(No Model.)

T. E. REDDY.

KETTLE FOR MAKING DROP SHOT.

No. 253,764. Patented Feb. 14, 1882.

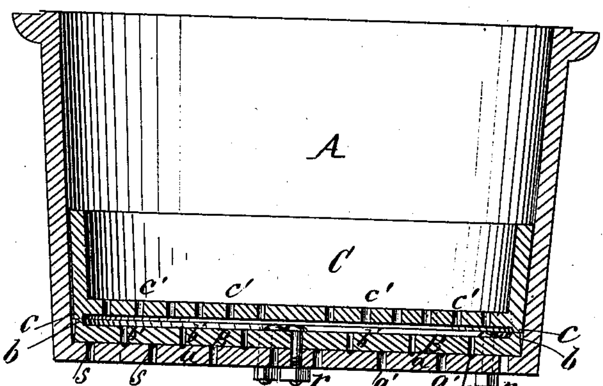


Fig. 1.

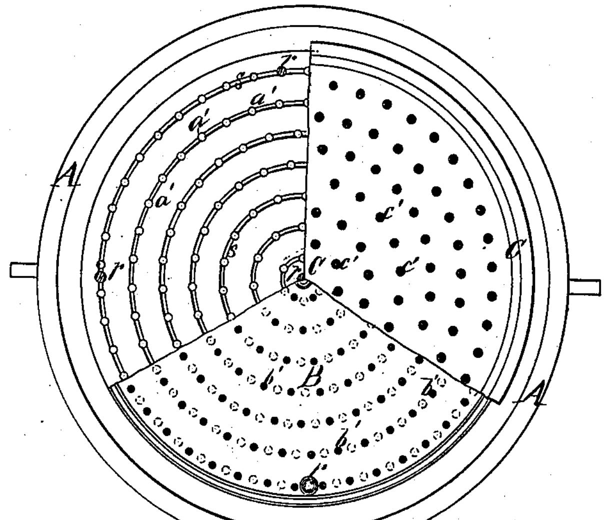


Fig. 2.

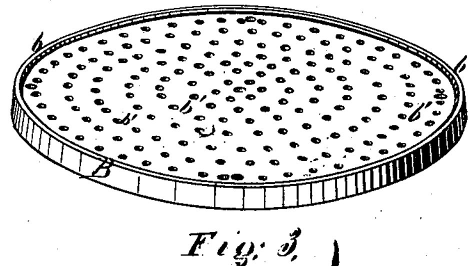


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS E. REDDY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JAMES McKEEFERY, OF SAME PLACE.

KETTLE FOR MAKING DROP-SHOT.

SPECIFICATION forming part of Letters Patent No. 253,764, dated February 14, 1882.

Application filed November 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. REDDY, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Kettles for Making Drop-Shot; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a vertical sectional view of my improved drop-kettle. Fig. 2 is a plan view, looking downward, parts of the inner pan and false bottom being broken away; and Fig. 3 is a perspective view of the removable or false bottom.

My invention relates to certain improvements in drop-kettles for making drop-shot; and it consists in certain combinations of a kettle having a perforated bottom with a perforated disk, plate, or false bottom and a perforated inner basin, pan, or kettle, such parts being constructed and arranged as hereinafter more fully described and claimed.

It has been customary heretofore in making drop-shot to employ a drop-kettle having a perforated bottom, such kettle being partially filled with some porous substance, as lead dross, through which the molten lead percolates or filters, and thus escapes through the perforations in the form of drops. Considerable difficulty is experienced with such kettles, owing in part to uneven or unequal flow of molten lead through the porous filling, thereby forming shot of many different grades or sizes intermingled; also, such porous filter or dross becomes more or less clogged or choked with impurities after short use, thereby impeding the flow of lead and necessitating frequent renewal, with loss of time, labor, and expense.

In order to avoid these and other like difficulties, I make use of a drop-kettle apparatus constructed as follows:

A cast-iron kettle, A, similar in general form to those in common use, is employed. This kettle has a flat bottom, *a*, in which are made any desired number of perforations, *a'*, of size adapted to form a given grade of shot as now practiced in the art. These perforations are distributed uniformly over the surface of the bottom; and in order to secure such distribution with other advantages, as hereinafter described, I arrange them by preference in concentric circles at about equal distances apart both in circumferential and radial directions. Grooves *s* are also made in the inner face of bottom *a*, in the circles of and joining or leading to the perforations *a'*. These grooves form channels to facilitate the flow of lead.

Within the kettle is a removable false bottom, B, which is perforated by preference in the same orderly arrangement as the kettle-bottom *a*, but with smaller perforations, *b'*. This false bottom B may be bound to the inner face of the kettle-bottom by bolts *r*, or equivalent screws, in any desired number. It is made with one plain face or side, (the under one, as shown in Figs. 1 and 3,) which is adapted to fit closely upon the inner face of the kettle-bottom. Upon the other side of B (the upper side, as shown) is formed a rim or flange, *b*, or equivalent lugs or projections. I prefer a continuous rim, as shown, in order to interrupt the flow of lead around the periphery of B when in the position shown. The shape and diameter of this false bottom are such that it may be placed within the kettle either side up, and thereby adjust the apparatus for forming different grades of shot. When the rim *b* is placed downward it forms a shallow chamber between the two bottoms, permitting a more rapid flow of lead and forming smaller shot. When the flat side of the false bottom is down, as shown in Fig. 1, the lead flows more slowly along the grooves *s* from the small perforations, *b'*, to the larger perforations, *a'*, and on account of the comparatively slow movement of the lead and the difference in size of the perforations the drops are formed more slowly, and consequently are larger, making coarser shot.

In order to secure a uniform flow, the bottom B is adjusted, as illustrated in Fig. 2, so that its perforations *b'* open into the grooves *s* between the perforations *a'*. This plate B may be used to advantage, however, without the grooves *s* in the kettle-bottom, as by loosening the bolts *r* a little the lead will flow with the

requisite freedom between the two flat faces from perforations b' to a'. This feature of binding the false bottom to bottom a more or less closely, in order to regulate the flow of lead as desired, I consider an important one; and in order to secure it other forms of adjustable fastening devices may be used instead of the bolts r.

It will be observed that when the plain side of plate or false bottom B is downward the adjacent surfaces of the two bottoms may be in contact. In this adjustment, the bottoms having surfaces such as are ordinarily secured in casting such articles, lead will find its way between them with sufficient freedom to form coarse shot. To stop all flow of lead by contact of such surfaces, they would have to be ground or otherwise made true and smooth. This is unnecessary, however, and I prefer to employ them with such form and finish as are secured in casting, so that the lead may find its way between the bottoms, as stated. As the bolts r are loosened for making finer shot the bottom B will be floated or raised vertically by the lead so far as the bolts may permit, thus opening more space between bottoms to facilitate flow of lead.

Within the main kettle and above the false bottom B is a perforated pan or inner kettle, C, of any desired depth. Any desired number and arrangement of perforations c' may be made in its bottom face adapted to permit a free flow of lead. The purpose of this pan is to gather the dross and other impurities and prevent them from clogging or interfering with the passages below; and to this end I prefer to make the perforations c' comparatively small and quite numerous, so that this pan may act as a strainer, permitting the flow of pure lead, but arresting impurities.

The pan C may rest upon the heads of bolts r, and thus afford a distributing-space, n, between it and false bottom B. I prefer, however, to make a continuous rim, c, around the under side of the pan, adapted to rest upon the rim b or upon the flat face of B, (whichever side of B may be uppermost,) and thus prevent in a great measure the flow of lead between the peripheries of B and C and the sides of the kettle.

If desired, the heads of bolts r may be sunk in plate or bottom B, thus affording clear space between such bottom and the pan for flow of lead.

Instead of arranging the perforations in concentric circles, as shown, other forms of arrangement may be employed, as spiral or in straight lines.

If the grooves s be omitted, the lines of perforations in B may alternate radially with the lines in a or other desired order, and arrangement may be employed such as will afford a uniform and equal flow to all the perforations a' in the kettle-bottom.

Instead of strainer-pan C, other forms of straining devices may be employed, or such strainer may be omitted entirely and still secure much better results than with drop-kettles heretofore in use. I prefer to employ it or its equivalent, however, as material advantages are secured thereby.

By arranging the false bottom B in different positions, as above described, two or more different grades of shot may be made with one kettle. In order, however, to make all the various grades or sizes of shot common in the trade, a number of kettles A will be employed having properly graduated perforations in their bottoms. One removable false bottom B may be used with the whole or any desired part of such set of kettles, or separate false bottoms may be provided for each kettle.

By means of this improved apparatus the peculiar difficulties which have heretofore attended the making of drop-shot are practically removed, and such work may be performed by comparatively unskilled labor. This is due largely to the uniform and ready flow of lead which is secured by the false bottom.

Shot can be formed with this device much more rapidly than heretofore. The product secured in any one adjustment is far more uniform in grade and less labor, skill, and expense are involved in securing such product.

I am aware of a certain construction of shot-kettles having perforated bottoms with an intervening agitating device, as shown and described in English Patent No. 746 of 1856; and I hereby disclaim such construction as not embodying my invention. Such kettles not only require constant attention to operate the movable parts properly, but also the shot formed thereby will necessarily vary widely in size. In my invention the relationship of parts once determined for a given grade of work is practically constant. No movement of parts is required in operation, and the lead flows evenly and without interruption from the perforations in one bottom to those in the other.

I claim herein as my invention—

1. A drop-shot kettle having two perforated bottoms, arranged face to face, without any interposed device to interrupt or regulate the flow of molten lead from the perforations in one to and through the perforations in the other, substantially as set forth.

2. The combination of the kettle having a perforated bottom, a perforated vertically-movable false bottom, and means for adjusting and holding such false bottom at different heights from the kettle-bottom, substantially as set forth.

3. A drop-kettle for making drop-shot, having a perforated bottom with grooves in its inner face leading to the perforations, in combination with a false bottom having perforations therein smaller in size than the perforations in the kettle-bottom, substantially as and for the purposes set forth.

4. A drop-kettle having a perforated bottom,

in combination with a perforated false bottom, B, and an inner perforated kettle or pan, C, substantially as set forth.

5. A drop-shot kettle having a perforated bottom, in combination with perforated false bottom B, having one plain face and a projection, *b*, on its other face, a perforated inner kettle or pan, C, having a projection, *c*, on its under face, and means for binding the false bottom to the kettle-bottom, substantially as set forth.

In testimony whereof I have hereunto set my hand.

THOMAS E. REDDY.

Witnesses:
R. H. WHITTLESEY,
C. L. PARKER.