

No. 648,611.

Patented May 1, 1900.

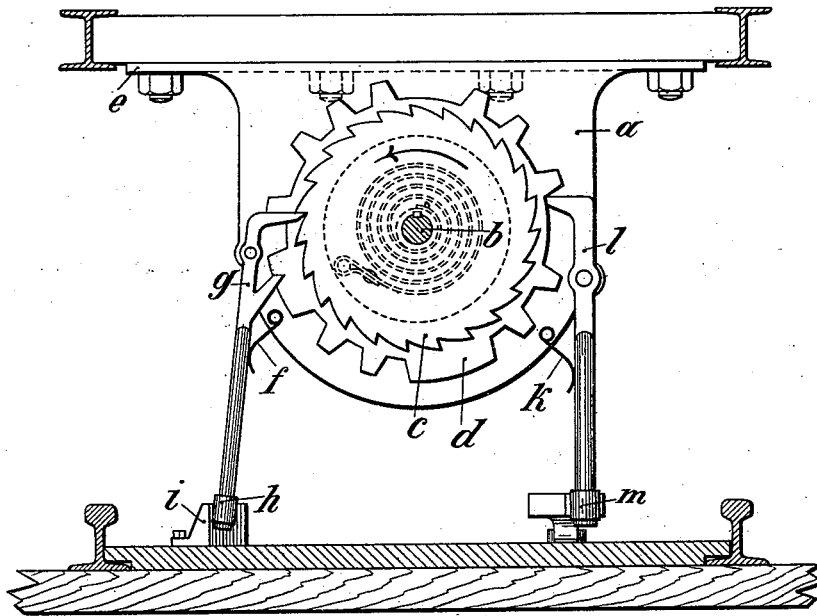
M. GAUL.
SWITCH DEVICE FOR RAILROADS.

(Application filed Sept. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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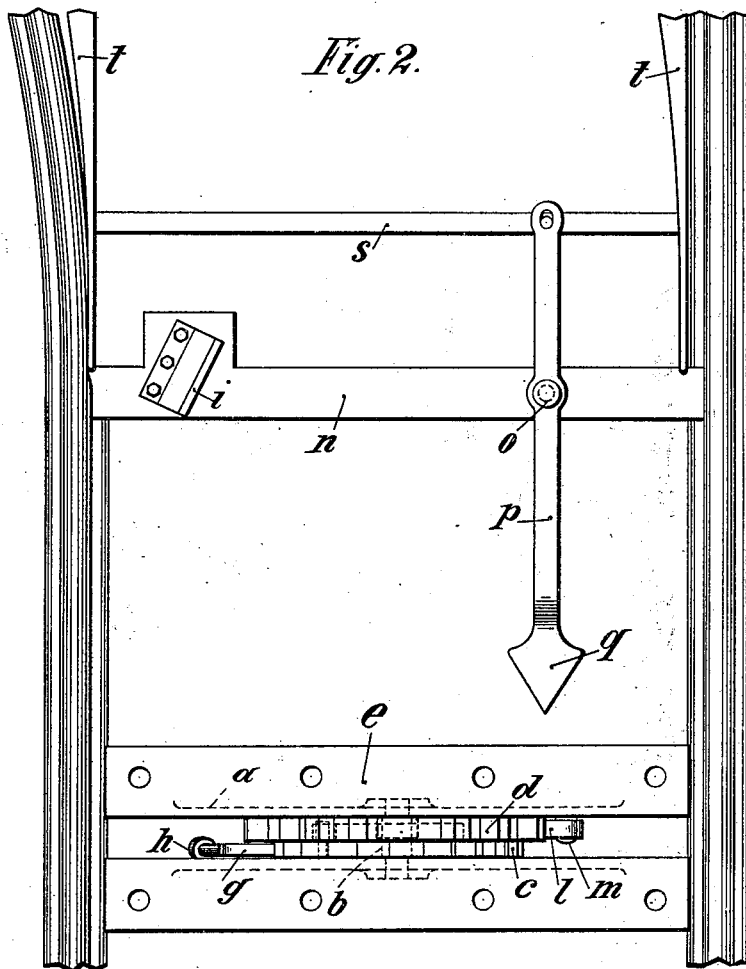
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

MAX GAUL, OF FRANKFORT-ON-THE-MAIN, GERMANY.

SWITCH DEVICE FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 648,611, dated May 1, 1900.

Application filed September 23, 1899. Serial No. 731,460. (No model.)

To all whom it may concern:

Be it known that I, MAX GAUL, merchant, a subject of the King of Prussia, Emperor of Germany, residing at Kranachstrasse 14, Frankfort-on-the-Main, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in or Relating to Switch Devices for Railroads, of which the following is a full, clear, and exact description.

The present invention relates to a device for automatically switching the various "points" on a certain length of railroad by means of the vehicle—for instance, the locomotive itself.

In its main feature it consists of a device as simple as it is effective, and comprises a ratchet-wheel and an irregular toothed wheel or cam, both keyed on the same axis and actuated by a spring, and two coöperating levers, by means of one of which the switching of the points is effected, while the other lever is actuated by an oblique guide secured in convenient proximity to the point operated.

It is evident that by such an automatic switching device not only the cost of construction and maintenance of a railway-line so provided is greatly reduced, but also the working of the line can be made absolutely independent of a pointsman, whereby greater security is obtained.

In the accompanying drawings such an approved construction of switching device is shown.

Figure 1 is a front sectional view of the roadway and part of the vehicle with the device applied, while Fig. 2 is a plan view.

In a casing *a*, which is preferably fixed to the bottom of the vehicle or locomotive, is secured in bearings a shaft *b*, on which are keyed two wheels *c* and *d*, the wheel *c* being an ordinary ratchet-wheel or locking-wheel, while the wheel *d* is an irregular toothed or cam wheel. The shaft *b*, together with its two wheels *c* *d*, is actuated by a spiral spring contained within the casing *e*, as indicated in dotted lines in Fig. 1. The ratchet-wheel *c* engages with a lever *g*, pressed by a spring *f* and pivoted on the casing *a*. At its lower free end the lever is provided with a roller *h* for the purpose of diminishing the friction when it comes in contact with the guide *i*, to be described. The cam-wheel *d* engages with

a lever *l*, pivoted on the casing *a* and pressed upon by a spring *k*, the free lower end of which lever is also provided with a roller *m* for the purpose of reducing the effect of friction.

Conveniently arranged on the track is an oblique guide *i*, fastened to a sleeper *n*, and a lever *p*, pivoted on a pin *o*, the free forward end of which is pointed, as at *q*, while the other end, by means of a slot *r*, actuates the points *t*, united by a cross-tie *s*.

The operation of the automatic switch device is as follows: When a train is moving in the direction indicated by the arrow, Fig. 2, the friction-roller *m* of the cam-lever *l* presses against and aside the point *q* of the switching-lever *p*, thereby moving the points *t* in the manner known and opening the branch line. As soon as the roller *m* has passed the switch-lever the friction-roller *h* of the ratchet-lever *g* is acted upon by the guide *i* as the train continues on its way, and its upper end moves outward in such a manner that the ratchet-wheel *c* is released, which then, together with the cam-wheel *d*, keyed on the same shaft, is turned by its spring in the direction as indicated by the arrow, Fig. 1; but it should be understood that it can only be thus turned to the extent of one tooth of the ratchet-wheel *c*, the end of the lever *g* acting as an anchor-escapement in clocks. The cam-wheel *d* is therefore also turned in the same direction—viz., toward the left—to the extent of a tooth of the ratchet-wheel *c*. The lever *l*, which has been returned by its spring *k* to its normal position, would therefore again actuate the next switch, provided it is arranged like the one represented in Fig. 2—in other words, provided that the next points would also have to be switched, as in the case described, from left to right. It is evident that on further turning the cam-wheel *d* by means of the lever arrangement the lever *l* would be caused to mount on the top of the next cam or tooth, thereby moving the lower end of the lever inward, so that it would come in contact with the other side of the next switch and actuate it in the contrary direction to the one represented in Fig. 2—i. e., the point would be moved from right to left.

The number and the arrangement of the teeth or cams on the wheel *d* depend on the

number and arrangement of the various switches or points that are to be passed by the vehicle passing over the line. In lines therefore containing switches acting in one direction only the arrangement of teeth or cams or of projections and recesses in the circumference of the wheel *d* would not be necessary and a simple disk would answer the purpose. In cases where left and right switches alternate regularly in the line the projections and recesses of the wheel *d* would be regular and symmetrical. In the drawings the case is represented as is usual in practice—viz., in which the changes as regards the direction in which the switching has to be carried out are irregular.

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

1. An automatic switch device for railroads comprising a casing or support on the locomotive or vehicle provided with two disks keyed on the same shaft provided with a motor-spring one disk being in the form of a

ratchet-wheel and engaging with an "anchor-lever," such as *g*, adapted to be operated by guides arranged on the track the other engaging with the end of a pivoted lever for actuating switch-levers of the points on the line, substantially as described.

2. In combination with a lever carried on the train for operating the switch, means carried on the train for changing the position of the lever and a guide on the track to operate said means to change the position of the lever, substantially as described.

3. In combination, the lever on the train for operating the switches, a cam on the train for operating the lever and setting it in its different positions and means for rotating the cam, substantially as described.

In witness whereof I subscribe my signature in presence of two witnesses.

MAX GAUL.

Witnesses:

JEAN GRUND,

RICHARD GUENTHER.