(No Model.) 2 Sheets—Sheet 1.

L. W. CROMER & G. GAVIN.

AUTOMATIC SWITCH AND FROG FOR RAILROADS.

No. 381,676. Patented Apr. 24, 1888.

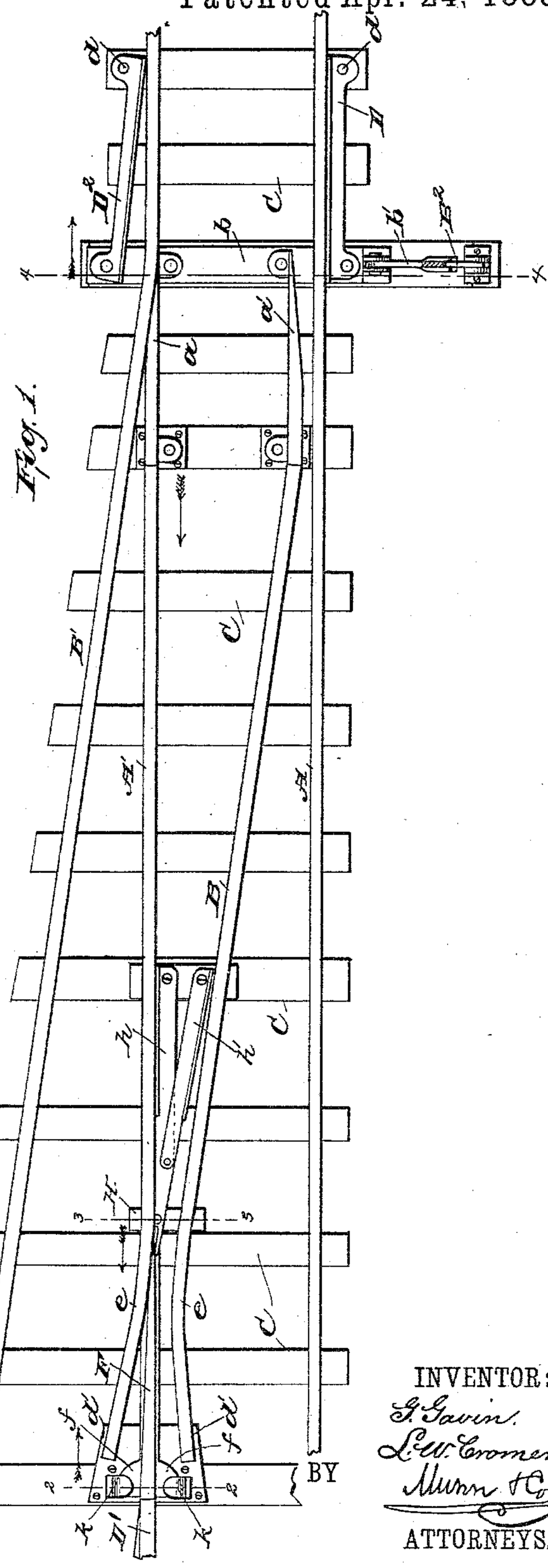

Fig. 1.

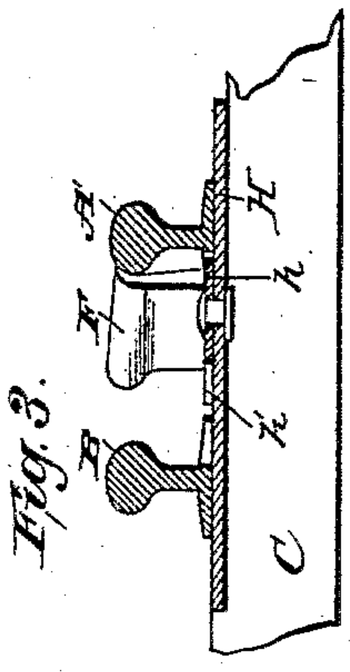

Fig. 3.

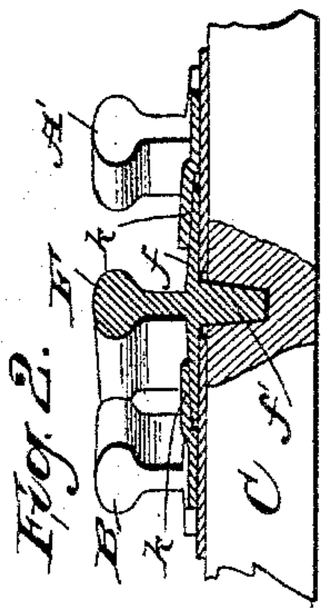

Fig. 2.

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Fig. 4.

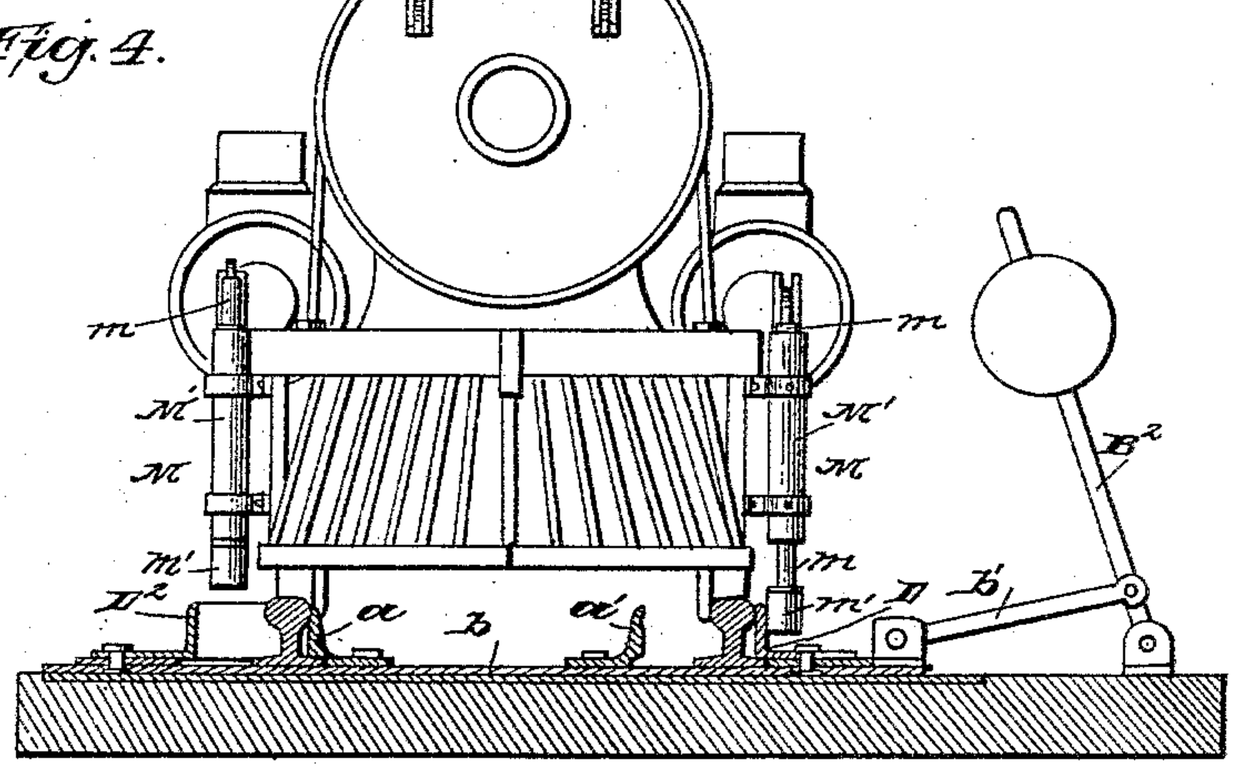


Fig. 5.

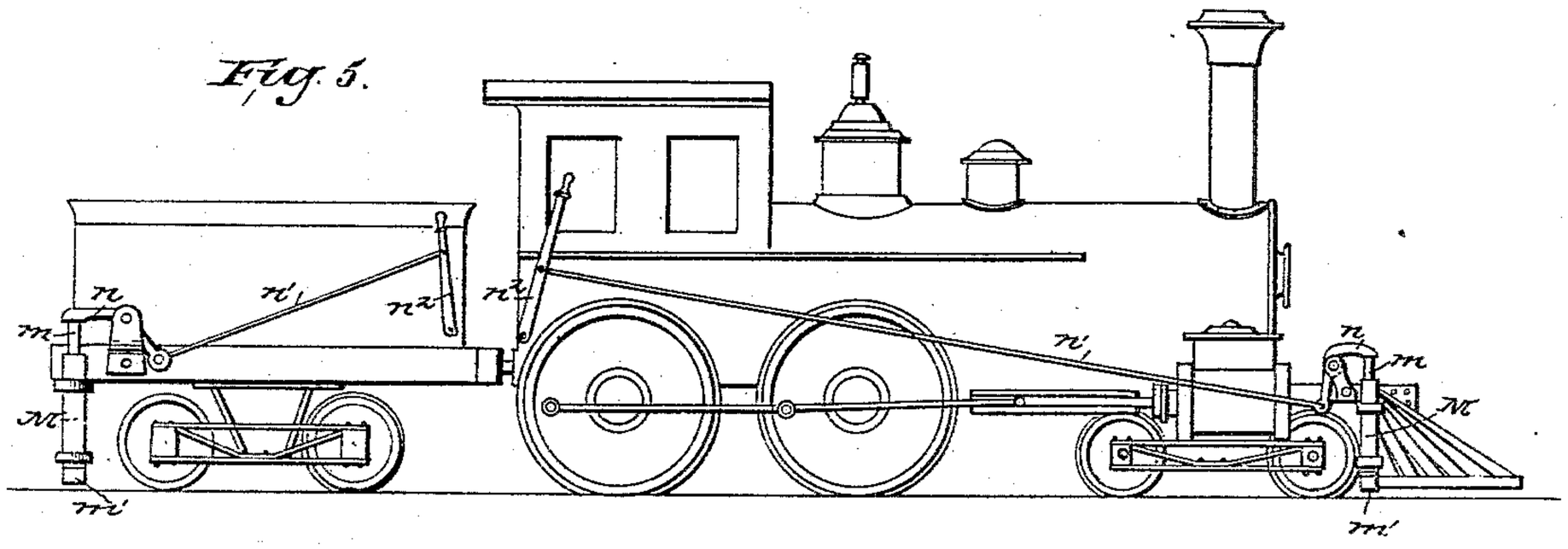
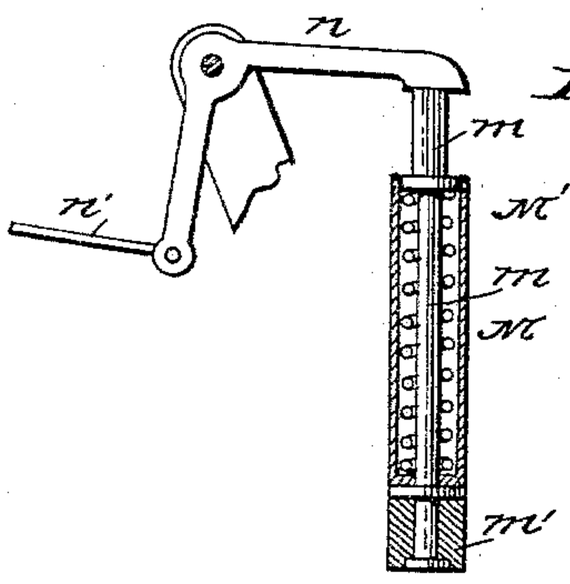


Fig. 6.



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UNITED STATES PATENT OFFICE.

LAWRENCE W. CROMER AND GEORGE GAVIN, OF EUREKA, NEVADA, ASSIGNORS TO THEMSELVES AND FRED M. HEITMAN, OF SAME PLACE.

AUTOMATIC SWITCH AND FROG FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 381,676, dated April 24, 1888.

Application filed June 22, 1887. Serial No. 242,139. (No model.)

To all whom it may concern:

Be it known that we, LAWRENCE W. CROMER and GEORGE GAVIN, of Eureka, in the county of Eureka and State of Nevada, have invented a new and Improved Automatic Switch and Frog for Railroads, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in an automatic switch and frog for railways, and has for its object to provide a simple, durable, and reliable means whereby an engine and cars may be automatically switched off in various directions through the medium of a contact of the wheel-flanges with the frog or switch, and wherein, when found desirable, the engineer may switch the train directly from the engine.

The invention consists in the construction and operation of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of our invention applied to a railway-track. Fig. 2 is a transverse section through the base of the frog on line 2 2 of Fig. 1. Fig. 3 is a transverse section through the guides for said frog, taken on line 3 3 of Fig. 1. Fig. 4 is a transverse section on line 4 4 of Fig. 1, taken through the switch, with an engine in position upon the rails. Fig. 5 is a side elevation of the engine and tender, and Fig. 6 is a detail view of the switch-operating device.

In carrying out the invention, A and A′ represent the main track, B B′ the siding, and C the ties or sleepers.

At one end of the inner rails, A′ and B, switch-points *a a′* are pivoted to the ties, whereby they have lateral movement, the other end of said points, adapted for engagement with the outer rails, A and B′, being pivoted to a plate, *b*, which plate, sliding transversely beneath the outer rails, has one outer end connected by means of a rod, *b′*, with the ordinary switch-lever, B^2, as shown in Fig. 4. Between each rail and the outer end of the transverse sliding plate *b* upon said plate one extremity of angle-bars D D^2 is attached, which bars, extending parallel with the rails and projecting vertically upward level therewith, are pivoted at their other extremity to the cross-ties, as at *d* in Fig. 1. Thus, should either angle-bar be pressed inward, it will carry the other simultaneously outward and manipulate the switch-points to carry a train from a siding onto the main track, or vice versa.

The two inner rails at their point of crossing are made to curve inward and outward, as shown at *e*, Fig. 1, their diverging ends being adapted to rest upon a flat horizontal plate, *d′*, which plate is secured to one of the ties.

Centrally the plate *d′*, at the edge opposite that upon which the aforesaid curved portions *e* of the inner rails rest, a single track, D′, is secured, which, being forked and the members made to extend forward in opposite directions, constitutes, respectively, the inner rails of two independent tracks—namely, the main track and siding.

In alignment with the end of the rail D′ one end of a frog-point, F, is pivoted, the said frog-point being provided at its pivotal end with side ears, *f*, and a central pin, *f′*, integral with its under side, as shown in Fig. 2. In effecting the pivotal connection with the plate *d′*, the pin *f′* is entered in an aperture in said plate and in the tie to which the plate is attached, and the said frog point is guided in its lateral movements by means of lugs *k*, secured upon the plate *d′*, which lugs are bent over and partially upon the ears *f* of said point, as shown in Figs. 1 and 2.

Parallel with the inner side of each inside rail, a short distance in front of the frog-point, one end of angle-bars *h h′* is pivoted to a tie, the other end of the bar *h* being connected with the free end of the frog-point and the other end of the bar *h′* being pivotally connected with the horizontal portion of the aforesaid bar *h*, as shown in Fig. 1. A transverse bar, H, pivoted to the angle-bar *h* near its connection with the frog-point, is adapted to slide with said frog-point and angle-bars beneath the inner tracks, and serves to guide the same in their lateral movements. (See Figs. 1 and 3.)

The engine and tender adapted to travel over the above-described track are provided with spring-actuated plungers M, one plunger

being attached at each side the cow-catcher of the engine and one plunger at each side the rear portion of the tender, as shown in Fig. 5. The plungers consist of a tubular casing, M′, secured in any approved manner to the tender and cow-catcher, in which casing a spring-actuated rod, *m*, is held, carrying at its lower end, outside the casing, a cylindrical head, *m′*, the said rods *m* being actuated from the cab of the engine through the medium of angle-levers *n*, connecting-rods *n′*, and hand-levers n^2, the hand-levers adapted to operate the plungers attached to the tender being pivoted thereto at each side near the cab, and the hand-levers operating the plungers attached to the engine being pivoted outside the cab, as shown in Fig. 5.

In operation the engine and tender passing over the track, with the switch and frog positioned as shown in Fig. 1, will keep upon the main track. When, however, before reaching the switch, the engineer should desire to run his train off upon the siding, upon going down the track, as shown by arrows in Fig. 1, he would manipulate the lever n^2, operating the plunger-bar attached to the right or left of the engine or tender, according to the way the engine is headed, and thereby bring the head of the plunger in contact with the angle-bar D or D^2, whereby the said bar would be carried onto the track and the position of the switch-points *a a′* changed to guide the wheels upon the side track. As the train passes down the track, the frog-point being positioned to keep the train upon the main track, the flanges of the wheels coming in contact with the angle-plate *h′* automatically change the position of said point and open a way to the siding. One train having just passed through upon the siding, the next train upon passing up the main track will, by means of the flanges of its wheels, automatically return the frog-point to its first position and through the same means open the switch-points, while the train upon the siding returning to the main track will in the same manner automatically operate the switch-points. In order, however, to run the said train down the main track, one plunger upon the left would be depressed, which, engaging the angle-bar D, would automatically set the switch-points open, as shown in Fig. 4.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the inner and siding rails of a railway-track, of the switch-points *a a′*, pivoted to the ties of said track at one end, a transversely-sliding plate, *b*, adapted to receive the other end of said switch-points, and angle-bars D D^2, pivoted outside the main rails to said transverse plate and to a tie of the track, substantially as shown and described, and for the purposes herein set forth.

2. The combination, with the main and siding rails of a railway-track, switch-points pivoted to the ties at one end and to a plate, *b*, sliding transversely beneath the track at the other, angle-bars D D^2, pivoted outside the main rails to said transverse plate and to one of the ties, and a switch-lever, B^2, adapted to move with said plate, of an engine and tender provided with spring-actuated plungers adapted to engage said angle-bars, and means for operating said plungers, substantially as shown and described, and for the purposes herein set forth.

3. The combination, with the main and siding rails of a railway-track, of a frog-point, F, pivoted at the junction of the inner rails, angle-bars *h h′*, pivoted to the ties between the inner rails, the bar *h* pivoted to the wedge end of said point, and the bar *h′* pivoted to said bar *h* in front of said point, substantially as shown and described, whereby the frog-point is automatically operated by the flanged wheels of a passing train, as herein set forth.

4. The combination, with the main and siding rails of a railway-track, of a frog-point, F, pivoted at the junction of the inner rails, provided with attached ears *f*, a plate, *d′*, secured to one of the ties and beneath the ears *f* and provided with guide-lugs *k*, angle-bars *h h′*, pivoted between the inner rails to one another and to the said frog-point, and a guide-plate, H, adapted to slide beneath the rails, secured to said angle-bars in front of the frog-point, substantially as herein shown and described, and for the purposes herein set forth.

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