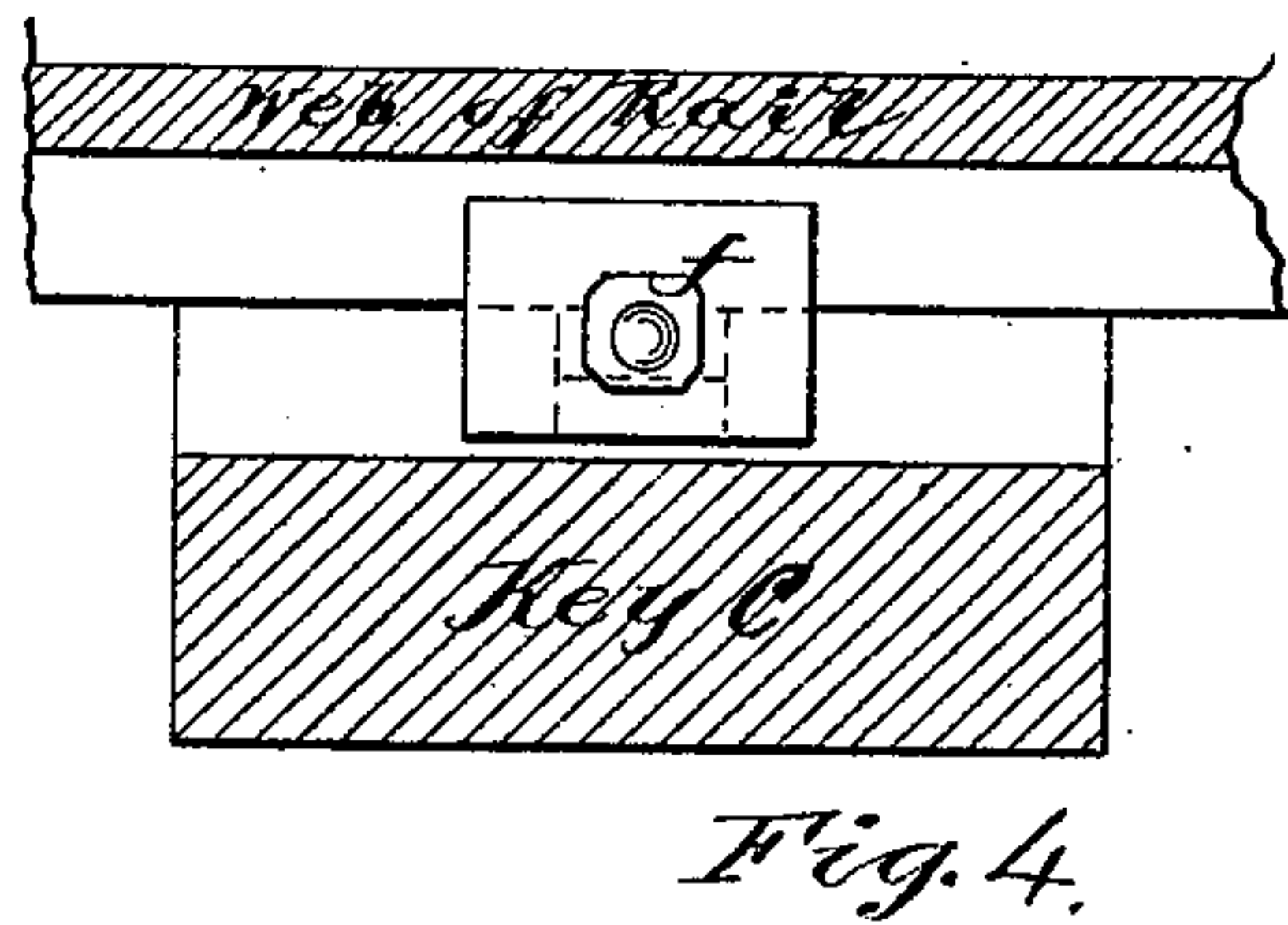
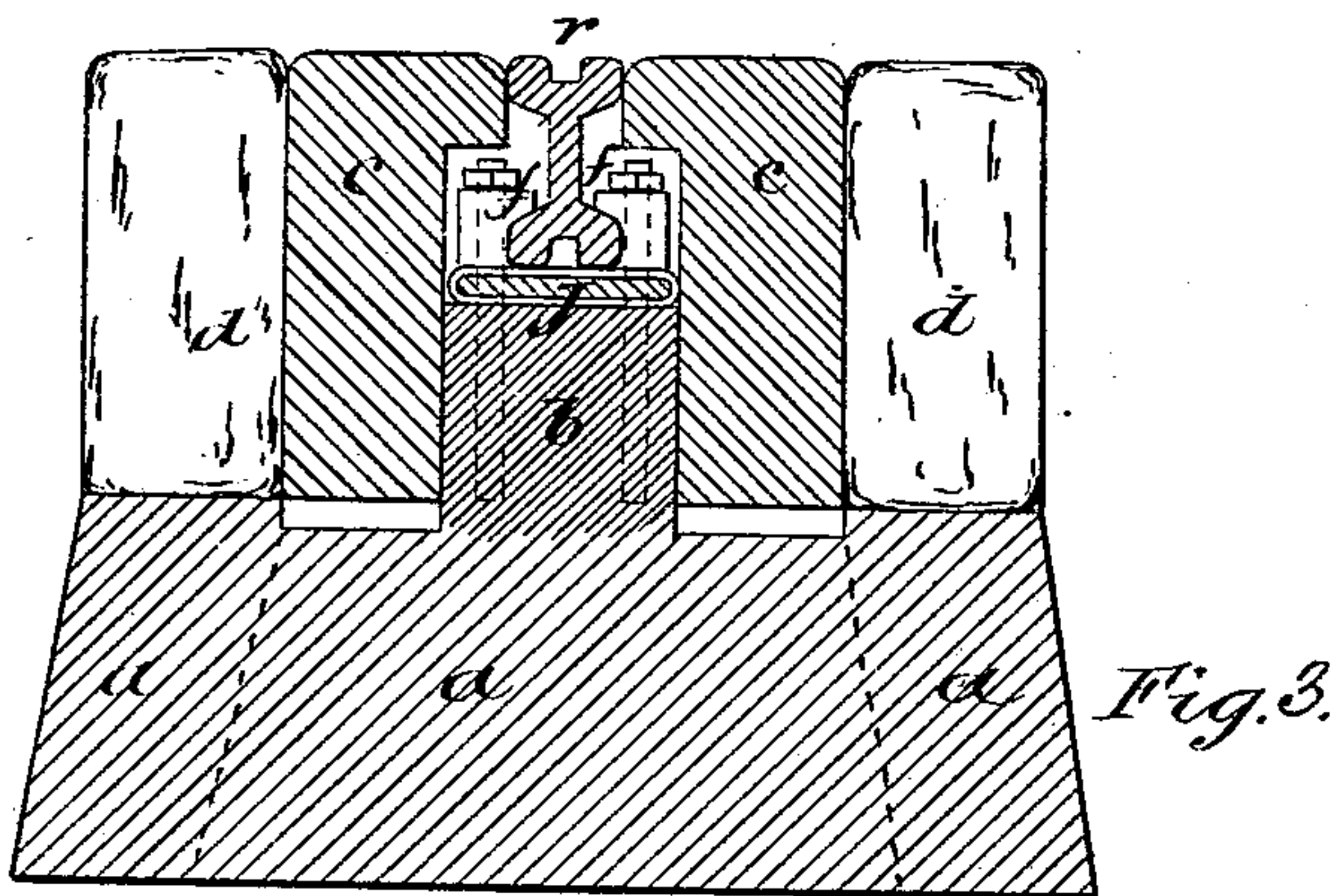
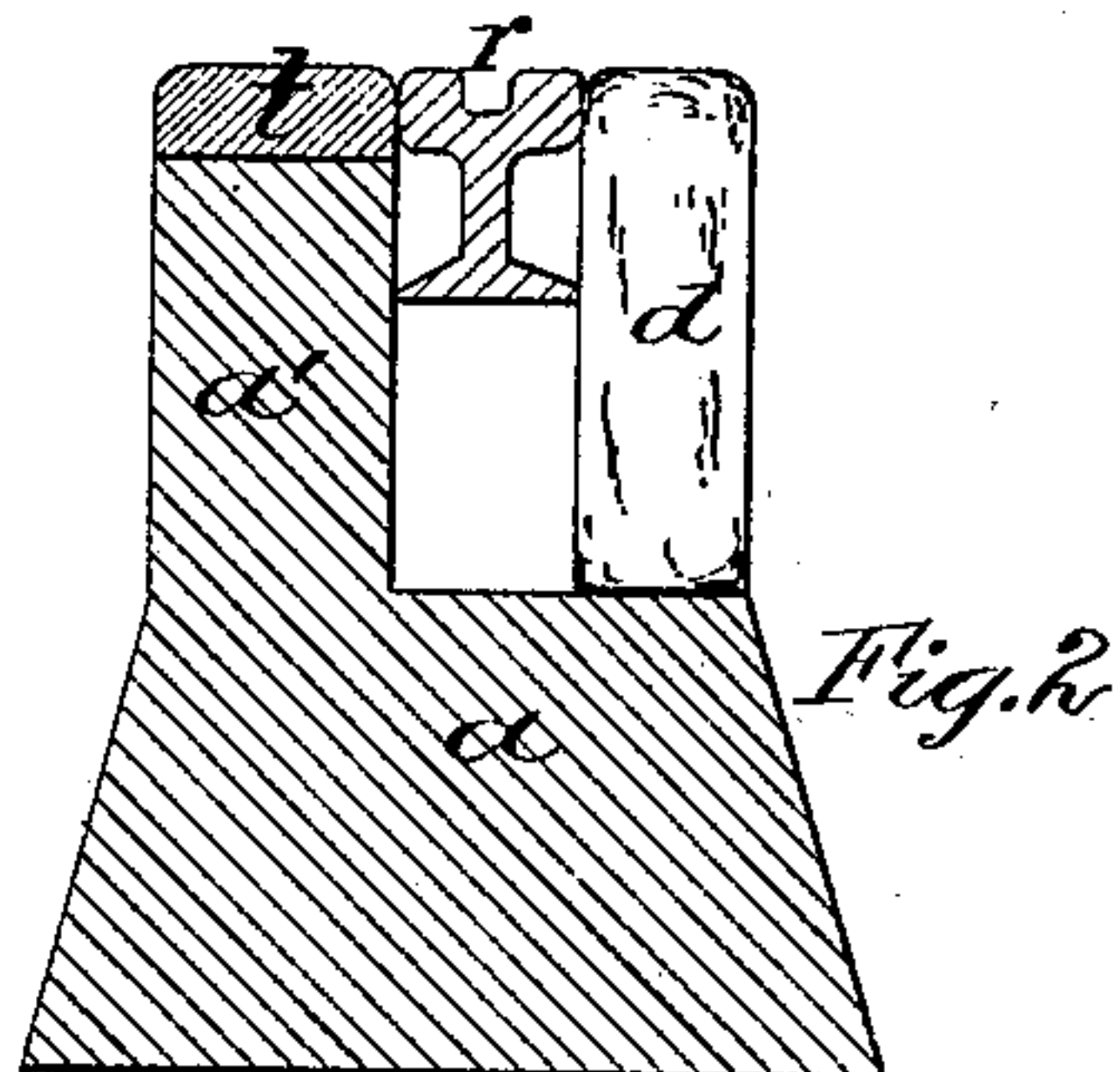
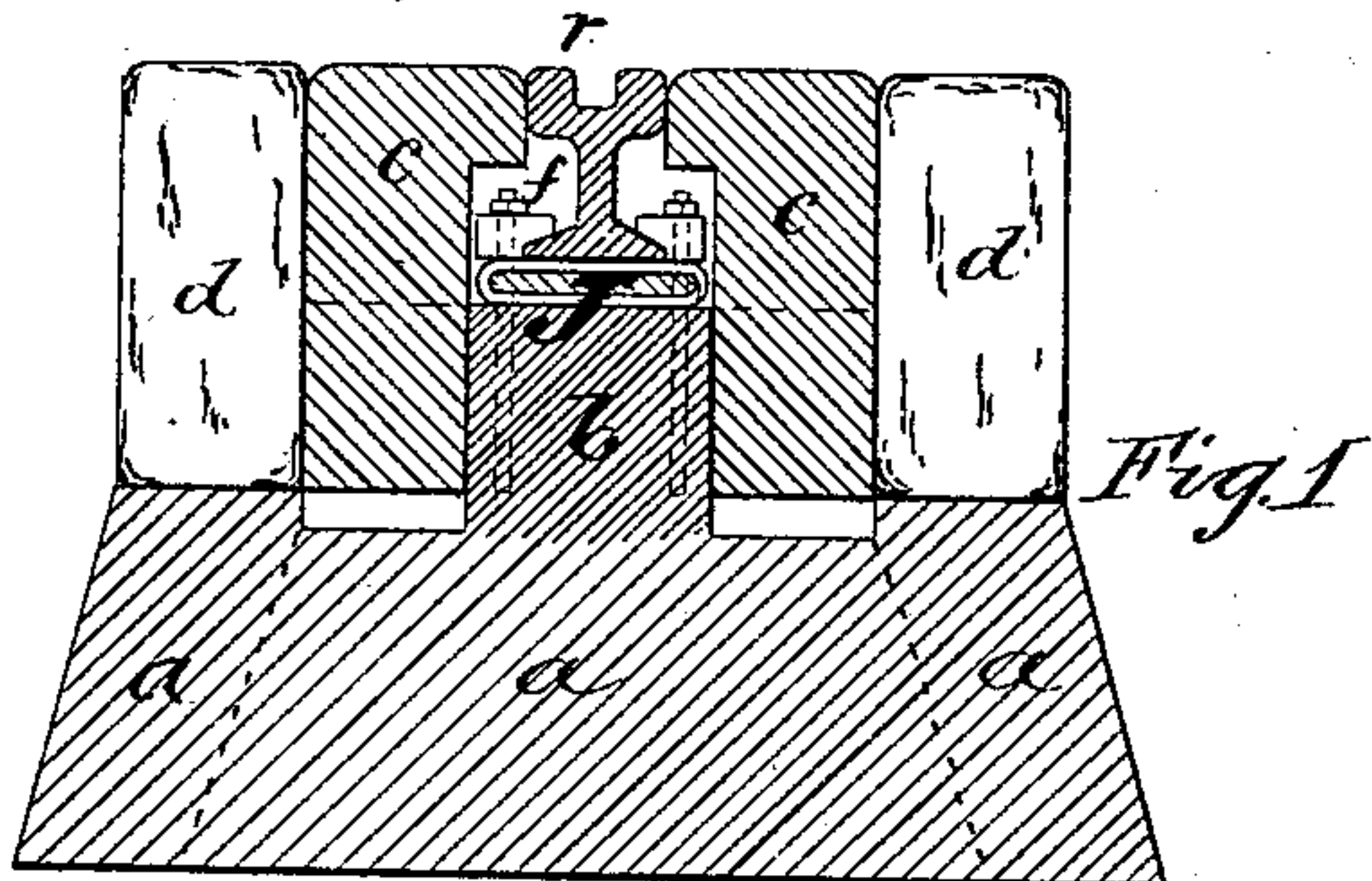
(No Model.)

W. MORRIS.

PERMANENT WAY OF RAILWAYS AND TRAMWAYS.

No. 251,625.

Patented Dec. 27, 1881.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM MORRIS, OF WESTMINSTER CHAMBERS, COUNTY OF MIDDLESEX,
ENGLAND.

PERMANENT WAY OF RAILWAYS AND TRAMWAYS.

SPECIFICATION forming part of Letters Patent No. 251,625, dated December 27, 1881.

Application filed January 21, 1881. (No model.) Patented in England January 8, 1880.

To all whom it may concern:

Be it known that I, WILLIAM MORRIS, a subject of the Queen of Great Britain, resident of 2 Westminster Chambers, in the county of Middlesex, England, have invented certain new and useful Improvements in the Permanent Way of Railways and Tramways, of which the following is a specification, and for which I have obtained a patent in Great Britain, No. 88, bearing date January 8, 1880.

My invention has relation to rail or tram ways; and it consists in constructing the chair or sleeper of cement, concrete, or other equivalent composition which will harden and form an adequate support and foundation for the rail, and in combining with said concrete or composition chair, sleeper, or foundation granite sets to brace and sustain the rails laterally.

My invention also consists in the combination, with the concrete or composition chair or sleeper, of certain peculiar means of fastening the rail in place and providing a coupling or joint connection.

My invention finally consists in certain details of construction and arrangement, as hereinafter described and claimed.

Reference being had to the accompanying drawings, Figure 1 is a section of a cement or concrete chair or sleeper applicable to a flat bottom rail, showing the wooden or iron keys, rail, and bearer, suitable either for a railway or tramway. *a* is the body of the cement or concrete chair or sleeper; *b*, a central elevated portion of the same, which I propose to form of different proportions of cement, sand, and ballast to the portion *a*. *c c* are wood or iron keys, which are placed about one yard apart. *d d* are longitudinal or transverse granite sets. *f f* are dovetail screw-bolts, with nuts and clips to secure the rail to the chair or sleeper. *r* is the rail, which is shown resting on a bent plate of steel filled with wood to give elasticity to the rail; or timber only may be used.

Fig. 2 is a similar section to Fig. 1, intermediate between two main chairs or sleepers, showing the longitudinal set *d*, the concrete chair continued, as shown at *a'*, to the surface of the road, in lieu of granite, if so desired, with a neat cement capping, (indicated by the letter *t*.)

Fig. 3 is similar to sections Figs. 1 and 2; but the parts shown are arranged for the use of a double-headed grooved rail.

Fig. 4 is an enlarged plan view of portion of Fig. 3, showing the web of the rail, dovetail bolt, nut, and clip to secure rail in position; also key *e*.

Fig. 5 is a general plan view. The letters refer to the same parts in this as in the other figures. *d d* are longitudinal granite sets; *m*, granite sets laid transverse or at right angles to the rail, and they may, if desired, be laid close up to the rail. *c c* are the wood or iron keys, which are removable when it is desired or required to get at the dovetail bolts and clips. *c' c'* are also keys, removable when desired to disconnect a fish-joint. *q* are fish-plates and bolts similar to those in general use for railways, or they may be made of the form to be hereinafter described.

Having, by reference to the accompanying drawings, thus far described the nature of my said invention and in what manner the same is to be performed, I would here remark that by the use of my invention I am enabled to construct cement chairs and sleepers for the permanent way of railways and tramways, and though I purpose to make them of Portland cement, yet I can make the said chairs and sleepers (longitudinal or otherwise) of any kind of cement, or of a combination of cements, or of one kind of cement combined with a combination of cements. Further, I can make the said chairs and sleepers of any kind of cement, or combination of cements, combined with sand or sand and ballast, and any other suitable materials. I can also make the said chairs and sleepers of any combination of cements combined with sand, sand and ballast, and any other suitable materials. I can make the said chairs and sleepers having some portions formed or made of what is technically known as "neat cement," while other portions of the same chair or sleeper may be of cement combined with a certain proportion of sand or sand and ballast, and any other suitable materials. Again, I can make one portion of the chair or sleeper of cement combined with a certain proportion of sand or sand and ballast, or any other suitable materials, while other

parts of the same chair or sleeper may be made of cement combined with a different proportion of sand, sand and ballast, or any other suitable materials, the various proportions of cement and sand and ballast used in the making of my chairs and sleepers being determined as circumstances may require. I can also make one portion of the said chairs and sleepers of a combination of cements; and other portions of the same chair or sleeper may be made of a combination of cements combined with sand or sand and ballast, and any other suitable materials.

To simplify the description, I propose, where cement or a combination of cements is used in combination with sand, sand and ballast, or any other suitable materials in the construction of my chairs and sleepers, to call them "concrete" chairs and sleepers, and when made entirely of cement or of a combination of cements I purpose to call them "cement" chairs and sleepers. I can also use in my invention any kind of asphalt in the construction of the said cement and concrete chairs and sleepers. I purpose to make or cast the said cement and concrete chairs and sleepers in suitable molds; or I can make them partly in molds and partly without, or *in situ*, with the aid of profiles and molds, as circumstances may determine. I

can also make my chairs and the sleepers of brick-work and concrete.

What I claim as my invention is as follows:

1. A railway or tramway chair or sleeper, *a*, constructed of cement, concrete, or composition, and provided with the central elevation or ridge, *b*, to support the rail, substantially as shown and described.

2. The combination, with the concrete, cement, or composition chair or sleeper and the rail, of the bearer *J*, substantially as shown and described.

3. The combination, with the rails *r*, granite sets *d*, and chair or sleeper, of the keys *c*, substantially as shown and described.

4. The combination, with the concrete, cement, or composition chair or sleeper having an elevated ridge of such material, of the stone capping *t*, substantially as shown and described.

The above specification signed by me this 10th day of December, 1880.

WILLIAM MORRIS.

Witnesses:

ROBERT H. I. COMERFORD,

JAMES JOHN LEWRY,

Clerks to Messrs. Comerford & Co.