

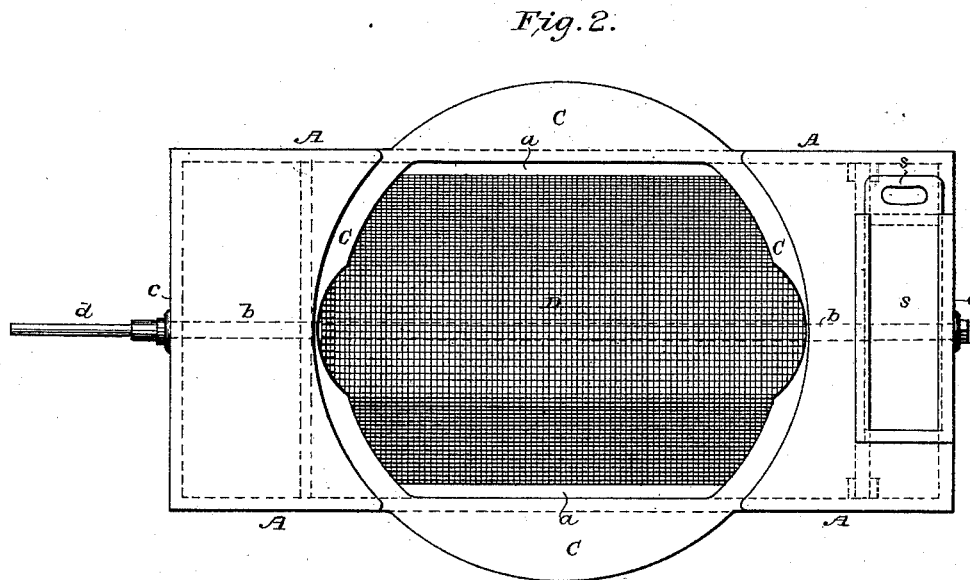
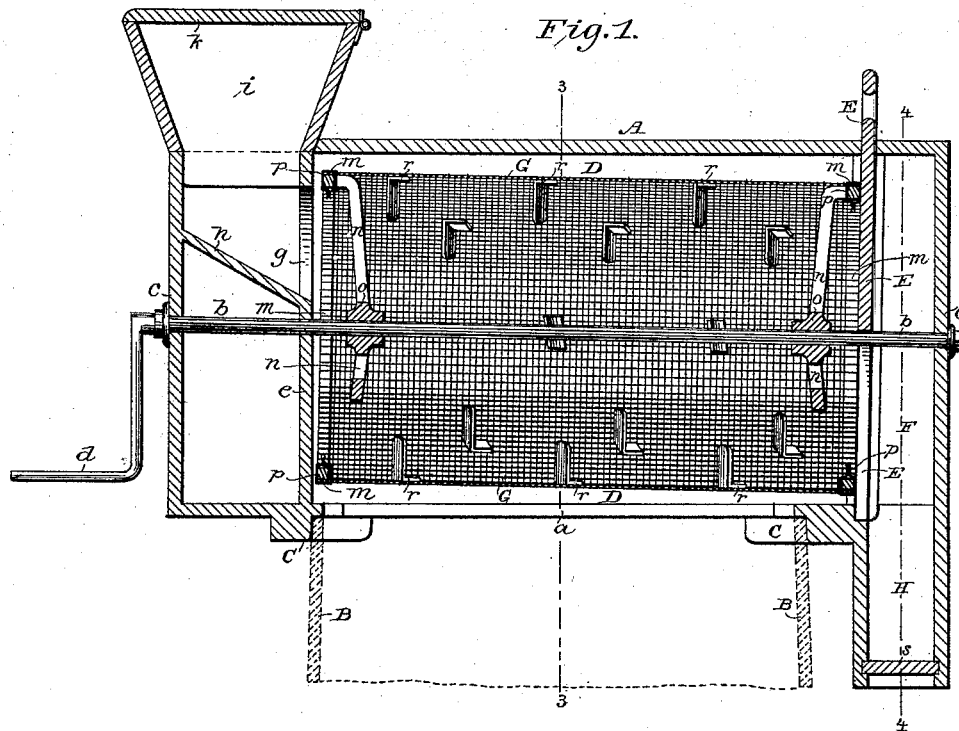
(No Model.)

2 Sheets—Sheet 1.

B. H. COOK.  
ROTARY SIFTER.

No. 419,751.

Patented Jan. 21, 1890.



Witnesses  
*John S. Latimer*  
*Edith A. Browne*

Inventor  
*Burton H. Cook*  
by *Arthur Fraser & Co.*  
his Attorneys

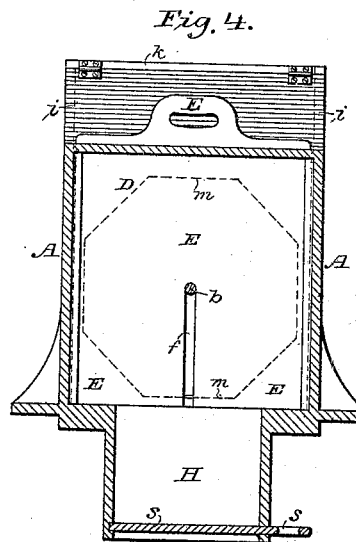
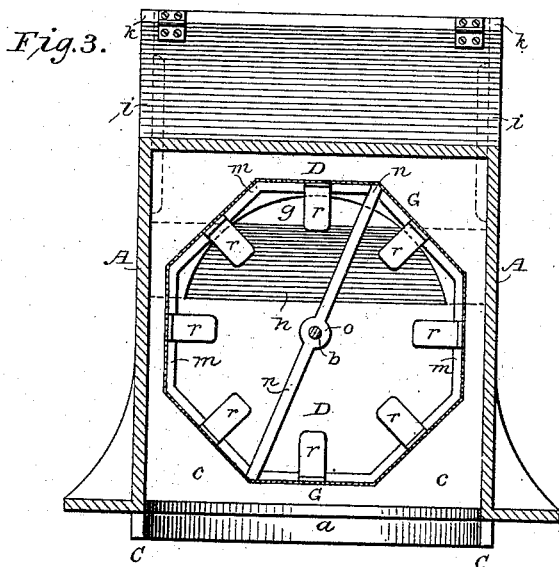
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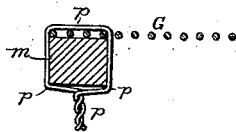
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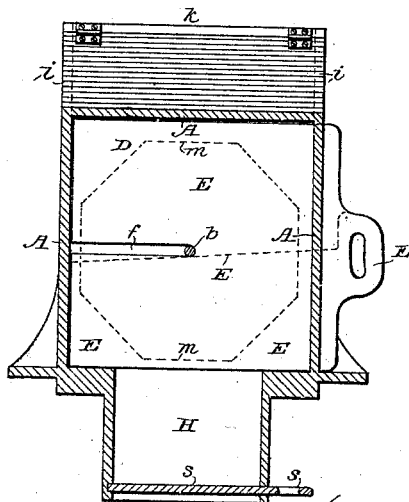
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*Fig. 5.*



*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

BURTON H. COOK, OF BROOKLYN, NEW YORK.

## ROTARY SIFTER.

SPECIFICATION forming part of Letters Patent No. 419,751, dated January 21, 1890.

Application filed October 8, 1889. Serial No. 326,325. (No model.)

*To all whom it may concern:*

Be it known that I, BURTON H. COOK, of Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Rotary Sifters, of which the following is a specification.

My invention applies more especially to ash-sifters, and aims to provide a sifter of the rotary class which shall be particularly cheap, simple, and effective. To this end I construct the sifter with an inclosing rectangular box or case adapted to fit over an ash-barrel and containing a rotary sifting screen or drum polygonal in cross-section, open at each end, and mounted on a horizontal or a horizontally-inclined axis within the case, from which an axial crank-handle projects to revolve the drum. An internal stationary partition in the case covers the lower half of the open end of the drum at its initial or receiving end, and a permanent receiving-hopper opening on the exterior of the case delivers the deposited cinders through a segmental opening in the top of said stationary partition into the receiving end of the drum. The drum consists of light polygonal rings or wheels having inwardly-recessed spokes and hubs secured to the central axle, the said rings being surrounded by wire-cloth wired to said rings. Upon the interior of the wire-cloth drum is affixed a spiral web or flange or a spirally-arranged series of flanges, which have a screw action to better agitate the cinders and convey them positively and gradually to the discharge end of the drum. This discharging end of the drum is open, but normally covered by a slide close to the rim of the drum, which, when withdrawn, allows the cinders to fall into a permanent pendent pocket or chamber on the delivery end of the case, and which pocket or chamber has a sliding bottom to allow of dumping the sifted cinders into the scuttle or other receptacle, when required.

The improved rotary sifter is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the improved sifter. Fig. 2 is an inverted plan thereof. Fig. 3 is a cross-section in a plane indicated by the line 3 3 in Fig. 1. Fig. 4 is a cross-section, on a smaller scale, in a plane

indicated by the line 4 4 in Fig. 1. Fig. 5 is a detail view showing the means for attaching the wire-cloth to the frame-work of the drum; and Fig. 6 is a sectional view similar to Fig. 4, showing a modification.

Referring to the drawings, A is the case of the sifter, which is preferably a rectangular wooden box, square in cross-section, but less than the diameter of an ordinary ash-barrel B, and in length greater than the diameter of the barrel, as shown in Figs. 1 and 2. This case is provided with a circular flanged base C, adapted to fit over the upper end of the ash-barrel, as indicated in Fig. 2, the case being entirely open at the bottom within such flanged base, as shown at *a* in Figs. 1, 2, and 3.

D is the rotary sifting-drum, which is mounted within the case directly over the ash-discharge opening *a*, and the shaft or axle *b* of which is journaled at each end in the extreme end walls *c c* of the case and is provided with the external crank-handle *d* at the receiving end of the case, said crank and axle being preferably formed in one piece of heavy wire bent into the form shown. The drum D is shorter than the case, and is entirely open at each end. The open receiving end of the drum abuts against or rotates close to a fixed partition *e* at the receiving end of the case. The open receiving end of the drum rotates in such close proximity to the fixed partition *e* that there is no opportunity for the passage of cinders between the drum and partition, so that no clogging of the sifter will result from such cause. The other open end of the drum, which is the delivery or discharge end, abuts against a removable partition or slide E, near the discharge end of the case. This removable partition or slide E is located some distance from the end wall *c*, in which the drum-shaft is journaled, so that a chamber F is formed beyond the drum and between the partition E and the rear wall *c* of the case. This partition or slide is located close to the delivery end of the drum, so that no cinders can pass between it and the drum. This partition E preferably closes the entire delivery end of the drum, and in order that it may be readily removed and may not interfere with the rotation of the drum it is provided with a nar-

row open slot *f*, which passes over the axle *b*. The top of the fixed partition *e* is formed with a half-round or segmental opening *g*, corresponding to the interior of the drum above its axle *b*, as seen best in Figs. 1 and 3, forming a receiving-opening delivering into the drum. From the base of this opening *g* an inclined chute or bottom *h* extends to the front end of the case directly under a hopper *i*, which is open on the top of the case and is provided with hinged lid *k*, so that by raising said lid the ashes and cinders may be dumped into the hopper, from whence they will be discharged by the incline *h* and through the opening *g* into the open receiving end of the drum *D*, as will be readily comprehended from Fig. 1.

The drum is formed of two light skeleton wheels or rings *m m* of hexagonal, octagonal, or other flat-sided polygonal form, preferably of cast-iron, each having two or more spokes *n*, extending to a central hub *o*, which is fixed on the central axle *b*. The spokes and hubs of these skeleton rims or rings are bent or recessed axially inward out of the vertical plane of the rings, so that the hubs and spokes do not obstruct the free entrance of the cinders into the open end of the drum, as will be readily comprehended from Fig. 1. The polygonal skeleton wheels of the drum are wrapped with a web of wire-cloth *G*, of suitable mesh, as shown, which lies in a succession of flat planes around the flat sides of the wheels or rings, and thus forms a flat-sided or polygonal sifting-drum, as best shown in Fig. 3, which form is best adapted for sifting, since the successive flat sides and intervening angles or hollows rotating against the mass of cinders subjects the same to greater shocks and agitations, and thus sifts out the ashes therefrom more effectually than would be the case with a cylindrical drum.

Referring to Fig. 5, it will be seen that the wire-cloth is secured to the rims of the skeleton wheels by means of wire loops or staples *p p*. Each of these wire loops or staples is composed of a short section of wire, which is passed around one of the rings or rims *m* through meshes of the wire, and is secured by twisting its ends together, thus binding the wire-cloth to the rings or rims in a simple, cheap, and effective manner.

Now, referring again to Figs. 1 and 3, to the inside of the wire-cloth drum is fixed a continuous spiral web or flange, or preferably a succession of inclined projections or lugs *r*, giving the effect of an Archimedean advancing screw, with a pitch or inclination advancing from the receiving to the discharge end of the drum. These spirally-disposed webs or flanges greatly assist in agitating the cinders and in keeping them separated and diffused on the sifting-web of the drum, and tend to feed the same gradually and positively toward the discharge end of the drum, which feeding action is assisted by having the drum set in a slightly-inclined position,

as shown. The drum, however, may be perfectly level, or it may be much more inclined than that illustrated, if preferred. In any case, however, the drum has preferably a uniform diameter throughout its length. The narrow chamber *F* between the removable partition *E* and the rear wall of the case is prolonged downward below the base of the case, forming a pendent cinder-receiving pocket *H*, which extends beneath the flanged base *C* of the sifter and overhangs the side of the barrel when the sifter is placed thereon, as seen in Fig. 2, whereby it permits of a scuttle or other vessel being placed under said pocket. The bottom of this pocket is provided with a movable slide *s*, to permit the discharge of the contents of the pocket into the scuttle.

The action of the sifter will be readily comprehended. The lid *k* of the hopper *i* being raised, the cinders and ashes are dumped into the same and descend at once into the front end of the drum, and the lid *k* being at once closed, the drum is now revolved by turning the crank *e*. The rotation of the drum scatters and diffuses the cinders upon the wire mesh and the centrifugal force of the rotation, together with the succession of flat sides and angles of the polygonal drum and the progressing action of the spiral or inclined flanges *r*, subjects the cinders to an effective sifting action, which rapidly separates the ashes and débris from the good cinders. The ashes and débris are thus sifted into the ash-barrel while the good cinders are gradually and positively advanced by the screw action of the flanges *r* to the discharge end of the drum, where they accumulate against the removable partition or slide *E*. When the sifting has been thus accomplished, the slide *E* is raised, permitting the cinders to fall into the pocket *H*, from which they may be dumped, when required, into the underlying scuttle by removing the bottom slide *s*.

Several features of the construction are to be particularly noted. The bearings of the drum-shaft are in the end walls of the case beyond the fixed and sliding partitions. Owing to this construction, the partitions can be placed in the closest proximity to the open ends of the drum, no space being required between either partitions for the bearings of the drum-shaft; and, owing to this relation of the partitions to the drum, there is no opportunity for the escape of the large cinders from the drum during the sifting operation, nor can the cinders clog the drum and prevent its rotation. An important relation also exists between the delivery end of the drum being closed by a removable partition and the inlet-opening into the receiving end of the drum being located in the fixed partition above the axis of the drum. Owing to this construction, the lower half of the drum in which the cinders and ashes are retained is closed at both ends by the two partitions during the entire sifting operation, so that the

ashes can be thoroughly and entirely separated from the good cinders before the sliding partition is opened. The ashes can pass only through the wire-cloth into the ash-barrel beneath, and cannot collect beyond the delivery end of the drum, where they would be in position to be discharged with the good cinders. At the same time, owing to the position of the inlet-opening into the drum, none of the cinders or ashes can back into the supply-hopper during the sifting operation, but are held in the lower part of the drum, where they are subjected to the agitation of the drum. Consequently, when the discharge sliding partition is opened, there is nothing left in the drum except clean cinders.

The presence of the discharge-chamber F and its depending closed pocket H insures the case being air-tight during the sifting operation, so that no dust will escape into the compartment. In case any dust should sift by the sliding partition it will always be collected in the closed pocket, which is a permanent part of the sifter, so that it always necessarily is in position. Any such collected dust will be removed on the first opening of the slide *s* before the sliding partition E is moved, so that the clean cinders will not become mixed therewith. The pocket thus acts as a discharge-chute, and the presence of such a chute is desirable, since the sifter is adapted to be placed upon an ash-barrel when in use, so that the delivery end of the drum is a considerable distance above the ground on which the ash-barrel rests. The pocket thus serves as a chute for conducting the cinders into the scuttle, and when closed it constitutes a receptacle into which the cinders may be emptied and retained temporarily.

In Fig. 6 modifications of the sliding partition F are illustrated. In the main construction the sliding partition moves vertically through a slot in the upper wall of the case. In one modification the sliding partition F is shown in full lines as a slide capable of lateral movement through a slot in one side wall of the case and as having a horizontal open slot straddling the drum-shaft. A modification of the slide is also indicated in dotted lines, wherein the slide covers only the lower half of the drum and does not extend above the drum-shaft.

I claim as my invention—

1. In an ash-sifter, a casing and a rotary open-ended sifting-drum the shaft of which is journaled in the end walls of said casing, in combination with a fixed partition at the inlet end of said drum, said partition having an inlet-passage therethrough wholly above the drum-shaft, and a movable sliding partition closing the delivery end of the drum, said fixed and sliding partitions being in close proximity to the respective open ends of the drum when the sifter is in operation, so that no space is left for the passage of cinders be-

tween the ends of said drum and said partitions, substantially as set forth.

2. In an ash-sifter which is adapted to be used when placed upon an ash-barrel, a casing, and a rotary open-ended sifting-drum the shaft of which is journaled in the end walls of the casing, in combination with a movable sliding partition closing the delivery end of the drum and forming a discharge-chamber between the delivery end of the drum and the end walls of the casing, the walls of said casing being extended downwardly below the drum, thus forming a continuation or pocket to said discharging-chamber, whereby said chamber constitutes a chute for the discharge of the cinders, and said movable sliding partition being in close proximity to the delivery end of said drum, so that no passage is left for cinders between them, substantially as set forth.

3. In an ash-sifter which is adapted to be used when placed upon an ash-barrel, a casing, and a rotary open-ended sifting-drum the shaft of which is journaled in the end walls of the casing, in combination with a discharging-chamber between the delivery end of the drum and the rear end wall of the casing, said chamber being extended downwardly to form a depending pocket or discharge-chute for the cinders from said drum, a slide closing the lower end of said pocket or chute, and a removable sliding partition covering the delivery end of the drum and separating it from said discharging-chamber, said sliding partition being in close proximity to the delivery end of said drum, so that no cinders can pass between them, substantially as set forth.

4. In an ash-sifter adapted to be used when placed upon an ash-barrel, a casing, an open-ended sifting-drum the shaft of which is journaled in the end walls of the casing, a discharging-chamber between the delivery end of the drum and the rear end wall of the casing, said chamber being extended downwardly below the drum to form a depending pocket or discharge-chute for the cinders from said drum, and a slide closing the lower end of said pocket or chute, in combination with a fixed partition closing the inlet end of the drum, said fixed partition having an inlet-opening wholly above the drum-shaft, and a movable sliding partition closing the entire delivery end of said drum and separating it from said discharging-chamber, said sliding partition having a slot straddling the drum-shaft, and both said fixed and sliding partitions being located in close proximity to the respective ends of the drum, so that no space is left between the drum and either of said partitions when the sifter is in operation, substantially as set forth.

5. In an ash-sifter, a casing and a rotary sifting-drum, said sifting-drum comprising a shaft journaled in the end walls of said cas-

ing, two end hoops or rings, a wire-cloth supported on said hoops or rings, and spokes connecting each of said hoops or rings with said shaft, said spokes being bent inwardly,  
5 in combination with fixed partitions closing the inlet end of the drum and having an inlet-opening wholly above the drum-shaft, and a movable sliding partition closing the delivery end of the drum, both of said partitions being in close proximity with the respective open ends of the drum, substantially

as set forth, whereby sufficient space is left between said partitions and said spokes, so that the cinders will not clog the drum.

In witness whereof I have hereunto signed 15 my name in the presence of three subscribing witnesses.

BURTON H. COOK.

Witnesses:

JONATHAN HALL,  
ANDREW A. FOSTER,  
JAMES S. HALL.