

(No Model.)

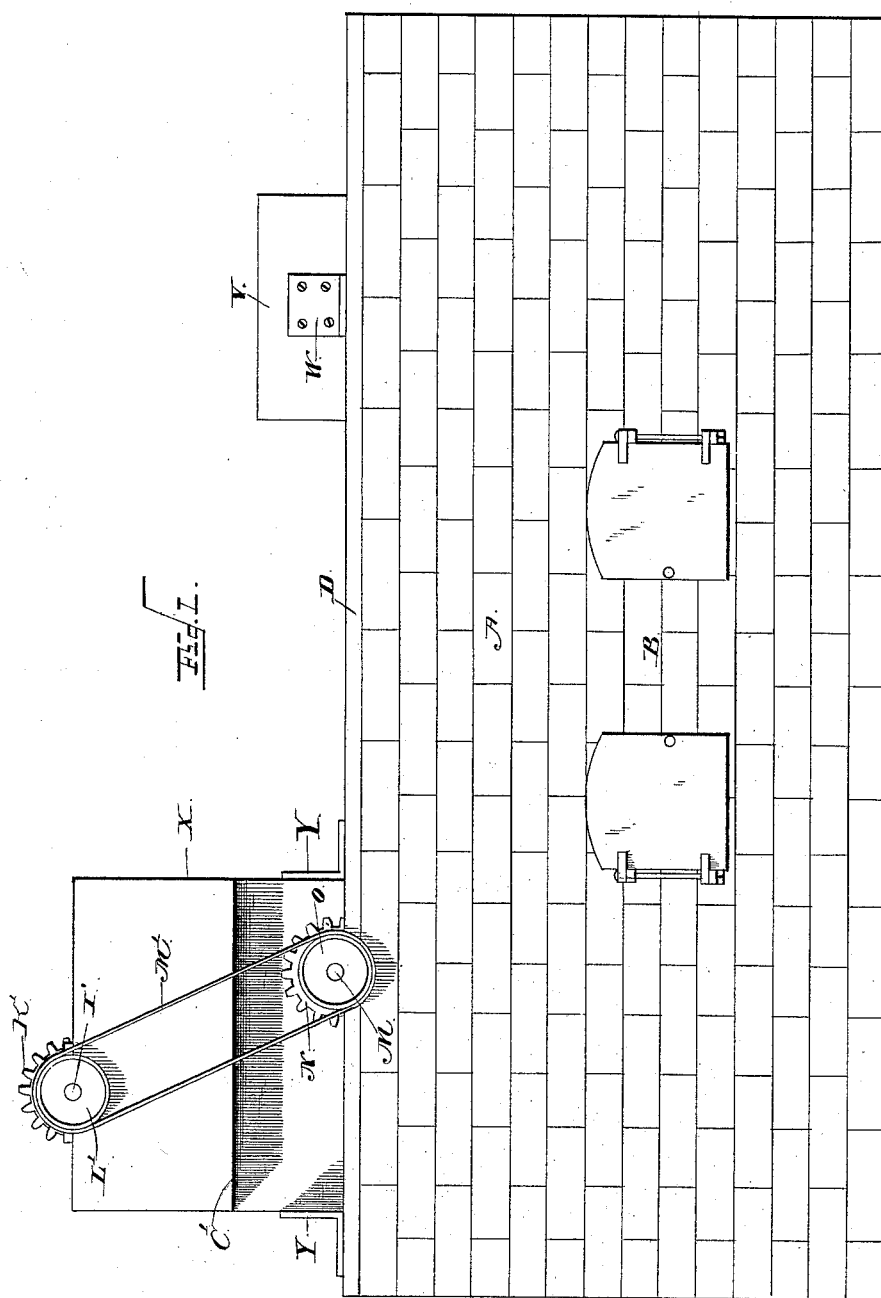
4 Sheets—Sheet 1.

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APPARATUS FOR GALVANIZING METALS.

No. 385,616.

Patented July 3, 1888.



Witnesses.

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J. W. Gammon

Inventor,
Robert Grey.

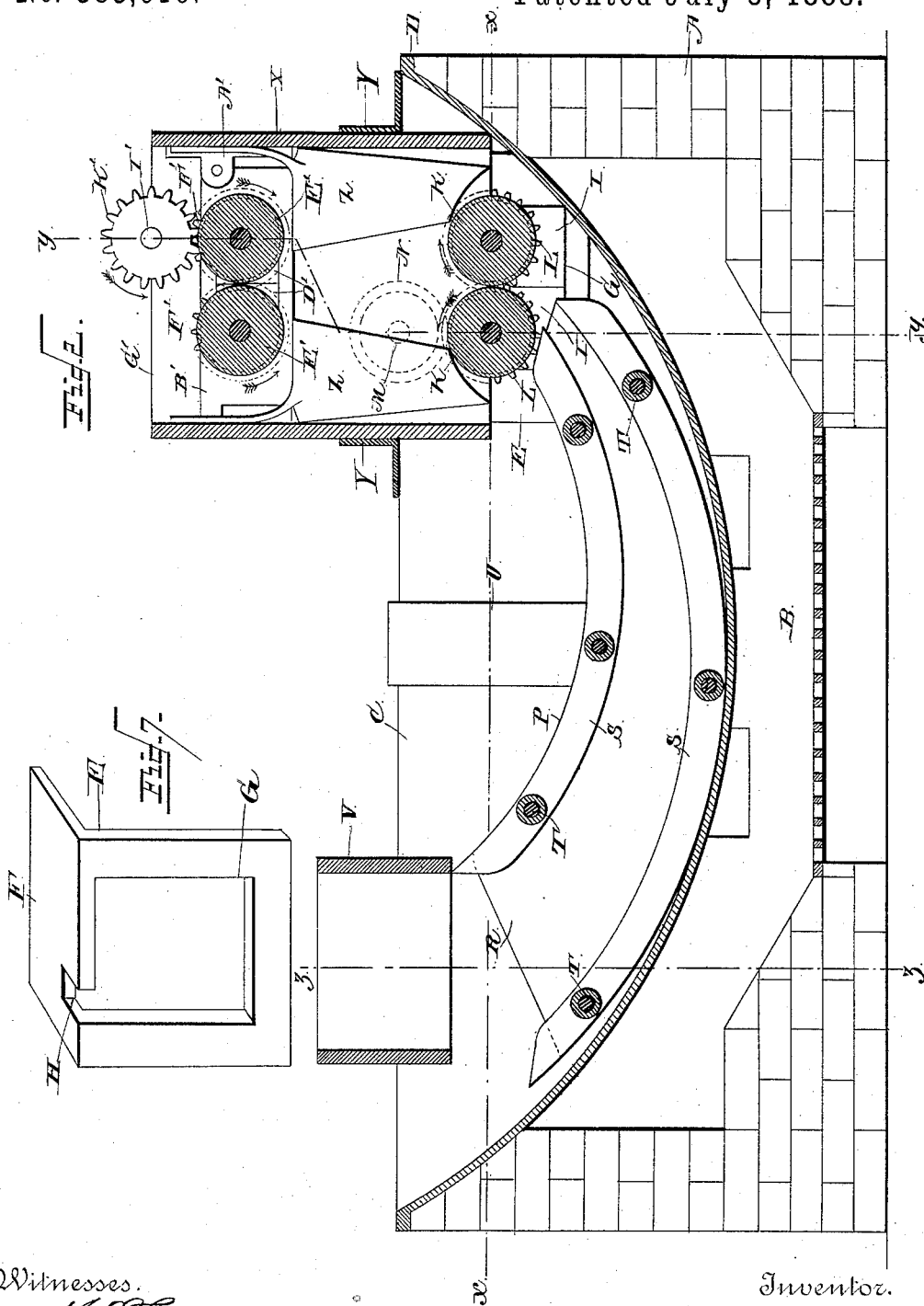
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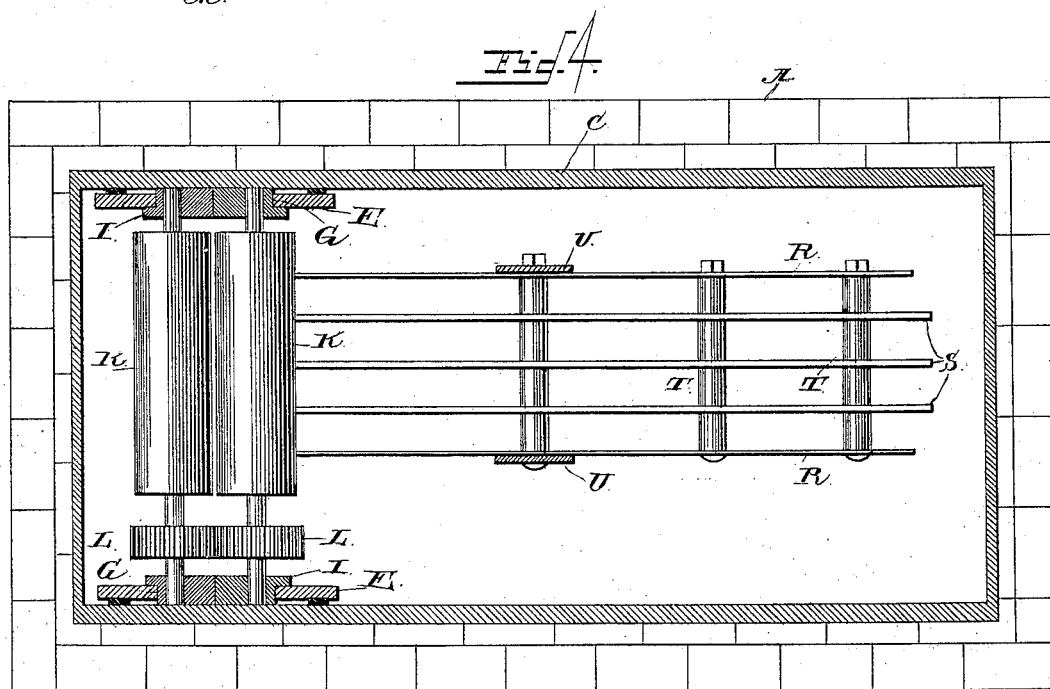
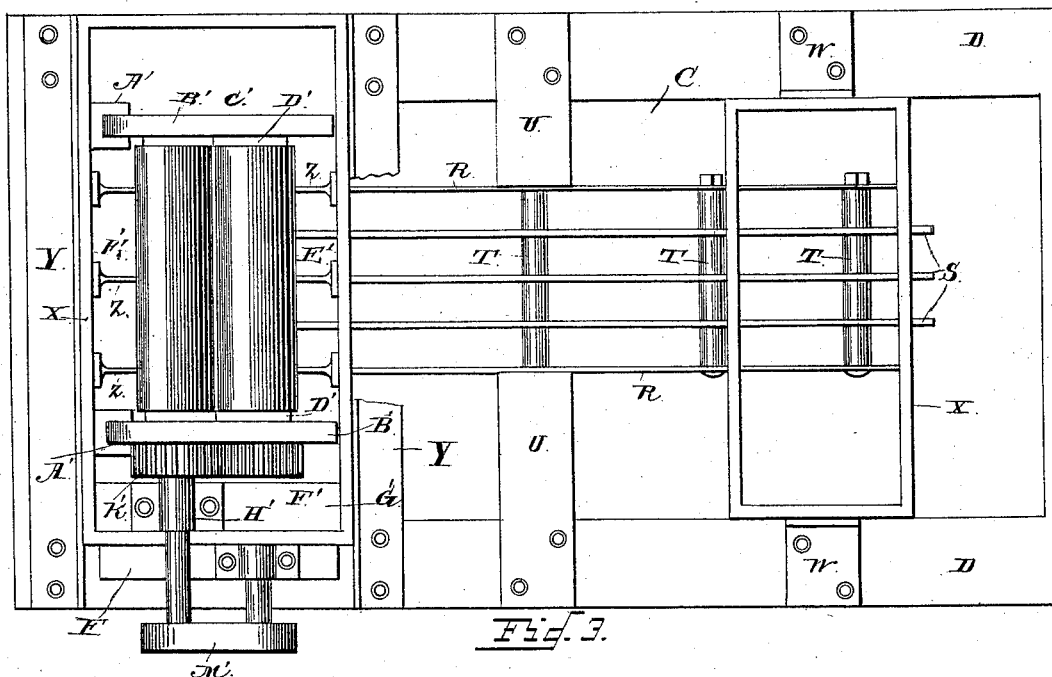
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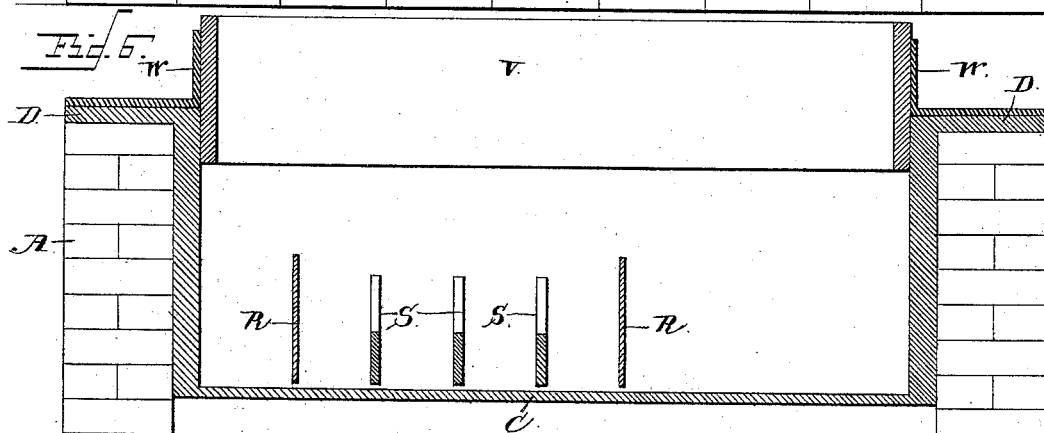
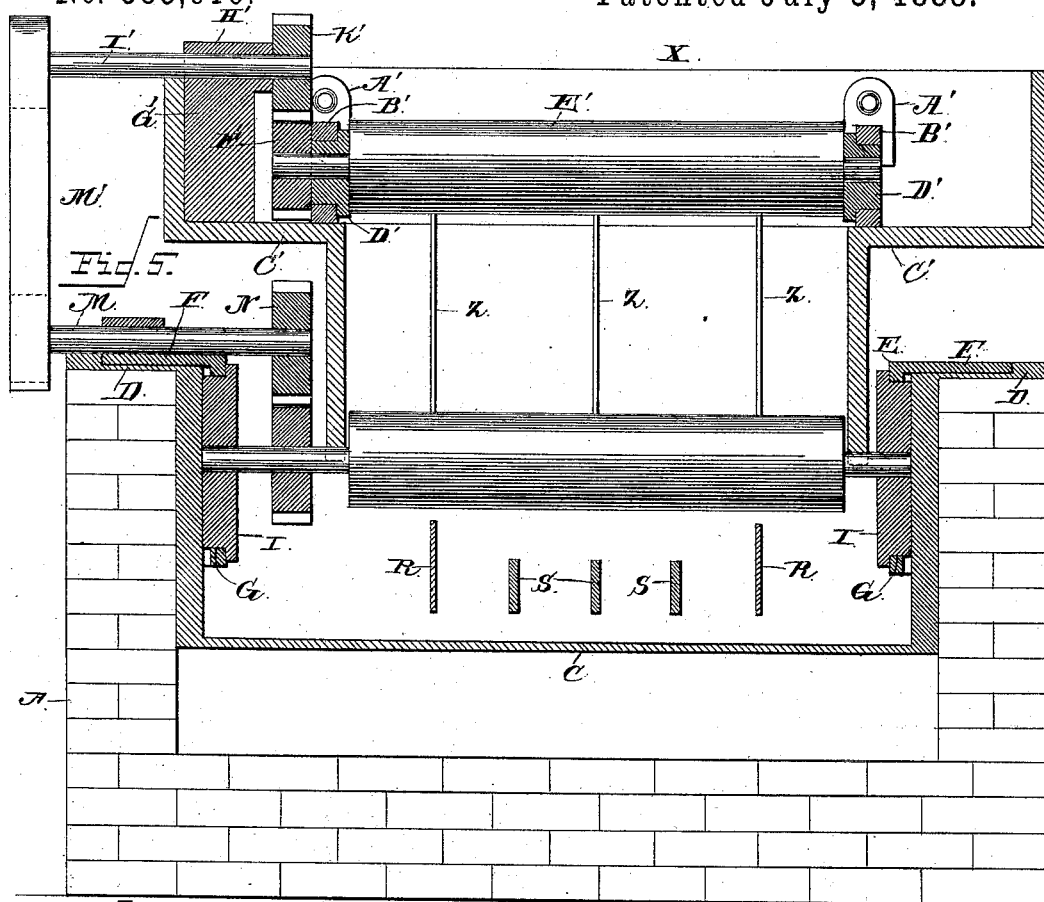
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UNITED STATES PATENT OFFICE.

ROBERT GREY, OF STRUTHER'S, OHIO.

APPARATUS FOR GALVANIZING METALS.

SPECIFICATION forming part of Letters Patent No. 385,616, dated July 3, 1888.

Application filed June 23, 1887. Serial No. 212,387. (No model.)

To all whom it may concern:

Be it known that I, ROBERT GREY, a citizen of the United States, residing at Struther's, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Apparatus for Galvanizing Metal, of which the following is a specification.

My invention relates to an improvement in apparatus for plating sheet-iron or other metals with lead or tin; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claim.

In the drawings, Figure 1 is an elevation of an apparatus embodying my improvements. Fig. 2 is a vertical central longitudinal sectional view of the same. Fig. 3 is a top plan view of the same. Fig. 4 is a horizontal sectional view taken on the line $x x$ of Fig. 2. Fig. 5 is a vertical transverse sectional view taken on the line $y y$ of Fig. 2. Fig. 6 is a similar view taken on the line $z z$ of Fig. 2. Fig. 7 is a detail view.

A represents a rectangular setting of brick-work, in the lower side of which is made a furnace, B.

C represents a rectangular melting pot or vessel, which is preferably made of cast-iron, fits between the side and end walls of the setting, and is provided at its upper edges with laterally-projecting flanges D, which rest upon the upper sides of the said walls, and thereby suspend the pot or vessel in the setting above the combustion-chamber of the furnace. The bottom of the pot or vessel is curved upward from the center to the ends, as shown in Fig. 2.

E, Figs. 2 and 7, represents a pair of metallic plates, which are provided at their upper ends with outwardly-extending lateral flanges F, and in the said plates are made rectangular openings G. At the outer upper corners of the said openings recesses H are made in the flanges F. The said flanges rest upon the upper side of the pot or vessel at one end thereof, are secured thereto by means of bolts or screws, and support the plates E vertically on opposite sides of the pot, as shown.

I, Fig. 4, represents bearing-blocks which are fitted in the openings G, and in the said bearing blocks are journaled the projecting spindle or trunnions of a pair of compression-rollers,

K. The said rollers are provided at one end with spur-wheels L, which mesh with each other. On the upper side of one of the plates F is arranged a transverse shaft, M, which is parallel with the rollers K, and is provided at its inner ends with a spur-wheel, N, that meshes with one of the wheels L, and has a pulley, O, at its outer end.

P, Fig. 2, represents a longitudinal tapered guiding-chute, which is arranged in the bottom of the pot or vessel C and comprises a pair of vertical longitudinal side walls, R, and curved forward-converging guide slats or bars S, that are secured between the upper and lower edges of the side walls by means of transverse bolt-rods T. Bracket-arms U connect the guide to the upper sides of the melting pot or vessel at the center thereof, and thereby secure the said guide rigidly in position therein.

At one end of the melting pot or vessel is arranged a rectangular transverse receptacle, V, which is supported in position by means of angle-irons W, Fig. 1, which are bolted to the upper edges of the pot or vessel and to the ends of the receptacle V. It will be observed that the lower edge of the said receptacle is somewhat below the top of the melting pot or vessel. The receptacle V is arranged above the larger end of the guideway or chute and communicates with the same.

X represents a grease pot or receptacle, which is supported upon a pair of transverse bars, Y, arranged above the ends of the melting pot or vessel, in which the rollers K are located. The lower edges of the said grease pot or receptacle bear upon the projecting spindles beyond the ends of the rollers K, and thereby secure the said rollers in position. On the front and rear sides of the grease pot or receptacle are secured vertical guide-bars Z, the inner edges of which are inclined and converge upward. The lower ends of the said guide-bars are rounded and adapted to the contour of the rollers K.

A' represents a pair of brackets, which are secured to the inner side of the outer wall of the grease pot or receptacle, near the upper edge thereof, and to the said brackets are pivoted the outer ends of a pair of horizontal arms, B'. The said arms are supported in a horizontal position transversely across

the ends of the grease pot or receptacle by an offset, C', made in each end of the latter, Figs. 1 and 5. Each of the arms B' is provided with a longitudinal slot of considerable width, and in the said slots are secured blocks, D', which
5 form the bearings for the projecting spindles of a pair of rollers, E'. The said rollers are provided at one end with spur-wheels F', which mesh with each other.

10 On one end of the grease pot or receptacle is secured a transverse bar, G', which is provided with a bearing-block, H'. A shaft, I', is journaled in the said block, is provided at its inner end with a gear-wheel, K', that
15 meshes with one of the wheels E', and is provided at its outer end with a pulley, L', that is connected to the pulley O by means of an endless belt, M'.

The operation of my invention is as follows:
20 The receptacle or vessel C is kept filled with melted lead or tin to the level of the bottom of the receptacle V, which is entirely open at bottom, so that the lighter flux floats on the heavier molten metal, and the plates to be
25 operated on can run through both flux and metal. A flux composed of muriatic acid, zinc, charcoal, and lime, in suitable proportions, is placed in the receptacle V, and the grease-pot is filled with palm-oil to the level
30 of the rollers E'. The sheet of metal to be plated is then directed through the flux in the box or receptacle V to the larger end of the guide or chute T, and passes through the same and through the body of molten metal in the
35 melting pot or vessel C and becomes coated therewith. As the front end of the plate or sheet of metal emerges from the narrow discharge end of the guide or chute, it is grasped by the rollers K, which are caused to rotate

in the direction indicated by the arrows in 40 Fig. 2, and thereby the said sheet of metal is drawn forward and upward between the opposing sides of the said rollers and firmly compressed thereby, so as to cause the metal coating to adhere to the sheet. From the rollers 45 K the sheet of metal passes up through the palm-oil in the grease pot or receptacle, and is directed between the rollers E', which impart a polish to the coated sides thereof.

The operation of applying the flux to the 50 sheet metal, the molten metal to the latter, and the polishing-oil is performed during one operation composed of three succeeding steps.

Having thus described my invention, I claim—

55 The combination, with the regularly-curved melting-pot, the flux-receptacle at one end of said pot V, open at top and bottom, and the grease-box at the opposite end of the melting-pot, provided with the rollers and operating 60 mechanism whereby the plates are drawn out of the machine, of the regularly-curved guide-frame P within the melting-pot, composed of the regularly-curved upper and lower bars S, the side walls, R, and the transverse bolts T, 65 the said frame P having its larger end under the receptacle V and its smaller end under the grease box, the upper and lower bars S converging toward said box, substantially as specified.

70 In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ROBERT GREY.

Witnesses:

JOHN E. McVEY,
CHAS. J. SUMMERS.