(No Model.) 2 Sheets—Sheet 1.

M. G. KNIGHT.

RAILROAD CROSSING.

No. 484,100. Patented Oct. 11, 1892.

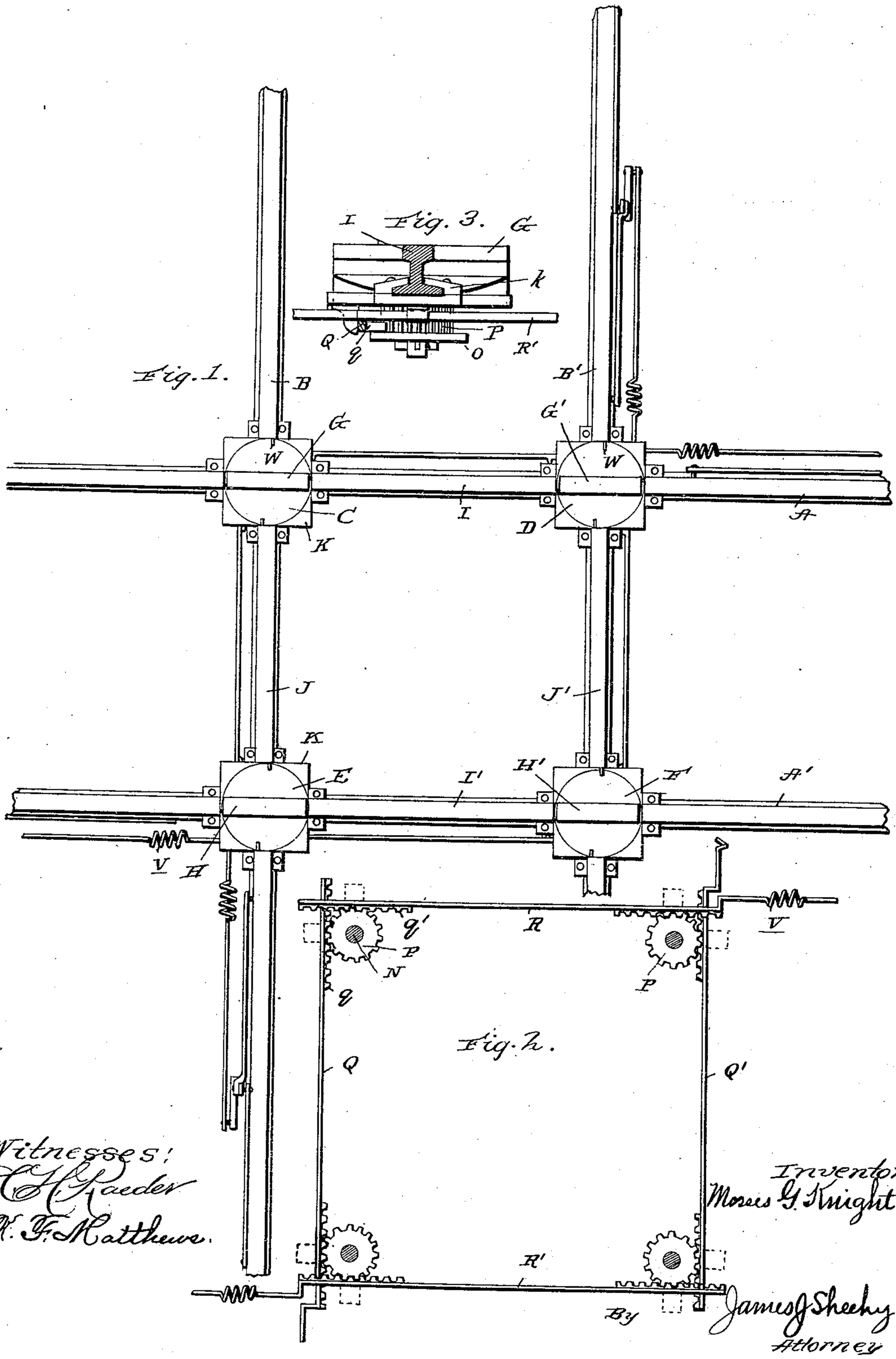

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

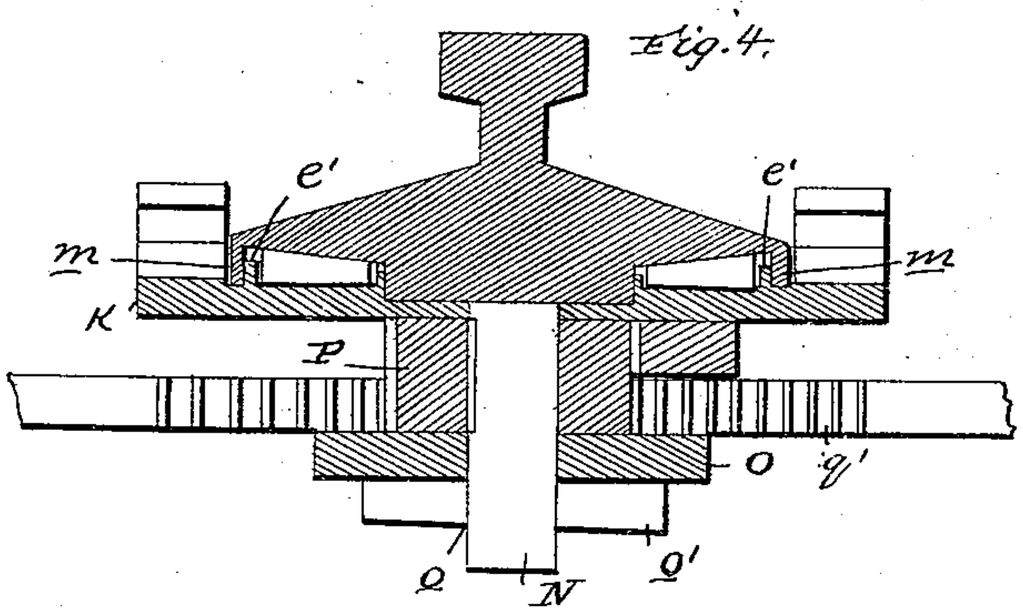


Fig. 5.

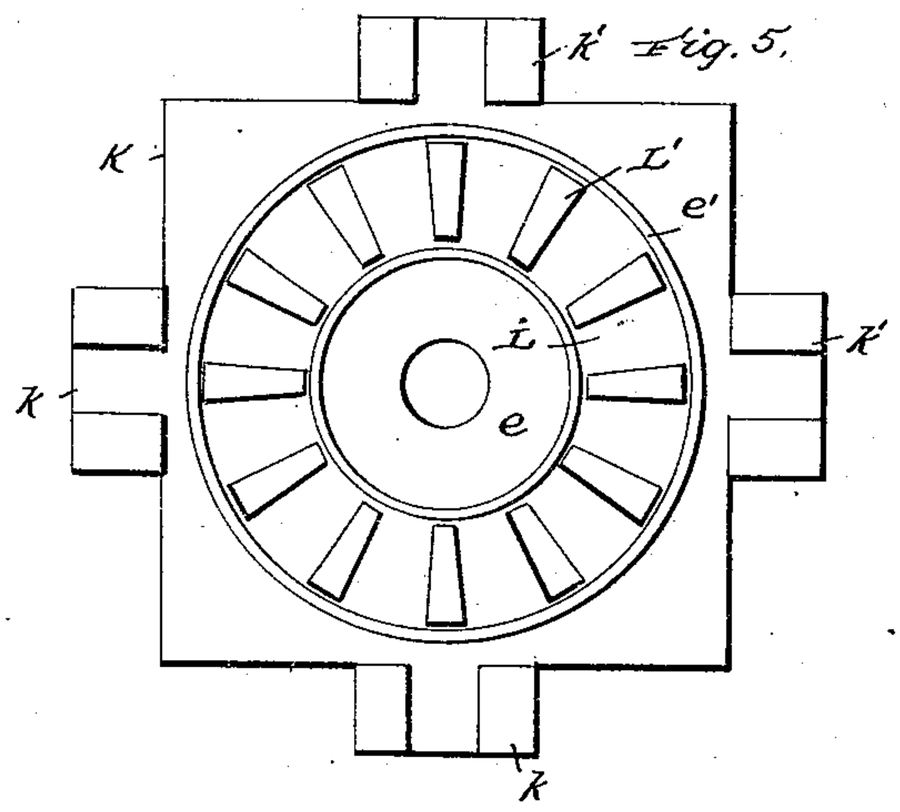
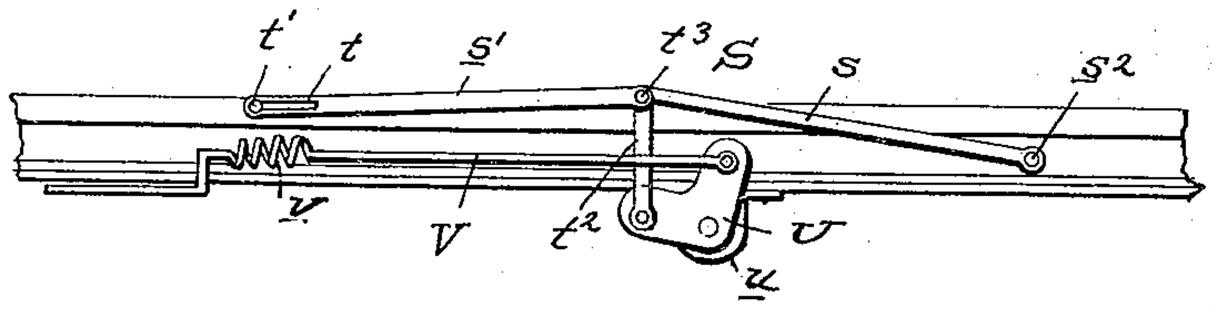


Fig. 6.



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UNITED STATES PATENT OFFICE.

MOSSES G. KNIGHT, OF OAK CLIFF, TEXAS.

RAILROAD-CROSSING.

SPECIFICATION forming part of Letters Patent No. 484,100, dated October 11, 1892.

Application filed March 29, 1892. Serial No. 426,935. (No model.)

To all whom it may concern:

Be it known that I, MOSSES G. KNIGHT, a citizen of the United States, residing at Oak Cliff, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Railroad-Crossings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to a novel automatic railway-track crossing; and it consists in certain devices organized in a manner to secure automatic alignment of a series of movable rail-sections with the main rails of a track on which a train is traveling in the direction of the crossing, the approach of the train setting in motion the devices by which the rail-sections are controlled, and thus dispensing with an attendant at the crossing to set the contrivance for the safe passage of the train through the crossing.

The invention further consists in the combination and construction of parts, which will be hereinafter more fully described, and particularly pointed out in the claims.

The invention is fully illustrated in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of the track-crossing complete. Fig. 2 is a detail view illustrating the means whereby the axially-turning disks are simultaneously adjusted. Fig. 3 is a detail view in elevation of one of the disks and a part of its actuating means. Fig. 4 is a vertical sectional view, on an enlarged scale, through the parts shown in Fig. 3. Fig. 5 is a plan view of the bed for the disk, showing the antifriction-bearing thereof. Fig. 6 is a detail view in side elevation, illustrating one of the series of wheel-actuated bars for moving the disks which carry the movable rail-sections.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A A′ designate the rails of one main track, and B B′ the rails of another main track, which extends at right angles to and intersects with the rails A A′ of the first-named main track. At the intersection or crossing-points of the rails of said right-angled tracks are arranged horizontal revoluble disks C D E F, each of which carries a movable rail-section adapted to be adjusted in alignment with either of the contiguous main-track rails, the movable rail-sections on the disks C D being designated at G G′ and those on the disks E F being shown at H H′, respectively. (See Fig. 1.) Between the disks C D is a stationary rail I. Between the disks E F is a parallel rail I′. Between the disks C E and D F are stationary rails J J′, respectively, the rails I I′ being in line with the rails A A′ of one main track and the rails J J′ being in line with the rails B B′ of the other main track. The disks are adapted to be simultaneously turned half-way around, and the rail-sections thereon are designed to align with the main-track rails and the stub-rails, according to which of the two main tracks the rail-sections are adjusted. Thus when the train is traveling on the main track A A′ the disks are turned so that the sections G G′ and H H′ are in line with the rails A A′ and I I′, as shown in Fig. 1; but when the train approaches the crossing on the track B B′ from either direction, the disks are turned to bring the rail-sections G G′ and H H′ in line with the rails B B′ and J J′, respectively, as will be readily understood. Each axially-turning disk is supported by a bed K, which is solidly and firmly secured in place, and the bed of said disk is provided with four radial sockets *k k′*, two of which are designed to receive the ends of two of the main-track rails, as A B, and the other two seats receive two fixed crossing-rails, as I J, said rails being securely bolted or fastened in place.

In the upper side of each fixed bed K is provided a central socket *e* for the reception of the central part of the revoluble disk, and concentric with this socket is arranged an annular vertical flange *e′*, which forms between itself and the wall of the central socket a chamber L, in which is placed a series of roller-bearings L′, which are of conical form, as shown in Figs. 4 and 5, and which bear against the lower beveled or inclined face of the revoluble disk.

The movable rail-section may be secured rigidly to its disk or made integral therewith, as shown in Fig. 3, and from the edge of the disk is a depending flange *m*, that takes

against the flange e' and serves to hold the disk in place and prevent its displacement. Each revoluble disk is further provided with an axially-arranged operating-stem N, which is rigidly secured to the disk at its lower side. This stem passes freely through a vertical central opening formed in the bed of the disk, and the lower end of said turning-stem N also passes through a fixed guide-block O, which is arranged a suitable distance below the bed K and parallel therewith, the lower extremity of the stem being slotted transversely at o and receiving a key or cotter o' below the guide-block O to prevent vertical displacement of the stem and the revoluble disk to which the stem is secured. The stem of each revoluble disk carries a power-gear P, which is rigidly secured to said stem by a key or in any other desirable manner, and with each gear-pinion meshes a rack in each of two endwise-movable actuating-rods, four of which are employed, as at Q Q′ and R R′. The rods R R′ are arranged above and at right angles to the other rods Q Q′, and each rod has two series of rack-teeth q q', which mesh with two of the pinions on the stems of two revoluble disks, the rods being arranged, as shown in Fig. 2 of the drawings, to connect all four of the revoluble disks for simultaneous action when one of the series of rods is moved by a train approaching the crossing in either direction. To effect this automatic operation of the revoluble disks, I provide a wheel-actuated pressure-bar S on each of the four sides of the crossing, and this pressure-bar is arranged alongside of one of the main-track rails at some distance from the crossing, so that all the parts will be actuated to adjust the movable sections of rails in line with the proper main-track rails on which the train is approaching. The head of the main-track rail to which the wheel-actuated pressure-bar is applied is cut away a short distance to receive this bar, and said pressure-bar is made in two sections s s', which are normally inclined reversely to each other and extend above the level of the track-rail in the path of the treads of the wheels adapted to travel on said rail. The section s of the pressure-bar has its outer end pivoted at s^2 to the web of the main-track rail, and the other section s' has a longitudinal slot t, through which passes a fixed pin t', that permits the section s' to have a limited endwise movement sufficient for the pressure-bar to be depressed below the rail. The inner meeting ends of the sections s s' of the bar are pivoted together and to a vertical arm t^2 by a common pivot t^3, and the lower end of this arm is pivoted to the short arm of a bell-crank rocker U, which is fulcrumed at the junction of its arms to a fixed depending bracket u, securely fastened to the under side of one of the main-track rails. The longer upper arm of this bell-crank rocker is pivoted to a pitman V, which extends from the rocker and is connected to one of the rack-bars which actuate the stems of the revoluble disks, and each pitman is provided with an intermediate coiled-spring portion v, which serves to sustain the rocker in position and hold the pressure-bar raised in the path of the car-wheels and provide for a deep double-flange wheel.

To limit the movement of the revoluble disks and insure proper alignment of the rail-sections thereon with the fixed track and crossing rails, I provide said track and crossing rails with protruding stops W, which are securely bolted to the webs of said rails and project beyond the ends of the same in the path of the rail-sections on said disks to contact with said movable rail-sections and arrest the motion thereof when the disks are actuated to set the rail-sections in line with either main track.

The operation of my invention is obvious from the foregoing description, and it may be briefly explained as follows: Normally the pressure-bars are elevated by the coiled-spring pitmen above the heads of the rails and the disks placed in positions so that the rail-sections thereon align with the main-track rails. As a train approaches the crossing from either direction the wheels depress the pressure-bar on one rail of the track, which in turn moves the rocker and pushes the pitman to move one of the rack-bars endwise, and as all the rack-bars are geared to the stems of the series of disks the latter are rotated to bring all of the movable rail-sections into proper alignment with the rails of the main track on which the train is traveling.

I am aware that changes and alterations in the form and proportion of parts and details of construction of the mechanism herein shown and described as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages of my invention.

Having described my invention, what I claim is—

1. In an automatic railway-crossing, the combination, with the main-track rails and the crossing-rails, of an axially-turning disk at each intersection of said rails and having the movable rail-section and a depending stem provided with a double gear-pinion, a stationary bed for each disk, the two sets of reciprocating bars, each having the rack-teeth which mesh with the pinions on the stems of two disks, and means for actuating either of said reciprocating bars, substantially as and for the purpose described.

2. In a railway-crossing, the combination, with the main-track rails and crossing-rails, of the fixed beds at the intersection of said rails, comprising the central socket and chamber, the annular vertical flange e', and the integral radial rail-seats in which are firmly secured the contiguous ends of the main-track and crossing rails, the revoluble disks seated in roller-bearings in said beds and having the depending stems and the annular flanges m, adapted to engage the flanges e' of the beds,

and means geared to the stems to simultaneously turn the series of stems and disks, substantially as described.

3. In a railway-crossing, the combination, with the main-track and crossing rails, of the fixed beds which receive the contiguous ends of said rails, the axially-turning disks carrying the movable stub-rails, the depending stems rigid with each disk and passing through the bed and a lower guide-block and having the key below the said block, the gear-pinion keyed to each stem, and the reciprocating rack-bars geared to the pinions on the stems of the disks, substantially as described.

4. In a railway-crossing, the combination, with the main-track and crossing rails, the disks carrying the movable stub-rails, and the rack-bars for actuating said disks, of a sectional pressure-bar connected to said main-track rail and having a pendant connected to a rocker and a spring-pitman between the rocker and the rack-bar, substantially as described.

5. In a railway-crossing, the combination, with the main-track and the crossing rails, the disks carrying the stub-rails and having the depending stems, and the rack-bars geared to said stems, of the sectional pressure-bar pivoted at the ends to a main-track rail and connected to a common pendant, the bell-crank rocker having the pendant connected to one arm, and the spring-pitman pivoted to the other arm of the pendant and connected to a rack-bar, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

MOSSES G. KNIGHT.

Witnesses:
W. J. SHERMAN,
GEO. W. STEWART.