

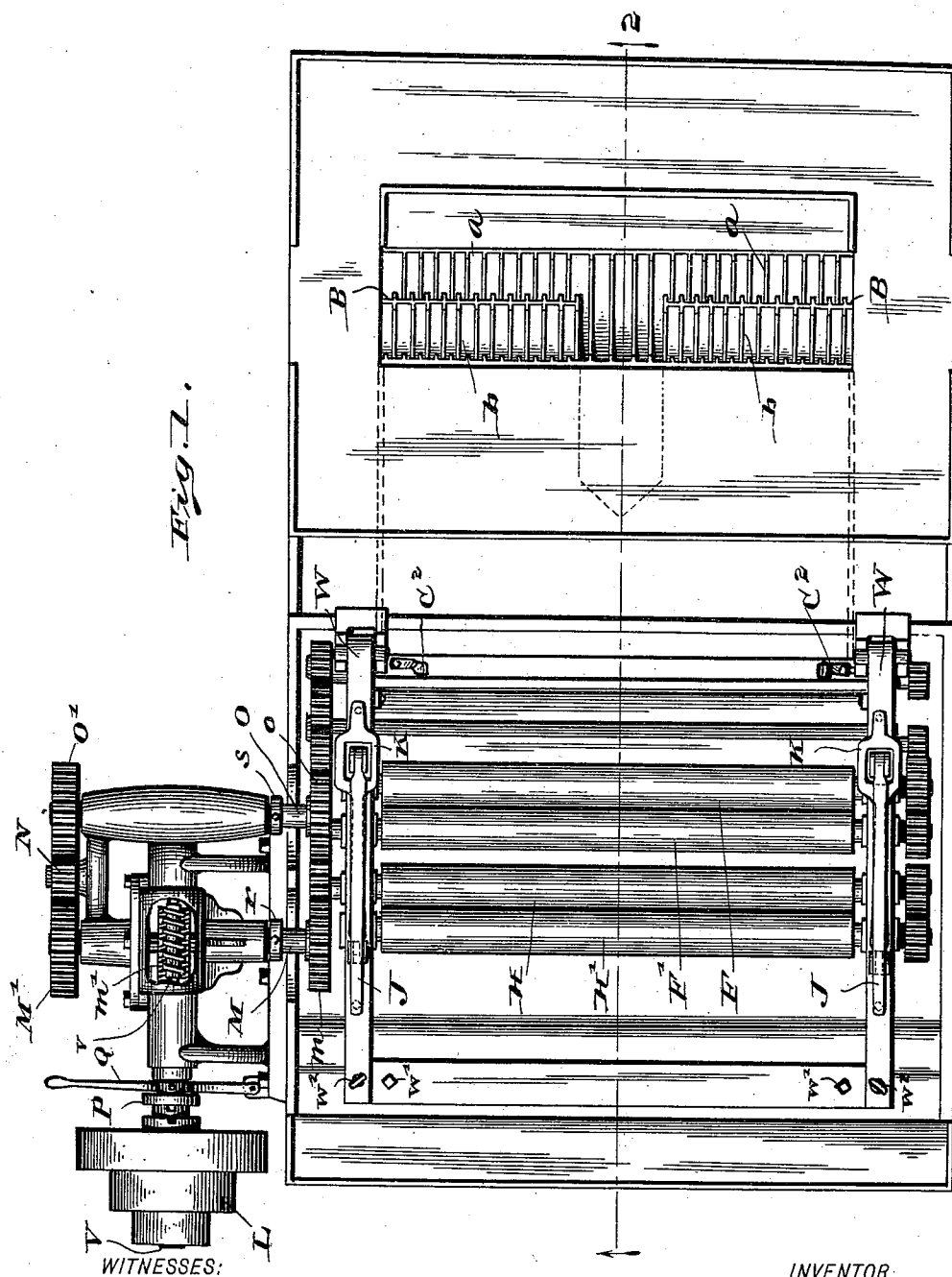
(No Model.)

3 Sheets—Sheet 1.

J. B. BAIRD.
TINNING MACHINE.

No. 546,571.

Patented Sept. 17, 1895.



INVENTOR

James B. Baird,

BY
Chester Bradford,
ATTORNEY.

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WITNESSES;

H. B. Neely
J. A. Walsh -

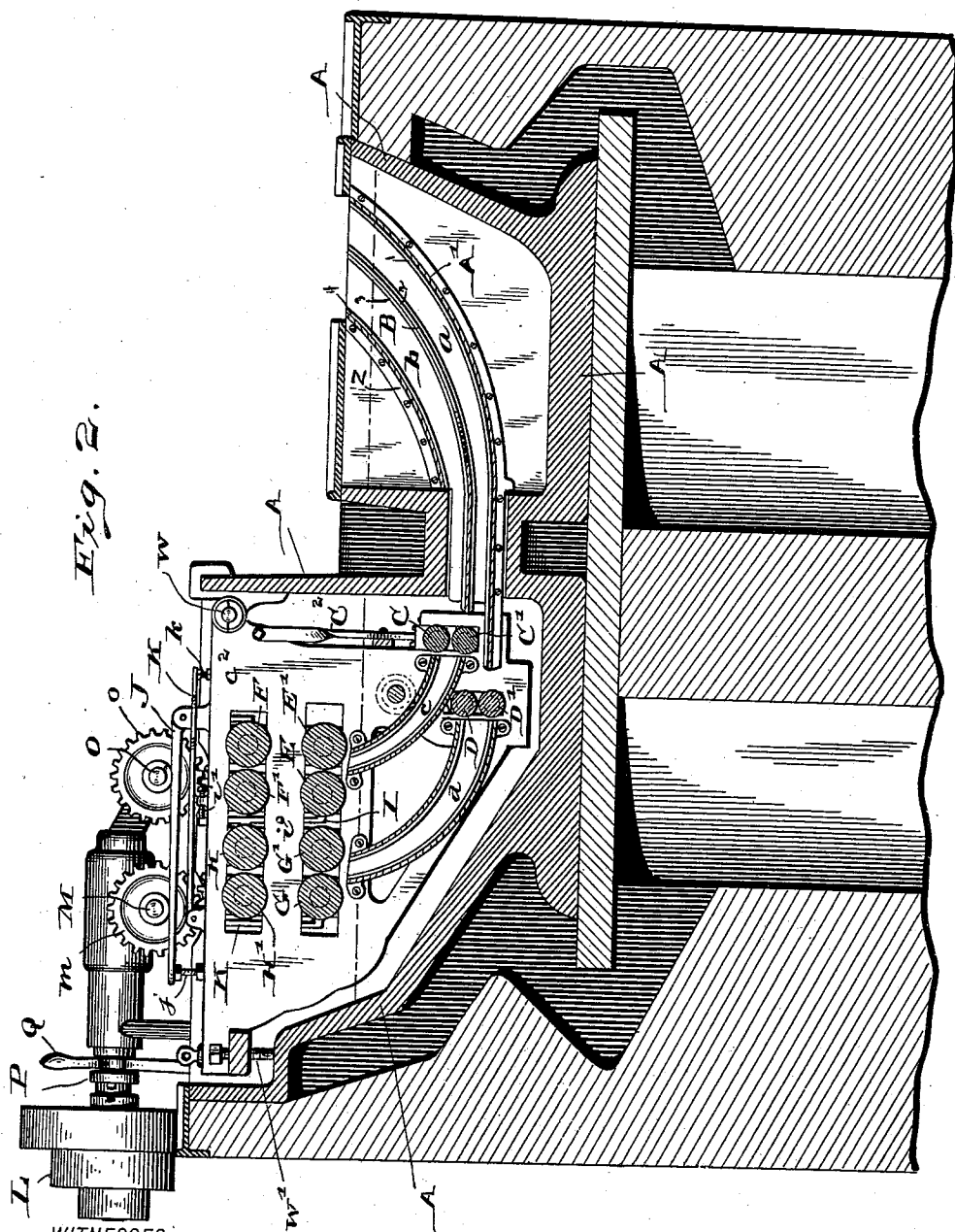
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3 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE,

JAMES B. BAIRD, OF ELWOOD, INDIANA.

TINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 546,571, dated September 17, 1895.

Application filed March 5, 1895. Serial No. 540,577. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. BAIRD, a citizen of the United States, residing at Elwood, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Tinning-Machines, of which the following is a specification.

The object of my said invention is to produce a tinning-machine of substantially the ordinary exterior dimensions which shall be capable of performing double the work of an ordinary machine.

As is well known, the mass of molten tin deteriorates rapidly during the operation of tinning. It is, therefore, of importance that as great a proportion of the mass shall be consumed within a limited period as is possible, in order that the bad effects of protracted exposure may be avoided, on the one hand, or the waste consequent upon throwing away unused material, which has become worthless, on the other.

A tinning-machine embodying my said invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view thereof; Fig. 2, a central sectional view as seen when looking in the direction indicated by the arrows from the dotted line 2 2 in Fig. 1; Fig. 3, a perspective view of the roll-frame and the rolls carried thereby separately as seen when removed from the tinning-tank, the ends of the roll-shafts and the gears carried thereby being broken away; and Figs. 4 and 5, end elevations of the parts shown in Fig. 3, together with the gears on the ends of the rolls, which are broken away in said Fig. 3.

Many of the features of construction shown are of an ordinary well-known and easily-understood character and do not need detailed description. Such as are novel in arrangement or operation will be particularly described, while those of ordinary construction will only be described so far as is necessary to give a clear understanding of the invention, or incidentally in describing the novel parts thereof.

The tank A is filled with molten tin to about the point indicated by the dotted line in Fig. 2, which, as commonly in tinning-machines, is kept to the required temperature by the fires in the combustion-chambers below and

around said tank. Placed within said tank are two ways *a* and *b*, through which the black sheets to be tinned are inserted into the machine. As shown in Figs. 1 and 2, the partition B, dividing these two ways, is cut away at its central portion sufficiently to permit the tongs with which the workmen handle the sheets to be as freely inserted as though said central partition B were not present. The upper sides of the plate A', forming the bottom side of the way *a*, and also of the said plate B and of the plate Z are provided with ribs 1, 2, 3, and 4, as shown, so that the plates do not come in contact with a smooth surface, but are kept from said surface by said ribs, enabling the sheets to be fully surrounded by the molten tin.

The plate B terminates at a point behind the termination of the plate A', and said plates are respectively positioned in front of the pairs of rolls C C' and D D', which pairs of rolls seize upon and feed the plates through and drive them up through the ways *c* and *d* to the finishing-rolls. It will be observed that the distance between these pairs of feeding-rolls and the corresponding pairs of finishing-rolls is the same, because of the arrangement stated; and the lower roll C' of one pair is behind the upper roll D of the other pair. This arrangement is an important one in carrying out my invention, as it enables the plates to be fed through the machine with uniformity and to be immersed to substantially the same depth in the molten metal. As shown most plainly in Fig. 3, the upper roll C of its pair is adapted to be adjusted by means of the angle-levers C² and the set-screws *c*² by which they are operated, and said angle-levers are so constructed as to serve also as springs, thus making the pressure between the rolls a yielding one. The upper rolls D of that pair are adjusted by means of the set-screws D², which bear upon springs *d*² on top the bearings of said rolls D, which makes the pressure between this pair of rolls also a yielding one, as in the other case. The upper rolls of these pairs are driven by the gears C³ D³ on the general train through the idle-gear X, as shown in Fig. 4, and the second one of each pair is driven through the smaller spur-gears on the other ends of the rolls, as shown plainly in Fig. 5.

There are two pairs of finishing-rolls for each set of ways, as shown plainly in the drawings, more especially in Fig. 2, said rolls being lettered, respectively, E E', F F', G G', and H H', the rolls E, F, G, and H being easily adjustable and the rolls E', F', G', and H' being fixed or not ordinarily adjustable.

The rolls E and H are rendered adjustable by the pivoted spring-levers I, which are pivoted at *i* and are operated by the set-screws *i'*. The pivot *i* being equi-distant between the points where said levers bear against the boxes carrying the shafts of said rolls they are moved equally and together, while the spring character of said levers makes the adjustment a yielding one.

The roll F is adjusted by the spring-levers J and the set-bolts *j*, and the roll H is correspondingly adjustable by means of the spring-levers K and set-bolts *k*, all as will be readily understood upon an inspection of the drawings.

As shown in Figs. 1 and 4, the entire series of rolls are driven by a train of gears from a common source of power (not shown) through a belt running to one or the other of the members of the cone-pulley L. As shown in Fig. 1, the shaft V, on which this cone-pulley is mounted, has a worm *v* on the other end, which engages with and drives a worm-wheel *m'* on the shaft M, thus driving said shaft, and through an idle-wheel N and suitable gear-wheels M' and O' the shaft O. Gear-wheels *m* and *o* on the shafts M and O engage with and drive the gears of the roll-trains. (Shown most plainly in Fig. 4.)

The frame W, carrying the rolls, is a separate structure and is removable from the tank. It is supported on pivots *w* and adjustable bolts *w'*, as shown most plainly in Fig. 2, and eyebolts *w''* are provided as a matter of convenience, to which hoisting mechanism may be connected in removing said frame. When it is desired to effect such removal, the collars *r s* on the shafts M and O, (see Fig. 1,) are loosened, so that said shafts M and O can be slipped endwise and the gears *m* and *o* thus freed from engagement with the gears below.

The speed of the machine may be varied by shifting the belt to one or another of the surfaces of the cone-pulley L, and the rolls may be stopped or put in motion, as desired, by means of the clutch B, operated by the lever Q or in any ordinary or desired manner.

As usual in tinning-machines, that portion to the right of the central depression in the tank, as illustrated in Fig. 2 above the dotted line, is filled with acid flux, through which the black sheets pass as they are immersed into the molten tin, and that portion to the left of said central depression above said dotted line, in which the pairs of finishing-rolls are situated, is filled with palm-oil, through which the sheets of tin emerge.

Having thus fully described my said in-

vention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a tinning machine, of two sheet-ways arranged one above the other, a set of finishing rolls for each sheet way, and also a set of feeding rolls for each sheet way, the upper feed roll of one set being behind and in substantially the same horizontal plane with the lower roll of the other set, whereby each set of feed rolls is enabled to be located substantially the same distance from the corresponding set of finishing rolls, substantially as shown and described.

2. The combination, in a tinning machine, of two sheet-ways arranged one above another and divided by a partition B, said partition being cut away in its center to permit the convenient insertion of tongs while handling the plates, substantially as set forth.

3. The combination, in a tinning machine, of the tank, the sheet ways, driving gearing embodying short shafts and spur gear-wheels thereon mounted on the frame of the tank, a detachable frame W having pivots *w* and adjusting screws *w'*, roll trains mounted in said frame, means for moving said short shafts endwise and the gear-wheels thereon into and out of engagement with the gear wheels on said roll trains, and means for raising said frame carrying said roll trains out of said tank when detached, said several parts being arranged and operating substantially as shown and described.

4. The combination, in a tinning machine having two sets of finishing rolls, the boxes of one roll of each pair being adjustable, of spring levers J and K mounted on the frame-work carrying the rolls and each connected to one of said adjustable boxes, said lever K having a perforation or bifurcation through which the lever J passes, whereby said levers are maintained exactly in line with equal strain thereon, and means for adjusting said levers, all substantially as shown and described.

5. The combination, in a tinning machine, with the various finishing and feeding rolls, of separate spring levers operating upon the bearings of one roll of each pair, the finishing rolls being operated upon by the levers J and K, with suitable adjusting screws, and the feeding rolls being operated upon by the angle levers C², the longer arms of which are upright and provided with adjusting screws *c''* bearing against the inner faces of the frame-work, substantially as shown and described.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 1st day of March, A. D. 1895.

JAS. B. BAIRD. [L. S.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.