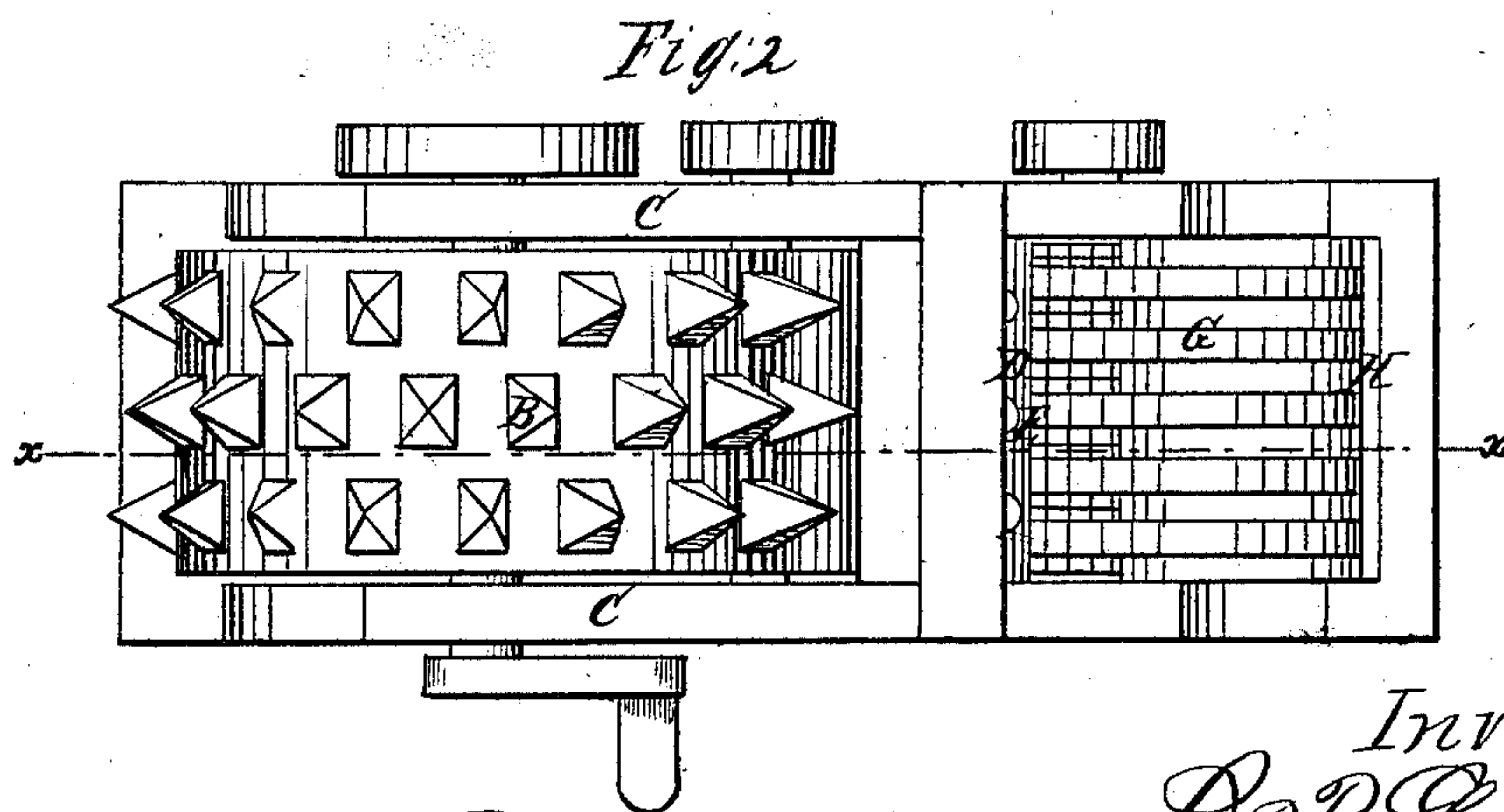
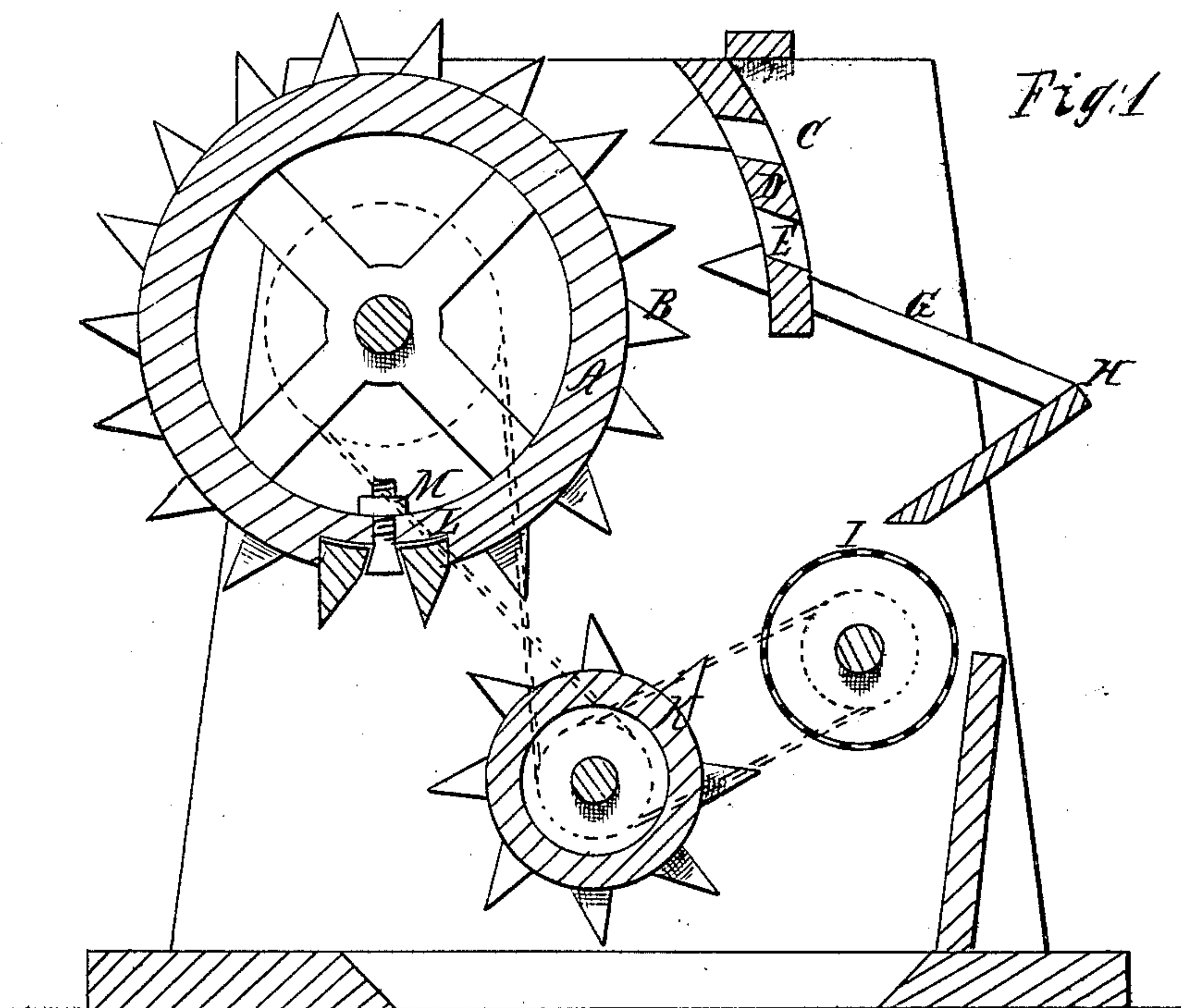


I. P. Garner,

Coal Breaker.

No. 90,439.

Patented May 25, 1869.



Witnesses
John F. Brooks
Wm. F. Clark

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L. P. GARNER, OF ASHLAND, PENNSYLVANIA.

Letters Patent No. 90,439, dated May 25, 1869.

IMPROVED COAL-BREAKER AND SEPARATOR

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, L. P. GARNER, of Ashland, in the county of Schuylkill, and State of Pennsylvania, have invented a new and improved Coal-Breaker and Separator; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in apparatus for breaking and separating coal, designed to provide a more efficient apparatus than any now in use.

The invention consists in the arrangement of breaking-rollers, separating-hopper, grate, and screen; also, certain improvements in attaching the spikes to the breaking-wheel, or cylinder, all as hereinafter more fully specified.

Figure 1 represents a sectional elevation of my improved machine, and

Figure 2 represents a plan view of the same.

Similar letters of reference indicate corresponding parts.

A represents a large breaking-cylinder, provided with spikes B, arranged in suitable bearings in the housings C.

D represents a hopper, or curb for confining the coal against the action of the wheel, and provided also with spikes to assist the breaking.

This curb is provided with perforations E, to permit the escape of such lumps as are small enough to do so.

These holes may be made of the proper size for any required size of coal, say steamboat-coal, or the largest size used, of broken coal.

A grate, G, is arranged under these openings, to receive the coal after passing through them for separat-

ing therefrom a smaller size, while the larger passes over the ledge thereof at H.

The smaller coal, after passing through the grate G, is delivered upon a screen, I, which may be either rotary or fixed, whereby it is again sized, and the larger part delivered therefrom to a smaller rotary breaker, K, as is also that passing down from the large breaker, where it may be broken as fine as may be required.

The small roller moves in the direction opposite to that of the larger one, and may be adjusted to or from the latter, to vary the size of the coal, as may be required.

To facilitate the removal of the spikes from the rollers for sharpening or renewal, I set them in recesses in the shell of the rollers, as shown at L, and provide the wedge-headed bolts M, secured by nuts inside thereof to clamp the spikes in place.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. The arrangement of the perforated spiked curb C, grate G, and ledge H, with reference to the spiked breaker A and rotary screen I, as herein described, for the purpose specified.

2. The combination, with the curb C and stationary or rotary screen I, of the grate G, when arranged substantially as specified.

3. The combination, with the breaker A, of the breaker K and screen I, when arranged substantially as specified.

4. The spikes arranged in the recesses L, and secured by the bolts M, substantially as specified.

L. P. GARNER.

Witnesses:

LEWIS HAUSE,

J. R. LINDENMUTH.