Claim 1

A potentially chain reacting system comprising a quantity of an element of the first category and an element of the second category, a cooling agent in thermal contact with the elements of the first and second category means for circulating said cooling agent through the chain reacting system.

Claim 2

A potentially chain reacting system composed of U^{238} and at least one element of the second category, means for a cooling agent in thermal contact with the uranium, means for circulating the said cooling agent through the chain reacting system.

Claim 3

A potentially chain reacting system comprising an element of the first category and an element of the second category. Helium in thermal contact with the elements of the first and second category means for circulating said helium through the chain reacting system.

Claim 4

A potentially chain reacting system comprising an element of the first category and an element of the second category, a liquid metal of an atomic weight equal to or above that of mercury in thermal contact with the elements of the first and second category means for circulating said metal through the chain reacting system.

Claim 5

A potentially chain reacting system comprising an element of the first category and an element of the second category, a liquid metal alloy of average atomic weight equal to that or above that of mercury, in thermal contact with the elements of the first and second category, means for circu-

lating said metal alloy through the chain reacting system.

Claim 6.

A potentially chain reacting system comprising an element of the first category and an element of the second category, a cooling agent in thermal contact with the elements of the first and second category means for circulating said cooling agent through the chain reacting system, means adapted to control the chain reaction.

Claim 7

A potentially chain reacting system comprising an element of the first category and an element of the second category, a cooling agent in thermal contact with the elements of the first and second category means for circulating said cooling agent through the chain reacting system, means adapted to control the chain reaction comprising a mass of substance within the chain reacting unit adapted to slowing down neutrons below the fission threshold of the element of the first category and means for shifting the position of the said mass.

Claim 1

A potentially chain reacting system comprising ~~a quantity of~~ an element of the first category and ~~a quantity of~~ an element of the second category, a cooling agent in thermal contact with the elements of the first and second category means for circulating said cooling agent through the chain reacting system.

Claim 2

A potentially chain reacting system composed of U^{238} and ~~a quantity of~~ at least one element of the second category, means for a cooling agent in thermal contact with the uranium, means for circulating the said cooling agent through the chain reacting system.

Claim 3

A potentially chain reacting system comprising an element of the first category and an element of the second category. Helium in thermal contact with the elements of the first and second category means for circulating said helium through the chain reacting system.

Claim 4

A potentially chain reacting system comprising an element of the first category and an element of the second category, a liquid ~~Heavy low melting~~ metal of an atomic weight equal to or above that of mercury. ~~Heavy low melting metal~~ in thermal contact with the elements of the first and second category means for circulating said metal through the chain reacting system.

Claim 5

A potentially chain reacting system comprising en element of the first category and an element of the second category, a liquid ~~Heavy low melting~~ metal alloy of average atomic weight equal to that or above that of mercury, ~~Heavy low metal alloy~~ in thermal contact with the elements of

Witnessed 3/25/43
Lucartha Sullivan

the first and second category, means for circulating said metal alloy through the ~~cahin~~ chain reacting system.

Claim 6.

A potentially chain reacting system comprising an element of the first category and an element of the second category, a cooling agent in thermal contact with the elements of the first and second category means for circulating said cooling agent through the chain reacting system, Means ~~of controlling~~ adapted to control the chain reaction ~~comprising a mass of substance within the chain reacting unit adapted to slowing down neutrons below the fissio n threshold of the element of the first category and means for shifting the position of the said mass.~~ below the critical condition for instantaneous

Claim 7.

A potentially chain reacting system comprising an element of the first category and an element of the second category, a cooling agent in thermal contact with the elements of the first and second category means for circulating said cooling agent through the chain reacting system, means adapted to control the chain reaction comprising a mass of substance within the chain reacting unit adapted to slowing down neutrons below the fission threshold of the element of the first category and means for shifting the position of the said mass.

Witnessed 3/28/43
Lucastha Sullivan

L. Szilard
March 9, 1943

Claim 1.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, and the said lattice being embedded in a mass containing at least one light element ~~which has a characteristic number above 80.~~

Claim 2.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of a slowing agent containing at least one light element with a characteristic number higher than 80, the said mass being so composed that the range of thermal neutrons is several times as large as the range of the low energy resonance neutrons.

Claim 3.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, and the said lattice being embedded in a mass containing at least one light element ~~which has a characteristic number above 80.~~

Claim 4.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of slowing agent containing at least one light element with a characteristic number higher than 80, the said mass being so composed that the range of thermal neutrons is several times as large as the range of the low energy resonance neutrons.

Claim 5.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass having carbon as its main component.

Claim 6.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite.

6a
6b

Claim 7.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 8.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing a compound of deuterium.

Claim 9.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing heavy water.

Claim 10.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates which contain uranium, the said lattice being embedded in a mass containing at least one light element which has a characteristic number above 80.

Claim 11.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates which contain uranium, the said lattice being embedded in a mass ~~containing at least one light element which has a characteristic number above 80.~~ of is an eff. slowing agent.

Claim 12.

A potentially chain reacting system comprising a lattice of aggregates which contain uranium and have the shape of cylindrical rods, the said lattice being embedded in a mass ~~containing at least one light element which has a characteristic number above 80.~~ is an eff. slowing agent

Claim 13.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass ~~containing at least one light element which has a characteristic number above 80~~ is an eff. slowing agent, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass ~~containing at least one light element which has a characteristic number above 80~~ is an eff. slowing agent, a cooling agent consisting in a liquid metal flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim ~~14A~~. 14.5

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass ~~containing at least one element which is an effective slowing~~ of an efficient slowing agent & agent, a cooling agent consisting in a low melting liquid metal composed of atoms ~~of mercury~~ having an average atomic number above 81 flowing within the said system in thermal contact with the said uranium-containg aggregates.

Claim 15.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice ~~of~~ being embedded in a mass ~~containing at least one element which is an efficient~~ of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal ~~of atoms having atomic numbers above 81~~ containg bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Put in claim Be ~~about~~ 1:10 and 1:3 ratio
" " " 1:10 and 1:5 ratio
" " " 1:10

Claim 15.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing at least one light element which has a characteristic number above 80, a cooling agent containing bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing at least one light element which has a characteristic number above 80, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 17.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass containing at least one light element which has a characteristic number above 80, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 18.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass containing at least one light element

which is an efficient slowing agent ~~has a characteristic number above 80,~~ means for controlling the function of the said system consisting of a slow neutron absorbed adapted to be moved into the interior and moved out from the interior of the said system.

Claim 19.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass containing at least one light element which is an efficient slowing agent ~~has a characteristic number above 80~~, means for controlling the function of the said system consisting of a rod-shaped slow neutron absorber within the system, means for changing the position of the said slow neutron absorber.

Claim 20.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass containing at least one light element which is an efficient slowing agent ~~has a characteristic number above 80~~, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

May 15, 1943

Claim 21.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass ~~that will efficiently slow down neutrons.~~ ~~containing at least one element which is an efficient slowing agent.~~ of an efficient slowing agent

Replacement copy

L. Szilard
May 23, 1943

Claim 1.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, and the said lattice being embedded in a mass of ~~an efficient~~ a slowing agent.

Claim 3.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, and the said lattice being embedded in a mass of an efficient slowing agent.

Claim 4.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 5.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass having carbon as its main component.

Claim 6.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite.

Claim 6a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the graphite being between 3 to 1 and 10 to 1.

Claim 6b.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the lattice being between 5 to 1 and 10 to 1.

Claim 7.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 7a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, and the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the lattice being between 10 to 1 and 3 to 1.

Claim 7b.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the lattice being between 10 to 1 and 5 to 1.

Claim 8.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing a compound of deuterium.

Claim 9.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing heavy water.

Claim 10.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates which contain uranium, the said lattice being embedded in a mass which is an efficient slowing agent.

Claim 10a.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates which contain Uranium, the said lattice being embedded in a mass of graphite.

Claim 10b.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates of uranium metal, the said lattice being embedded in a mass which is an efficient slowing agent.

Claim 10c.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 11.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates which contain uranium, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 11a.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates which contain uranium, the said lattice being embedded in a mass of graphite.

Claim 11b.

A potentially chain reacting system comprising a lattice of rod-like shapes aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 11x.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 12.

A potentially chain reacting system comprising a lattice of aggregates which contain uranium and have the shape of cylindrical rods, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 12a.

Apotentially chain reading system comprising a lattice of aggregates which contain uranium and have the shape of cylindrical rods, the said lattice being embedded in a mass of graphite.

Claim 12b.

A potentially chain reacting system comprising a lattice of aggregates ~~which~~ of uranium metal, ~~and~~ which have the shape of cylindrical rods, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 12c.

A potentially chain reacting system comprisisng a lattice of aggregates of uranium metal having the shape of cylindrical rods, the said lattice being embedded in a mass of graphite.

Claim 13.

A potentially chain reacting system comprising a lattice of ggregates of substance containg uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 13a.

A potentially chain reading system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, a cooling agent flowing within the said system in thermal contact

with the said uranium-containing aggregates.

Claim 13b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 13c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a liquid metal flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal composed of atoms having atomic numbers above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal composed of atoms having atomic numbers above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal composed of atoms having an atomic number above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal composed of atoms having atomic numbers above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 15. A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containing sybstance.

Claim 15a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containging substance.

Claim 15b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal containing bisumth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 15c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16.

Apotentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 17.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 17a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 17b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density.

Claim 17c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the funtion of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 18.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of a slow neutron absorbed adapted to be moved into the interior and moved out from the interior of the said system.

Claim 18a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorbed adapted to be moved into the interior and moved out from the interior of the said system.

Claim 18b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowin agent, means for controlling the function of the said system consisting of a slow neutron absorbed adapted to be moved into the interior and moved out from the interior of the said system.

Claim 18c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorbed adapted to be moved into the interior and moved out from the interior of the said system.

Claim19.

A poteintially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 19a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 19b.

A potentially chain reaction system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of rod shaped slow neutron absorbers within the system, means for chaging the position of the said slow neutron absorbers.

Claim 19c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 20.

A potentially chain reacting system comrpising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

Claim 20a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

Claim 20b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficinet slowing agent, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reaction system.

Claim 20c.

A potentially chain reaction system comprising a lattice of aggregates of ~~xxxxxxxx~~ uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

Claim 21.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of an efficient slowing agent.

Claim 21a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of graphite.

Claim 21b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of an efficient slowing agent.

Claim 21c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a massof graphite.

L.Szilard
May 23, 1943

Claim 1.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, and the said lattice being embedded in a mass of a slowing agent.

Claim 3.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, and the said lattice being embedded in a mass of an efficient slowing agent.

Claim 4.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 5.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass having carbon as its main component.

Claim 6.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite.

Claim 6a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the graphite being between 3 to 1 and 10 to 1.

Claim 6b.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the lattice being between 5 to 1 and 10 to 1.

Claim 7.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 7a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, and the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the lattice being between 10 to 1 and 3 to 1.

Claim 7b.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium in the form of uranium metal, the said lattice being embedded in a mass of graphite, the weight ratio of carbon to uranium in the lattice being between 10 to 1 and 5 to 1.

Claim 8.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing a compound of deuterium.

Claim 9.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass containing heavy water.

Claim 10.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates which contain uranium, the said lattice being embedded in a mass which is an efficient slowing agent.

Claim 10a.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates which contain uranium, the said lattice being embedded in a mass of graphite.

Claim 10b.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates of uranium metal, the said lattice being embedded in a mass which is an efficient slowing agent.

Claim 10c.

A potentially chain reacting system comprising a lattice of spheroid shaped aggregates of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 11.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates which contain uranium, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 11a.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates which contain uranium, the said lattice being embedded in a mass of graphite.

Claim 11b.

A potentially chain reacting system comprising a lattice of rod-like shapes aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 11c.

A potentially chain reacting system comprising a lattice of rod-like shaped aggregates of uranium metal, the said lattice being embedded in a mass of graphite.

Claim 12.

A potentially chain reacting system comprising a lattice of aggregates which contain uranium and have the shape of cylindrical rods, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 12a.

A potentially chain reacting system comprising a lattice of aggregates which contain uranium and have the shape of cylindrical rods, the said lattice being embedded in a mass of graphite.

Claim 12b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, and have the shape of cylindrical rods, the said lattice being embedded in a mass of an efficient slowing agent.

Claim 12c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal having the shape of cylindrical rods, the said lattice being embedded in a mass of graphite.

Claim 13.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 13a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 13b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 13c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, a cooling agent flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a liquid metal flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal composed of atoms having atomic numbers above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal composed of atoms having atomic numbers above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal composed of atoms having an atomic number above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 14.5c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal composed of atoms having atomic numbers above 81 flowing within the said system in thermal contact with the said uranium-containing aggregates.

Claim 15.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 15a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 15b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 15c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, a cooling agent consisting in a low melting liquid metal containing bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of an efficient slowing agent, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said lattice being embedded in a mass of graphite, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 16c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite liquid bismuth flowing within the said system in thermal contact with the said uranium-containing substance.

Claim 17.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 17a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 17b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density.

Claim 17c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of the slow neutron absorber within the system adapted to be moved from a point of high neutron density towards a point of low neutron density and vice versa.

Claim 18.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of a slow neutron absorber adapted to be moved into the interior and moved out from the interior of the said system.

Claim 18a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorber adapted to be moved into the interior and moved out from the interior of the said system.

Claim 18b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of a slow neutron absorber adapted to be moved into the interior and moved out from the interior of the said system.

Claim 18c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorber adapted to be moved into the interior and moved out from the interior of the said system.

Claim 19.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 19a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 19b.

A potentially chain reaction system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 19c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of rod-shaped slow neutron absorbers within the system, means for changing the position of the said slow neutron absorbers.

Claim 20.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

Claim 20a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing an element that undergoes slow neutron fission, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

Claim 20b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of an efficient slowing agent, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reaction system.

Claim 20c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said lattice being embedded in a mass of graphite, means for controlling the function of the said system consisting of a slow neutron absorber within the system the position of which is controlled by the radiation emanated from the chain reacting system.

Claim 21.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of an efficient slowing agent.

Claim 21a.

A potentially chain reacting system comprising a lattice of aggregates of substance containing uranium, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of graphite.

Claim 21b.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of an efficient slowing agent.

Claim 21c.

A potentially chain reacting system comprising a lattice of aggregates of uranium metal, the said aggregates being surrounded by a layer of beryllium, and the said lattice being embedded in a mass of graphite.

Application as prepared by Dr. Szilard and forwarded to Washington on May 29, 1943.

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