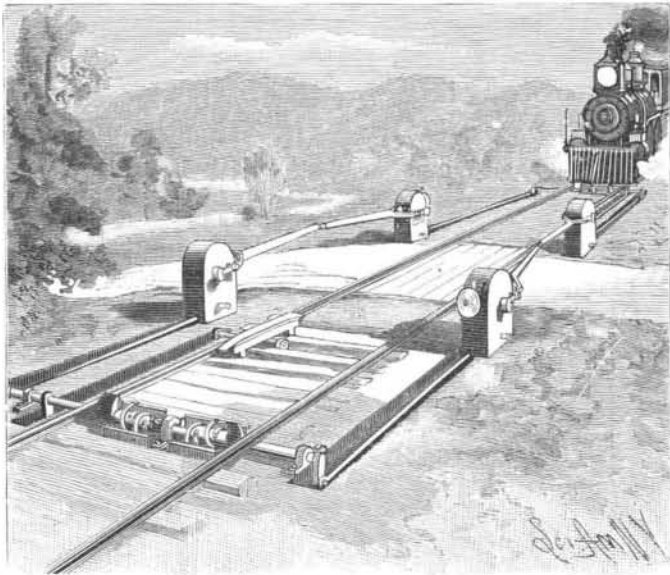


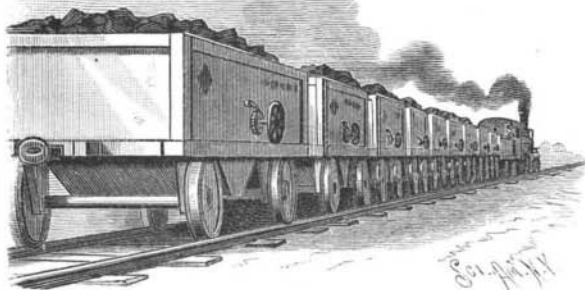
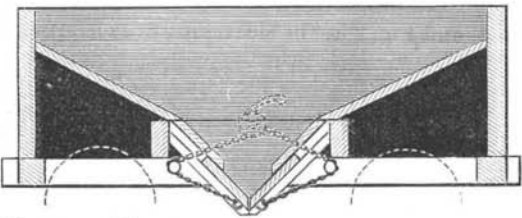
**AN AUTOMATIC RAILWAY CROSSING GATE.**

A gate for closing common roads where they cross railway tracks, and which is automatically opened and closed by trains passing either way, is shown in the accompanying illustration, and has been patented by Mr. George W. Housel, of Bloomsbury, N. J. The invention covers a novel construction and arrangement of trip devices, and lever and tread plate and danger signal operating mechanism, which are the same approaching



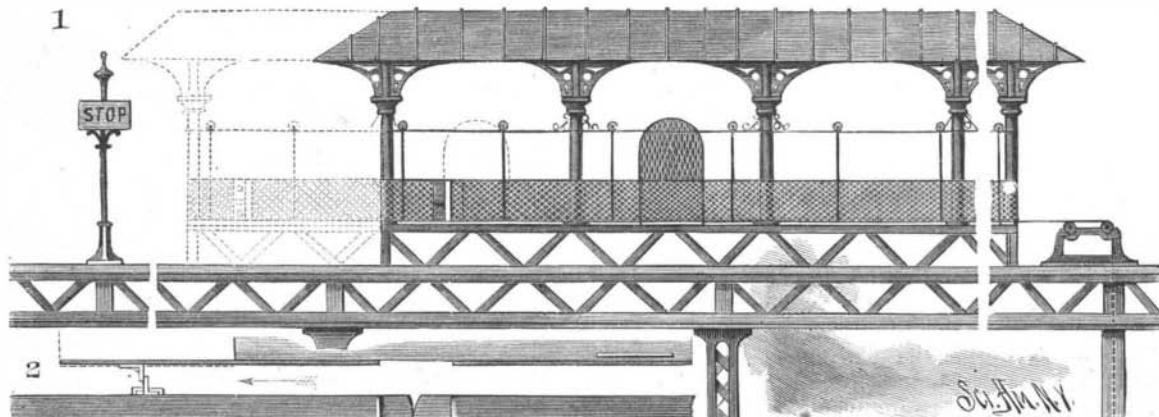
**HOUSEL'S AUTOMATIC RAILWAY CROSSING GATE.**

each of the gate posts and barriers of a double track railway, for which four separate sets of tripping mechanism are required, a single track railway requiring but two sets. A shaft is journaled transversely of the track at some distance from each post and its barrier, a crank arm fixed to this shaft being connected with a rod or bar connected at its other end with an elbow lever operating a gear wheel in the post. Sleeves fitted loosely on the shaft, and provided with springs, connect it with trip arms, by which the shaft is operated by the wheels of an approaching train, in connection with a tread bar, which has sloping or beveled



**DAVIS' DUMPING CAR.**

ends, and which is long enough to cause it to be always depressed by the car wheels of a passing train. An approaching train first strikes a distant trip arm, which sounds a gong signal, and next actuates the trip arms in connection with the shaft journaled transversely of the shaft, whereby the barrier is lowered, the connection with the sleeve and its springs and its tread bar being such as to hold the gate barriers down until the last car of the train has passed by, and then raise the barriers. The construction is such that with two trains passing a crossing at the same time, or with a train backing down on a crossing after it has passed, the signal and the gate operating devices will in each case work automatically.



**RINALDI'S GATE FOR ELEVATED RAILWAY STATIONS.**

**American Institute Exhibition.**

The fifty-sixth annual exhibition of the American Institute will be opened this year on the 28th of September. The buildings are being put in order, and will be painted inside and outside. The feature of the year will be the electrical department, which will occupy fully one half of the enormous buildings. It will be not alone an exhibition of all the latest inventions in this most interesting of modern sciences, but as well historical, for in it will be displayed all the noted apparatus of the past. Everything electrical can there be seen, from a motor for drawing trains of cars to the smallest toy. The display of improved methods of lighting and new motors will be the largest ever seen in this country. In addition to this novel exhibition, there will be an exhibition of other late inventions in the mechanical arts, so far as it is within reach of the management to find the required space for their accommodation. Intending exhibitors who have not yet applied for space should not longer delay their application.

**AN IMPROVED DUMPING CAR.**

For cars such as are usually employed in transporting coal, the invention herewith illustrated, which has been patented by Mr. William L. Davis, of South Amboy, N. J., affords an improved construction and mechanism for operating the doors, whereby they can be easily opened to any desired extent, and will be held in such adjustment, or can be quickly and securely closed [to

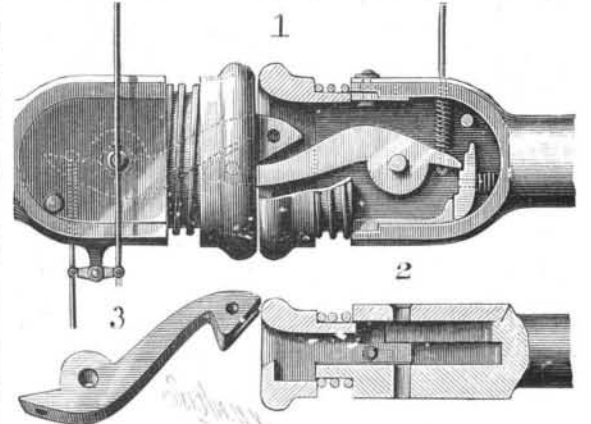
cut off the discharge, while the operating mechanism is wholly on the exterior of the load bin. The discharge opening is regulated by weighted doors, which slide on the under side of the inclined walls of the chute, in converging guides, chains attached to the lower edge of each sliding door at either end being connected to transverse shafts journaled in bearings in the bottom beams. The ends of these shafts are also journaled in bearings in the outer beam, and chains are wrapped around the shafts between the inner and outer beam, in opposite directions, and connected to a short shaft which carries a hand wheel, by turning which the doors will be raised. A ratchet wheel on the latter shaft is engaged by a dog pivoted to the car body to hold the doors open, and on releasing the dog the doors descend by gravity to close the discharge opening.

**AN IMPROVED ELEVATED RAILWAY GATE.**

A device for controlling the admission of passengers from elevated railway stations to the cars, and preventing any from being forced from the platform on to the tracks, has been patented by Mr. Leonida Rinaldi, of No. 219 East Thirteenth Street, New York City, and is shown in the accompanying illustration. Upon the edge of the platform, next the tracks, and extending its full length, is a railing supported by lower and by upper rollers, the latter riding upon a rail carried by the posts that support the roof. Near the forward end of the railing is a projection extending into the path of a swinging projection carried by one of the forward cars or by the engine of a train, while to the rear end of the railing is connected a weight, by means of a chain or wire, extending over spring-supported sheaves, the weight being housed within a tube or box, in the lower portion of which is a buffer spring. As a train nears the forward end of the station, the projection from the locomotive or a forward car strikes the projection from the railing, so that the railing is carried along to open one or more gates, one such opening being indicated in dotted lines in Fig. 1, at the same time raising the suspended weight. After the passengers have boarded the train, the projection swinging from its forward portion is withdrawn, by a manipulating cord, from engagement with the projection attached to the railing, when the weight acts to return the gates to closed position, this cord also serving to enable the engineer or trainmen to pass a station without opening the gates when it is desired to go by without stopping.

**AN IMPROVED CAR COUPLING.**

A car coupler by which cars will be automatically coupled on coming together, and in which the buffer springs will hold the buffers close together, so that no space remains between them wherein the foot of a person may be caught, is shown in the accompanying illustration, and has been patented by Mr. Nelson Muslar, of West Boylston, Mass. The buffer of each drawhead has rearwardly extending guide arms, working in a groove, and a buffer spring surrounding the buffer behind its head abuts the forward end of the drawhead, in which the buffer is yieldingly held, an extension of the drawhead projecting into the buffer and limiting its inward movement, as shown in Fig. 2. Behind its pivot point the coupling hook has a tongue or lug to which is secured the inner end of a trip or

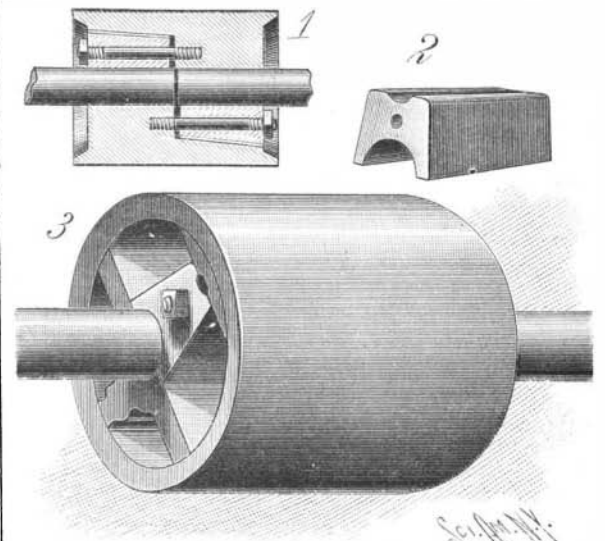


**MUSLAR'S CAR COUPLING.**

operating rod, the other end extending outward to a point where it may be conveniently reached by the train hands. Surrounding this rod, within the drawhead, is a spiral spring that holds the coupling hook in locked position until uncoupled by the operating rod, which also has connections whereby it may be operated from either side of the car. In a recess in the rear of the coupling hook is a catch block loosely held on a stem surrounded by a spring, whereby the catch block is pressed outward against the lug on the rear of the coupling hook, thus swinging the coupling hooks to automatically couple cars coming together. Each coupling hook is formed with a lateral recess in its outer end, with a hole at right angles thereto, so that a car provided with this improved coupler may also be coupled to a car having the ordinary link and pin coupler.

**AN IMPROVED SHAFT COUPLING.**

A strong and simple form of shaft coupling, in which the body of the coupling is preferably made to be used as a pulley if desired, is shown in the accompanying illustration, and has been patented by Mr. Robert J. Stuart, of New Hamburg, Dutchess County, N. Y. Fig. 3 is a perspective view of the coupling applied,



**STUART'S SHAFT COUPLING.**

Fig. 1 being a sectional elevation and Fig. 2 showing one of the wedges for securing the coupling and shaft together. The interior of the body of the coupling is formed with two opposite bridges, each of which joins the body by three webs, each bridge having a concave seat for one end of a shaft, and the seats being at opposite ends and opposite sides of the body, so that the coupling is perfectly balanced as to weight. Opposite each bridge is formed an inclined surface, against which the outer inclined surface of a wedge acts for binding the shaft and the coupling together, a bolt passing through the wedge, and screwed into one web of the bridge, forcing the wedge into the coupling for binding the shaft.

**TO MAKE GRAVEL ROOFS.**—First tack two-ply tarred paper on your roof, then boil tar and pitch together and apply with brush hot, then scatter pebbles over tar and pitch when soft.