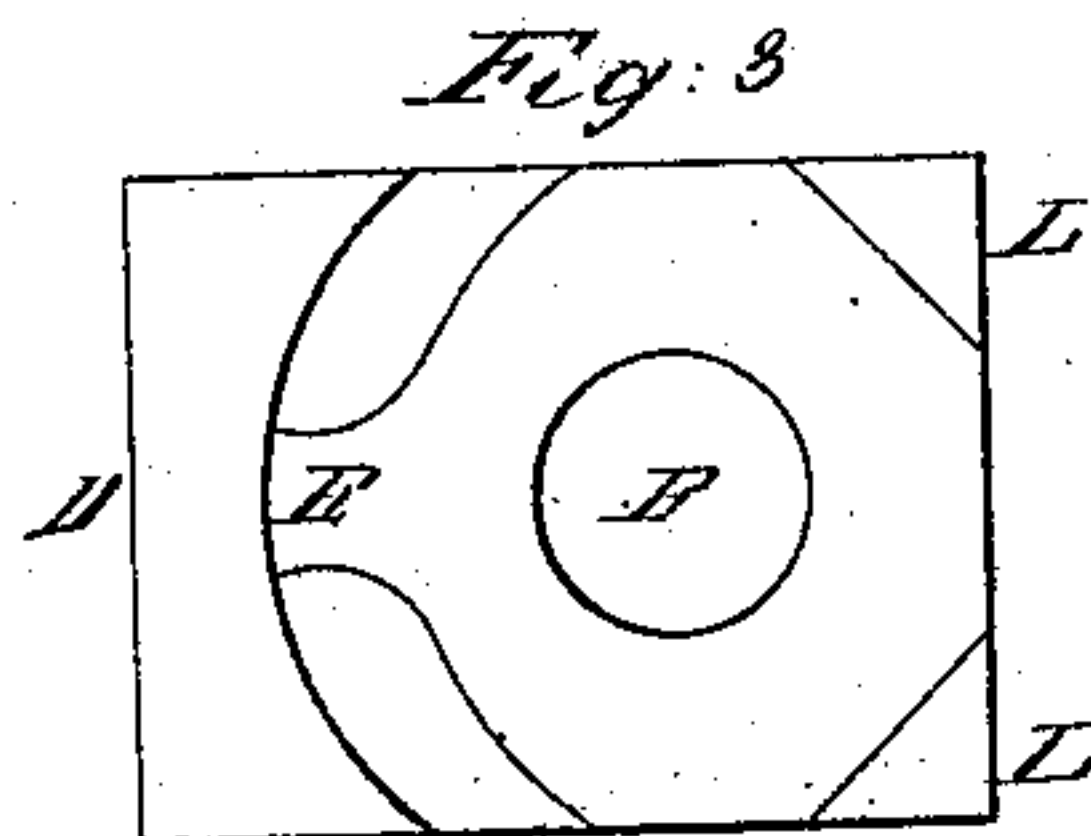
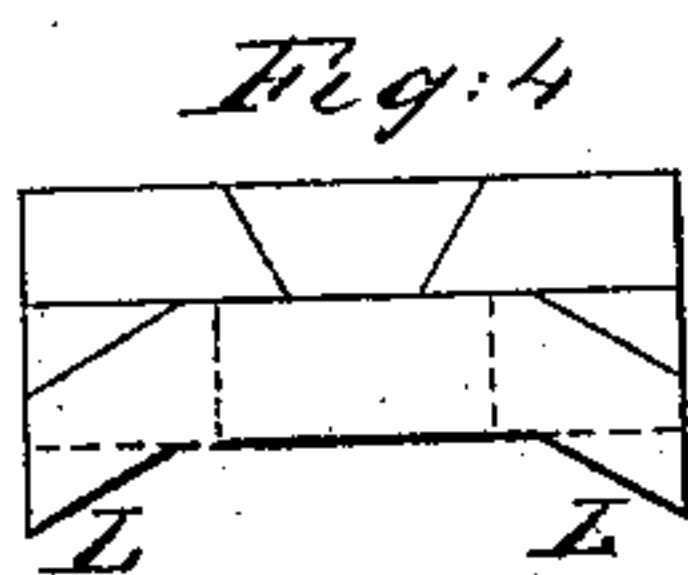
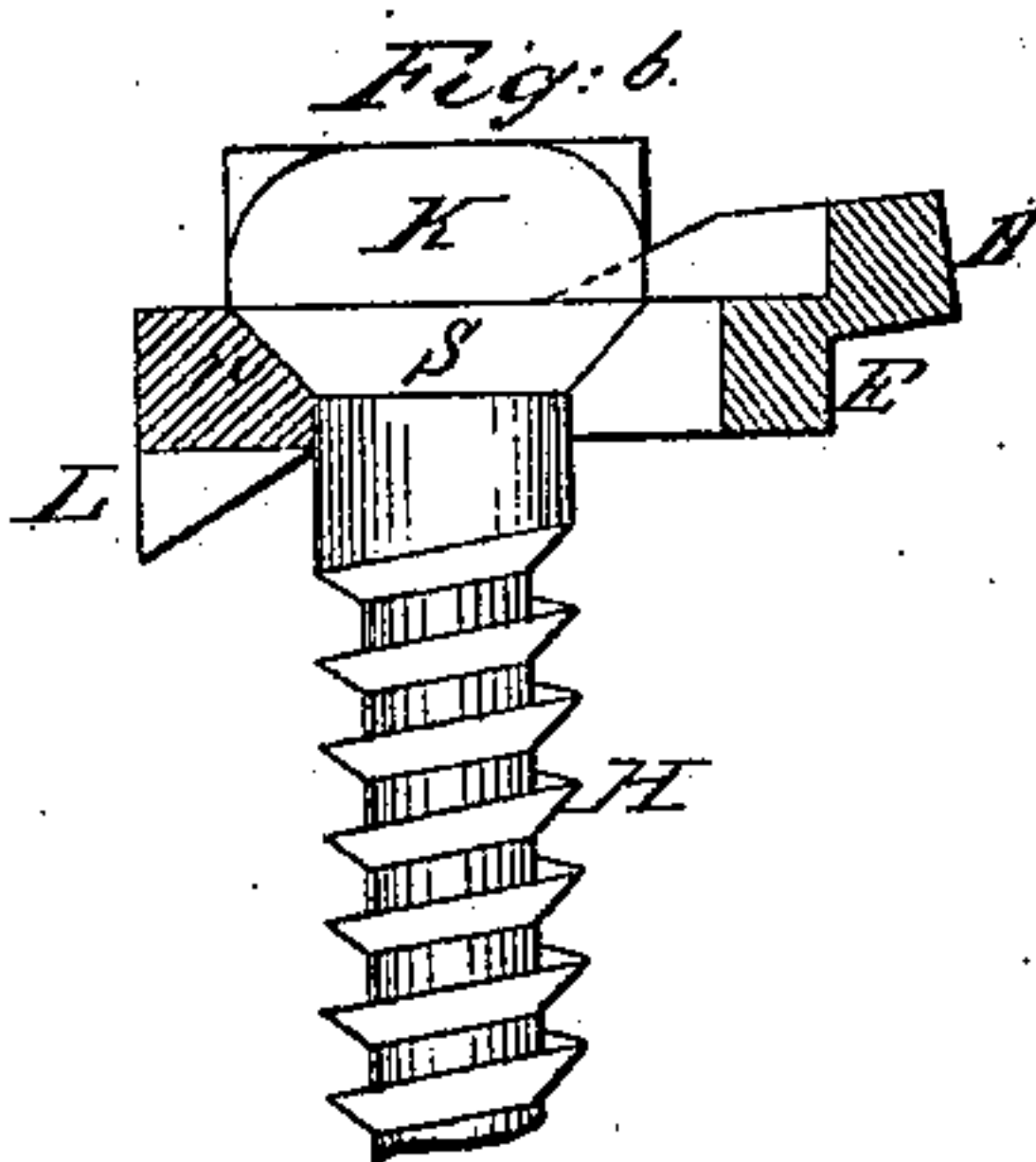
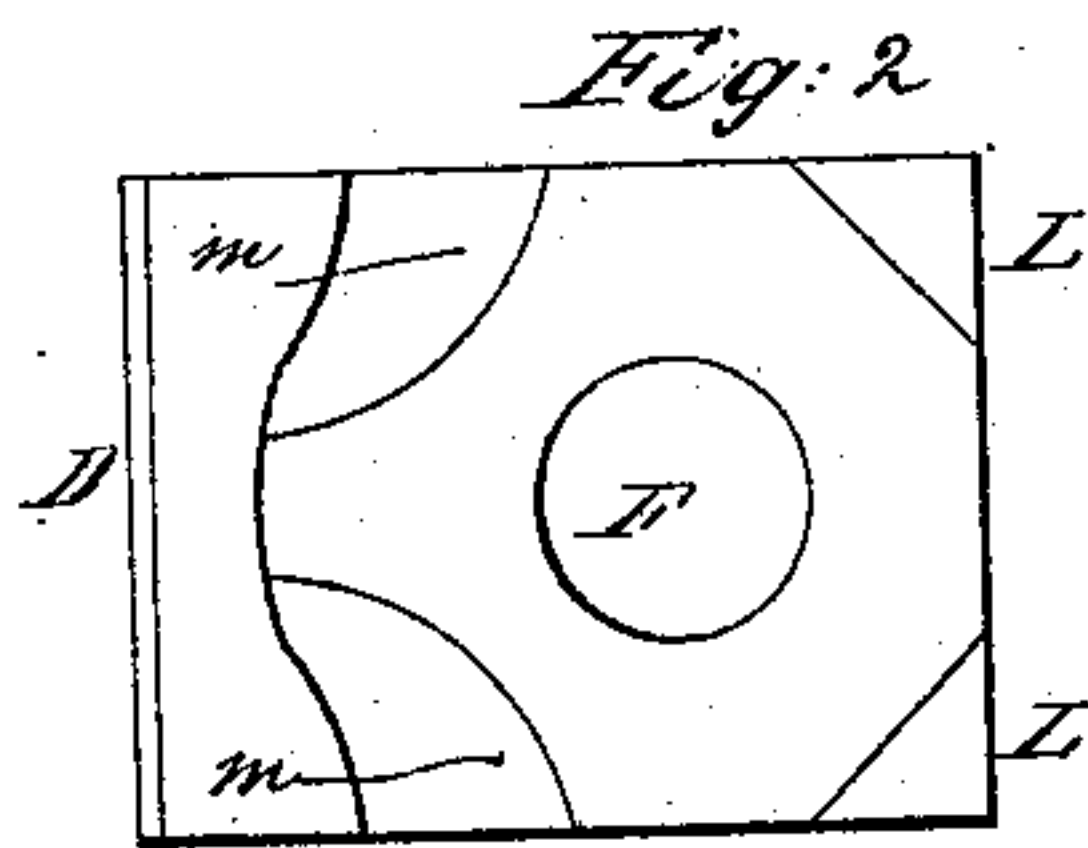
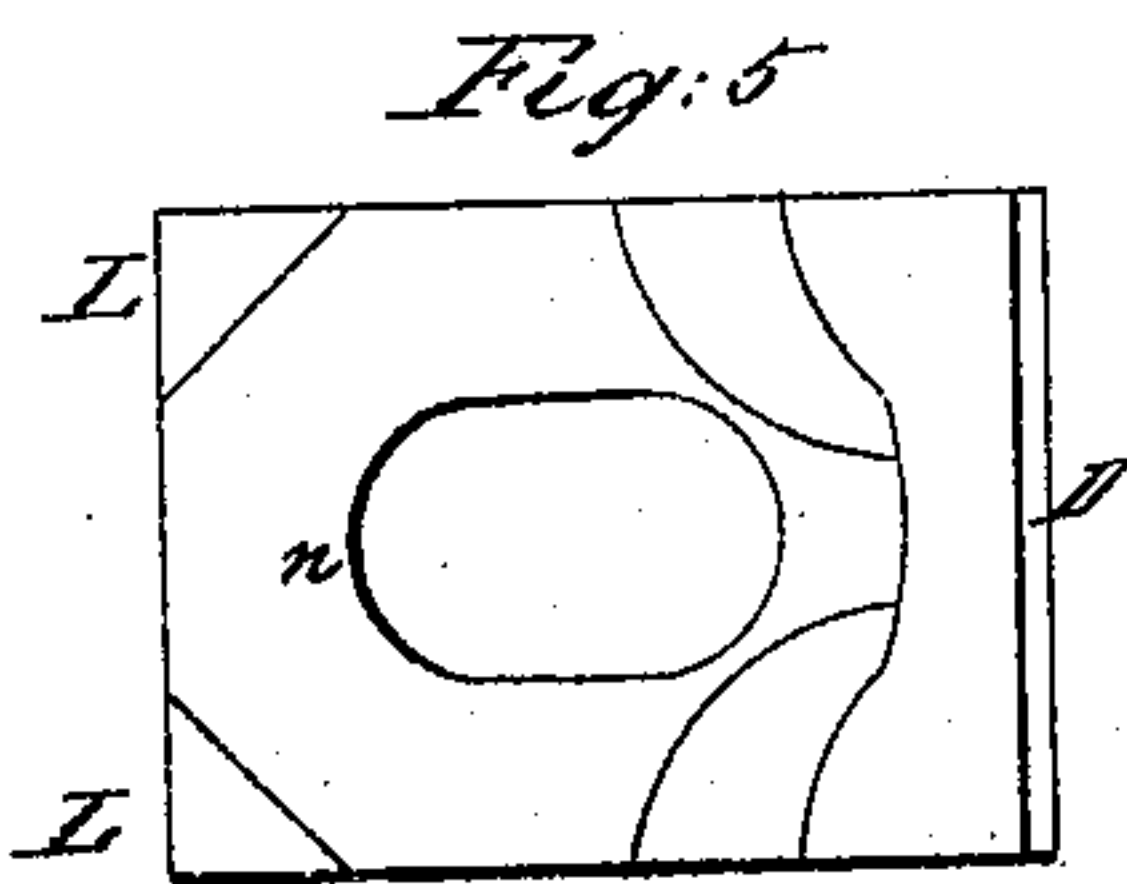
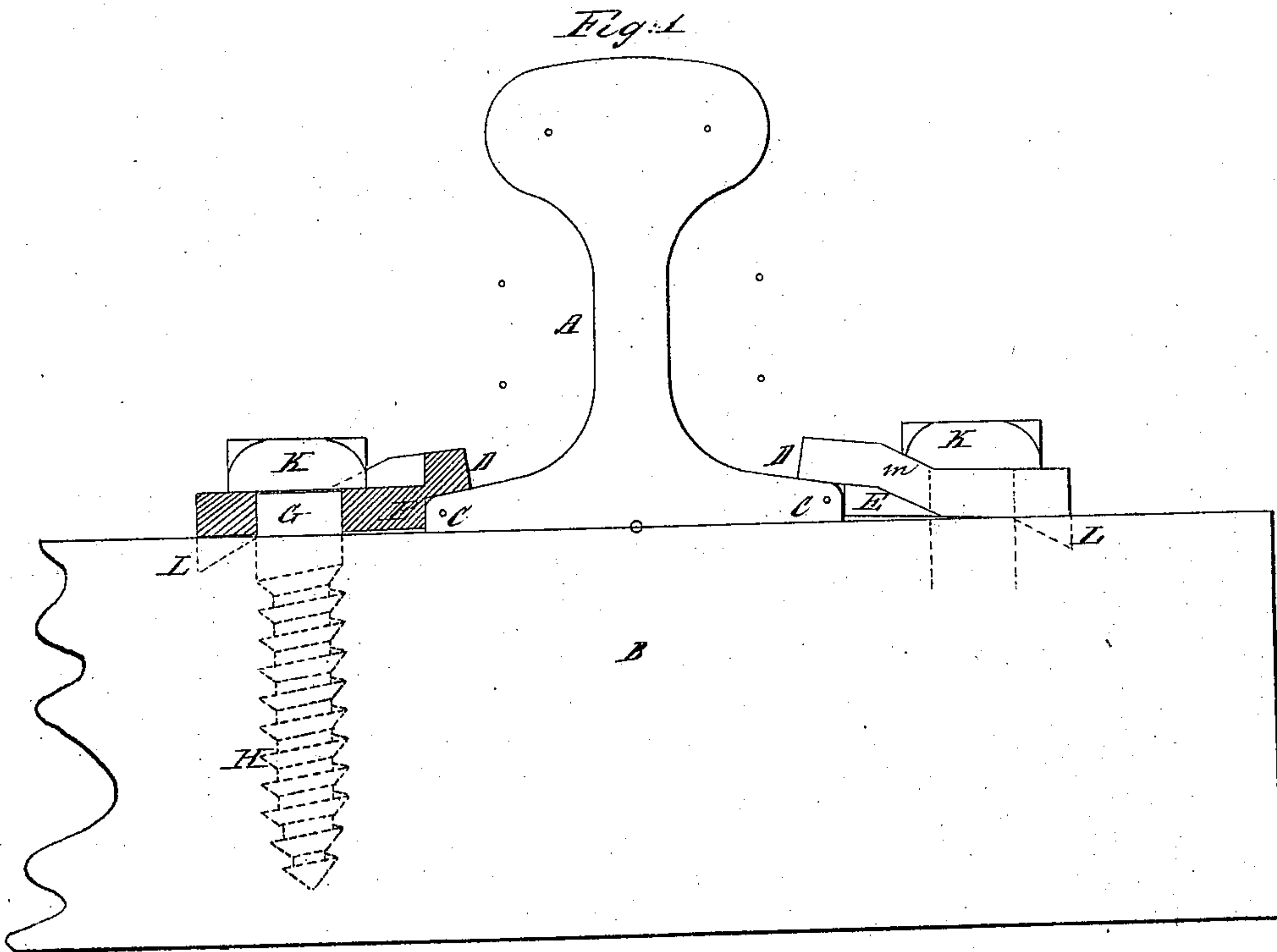


J. Cochrane.

Railroad Track Fastening.

N^o 64,843.

Patented May 21, 1867.



Witnesses

John Smith
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United States Patent Office.

JOHN COCHRANE, OF WALL TOWNSHIP, NEW JERSEY.

Letters Patent No. 64,843, dated May 21, 1867; antedated May 13, 1867.

IMPROVED RAILROAD 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, JOHN COCHRANE, of the township of Wall, county of Monmouth, and State of New Jersey, have invented a new and improved Fastening for Securing Railroad Rails to the Cross-Ties; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the figures and letters marked thereon—

Figure 1 being an end elevation of a railroad rail, together with a portion of the cross-tie to which it is attached; also a side view and vertical longitudinal section of the cleat.

Figure 2, a top view of the cleat.

Figure 3, inverted plan of the same.

Figure 4, rear end view of the same.

Figure 5, a slotted cleat; and

Figure 6, a vertical longitudinal section of the same.

The same letters of reference are used in all the figures to designate the same parts.

The means of fastening railroad rails to the cross-ties heretofore in almost general use is the well-known wrought-iron square-shanked and hook-headed spike, against which, however, there are two very serious and well-founded objections. In the first place, these spikes are certain to split the timber into which they are driven, thereby greatly diminishing the capacity of such timber to hold or retain the spike in place, while, secondly, the splits or fissures thus produced, permitting the introduction of water, soon causes the rotting and decay of such timber. Spike-fastenings accordingly require constant attention, and as the only remedy for looseness which they admit of consists in driving them into new places in the timber, the cross-ties are soon rendered unfit for use by the numerous holes and fissures thus produced. To remedy these evils of the common spike, it has been proposed to use screw-bolts for fastenings, taking into the timber by means of holes previously bored for the purpose close to the rail, so that the heads of such bolts might bear upon the flanges and thus secure the rail to the cross-tie in a most efficient manner. By this mode of fastening, the integrity of the timber would be preserved and its durability secured from the rotting effects of moisture, which would be effectually excluded, but the removal and re-insertion of such bolts when taking up and relaying the rails being considered tedious when compared with the operation of drawing and re-driving the common spike, as well as the supposed additional cost of such screw-bolts as compared with common spikes, has prevented this mode of fastening from being adopted. The objections, however, above stated to the screw-bolt as a means of fastening have been obviated to some extent by the use of that peculiar modification of it known as the railroad screw-spike, consisting of a wood-screw bolt with a double-hooked head, so that upon being screwed down close to the rail, with either hook resting square upon the flange, the rails may be taken up or removed by merely backing such screw-spikes a quarter of a turn, and then, on replaceng the rails, they may be fastened down again by turning the screw forward till the hook would again stand square upon the rail flange. But the fact that the screw has to hold in the timber requires that its threads shall be wide apart or of a coarse pitch. It is, therefore, not always practicable to make the hook of the head stand square with the edge of the rail and have at the same time the requisite tightness or pressure upon the flange; and if the least degree of tightness more than this is required, the bolt must be turned round till the opposite hook of the head be brought over the rail, thereby in all probability causing the pressure upon the flange to be too great for the timber, for the pitch of the screw being a quarter of an inch, the half turn will sink it an eighth of an inch, and thus crush the fibre of the wood, to the destruction of its holding power, by the upward draught or pressure of the screw-threads upon it. My invention, which I am now about to describe, presents a mode of fastening that is clear of these objections, for while it permits the rails to be taken up and replaced with the least possible labor or delay, any degree of tightness may be secured without reference to the position of the head of the bolt upon the rail.

The nature of my invention consists in securing the flanges of the rails to the cross-ties, by means of screw-bolts or wood-screw spikes and metallic cleats; the latter being so formed as to have a bearing upon the top surface of both rail-flange and cross-tie, and also a bearing against the edge of the rail-flange, so as to prevent lateral movement of the rails by the end thrust or action of the wheels against them; and so constructed and arranged also that the rails may be taken up or replaced without removing the screw-bolts from the cross-ties.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and the manner in which it acts.

I make the cleats of flat bar iron, of about two inches in width and three-eighths of an inch, more or less, in thickness, and forge or press them into the form shown in figs. 1, 2, and 3. In fig. 1 A is the rail, and B the cross-tie or timber to which the rails are secured, and C C are the flanges of the rail. Upon these flanges the lip D of the cleat rests. The part E bears against the edge of the rail, and is less than the thickness of the flange of the rail in height, so that the inner portion of the cleat shall bear upon the rail and not upon the cross-tie, and the rear portion of the cleat rests directly upon the cross-tie. Through the body of the cleat I make a circular opening, F, for the screw-bolt G to pass through; and the part E is so formed that the cleat may make a half rotation around the bolt G as a centre, as shown in fig. 3, thereby permitting the removal of the lip D of the cleat from off the flange of the rail without the necessity of taking the bolt G out of the timber, merely requiring it to be slackened up a little so as to liberate the cleat. The bolt G is about three-quarters of an inch in diameter, and has a screw-thread formed upon it of serrated shape, a quarter of an inch in pitch and an eighth of an inch in depth, as shown at H, figs. 1 and 6, so as to hold efficiently in timber; and has a head, K, of square or ordinary form, by which the screw may be driven in the, usual manner, by means of a wrench or key. On tightening down the bolt the cleat will bear upon the cross-tie and also upon the rail, but the depth of the part E of the cleat being less than the thickness of the rail flange, the bearing of the bolt-head upon the cleat will throw the pressure principally upon the rail. At the back of the cleat I usually form a couple of spurs by bending down the corners, as shown at L in all the figures, which spurs entering or taking into the cross-tie assist materially in holding the cleat up to the rail against the lateral thrust to which the rail is exposed by the action of passing trains, and thereby relieving the screw-bolt from the disturbing effects of such strains and shocks, which is an advantage that is not possessed by any other mode of fastening, thus enabling the bolt to maintain its hold in the timber for a much greater length of time than when it is the only means of resisting such lateral shocks, as in the common square spike and the screw-spike fastening before referred to. The form of cleat shown in the drawings is such that it may be made of flat bar iron at one operation, by a machine which I have designed for that purpose, and which I propose to make the subject of a separate patent; the thickness of the material remaining the same in all its parts; the part E being formed by a central shearing of the iron across the fibre or grain of the bar, and then a downward protrusion of the severed portion, so as to form a vertical bearing under the lip D to take against the edge of the rail, while the side parts of the cleat are bent sufficiently to unite the lip D with the body of the cleat without impairing the strength of the material, as shown at *m*, fig. 1, and *m m*, fig. 2. Instead of moving the cleat around the bolt G so as to take the lip D off the flange of the rail, as described, the central opening in the cleat, for the screw-bolt, may be of slot form or sufficiently elongated to permit the cleat, on backing out the screw-bolt for a short distance, to be drawn outwards till the lip D of the cleat is completely off the flange of the rail, as shown in figs. 5 and 6. But when the cleat is thus constructed it should have the outer end of the slot countersunk, as shown at *n*, figs. 5 and 6, and the bolt should be made with a conical bearing under the head to suit such countersink, as shown at *g*, fig. 6, and thus when screwed home the cone of the bolt-head would enter the countersink of the cleat and thereby assist in holding the cleat against the lateral thrusts and shocks to which the rails are subjected.

It is possible that other changes in the form of the cleat might be suggested without thereby changing its general features or principle. I do not, therefore, limit myself to the specific forms which I have herein shown and described, but claim the right to the exclusive use of any form of cleat when used in combination with a screw-bolt that has the elements herein described, viz, a part to rest upon the flange of the rail; a part to bear against the edge of the rail; a part to rest upon the cross-tie; an opening through which to pass the screw-bolt that secures it to the cross-tie, and such construction or arrangement of the parts as permits the removal of the cleat from the flange of the rail without the removal of the screw-bolt from the cross-tie.

Having thus described my improved railroad rail-fastening, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of a screw-bolt or wood-screw spike with a cleat that has a bearing upon the top and at the edge of the rail-flange, and also upon the cross-tie, and so constructed or formed that it can be removed from the flange of the rail upon slackening up the screw-bolt or wood-screw spike by which it is secured to the cross-tie, substantially as herein described.

2. The heel-spurs of the cleat for entering into the timber or cross-tie, so as to hold against the lateral thrusts upon the rails, as caused by the action of the wheels of passing trains, in combination with the screw-bolt or wood-screw spike-fastening of such cleat, substantially as herein described.

3. The peculiar construction of the cleat by reason of which it may be made by pressure or percussion from flat bar iron, complete in all its parts, without necessarily altering the thickness of the material in any of such parts, substantially as herein described.

JOHN COCHRANE.

Witnesses:

J. W. BUTLER,
JOHN R. COOPER.