

A. ZUKOR.
RAILWAY SIGNAL.

APPLICATION FILED JULY 29, 1912.

1,053,691.

Patented Feb. 18, 1913.

3 SHEETS—SHEET 1.

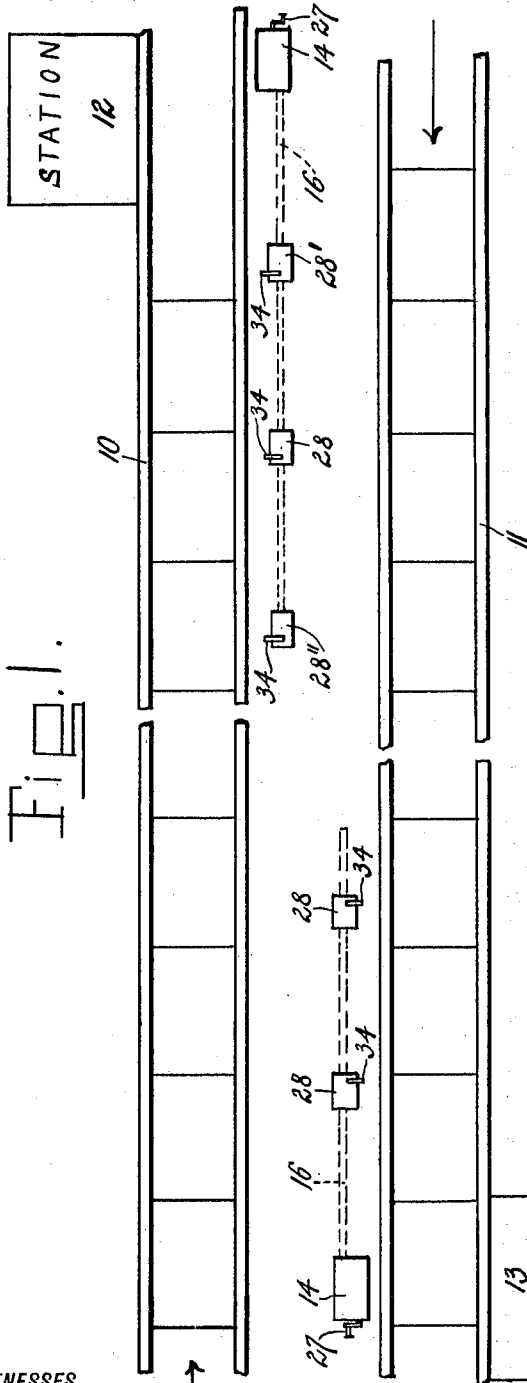


Fig. 1.

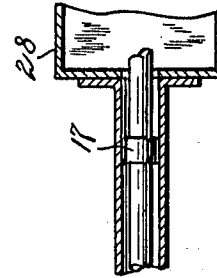
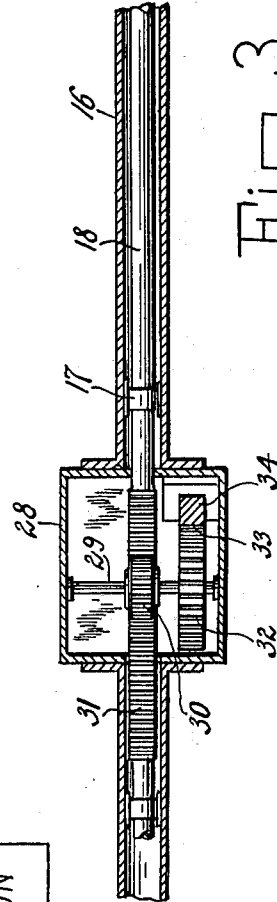


Fig. 3.



WITNESSES

S. Birnbaum
Jm. Klink.

INVENTOR

Arnold Zukor

BY

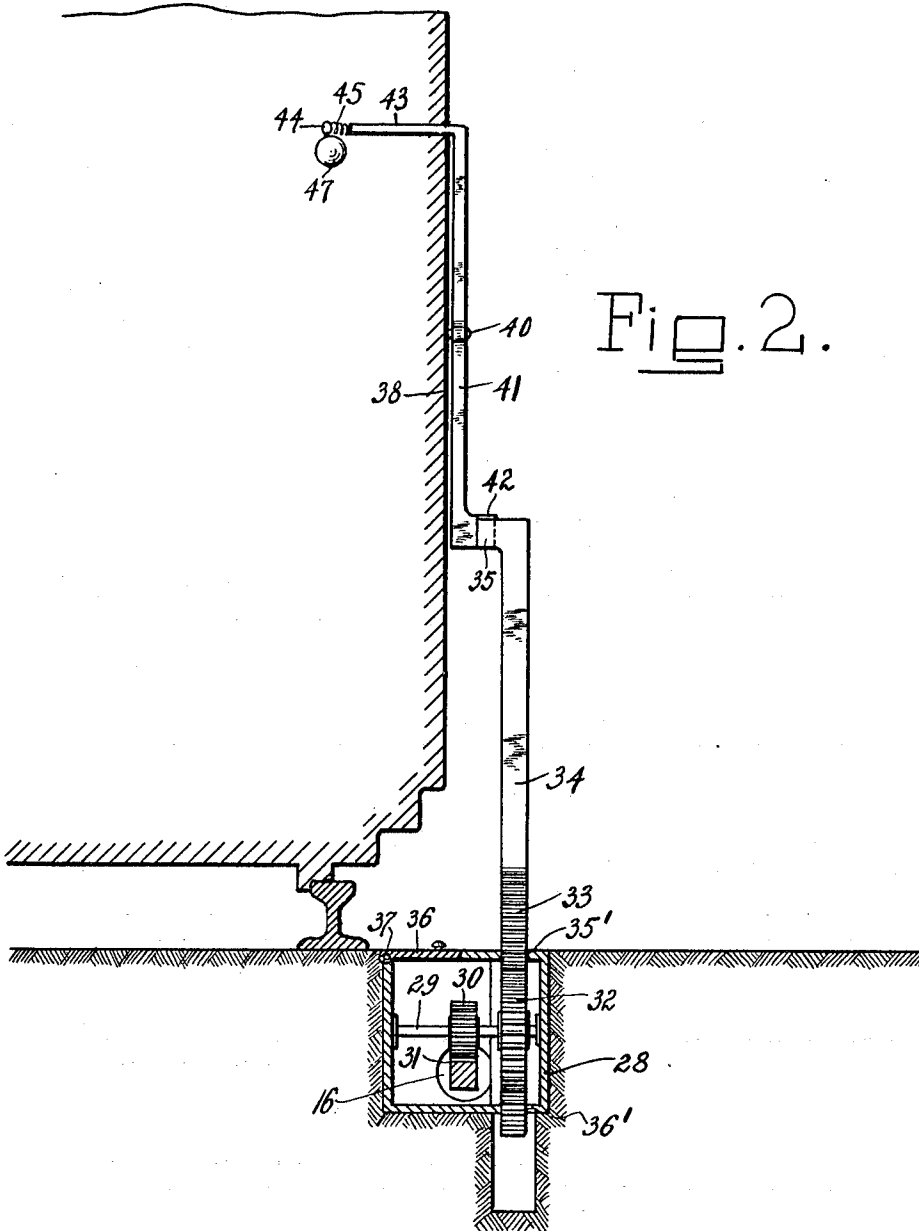
Sigmund Herzog
his ATTORNEY

A. ZUKOR.
RAILWAY SIGNAL.
APPLICATION FILED JULY 29, 1912.

1,053,691.

Patented Feb. 18, 1913.

3 SHEETS—SHEET 2.



WITNESSES

S. Birnbaum
Wm. Clark

Arnold Zukor INVENTOR
BY *Sigmund Herzog*
his ATTORNEY

A. ZUKOR.
RAILWAY SIGNAL.
APPLICATION FILED JULY 29, 1912.

1,053,691.

Patented Feb. 18, 1913.
3 SHEETS—SHEET 3.

Fig. 4.

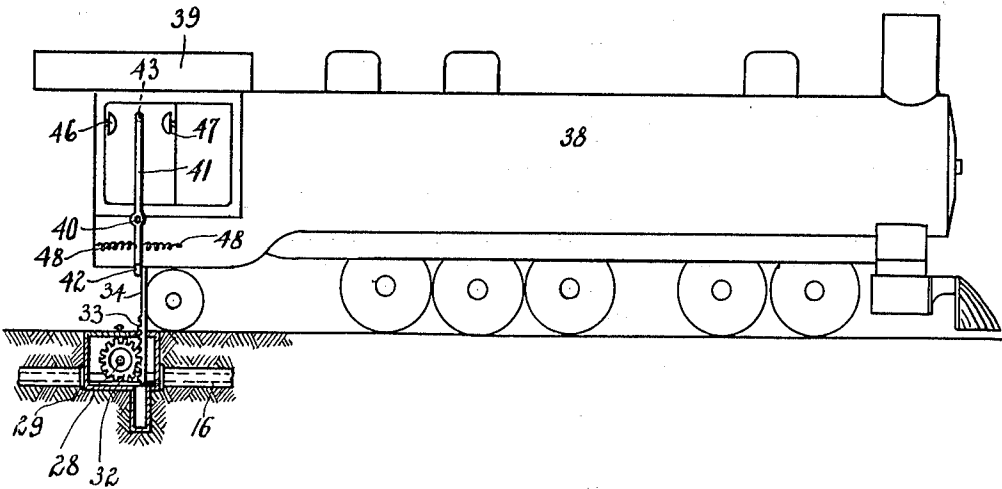
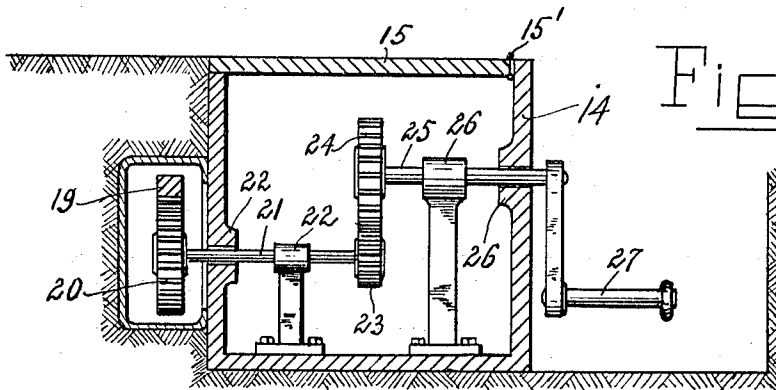


Fig. 5.



WITNESSES

S. Rimbaun
Wm. Link.

Arnold Zukor INVENTOR
BY *Sigmund Herzog*
his ATTORNEY

UNITED STATES PATENT OFFICE.

ARNOLD ZUKOR, OF NEW YORK, N. Y., ASSIGNOR OF ONE-FOURTH TO MORRIS
NEWMAN, OF NEW YORK, N. Y.

RAILWAY-SIGNAL.

1,053,691.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed July 29, 1912. Serial No. 712,016.

To all whom it may concern:

Be it known that I, ARNOLD ZUKOR, a citizen of the United States, and resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway-Signals, of which the following is a specification.

The present invention relates to railway signaling devices, and has for one of its objects to provide a device of this class which is simple in construction and efficient in operation to prevent effectively rear collisions of trains upon a track.

Another object of the invention is to provide a plurality of signals adapted to be simultaneously set from a railway station so as to actuate an audible signaling device on the locomotive of a train passing over a predetermined portion of the track.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claim and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction within the scope of the appended claim without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a diagrammatic view of the invention as employed on a double track road; Fig. 2 is a front elevation, partly in section, of the signal showing the position of the same as it acts upon the cooperating part of the locomotive; Fig. 3 is a horizontal section taken through a portion of the apparatus; Fig. 4 is a side elevation of a locomotive and the parts of the signal shown in Fig. 2 of the drawings; and Fig. 5 is a vertical section taken through the signal setting means.

Broadly speaking, the invention consists of a plurality of interconnected signals which are arranged along the tracks in rear of railroad stations, and adapted to be set simultaneously, preferably, from the signaling towers at the stations. These signals,

when set, actuate a swinging arm upon the locomotive of a passing train, said arm operating an audible signal, such as a bell, which is arranged in the cab of the locomotive. The signals are set when a train arrives at the station, in order to inform the engineer of another incoming train of the fact that the track at the station is occupied.

Referring to the drawings, the numerals 10 and 11 indicate the tracks of a double-track road, and the numerals 12 and 13 two distant stations. The trains run on the two tracks in the directions indicated by the arrows in Fig. 1 of the drawings. In the signaling tower of each station is arranged a casing 14, (shown in detail in Fig. 5 of the drawings), its cover 15, which is hinged at 15' to the casing, being, preferably, flush with the ground. In this casing is arranged the signal setting mechanism which will be presently fully described. From the casing 14 extends along the inner rail of the track, in rear of the station, a tube 16 to a distance about two miles from the station. In this tube, which is arranged under the ground, is shiftably mounted in bearings 17, 17 a rod 18. That portion of the rod which is arranged near the casing 14 is formed as a rack 19, the teeth of which mesh with a gear 20, keyed to a shaft 21, which is suitably journaled in bearings 22, and carries upon that end which is arranged within the casing 14 a gear 23, in mesh with a gear 24, which is keyed or otherwise attached to a shaft 25, the latter being journaled in bearings 26, 26. One end of the shaft 25 extends through the casing 14, and has fixedly attached thereto outside of the casing an operating crank or handle 27.

The tube 16 is provided with box-like enlargements 28 at, preferably, equidistantly arranged points thereof, the first box, denoted by the numeral 28', being arranged in rear of the station and the last box 28'' at the outer end of the tube 16. These boxes are all alike in structure and so are also the parts contained therein. In each box is rotatably mounted a transverse shaft 29, to which is keyed a gear 30, meshing with a rack 31, which is made integral with or attached to those portions of the rod 18 which are arranged in the boxes 28. Upon the shaft 29 is furthermore mounted a gear 32, in mesh with a rack 33 upon a vertical

signaling bar 34, which projects through openings 35' and 36' in the cover and bottom, respectively, of the box 28. The upper free end of each signaling bar extends a substantial distance above the level of the ground, and carries a projection 35, which extends toward the inner rail of the track. The cover portion 36 of each box 28 is hinged at 37 to the box, and is adapted to be lifted to have access to the interior parts of the box to lubricate the parts, etc. From the foregoing it will be seen that by turning the handle 27 in one or the other direction, the gear 20 will be rotated, and, as the same is in mesh with the rack 19, the rod 18 and the racks 31 thereof will be shifted in one or the other direction. This shifting movement will rotate the gears 30 and 32 and thereby raise or lower the signaling bars 34. The locomotive of the train is denoted in the drawings by the numeral 38. To the side of the cab portion 39 of this locomotive is pivoted at 40 a two armed lever 41, the lower free end of which is provided with an outwardly extending lug 42, while its upper end is provided with an inwardly projecting horizontal arm 43, which extends into the cab and is provided upon its free end with a bell-hammer 44, the latter being attached to the arm 43 by means of a spring 45. The arm 44 is adapted to actuate two bells 46 and 47, which are arranged within the cab. Springs 48, 48, secured to the side of the locomotive and to the lever 41, serve to hold the same in its central position or to swing it into such position. The signaling bars 34 are normally arranged a suitable distance below the lugs 42 upon the two armed lever 41, but may be shifted into the path of said lugs as will be hereinafter described.

The operation of the signaling device is as follows: Let us suppose that a train is stopping at the station 12, and the tower-man wishes to signal this fact to an incoming train. By rotating the handle 27 of the setting means in the proper direction, the rod 18 will be shifted, whereby the signaling bars 34 will be raised into the path of the lug 42 of the two armed lever 41. When the locomotive arrives at the box 28'', the two armed lever 41 will be swung to one side, whereby one of the springs 48 will be expanded and the other compressed. The lug 42 will disengage itself, as the train is running, from the projection 35 of the signaling bar, whereby the said lever will oscillate on its pivot until the tensions of the springs 48 are equalized. Due to this oscillating movement, the bells 46 and 47 will be acted upon by the hammer 44, conveying thereby the information to the engineer that

a train is stopping at the station ahead. After receiving this information, the engineer slows down the train. At the second box a similar signal will be given which will cause the engineer to proceed at a still slower speed, and to stop if a signal is given at the box 28'. Should the train depart in the meantime from the station, the tower-man turns the handle 27 in the opposite direction, withdrawing thereby the signaling bars 34 from the path of the lug 42 upon the locomotive. No signals will thus be given at the boxes, causing thus the engineer to proceed at the proper speed to the station.

It will be observed that the device is very useful in view of the fact that the engineer of a train does not need to look for the usual semaphores, which he is apt to overlook while attending to the several setting levers of the locomotive, and which cannot be seen at all in foggy weather.

While herein three boxes have been shown in rear of each station and a specified distance mentioned, it is obvious that any other suitable number of boxes may be employed at suitable distances, according to the requirements.

What I claim is:—

In a railroad signal, the combination with a two-armed lever pivoted to the side of a locomotive provided upon its upper end with a bell actuating hammer and at its lower end with an outwardly extending lug, of a tube arranged under the ground along the track and extending from the signal tower in rear of a station to a substantial distance from the station, said tube being provided with a plurality of box-like enlargements, of a transverse shaft rotatably mounted in each box, two gears fixedly attached to each shaft, a substantially vertical signal bar shiftably arranged in each box provided with a projection upon its upper end and having a rack meshing with one of the gears in its box, a rod shiftably mounted in said tube and extending through said boxes, said rod being provided with racks at those portions which are arranged in said boxes, said last named racks meshing with the other gears on said shafts, and means arranged at the station for shifting said rod, whereby said bars are simultaneously raised to bring their projections into the path of said lug or simultaneously withdrawn from said path, at will.

Signed at New York, in the county of New York and State of New York, this 26th day of July, A. D. 1912.

ARNOLD ZUKOR.

Witnesses:

SIGMUND HERZOG,
MORRIS NEWMAN.