P. J. WINTGENS.

COOLING DEVICE FOR TIN SHEET MILLS.

APPLICATION FILED JUNE 22, 1908.

912,764.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

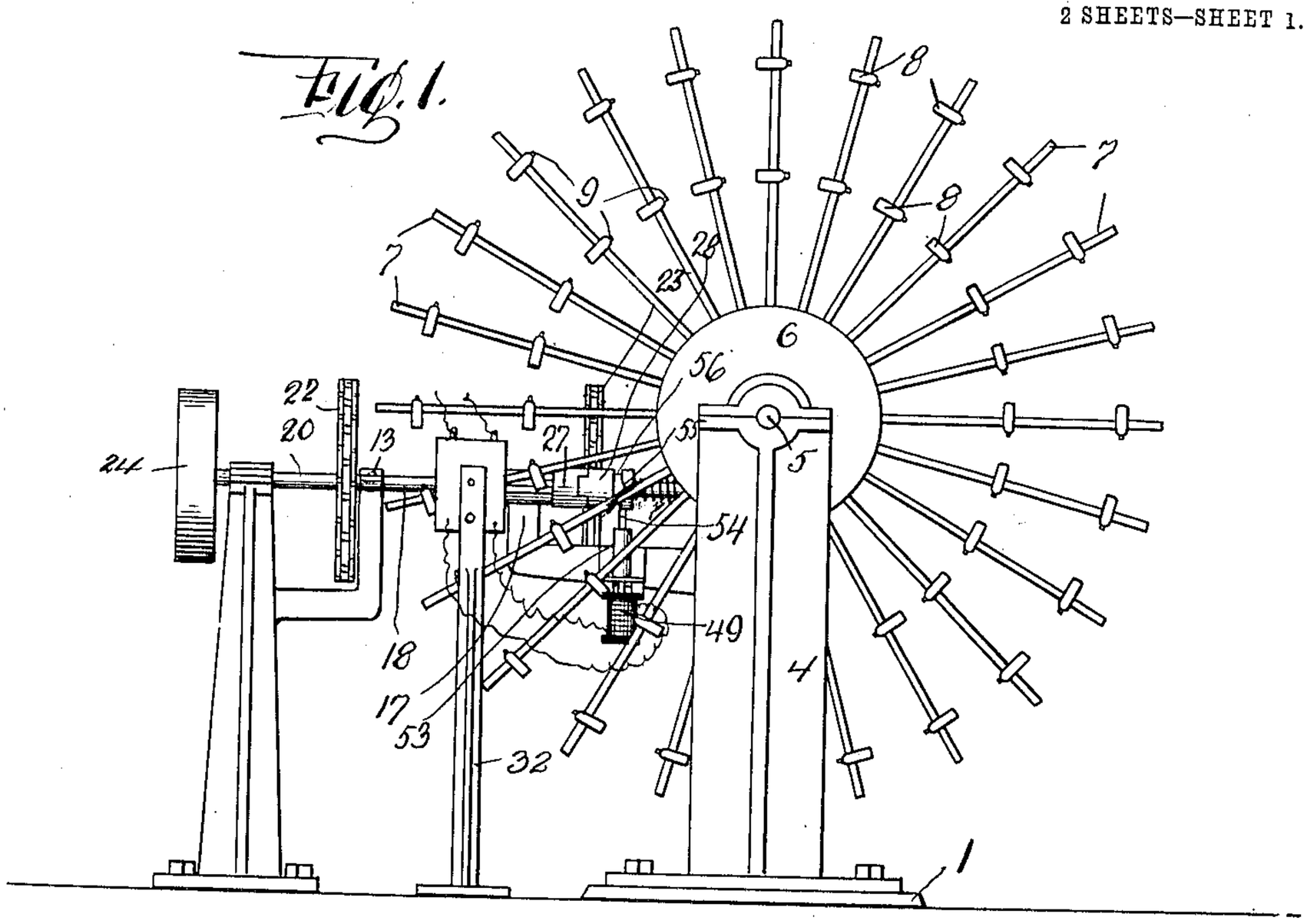
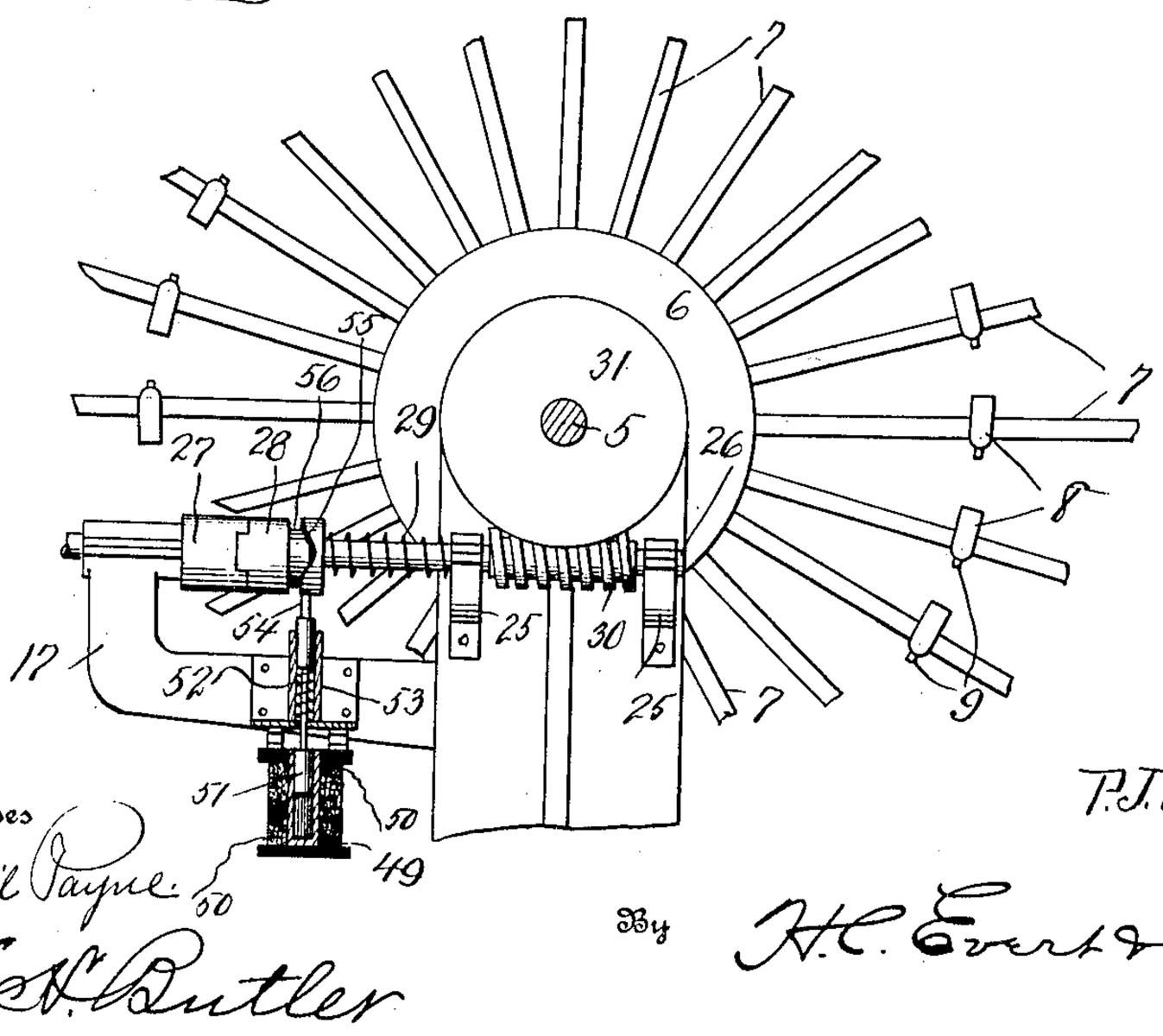


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

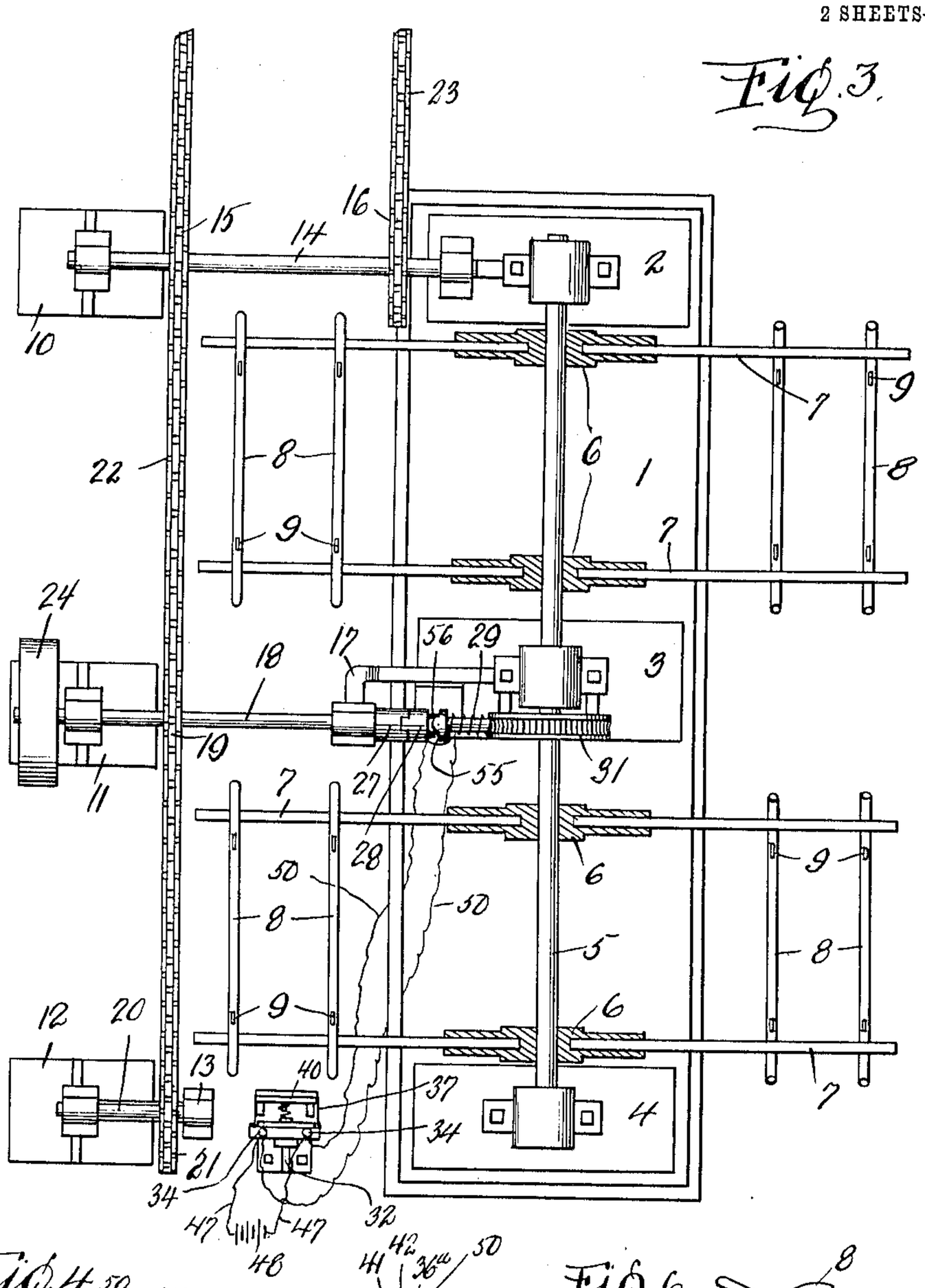


Fig. 4.

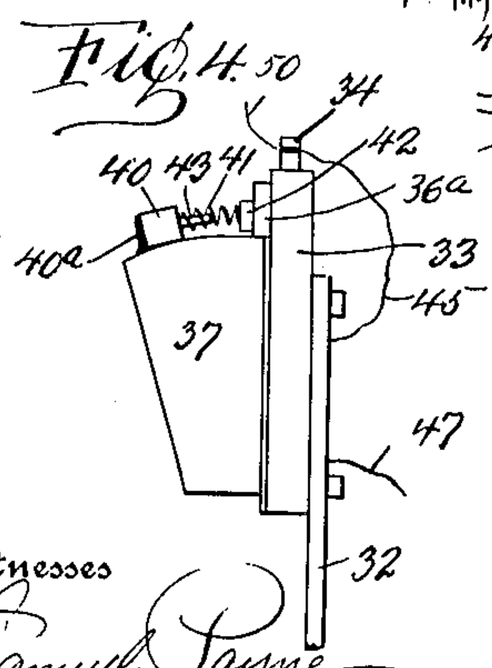


Fig. 5.

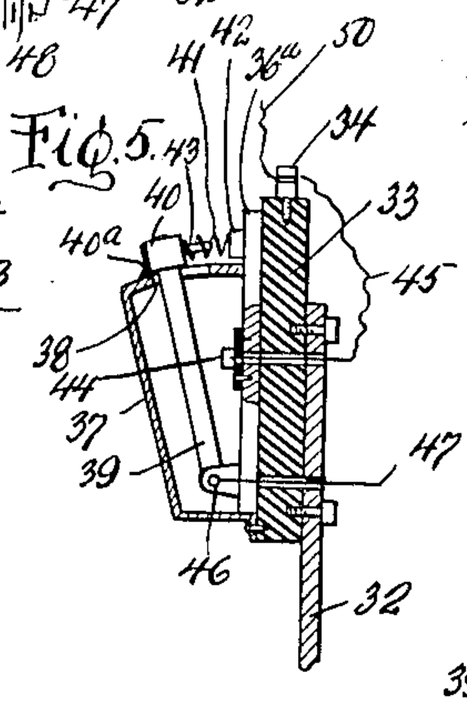


Fig. 6

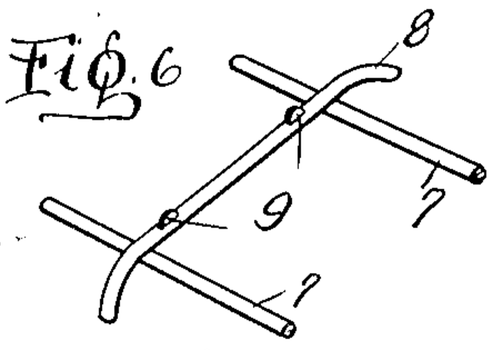
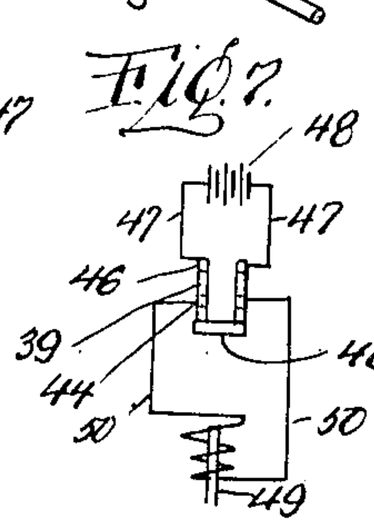


Fig. 7.



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UNITED STATES PATENT OFFICE

PETER J. WINTGENS, OF FORD CITY, PENNSYLVANIA.

COOLING DEVICE FOR TIN-SHEET MILLS.

No. 912,764. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed June 22, 1908. Serial No. 439,831.

To all whom it may concern:

Be it known that I, PETER J. WINTGENS, a citizen of the United States of America, residing at Ford City, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Cooling Devices for Tin-Sheet Mills, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a cooling device for tin plate mills, and the primary object of my invention is to provide a device for automatically handling and airing sheets of tin after having been galvanized and operated upon by the ordinary buckler of a tin plate mill.

A further object of this invention is to provide a device that will be automatically operated to sufficiently cool sheets of tin and permit of the same being manually handled.

To this end, I have devised a device comprising revoluble circular racks designed to receive sheets of tin from an endless conveyer. The racks are intermittently moved in unison and by the time the racks make a half rotation, the tin sheets placed thereon are sufficiently cool to permit of the same being removed.

The detail construction entering into my invention will be presently described and then specifically pointed out in the appended claims.

In the drawings:—Figure 1 is an end view of my device, Fig. 2 is a cross sectional view of the device partly broken away and partly in section, Fig. 3 is a plan of the device partly broken away and partly in section, Fig. 4 is an elevation of an electrical switch forming part of my device, Fig. 5 is a vertical section of the same, and Fig. 6 is a perspective view of a portion of one of the racks, and Fig. 7 is a diagrammatic view of the electrical connections of my device.

To put my invention into practice, I provide a base plate 1 with vertical bearings 2, 3 and 4, said bearings being equally spaced apart upon the base plate 1. These bearings support a revoluble shaft 5 arranged longitudinally of the base plate 1. Upon the shaft 5 between said bearings are mounted two circular racks, each rack comprising hubs 6, provided with a plurality of radiating arms 7, similar to the spokes of a wheel. The arms 7 of one hub are connected to the arms 7 of the other hub of each rack by transverse bars 8 which are provided with revoluble rollers 9, said rollers constituting an anti-friction bearing for sheets of tin, as will presently appear.

Contiguous to the base 1 are arranged vertical bearings 10, 11, 12 and 13, said bearings being arranged parallel to the base 1 and in transverse alinement with the bearings 2 to 4 inclusive. In the bearings 2 and 10 is journaled a shaft 14 provided with sprocket wheels 15 and 16. The bearing 3 is provided with a bracket 17 and journaled in said bracket and the bearing 11 is a shaft 18 provided with a sprocket wheel 19. In the bearings 12 and 13 is journaled a shaft 20 provided with a sprocket wheel 21. Over the sprocket wheels 15, 19 and 21 travels an endless sprocket chain 22, and over the sprocket wheel 16 travels an endless sprocket chain 23, said chain being adapted to convey sheets of tin to the circular racks mounted upon the shaft 5. The chains 22 and 23 can be driven by a belt or motor in connection with the shaft 18, said shaft having a pulley wheel 24 for a belt.

The bearing 3 is provided with brackets 25 for a shaft 26, said shaft having one end confronting the end of the shaft 18. These confronting ends are provided with clutch members 27 and 28, the former being fixed upon the shaft 18, and the latter slidably mounted upon the shaft 26, and normally held in engagement with the clutch 27 by a coil spring 29 encircling the shaft 26. The shaft 26 is provided with a worm 30 adapted to mesh with a worm gear 31 mounted upon the shaft 5.

At the forward end of the machine is arranged a standard or upright 32 in close proximity to the bearing 13, and at the forward side of the circular rack carried by the shaft 5. This upright or standard is provided with a plate 33 of a suitable insulating material, and secured to said plate are binding posts 34.

Secured to the plate 33 is a plate 36^a having a slotted casing 37, and pivotally connected to the plate 36^a within the casing 37 and extending through the slots 38 thereof are arms 39, said arms having their outer ends provided with a cross head 40. This cross head is provided with an insulated plate 40^a, the object of which is to prevent the current of electricity from passing into a sheet of tin adapted to contact therewith. Interposed between the cross head 40 and

the plate 36ª is a coil spring 41, said spring being attached to a block 42, carried by the plate 36ª, and encircling a pin 43 carried centrally of the cross head 40. Within the casing 37 are arranged insulated contacts 44 adapted to be engaged by the arms 39, said contacts being connected to the binding posts 34 by wires 45. Connecting with the pivot lugs 46 of the arms 39 are wires 47, said wires leading to a suitable source of electrical energy, as a battery 48. The arms 39 and the cross head 40 are similar to a knife switch and is adapted to bridge the contacts 44, when the cross head 40 is struck by a sheet of tin, as will be presently described.

The brackets 17 support a solenoid 49 directly beneath the clutch member 28, this solenoid being connected to the binding posts 34 by wires 50. The core 51 of the solenoid is normally held in an elevated position by a coil spring 52 arranged in a casing 53, carried by the bracket 17. The upper end of the core terminates in a pin 54 adapted to engage the cam side 55 of the annular groove 56 formed in the clutch member 28.

Operation: After sheets of tin have been galvanized and buckled they are conveyed to my cooling device upon the sprocket chains 22 and 23. These sprocket chains are adapted to contact two sheets of tin upon the circular racks of my device, said racks being held stationary by the clutch members 27 and 28 being disengaged, consequently a rotary movement cannot be imparted to the shaft 5 from the shaft 18. The anti-friction rollers 9 are adapted to take the place of the sprocket chain 23 after the sheets of tin have passed off of said sprocket chain, the sheets of tin being of a sufficient length to operate the space between the circular racks. Immediately upon the forwardmost sheet of tin passing to the circular rack at the forward end of my device, said sheet of tin is adapted to impinge my electrical clutch actuating mechanism. As the sheet of tin engages the plate of insulation 40ª, carried by the cross head 40, the spring 41 is placed under tension and the arms 39 moved to engage the insulated contacts 44. An electrical circuit is then completed through the battery 48 and the solenoid 49, energizing said solenoid and lowering the pin 54 to the position shown in Fig. 2 of the drawings. When the pin 54 is lowered and engages the periphery of the clutch member 28, the spring 29 encircling the shaft 26 retains the clutch member 28 in engagement with the clutch member 27, and a rotary movement will be imparted to the shaft 5. Immediately upon a rotary movement being imparted to the shaft 5, the tin plate which engages the insulated plate 40ª is moved out of engagement with said plate, due to the fact that it is carried by the rack. When the cross head 40 is released by the tin plate, the spring 41 returns said cross head to its normal position, breaking the electrical circuit and allowing the spring 52 within the casing 53 to elevate the pin 54, or to frictionally hold the same in engagement with the clutch 28. By this time the shaft 26 has made a quarter of a revolution and the pin 54 recedes into the groove 56, engaging the cam surface 55 of said groove. A further movement of the shaft 26 causes the clutch member 28 to move out of engagement with the clutch member 27 and place the spring 29 under tension. This is accomplished by the pin 54 engaging the cam surface 55 of the clutch member 28 and forcing the same rearward. Since the clutch member 28 has been moved out of engagement with the clutch member 27, the cessation in the rotation of the shaft 5 is accomplished, the racks thereof remaining stationary while tin plates are being placed thereon and removed. When another tin plate engages the plate 40ª, moves the arms 39 and completes the electrical circuit through the solenoid 49, the pin 54 will again be withdrawn, and the spring 29 place the clutch member 28 in engagement with the clutch member 27, and allow the circular racks of the device to move, to receive other plates.

It will be observed that my clutch and the electrically actuating and controlling mechanism thereof will cause an intermittent movement of the circular racks. The sheets of tin entering one side of the racks are slowly conveyed to the opposite sides thereof and manually removed, the lapse of time in transferring the sheets from one side of the rack to the opposite side being sufficient to allow the sheets to cool.

My cooling device is constructed to handle a large number of sheets or plates of tin, and I reserve the right to construct the device with a greater number of circular racks than shown.

While in the drawings forming a part of this application there is illustrated a preferable form of construction embodying the invention, it is to be understood that the elements therein may be varied or changed as to the shape, proportion and exact manner of assemblage without departing from the spirit of the invention.

Having now described my invention what I claim as new, is:—

1. A cooling device for tin sheets embodying bearings, shafts journaled in said bearings with some of said shafts at right angles to the other of said shafts, circular racks mounted upon one of said shafts, each rack comprising hubs, radiating arms, bars connecting the arms of each rack, rollers carried by said bars; a spur wheel mounted upon said shaft, a worm gear mounted upon one

of the other of said shafts for imparting a rotary movement to said spur wheel, sprocket chains carried by some of said shafts for conveying tin sheets between the arms of said racks, a clutch for controlling the operation of said racks, said clutch comprising two clutch members, means for normally holding said members in engagement with each other, means actuated by a positioned sheet of tin for moving said members out of engagement with one another, said means including a solenoid, a suitable source of electrical energy and a switch released by said positioned plate for breaking a circuit through said solenoid.

2. A cooling device for tin sheets embodying bearings, shafts journaled in said bearings with some of said shafts at right angles to the other of said shafts, circular racks mounted upon one of said shafts, each rack comprising hubs, radiating arms, bars connecting the arms of each rack, rollers carried by said bars; a spur wheel mounted upon said shaft, a worm gear mounted upon one of the other of said shafts for imparting a rotary movement to said spur wheel, sprocket chains carried by some of said shafts for conveying tin sheets between the arms of said racks, a clutch for controlling the operation of said racks, said clutch comprising two clutch members, means for normally holding said members in engagement with each other, and means actuated by a positioned sheet of tin for moving said members out of engagement with one another.

3. A device of the type described comprising bearings, shafts journaled in said bearings, circular racks mounted upon one of said shafts, sprocket chains adapted to travel over the other of said shafts for conveying sheet metal to said racks, a clutch for controlling the operation of said racks, said clutch comprising two normally held together clutch members, and means adapted to be actuated by the positioned sheet of metal for moving said clutch members out of engagement with one another and causing a cessation in the movement of said racks, said means including a solenoid, a suitable source of electrical energy, and a switch for controlling the circuit through said solenoid.

4. A machine of the type described comprising revoluble shafts, circular racks carried by one of said shafts, conveyers carried by the other of said shafts for transferring sheet metal to said racks, and an automatically operated clutch mechanism actuated by the sheets when fed to the racks for controlling the operation of said racks.

5. A cooling device for coated sheets comprising revoluble racks for carrying the sheets, means for conveying the sheets to the racks, an automatically operated clutch mechanism coated by the sheets when fed to the rack for controlling the operation of said racks.

6. A device of the type described comprising intermittently moving circular sheet receving racks, an automatically actuated clutch mechanism thrown into operation by the sheets when conveyed to the racks for controlling the movement of said racks, and means for conveying sheet metal to said racks.

7. A device of the type described comprising intermittently rotatable sheet receiving racks, and an electrically operated clutch mechanism for controlling the movement of said racks.

8. A device of the type described comprising a rotatable sheet supporting means to which the sheets are conveyed, means for intermittently rotating said supporting means, and means actuated by the sheets when conveyed to the supporting means for forming an electrical circuit whereby said means for intermittently rotating said supporting means is actuated.

In testimony whereof I affix my signature in the presence of two witnesses.

PETER J. WINTGENS.

Witnesses:
MAX SROLOVITZ,
K. H. BUTLER.