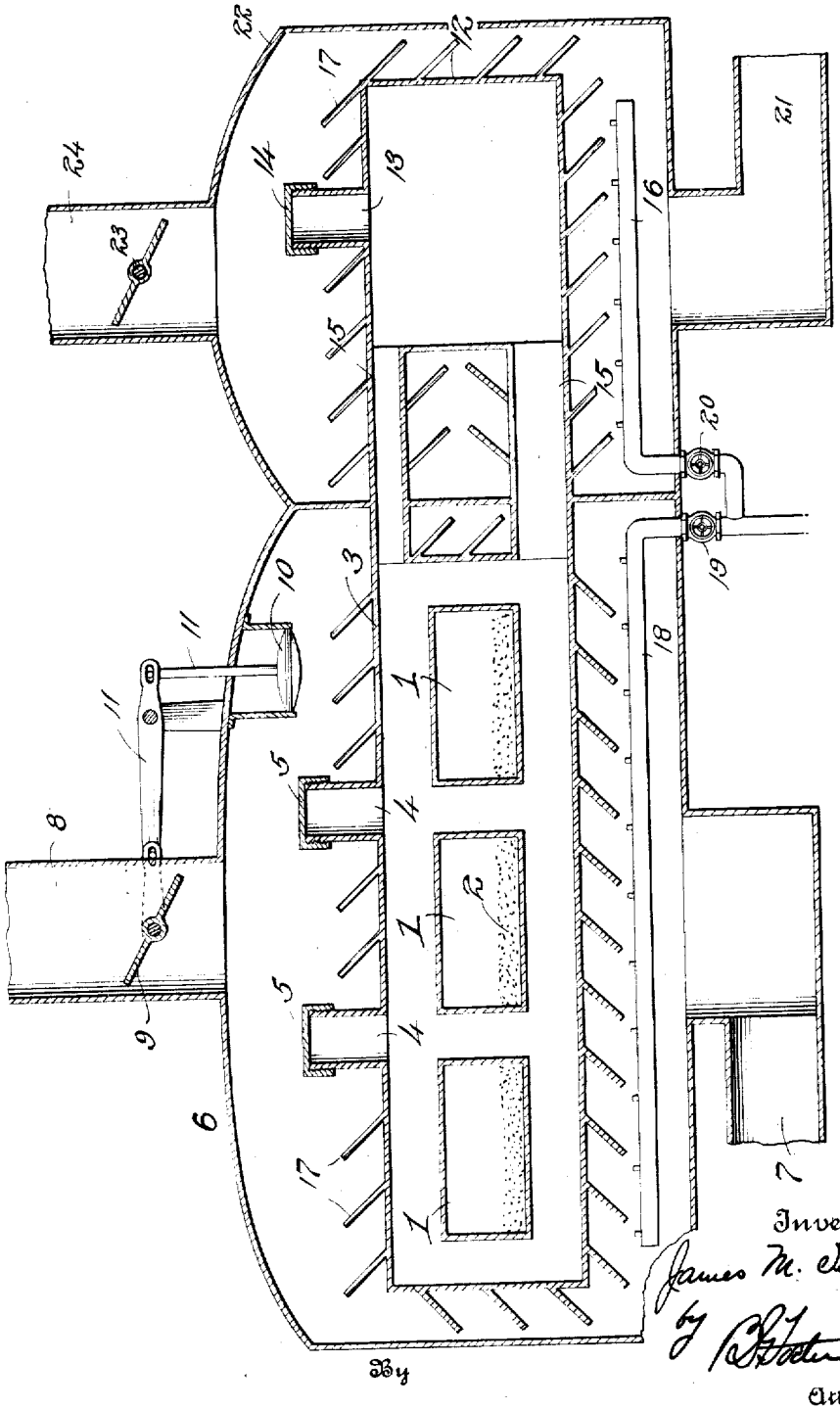
Nov. 1, 1927. 1,647,317

J. M. SELDEN

PROCESS OF CARRYING ON CATALYTIC REACTIONS

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By

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PROCESS OF CARRYING ON CATALYTIC REACTIONS.

Application filed January 2, 1920. Serial No. 348,871.

The present invention relates to process of carrying out catalytic reactions, and more particularly to that type in which high degrees of heat are generated. Such reactions are disclosed for example in the United States patents to Conover and Gibbs Nos. 1,284,887, 1,284,888, and 1,286.117.

The object is to provide effective means for controlling the heat and maintaining an even temperature.

The accompanying drawing is a sectional view diagrammatic in its character of one embodiment of the invention.

In this structure a plurality of conduits or chambers 1 are employed containing catalytic material, as 2, which may be of any desired character. It will be understood that the material to be oxidized, preferably in vaporous form is supplied to or passed through the chambers 1 in a manner readily understood.

Enclosing the chambers 1 is a jacket 3 of any suitable form and material, preferably being common to all the chambers, and having suitable openings 4 in its top, provided with removable closures 5 covering the same.

The jacket 3 in turn is enclosed by a casing 6, to the bottom of which is connected a supply conduit 7. An outflow conduit 8 leads from the top of the casing and contains a suitable damper 9. This damper may be automatically actuated through the medium of a thermostat indicated at 10 in the casing 8, and having connections 11 with said damper.

Located outside the casing 6 is a reservoir 12 having a filling nipple 13 closed by a suitable cap 14. This reservoir is connected with the jacket 3 by one or more supply or circulating pipes 15. The reservoir is heated by any suitable means, as for example, burners 16. The jacket 3, reservoir 12 and conduits 15 furthermore are preferably provided with heat radiating devices in the form of fins 17 located on their exteriors. The jacket 3 may be primarily heated by suitable burners 18 placed below the same within the casing. The burners 18 are controlled by a suitable valve 19 and the burners 16 by a valve 20.

The reservoir 12 may also be enclosed in a casing 22 having a lower inlet 21 and an upper outlet 24, the latter containing a suitable damper 23.

The reservoir 12 and jacket 3 are supplied with a suitable heat conducting medium which may be any desired fluid, as for example, liquid metal maintained in a fluid condition by the heat from the burners 16. Air or other gaseous heat-modifying medium is supplied to the casing 6 through the conduits 7 and 21 respectively and passes out of the conduits 8 and 24, thereby flowing around the jacket 3 and reservoir 12 and against the fins 17. The movement of this gaseous medium is controlled by the dampers 9 and 23, so that the temperature in the casing is suitably controlled. The reservoir 12 can be utilized both as a means for supplying heat to the chambers 1 and also as a heat radiating member, dependent on the amount of heat produced in the chambers 1 and the temperatures it is desired to maintain therein. The burners 16 and 18 are provided for bringing the catalytic chambers up to reaction temperature and thereafter supplying any heat that may be necessary. When in operation, if the radiation from the jacket 3 is sufficient to take care of the surplus heat, the entire portion contained within the casing 22 may be maintained in inactive condition.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. The process of carrying on reaction which consists in causing reacting vapors to contact with a plurality of bodies of catalyst at a high reacting temperature and producing heat thereby in excess of that necessary for the reaction, abstracting such excess heat from the various bodies of catalyst and vapors by subjecting said various bodies of catalyst simultaneously to the heat modifying action of a single body of fluid that can flow freely about all of the same, causing the fluid heated by the catalyst to flow out of heat transferring relation to all the catalyst bodies, subjecting the portion so flowing to the cooling action of a gaseous

medium, and returning said portion again to heat transferring relation with the catalyst bodies.

2. The process of carrying on reaction which consists in causing reacting vapors to contact with a plurality of bodies of catalyst at a high reacting temperature and producing heat thereby in excess of that necessary for the reaction, abstracting such excess heat from the various bodies of catalyst and vapors by causing a single body of liquid metal to be simultaneously located in heat-transferring relation to the various bodies of catalyst and to thereby absorb excess heat therefrom, causing the metal heated by the various bodies to move out of heat-absorbing relation with the bodies of catalyst, and cooling said metal while out of said heat absorbing relation by passing a moving stream of a cooler gas past the same in heat-transferring relation thereto.

3. The process of carrying on reaction which consists in causing reacting vapors to contact with a plurality of bodies of catalyst at a high reacting temperature and producing heat thereby in excess of that necessary for the reaction, abstracting such excess heat from the various bodies of catalyst and vapors by causing a single body of liquid metal to be simultaneously located in heat-transferring relation to the various bodies of catalyst and to thereby absorb excess heat therefrom, causing the metal heated by the various bodies to move out of heat-absorbing relation with the bodies of catalyst, cooling said metal while out of said heat-absorbing relation by passing a moving stream of a cooler gas past the same in heat-transferring relation thereto, and returning the cooled metal back into heat transferring relation with the various bodies of catalyst.

In testimony whereof I affix my signature.

JAMES M. SELDEN.

medium, and returning said portion again to heat transferring relation with the catalyst bodies.

2. The process of carrying on reaction which consists in causing reacting vapors to contact with a plurality of bodies of catalyst at a high reacting temperature and producing heat thereby in excess of that necessary for the reaction, abstracting such excess heat from the various bodies of catalyst and vapors by causing a single body of liquid metal to be simultaneously located in heat-transferring relation to the various bodies of catalyst and to thereby absorb excess heat therefrom, causing the metal heated by the various bodies to move out of heat-absorbing relation with the bodies of catalyst, and cooling said metal while out of said heat absorbing relation by passing a moving stream of a cooler gas past the same in heat-transferring relation thereto.

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DISCLAIMER.

1,647,317.—*James M. Selden*, Pittsburgh, Pa. PROCESS OF CARRYING ON CATALYTIC REACTIONS. Patent dated November 1, 1927. Disclaimer filed December 31, 1928, by the patentee, assignee, *The Selden Company*, assenting.

Hereby enters this disclaimer to the process of claim 1 of said Letters Patent except when said process is practiced with a heat controlling bath or "single body of fluid" which is composed of a substance that is solid at ordinary room temperatures.

[*Official Gazette January 15, 1929.*]

DISCLAIMER

1,647,317.—*James M. Selden*, Pittsburgh, Pa. PROCESS OF CARRYING ON CATALYTIC REACTIONS. Patent dated November 1, 1927. Disclaimer filed March 18, 1930, by the assignee, *The Selden Company*.

Hereby enters this disclaimer to the process of claims 1, 2, and 3 of said Letters Patent except when the "single body of fluid" is directed positively through a path of movement which includes a cooling zone partitioned off from the zone where the plurality of bodies of catalyst are situated and where the excess heat of the reaction is being produced and the cooling by a gaseous medium takes place in said partitioned off cooling zone and the cooled liquid is returned to the zone where the plurality of catalyst bodies are situated.

[*Official Gazette April 1, 1930.*]

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