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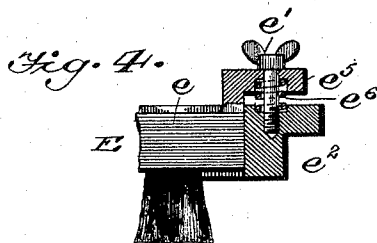
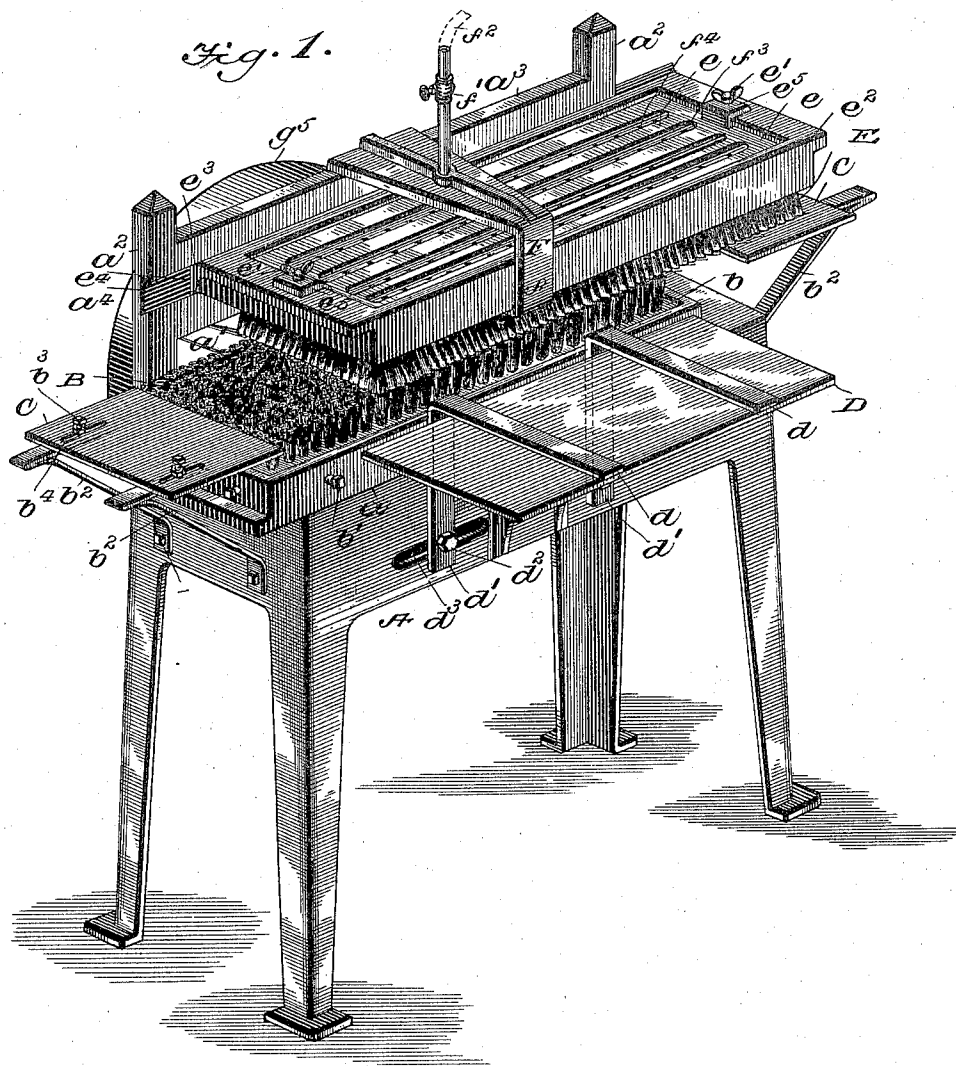
2 Sheets—Sheet 1.

W. E. HARRIS.

BRUSH MACHINE FOR CLEANING METALLIC BARS OR PLATES.

No. 580,312.

Patented Apr. 6, 1897.



Witnesses

John D. Smith
Wm. S. Dodge.

Inventor

William E. Harris,
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Geo. W. Upson
Attorneys.

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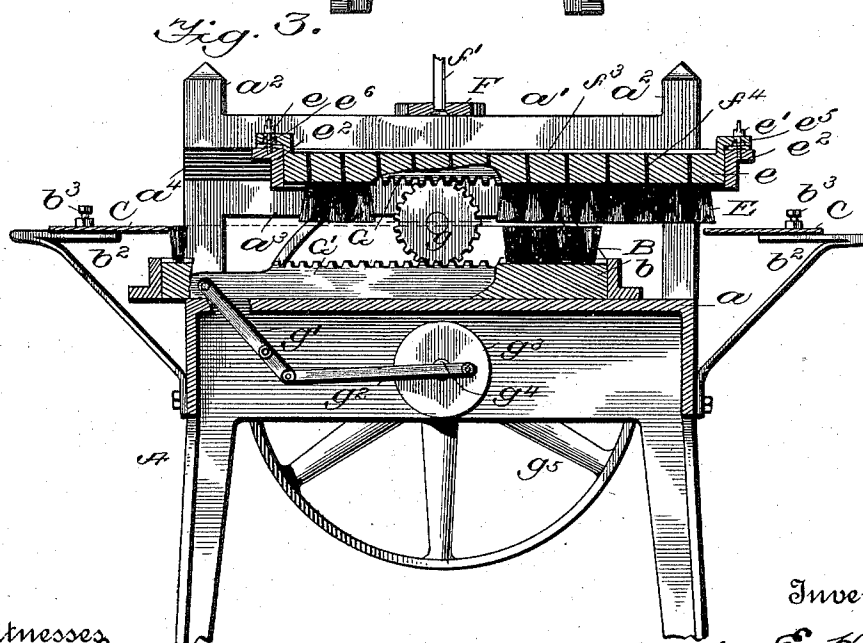
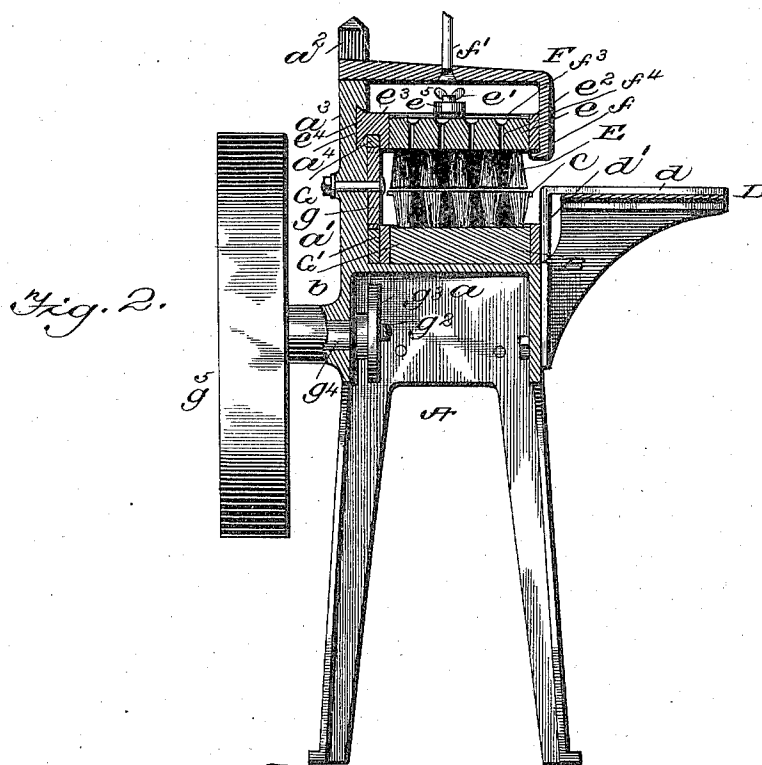
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Inventor

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by John White, and
Geo. W. Upson, Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM EDWIN HARRIS, OF NILES, OHIO.

BRUSH-MACHINE FOR CLEANING METALLIC BARS OR PLATES.

SPECIFICATION forming part of Letters Patent No. 580,312, dated April 6, 1897.

Application filed October 13, 1896. Serial No. 608,744. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EDWIN HARRIS, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Brush-Machines for Cleaning Metallic Bars or Plates; and I 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 appertains to make and use the same.

This invention contemplates certain new and useful improvements in brush-machines for cleaning metallic bars or plates—that is, removing scale therefrom while hot and before being rolled—or for cleaning cold metal sheets, and likewise for polishing finished bright tin plates.

The object of the invention is to provide a machine of this class for readily and quickly removing the scale from a hot bar or plate by means of reciprocating brushes.

A further object is to provide for cooling the brushes and raising the scale on the plates while being cleaned.

A further object is to allow the brushes to accommodate themselves to plates of different thicknesses; and a further object is to provide a machine of this class which will be simple in construction, positive in operation, strong, and durable.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved machine. Fig. 2 is a transverse sectional view. Fig. 3 is a central longitudinal sectional view with parts broken away. Fig. 4 is a sectional detail view.

Referring to the drawings, A designates the framework, which comprises a stand or table α and an upright side α' , the latter being composed of two end posts α^2 and a connecting-bar α^3 , in which latter a longitudinal dovetail groove α^4 is formed.

B designates the lower brush, preferably formed of strong wire. The back b of this brush is held in a frame by screws b' , said frame being located on the table-top, so as

to be capable of longitudinal movement. Adjacent to the ends of the table are flat horizontally-disposed plates C, the inner edges of which form stops or abutments for a plate placed on the brush. These plates C are adjustably mounted on braces b^2 by bolts b^3 , passed through slots b^4 in said plates. The braces b^2 are attached to the ends of the frame.

To the front of the frame is rigidly attached a receiving-table D, the same consisting of a flat plate, over which extend, transversely, two parallel horizontal arms d , the vertical portions d' of which are adjustably connected to the frame by bolts d^2 , passed through slots d^3 in said frame. These arms serve as guides for the tongs by which the hot or cold plates are held and handled.

E is the upper brush, the wires of which face downward toward those of the lower brush. The back e of this upper brush is held by screws e' within an oblong frame e^2 , one longitudinal side e^3 of which is formed with a dovetail tenon e^4 , which fits in the corresponding groove a^4 , so that the brush can be moved longitudinally back and forth. The screws e' are passed down through overlapping flanges e^5 and fit in openings in frame e^2 . These screws, beneath the flanges e^5 , are surrounded by coil-springs e^6 . Thus the upper brush is free to give, so as to accommodate plates of different thicknesses.

The brush E is supported by an overhanging arm F, which is rigid with the bar α^3 and extends out over the brush and is provided with a depending flanged portion f . Into an opening in this arm is screwed a pipe f' , with which a hose f^2 is designed to be connected for supplying water to the brushes while in operation.

The back of brush E is corrugated or formed with grooves f^3 , from which lead holes or perforations f^4 to allow the water to pass to the brushes and plates.

G G' designate opposed rack-bars carried by brushes B and E along their inner longitudinal sides, and between these rack-bars, meshing therewith, is a pinion g . To the lower rack-bar G' is pivotally connected one end of a rocking arm g' , pivotally secured to

frame A, and to the lower end of said arm is connected one end of a pitman g^2 , the other end of which is attached to a wheel g^3 , fast on a shaft g^4 , upon which latter is a large
 5 band-wheel g^5 , which is driven by any suitable belt. (Not shown.) The revolution of this wheel and shaft imparts an opposite reciprocal longitudinal movement of the two brushes.

10 It is well known that when plates or bars are heated before rolling thin a scale forms on their surfaces. This can be removed by cold-pickling, which is expensive and requires time. If the plates are rolled while
 15 red-hot and squeezed to the desired thinness without first removing the scale, the latter is thereby pressed into the surfaces and often subsequently comes loose, making the plates rough and defective, and in many instances
 20 entirely ruining them; but in connection with my invention the plate is grasped with tongs while red-hot and passed over the receiving-table between the metal brushes. The latter being reciprocated in opposite directions two or three times effectively remove
 25 all scale and loose particles, the water serving to keep the brushes cool and also to aid in raising and loosening the scale. After being thus cleaned the plate is carried direct
 30 to the rolls ready to be rolled into thin tin plates.

My machine is also equally useful for cleaning cold metal sheets, either dry or with water and sand. I can also substitute wool brushes
 35 and thereby use the machine for wiping and polishing finished bright tin plates, an office usually performed with big pieces of sheepskin manipulated by hand.

The advantages of my invention are apparent from what has been said.

I claim as my invention—

1. A brush-machine of the character herein described having upper and lower brushes between which the article to be cleaned is designed to be placed, said brushes being operatively connected together, and means connected to one of said brushes for imparting a reciprocal longitudinal movement thereto, whereby both of said brushes will be caused
 50 to move longitudinally in opposite directions, substantially as set forth.

2. A brush-machine of the character herein described having upper and lower brushes between which the article to be cleaned is designed to be placed, gearing between said brushes, and operating means connected to one of said brushes, whereby both of said brushes will be moved longitudinally in opposite directions, substantially as set forth.

3. A brush-machine of the character herein described having upper and lower brushes between which the article to be cleaned is designed to be placed, and means for imparting a reciprocating movement to said brushes,
 65 said upper brush having corrugations in its

back and provided with openings for the passage of water to the article while being cleaned, substantially as set forth.

4. The combination with the frame having stops at its ends, and a receiving-table at its front, of a lower brush mounted on said frame, an upper brush supported thereby, connections between said brushes, and means connected to one of said brushes, whereby a reciprocating longitudinal movement may be
 75 imparted to said brushes, substantially as set forth.

5. The combination with the frame having adjustable stop-plates at its ends, a receiving-table at its front, and adjustable arms extended over said table, of upper and lower brushes operatively connected together, and means connected to one of said brushes for imparting a reciprocating longitudinal movement to both of them, substantially as set
 85 forth.

6. The combination with the frame, of the lower brush mounted thereon, the upper brush overhanging said lower brush, an arm supporting said upper brush, and means for imparting a reciprocating longitudinal movement to said brushes, substantially as set
 90 forth.

7. The combination with the frame, of the lower brush mounted thereon, the upper brush overhanging said lower brush having corrugations and perforations in its back, an arm supporting said upper brush, a water-supply pipe supported by said arm, and means for imparting a reciprocating longitudinal movement to said brushes, substantially as set
 95 forth.

8. The combination with the frame having an upright side formed with a groove, of the lower brush mounted on said frame, the upper brush having one of its sides fitted in said groove, an arm supported by said side and engaging the outer side of said brush, and means for imparting a reciprocal longitudinal movement to said brushes, substantially
 105 as set forth.

9. The combination with the frame, and the lower brush, of the upper brush, a frame therefor in which said brush is yieldingly supported, operative connections between said brushes, and means connected to one of said brushes for imparting a reciprocating longitudinal movement to both of them, substantially as set forth.

10. The combination with the frame, and the lower brush, of the upper brush having flanges, a frame in which said brush is designed to fit, screws extended through said flanges engaging said frame, springs beneath said flanges, and means for imparting a reciprocating longitudinal movement to said brushes, substantially as set forth.

11. The combination with the frame, of the upper and lower brushes mounted on said frame, rack-bars carried by said brushes, a
 130

pinion meshing with said rack-bars, and means for imparting a reciprocating longitudinal movement to said brushes, substantially as set forth.

5 12. The combination with the frame, of the upper and lower brushes mounted on said frame, rack-bars carried by said brushes, a pinion meshing with said rack-bars, an arm connected to said lower brush, an operating-

shaft and a pitman connected thereto and to 10 said arm, substantially as set forth.

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

WILLIAM EDWIN HARRIS.

Witnesses:

D. E. WILLIAMS,
GEO. W. UPTON.