J. BOOTH.

Means for Securing Spinning-Rings to their Rails.

No. 164,256. Patented June 8, 1875.

Fig. 1

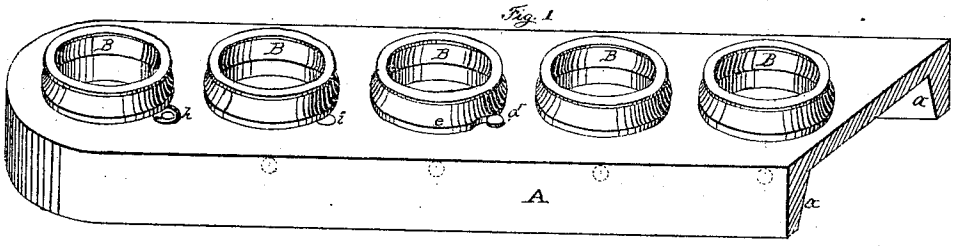


Fig. 2.

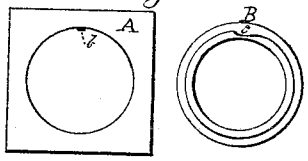


Fig. 4.

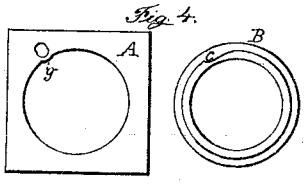


Fig. 3.

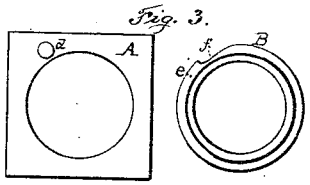


Fig. 5.

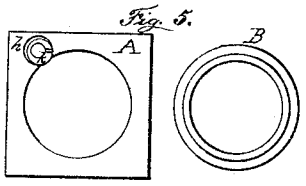
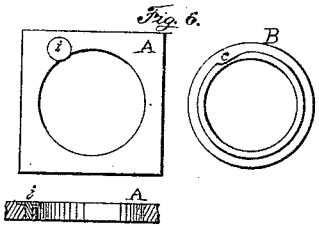


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN BOOTH, OF LINCOLN, ASSIGNOR OF ONE-HALF HIS RIGHT TO FRANCIS J. RABBETH, OF PAWTUCKET, RHODE ISLAND.

IMPROVEMENT IN MEANS FOR SECURING SPINNING-RINGS TO THEIR RAILS.

Specification forming part of Letters Patent No. **164,256**, dated June 8, 1875; application filed February 24, 1875.

To all whom it may concern:

Be it known that I, JOHN BOOTH, of the town of Lincoln, in the county of Providence and State of Rhode Island, have invented a certain new and useful Method of Securing Spinning-Rings to their Rails; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my said invention.

Various modes of securing spinning-rings to their rails have heretofore been proposed, and many have been practically tested. It is, of course, desirable that the ring-rails be as light as is consistent with the requisite strength, and that all methods of attaching rings to rails which involve necessarily the cutting away of, or boring through any portion of, the rail for the purpose of introducing set-screws or analogous devices for engaging with the rings, are objectionable, in that the rail is, to that extent, weakened. This is a well-defined objection when the rails are but little wider than the diameter of the holes to receive the rings, and it is of comparatively frequent occurrence that in handling said rails they are broken adjacent to the set-screw holes. Various means have been heretofore devised for securing the rings without these set-screws and their necessary drill-holes to receive them; but, so far as I have been able to learn, the extra expense incidental to their practical application has prevented their general adoption. Moreover, securing devices, as heretofore applied, have usually projected from the top or edge surface of the rail; and these have been objectionable, because they would catch and retain dirt and lint, and render the wiping up or cleaning off the rail a comparatively difficult matter.

I seek, through my invention, not only to secure the rings to the rails without the necessity of drill-holes at any point in the rail which would practically weaken it, but also economy in time, labor, and expense, as compared with previous modes of securing them. This I attain by providing the rail or the ring with an eccentric surface, and the ring or the rail, as the case may be, with a surface with which said eccentric surface may be made to forcibly engage to a degree sufficient to unite the ring to the rail for all practical purposes. But, more particularly to describe my invention, I will refer to the drawings herewith, in which—

Figure 1 represents a portion of a ring-rail with several rings attached thereto in accordance with my invention. Figs. 2, 3, 4, 5, and 6 represent portions of a ring-rail and rings detached therefrom.

In Fig. 1, at A, is represented the usual form of cast-iron ring-rail, with its two downwardly-extending strengthening-flanges at front and rear edges, as at *a*. Opposite each ring, in the front edge of the rail, I indicate, by dotted circles, the points where set-screws would be inserted, if that mode of fastening was desired. It will be seen that at that point, opposite each ring, there is but little bulk of metal at the most, and a considerable proportion of that is cut away in drilling the hole for the set-set-screw.

It will be understood that my method of fastening the rings in their seats involves the principle of the curved-surface cam, and that there exists quite a variety of obvious ways of applying said principle. I show several forms of applying it; one of which, however, is applicable only to wrought-iron or steel-ring rails. In Fig. 2 I show one of the simplest forms, which is at the same time quite as effective as any known to me which are applicable to cast-iron rails. It will be seen, on reference to this figure, that the ring-rail A is provided with the usual hole to receive the ring B. At *b* I show a small smooth-headed pin or stud, which is fitted into a shallow hole drilled into the rail in a line with its longitudinal center. This pin may be set at any other desired point. As it need be but a very small one, and as its hole need be of but little depth, it would still be preferable to the set-screw, as formerly employed, for the latter requires a hole extending from the edge into the ring-hole. I prefer, however, to place this pin as shown. It is to be understood that this hole for the pin need not be drilled in any particular plane, although it is preferable that it be in a line parallel with the longitudinal upper surface of the rail. Its function is purely that of a stud, and the sur-

face on the end of it is the only portion thereof which performs any service. The ring B in Fig. 2 is shown to be bottom up, exhibiting the seat-flange, and also the neck, which enters the hole in the rail. The neck of the ring is turned off in the usual manner, and differs from rings as generally made only in having a portion of its periphery milled away, so as to present a short eccentric surface, as at *c*. This ring, on being inserted in the rail-hole, readily enters, if the deepest-milled portion is opposite the stud *b;* and, on turning the ring in the proper direction, the eccentric surface thereof engages with the head of the stud, and, by applying more or less force in said direction, the ring will be more or less securely held in position.

In Fig. 6 I show a stud in the top of the rail, closely adjacent to the periphery of the hole in the rail. This stud *i* has a head, which projects on one side into the ring-hole, as shown, for engaging with the eccentric surface on the rings milled, as shown in Figs. 2 and 4. In Fig. 3 I illustrate how the same effect is attainable by precisely the same means applied in a different manner. At *d* I represent a short vertical stud, which occupies a hole in the top of the rail. The seat-flange *e* of the ring is milled away at *f* in a manner corresponding to that at *c* in the previous figure. In this case the side of the stud *d* performs the same service as the end of the stud *b* in the preceding figure.

In Fig. 4 I show a wrought-iron ring-rail, which, by reason of its ductile character, admits a portion of the side of the ring-hole being swaged inward, as at *g*, at which point a small hole has been drilled for conveniently effecting the swaging. With this inward projection *g* a ring is used of the same character as that shown in Fig. 2, the milled portion *c* allowing the ring to occupy the hole, as in that instance. The projection *g* performs the same service as the studs before described.

It will be seen that in each of these cases the eccentric surface is on the ring, and that it is by the rotation of the latter that the eccentric surface and the engaging-surface of the stud, or equivalent projection, are brought into frictional contact for securing the ring in position.

It is obvious that there must be a movable surface; but it is equally obvious that the eccentric surface may be attached to the rail. I illustrate this in Fig. 5. At *h* in the top of the rail a shallow circular recess is cut, closely adjacent to the ring-hole, as shown. In this recess, at its center, is a pin or stud, on which an eccentric button, *k*, may be revolved. When this button is revolved a portion of its eccentric surface is thrown against the exterior of the neck of the ring below the seat-flange, and, by its contact therewith, secures the ring in position. For conveniently turning the button I provide a shallow radial slot, as shown, whereby, with a screw-driver or chisel and a slight tap with a hammer, it may be readily effected.

While, so far as relates to securing the ring in position is concerned, it does not matter whether the moving eccentric surface is on the ring or on the rail, as illustrated, it is obviously preferable to employ a stationary stud in the rail and the eccentric surface on some portion of the ring.

It will be seen that by none of these several modifications is the rail materially weakened. There are no tapped holes or set-screws, and the milling of the rings may be rapidly and economically performed with tools which will readily be suggested to persons skilled in machine-building. For convenience in wiping up I prefer the studs or engaging-surface shown in Figs. 2, 4, and 6.

I am aware that it is not new to secure rings to their rails by means of screw-threads on ring and rail, as that method has been known for many years, and has, to a limited extent, been practically employed.

Having thus described my invention, and shown some of the best embodiments thereof known to me, I claim as new, and desire to secure by Letters Patent—

The combination of a spinning-ring and its rail with eccentric frictional engaging devices or surfaces for connecting the two together, substantially as described.

JOHN BOOTH.

Witnesses:
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