

(No Model.)

K. H. COTTLE & R. C. DANLY.
SAND BLAST.

No. 604,559.

Patented May 24, 1898.

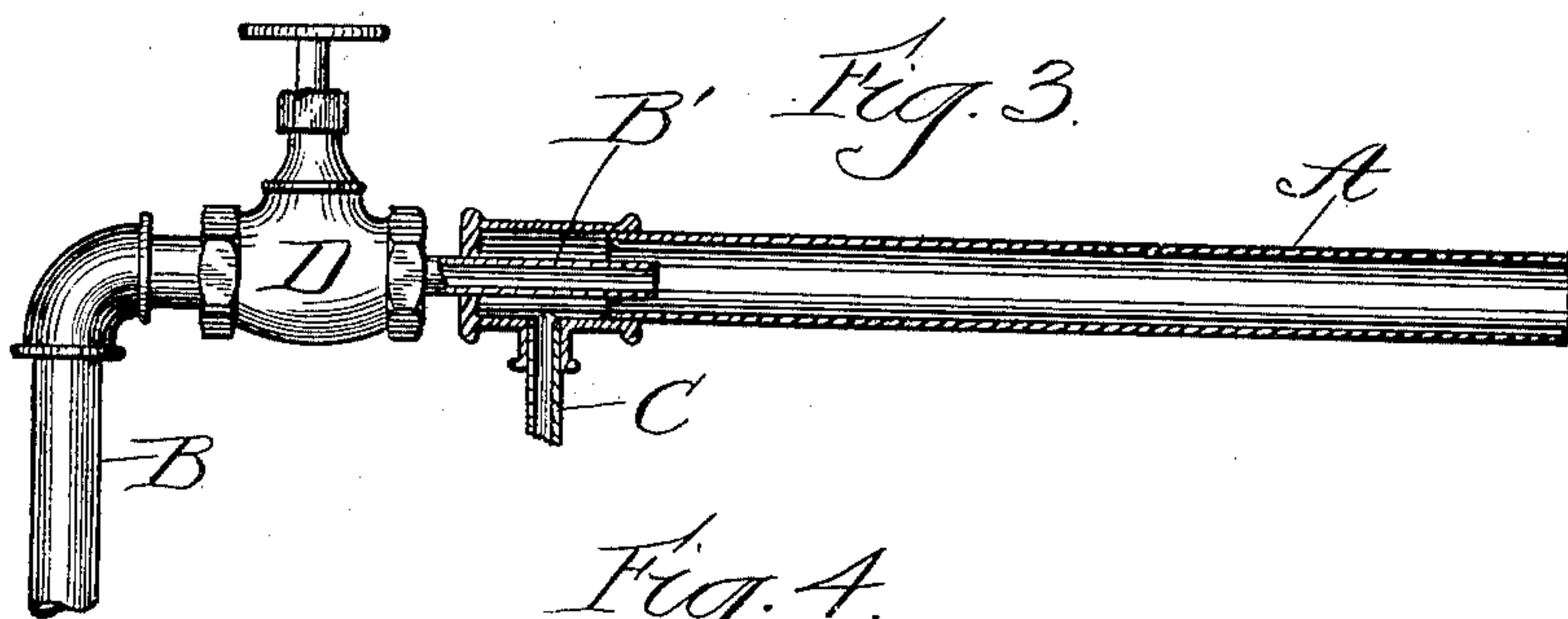
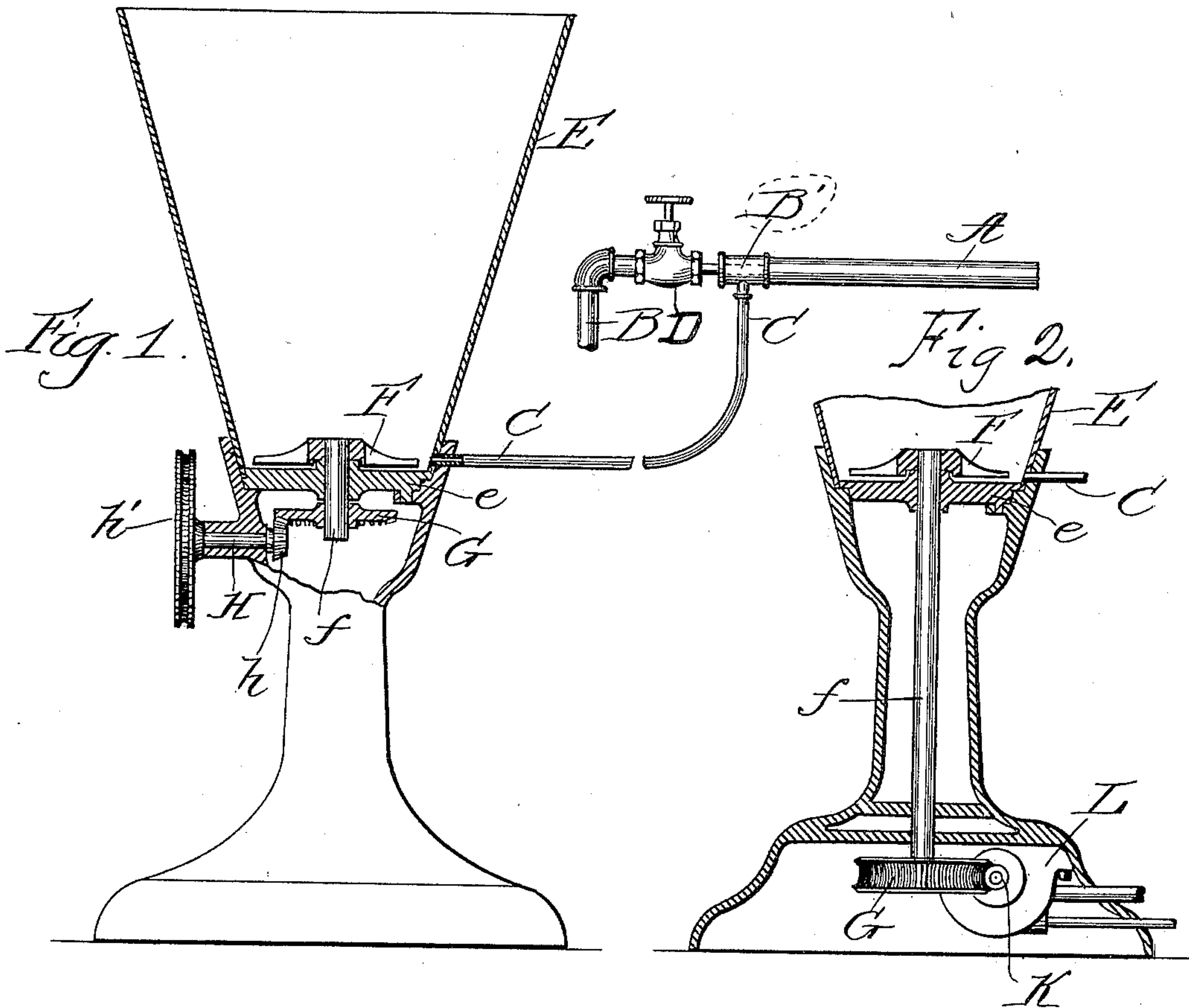
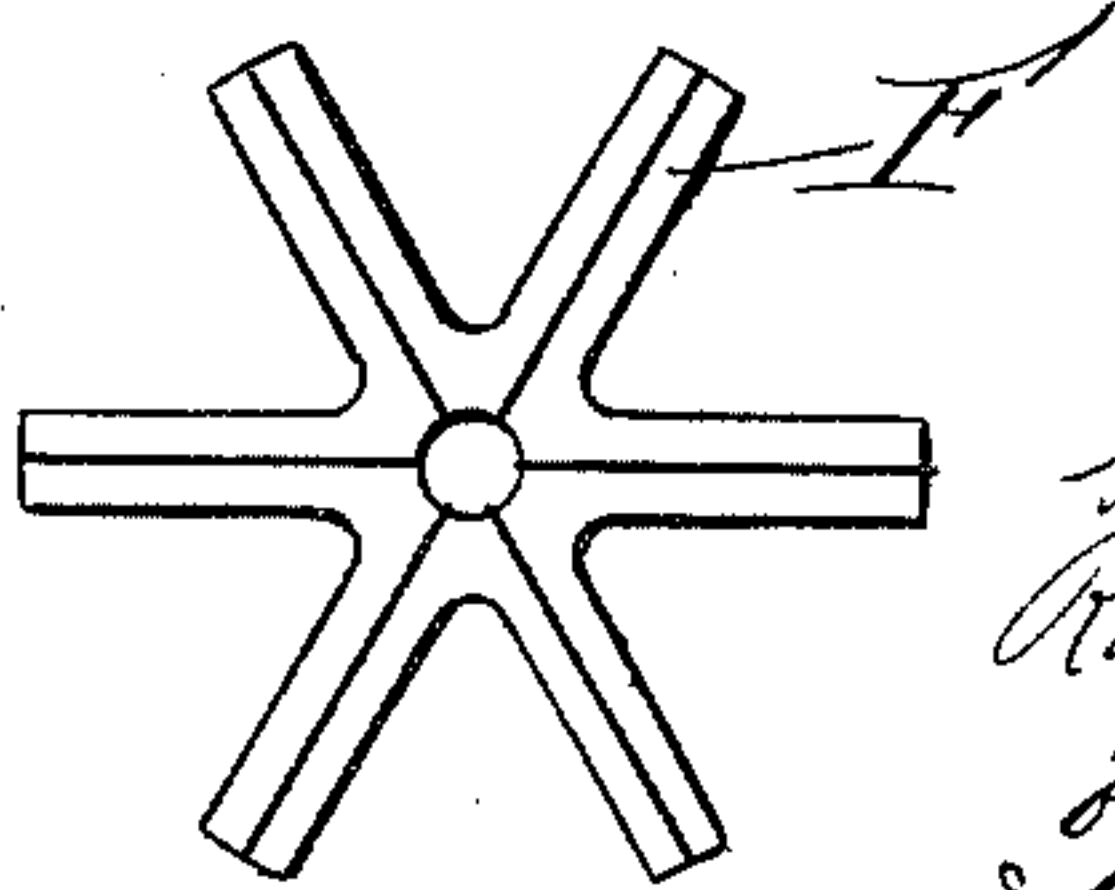


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SAND-BLAST.

SPECIFICATION forming part of Letters Patent No. 604,559, dated May 24, 1898.

Application filed October 28, 1897. Serial No. 656,633. (No model.)

To all whom it may concern:

Be it known that we, KIMBALL H. COTTLE and ROBERT C. DANLY, citizens of the United States of America, residing at Chicago, county of Cook, and State of Illinois, have jointly invented certain new and useful Improvements in Sand-Blasts, of which the following is a description.

In the accompanying drawings, wherein like reference-letters indicate like or corresponding parts, Figure 1 is a side elevation of our improved device with parts broken away to show the construction. Fig. 2 is a similar view showing a modification. Fig. 3 is a side elevation of the pipe construction in partial section, and Fig. 4 is a top plan of a simple form of agitator that may be used with good results.

By the ordinary methods of sand-blasting only dry sand is used for reasons, of which one is that in the ordinary apparatus a regular feed cannot be had if the sand is moist, as in such condition it lumps or cakes.

The object of our invention is to obviate the above objectionable features in a simple, economical, and effective device and at the same time secure more satisfactory working results.

To this end our invention consists, broadly, in employing the sand or its equivalent in the blast in a moist or wet condition.

It also consists in the construction of an apparatus that will satisfactorily and effectively handle the sand for that purpose either while in such condition or dry.

It also consists in providing means whereby the feed of the sand in the blast is regular and positive at all times, thus securing the most perfect results.

It also consists in utilizing a sand-burdened jet or blast of steam for the purpose named.

It also consists in such other novel construction and combination of parts as are shown and described and as are particularly pointed out in the claims.

In the drawings, A represents the discharge end of the blast-pipe.

B is the force-pipe, a section B' of which extends into the pipe A to produce what is known as an "exhaust siphon action."

C is the sand-supply pipe through which

the sand is impelled by the siphon action referred to, and D is a valve controlling the force-pipe and blast.

E is a vessel or receptacle of any preferred form or size for the sand-supply.

In the preferred construction the vessel E is provided with a circular bottom portion, from one side of which the sand-supply pipe C preferably extends, for the reason herein after explained.

F is an agitator, of any suitable form, arranged in the receptacle E and adapted to be operated by any preferred means. This action loosens up and prevents the clogging or packing of the sand and at the same time constantly moves it in close proximity to the receiving end of the pipe C, from whence it is forced forward by the exhaust or sucking action of the siphon.

Any preferred means may be employed to operate the agitator F. In the construction shown in Fig. 1 the agitator is secured to the top of the shaft *f*, which, extending through suitable bearings in the bottom *e* of the receptacle, is provided with a gear-wheel G on its lower end. A shaft H, mounted on the frame and provided on its inner end with the pinion *h*, meshing with the gear G, and a pulley *h'* on its outer end, provides means for rotating the agitator. In some cases it may be preferred to use other means for the same purpose. Fig. 2 shows another simple method. In this figure the shaft *f* is extended downward to a convenient point near the floor, where the gear-wheel G meshes with a worm K, driven by a motor or turbine L. Only a comparatively slow motion is required for the agitator. Consequently we have reduced the motion in both the forms shown. It is obvious, however, that this may be regulated to suit the circumstances.

Either air or steam may be forced through the pipe B to supply the operative force of the blast, our apparatus being adapted to either. We prefer, however, to utilize steam for this purpose, as it dispenses with the necessity for pumps or equivalent mechanism to secure the necessary air-current.

In the preferred form a steam-pipe of suitable size conducts steam from the boiler or from a larger steam-pipe to the siphon. By

this method the sand is moistened or wet sufficiently to produce good results, and the force may be easily regulated to secure the most perfect results. Our apparatus is adapted also to use dry sand as well as moist. Consequently we do not wish to limit ourselves as to the apparatus to the use of moist sand alone.

After describing our improvement it is obvious many modifications may be made without departing from the spirit of our invention. Hence we do not wish to be understood as limiting ourselves to the exact mechanism set forth.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a device of the kind described, the force-pipe, arranged to direct a blast upon the work to be treated, in combination with a sand-receptacle, an agitator arranged therein, means for operating the agitator, and means for conducting the sand from the receptacle and delivering it to the force-pipe, substantially as described.

2. In a device of the kind described, a pipe adapted to direct a blast on a given object, and a force-pipe extending into the pipe to produce a siphon action, in combination with a sand-receptacle, an agitator arranged therein,

means for operating the agitator, and a sand-pipe extending from the receptacle to the siphon, substantially as described.

3. In a device of the kind described, the siphon-blast, in combination with the receptacle E, agitator, F, gear-wheel, G, mechanism for driving the gear-wheel, and sand-pipe C, connecting the receptacle with the siphon, substantially as described.

4. In a device of the kind described, a sand-receptacle, a blast-pipe, a sand-supply pipe connecting with said blast-pipe and with said receptacle at or near its bottom, an agitator within the sand-receptacle adjacent said sand-supply pipe, means for operating the same, and a force-pipe, substantially as described.

5. In a device of the kind described, a sand-receptacle having an outlet-opening in one of its side walls, a horizontally-rotating agitator within the receptacle adjacent said opening, means for operating said agitator, a blast-pipe, a sand-supply pipe leading from said outlet-opening to said blast-pipe, and a force-pipe, substantially as described.

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