

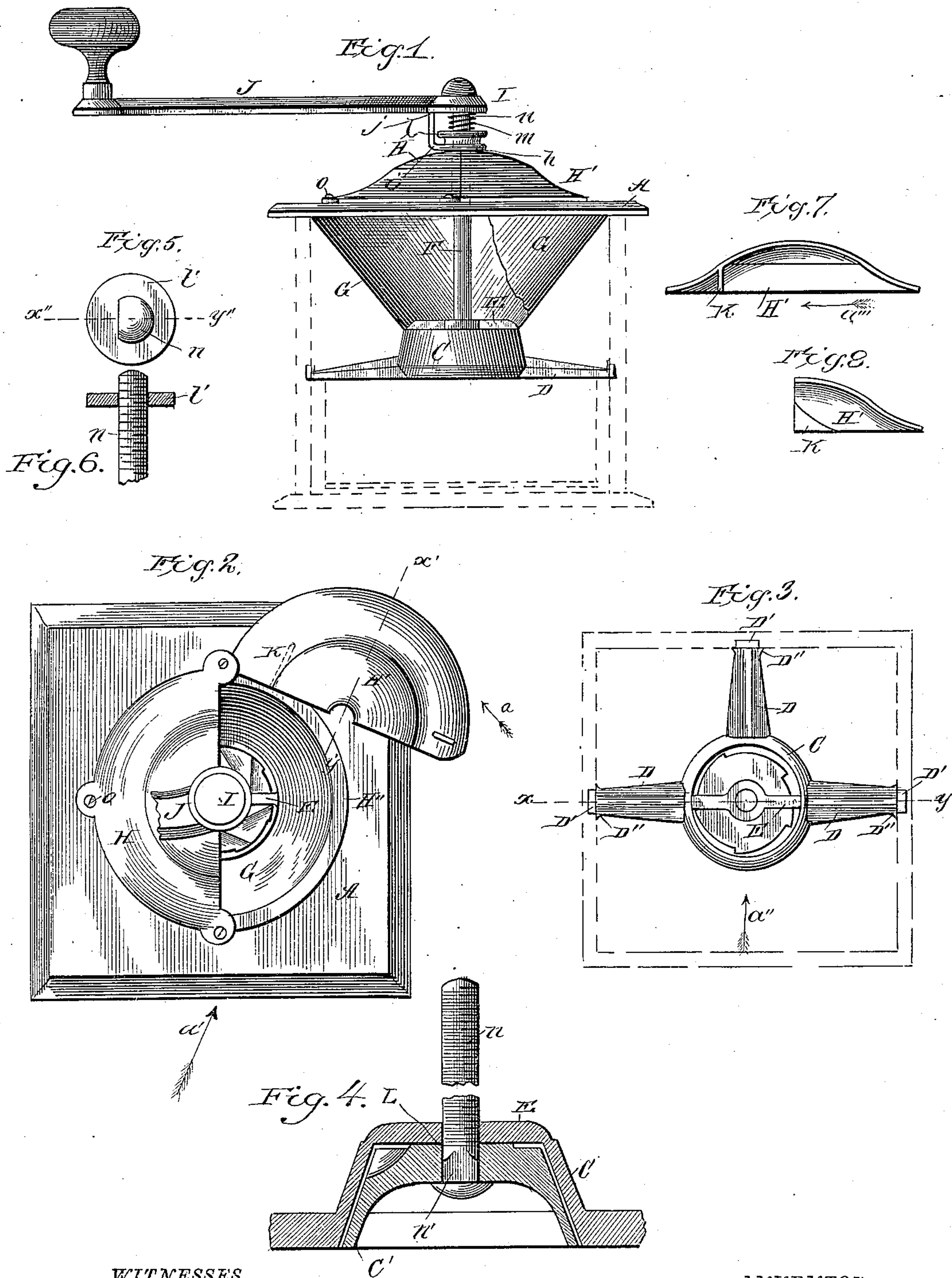
(No. Model.)

E. H. & C. MORGAN.

COFFEE MILL.

No. 333,243.

Patented Dec. 29, 1885.



WITNESSES

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# UNITED STATES PATENT OFFICE.

EDGAR H. MORGAN AND CHARLES MORGAN, OF FREEPORT, ILLINOIS.

## COFFEE-MILL.

SPECIFICATION forming part of Letters Patent No. 333,243, dated December 29, 1885.

Application filed February 9, 1885. Serial No. 155,402. (No model.)

*To all whom it may concern:*

Be it known that we, EDGAR H. MORGAN, a resident of Freeport, in the county of Stephenson and State of Illinois, and CHARLES MORGAN, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Coffee-Mills; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to improvements in coffee-mills, and is fully described, explained, and claimed in the following specification, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the mill and the cover of the box on which the mill is fastened, the position of the box being shown in dotted lines and the hopper of the mill being partly broken away to show construction; Fig. 2, a plan of the mill; Fig. 3, a plan of the grinding-shell and its integrally-formed supporting-arms, the position of the box being indicated by dotted lines; Fig. 4, a central vertical section (through line  $x y$ , Fig. 3) of the grinding-shell and cone and the central supporting-bolt,  $n$ ; Fig. 5, a plan, and Fig. 6 a section, of a central bolt and washer slightly different in form from that shown in the previous figures; Fig. 7, an internal elevation of the swinging cover of the mill, the view being in the direction indicated by the arrow  $a'$ , Fig. 2; and Fig. 8, a central vertical section of the cover through the line  $x' y'$ , Fig. 2, the view being in the direction indicated by the arrow  $a$ , Fig. 2.

In these views A is the top, and B are the side pieces, of a box of ordinary construction, the side pieces being mitered or dovetailed together and the top nailed or screwed to the side pieces. The lower part of one of the sides is cut away for the admission of an ordinary drawer, and a bottom board is fastened to the lower edges of the side boards and supports the drawer. Immediately above the drawer-space is the main casting of the mill, consisting of a conical grinding-shell, C, an integrally-formed bridge, E, above the shell,

and three integrally-formed arms, D, whose outer ends enter suitable sockets in three of the side pieces of the box. These sockets are formed in the side pieces before putting them together, and the connecting of the side pieces secures the casting in place. The end D' of each of the arms D is cylindrical and fits in the socket prepared for it, and just inside of each of the cylindrical ends is a square shoulder, D'', which rests against the inner face of the side piece, and thus steadies the casting.

We are aware that it is not broadly new to fasten in place the main casting of a coffee-mill by providing it with projections which enter the sides of the inclosing-box, a mill having its hopper and stationary grinding-burr formed in a single piece, whose edges enter grooves in two opposite sides of the box, being shown in a prior patent. The cylindrical form of the ends of supporting-arms (shown herein) is, however, preferable to any other shape, since the sockets for receiving said ends can be prepared more rapidly and perfectly by boring than in any other way. At the same time the shoulders on these arms, while not essential, add to the convenience of construction, since they obviate the necessity of boring the sockets to an exact depth.

Above the main casting and resting on it is a sheet-metal hopper, G, lying wholly within the box, and held in place by the top A, which is fastened to the side pieces after the hopper has been put in place. In the top A is a circular opening somewhat smaller than the upper rim of the hopper, in order that when the cover is fastened on, the hopper may be secured thereby, and an annular metal plate, H'', surrounds the opening in the top A, and is fastened securely to the top.

We are aware that it is not new to place the hopper of a coffee-mill within the box and below the cover thereof; but we believe this to be the first mill in which a sheet-metal hopper is superposed upon the stationary burr of the mill within the mill-box and held in place by the cover without other fastening. The fastening thus afforded is perfectly rigid and secure, and costs absolutely nothing, since the box, the stationary burr, and the cover of the



box must all be fastened together securely, whether their connection holds the hopper in place or not.

In all prior constructions similar to this the hopper has been fastened to the sides of the box, the cover, or the stationary grinding-burr. In the mill shown herein the hopper is entirely separate from the box, the cover, and the stationary burr. It rests on the grinding-burr, and is held in place by the hopper without being attached to either.

Above the plate  $H''$  is a semicircular stationary cover,  $H$ , closing one-half of the opening in the top  $A$ , and a semicircular cover,  $H'$ , is pivoted at one extremity of the common diameter of the two semicircles, and by swinging about this pivot opens or closes the remaining half of the opening in the top.

At the center of the cover  $H$   $H'$  is a small circular cap or plate,  $h$ , fastened to or forming a part of the stationary half  $H$  of the cover, and this cap and the bridge  $E$  are centrally bored to receive and form the bearings of a central bolt,  $n$ , screw-threaded at its upper end, headed at its lower end, and having a square neck just above the head. A grinding-cone,  $C'$ , having a square central opening, hangs on the head of the bolt within the shell  $C$ , the opening in the cone conforming substantially to the neck of the bolt, so that the bolt and cone must turn together.

The use of a separate bolt for suspending and rotating the cone  $C$  is preferable to the use of an integrally-formed cone and vertical shank, for the reasons that the wrought bolt is cheaper, stronger, and more perfect than a cast shank, and permits the making of a more perfect cone-casting, and at the same time the suspension of the cone on the bolt allows a certain amount of adjustment of the cone to the shell independently of the position of the bolt. In mills of this class the grinding-burrs are cast, and are seldom absolutely perfect, and a slight automatic lateral adjustment is almost a necessity to their successful operation.

On the upper surface of the cone  $C'$  is a boss,  $L$ , of such thickness that as the cone is raised by raising the bolt  $n$ , or otherwise, the boss strikes the lower face of the bridge  $E$  before the periphery of the cone strikes the inner surface of the shell, and thus prevents the unnecessary wear of the grinding-surfaces, which might otherwise result from too close an adjustment.

Above the cap  $h$  is a washer,  $i$ , fitting loosely about the central bolt,  $n$ , and above the washer is a regulating-nut,  $l$ , by means of which the bolt is raised or lowered for the purpose of adjusting the grinding-surfaces. On the upper end of the bolt is screwed a crank,  $J$ , the end of the bolt lying in a screw-threaded socket in the lower face of the crank. The washer  $i$  and crank  $J$  are connected by a vertical finger,  $j$ , cast either on the washer or the crank, and entering a suitable socket in the

other of said parts, and thus insuring the simultaneous rotation of the two parts. The nut  $l$  thus lies between two parts, which always move in the same direction and at the same speed, and is thus guarded against any friction which might tend to turn it with relation to the bolt. To prevent its rotation through accidental causes or the jar of operation, a spring,  $m$ , is interposed between the crank  $J$  and the nut, and affords sufficient friction for the purpose.

Figs. 5 and 6 show a form of washer which may be substituted for the one already described. As shown in those figures, one side of the bolt is flattened, and the central opening in the washer is made to correspond with the form of the bolt. The crank is fastened to the upper end of the bolt in the same way shown in Figs. 1 and 2, and already described, and the turning of the crank turns the bolt, which carries the washer with it at the same speed which the crank has. The operation of this device is the same as that of the one already described, though the construction is somewhat different.

The construction of the cover  $H$   $H'$   $H''$  so far as it has already been described is one that is common in coffee-mills already in use, but we have added to it a feature which we believe to be novel as well as useful. On the lower face of the swinging cover  $H'$ , near its pivotal point, is a vertical web,  $K$ , cast integral with the cover, the lower edge of the web being preferably a straight line in the plane of the upper surface of the plate  $H''$ . When the hinged cover is closed and lies against the stationary cover  $H$ , the web  $K$  is over the hopper  $G$ , and the edge of the cover  $H'$  rests on the plate  $H''$ . As soon, however, as the cover  $H'$  is swung open, the lower edge of the web rests on the plate  $H''$ , and these two parts are in contact during such time as the cover may be open, whether wholly or partially. The friction of the swinging cover is thus brought on the metallic plate  $H''$  instead of on the wooden top  $A$ , and the wear caused by the friction is at a point which is always hidden from view by the cover itself. The two metal parts  $K$   $H''$  also work much more smoothly together than the cover  $H'$  would work on the surface of the wooden top  $A$ , covered as it is with shellac or varnish. The addition of the web is thus a material improvement in the appearance and smoothness of operation of the top of the mill.

We are aware that many of the features of the mill shown are old and well known, and we hereby disclaim any novelty therein, except such as is set forth in and covered by the following claims, to wit:

1. The combination, with the box of a coffee-mill, of the main casting thereof provided with arms having cylindrical ends, which enter sockets in the inner faces of two or more of the sides of the box, the casting being held in place by the sides of the box when connected,



substantially as shown and described, and for the purpose set forth.

2. The combination of the sides B of the box and the stationary grinding-shell C, provided with arms D D D, having cylindrical ends D' and shoulders D'', the ends D being seated in sockets in the sides B, and the shoulders D being in contact with the inner faces of said sides, substantially as shown and described, for the purpose set forth.

3. In a coffee-mill, the combination of the box thereof, a grinding-shell held in place within the box and at a suitable distance below the top thereof, and a sheet-metal hopper resting on the grinding-shell and held in place by the top of the box, but not attached to the grinding-shell or to the top of the box, substantially as shown and described, and for the purpose set forth.

4. The combination of the stationary shell C, provided with the centrally-bored bridge, E, the bolt *n*, journaled in said bridge, the cone C', suspended within said shell, and sup-

ported and rotated by the head of the bolt *n*, and provided with the boss L, the crank J, attached to the upper end of said bolt, and means for raising and lowering the bolt and cone, substantially as shown and described, and for the purpose set forth.

5. The combination of the bolt *n*, the nut *l*, the washer *i*, the finger *j*, and the spring *m*, substantially as shown and described, and for the purpose set forth.

6. The combination of the top A, the annular plate H'', the stationary cover H, and the hinged cover H', provided with the web K, substantially as shown and described, and for the purpose set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

EDGAR H. MORGAN.

CHARLES MORGAN.

Witnesses:

J. A. CRAIN,

F. W. BRAINERD.