

any other suitable substance, substantially as set forth. 12th. The combination, in a railroad signal, of an air bellows F, shifting box F<sub>5</sub>, lead pipe e, valves G G<sub>1</sub> and G<sub>2</sub>, substantially as and for the purpose set forth. 13th. The combination, with an air bellows F, valve G and lever C, of a shifting mechanism D D<sub>1</sub> a d b and c to automatically direct the flow of air from the bellows by a train passing in either direction to operate signals (as may be desired), substantially as set forth. 14th. The automatic shifting of the direction of air to operate signals in either direction from the same pipe, by a train passing to and from the same track, substantially as and for the purpose set forth. 15th. The connection of the bellows F and shifting air box F<sub>5</sub>, and the expansion valve G<sub>1</sub> with another bellows, at any desired distance therefrom by a pipe, substantially as and for the purpose set forth. 16th. The connection, with a pipe leading to a crossing or station signal, of a shifting air box F<sub>5</sub> to cause the said signal to be operated by an approaching train and not to be operated by a train going from the signal on the same track, substantially as set forth. 17th. The plate N<sub>3</sub>, arms N<sub>2</sub> and n, fulcrum lever L, disengaging arm n<sub>3</sub>, catch lever m<sub>3</sub>, releasing lever n<sub>2</sub> and valve G<sub>1</sub> and setting valve G, in combination with bellows F, springs E and lever C to set the "block" signal H by a passing train and release the same when passing another bellows at a suitable distance away by the track, to prevent collision in that section, substantially as set forth. 18th. The automatic setting and locking of the "block" signal H by a train passing along on a railroad track by means of an expansion valve G, lever I and catch m to prevent collision from a following train, and the automatic releasing thereof by the train while passing another bellows in advance by means of valve G<sub>1</sub>, substantially as set forth. 19th. The protection of levers C D D<sub>1</sub> C<sub>2</sub> C<sub>3</sub> and rod B<sub>3</sub> bellows F and its operating mechanism by an iron sheathing and house, substantially as and for the purpose set forth. 20th. The iron sheathing or covering C<sub>4</sub>, "block" signal standard and bellows house for protecting the levers and signal operating mechanism, substantially as and for the purpose set forth. 21st. The combination, in railroad signal, of a lever C, bellows F, pipe e, valve G<sub>1</sub>, disks H<sub>1</sub> H<sub>2</sub>, gong S<sub>2</sub>, sign K and lantern U, substantially as and for the purpose set forth. 22nd. The combination, with a valve G<sub>1</sub>, of disks H<sub>1</sub> H<sub>2</sub>, substantially as and for the purpose set forth. 23rd. The combination, with a "block" signal H and mechanism of a valve G<sub>1</sub>, train indicators H<sub>1</sub> H<sub>2</sub>, sign K, weight S and gong S<sub>2</sub>, substantially as and for the purpose set forth. 24th. The combination of a railroad signal or gate L and crank M, mounted and operated, substantially as and for the purpose set forth. 25th. The combination, in an automatic signal, of an inscribed movable sign K or L capable of being automatically concealed and displayed, substantially as set forth. 26th. The combination, in a railroad signal, of a spring g<sub>1</sub>, rod n, weight T and spring d<sub>3</sub>, substantially as and for the purpose set forth. 27th. The automatic simultaneous sounding of a gong S<sub>2</sub> and displaying of a disk or disks H<sub>1</sub> and H<sub>2</sub>, sign K and lantern U to announce approaching trains, substantially as set forth. 28th. The combination, with the bellows F, pipe e and valve G<sub>1</sub>, of the different colored disks H<sub>1</sub> and H<sub>2</sub>, operated by the same valve, substantially as and for the purpose set forth. 29th. The combination, in railroad signal, of a set and movable and distinctive operating disks or indicators H<sub>1</sub> H<sub>2</sub> H<sub>3</sub> H<sub>4</sub>, whereby the signal H<sub>1</sub> will indicate safety to the approaching engineer, and signal H<sub>2</sub> indicate danger to any person opposite thereto, and if two trains should approach each other the red signal H<sub>3</sub> will cover signal H<sub>1</sub> and thus indicate danger in advance to both engineers, substantially as and for the purpose set forth. 30th. The combination, with the signal H<sub>1</sub> and H<sub>2</sub>, of a catch m and valve G<sub>1</sub> to use said signals as "block" signal when desired, substantially as and for the purpose set forth. 31st. The combination of a transparent disk H<sub>2</sub> to indicate danger, and non-transparent disk H<sub>3</sub> provided with opening 3 to indicate safety, substantially as and for the purpose set forth. 32nd. The movable signal disk H<sub>4</sub> provided with glass 4, substantially as and for the purpose set forth. 33rd. The light S<sub>1</sub> placed in a railroad signal, to show in both directions to indicate safety or danger, substantially as and for the purpose set forth. 34th. The lighting of an automatic signal by gas or otherwise, and the automatic adjustment, concealment displaying thereof, substantially as and for the purpose set forth. 35th. The combination, in a railroad signal, of one or more reflectors S<sub>5</sub>, substantially as and for the purpose set forth. 36th. The combination, with a railroad signal, of a clock mechanism to automatically light the lamps or burners and extinguish them at any desired given time, substantially as set forth. 37th. The automatic setting in advance by a moving train of an indicating signal light and sounding a gong at a crossing of railroads, whereby the first approaching train will show danger to block all other trains until it passes the crossing and releases its sign, substantially as set forth. 38th. The automatic revolving of an indicating lantern or sign to signal moving trains on railroad track, substantially as and for the purpose set forth. 39th. The combination, in a railroad signal, of an automatic revolving light or indicative sign, substantially as and for the purpose set forth. 40th. The combination, with an air bellows F, tube e and expansion valve g<sub>1</sub>, of an indicative lantern capable of being automatically revolved, substantially as and for the purpose set forth. 41st. The combination, in a railroad signal and also in a clock mechanism, of a spiral wire U<sub>1</sub> to transmit revolving motion in any desired direction, substantially as set forth. 42nd. The combination of an automatic revolving light or signal U and sounding gong S<sub>2</sub> in an automatic signal, substantially as set forth. 43rd. The automatic operation of a visible and audible railroad signal by a clock mechanism operative by the gravity of a weight and wound up and actuated by a passing train, substantially as set forth. 44th. The automatic releasing of clockwork mechanism to operate signals in advance of an approaching train, by air forced by the pressure of a train passing over bar B to actuate lever C, bellows F and valve G<sub>1</sub>, substantially as set forth. 45th. The automatic winding and stopping of a signal mechanism by a train moving along a railroad track, substantially as set forth. 46th. The combination, with the wheel T and weight S, of a ratchet S<sub>1</sub> playing free on the shaft and having one set of teeth to engage with a winding pawl X, and another set of teeth to engage with the catching pawl x<sub>1</sub> attached to the wheel T, to automatically wind the weight S and give wheel T a revolving motion, substantially as set forth. 47th. The combination, in a railroad signal, of a wheel T, pin p<sub>1</sub> and pin or prong r, to automatically display a sign and sound a gong, substantially as set forth. 48th. In an automatic winding mechanism of a railroad signal, the drum ratchet S<sub>1</sub>, pawl X and rope

S<sub>1</sub>, gripping button and key V<sub>5</sub>, rod V, guide V<sub>2</sub> and the yielding springs, substantially as and for the purpose set forth. 49th. The combination of a drum ratchet S<sub>1</sub>, plate or lever X<sub>2</sub> rod V, pitman V<sub>1</sub> and crank or lever Z, to automatically wind and stop the signal mechanism, substantially as set forth. 50th. The combination, in a railroad signal, of a lever C<sub>2</sub>, rod V, spring V<sub>1</sub>, guard V<sub>2</sub>, pitman V<sub>1</sub>, pawl X, carrier or plate X<sub>2</sub>, ratchet drum S<sub>1</sub>, weight and spring S, wheels T and T<sub>1</sub> and pawl S<sub>1</sub>, to automatically wind and operate railroad signals by a train moving along a railroad track, substantially as set forth. 51st. The combination, in an automatic railroad signal, of a wheel T<sub>1</sub>, collar i<sub>3</sub>, recess i<sub>3</sub>, pin p, prong or prongs r and lever r<sub>1</sub>, to automatically operate visible and audible signals by the revolving of a wheel, substantially as set forth. 52nd. The combination, in a railroad signal, of an adjustable regulator J and segment R<sub>1</sub> to control the operation of signals, substantially as and for the purpose set forth. 53rd. The combination, in a railroad signal, of a segment R<sub>1</sub>, whereby the signals are kept in constant operation for a given time or until stopped by a passing train, substantially as set forth. 54th. The combination, with the wheel T, of the spring t and g<sub>1</sub>, substantially as and for the purpose set forth. 55th. The combination, in an automatic railroad signal, of a catch k, to lock and release the mechanism, substantially as set forth. 56th. The combination, with a clock mechanism, of an air bellows F, pipe e and valve G<sub>1</sub>, to automatically release the operating mechanism, substantially as set forth. 57th. The operation of signals by means of air passing from valve G<sub>1</sub>, substantially as and for the purpose set forth. 58th. The combination, with the bar B<sub>2</sub>, lever C<sub>2</sub>, rod V and weight S, of the guide or arm V<sub>2</sub>, locking lever V<sub>3</sub> and rod V<sub>4</sub>, whereby the pressure of the car wheels passing over bar B<sub>2</sub> will wind up the mechanism until the weight S engages with an arm V<sub>2</sub> and rod V<sub>4</sub>, to keep bar B<sub>2</sub> below the actuating contact with the following wheels, and also pressing lever V<sub>3</sub> into engagement with plate X<sub>2</sub>, substantially as and for the purpose set forth. 59th. In a railroad signal apparatus, an iron frame constructed and milled and having an arm whereby the same pattern will answer for back and front, and the connection thereto of one or two independent sets of clock mechanism, whereby the approach of a train is automatically announced from either direction by the same gong and signals, substantially as set forth. 60th. The combination, in a railroad signal, of a double clock or gear mechanism, whereby the approach of a train from either direction is announced by the same audible and visible signals, substantially as set forth. 61st. The automatic announcement by the same signal of an approaching train moving in either direction on a railroad track by means of a double clock work mechanism in the same signal, substantially as set forth. 62nd. The operation of signals by a train moving on either track by means of a rod or shaft B<sub>3</sub> and offset or crank B<sub>3</sub>, and lever C<sub>5</sub>, substantially as and for the purpose set forth. 63rd. The combination of a railroad signal with one or more tracks by a shaft B<sub>3</sub> provided with one or more universal joints, to prevent binding or unnecessary friction, substantially as and for the purpose set forth. 64th. The combination, in a railroad signal, of an iron post provided with flanges, doors, cams, lugs and gong hood, to connect, support and protect signal mechanism, substantially as set forth. 65th. The combination, with the bellows F, pipe e, valve G<sub>1</sub>, weight S and wheel T, of a vertical swinging gate M<sub>3</sub>, substantially as and for the purpose set forth. 66th. The combination, in a railroad gate, of a weight S to shut the gate, substantially as set forth. 67th. The automatic closing and opening of a gate M<sub>3</sub> by the pressure of a moving car or carriage actuating the bellows F, valve G<sub>1</sub>, rod V, substantially as set forth. 68th. The described combination to automatically operate gates, substantially as and for the purpose set forth. 69th. The combination of the signal brace and lantern M<sub>3</sub> E<sub>1</sub> M<sub>5</sub> M<sub>6</sub> and M<sub>7</sub> with an automatic operating gates, substantially as and for the purpose set forth. 70th. The combination, in a railroad signal or an automatic gate, of an iron frame M<sub>2</sub>, substantially as and for the purpose set forth. 71st. The combination, in an automatic gate, of a hinge P and spring P<sub>1</sub>, substantially as and for the purpose set forth. 72nd. The combination, in a railroad signal, of a gear wheel mechanism capable of being operated by the gravity of a suspended weight, to automatically strike repeated strokes on a sounding gong, display a movable sign disk or revolve a lantern or sign, shut and open a gate either separately or simultaneously, and wound up, operated and stopped by a train passing along on a track, to automatically indicate its movement in advance both by visible and audible signals, substantially as set forth. 73rd. The combination, in a railroad signal, of a rod V, guide V<sub>2</sub>, weight S and rope S<sub>1</sub>, whereby the forward wheels of a train causes the mechanism to wind up automatically and remove the mechanism from the contact with following wheels, substantially as and for the purpose set forth. 74th. In an automatic signal, a segment or circle R<sub>1</sub> and spring R<sub>3</sub>, to regulate the time desired to operate the signal, substantially as and for the purpose set forth. 75th. In an automatic signal, a lever Q, catch p<sub>1</sub>, pawls R and X and spring R<sub>3</sub>, substantially as and for the purpose set forth. 76th. A combination, with a fulcrum lever, of a spring E or V<sub>1</sub> to ease the action on the mechanism and reset the levers, substantially as set forth. 77th. The releasing of a "block" signal H by a roller or wheel attached to a car or truck, and a combination, with a locomotive, car or truck, of a special wheel or revolving pulley, to automatically operate block signal, substantially set forth. 78th. An automatic audible and visible signal S<sub>2</sub> and K at stations, to announce the approach and indicate the moving direction of trains, as set forth. 79th. The combination, with a gong S<sub>2</sub> and sign K or M, a spiral U to operate signals, as set forth. 80th. The combination, in signals, of a shaft m<sub>3</sub> and transparent and non-transparent disks, as set forth. 81st. Bar B, lever C, catch C<sub>2</sub>, crank f, spring E E, to automatically operate railroad signals, gates or switches. 82nd. The combination, in a railroad signal, of a bar B, levers C and I and catch m, to automatically set and lock "block" signal H by a train moving along on a railroad track, and combination therewith of a valve G<sub>1</sub>, to release the same, as set forth. 83rd. The combination, in a railroad signal, of a wire rope S<sub>1</sub> to suspend a weight to a drum wheel or shaft, to give it revolving motion, as set forth.

## No. 17,226. Improvements in Life Boats. (Perfectionnements aux bateaux de sauvetage.)

Henry F. Coombs, Charlottetown, P.E.I., 12th July, 1883; 5 years.