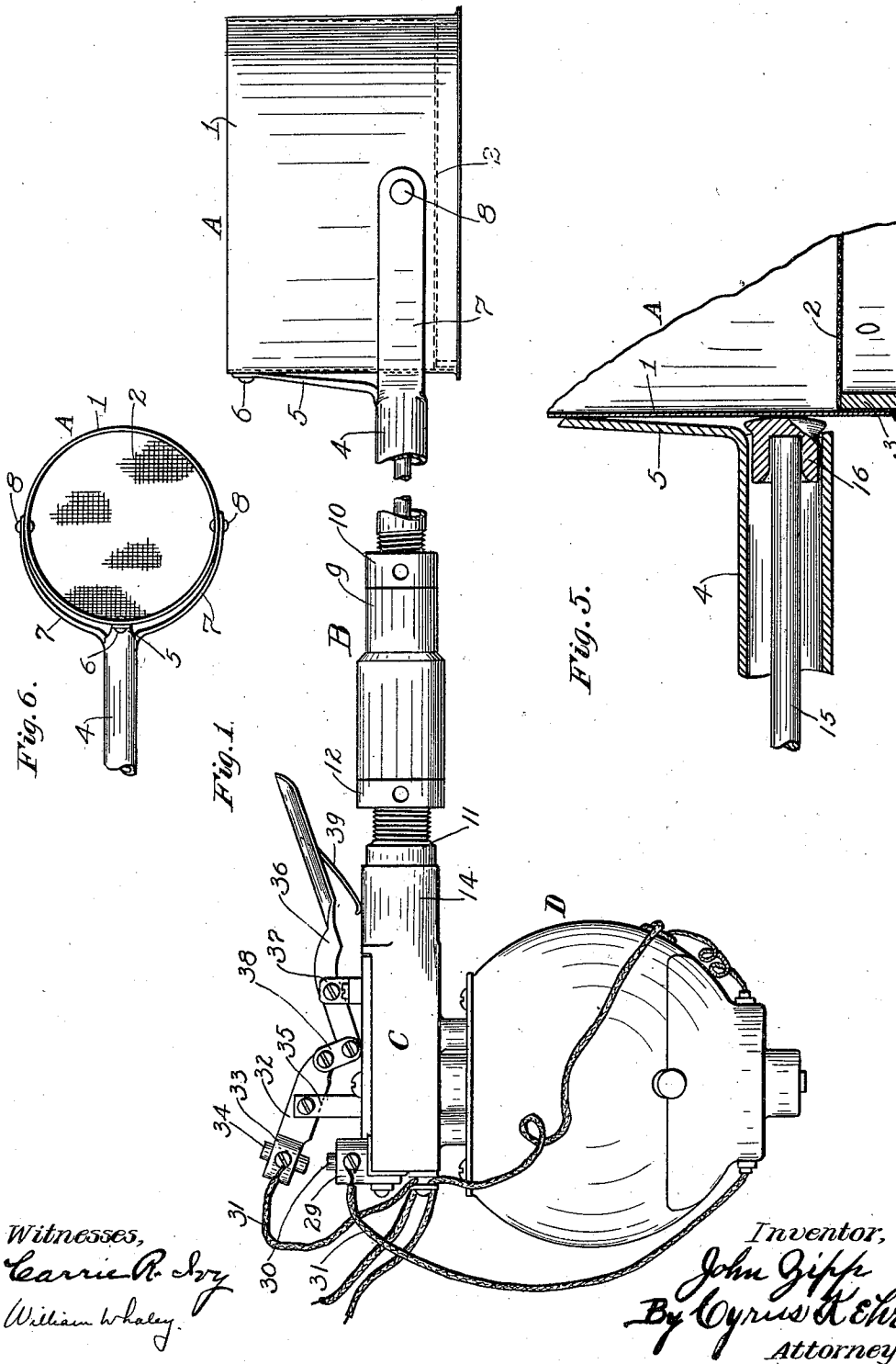


J. ZIPP.
DREDGER FOR POWDER FORM MATERIAL.
APPLICATION FILED APR. 24, 1908.

Patented Aug. 15, 1911.

2 SHEETS-SHEET 1.

1,000,873.



Witnesses,
Carrie R. Ivy
William Whaley.

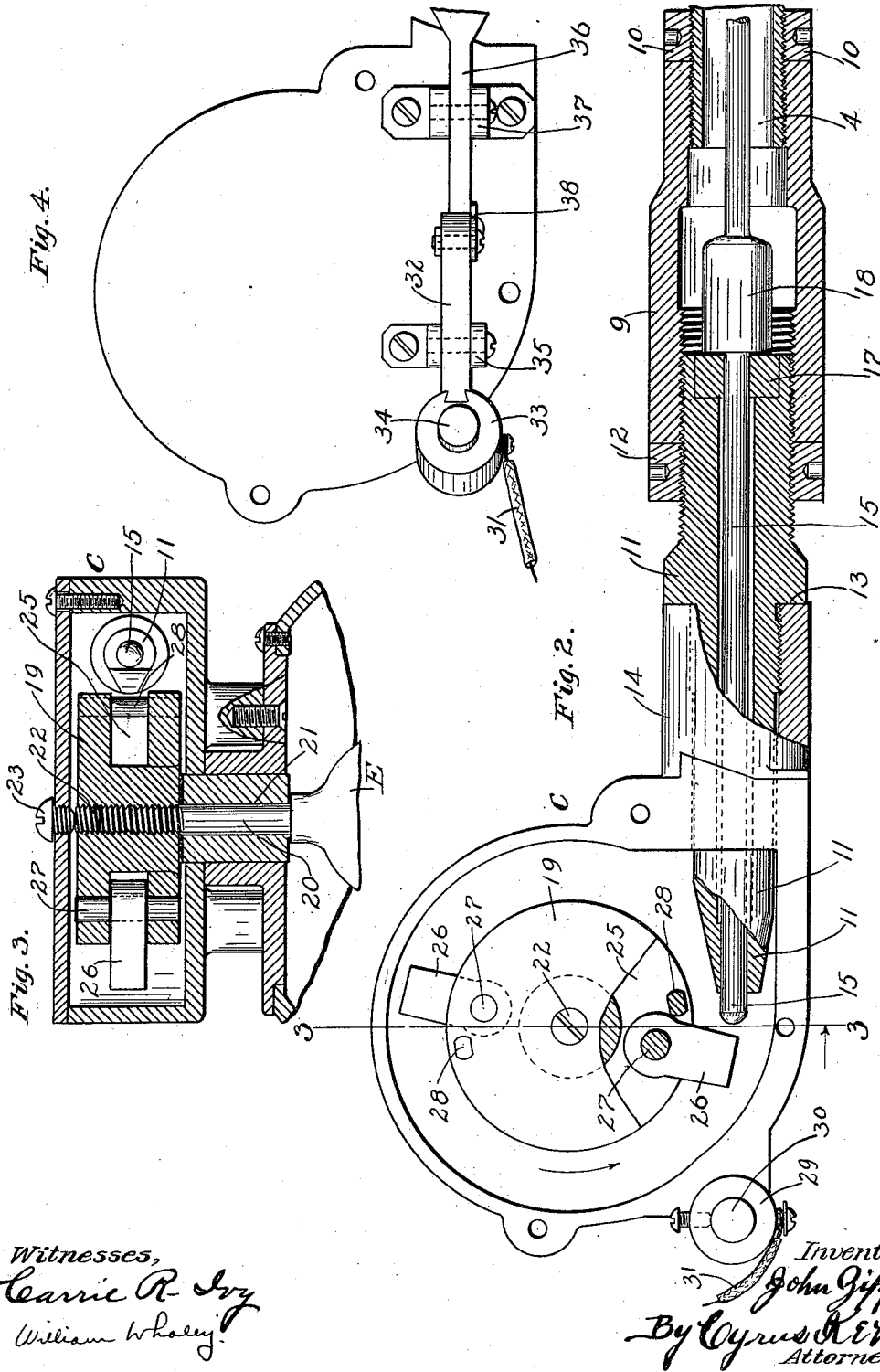
Inventor,
John Zipp
By Cyrus Kehr
Attorney.

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UNITED STATES PATENT OFFICE.

JOHN ZIPP, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO THE CAHILL IRON WORKS,
OF CHATTANOOGA, TENNESSEE, A CORPORATION OF TENNESSEE.

DREDGER FOR POWDER-FORM MATERIAL.

1,000,873.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed April 24, 1908. Serial No. 428,958.

To all whom it may concern:

Be it known that I, JOHN ZIPP, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Improvement in Dredgers for Powder-Form Material, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates particularly to dredgers which comprise a receptacle in the bottom of which is a screen of small mesh through which powder-form material is sifted upon some surface to which said material is to be applied. One of the uses for such an apparatus is the showering of ground glass or other enameling material upon heated metal bath tubs, sinks, lavatories, etc., for enameling the surfaces of such articles.

The objects of the improvement are to provide a dredger receptacle adapted to be efficiently agitated or vibrated to cause the proper passing of the powder-form material through said screen, and to provide efficient and readily-controllable means for agitating or vibrating said dredger receptacle.

In the accompanying drawings, Figure 1 is a side elevation of a dredger embodying my improvement, a portion of the handle being broken away; Fig. 2 is a horizontal view of the motor end of the same apparatus, the cover being removed from the hammer chamber and other portions being sectioned horizontally; Fig. 3 is a section on the line 3—3 of Fig. 2, the cover being in position; Fig. 4 is a plan of the hammer chamber cover and the circuit controlling mechanism mounted upon said cover; Fig. 5 is a detail upright section of a portion of the dredger receptacle and the adjacent portion of the handle; Fig. 6 is a plan of the dredger receptacle.

Referring to said drawings, A is the receptacle. In the form shown, this is upright, cylindrical or drum-shape, and composed of a sheet metal wall, 1, a wire screen, 2, and a ring, 3, between which and the wall, 1, the exterior edge of the screen is clamped.

B is the handle. This consists of several pieces. One of these is a tubular portion, 4, which is split to form a strip, 5, extending upward and joined to the upper edge of the wall, 1, by means of a rivet, 6, and to form

two strips, 7, extending horizontally around the adjacent half of the receptacle and having their ends secured to the receptacle by rivets, 8, approximately in a line cutting the axis of the receptacle perpendicularly to the axis of the handle; said strips, 7, and also the strip, 5, touching the wall of the receptacle only where said strips are joined to the receptacle wall by said rivets. This leaves a large portion of said wall adjacent the remaining tubular portion of the handle free for vibration. The said portion, 4, of the handle may be of any desired length; three, six, or eight feet, more or less. The end of said portion, 4, opposite the receptacle is exteriorly screw-threaded and receives one end of an interiorly screw-threaded sleeve, 9, and adjacent said sleeve is a lock-nut, 10, adapted to bear against the adjacent end of said sleeve. The opposite end of said sleeve is interiorly screw-threaded and receives one end of an exteriorly screw-threaded tube section, 11, and a lock-nut, 12, surrounds said section, 11, and bears against the adjacent end of the section, 9. The section, 11, has an annular shoulder, 13, which is directed away from the section, 9. At the side of said shoulder opposite said section, 9, said portion, 11, is extended through a tubular neck, 14, on the hammer chamber, C; and extends a little way into said chamber, the axis of said neck, 14, being tangential to said chamber, as shown in Fig. 2.

A transmitting shaft, 15, extends through the portions, 4, 9, and 11, of the handle, and is slidable therein to a limited extent. One end of said shaft projects a little way through the tubular section, 11, into the hammer chamber, and the opposite end of said shaft rests in a bushing block, 16, which nearly fills the tubular portion, 4, of the handle and bears against the adjacent portion of the wall, 1, of the receptacle. Said block affords a broad contact with said wall, 1, and serves as a support for holding the shaft, 15, free from the walls of the portion, 4, of the handle, and it may be regarded as a part of said shaft. The end of the tubular section, 11, which extends into the hammer chamber is contracted to form a bearing in which the shaft, 15, may slide endwise. Another bearing for said shaft is formed by setting a tubular bushing piece, 17, into the end of the section, 11, which

extends into the sleeve, 9. Adjacent the side of said bushing which is directed toward the receptacle, said shaft has an enlarged portion, 18, adapted to bear against said bushing and limit the endwise movement of the shaft toward the hammer chamber. The endwise movement of said shaft toward the receptacle is limited by the block, 16, which bears against the receptacle wall, as already described.

By means of the sleeve, 9, the handle, B, may be shortened and lengthened, whereby the projection of the transmitting shaft, 15, into the hammer chamber may be varied.

As will be readily understood from the foregoing description, the force of blows delivered upon the end of said shaft in the the hammer chamber will be transmitted through said shaft and the block, 16, against the wall, 1, of the receptacle, A. The mechanism for delivering such blows to said shaft will be next described.

Within the hammer chamber, C, is a circular head, 19. Below said chamber is an electric motor, D, having an upright armature shaft, 20, extending from the armature, E, through a bearing, 21, below the hammer chamber and having an upper screw-threaded portion extending into the circular head, 19, the portion of said shaft which is not screw-threaded bearing against the lower portion of said head. In the upper portion of said head is a short screw section, 22, which is driven against the end of the shaft, 20, and serves to bind the latter. Above said section, 22, a short screw, 23, extends downward through the upper wall, 24, of the hammer chamber, C, and bears against said screw section, 22. The rotation of the armature, E, will rotate the shaft, 20, and the circular head, 19. The rotation is to be in the direction of the arrow in Fig. 2.

The head, 19, has in its perimeter an annular recess, 25, in which are secured two striking or hammer arms, 26. An upright pintle or axle, 27, extends through each of said arms and the portions of said head above and below said recess. This adapts the free end of each of said arms to extend outside of said recess, and the parts are so proportioned as to permit such end to extend far enough outward to strike the adjacent end of the transmitting shaft, 15, when said head is rotated. In operation, said head is rotated at a high velocity and centrifugal force turns said hammer arms outward, and during each rotation each of said arms strikes the end of said shaft, 15, and is turned by the latter sufficiently for passing. Thus, for each rotation of said head, the end of said shaft receives two blows, and said head may be rotated approximately fifteen hundred or two thousand times per minute, and said shaft therefore receives from three thousand to four

thousand blows per minute. The force of each such blow is transmitted through said shaft, 15, to the wall, 1, of the receptacle, A. The large number of blows so transmitted to said wall cause a correspondingly large number of vibrations in said receptacle. Delivering said transmitted blows to the wall of said receptacle at a point removed from the attachment of said wall of the handle permits a more extensive vibration than would be possible if said handle were attached at the point of delivery of said blows. A stop, 28, is placed in front of each hammer arm in the recess, 25, to prevent said arm from moving forward beyond the radial position.

The electric motor, D, is controlled by means of a circuit closer located upon the hammer arm. A suitably insulated socket, 29, receives a carbon electrode, 30, and one portion of the circuit wire, 31, is seated in said socket. Above said socket is an arm, 32, which has a tubular head, 33, in which is secured a carbon electrode, 34, adapted to bear upon the carbon electrode, 30. Another portion of the circuit wire, 31, is secured to said tubular head, 33. Said arm, 32, is pivotally supported adjacent its middle by a post, 35. A hand lever, 36, is placed above and parallel to the neck, 14, and pivoted between its ends on a standard, 37. The end of said hand lever adjacent the arm, 32, is coupled to said arm by means of a link, 38. Under the free end of said hand lever is placed a spring, 39, so arranged as to normally hold said end of said lever in the elevated position, whereby the end of the arm, 32, bearing the electrode, 34, is normally elevated. When said end of said arm is thus elevated, the two carbon electrodes are sufficiently separated to break the circuit. For operating said circuit-breaker, the workman extends one hand around said free end of the hand lever, 36, and around the neck, 14, and by closing his hand presses said end of said hand lever downward. When said end has been pressed downward far enough to nearly or quite close the space between said carbon electrodes, the current will pass from one such electrode to the other and the motor will be operated. The current may be varied by varying the arc between said carbon electrodes, and the vibration of the receptacle, A, will be correspondingly varied. In practice I have found that the quantity of material passing through the screen of said receptacle may be thus easily varied through a considerable range. Said carbon electrodes may be renewed from time to time when they become too short.

I claim as my invention:

1. The combination of a sieve, an impact device adapted to be vibrated against the sieve, means for actuating the same, and

means fixedly mounting and supporting the sieve at points remote to the point of contact of said impact device.

2. The combination of a sieve, an impact device adapted to be vibrated against the sieve, means for actuating the same, and means fixedly mounting and supporting the sieve at points remote to the point of contact of said impact device, said last mentioned means comprising oppositely disposed arms secured to opposite sides of the sieve and an intermediate upright portion secured a considerable distance thereabove to the upper portion of the sieve.

3. The combination of a sieve, a handle therefor, a vibratory device associated with the handle, means carried by the handle for actuating the vibratory device, and means for adjusting the handle to vary the distance between the sieve and the means for actuating the vibratory device, thereby varying the intensity of the vibration while maintaining the operative relation of the vibratory device to said actuating means.

4. The combination of a sieve, a handle therefor, a vibratory device associated with the handle, means for actuating the vibratory device, and means for adjusting the handle to regulate the operation of the vibratory device by said actuating means.

5. The combination of a sieve, a handle, a vibratory device for shaking the sieve, means for actuating said vibratory device, and means for changing the normal relation of the vibratory device and sieve to correspondingly vary the operation of the sieve, substantially as described.

6. The combination of a sieve, a handle therefor, a vibratory device for shaking the sieve, rotary power transmitting means for actuating said vibratory device, a casing for the latter, and a detachable connection between said casing and the handle, said rotary power device comprising a rotatable hammer arranged to strike the vibratory device and the detachable connection being tangential of the casing.

7. The combination of a sieve, a handle therefor, a vibratory device for shaking the sieve, rotary power transmitting means for actuating said vibratory device, a casing for the latter, a detachable connection between said casing and the handle, said rotary power device comprising a rotatable hammer arranged to strike the vibratory device and the detachable connection being tangential of the casing, and an elongated extension separate from the casing extending a substantial distance thereinto to constitute a bearing for the vibratory device.

8. The combination of a sieve, a handle therefor, a vibratory device associated with the handle adapted to shake the sieve, means for operating the vibratory device, and a bushing piece mounted to constitute a bear-

ing for the vibratory device and an impact block for the vibratory device to limit the movement of the latter away from the sieve, the latter having an enlargement to abut against said block.

9. The combination of a sieve, a tubular handle therefor, a vibratory rod passing through said handle arranged to impact the sieve to shake the same, means for actuating the rod, and widely separated relatively small bearings in the handle for supporting the rod while offering minimum friction to the operation of the same, the outermost bearing being movable with the rod to constitute an impact head therefor.

10. The combination of a sieve, and means for supporting and vibrating the same including an impact extension, rotary power transmitting means for operating said extension, and a rotary motor for operating the rotary power transmitting means having a threaded connection with said means.

11. The combination of a sieve, and means for supporting and vibrating the same including an impact extension, rotary power transmitting means for operating said extension, a rotary motor for operating the rotary power transmitting means having a threaded connection with said means, and a threaded locking device engaging said means for resisting the uncoupling of said threaded connection.

12. The combination of a sieve, and means for supporting and vibrating the same including an impact extension, rotary power transmitting means for operating said extension, a rotary motor for operating the rotary power transmitting means having a threaded connection with said means, a threaded locking device engaging said means for resisting the uncoupling of said threaded connection and a binding screw constituting a bearing for the rotary power transmitting means engaging the threaded locking device.

13. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with said screen adapted to strike said shaft, and means also mounted to be carried by said screen for applying power to said rotary hammer mechanism.

14. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with said screen adapted to strike said shaft, means also mounted to be carried with said screen for applying power to said rotary hammer mechanism, and means mounted to be car-

ried with the screen for controlling the power.

15. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with the screen adapted to strike said shaft, a motor also mounted to be carried with the screen for rotating said striking mechanism, means for supplying a power medium to said motor, and means carried with the screen for controlling said last mentioned means.

16. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism comprising centrifugal striking arms mounted to be carried with the screen adapted to strike said shaft, a motor also mounted to be carried with the screen for rotating said striking mechanism, means for supplying a power medium to said motor, and means carried with the screen for controlling said last mentioned means.

17. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with the screen adapted to strike said shaft, an electric motor also mounted to be carried with the screen for rotating said striking mechanism, and current controlling mechanism mounted adjacent to the handle.

18. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with the screen adapted to strike said shaft, an electric motor also mounted to be carried with the screen for rotating said striking mechanism, and current controlling mechanism comprising carbon electrodes mounted adjacent to the handle.

19. A hand tool of the character described comprising a receptacle having a sifting screen, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with the screen adapted to strike said shaft, an electric motor also mounted to be carried with the screen for rotating said striking mechanism, and current controlling mechanism comprising adjustable carbon electrodes mounted adjacent to the handle.

20. A hand tool of the character described comprising a horizontally disposed receptacle having a sifting screen in its bottom,

a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with the hammer and rotatable in a horizontal plane adapted to strike said shaft, and a motor also mounted to be carried with the handle arranged below and in operative relation to the striking mechanism.

21. A hand tool of the character described comprising a horizontally disposed receptacle having a sifting screen in its bottom, a handle secured to said receptacle, a transmitting shaft combined with said handle, a rotary hammer mechanism mounted to be carried with the hammer and rotatable in a horizontal plane adapted to strike said shaft, and a motor also mounted to be carried with the handle arranged below and axially in alinement with the striking mechanism.

22. A hand tool of the character described comprising a receptacle having a sifting screen, a handle rigidly secured to said receptacle, shaking means arranged to directly engage the body of the receptacle but disconnected therewith, the point of engagement of the shaking means with the body being within an area of the receptacle free for vibration, and power mechanism mounted to be carried with the receptacle for actuating said shaking means.

23. The combination with a sieve, of a hollow handle therefor, a reciprocating rod in said handle, means for actuating the rod, and an enlarged head on the outer end of the rod adapted to engage the sieve, the inner portion of the head being formed to approximately fit and slide within the end of the hollow handle.

24. The combination with a sieve, of a hollow handle therefor, a reciprocating rod in said handle, means for actuating the rod, and an enlarged head on the outer end of the rod adapted to engage the sieve the inner portion of the head being formed to approximately fit and slide within the end of the hollow handle and the outer portion of the head being provided with a flange adapted to engage the end of the hollow handle in the inward movement of the head.

25. In a hand tool, the combination of a sieve, a handle, vibratory means for shaking the sieve, an electric motor operatively associated with said vibratory means for actuating the same, means for mounting the motor so that the same is carried with the sieve, means for controlling the actuation of the motor, and auxiliary means for regulating the vibratory means, said controlling and regulating means being mounted to be carried with the tool.

26. In a hand tool, the combination of a sieve, means for actuating the sieve to feed the material therefrom, means for supplying operating medium operatively associated

with said actuating means for operating the same mounted to be carried with the tool, means for controlling the supply of said operating medium, and auxiliary means for regulating the action of the actuating means, said controlling and regulating means being mounted to be carried by the tool, substantially as and for the purpose described.

27. In a hand tool, the combination of a sieve, means for actuating the sieve to cause the material to be fed therefrom, means for supplying an operating medium operatively associated with said actuating means for operating the same mounted to be carried with the tool, and means for regulating the action of the actuating means independently of the means for supplying the operating medium.

28. A hand tool of the character described comprising a handle, a sieve, and means for actuating the same including a stem movably supported by the handle, means for operating the stem, power controlling means

carried by the tool for regulating the operating means, and other means also carried by the tool for governing the character of movement of the stem, substantially as described.

29. In a hand tool, the combination with a sieve, of means for effecting discharge from the sieve including electrically operated means mounted to be carried by the sieve for imparting a discharging action to the latter, and controlling instrumentalities also mounted to be carried by the sieve for governing the actuation of the electrically operated means and for regulating the intensity of the discharge from the sieve.

In testimony whereof I have signed my name, in presence of two witnesses, this 21st day of April, in the year one thousand nine hundred and eight.

JOHN ZIPP.

Witnesses:

F. H. CALDERELL,
H. W. POWEL.