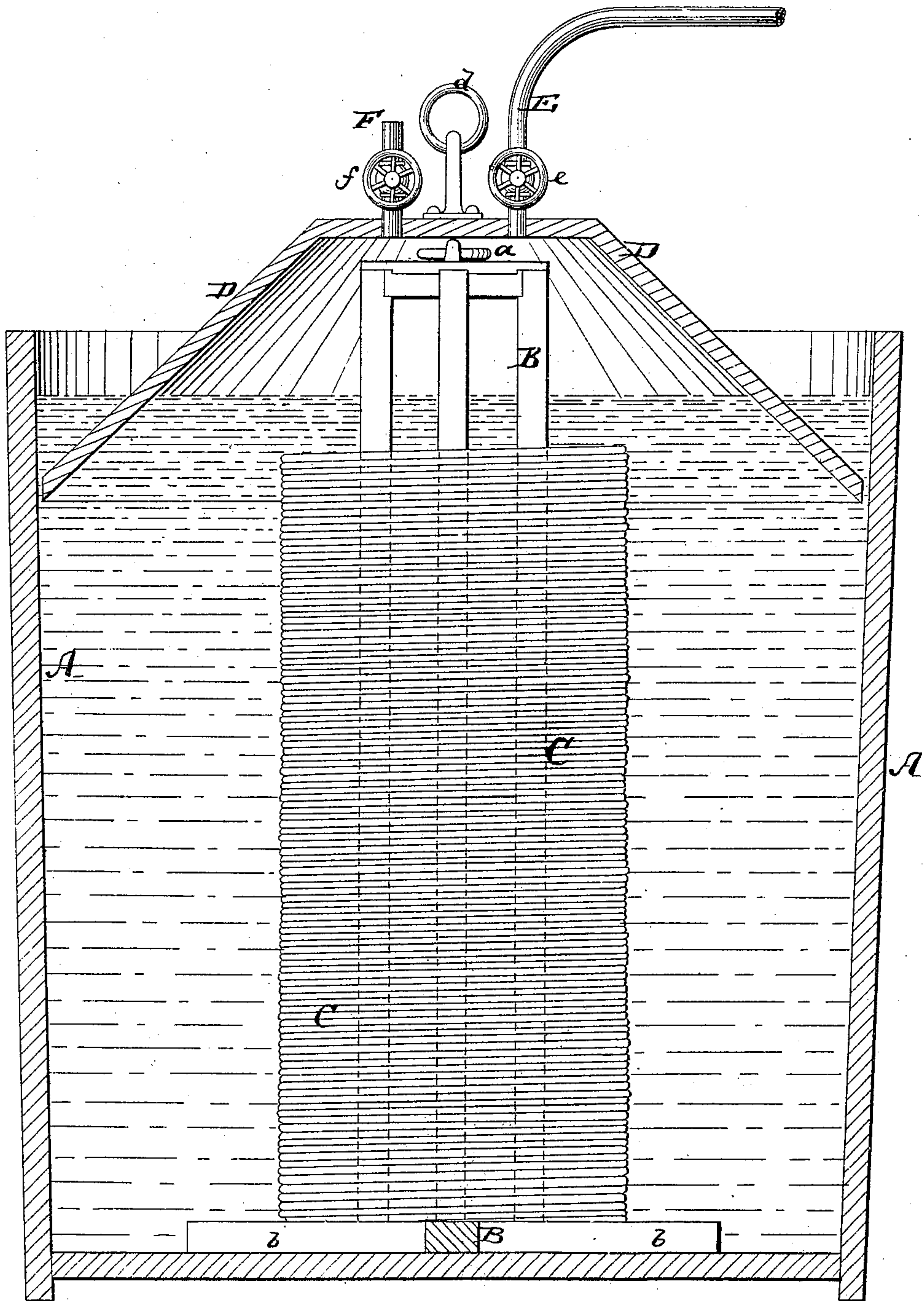


(No Model.)

R. N. R. PHELPS.
APPARATUS FOR COLLECTING WASTE HYDROGEN IN THE MANUFACTURE
OF IRON WIRE.
No. 248,606. Patented Oct. 25, 1881.



Witnesses,
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UNITED STATES PATENT OFFICE.

RICHARD N. R. PHELPS, OF BROOKLYN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HIMSELF AND HARVEY M. MUNSELL, OF NEW YORK, N. Y.

APPARATUS FOR COLLECTING WASTE HYDROGEN IN THE MANUFACTURE OF IRON WIRE.

SPECIFICATION forming part of Letters Patent No. 248,606, dated October 25, 1881.

Application filed September 29, 1880. (No model.)

To all whom it may concern:

Be it known that I, RICHARD N. R. PHELPS, of Brooklyn, in the county of Kings and State of New York, have invented an Improved Apparatus for Collecting Waste Hydrogen in the Manufacture of Iron Wire, of which the following is a specification.

The drawing represents a sectional elevation of my improved apparatus.

10 When, in the manufacture of iron wire, the wire is put through the forming-rollers in a heated condition a scaly envelope is formed around it. To remove this envelope and present the wire in marketable condition, the same is plunged into a bath of diluted sulphuric or muriatic acid, which acid removes said envelope and leaves the surface of the wire bright; but the action of the acid upon the wire generates hydrogen, which in all wire-works, as at present constituted, is allowed to escape into the room in which the bath is placed. This hydrogen is highly injurious to health and seriously affects the workmen whose duty it is to attend to the bath. Moreover, this hydrogen is a valuable substance, and its escape into the air is an unnecessary waste.

20 My invention has for its object, first, to prevent the hydrogen generated in the bath from entering the air and from vitiating it in the manner stated; and, second, to collect such hydrogen for use in the arts—such, for example, as admixture with carbon, in the making of illuminating-gas, or for combustion for generating heat.

35 My invention consists in supplying the vat which contains the bath with a loosely-fitting cover adapted to dip into the diluted sulphuric or muriatic acid, and provided with a pipe or pipes for carrying away the hydrogen gas generated to places where it can be utilized, all as hereinafter more fully described.

45 In the drawing, the letter A represents the wooden tub or vat, of usual or suitable size or form, adapted to receive a wooden post or frame, B, that is embraced by the coil C of a scaly wire. The frame B has a ring or hook, a, at the upper part, so that by attaching thereto the tackle of a crane or hoisting apparatus it may be lifted, together with the coil of wire,

out of or placed into the tub or vat, as occasion requires.

The coil C rests on the sidewardly-projecting feet b of the frame B, so that it will follow said frame when the same is hoisted out. The vat is to be filled nearly to its upper edge with mixture of water and sulphuric or muriatic acid in the usual proportions, which mixture is to remove the scale from the surface of the wire by chemical action, such action generating hydrogen gas, as is well known. To prevent the waste of this gas, I place over the coil C a cover, D, which loosely enters the vat and dips into the liquid therein contained, as shown, said cover being preferably of truncated conical form, as shown. This cover is provided also with a ring or hook, d, at its upper part, so that it can be readily lifted out and replaced by suitable hoisting-tackle.

Through the cover passes, and from it extends outwardly, a pipe, E, which carries a suitable cock, e, and which leads into a suitable gas-purifier, (not shown,) and thence into a carbureting or mixing apparatus, (not shown,) where the hydrogen gas may be mixed with evaporating gasoline or other hydrocarbon in the making of illuminating-gas. Another pipe, F, having a cock, f, projects likewise from the cover D, and is open at its outer and inner end. When the operation commences the hydrogen gas generated within the vat and beneath the cover first expels the atmospheric air which fills the space between the cover and the surface of the liquid, and allows this air to escape through the pipe F, the cock of which is kept open for the purpose; but as soon as the air has been expelled, which the attendant will readily perceive, the cock f is closed and the cock e opened, so that the hydrogen gas generated during the continuation of the process may pass up into the pipe E and be conducted into the purifier and thence into the carbureter or reservoir, where the gas can be collected for use in the arts. The cover D during the operation rests either on top of the frame B, as shown in the drawing, or on other suitable support which may be provided for it.

The pipe F, instead of projecting directly from the cover D, may be a branch of the pipe

E, in which case a three-way cock in the pipe E, or an equivalent construction of cock, may be used to operate, so that when the branch F is open to permit the air to escape the pipe E will be closed, and vice versa.

By the arrangement of loosely-fitting cover D with its gas-discharge pipe E the escape of the hydrogen gas into the air is prevented, the health of the operator is preserved, and the valuable gas collected for use in the arts.

The frame B is important, as it serves to centralize the position of the coil and keep it upright beneath the most elevated part of the cover which the frame supports, so that the hydrogen gas will all be centrally discharged upward toward the frame E.

The apparatus is also available in cleaning iron plates, cars, rods, screws, and other articles of iron.

I do not claim a gas apparatus with inverted follower, cover, and telescopic discharge-pipe—such, for example, as is shown in English Pat-

ent No. 3,327 of 1873. Such apparatus is not adapted to the process described by me, as the cover is to move up and down during operation, and also because the cover is without any air-discharge pipe. Nor do I claim a vat surrounded by an annular generator and provided with a cover dipping into the generator, said cover carrying a vessel that is suspended into the vat, as in Patent No. 115,873.

I claim—

The vat A, provided and combined with standing rack B, which is adapted to receive the iron, C, to be cleaned, and with the loosely-fitting cover D, which is dipped directly into said vat, and with the gas-conducting pipe E, carried by said cover, for operation substantially as described.

RICHARD N. R. PHELPS.

Witnesses:

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