

(No Model.)

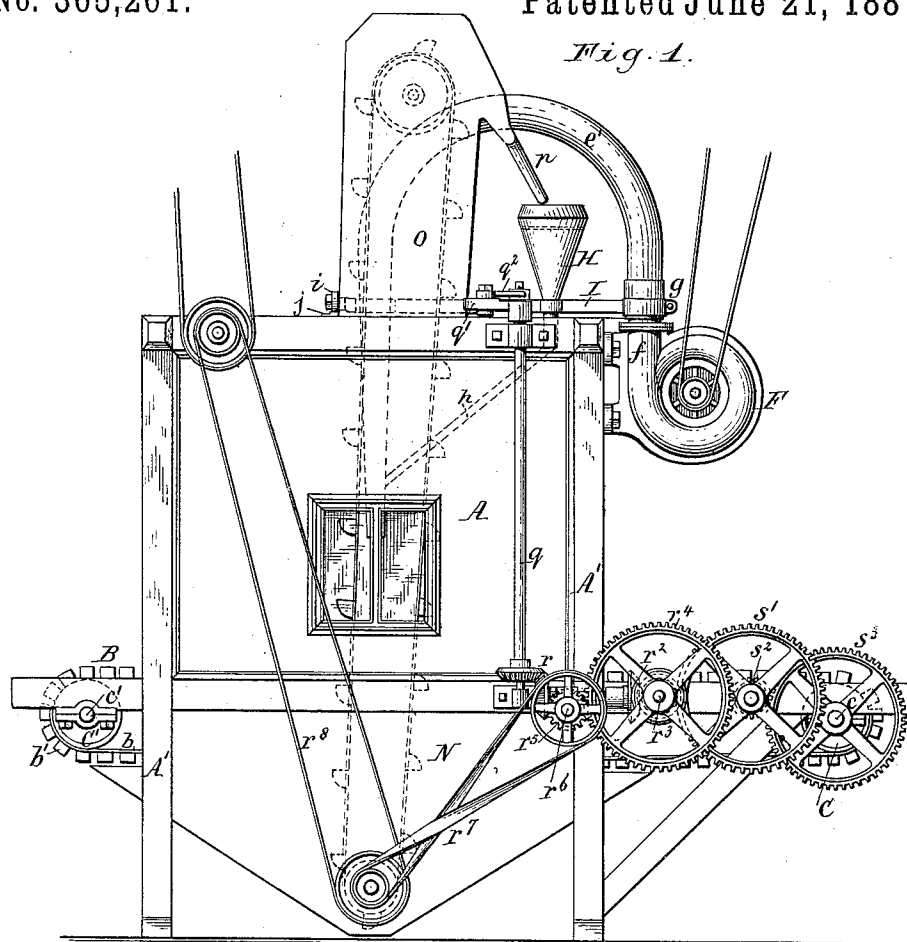
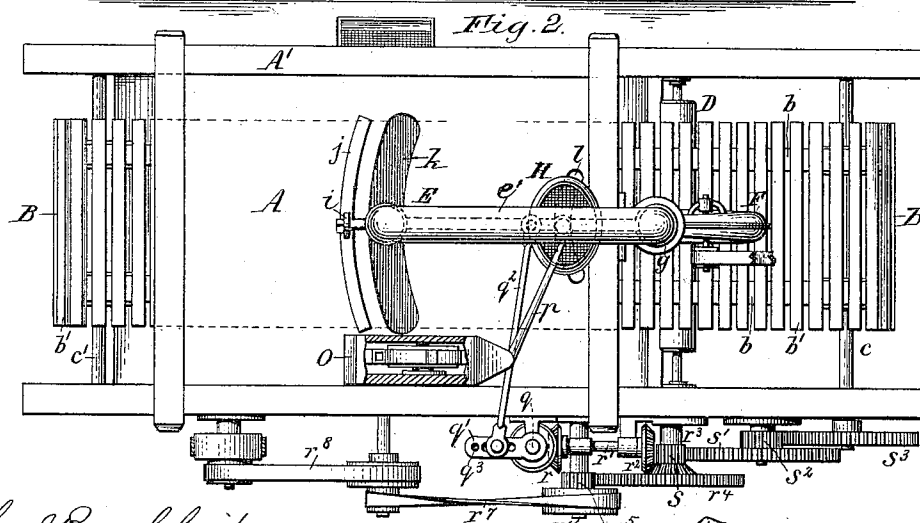
2 Sheets—Sheet 1.

F. W. KING & J. MAW.

SAND BLAST MACHINE.

No. 365,261.

Patented June 21, 1887.



W. Buchheit.
Theodore L. Popp. } Witnesses.

F. W. King
John Maw } Inventors.
By Wilhelm Hornum, Attorneys.

(No Model.)

2 Sheets—Sheet 2.

F. W. KING & J. MAW.

SAND BLAST MACHINE.

No. 365,261.

Patented June 21, 1887.

Fig. 3.

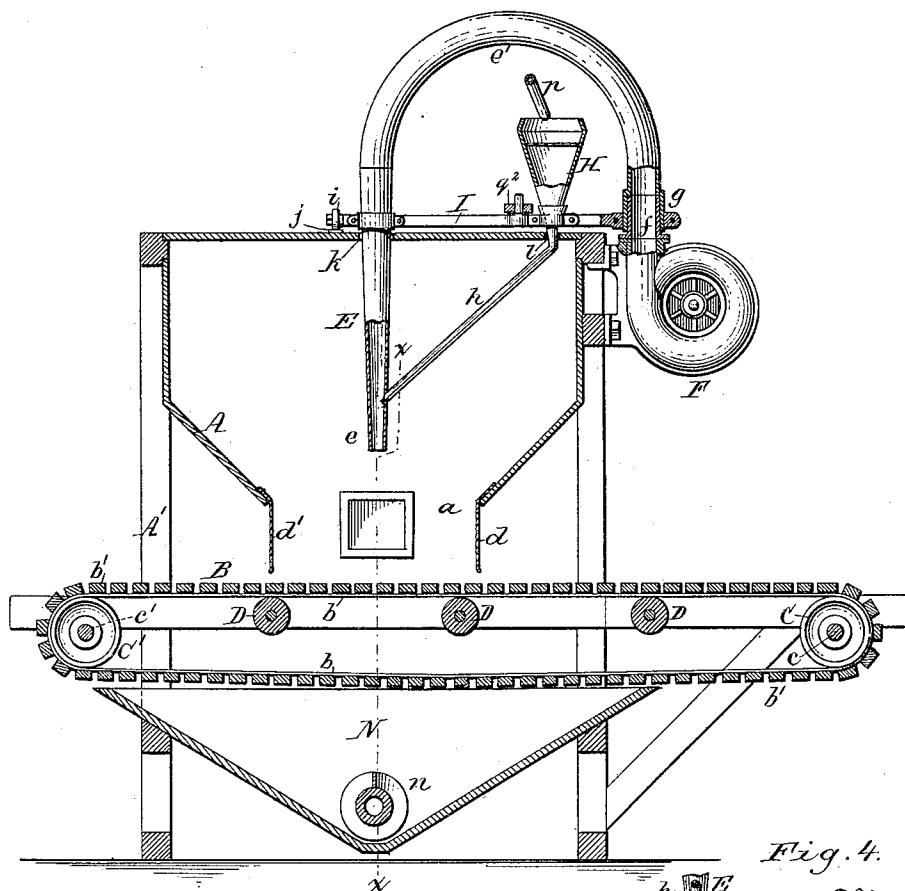


Fig. 5.

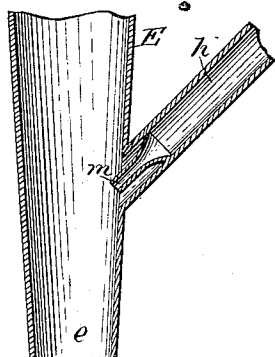
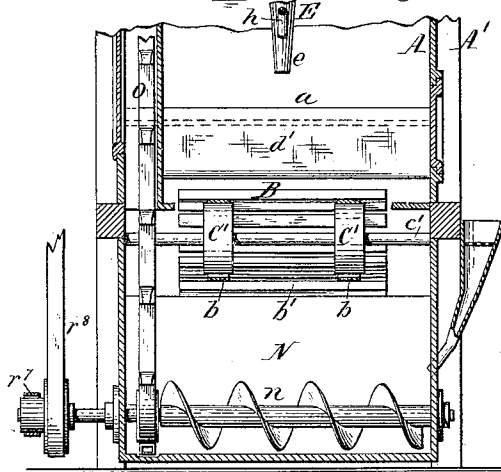


Fig. 4.



Chas. Buchheit,
Theodore L. Popp, } Witnesses

F. W. King
John Maw } Inventors.
By Wilhelm Munnich, Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK W. KING, OF HAMILTON, AND JOHN MAW, OF DUNDAS,
ONTARIO, CANADA.

SAND-BLAST MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,261, dated June 21, 1887.

Application filed April 17, 1886. Serial No. 199,279. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK W. KING and JOHN MAW, respectively of Hamilton and Dundas, in the Province of Ontario, Canada, have invented a new and useful Improvement in Sand-Blast Machines, of which the following is a specification.

This invention relates to an improvement in that class of machines by which the sand-blast is employed for operating upon metallic or other surfaces for cleaning, dressing, or cutting the same.

The object of our invention is to produce a simple and efficient machine by which ornamental castings, especially stove-castings, can be rapidly and thoroughly cleaned from slag, scale, or sand, and by which they can be prepared for the nickel-plating or other subsequent finishing process.

Our invention consists of the improvements in the construction of the machine, which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of our improved machine. Fig. 2 is a top plan view of the same. Fig. 3 is a longitudinal sectional elevation of the machine. Fig. 4 is a cross-section of the lower portion of the machine in line *xx*, Fig. 3. Fig. 5 is an enlarged sectional view of the nozzle of the blast-pipe.

Like letters of reference refer to like parts in the several figures.

A represents the casing of the machine secured to a frame, A', and provided at its lower end with an opening, *a*.

B represents a horizontal endless carrier, consisting of endless belts *b* and cross bars or slats *b'*, secured thereto. The carrier B runs around pulleys C C', which are secured to shafts *c c'*, journaled in bearings secured to the frame A' at opposite ends of the case A.

D represents supporting-rollers journaled in bearings secured to the frame A', and supporting the upper horizontal portion of the carrier B between the pulleys C C', as clearly represented in Fig. 3. The upper portion of the carrier B passes underneath the opening *a* in the bottom of the case A, which latter is provided with curtains *d d'*, depending from the

front and rear ends of the opening *a*, for the purpose of confining the blast upon the carrier.

E represents the movable blast-pipe arranged with its depending discharge-nozzle *e* in the case A above the opening *a* thereof, so as to move back and forth from side to side in the case A over the carrier B and transversely to the same.

F represents a fan-blower or other suitable air-propelling device, secured to the front portion of the frame A', near the top thereof, and provided with an upwardly-projecting stationary discharge-nozzle or blast-pipe, *f*.

e' represents the curved upper portion of the blast-pipe E, connecting the discharge-nozzle *e* of the blast-pipe with the discharge-nozzle *f* of the fan. The front end of the blast-pipe is provided with a trunnion, *g*, which fits around the discharge-nozzle *f* of the fan and turns on the same, as clearly represented in Fig. 3.

H represents the sand-hopper, arranged above the casing A, and *h* represents the pipe whereby the sand is conducted from the hopper H to the nozzle *e* of the blast-pipe.

I represents a bar or arm, upon which the sand-hopper H is supported, and which is arranged above the case A and connects the ascending front portion of the blast-pipe with its descending rear portion. The front end of the bar I embraces the trunnion *g*, and its rear portion embraces the upper part of the descending rear portion of the blast-pipe.

i is a supporting-roller attached to the rear end of the arm I and running upon a curved track, *j*, secured to the top of the case A.

k represents a curved slot formed in the top of the case A for the passage of the blast-pipe, and *l* is a similar slot formed in the top of the case A for the passage of the sand-pipe. The latter is inclined downwardly and enters the nozzle *e* of the blast-pipe at a short distance above its lower end.

m represents the contracted sand-discharge nozzle, secured in the lower portion of the sand-pipe *h* and projecting with its lower end slightly into the blast-nozzle *e*. The end of the sand-nozzle *m* is arranged at right angles to its axis, and as the latter is inclined down-

wardly the upper portion of the end of the sand-nozzle overhangs and shelters the lower portion from the blast. This enables the sand to issue freely from the nozzle *m* and to distribute itself in the blast-pipe, while the contraction of the sand-nozzle prevents the blast from entering the sand-pipe *h* and interfering with the flow of the sand through the same.

N represents a hopper arranged underneath the carrier *B* for the reception of the spent sand, and *n* represents a screw conveyer arranged on the bottom of the hopper.

O represents an elevator which receives the spent sand from the conveyer *n* and elevates the same to the sand-hopper *H*, into which it is discharged by the discharge-spout *p* of the elevator.

q represents a vertical shaft arranged on one side of the frame *A* and journaled in bearings secured to the same.

q' is a crank secured to the upper end of the shaft *q*, and connected by a rod, *q''*, with the arm *I*, so as to swing the latter horizontally back and forth as the crank *q'* rotates. The latter is provided with a series of holes, *q'''*, either of which may be used for attaching the rod *q''*, as may be necessary to increase or reduce the throw of the arm *I* and the sweep of the blast-pipe. The shaft *q* is rotated by a pair of bevel-wheels, *r*, from a horizontal shaft, *r'*, which is driven by a pair of bevel-wheels, *r''*, from a transverse shaft, *r'''*. The latter is driven by spur-gears *r⁴* *r⁵* from a transverse shaft, *r⁶*, which receives motion from the shaft of the conveyer *n* by a crossed belt, *r⁷*. The conveyer-shaft is driven by an open belt, *r⁸*. The endless carrier *B* is driven from the transverse shaft *r³* by a train of gear-wheels, *s s' s² s³*.

The castings or other articles to be cleaned or dressed are placed upon the carrier *B*, in front of the case *A*, and are conveyed by the carrier *B* past the nozzle of the blast-pipe, which latter delivers the blast downwardly upon the castings. The nozzle of the blast-pipe swings or reciprocates transversely back and forth over the carrier, and remains at all times at the same height above the carrier, which height is so regulated as to deliver an effective blast upon the castings suitable for the nature of the work to be performed. The sand-blast cleans or dresses all portions of the castings which are exposed to it and enters the fine ornamentations, thereby cleaning or dressing the castings perfectly and with great speed and economy of power. The cleaned castings are removed from the tail portion of the carrier *B*. The spent sand passes through

the spaces between the slats of the carrier and collects in the hopper *N*, from which it is removed by the conveyer *n* and elevator *O* and returned to the sand-hopper *H*. Fresh sand is supplied to said hopper from time to time, as may be necessary.

It is obvious that emery or some other suitable substance may be substituted for the sand, if desired.

We claim as our invention—

1. The combination, with a fan having an upright stationary blast-pipe, of a movable sand-blast pipe swinging horizontally on said stationary pipe and provided with a depending nozzle, a casing inclosing said nozzle and provided in its top with an opening, in which the nozzle swings, and an endless carrying-apron arranged below said casing and underneath the blast-nozzle, substantially as set forth.

2. The combination, with the stationary blast-pipe, of a swinging blast-pipe and a sand-receptacle and sand-discharge pipe, both connected with the swinging blast-pipe and moving therewith, substantially as set forth.

3. The combination, with the fan and its nozzle, of a swinging blast-pipe, a sand hopper and pipe, both connected with the blast-pipe and moving therewith, and a carrier, upon which the work is placed, substantially as set forth.

4. The combination, with the fan *F*, having a discharge-nozzle, *f*, of the bent blast-pipe *E*, connected with the nozzle *f* by a trunnion, *g*, an arm, *I*, secured to the blast-pipe, a sand-hopper, *H*, supported on the arm *I* and provided with a sand-pipe, *h*, and a carrier, *B*, substantially as set forth.

5. The combination, with the fan *F*, having a discharge-nozzle, *f*, of the bent blast-pipe *E*, connected with the nozzle *f* by a trunnion, *g*, an arm, *I*, secured to the blast-pipe and provided with a supporting-roller, *i*, a sand-hopper, *H*, and pipe *h*, and a case, *A*, provided with a track, *j*, substantially as set forth.

6. The combination, with the depending blast-nozzle, of a sand-pipe provided with a contracted nozzle, *m*, which opens in a downwardly-inclined direction into the side of the blast-nozzle, substantially as set forth.

Witness our hands this 13th day of April, 1886.

F. W. KING.
JOHN MAW.

Witnesses:

JNO. J. BONNER,
CARL F. GEYER.