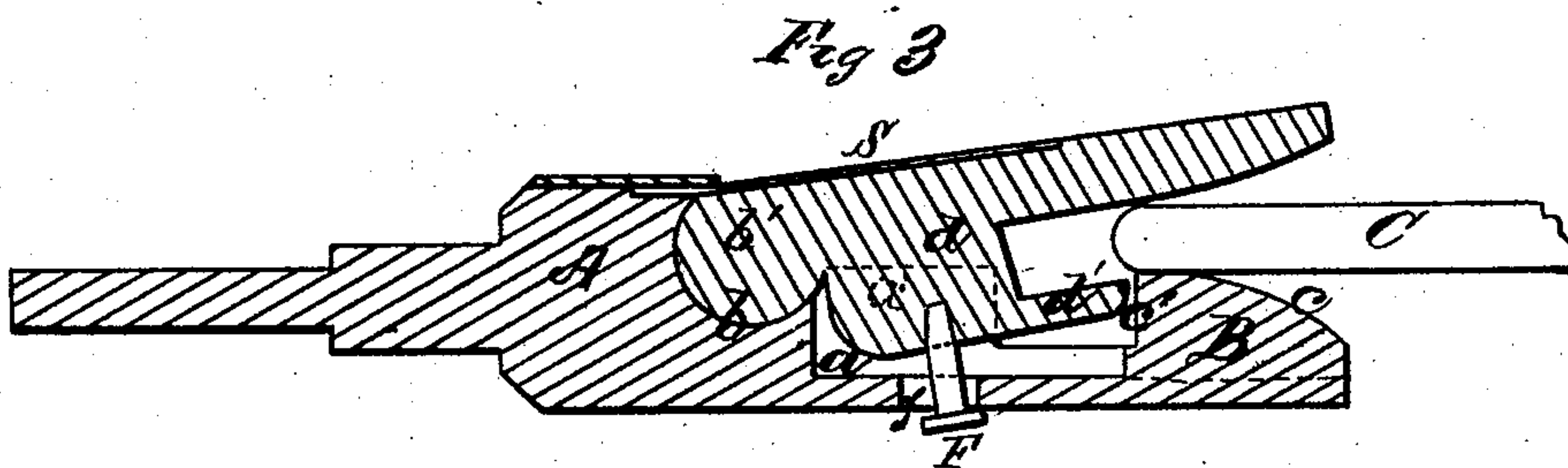
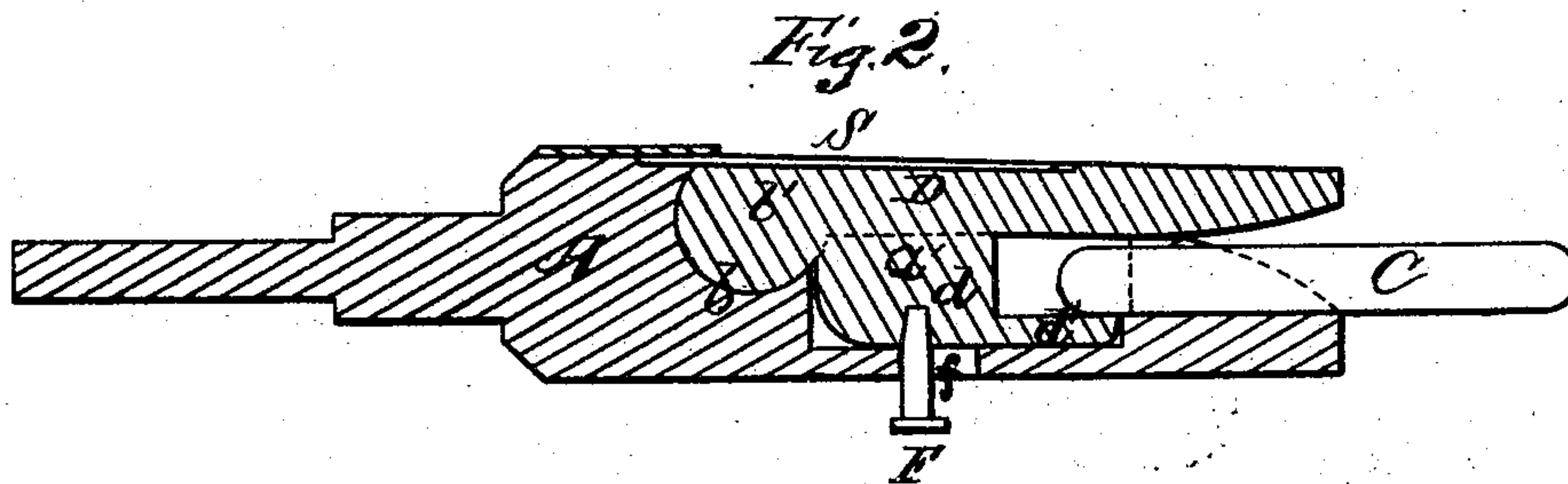
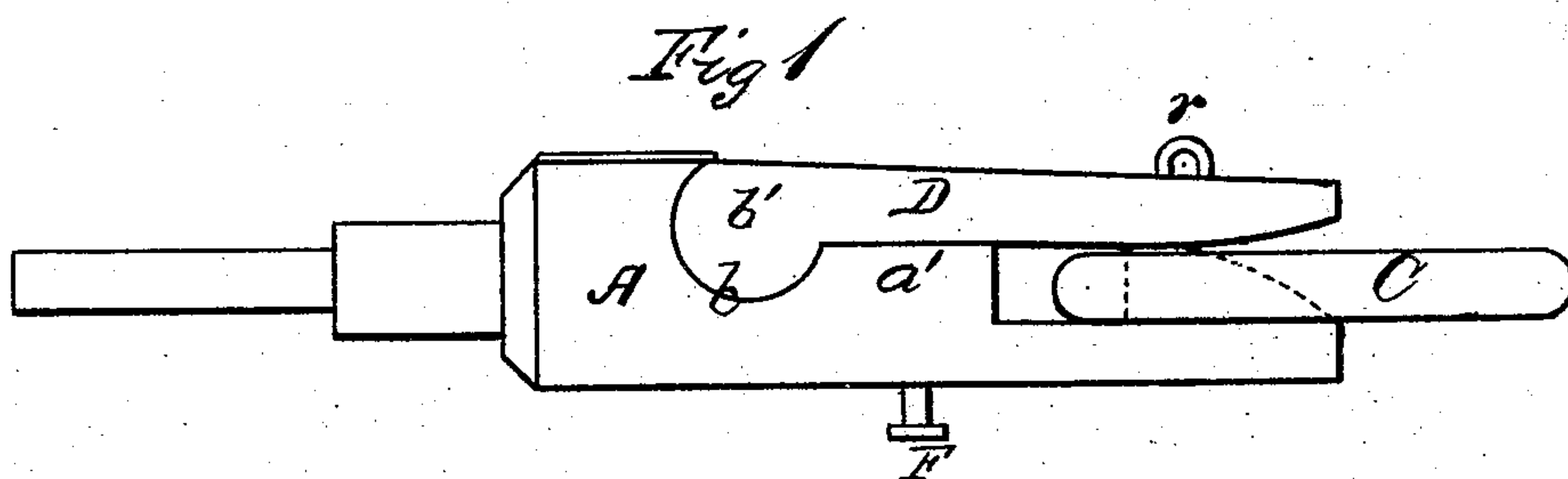


F. GRAINGER.
Car-Couplings.

No. 156,995.

Patented Nov. 17, 1874.



WITNESSES

Mary J. Utley.
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UNITED STATES PATENT OFFICE.

FRANCIS GRAINGER, OF MORGAN, OHIO, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO GEORGE R. WEBSTER AND JOHN F. JEFFORDS.

IMPROVEMENT IN CAR-COUPPLINGS.

Specification forming part of Letters Patent No. **156,995**, dated November 17, 1874; application filed September 26, 1874.

To all whom it may concern:

Be it known that I, FRANCIS GRAINGER, of Morgan, in the county of Ashtabula and State of Ohio, have invented a new and valuable Improvement in Car-Couplings; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side view of my car-coupling. Figs. 2 and 3 are sectional views of the same.

This invention has relation to automatic couplers for railroad-cars, wherein a vibrating upper plate having a lifter attached to its lower surface is applied by means of a spring to the lower fixed portion of the draw-bar, having upon its front edge a beveled draw-iron, the link falling over the said draw-iron to effect a coupling when the said plate is thrust upward by the link of an approaching car, and raised off therefrom by the said lifter when the plate is raised up, thus effecting an uncoupling; and the novelty thereof consists in the combination, with such a vibrating plate, having a flange with a front lower extension, and a transverse cylindrical enlargement upon the rear end of a fixed portion of the draw-bar, having a transverse cylindrical groove to receive the enlargement of the upper plate, vertical lateral lugs, and a longitudinal groove to receive the flange and the extension thereof, whereby all endwise and lateral displacement of the said upper plate is prevented. It also consists in a headed bolt passing through a longitudinal slot in the floor of the draw-bar, and secured to the vibrating plate, whereby undue upward displacement thereof is prevented, as will be hereinafter more fully explained.

In the annexed drawings, A designates the body of my improved draw-bar, having a deep groove, *a*, preferably rectangular, cut in its lower floor, bounded on each side by vertical lugs *a'*, for a purpose hereinafter to be explained. It has also a cylindrical groove or socket, *b*, cut transversely across it at or near its rear end, the object of which will ap-

pear farther on. The whole of this body, with its groove, lugs, and transverse cylindrical groove, is cast in one piece around a wrought-iron hooking device, B, having an inclined front surface, *c*, and a vertical rear end, *c'*, as shown in Fig. 3 of the drawings, and the said device is of such a width as that it shall be freely received into the slot of a coupling-link, C. D designates the upper plate of my improved draw-bar, having upon its rear end a cylindrical enlargement, *b'*, conforming closely to the contour of the transverse groove *b* of the body thereof, and upon its lower surface a flange, *d*, the lower end of which is extended to the front to form a lifting-arm, *d'*, as shown in Figs. 2 and 3. When the upper plate is placed in position on the body A of the draw-bar the enlargement *b'* will be received into the groove *b*, the flange *d* and lifter *d'* into the groove *a*, and between the lugs *a'*, when the draw-bar will present the appearance shown in Fig. 2. F designates a headed bolt, which is passed through a slot, *f*, in the body A of the draw-bar, and screwed into the hinged plate B thereof, for the purpose of preventing undue upward displacement thereof, whereby it would be thrown out of place on the body A of the draw-bar in the event of a casual breaking of the spring S, all lateral displacement being prevented by the flange *d* when it is inserted between the lugs *a'*, into the groove *a* in the floor of the draw-bar. Upon the upper surface of both the body A and hinged plate B a groove is cut, into which is placed a steel spring, S, the end of which is rigidly secured to the body.

When two cars are approached to effect a coupling, a coupling-link, C, in the draw-bar of the one will come in contact with the inclined draw-iron B of the other, causing the end of the said link to be directed upward against the lower surface of the hinged plate B, vibrating it upward into the position shown in Fig. 3, when the reaction of the spring S will cause it to fall over the draw-iron, thus effecting a coupling.

An uncoupling may be effected by a train-hand upon the roof or platform of a car by drawing upon a rope or chain attached to a ring, *r*, in the hinged plate B, which will cause

the said plate to vibrate upward, at the same time actuating the lifter *d'*, to raise the link C off the draw-iron B. The separation of the cars will effect an uncoupling, and if the hinged plate be now released it will gravitate into place, ready at any time to be coupled.

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

1. In an automatic car-coupling, the combination of the body A of a draw-bar, having grooves *a b*, lugs *a'*, and a draw-iron, B, the link C, and the hinged plate D, having a cylindrical enlargement, *b'*, flange *d*, and lifting-

arm *d'*, substantially as and for the purpose specified.

2. The combination, with the body A and hinged plate B, of the bolt F, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANCIS GRAINGER.

Witnesses:

JOHN J. HOYT,

ELCIE G. DODGE.