(No Model.)

J. N. BERRY.

THILL COUPLING.

No. 480,244. Patented Aug. 9, 1892.

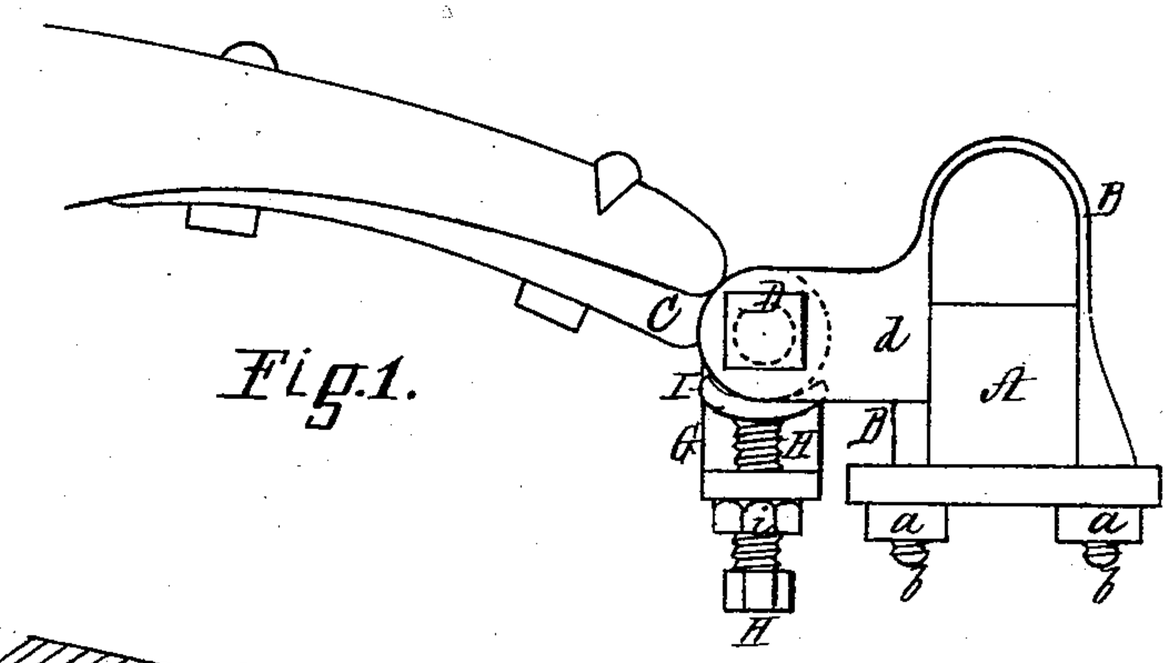

Fig. 1.

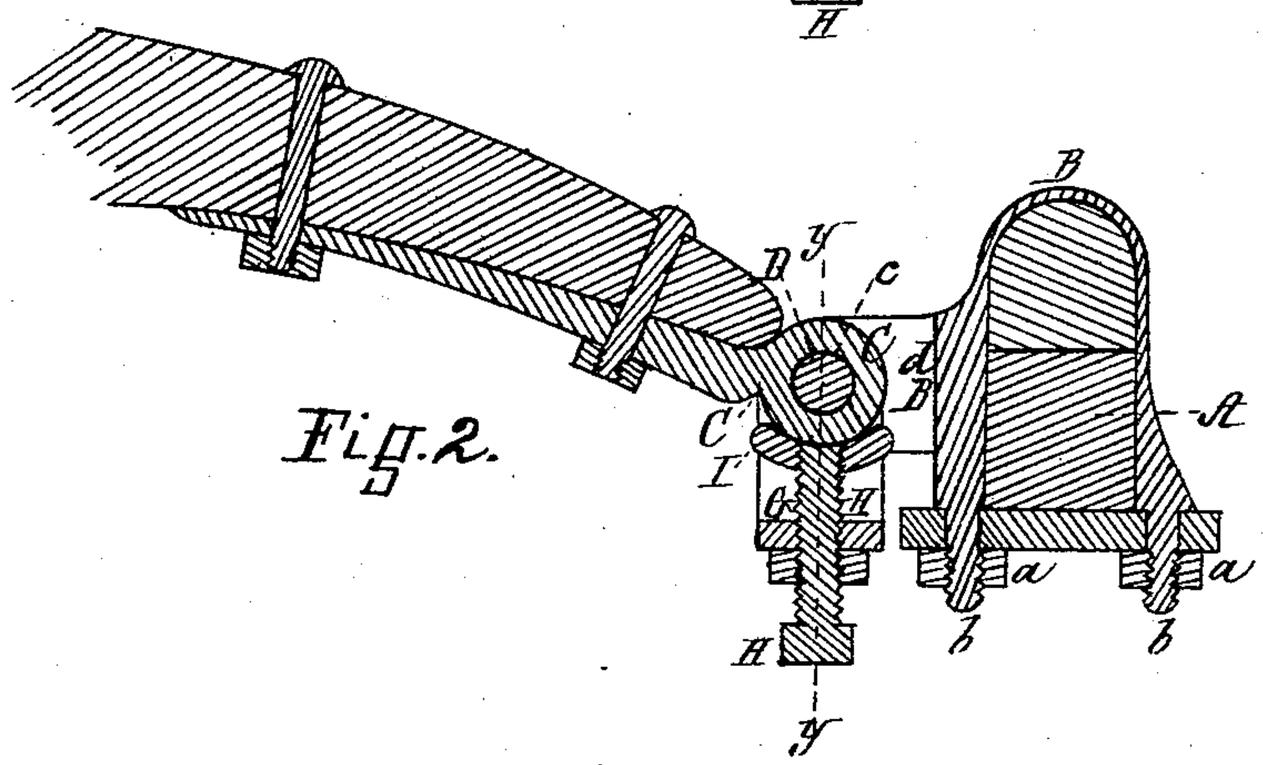

Fig. 2.

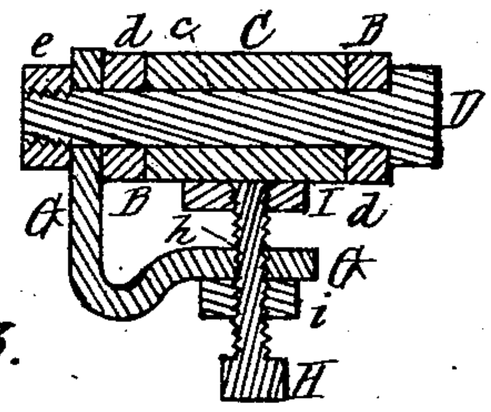

Fig. 3.

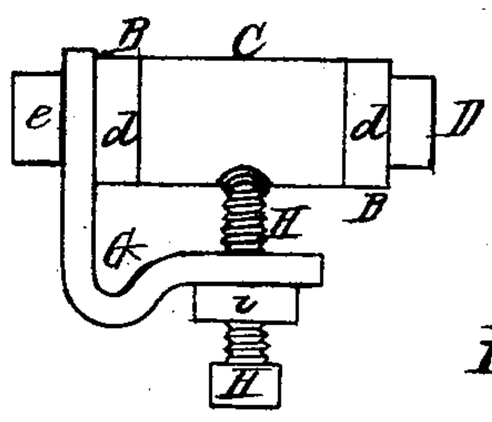

Fig. 4.

WITNESSES:
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UNITED STATES PATENT OFFICE.

JOSEPH N. BERRY, OF BOSTON, MASSACHUSETTS.

THILL-COUPLING.

SPECIFICATION forming part of Letters Patent No. 480,244, dated August 9, 1892.

Application filed February 23, 1892. Serial No. 422,478. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH N. BERRY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Thill-Couplings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a thill-iron and axle-clip coupled together and having my invention applied thereto. Fig. 2 is a vertical transverse section through the center of Fig. 1. Fig. 3 is a longitudinal section taken in the direction of the line *y y* of Fig. 2; Fig. 4, a modification to be referred to.

My present invention relates to that class of well-known devices termed "anti-rattling thill-couplings," for connecting shafts or poles to carriage-axles, my object being to attain the maximum simplicity, compactness, and economy in the construction of such devices for preventing the disagreeable incessant noise incident to such connections not provided with anti-rattling devices; and this invention consists in the combination and arrangement, with the thill-eye and axle-clip, of a bent spring and an adjustable screw passing through its lower portion and bearing against the under side of the thill-eye or against a plate interposed between them for regulating the resiliency of said spring, the said devices being adapted for instant application to any thill connection by any person having a nut-wrench and without the exercise of skill.

In the said drawings, A represents the axle and B the clip, secured together in the ordinary manner by nuts *a a*, turning over the screw-threaded tangs *b b*, projecting from the lower ends of the clip.

C is the thill-iron, and *c* its eye, this iron being secured to the bifurcations *d d* of the clip by a screw-bolt D, having a nut *e* turning thereover, all being of well-known construction.

When a carriage is in motion, the friction between the eye of the thill-iron C and the connecting-bolt D will necessarily occasion wear of these parts and looseness of the joint formed thereby, resulting in an objectionable constant rattling and noise. To prevent the said rattling, I preferably employ three devices constructed, associated together, and applied to the thill-coupling as follows: A spring G, of the form seen in Fig. 3, is provided with a hole near its upper end for the passage of the connecting-bolt D, one end of said spring being securely held between the nut *e* and the outside of the contiguous bifurcation *d* of the clip and its other end extending down and being bent at or nearly at right angles to its vertical portion, said lower or horizontal portion being located beneath and at a short distance from the under side of the thill-iron and being provided with a screw-hole *h* for the passage of an adjustable screw H, to the upper end of which is fastened a metal plate I, preferably concave on its upper surface to conform to and fit the under cylindrical surface of the thill-iron C. When the spring G has been compressed by turning the adjustable screw H so as to bring the plate I with the desired degree of pressure against the under side of the thill-iron, the tension thus obtained and the friction of the plate against the thill-iron are preserved by tightening a nut *i* against its seat—*i. e.*, the under side of the horizontal portion of the spring—which acts as a "check-nut" to prevent its accidental turning and the plate from relaxing its pressure. The screw H is secured to the plate I by simply upsetting or expanding the threads over the inner surface of the plate at the point of connection. The turning of the adjustable screw H, besides compressing the lower portion of the spring in the direction of the thill-iron, also exerts a side pressure on the upper or vertical portion of the spring, the result of which is to bear unevenly on the inside of the nut *e*, thus causing it to perform the function of a "check" or "lock" nut to prevent the connecting-bolt D from accidentally turning.

The plate I (in light vehicles) may be omitted and the end of the adjustable screw H be upset or spread out so as to form a bearing-surface sufficiently extended to insure the required degree of friction between it and the under side of the thill-iron to prevent rattling. (See Fig. 4.)

I am aware that springs have heretofore been applied to thill-couplings; but the lower or free end of the spring has been held in contact with the under side of the thill-iron and the pressure has been imparted directly there-

to without the interposition of an adjustable device. The utility of such springs cannot be permanent when applied to thill-couplings without some governing or regulating device. I therefore prefer to graduate the pressure of the spring from time to time to compensate for the wear and find that the adjusting-bolt is a necessary element in controlling the resiliency of the spring. Without some compensating means the spring by being worn (when in contact with the thill-iron) would vary in its resiliency or become set and rendered useless.

I prefer that my anti-rattling device should consist of the spring G, its adjusting-bolt H, and the plate I, as they are all connected and can be conveniently handled as one piece, which can be instantly applied to a thill-coupling without skill by any person having a wrench and while the horse is attached to the shafts.

I claim—

1. As an improvement in thill-couplings, the combination, with the thill-eye, axle-clip, and connecting-bolt, of a bent spring G, having its upper end attached to one side of the clip and its lower end located under but not in contact with the thill-eye, and an adjustable screw H, passing through the said lower end and bearing on the under side of the thill-iron, as set forth.

2. The bent spring G, with its screw-hole *h*, and having one end secured to one of the ears of the clip by the coupling-bolt D and its other end located in a vertical plane under the thill-eye and out of contact therewith, an adjustable screw H, passing through the hole *h* for regulating the tension of said spring, a concave plate I in contact with and kept in place against the outer surface of the thill-eye by the end of said adjusting-screw, and a check-nut *i* for preventing the screw H from accidentally turning when adjusted, combined and arranged as and for the purpose set forth.

Witness my hand this 12th day of February, 1892.

JOSEPH N. BERRY.

In presence of—
EDWARD P. OSBORNE,
WILLIAM S. FENTON.