

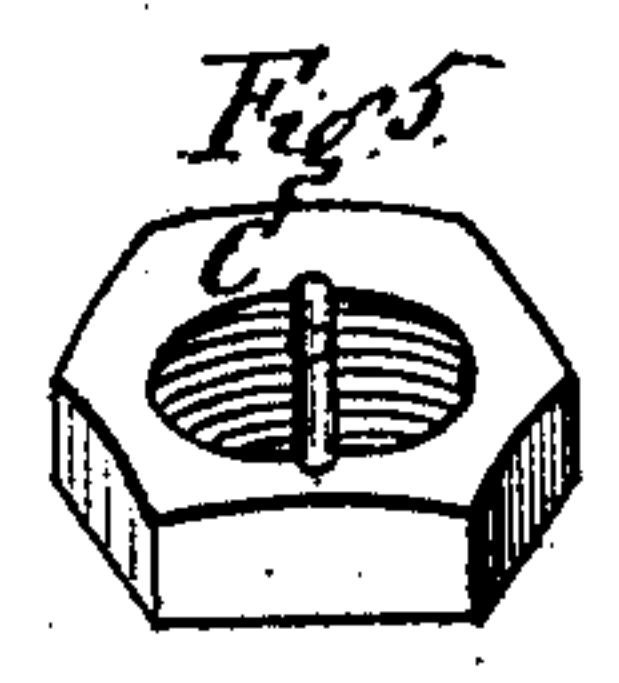
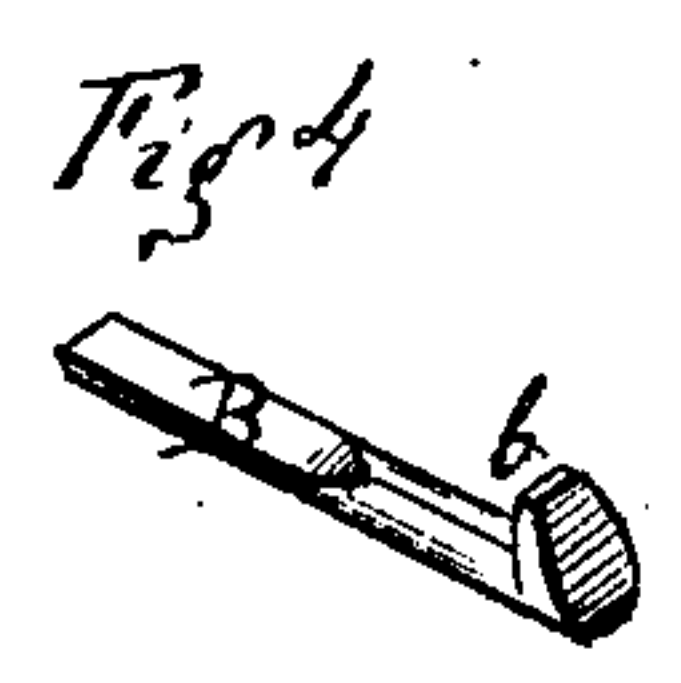
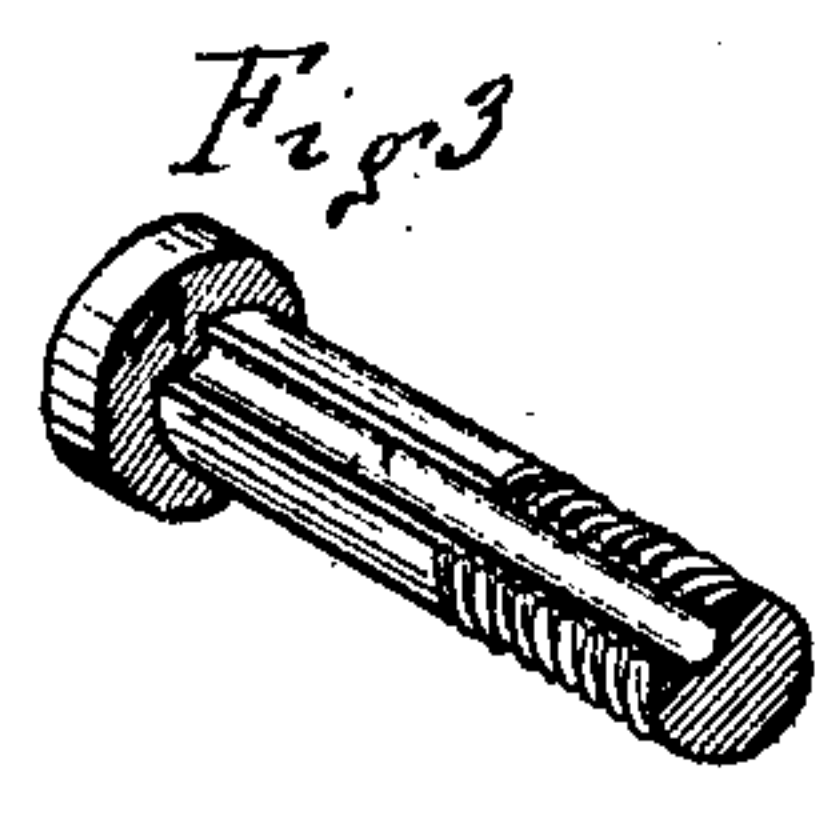
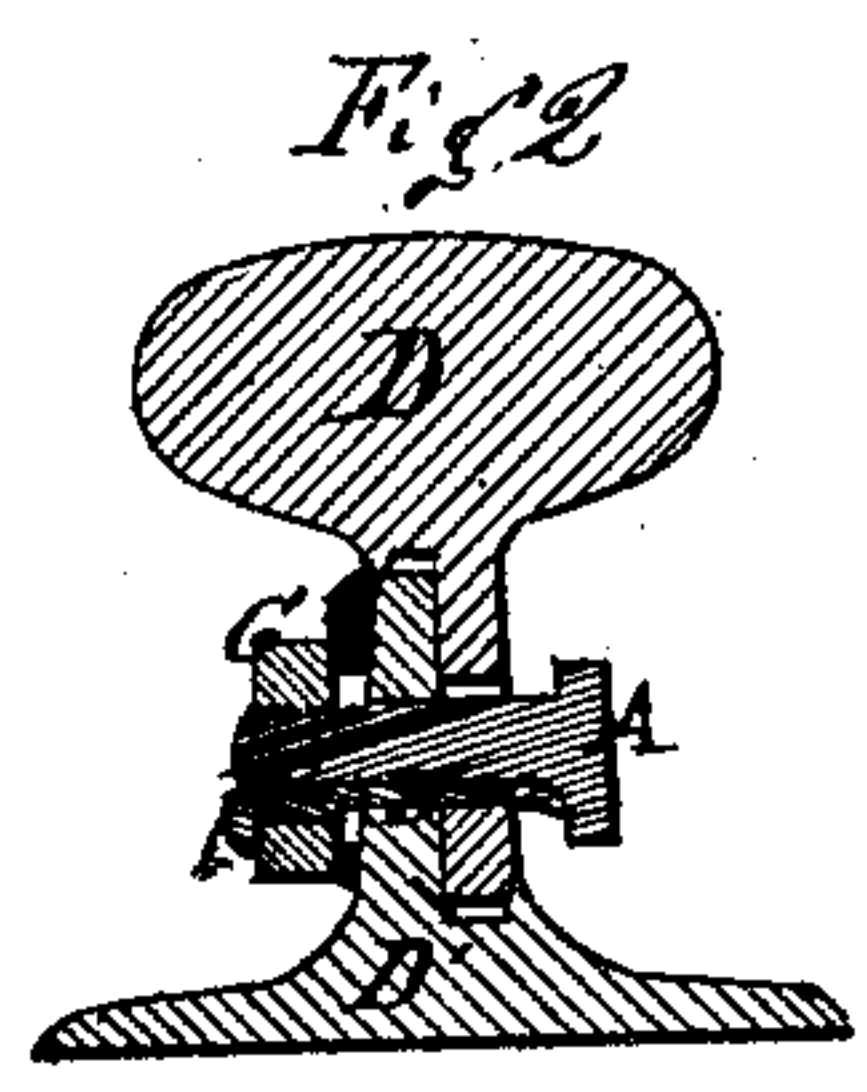
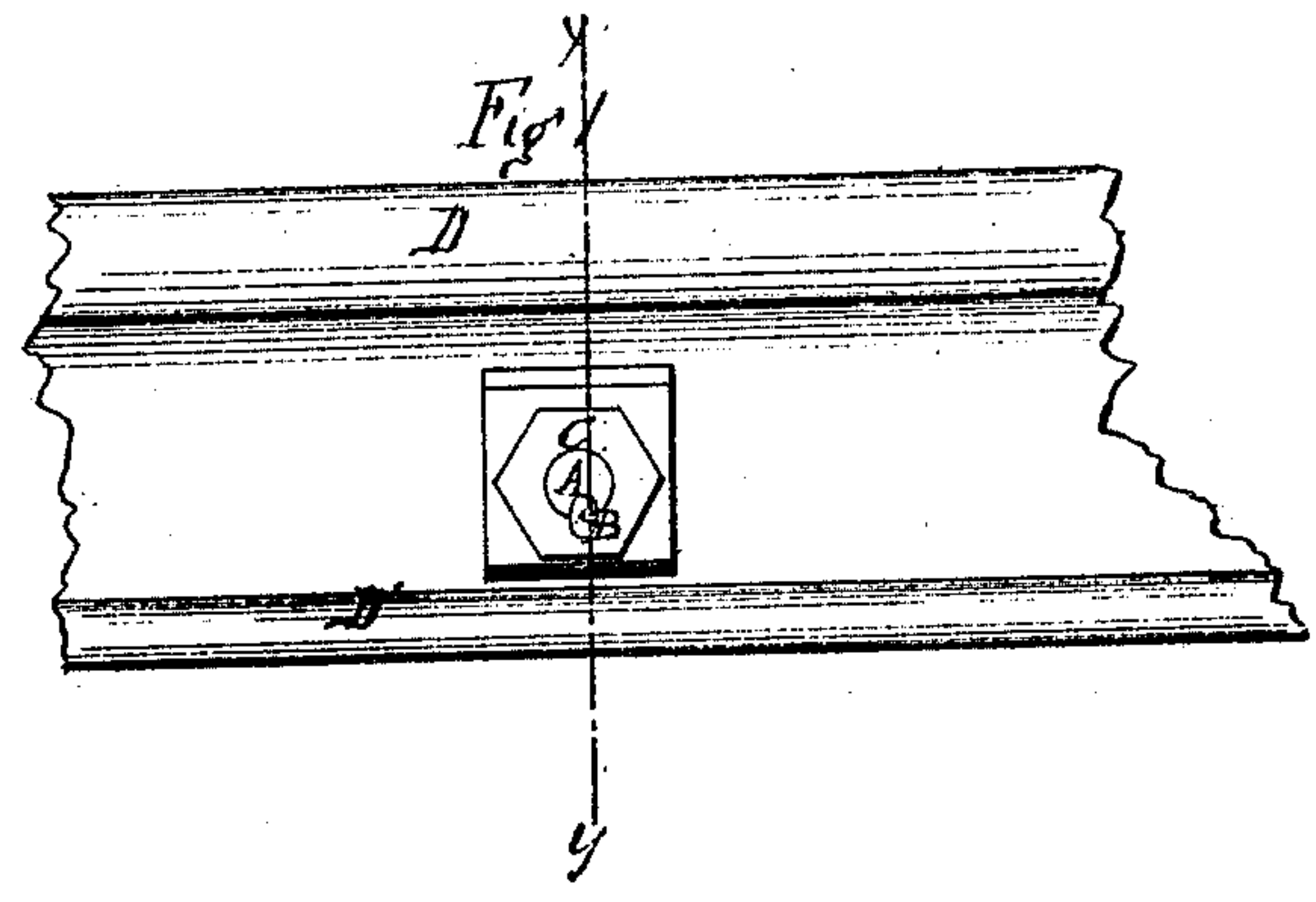
2. Sheets, Sheet 1.

E. R. Shepard,

Rail Joint.

No. 94,783.

Patented Sept. 14, 1869.



Witnesses
N. B. Smith
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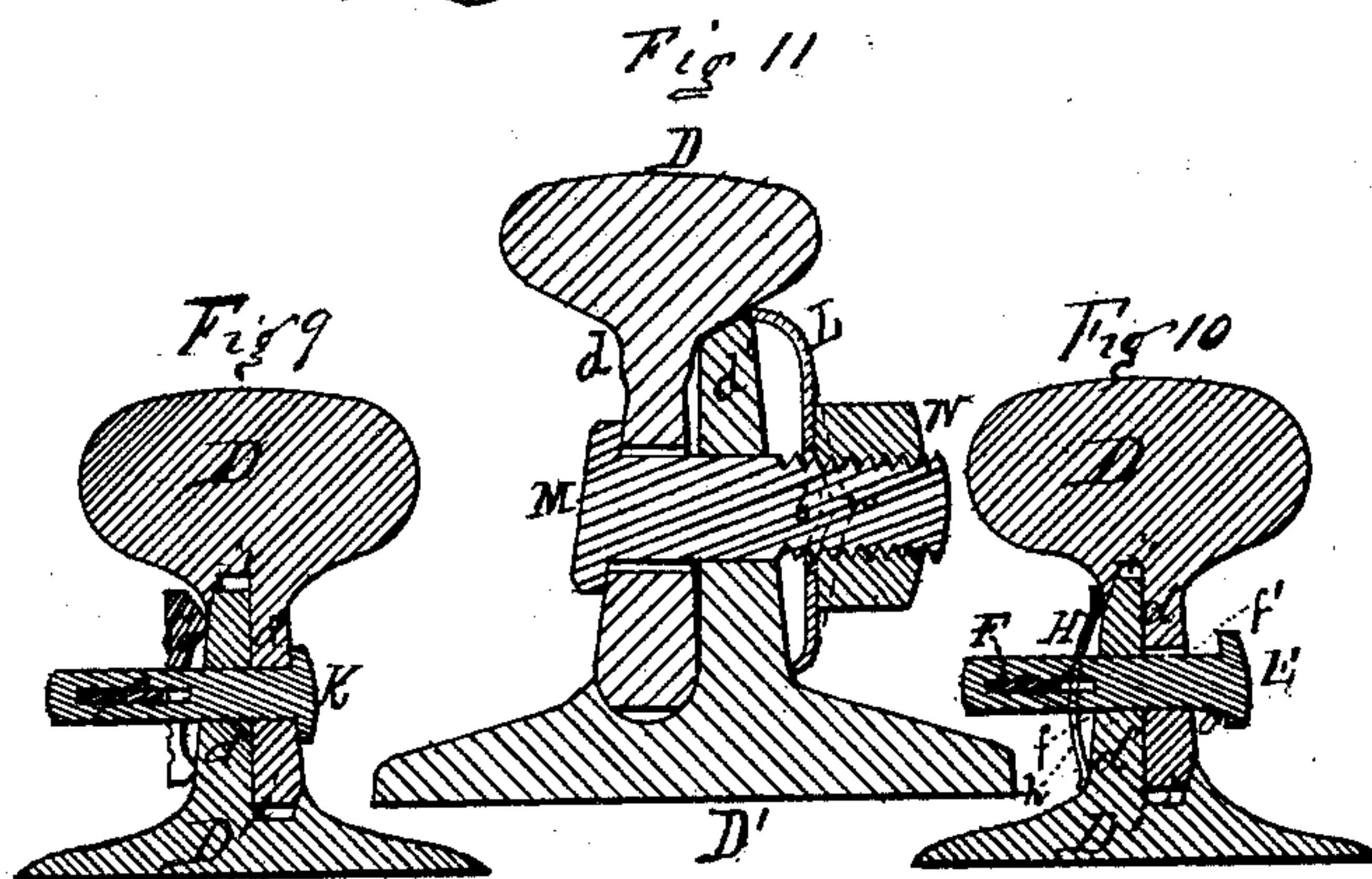
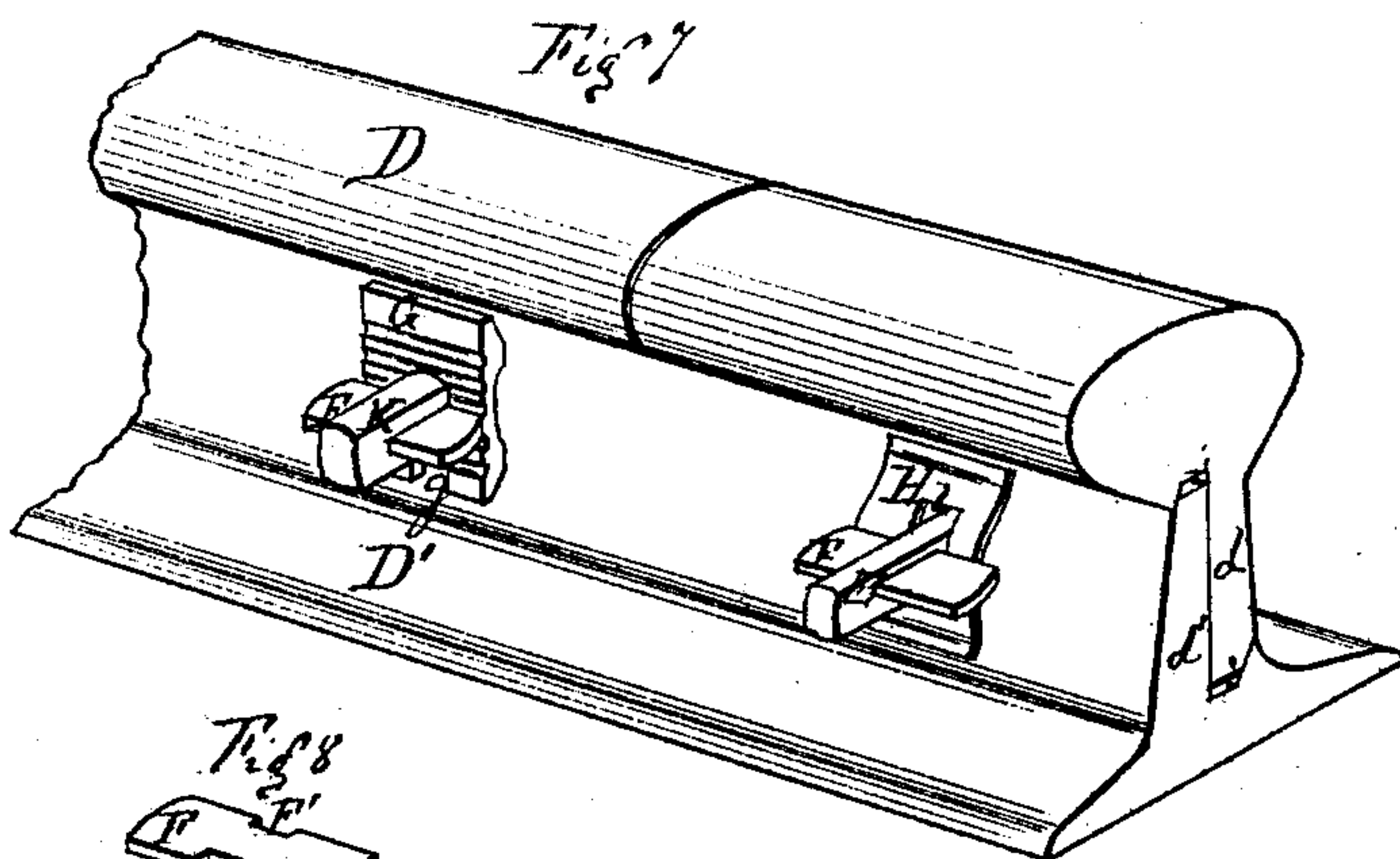
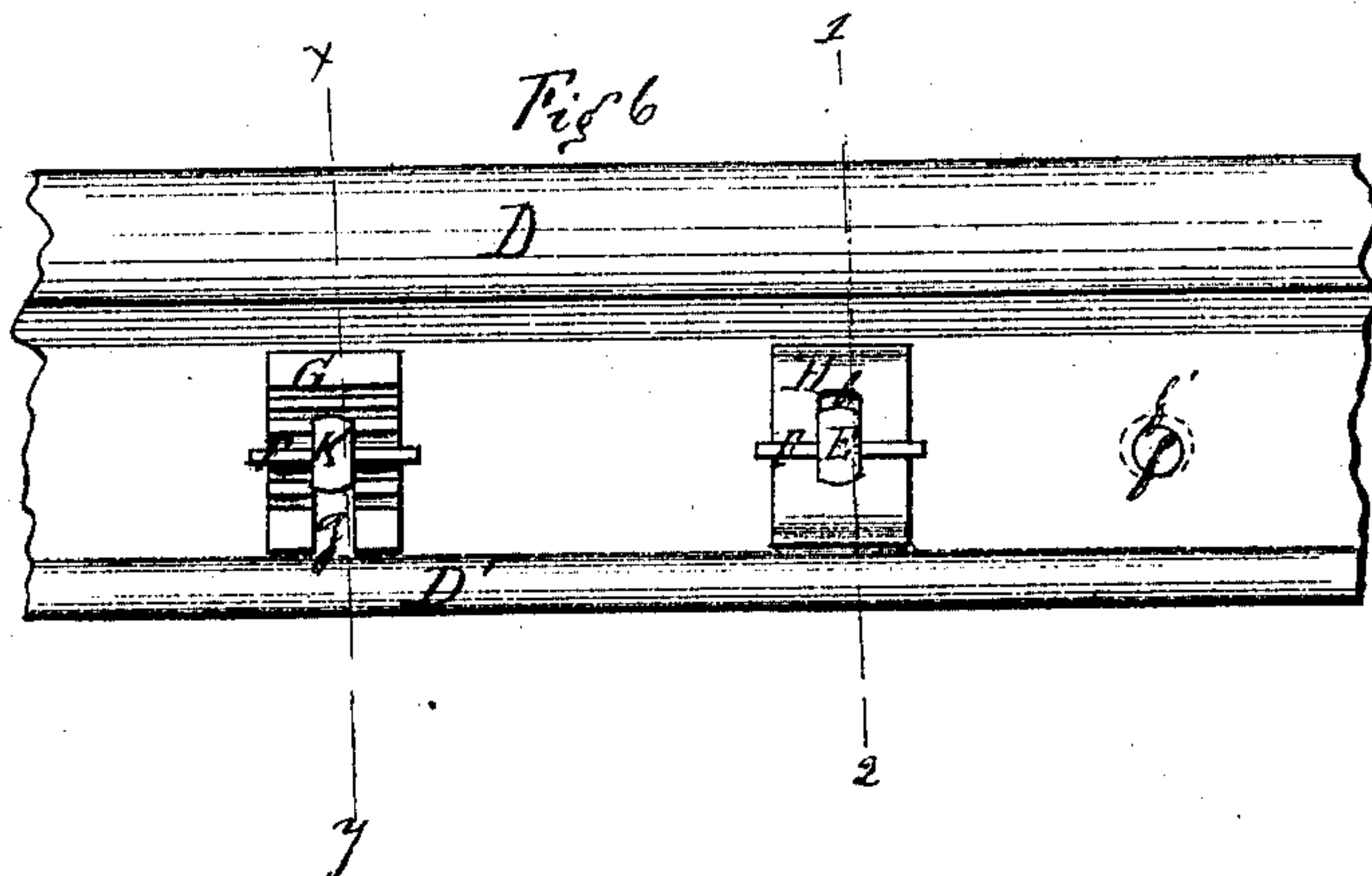
E. R. Shepard,

2. Sheets, Sheet 2

Rail Joint.

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Witnesses
A. R. Smith
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United States Patent Office.

EDWIN R. SHEPARD, OF SCRANTON, PENNSYLVANIA.

Letters Patent No. 94,783, dated September 14, 1869; antedated August 26, 1869.

IMPROVED RAILWAY-RAIL FASTENING.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, EDWIN R. SHEPARD, of the city of Scranton, in the county of Luzerne, and State of Pennsylvania, have invented certain Improvements in Fastening-Devices for Compound Railroad-Rails, Railroad-Chairs, and for such other purposes as they may be adapted to, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a rail, with the lock-nut applied;

Figure 2 is a transverse sectional view of the same, through the line *x y*;

Figure 3 represents the bolt;

Figure 4 is the key used for locking the nut;

Figure 5 shows the nut after it has been locked;

Figure 6 is a side elevation of a rail with the other devices applied;

Figure 7 is a perspective view of the same;

Figure 8 represents the gib;

Figure 9 is a transverse section of the same figure, through the line *x y*;

Figure 10 is a transverse section of same figure, through the line 1 2; and

Figure 11 is a sectional view of one of the devices.

Similar letters of reference indicate similar parts in all of the figures.

My invention is designed to prevent any motion, either lateral or vertical, between the parts of a compound railroad-rail, or between the ordinary rails and the chairs, or other means employed to confine in proper position the ends of said rails, except, however, that provision has been made for a limited but certain depression of the head of a compound rail, relative to its base, as I will now proceed to explain.

Experience has proven that a rail suffers but little wear from the wheels of a heavily-laden car being rolled rapidly upon it, so long as the rail itself remains firmly seated upon its support or bed, because the pressure is distributed gradually throughout both the rail and bed; but if, when the rail is loose, and sprung up at the end, as it frequently is from various causes, a wheel is rolled quickly upon it, it (the rail) is forced down upon its seat with a concussion, and is soon pounded out, for it occupies the same relation to the wheel and the chair, or, if a compound rail, to the wheel and the lower section or base of the rail, that a piece of iron does to the hammer and anvil.

Now, to avoid this result, it is necessary to prevent the recoil of the head of the rail after the wheel has left it. This I accomplish by the following device:

In figs. 7 and 10 *D* is the head of the rail, provided with a rib, *d*; *D'* is the base of the rail, having a rib, *d'*.

Both head and base are provided with a groove, the pitch of which corresponds with the bevelled edges of

the ribs *d d'*, as shown at *i*. The width of the grooves relative to that of the bevelled edge of the ribs, is such that when the rails are first laid, the ribs cannot touch the bottom of the grooves, but as the parts become worn, and perfectly seated to each other, they (the ribs) can settle further down into said grooves.

Through the rib *d* are perforations or slots *f*, fig. 6, either round or square, and through the rib *d'* are also slots *f'*, elongated horizontally; said slots *f'* have also a greater diameter vertically than the slots *f*.

E is a key or bolt, provided at one end with a slot, *e*, and at the other end with an incline, *e'*.

F is a gib, recessed on both sides, as at *F'* and *F''*, fig. 8.

These recesses should be of different depths, to allow of different adjustments.

H is an elliptic spring, slotted at or near its centre, at *h*.

In applying this device the rails should be laid tightly together, care having been taken to punch the slots *f* and *f'*, so that when the rail is laid the bottoms of both slots shall be nearly on the same horizontal line. It is advisable, however, that the slots in the rib *d* should be a little below those in the rib *d'*, so that in case the parts of the rail do not fit perfectly we can still insert the bolts, then insert the bolt or key *E* from the outside of the rib *d*. This key should fit closely in the slot *f*, which will allow said key to be inserted until the incline *e'* reaches or barely enters the slot *f'*. Next slip the elliptic spring *H* over the key or bolt *E*, and put in the gib *F*.

It will be readily seen, that when the head *D* is forced downward relatively to the base *D'*, the key *E* will be drawn through the slots *f* and *f'*, by means of the spring *H* and gib *F*, the incline *e'* following up, so to speak, the depression of the head, effectually preventing its recoil or any looseness vertically between the head and base.

To secure the parts against lateral motion, I have invented the following device:

K is a bolt of the ordinary construction, slotted for the insertion of the gib *F*.

G is a washer, made wedging in form.

g is a gain in said washer, of sufficient width to admit the bolt *K*.

The washer *G* is recessed or concaved upon its inner side, and flat, or what is better, corrugated upon its outer side, that is, upon the side toward the gib and from the rail.

In using this washer, I first thrust the bolt *K* through the slots in the ribs of the rails, and then put the gib *F* through the slot in the bolt, and drive the wedge-washer *G* tightly behind the gib.

Among the advantages possessed by this washer is the certainty of its operation. It is slightly elastic, on

account of the recess upon its inner face, and will, therefore, yield enough, when being driven down, to allow the corrugations upon its outer face to pass by the gib, while these same corrugations will effectually prevent its return, and the consequent loosening of bolt-work, which ordinarily results from a constant jarring.

Another important advantage gained in this construction is the facility with which it may be tightened up after the parts have become loose from wear. A man, with a set-bar in one hand and a hammer in the other, can drive them down to their places almost as fast as he can walk along the track.

For the purpose of still further securing the parts against lateral motion, I have invented a lock-nut, as follows: (See figs. 1 to 5.)

A is the bolt, provided with a groove or key-seat, *a*, extending its entire length. The thread is cut in any well-known manner.

B is a key, its under surface conforming to the seat *a*. The upper side of this key is in the form of a rib or feather, *b*. This feather should, however, extend only part of the length of the key, say about far enough to reach through the nut; the remaining portion of the key should barely fill the groove *a*.

The thickness of this feather is immaterial, but for convenience, it should be about thick enough to extend through the thread of the nut when applied to the bolt.

The nut C is made of any desired shape, and provided with the ordinary thread.

In locking this nut upon a bolt, after it has been screwed on the desired distance, I take a V-shaped drift, and cut a groove or key-seat through the thread on the inside of the nut, as seen at *c*, fig. 5, cutting this seat exactly opposite the seat *a* in the bolt, and drive in the key B, which will hold the bolt and nut firmly in their respective positions.

This device is very cheap, because the key can be made by machinery about as cheap as common nails, and the groove can be rolled in the bolt at the rolling-mill without incurring additional expense. It is also very convenient, inasmuch as the nut can be held or locked at any point of its rotation about the bolt.

Another important point is this: the groove *a* renders the bolt practically flat on one side, thus adapting it to be held from turning around while the nut is being screwed on, by any one of the parts through

which it (the bolt) passes; this is many times very convenient, and dispenses with the use of button-headed, or even the ordinary square heads, enabling me to use in their stead round rivet-headed bolts, which are much more easily and cheaply made, owing to the nature and condition of the parts to be bolted together.

It is sometimes desirable to hold the bolt by means of the part next to the nut. This can be done with my bolt without altering the shape of the rod from which it is made, either to accomplish that purpose, nor yet to adapt it for cutting the thread upon it, as would be necessary with a square bolt.

Another feature in my invention consists of the elliptic spring L, fig. 11, provided with a slot, to receive the bolt M, and also with a rib, *l*, extending across its face, on a line intersecting the centre of said slot.

The bolt M is of any usual or desired form, and has the ordinary thread or screw cut on the end.

N is a nut of any usual construction, except that it has a groove, *n*, or a series of grooves, across its inner face, each on a line intersecting the centre of the hole in which the thread is cut, and of a size and form corresponding to the size and form of the rib *l* on the spring.

It will be apparent, that whenever the nut shall have been screwed down, so as to hug the spring L, the rib *l* will snap into the groove *n*, and effectually prevent the said nut from backing off.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The elliptic spring H, in combination with the key-bolt and gib.

2. The forked wedge-washer, whether corrugated upon one face, and concaved upon the other, or flat upon one or both of its faces, and operating substantially as set forth.

3. The circular bolt A, provided upon one side with a flat or grooved key-seat extending the entire length of said bolt, substantially as set forth.

4. In combination with a compound rail, the elliptic spring L, bolt M, and nut N.

EDWIN R. SHEPARD.

Witnesses:

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HOMER CLUTE.