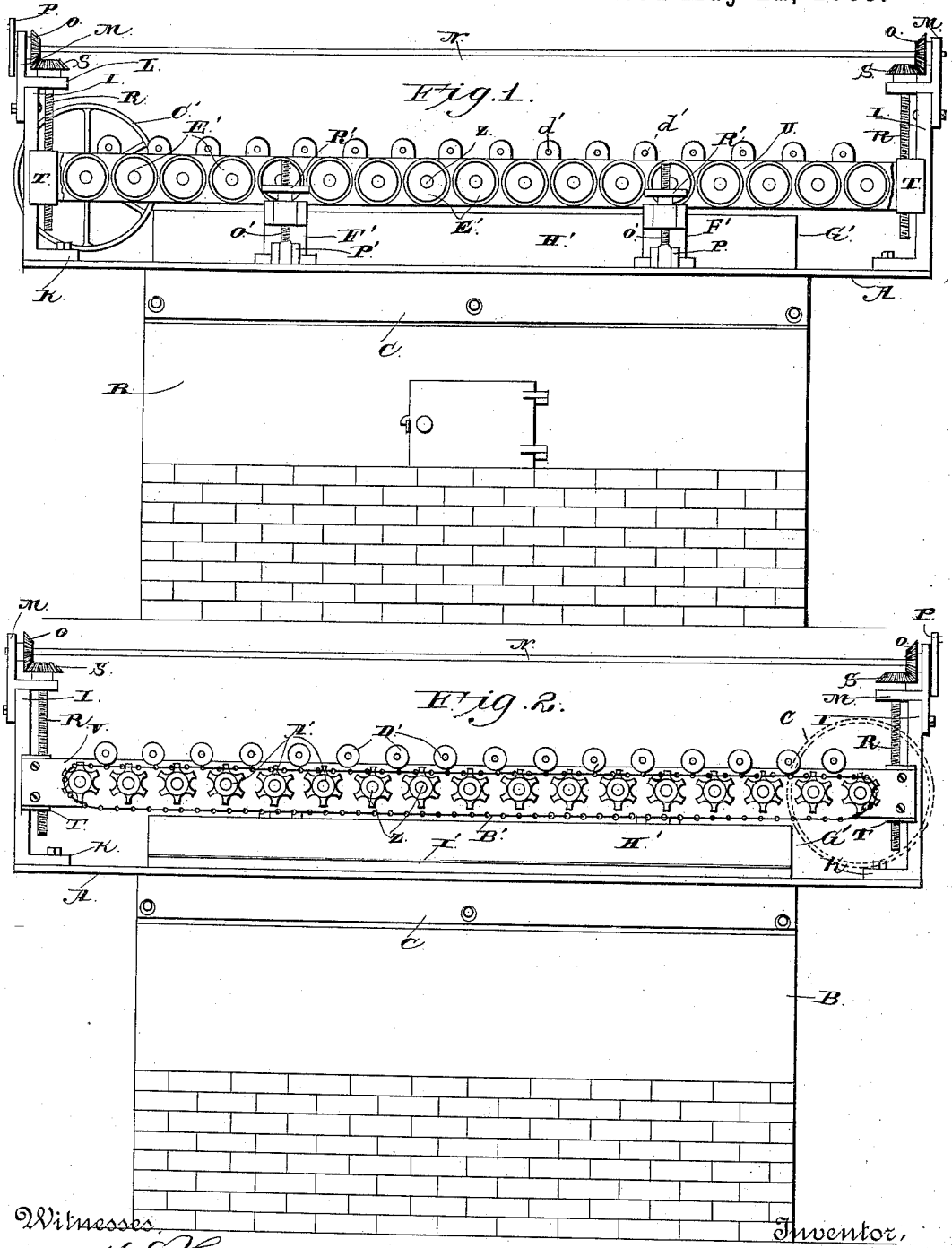
(No Model.) 3 Sheets—Sheet 1.

J. S. JOHNSTONE.

MACHINE FOR SOLDERING CYLINDRICAL CANS.

No. 383,301. Patented May 22, 1888.



Witnesses,
M. E. Fowler.
J. W. Garner

Inventor,
James S. Johnstone
by C. A. Snow & Co.
his Attorneys.

(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

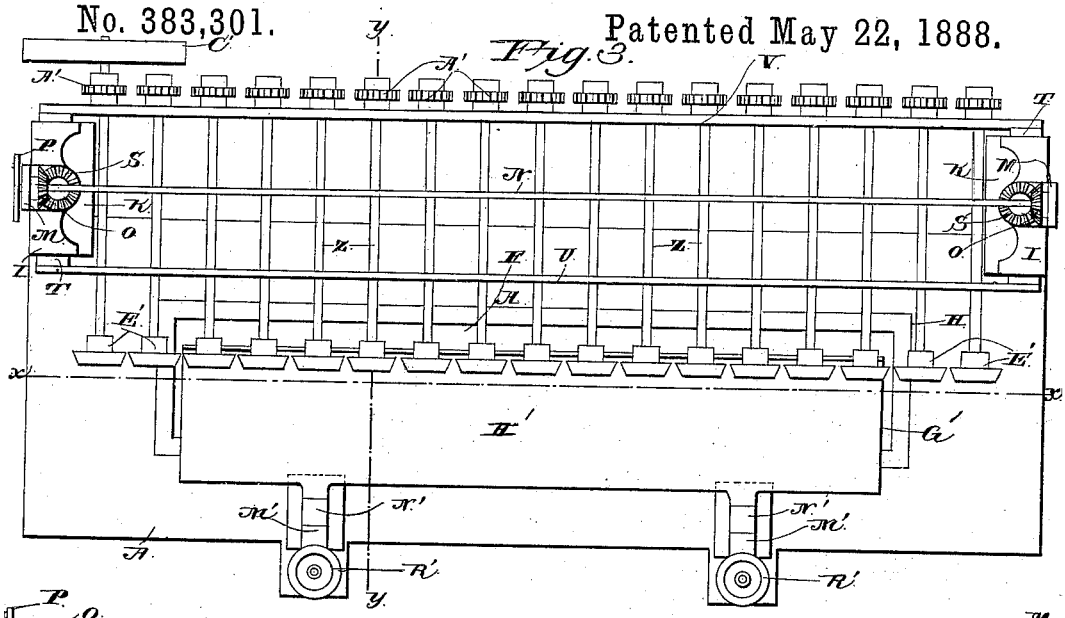

Fig. 4.

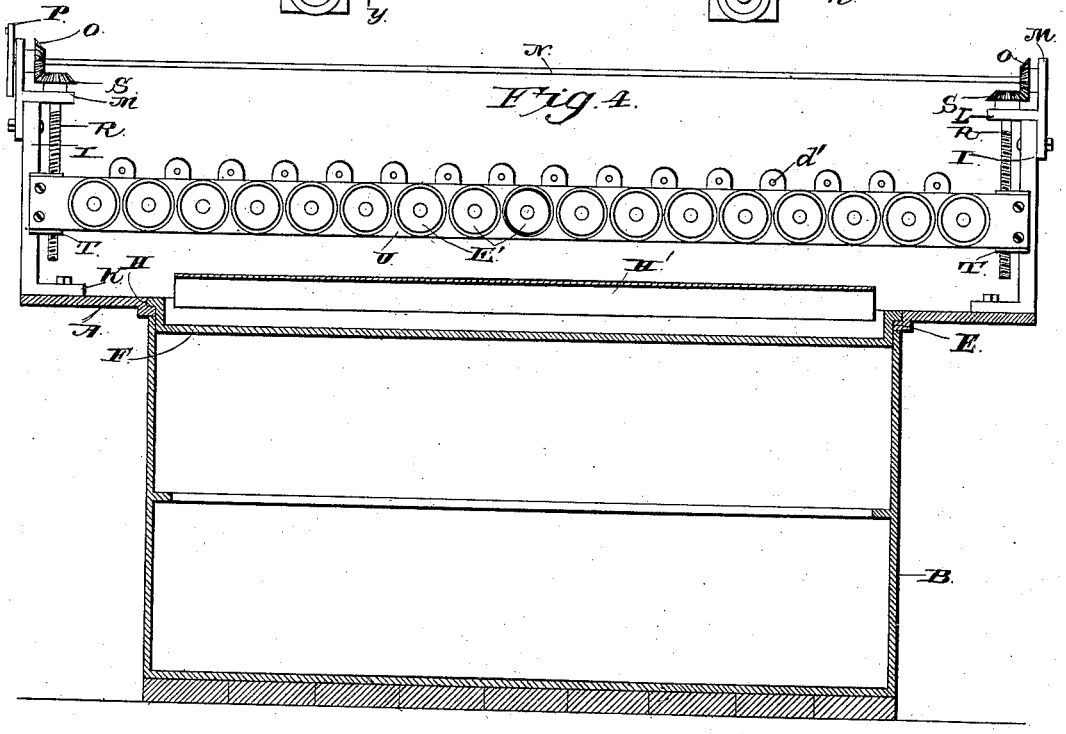

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Fig. 5.

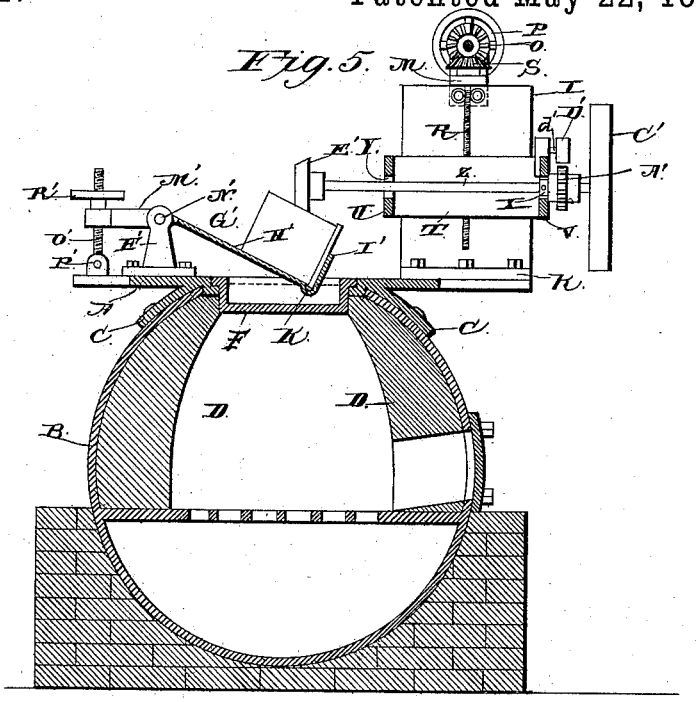


Fig. 6.

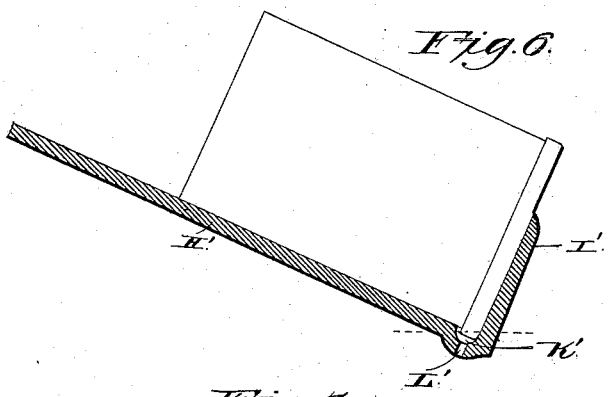
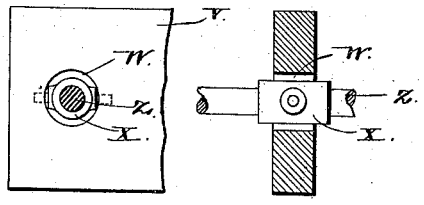


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES SAUNDERS JOHNSTONE, OF PORTLAND, OREGON.

MACHINE FOR SOLDERING CYLINDRICAL CANS.

SPECIFICATION forming part of Letters Patent No. 383,301, dated May 22, 1888.

Application filed March 17, 1888. Serial No. 267,537. (No model.)

To all whom it may concern:

Be it known that I, JAMES SAUNDERS JOHNSTONE, a citizen of the United States, residing at Portland, in the State of Oregon, have invented a new and useful Improvement in Machines for Soldering Cylindrical Cans, of which the following is a specification.

My invention relates to an improvement in machines for soldering cylindrical cans; 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 claims.

In the accompanying drawings, Figure 1 is a front elevation of a can-soldering machine embodying my improvement. Fig. 2 is a rear elevation of the same. Fig. 3 is a top plan view of the same. Fig. 4 is a vertical longitudinal sectional view taken on the line *x x* of Fig. 3. Fig. 5 is a vertical transverse sectional view taken on the line *y y* of Fig. 3. Fig. 6 is an enlarged detail transverse sectional view of the track on which the cans are guided. Fig. 7 is a detail view of the pivoted bearing.

A represents a bed-plate, of suitable length and width, which is adapted to be arranged on the upper side of a furnace, B. It is provided with curved brackets C on its lower side, which engage the curved upper sides of the furnace and are bolted thereto. The furnace is cylindrical in shape, as here shown, its upper half constituting the fire-box and its lower half constituting the ash-pit. Fire-bricks D are arranged in opposite sides of the upper portion of the furnace, and are adapted to concentrate the heat under an opening in the top of the furnace. This opening registers with the longitudinal opening E in the bed-plate, and in said opening E is suspended a melting-trough, F, which is rectangular in shape and is provided at its ends and sides with flanges that engage corresponding recesses, H, in the bed-plate. This melting-trough is long and narrow and shallow, as shown, is made, preferably, of cast metal, and may be readily removed from the bed-plate in case it should become cracked or injured by the heat to which it is subjected, thus enabling the trough to be replaced with a new one when necessary. At the ends of the bed-plate are vertical standards I, which are provided at their lower ends with horizontal feet or brackets K, secured to the bed-plate by means of bolts.

L represents a pair of brackets, which are bolted to the upper ends of the standards I, extend horizontally from the inner sides thereof, and are provided with vertical ears or plates M, in which is journaled a longitudinal shaft, N. Near the ends of this shaft are rigidly secured miter-pinions O, and one end of the shaft has a crank-wheel, P, by means of which the shaft may be rotated.

R represents a pair of vertical shafts, which have their upper ends journaled in the brackets L, and are provided with rigid miter-pinions S, which mesh with the pinions O. The depending portions of said shafts R are screw-threaded.

T represents a pair of blocks, which have vertical transverse grooves or recesses that engage the inner sides or standards, I, and thereby adapt said blocks to be moved vertically and guided on the standards. The front sides of said blocks P are connected by a bar, U, and the rear sides thereof are connected by a bar, V. In the said bar V, equidistant apart and at suitable intervals, are transverse openings W, in which are seated pivoted bearings X. The front bar, U, has a series of vertical slots or openings, Y, which are arranged opposite the openings W.

Z represents a series of transverse shafts, which are journaled in the pivoted bearings X and in the slot Y, and have their ends projecting beyond the outer sides of the bars U V. To the rear ends of the said shaft are keyed small sprocket-wheels A′, and the said sprocket-wheels are connected by an endless sprocket-chain, B′, the upper side of which engages the upper side of the sprocket-wheels and the lower side of which is normally suspended below and out of contact with the lower sides of the sprocket-wheel. One of the end shafts, Z, has a pulley or bearing-wheel, C′, by means of which rotary motion may be imparted to all of the shafts Z through the sprocket-wheels and the endless sprocket-chain, thereby causing all of said shafts to revolve in the same direction and at the same rate, as will be readily understood.

D′ represents a series of friction-rollers, the shafts *d′* of which are journaled on the rear

side of the bars V and bear against the upper side of the sprocket-chain midway between the sprocket-wheels, so as to keep said sprocket-chain at all times in engagement with the sprocket-wheel and prevent it from slipping therefrom. To the outer or front end of each shaft Z is secured a friction-disk, E'. The said friction-disks are made of rubber or other suitable material and are slightly conical in shape, as shown, and are arranged in line with each other and over the melting-trough.

F' represents a pair of standards, which are bolted on the front side of the bed-plate at suitable distances from the ends thereof.

G' represents a guiding-track, comprising a laterally-inclined plane, H', having a right-angular flange, I', at its lower edge, and provided at its lower corner with a longitudinal concavo-convex groove, K', having a series of openings, L'. At the upper outer side of said track are lever-arms M', which are fulcrumed to the standards F', as at N'. The length of the track is nearly equal to the length of the melting trough or pan, and said track by being pivoted to standards F' is adapted to have its lower corner raised or lowered above the bottom of the melting-pan, so that it may be immersed in the melted solder in said melting pan or trough to any desired depth. This result is accomplished by means of screws O', which have their lower ends pivoted to ears P', formed on or secured to the bed-plate, the said screws passing freely through openings in the arms M' and having adjusting-nuts R' on their upper end to engage the arms M', and thereby support the track at any desired inclination.

The operation of my invention is as follows: A fire is started in the furnace and a suitable quantity of solder is placed in the melting trough or pan and melted. The frame, comprising the block P and bars U V, which carries the shafts Z is raised or lowered to the required height by turning shaft N and thereby imparting rotary motion to the elevating-screws R; and the track or guide G' for the cans is lowered to the required depth in the melted solder, so that the same passes through the openings L' and just fills the longitudinal groove K'. Rotary motion is then imparted to the series of shafts Z, in the manner before described, thus causing the friction-disks to rotate in the same direction and at the same rate of speed. The cans to be soldered are placed on the guide or track G', after having had the necessary acid applied thereto, said cans being fed to the track or guide continuously, one after another. As soon as each can is placed on the track or guide, it is engaged by one of the rotating friction-disks and is caused to revolve and thereby move longitudinally on the track or guide, the lower side of the can, where the solder is to be applied, being thus caused to run in the groove K', which, as before stated, is kept filled with melted solder. As soon as the can passes one friction-disk, it is operated upon by another, and is thus kept in continuous rotation and is rolled throughout the entire length of the track or guide, and thereby the solder is thoroughly applied to the can, as will be readily understood.

By reason of the pivoted bearings and the vertical slots in which the shafts Z are journaled, each of the said shafts has its front end vertically movable independently of the other shafts, thus enabling the friction-disks to rise and permit the can to pass under them in their course on the guide-track.

As the solder in the pan or trough is consumed, the operator turns the nuts R' upward on the screws O', so as to lower the track or guide farther into the trough or pan in order to keep melted solder at the required level in the groove or gutter.

Inasmuch as the frame which carries the shafts Z is vertically movable, as before described, the machine is adapted to solder cans of varying sizes, as will be very readily understood.

Having thus described my invention, I claim—

1. The combination, in a can-soldering machine, of the bed-plate having a soldering trough or can, the vertically-movable frame, the revoluble shafts Z, journaled in said frame, means to rotate said shafts, and the friction-disks E', secured to said shafts, for the purpose set forth, substantially as described.

2. The combination, in a can-soldering machine, of the frame, the shafts Z, journaled therein, and having their outer ends independently movable in a vertical direction and provided with the friction-disks E', and means, substantially as set forth, to rotate said shafts, for the purpose specified.

3. In a can-soldering machine, the combination of the furnace having the opening in its upper side, the bed-plate fitting on the top of the furnace, having the longitudinal central opening registering with the opening in the furnace and provided with the brackets C, bolted to the upper side of the furnace, and the solder pan or trough fitting in and having supporting-flanges engaging countersunk recesses in the sides of the opening in the bed-plate, substantially as described.

4. The combination, in a can-soldering machine, of the solder pan or trough, the laterally-inclined guide-track having the flange I', and provided at its lower side with the groove or gutter K' and openings L', and devices to vertically adjust said guide-track, substantially as described.

5. The combination of the solder trough or pan, the pivoted laterally-inclined guide-track having the flange I' at its lower side, and the groove K' and openings L', for the purpose set forth, and provided at its upper side with the arms M', and the adjusting-screws engaging said arms and adapted to raise or lower the guide-track in the trough or can, substantially as described.

6. The combination of the bed-plate having

the solder trough or pan and vertical standards I, with the vertically-movable frame, the revoluble shafts journaled in said frame and having the friction-disks, for the purpose set forth, the elevating-screws R, engaging the frame and journaled in bearings on standards I, and the shaft N, geared to said screws, substantially as described.

7. The combination of the bar U, having the vertical slots Y, the bar V, the bearings X, pivoted to said bar, the shafts Z, journaled in said bearings and extending through the slots Y, the friction-disks at the outer end of said shafts, the sprocket-wheels at the inner ends thereof, and the endless chain connecting said sprocket-wheels, substantially as described.

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

JAMES SAUNDERS JOHNSTONE.

Witnesses:
H. W. FRIES,
D. W. WAKEFIELD.