2 Sheets—Sheet 1.

W. R. BERGER

APPARATUS FOR SINGEING HOGS.

No. 183,625. Patented Oct. 24, 1876.

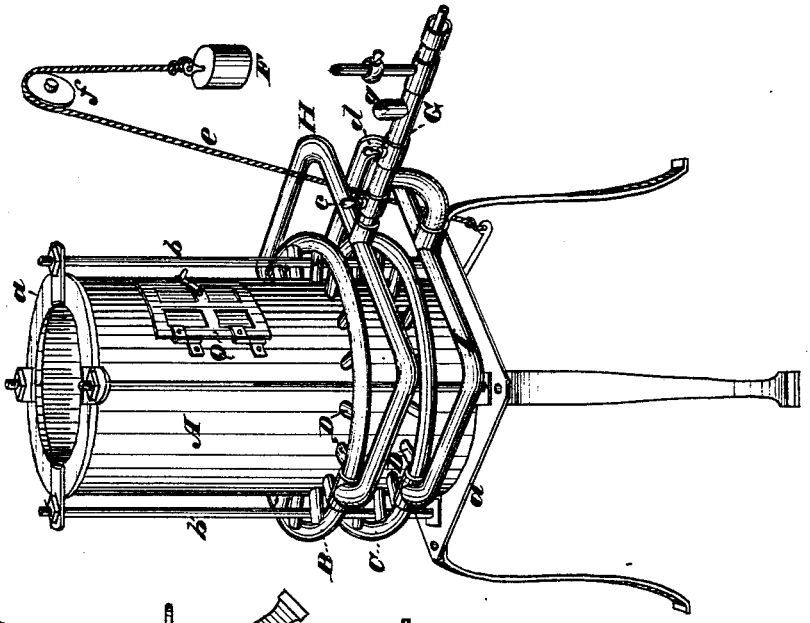

Fig. 1

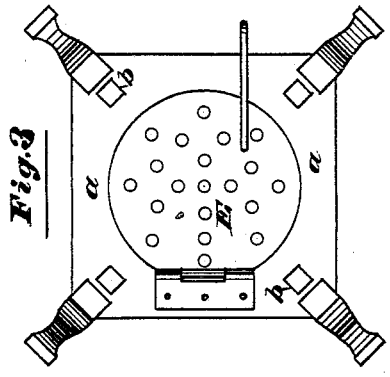

Fig. 3

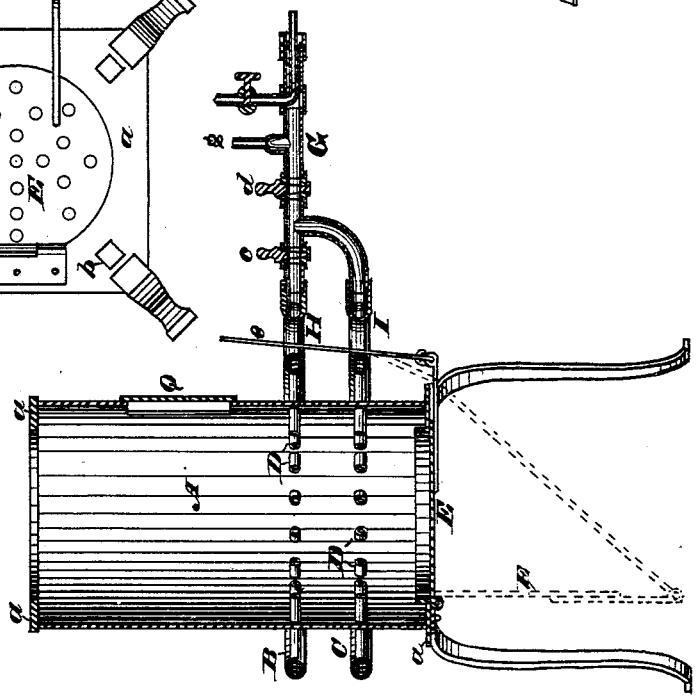

Fig. 2

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William R. Berger
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2 Sheets—Sheet 2.

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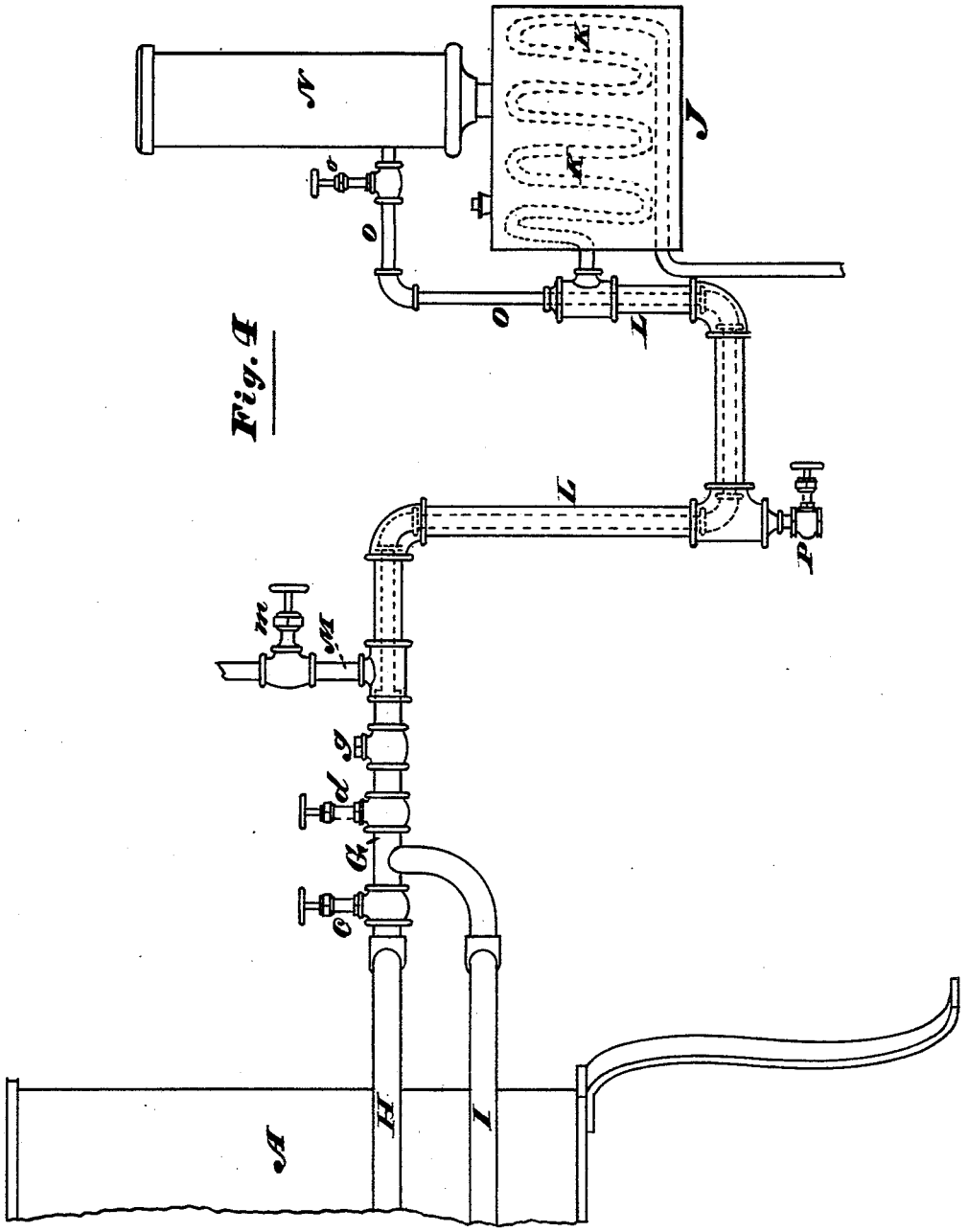

Fig. 1

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Inventor
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Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM R. BERGER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO ISAAC ATKINSON, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR SINGEING HOGS.

Specification forming part of Letters Patent No. **183,625**, dated October 24, 1876; application filed August 28, 1876.

To all whom it may concern:

Be it known that I, WILLIAM R. BERGER, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in an Apparatus for Singeing Hogs, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of the apparatus; Fig. 2, a vertical sectional view of the same; Fig. 3, a plan view of the under side of the apparatus; and Fig. 4, an elevation showing the construction and arrangement of the apparatus for generating gas, and its connection with the singer.

My invention relates to an apparatus for singeing the bristles from hogs, instead of removing them by scalding. This has been attempted heretofore by using a furnace with straw, coal, or wood for fuel. The operation of such a furnace, however, is unsatisfactory, as it is impossible to secure an amount of flame sufficient for the purpose without generating such a degree of heat as to defeat the success of the operation by the danger of burning the subject treated.

I have devised an apparatus in which gas is used instead of a furnace with ordinary fuel.

The invention consists of a cylindrical stack surrounded by rings of gas-pipe provided with a series of burners, projecting into the interior of the stack, in combination with a door at the bottom, by means of which the draft is regulated, and also in combinations of various devices, as will be hereinafter more fully set forth.

In the drawings, A represents a cylindrical stack, made of boiler-iron or any other suitable material. This cylinder is surrounded by two exterior rings of gas-pipe, B and C, arranged one above the other, in which are fitted suitable gas-burners D, which extend from the pipes B and C through and into the interior of the stack A.

The stack should be lined with fire-brick, and the burners D should be made of such length as to enter but not project through and beyond this lining.

At the top and bottom of the stack are plates *a*, which are connected together and held in place by suitable rods *b*, and as the plates are constructed to project over the lining, the latter is held firmly in place within the stack.

At the bottom of the stack is a hinged door, E, which is perforated, as shown in Fig. 3 of the drawings. A cord, *e*, is attached to an arm fastened to this door, which passes over a pulley, *f*, suitably arranged in the building for this purpose, and has at the other end a weight, F, by means of which the door E is held up in position.

The pipes B and C are connected to a feed-pipe, G, by means of branching pipes H and I, which are united to the pipes B and C on both sides of the stack. A stop-cock, *c*, is placed in the upper connecting-pipe H, so that, if desired, the gas may be shut off from the upper ring of burners, and also regulated in its flow when the apparatus is in use.

Another stop-cock, *d*, is placed in the feed-pipe G, just before its junction with the pipes H and I, as shown in Fig. 2 of the drawings, by means of which the flow of gas to the burners D may be regulated and entirely shut off from the pipes B and C whenever desired.

I also apply a pressure-gage to the supply-pipe at *g*, by means of which the pressure of the gas in the feed-pipe is always determined.

The supply-pipe G may be connected with any gas-generating apparatus, in any suitable manner, as inflammable gas of any kind may be used in this apparatus. I prefer, however, to use a gas obtained from hydrocarbon oils, as I have found this gas better adapted to the production of the amount of flame required for the successful operation of my apparatus.

In Fig. 4 of the drawings I have illustrated a method of generating this gas and conducting it to the burners. A suitable tank, J, is filled with benzine, gasoline, or any other suitable material.

To insure safety, this tank or generator may be located outside of the building in which the singeing apparatus is placed. Within this generator is placed a coil of pipe, K, one end of which passes outside of the tank, and

is connected to a large pipe, L, which is joined to the feed-pipe G by means of a steam-pipe joint.

A pipe, M, conveys steam from a suitable boiler located in any convenient place to the pipe L, through which it passes into the coil K within the generator, thereby raising the temperature of the fluid within, and causing it to vaporize. Above the tank or generator, and connecting with the interior thereof, is placed a receiver, N, into which the gas passes from the generator J. A gas-pipe, O, is fitted into this receiver, and conducted thence to the steam-pipe L, near its junction with the coil K. The gas-pipe O is carried into the steam-pipe L, and conducted along within it, as shown in dotted lines in Fig. 4, to the feed-pipe G, with which it is suitably joined, the joint being so constructed that no steam can pass into the pipe G, and the other end of the pipe L being so constructed that steam cannot pass out around the pipe O. The steam-pipe M is provided with a stop-cock, *m*, and the gas-pipe O has a similar stop-cock, *o*, located near the receiver N There is also a water-trap, P, of ordinary construction, located at the lowest point of the steam-pipe, by means of which the drip is conducted away from the pipe.

The operation of my apparatus is as follows: The steam admitted through the pipe M is conducted by the pipe L into the coil K, through which it passes, and then escapes into the air at the open end of the latter, which extends outside of the generator J. The coil K, being heated by the steam, raises the temperature of the fluid which surrounds it to such a degree that it is vaporized, and the gas passes up into the receiver N, whence it is conducted, by the gas-pipe O, to the feed-pipe G; and as the pipe O is placed within the steam-pipe L, and is therefore constantly surrounded by hot steam, the condensation of gas in the pipe O is prevented, and, in fact, the gas is rarefied during its passage from the receiver to the feed-pipe. Everything being in readiness, the gas is turned on and ignited at the burners within the stack A, the door E is closed, either partially or entirely, and the dead hog is let down into the stack by any suitable apparatus. It is necessary to close the door E, so as to check the draft, which would be so strong up through the stack as to carry the flame upward and out of the top. This door should be so managed by the attendant as to give the proper draft to produce a large amount of flame without having it strong enough to carry the flame upward so rapidly that the singeing will not be accomplished. A period of from twenty to thirty seconds is sufficient to do the work of singeing thoroughly, and the flow of gas is then checked by turning the stop-cock *d*, the door E is opened, and the hog is lowered into a vat of water, over which the stack A is placed. By perforating the door E, as described, a suitable draft will, under ordinary circumstances, be obtained when the door is closed; but, if occasion should demand, the latter may be opened slightly at any time by the attendant to increase the draft. A glazed door, Q, is placed in the side of the stack A, if desired, so that the operation of the apparatus may be inspected at pleasure.

This apparatus I have found by actual use to be effective and satisfactory for the purpose described. It is simple and cheap in construction, and by no means expensive, and the method described above for supplying it with the necessary gas also furnishes the latter at a comparatively small expense, as the material from which it is obtained can be purchased at a low price.

The operation of the apparatus is certain in its effects, the jets of gas-flame completely enveloping the body of the animal, thereby insuring thorough work. At the same time there is perfect safety, as the gas can be shut off in an instant, and there is also freedom from unpleasant odors which are generated by other methods.

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

1. A cylindrical stack, A, in combination with a series of gas-burners arranged around the interior surface, and a swinging door to close the bottom of the stack, substantially as and for the purpose set forth.

2. The combination of the stack A, perforated door E, closing the bottom thereof, exterior rings of gas-pipe B C, gas-burners D, and stop-cocks *c c*, arranged and operating substantially as described.

3. The combination of the gas-pipe rings B C, the branching pipes H I, the feed-pipe G, and the stop-cocks *c* and *d*, substantially as and for the purpose set forth.

WILLIAM R. BERGER.

Witnesses:

L. M. HARRIS,

J. M. THACHER.