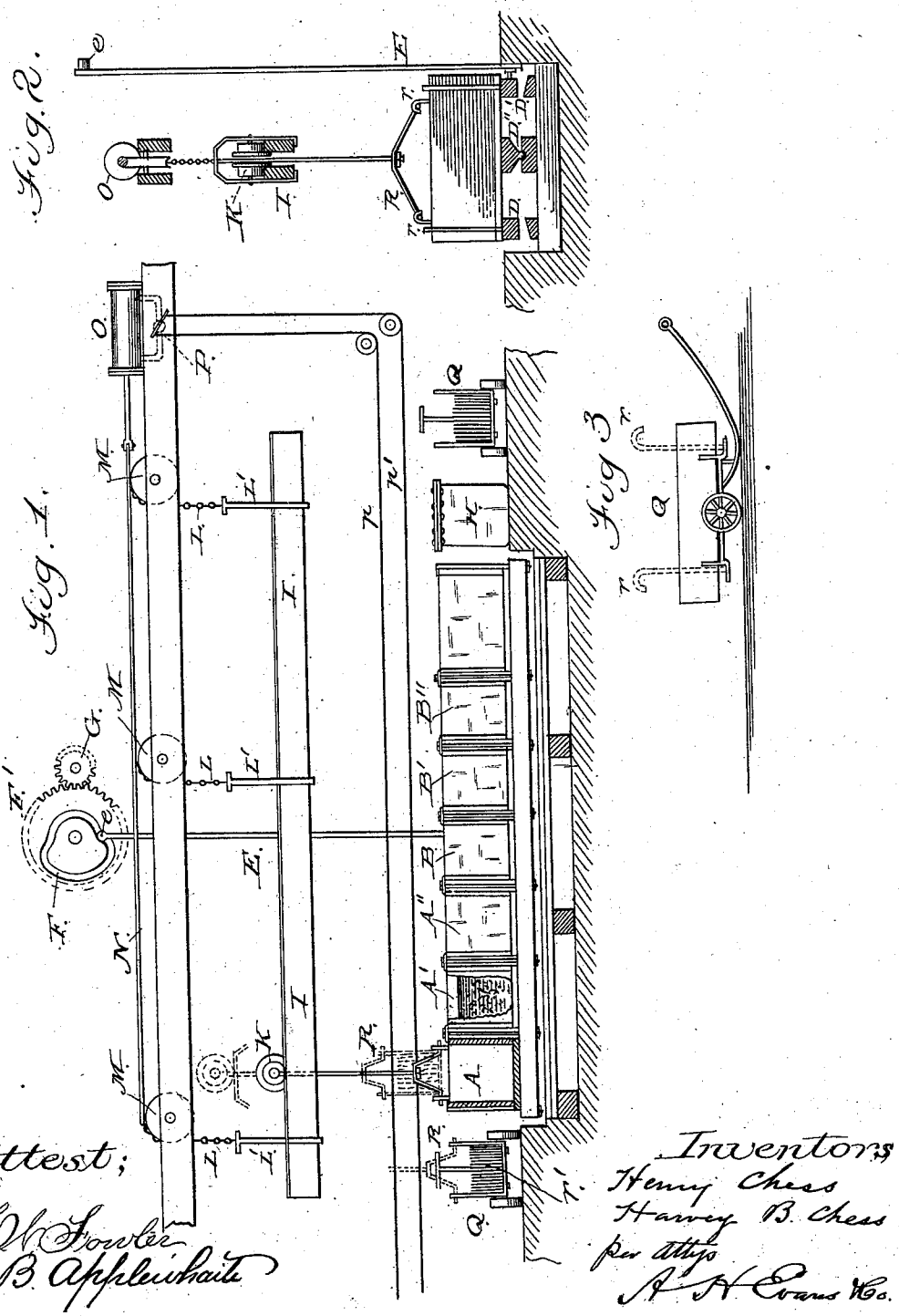
(No Model.)

H. & H. B. CHESS.

APPARATUS FOR SCALING AND PICKLING METAL PLATES.

No. 294,441. Patented Mar. 4, 1884.



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APPARATUS FOR SCALING AND PICKLING METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 294,441, dated March 4, 1884.

Application filed November 2, 1883. (No model.)

To all whom it may concern:

Be it known that we, HENRY CHESS and HARVEY B. CHESS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Scaling and Pickling Metal Plates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a side elevation of an apparatus for scaling and pickling metal plates. Fig. 2 is an end view of same. Fig. 3 is a detail view, to be referred to.

Our present invention relates to a means for easily handling and transferring the material while being treated; and it consists of the combination of devices hereinafter explained and claimed.

To enable others skilled in the art to make and use our invention, we will proceed to describe the exact manner in which we have carried it out.

The work of handling, transferring the material, and agitating the baths during the process of pickling is disagreeable, unwholesome, and dangerous. Our apparatus provides for the removal or transfer of the sheets or plates in bulk from a wagon or carriage directly to the successive acid and rinsing tanks, with automatic agitation in them all, and thence into the steam drying-box, and finally depositing them in bulk on a wagon or carriage similar to that from which they were taken, and in a position to be readily handled in subsequent operations.

In the drawings, A, A′, and A″ represent a series of acid-tanks of proper dimensions, clamped firmly side by side, and against these are secured the fresh-water tanks B B′ B″, of similar size, and next to these a similar tank containing lime-water, the whole number being firmly and rigidly clamped together, and constituting a complete set for scaling, rinsing, and neutralizing, and have imparted to them an intermittent rocking motion by a means which we will now proceed to explain, the object being to impart to the fluid a sort of irregular current, the tendency of which will be to cleanse the metal first of the scale and then of the acid before the metal is subjected to the steam bath C. The series of tanks before described are firmly secured upon the transverse timbers D D′ D″, the latter being placed under the center of the tanks, and so arranged as to rock on a pivot or hinge at the central longitudinal line. This pivoting keeps the whole system in place, but permits a slight rocking or seesaw motion to be given by the link E, the lower end of which is attached to D′, or at the rear, and the upper end of which is placed in connection with and is operated through a roller, *e*, playing in the cam-groove F in the wheel F′. This wheel receives a steady but slow motion from the pinion G, driven by any convenient power; but the link E receives two rests and two opposite movements at each revolution of the wheel F′, which, being transmitted to the tanks, produce intermittent waves of the dilute acid, fresh water, and lime-water, for the purpose hereinbefore explained. The steam drying-box H is stationary. Over the whole system of tanks we place the double track I, on which the traveler K runs freely the whole length of the track. This track in turn is suspended by chains L and stirrups L′ at several points, and these chains run over pulleys M, and are attached to a common rod, N, which is actuated by a hydraulic or steam cylinder, O, provided with a three-way valve at P, and this latter is controlled by cords *p p′*, traversing the whole length of the system and within easy reach of the attendant at any point of the operation.

The operation of our apparatus is as follows: The wagon or carriage Q, properly loaded with the sheets or plates of metal, placed in order, as shown in Figs. 1 and 3, is hauled to the acid end of the system of tanks, when a touch on the cord *p* lowers the track with its traveler, to which the spider R is attached. This spider is placed under the hooks *r*, which have been placed under and about the iron plates *r′* on the wagon, and a touch on the cord *p′* lifts the load of plates in bulk above the level of the top of the tanks. Then the attendant, with but slight exertion, moves the load of plates in place over the acid-tank, and by a touch of the cord *p* he lowers the plates in bulk, with the hooks *r*, into the acid bath. After a proper time it is again lifted by the same spider, and carried above and dipped successively in the fresh-water tanks B, B′, and B″, and repeatedly dipped in each

tank, as in hand-rinsing, and then deposited by the same means in the lime-water tank, when the attendant starts with another load of sheets or plates to be similarly treated. During all this time the tanks are being intermittently rocked, as hereinbefore described. After all remaining acid has been completely neutralized in the lime-water bath, the plates are removed in bulk to the steam drying-box H, and thence by the same machinery to another wagon or carriage, Q', for removal. During all this operation the pickling and rinsing is greatly facilitated by the rocking tanks, causing currents to flow lengthwise and up and down through the interstices or spaces between the sheets or plates. This may be further assisted by slightly bending alternate plates if they are too true and lie too closely together. These currents enable us to dispense with the use of tongs and bars to secure a proper cleansing of the plates.

The fresh-water tanks should be supplied with running water.

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

In an apparatus for scaling and pickling metal plates, a series of rigidly-clamped tanks, in combination with the track I, traveler K, chains L, stirrups L', pulleys M, and rod N, with suitable mechanism for operating the rod, substantially as and for the purpose set forth.

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Witnesses:
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