No. 610,189. Patented Sept. 6, 1898.

J. E. MATHEWSON.

SAND BLAST APPARATUS.

(Application filed Oct. 28, 1896.)

(No Model.) 2 Sheets—Sheet 1.

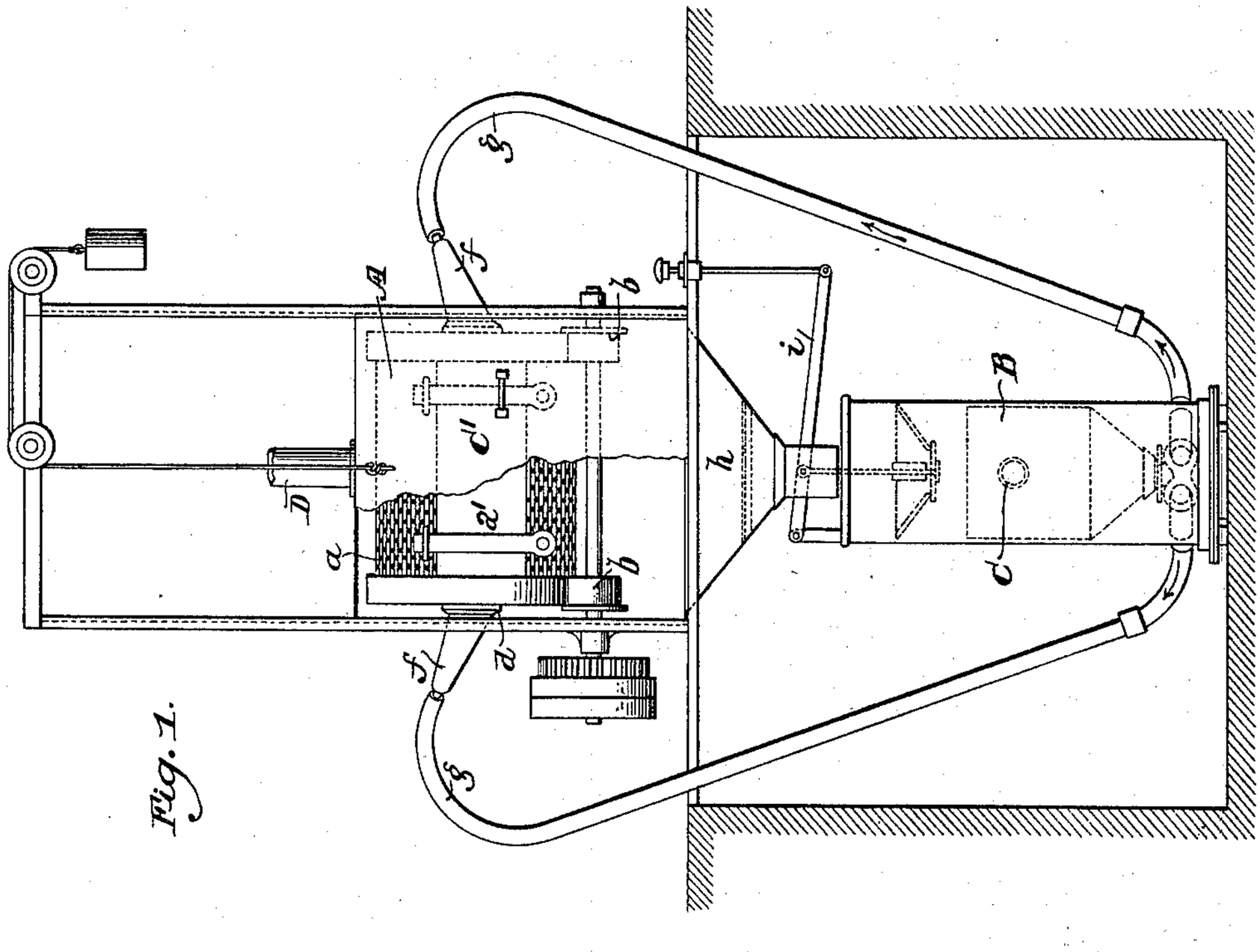

Fig. 1.

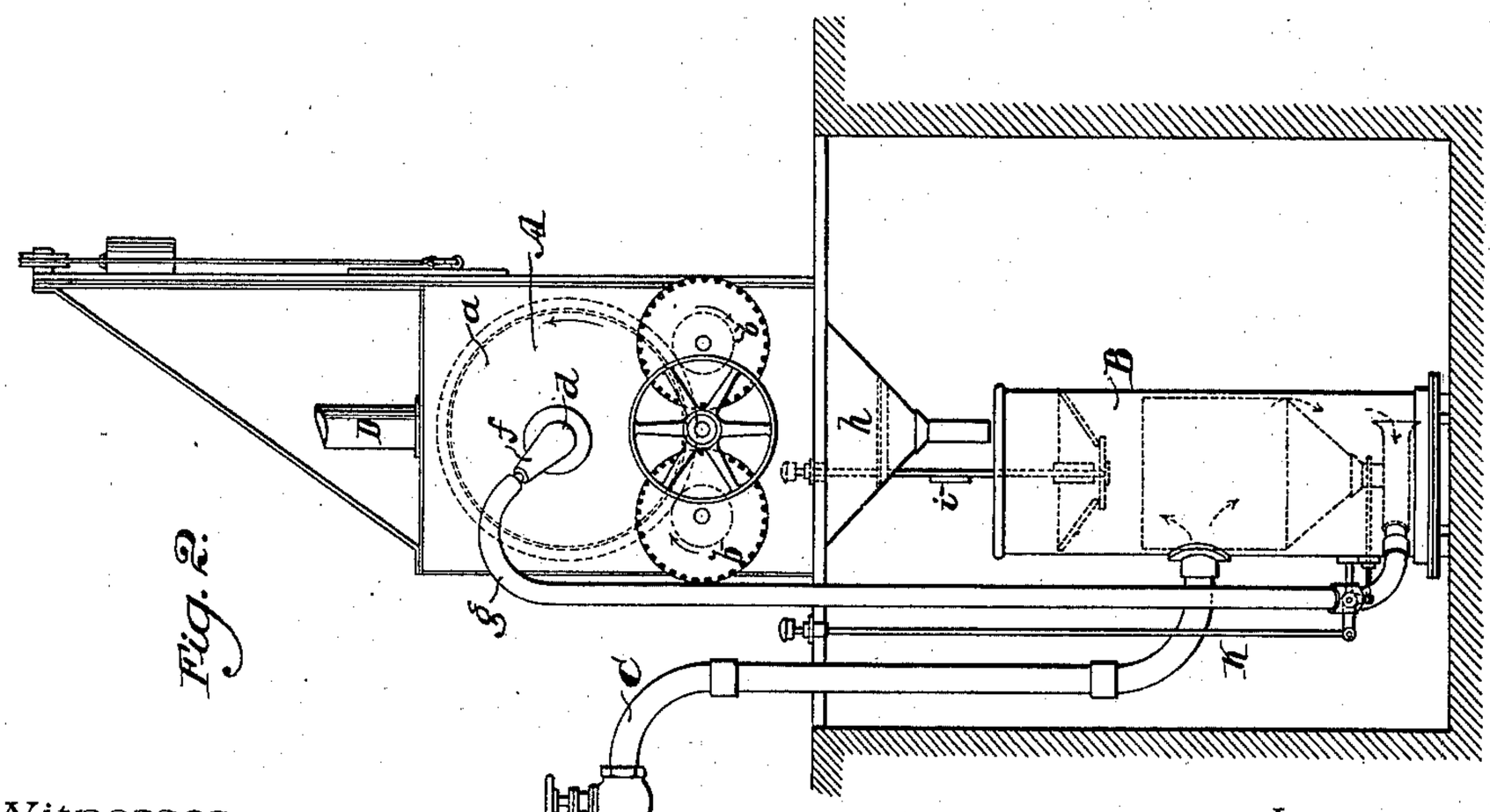

Fig. 2.

Witnesses.
Henry Dauney
D. Stewart

Inventor.
Jeremiah Eugene Mathewson
by Francis T. Chamberlain
his Attorney.

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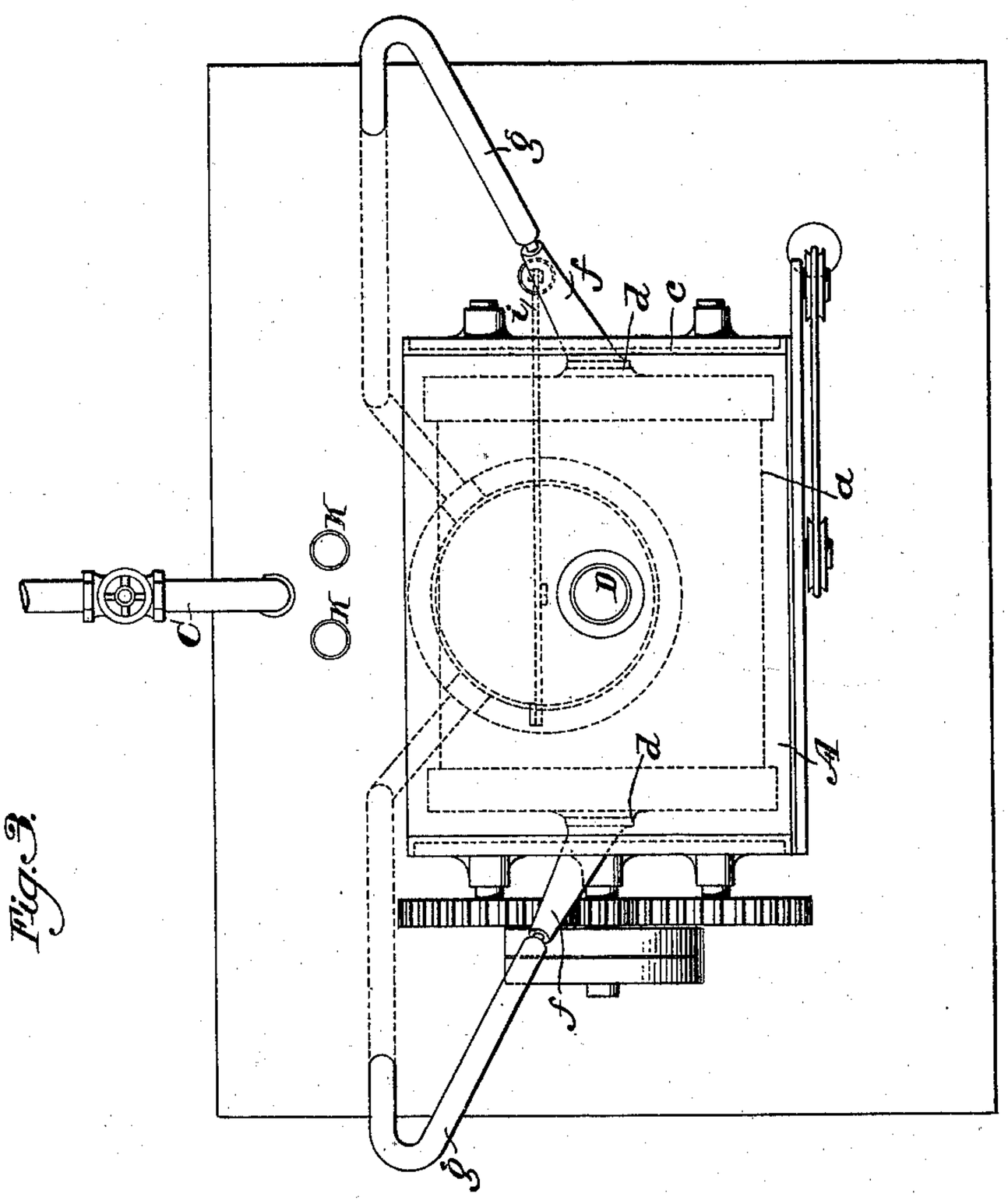

Fig. 3.

Witnesses.
Henry Dewey
D. Stewart

Inventor.
Jeremiah Eugene Mathewson.
by Francis T. Chamberlain,
his Attorney.

UNITED STATES PATENT OFFICE.

JEREMIAH EUGENE MATHEWSON, OF SHEFFIELD, ENGLAND.

SAND-BLAST APPARATUS.

SPECIFICATION forming part of Letters Patent No. 610,189, dated September 6, 1898.

Application filed October 28, 1896. Serial No. 610,278. (No model.) Patented in England December 24, 1895, No. 24,715.

To all whom it may concern:

Be it known that I, JEREMIAH EUGENE MATHEWSON, engineer, of Bellefield Works, Sheffield, in the county of York, England, have invented certain new and useful Improvements in Sand-Blast Apparatus, (for which I have obtained British Letters Patent No. 24,715, of December 24, 1895,) of which the following is a specification.

The cleaning of castings, forgings, &c., to remove scale, sand, and other matter which may adhere to the articles as they come from the foundry or elsewhere has been effected by means of the sand-blast with great advantage. One mode of procedure has been to place the articles in a suitable position and to direct the sand-blast (the apparatus being supported in the hands of the operator) onto them. This mode, while being eminently suitable for large work, was obviously hardly practical for small castings, forgings, &c., and therefore these articles have been placed in a tumbling-barrel and the sand-blast has been directed upon them through a trunnion-hole. The tumbling-barrel was contained in a suitable casing and rested on driven rollers, by which means a slow rotary motion was communicated to it, so that one part or face of each article was exposed for a certain time to the action of the blast and was then by the movement of the barrel caused to tumble over and roll down to the bottom of the pile, thus presenting another part or face to the action of the blast.

Hitherto a steam sand-blast, as described in English Letters Patent granted to me, dated December 5, 1884, No. 15,980, has been used in connection with the tumbling-barrel for the purpose of cleaning these small castings; but in practice it has been found detrimental because of a certain amount of dampness which could not be eliminated and which caused the metal castings to become rusty. There was, besides, a want of compactness and simplicity in the apparatus which rendered it somewhat difficult to properly work; and the object of the present invention is to simplify the construction and improve the working of this class of apparatus and otherwise to overcome the disadvantages enumerated above.

In carrying out my invention I employ a compressed-air blast in the manner described in the specification of English Letters Patent granted to me, dated June 22, 1893, No. 12,306, and I place this sand-blast apparatus below the tumbling-barrel apparatus, this latter apparatus being provided with a hopper or funnel shaped bottom, so that the sand may drop into the sand-blast machine, and thus provide for the automatic working of the whole apparatus.

The sand-blast machine is provided with suitable pipes to convey the sand and air upward to the tumbling-barrel casing and connecting with suitable nozzles which inject the sand into the barrel through trunnion-holes, suitable levers being provided by which the sand and other valves may be manipulated from above.

To the top of the barrel-casing I attach a pipe which is connected with any suitable exhausting system, and I draw the excess of air and fine particles of sand away from the casing and discharge them into the atmosphere outside the building or into some suitable receiver where the dust particles can settle.

In the accompanying drawings, Figure 1 is a front elevation of the improved apparatus with the front door of the casing partly removed. Fig. 2 is a side elevation, and Fig. 3 a plan view.

The apparatus consists of two parts—namely, the tumbling-barrel apparatus A and the sand-blast machine B. Referring more particularly now to the barrel apparatus, *a* is the tumbling-barrel, with closed ends, which might perhaps be more properly designated a cage, being perforated to permit of the sand, &c., dropping through.

The barrel *a* is carried by driven flanged rollers or wheels *b*, mounted on shafts having bearings in the sides of the inclosing casing *c*. This casing is provided with a counterweighted sliding door *c'*, and the barrel *a* is also provided with a door *a'*, by which articles to be treated are placed in and taken from the barrel.

d are trunnion-holes in the ends of the barrel to receive the ends of conical tubes *f*, which project through the casing *c* and serve to conduct the sand-blast into the barrel. These tubes *f* are set at an inclination down-

ward and forward, so that the direction of the sand-blast shall be toward the front of the barrel and also downward. Connected with the outer ends of these pipes *f* are the conducting-pipes *g* from the sand-blast machine B, which is placed in a pit below the tumbling-barrel apparatus A.

The articles to be treated are placed in the barrel *a*, in which as it is slowly rotated they are continually being turned over, thus presenting new faces to the action of the sand-blast. The spent sand and scale removed pass through the perforations in the barrel and drop into a funnel or hopper *h*, forming the lower part of the casing *c*.

The funnel *h* conveys the sand, &c., to the top part of the sand-blast machine B, which is also hopper-shaped, but is closed at bottom by a valve. This valve is opened from time to time by the attendant operating a lever *i* to allow the sand to pass into another hopper contained in the blast-machine proper, as described in the specification of patent before referred to. This hopper has sand-outlets into two mixing-chambers below, which outlets are regulated by valves operated by the attendant through the rods *k*. The mixing-chambers are connected each with a conducting-pipe *g*, before mentioned.

C is the air-supply pipe, in connection with some suitable air-compressor. (Not shown.)

D is the air, &c., outlet from the barrel-casing *c*, to which the exhaust system before referred to, but not shown, is adapted for the purpose mentioned.

It will be obvious that as the greater includes the less the apparatus may, if desired, be made single-acting, or I may employ two or even more tumbling-barrels placed back to back or otherwise with the same sand-blast machine, the several barrel-funnels conducting the sand to the sand-blast-machine hopper as above described.

What I claim is—

1. A sand-blast tumbling-barrel apparatus having a perforated rotatable barrel in combination with a hopper placed beneath said barrel, a sand-blast apparatus situated beneath said hopper arranged to receive sand therefrom and one or more delivery-conduits leading from the sand-blast to the inside of the tumbling-barrel.

2. A sand-blast tumbling-barrel apparatus having a perforated rotatable barrel in combination with a closed chamber surrounding said apparatus said chamber having a hopper-bottom and also an exhaust-conduit leading therefrom, a sand-blast apparatus situated beneath said hopper arranged to receive sand therefrom and one or more delivery-conduits leading from the sand-blast apparatus to the inside of the tumbling-barrel.

3. A sand-blast tumbling-barrel apparatus having a perforated rotatable barrel in combination with a closed chamber surrounding said apparatus said chamber having a hopper-bottom and also an exhaust-conduit leading therefrom, rollers *b* for supporting and driving the tumbling-barrel situated in said chamber, a sand-blast apparatus situated beneath said hopper arranged to receive sand therefrom and one or more delivery-conduits leading from the sand-blast apparatus to the inside of the tumbling-barrel.

London, England, October 8, 1896.

JEREMIAH EUGENE MATHEWSON.

Witnesses:
H. K. WHITE,
JOSEPH LAKE.