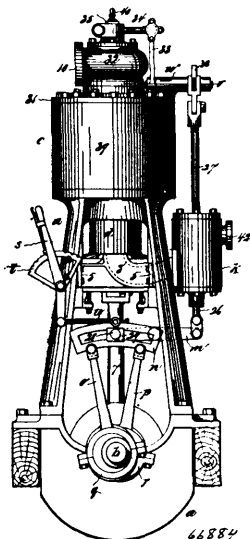


5th. In a compound engine, means operating automatically for establishing direct communication between the source of live steam



supply and the low pressure cylinder through the high pressure cylinder, to change the operation of the engine from compound to semi-compound, and thereby increase the power of the engine for the purpose of overcoming inertia in starting or on an increase in the load on the engine while running, as set forth. 6th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment in said stationary cylinder, means for admitting steam alternately to said piston and stationary cylinders and means for changing the direction of motion of the crank, for the purpose set forth. 7th. A steam engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder working on said abutment and in said stationary cylinder, suitable steam distributing appliances and means for changing the direction of motion of the crank, for the purpose set forth. 8th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder, means for admitting steam to said piston cylinder through said abutment and means for admitting steam to the stationary cylinder through said piston cylinder, for the purpose set forth. 9th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary bifurcated abutment, a piston cylinder having motion on said abutment and in said stationary cylinder, a cross head connected with said piston cylinder and having motion between the legs of the abutment, a crank shaft and a driving rod connecting said cross head with said crank shaft, for the purpose set forth. 10th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary bifurcated abutment having steam passages in its legs and an outlet port in its head, and a piston cylinder having motion on said abutment and in said stationary cylinder, for the purpose set forth. 11th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment and in said stationary cylinder and means for causing the engine to work semi-compound or compound, for the purpose set forth. 12th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment, means for causing the engine to work semi-compound or compound and means for changing the direction of motion of the crank whether the engine works semi-compound or compound, for the purpose set forth. 13th. A combined compound and semi-compound engine, comprising a stationary cylinder open at its outer end, a stationary bifurcated abutment arranged in the axial plane of said cylinder, a piston cylinder open at its outer end and having extensions therefrom, said piston cylinder working on the abutment and in a stationary cylinder, a cross head connected with the piston cylinder extensions and having motion between the legs of the abutment, a crank shaft and a connecting rod connected with the crank on said shaft and with the aforesaid cross head, for the purpose set forth. 14th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment and in said cylinder, a crank shaft, a connection between the crank of said shaft and the piston cylinder, a main or distributing valve controlled by the movement of the crank shaft, an exhaust valve for the stationary cylinder, and an intermediate valve in the piston head of the piston cylinder, both of said valves controlled by the movements of the distributing valve, for the purpose set forth. 15th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment and in said cylinder, a crank shaft, a connection between the crank of said shaft

and the piston cylinder, a main or distributing valve controlled by the movements of the crank shaft, an exhaust valve for the stationary cylinder, an intermediate valve in piston head of the piston cylinder, both said valves controlled by the movements of the distributing valve, and means for adjusting the last-named valve to cause the engine to work semi-compound or compound, substantially as set forth. 16th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment and in said cylinder, a crank shaft, a connection between the crank of said shaft and the piston cylinder, a main or distributing valve controlled by the movements of the crank shaft, an exhaust valve for the stationary cylinder, an intermediate valve in piston head of the piston cylinder, both said valves controlled by the movements of the distributing valve, and means for adjusting the last-named valve to change the direction of motion of the crank, for the purpose set forth. 17th. A combined compound and semi-compound engine, comprising a stationary cylinder, a stationary abutment, a piston cylinder having motion on said abutment and in said stationary cylinder, a crank shaft, a connection between the crank of said shaft and the piston cylinder, a main or distributing valve controlled by the movements of the crank shaft, an exhaust valve for the stationary cylinder, an intermediate valve in piston head of the piston cylinder, both said valves controlled by the movements of the distributing valve, means for adjusting the last-named valve to cause the engine to work semi-compound or compound, and means for adjusting said valve to change the direction of motion of the crank whether the engine works semi-compound or compound, substantially as set forth. 18th. In an engine of the type described, a bifurcated stationary abutment forming a way in which the cross head reciprocates, for the purpose set forth. 19th. In an engine of the type referred to, a bifurcated stationary abutment forming a way in which the cross head reciprocates and serving to admit live steam to the piston cylinder, for the purpose set forth. 20th. In an engine of the type described, a bifurcated stationary abutment forming a way in which the cross head reciprocates and serving to admit live steam to the piston cylinder and to the stationary cylinder, for the purpose set forth. 21st. In a compound engine comprising a low pressure cylinder, a piston abutment, a high pressure piston cylinder working on said abutment and in said low pressure cylinder, respectively, a valve controlling the supply of live steam to the high pressure cylinder, a valve controlling passages leading from the high pressure cylinder into the low pressure cylinder, and an exhaust valve for the latter cylinder, a valve gear operated from a moving element of the engine and actuating the valves to cause the engine to normally work compound, a governor influencing the operation of said valve gear and valves so as to establish, under certain conditions, direct communication between the source of live steam supply and the low pressure cylinder through the high pressure cylinder to change the normal operation of the engine from compound to semi-compound, for the purpose set forth. 22nd. In a compound steam engine, a low pressure cylinder, a piston abutment, a high pressure piston cylinder working on said abutment and in said low pressure cylinder, said high pressure piston cylinder extended for connection with the crank shaft beyond the steam area determined by the packing on said abutment, a self packing distributing valve working in a suitable chamber, and having its operating stem located externally of said chamber for connection with the valve operating device, a semi-rotary intermediate valve in the head of the high pressure piston cylinder, a semi-rotary exhaust valve for the low pressure cylinder and the valve stem for said intermediate valve operated by said exhaust valve and located wholly within the steam area of the low pressure cylinder, said exhaust valve having its stem externally of said steam area, substantially as set forth and for the purpose of dispensing with stuffing boxes and glands for said parts.

#### NO. 6,884. Charging Machine. (*Machine à charger.*)

Edwin W. McKenna, Milwaukee, Wisconsin, assignee of David Holliday Lentz, Joliet, Illinois, and Henry C. Shaw Pittsburg, Pennsylvania, all in the U.S.A., 3rd April, 1900; 6 years. (Filed 27th February, 1899.)

*Claim.*—1st. In a charging machine, the combination with a table adapted to support a number of rails and to permit a number of such rails to be moved off from it together, of pushing mechanism adapted to travel along said table in the direction of its length and simultaneously to charge a number of the rails accommodated upon said table, and means for causing said pushing mechanism to perform its excursion along said table, substantially as described. 2nd. In a charging machine, the combination with a table adapted to support a number of rails, of a series of guiding blocks located at intervals along said table in the line of the rails to maintain said rails parallel to one another and at given distances apart, pushing mechanism adapted to travel along said table in the direction of its length, said pushing mechanism being adapted to engage a number of rails, and means for causing said pushing mechanism to perform its excursion along said table, whereby a number of rails may be charged by one excursion of said pushing mechanism, substantially as described. 3rd. In a charging machine, the combination with frame work forming a table and adapted to support a number of rails, said table being adapted to permit all of such rails to be moved off from it longitudinally, of pushing mechanism adapted to engage all of said rails at one time