F. T. RICHARDS.

DRIER.

APPLICATION FILED SEPT. 27, 1917.

1,307,270.

Patented June 17, 1919.

3 SHEETS—SHEET 1.

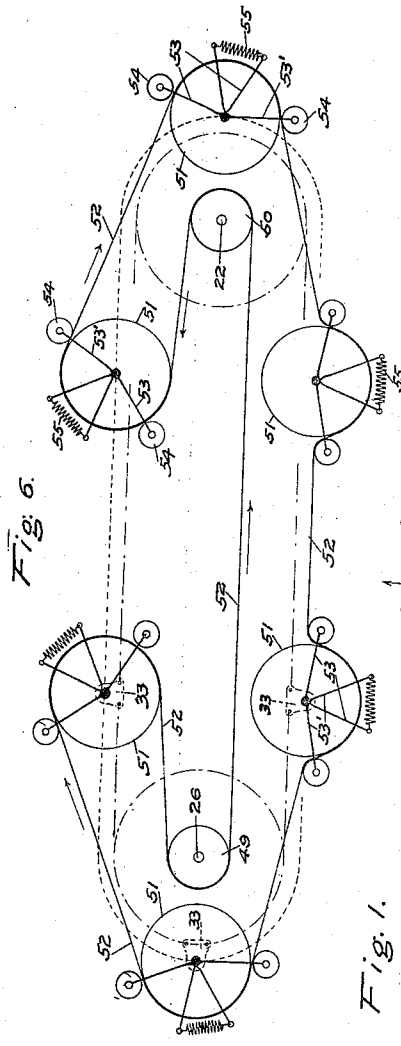


Fig. 6.

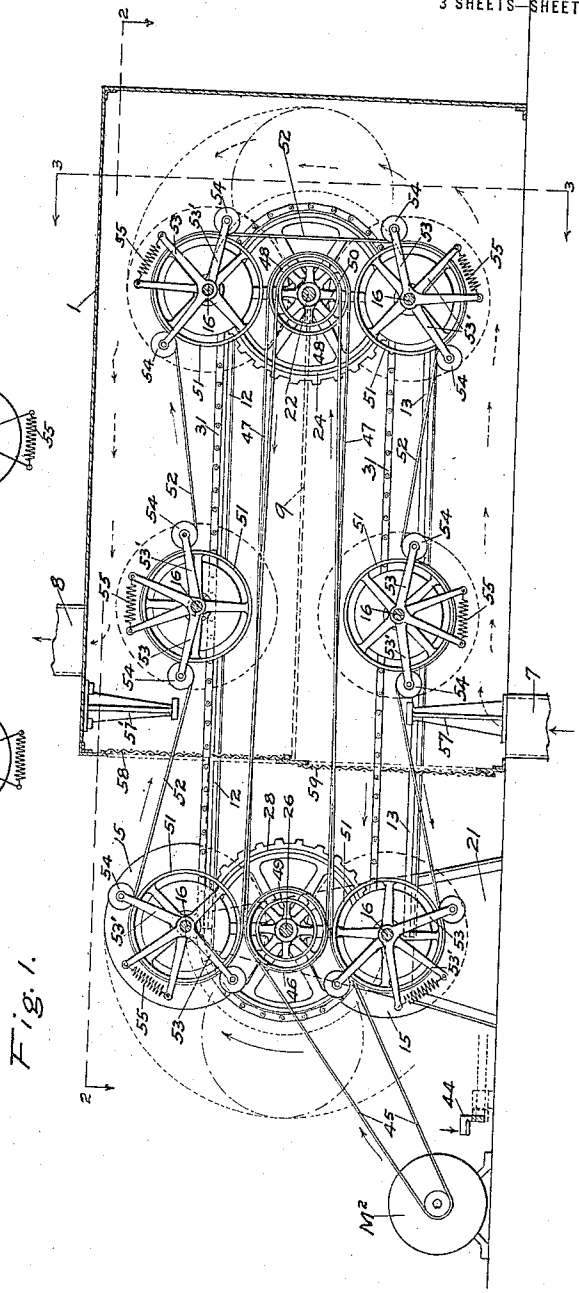


Fig. 1.

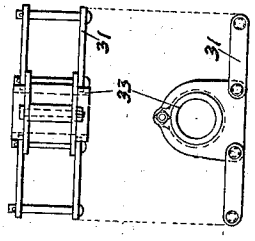


Fig. 7.

Inventor.

By

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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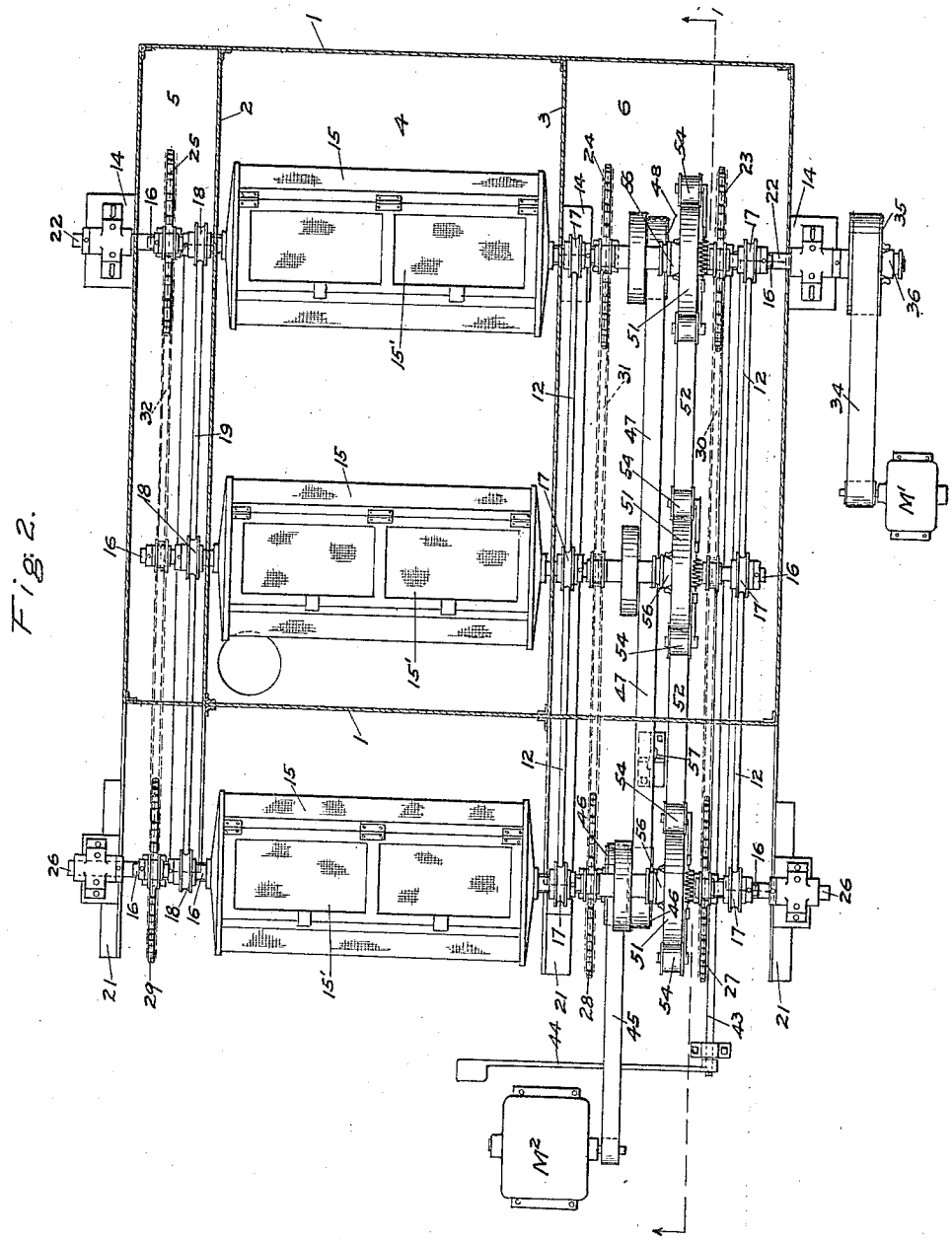


Fig. 2.

Witness: Frederick T. Richards, Inventor,

By [signature] Atty.

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3 SHEETS—SHEET 3.

Fig. 3.

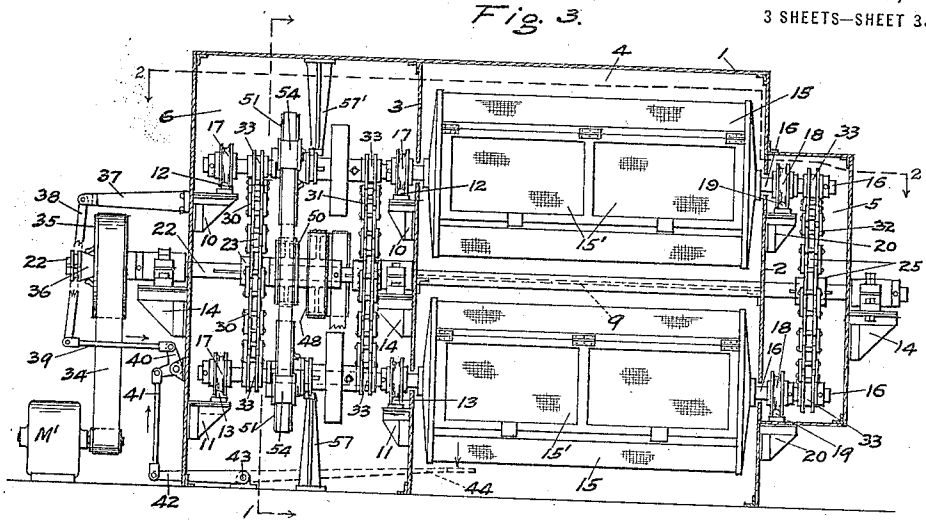


Fig. 4.

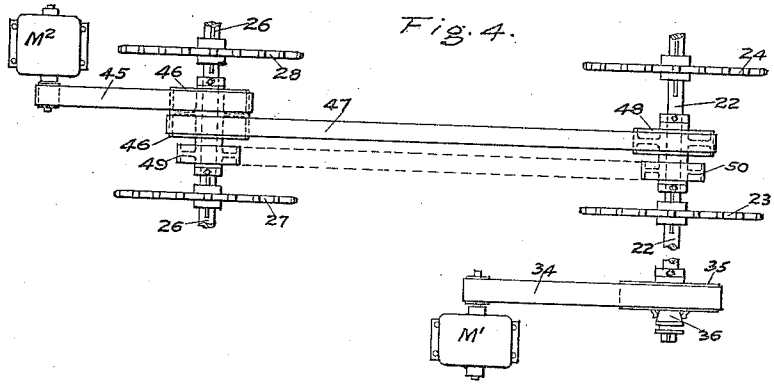
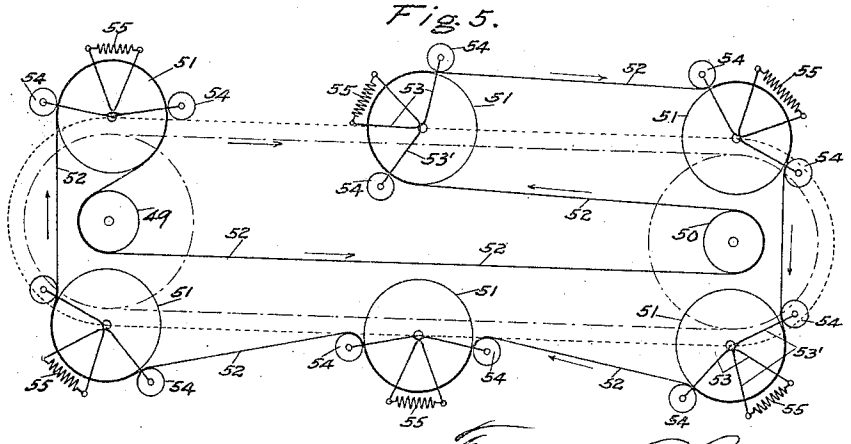


Fig. 5.



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UNITED STATES PATENT OFFICE.

FORDYCE T. RICHARDS, OF PORTLAND, OREGON.

DRIER.

1,307,270. Specification of Letters Patent. Patented June 17, 1919.

Application filed September 27, 1917. Serial No. 193,485.

To all whom it may concern:

Be it known that I, FORDYCE T. RICHARDS, a citizen of the United States, residing in the city of Portland, county of Multnomah, and State of Oregon, have invented certain new and useful Improvements in Driers, of which the following is a specification.

My invention relates to driers, and more particularly to a conveyer or multiple drier, wherein a plurality of drier receptacles or containers are carried from a loading and unloading position through a drying chamber.

Among the salient objects of my invention are,—to provide in a drier of the character referred to, means for rotating the drier receptacles or containers as they are carried through the drying chamber; to provide means for intermittently stopping the rotative movement of said receptacles or containers as they come to the loading position, whereby to make it possible to load and unload the same without stopping the rotative movements of the other receptacles even though they are held in one position for a time within the drying chamber; to provide means whereby the travel of the drier receptacles into and through the drier chamber can be interrupted or stopped, at will; and, in general, to provide an improved drier of the character referred to.

In order to more clearly describe my invention, I have illustrated one practical embodiment thereof in the accompanying sheets of drawings, which I will now describe.

Figure 1 is a vertical longitudinal sectional view through a drier embodying my invention, taken on line 1—1 of Figs. 2 and 3;

Fig. 2 is a horizontal sectional view thereof, taken on line 2—2 of Figs. 1 and 3;

Fig. 3 is a vertical transverse sectional view thereof, taken on line 3—3 of Fig. 1;

Fig. 4 is a top plan view of driving mechanism, apart from the machine;

Fig. 5 is a diagrammatical view ilustrating the course of travel of the drier containers and the means for rotating the same;

Fig. 6 is a similar view showing the parts in a further advanced position; and

Fig. 7 shows plan and side views of a conveyer bearing box attached to a conveyer chain.

Referring now more in detail to the drawings, my invention as here embodied for purposes of illustration, comprises a main housing 1, which may be of any suitable size and shape. Two partitions 2 and 3 divide the interior of the main housing into a drying chamber 4, and two side chambers, designated 5 and 6, as clearly shown in Fig. 2. The middle or drying chamber 4 is supplied with a heating and drying medium, as through a supply pipe 7, Fig. 1, which drying medium, after circulating rearwardly and upwardly and forwardly again, passes out through an outlet pipe 8. A horizontal partition, or floor, 9, extends from the front of the main housing, in the drying chamber 4, rearwardly, as a baffle member, to cause the heating medium to first pass rearwardly around the end thereof before it can pass upwardly and forwardly to the exit. This horizontal partition 9 is indicated in dotted lines in Figs. 1 and 3.

Referring to Fig. 3, there is mounted along the opposite sides of the chamber 6, upper and lower supporting brackets, designated, respectively, 10, 10 and 11, 11, and supporting tracks 12, 12 and 13, 13, for a purpose hereinafter again referred to. Three other similar bearing brackets, 14, 14, 14, Figs. 2 and 3, are mounted, one on the inner side of the chamber 6, and the other two on the outside walls of the main housing, toward the end of the course of travel of the drier containers, as hereinafter more fully described. A plurality of drier containers, 15, 15, are rotatably mounted on shafts 16, 16, provided near their opposite ends with grooved traction wheels 17, 17, in the chamber 6, which run on the tracks 12, 12, and at their opposite ends, said shafts are provided with similar traction wheels, 18, 18, which run on tracks 19, 19, supported on supporting brackets 20, 20, Figs. 2 and 3.

At the forward end of the main housing, and in front of the same, are three spaced supporting standards, as 21, 21 and 21. Supported by the bearing brackets 14, 14, 14, is a main shaft 22, which extends through the main housing from one side thereof to the other, as indicated in Fig. 2 and Fig. 3. Said shaft 22 is provided with large driving sprockets, 23 and 24 in the chamber 6, and a similar sprocket 25 in chamber 5.

Supported by the bearing standards 21, 21, is another shaft 26, on which are keyed

two sprocket wheels 27 and 28, near one end thereof, and at the other end thereof another sprocket wheel 29. Sprocket wheels 23 and 27 are connected by means of a sprocket chain 30. Sprocket wheels 24 and 28 are connected by means of a sprocket chain 31. Sprocket wheels 25 and 29 are connected by means of a sprocket chain 32. Said sprocket chains are provided at intervals apart with bearing boxes, 33, as shown in detail in Fig. 7, which carry the ends of the shafts 16, 16, on which are mounted the drier containers 15, 15.

Thus by means of the sprocket chains 30, 31 and 32, said drier containers 15, 15 are moved along on the tracks 12, 13 and 19.

I will next describe the means for driving said sprocket chains and the drier containers carried thereby. A motor M^1 is connected by means of a belt 34 to a pulley 35, on shaft 22. Said pulley 35 is adapted to be locked to the shaft 22, at will, by means of a clutch mechanism 36, operable by any desired means, whereby to drive the shaft 22, the sprockets 23, 24 and 25, which are keyed to the shaft, and said sprocket chains, for the purpose of propelling the drier containers around their course of travel in the housing.

Referring to Fig. 3, I have shown a supporting arm 37, mounted on the side of the housing, and pivotally connected with which is a clutch-operating lever 38, connected at its middle portion with the clutch 36, and at its lower end connected by means of links and bell-cranks 39, 40, 41 and 42, to a rock shaft 43, extended to the front of the machine and provided with a foot lever 44 for manually operating said clutch mechanism whenever desired to stop the travel of the drier containers.

A motor M^2 is connected by means of a belt 45 to a driving pulley 46, turning on shaft 26, from which pulley also runs a belt 47 to another pulley 48, turning on shaft 22. Formed as a part of, or connected to be driven with, pulleys 46 and 48, on shafts 26 and 22, respectively, are smaller pulleys 49 and 50. Mounted on each of the shafts 16, 16, of the drier containers and moving therewith, are pulleys 51, 51. These pulleys 51, 51 are all connected to be driven together by means of a belt 52, whereby to revolve said drier containers during their travel.

Each of said shafts 16, 16 is also provided, adjacent its pulley 51, with an automatic belt holding device for holding the belt sufficiently in contact with the pulley to give it a rotative movement. These belt holders each comprise two bellcranks, as 53 and 53′, mounted on the shaft of the container, and provided at their remote ends with small belt pulleys or wheels, 54, 54, and connected at their adjacent ends by means of a coiled spring, as 55, tending to draw them together in such manner as will hold the belt to the pulley in each case.

The pulleys 51, 51 on the shafts 16, 16 of the drier containers 15, 15, are each provided with a clutch mechanism, as 56, whereby said pulley can be released from the shaft at will, in order to stop the rotation of said drier containers.

In order to automatically operate these clutch mechanisms 56, as said drier containers come to a stop position, and to again operate said clutch mechanism to start rotation of the containers with their pulleys, cam standards 57 and 57′ are provided, as shown in Figs. 1, 2 and 3, so positioned that as a container comes along and is about to pass out of the housing 1, its clutch mechanism is operated by the cam standard 57, whereby said container is not rotated again by the belt 52 until after it is carried back into the housing and its clutch is engaged by the cam standard 57′, depending from the top of the housing, whereby said container is again rotated as it moves into the housing.

It will be understood, of course, that as a container comes from the housing, the operator operates the clutch mechanism 36 by pressing the foot lever 44, as before described, and the sprocket chains which move the containers are stopped, with the container or receptacle out in front of the housing, ready to be filled or emptied, as the case may be.

The front of the drier housing may be provided with any suitable closures for closing the same and at the same time permitting the receptacles to be moved out of and into said housing. In the present showing, I have provided curtain-like members, 58 and 59, as shown in Fig. 1, which hang loosely from their upper edges and are moved with the receptacles as they move into and out of said housing.

Each of the drier receptacles 15, 15, is provided with doors, as 15′ whereby the matter or materials to be dried can be placed therein as the driers emerge from the housing. The drier receptacles are made of woven wire or other open material, suitable for retaining the matter to be dried. The drier here illustrated is especially adapted for drying clothes in laundries. As the drier receptacles are moved through the drier housing, and subjected to the heat thereof, they are revolved about their own axes and the matter or materials therein are tumbled and turned as they are thus subjected to the drying action within the main drying chamber 4.

I am aware that many changes in details can be made in my invention as here illustrated without departing from the spirit thereof, and I do not, therefore, limit the invention to this embodiment, or to the de-

tails here shown for purposes of illustration, except as I may be limited by the hereto appended claims.

I claim:

1. In a drier of the character referred to, in combination, a housing, means for supplying a heating and drying medium thereto, track members in said housing, a plurality of drier receptacles movably and revolubly mounted, means for moving said receptacles through said housing on said track members and a flexible driving means connecting all of said receptacles for revolving the same as they are moved bodily through said housing, said flexible driving means being adapted to travel bodily around the course of travel for said receptacles during its travel as a driving means for revolving said receptacles, substantially as described.

2. In a drier of the character referred to, in combination with a housing and means for supporting and carrying a plurality of drying receptacles through said housing, of means for revolving said receptacles, said means comprising an endless driving member looped around said receptacles and traveling bodily therewith, and means for driving said endless driving member during its bodily movement for revolving said receptacles.

3. In a drier of the character referred to, in combination with a housing and means for supporting and carrying a plurality of drying receptacles through said housing, of means for revolving said receptacles during their bodily travel through said housing, said means comprising an endless element looped around said receptacles and moving bodily therwith, means for yieldingly holding said element in driving connection with said elements, and means for drivng said endless element during its bodily movement whereby to revolve said receptacles as they are moved through said housing, substantially as described.

4. In a drier of the character referred to, in combination, a housing, a track through said housing to form an endless course of travel, drying receptacles adapted to be carried along said track, means for moving the same along said course of travel, means for revolving said receptacles as they travel around said course of travel, said means comprising an endless element connected with all of said receptacles and moving bodily therewith, means carried with each of said receptacles for yieldingly holding said endless element partially around its driving member for revolving the same, and means for driving said endless element during its bodily travel for revolving said receptacles during their travel around said course of travel, and means for stopping the rotative action of said receptacles as they come to a loading position, substantially as described.

5. In combination, a housing, a track providing an endless course of travel through said housing, drying receptacles adapted to be moved around said course of travel through said housing, means for moving the same, and means for rotating said receptacles during their travel through said housing, said means comprising an endless element looped around each of said receptacle-driving members, driving members on said receptacles adapted to said endless element, said endless element being in continuous driving connection with all of said driving members, and means for interrupting the driving connections between a driving member and its receptacle, whereby to stop the rotative action of a receptacle for loading and unloading, substantially as described.

6. In combination, a housing, a track providing an endless course of travel through said housing, drying receptacles adapted to be moved around said course of travel through said housing, means for moving the same, each of said receptacles being provided with a driving member, an endless driving element looped around all of said driving members for rotating said receptacles during their travel through said housing, said endless driving element being connected for continuous action with all of said driving members and moving bodily therewith around said course of travel, means for interrupting the driving connection between said driving member and its receptacle, and means for interrupting the bodily travel of said receptacles through said housing at will, substantially as described.

7. A drier of the character referred to comprising in combination, a housing, track members in said housing, a plurality of drier receptacles, a sprocket chain adapted to carry said receptacles through said housing on said track members, a belt connecting all of said receptacles and adapted to revolve the same as they move through said housing, means for holding said belt to each of said drier receptacles for turning the same, means for driving said sprocket chain, means for driving said belt, and means for interrupting the travel movement and also the revolving movement of said drier receptacles for loading and unloading the same, substantially as described.

8. A drier of the character referred to comprising in combination a housing, track members in said housing, a plurality of drier receptacles, means for moving said receptacles through said housing on said track members, means for driving the same, means connecting all of said receptacles and for revolving the same as they move through said housing, means for yieldingly holding said connecting and revolving means in driving connection with said receptacles, means for automatically and intermittently stopping the travel

movement of said receptacles through said housing, and means for manually stopping the revolving movement of said receptacles as they come to the loading and unloading position, substantially as described.

9. In a drier of the character referred to, a housing, a plurality of drier containers, means for moving the same through said housing, a flexible driving member connecting said receptacles and adapted to revolve the same as they move through said housing, and means yieldingly holding said flexible driving member to its work, substantially as shown and described.

Signed at Portland, Multnomah county, Oregon, this 22d day of September, 1917.

FORDYCE T. RICHARDS.

In presence of—

J. C. STRENG,

HENRY L. LYONS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."