

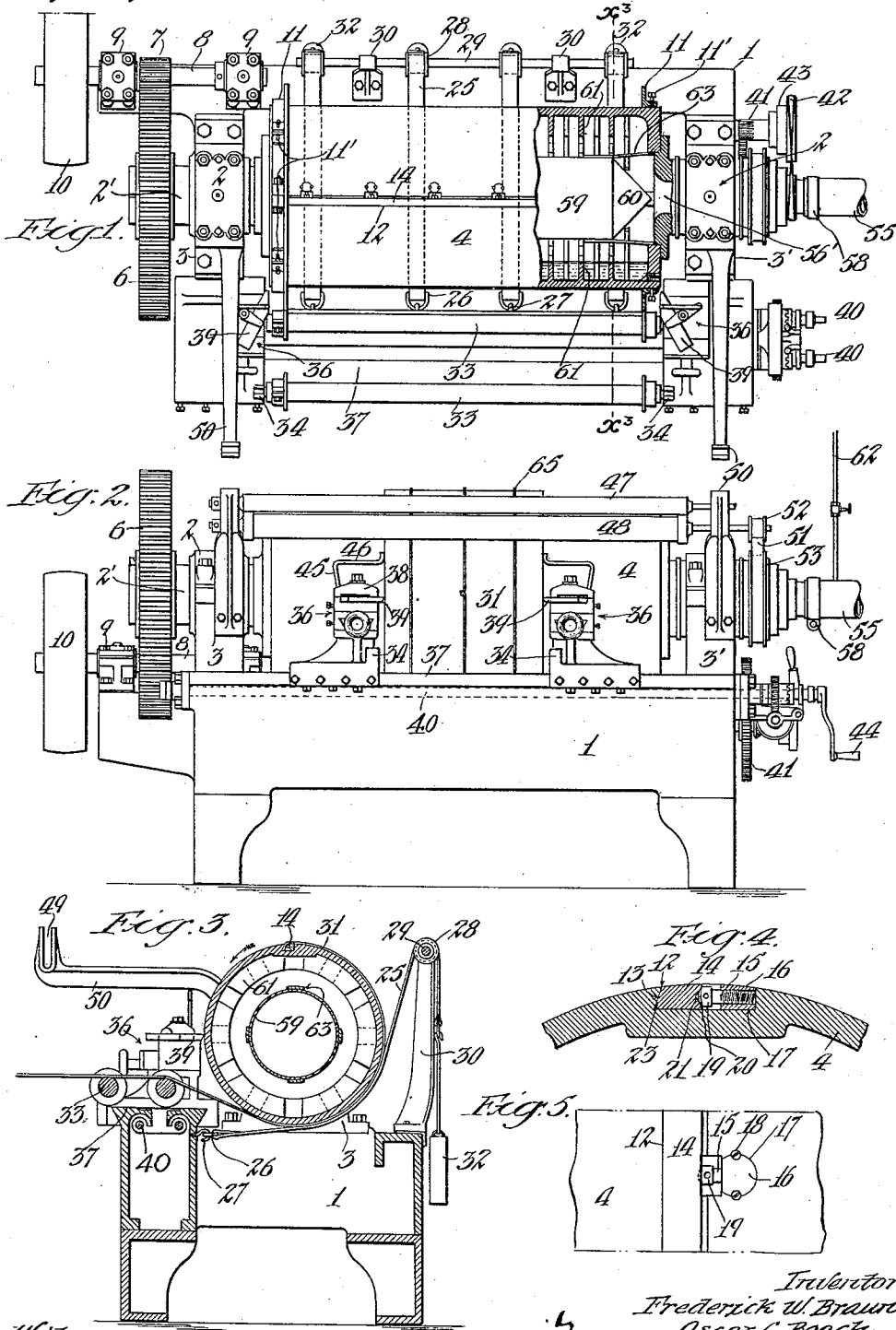
F. W. BRAUN & O. C. BEACH.

ZINC SHAVING MACHINE.

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1,064,284.

Patented June 10, 1913.



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UNITED STATES PATENT OFFICE.

FREDERICK W. BRAUN AND OSCAR C. BEACH, OF LOS ANGELES, CALIFORNIA; SAID BEACH ASSIGNOR TO SAID BRAUN.

ZINC-SHAVING MACHINE.

1,064,284.

Specification of Letters Patent.

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Application filed July 2, 1909. Serial No. 505,757.

To all whom it may concern:

Be it known that we, FREDERICK W. BRAUN and OSCAR C. BEACH, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Zinc-Shaving Machine, of which the following is a specification.

This invention relates to a machine for cutting zinc shavings for use in chemical and metallurgical operations.

The object of the invention is to conduct the heat generated by the cutting operation, away from the zinc sheet and avoid accumulating in the metal to be cut a temperature that is excessive and to secure a finished product that is sound, unoxidized and unchanged metallic, filiform zinc. We accomplish this by novel and efficient means for causing rapid radiation and elimination of the generated heat.

The accompanying drawings illustrate the invention, and referring thereto:—

Figure 1 is a plan of the machine, partly in section. Fig. 2 is a front elevation thereof. Fig. 3 is a transverse section on line x^3-x^3 in Fig. 2. Fig. 4 is a fragmentary section of a portion of the rotary drum of the machine, and Fig. 5 is a plan thereof, showing the manner of attachment of the sheet metal to the drum.

1 designates the frame of the machine on which is mounted by bearings 2, supports 3, 3' of a rotary drum 4. One of the supports 3 is provided with a gear 6 engaged by a pinion 7 on a driving shaft 8 journaled in bearings 9 on the frame and carrying a driving pulley 10, whereby the drum 4 may be set in rotation.

The drum 4 is adapted to receive and support zinc sheets, and is provided at each end with a removable annular flange 11 which may be fastened to the drum by bolts or screws 11', the sheet being guided between these flanges, in winding it on the drum. A longitudinal groove 12 in the periphery of said drum is provided at one edge with a dove-tail or undercut face 13, and a clamp plate or bar 14 extending in said groove is adapted to be held toward said plate by pressure screws 15, each pressure screw working in a screw threaded block 16 seated in a recess 17 in the periphery of the drum, and fastened therein by screws 18. At its outer end the screw 15 has a capstan head

19 with a convex end face 20 engaging in a conical depression or recess 21 in the rear edge of the clamp bar 14 to hold the clamp bar in position. The sheet zinc 31 to be cut is placed with one edge between the clamp bar 14 and the undercut face 13 and the bar then clamped tight to hold the plate in position. Bar 14 is cut away or chamfered as at 23 at its front lower corner to provide for the irregularities or roughness of the zinc sheet at its end. When the zinc sheet has been fastened, as described, it extends under and around the drum, as indicated in Fig. 3, and is held temporarily in position by leading or guiding straps 25, each strap 25 being secured by an eye 26 at one end thereof to a hook 27 on the front bar of the machine frame, said strap passing rearwardly under the drum and up over a pulley 28 carried by a shaft or bar 29 mounted on standards 30 on the frame 1, the further end of this strap being provided with a counterweight 32 to hold the strap under tension and cause the same to press against drum 4, the strap being bent partly around the periphery of the drum, as shown in Fig. 3, so as to hold the zinc sheet against the drum.

Means are provided for feeding zinc sheets into position on the drum, said means consisting of rollers 33 extending parallel to the axis of the drum and mounted in bearings 34 on the frame, said rollers forming a support for the zinc sheet 31 which is placed thereon and pushed forward until its forward edge comes in contact with the drum, as hereinafter described. Cutter supports 36, preferably in duplicate, one being provided at each end of the machine, are mounted to slide on a guide rail or way 37 parallel to the axis of the rotary drum, each cutter support being provided with clamp means 38 for clamping a cutting tool 39 which is formed as a side cutter, the cutting edge or blade of the tool extending in a plane perpendicular to the axis of the rotary drum. The two cutter supports 36 are operated simultaneously in opposite directions by two screws 40 operated by gearing 41, belting 42 and step pulleys 43 from the shaft 2' of the rotary drum so as to drive the feed screw 40 in any required speed. These driving connections, together with the manual controlling means 44 therefor, are of any usual or suitable construction common in the art, forming no part of the present invention.

Each cutter support 36 may be provided with an arm 45 extending upwardly therefrom and provided with a rest or guide 46 for supporting and guiding the shaving in its passage from the cutter. A further guiding and feeding means for the shavings may be provided consisting of horizontal rollers 47, 48 rotatably mounted in a slot 49 in the respective brackets 50 at opposite ends of the machine, the upper roller 47 resting on the lower roller by gravity and the lower roller being driven by belt 51 and pulleys 52, 53 from the shaft 2' of the rotary drum.

Heat elimination is effected by radiation, the drum and its supports 3, 3' being hollow for the passage of air or fluid there-through. A pipe 55 for supplying air under the requisite pressure is connected to the support 3' by a coupling 58 so as to communicate with the bore 56' thereof. A shell or interior drum 59, which may be of light sheet metal, is supported in and coaxially with the rotary drum 4 by means of arms or brackets 63 extending from the end plates of the drum 4, the forward end of this shell being conical, as shown at 60, the cone being opposite the inlet opening formed by the bore 56' so that the incoming air will be deflected toward the peripheral wall of the rotary drum and perfect circulation thereof throughout the entire interior of the drum is attained. On said peripheral wall are provided heat elimination means comprising a series or plurality of heat radiating flanges, fins, pins, or projections 61 which extend radially inward from said wall and are preferably staggered or off-set so that the air in passing therebetween has to follow a tortuous course around the fins, and heat from the fins and drum is radiated to the interior where it is carried out by the passing air. A pipe 62 is provided for supplying fluid to the drum, said pipe communicating for example with the air supply pipe 55 so that the fluid passes in with the air to increase the heat radiation.

The operation is as follows:—The first zinc sheet to be applied to the roll is slipped between the straps 25 and rotary drum 4 and its end is secured by the clamping means 14, 13, as above described. The drum 4 is set in rotation in direction of the arrow, in Fig. 3, by the driving means therefor and draws the sheet around it in the manner shown in Fig. 3. When the sheet has reached a position wherein the end of the sheet approaches the retaining straps 25 another sheet is fed on over the rollers 33 so that its forward end enters between the rotary drum and the rear end of the first sheet, a considerable overlap being provided so that the sheets will be held in proper position after they pass off of the retaining straps 25. The further movement of the rotary drum 4 draws the second sheet forward

and this operation is kept up until enough sheets have been wound onto the drum to provide the required thickness for cutting. In the above described operation the end flanges 11 serve to guide the sheets into place. When a sufficient thickness of zinc sheets has thus been wound onto the drum the roll of sheets is fastened on the drum by retaining bands or wires 65, see Fig. 2, which may be twisted or otherwise fastened to bind them tightly onto the roll of sheets. The guide flanges 11 are then removed and the cutters 39 are placed in position against the ends of the roll of zinc sheets, and the clutch or controlling means 44 is then operated to bring the cutter feed into operation, causing the cutters to gradually move inwardly toward the midwidth of the machine. In this movement of the cutters continuous shavings are cut from the sheets of zinc and said shavings may be led over the rests 46 and between the feed rollers 47, 48, whereby they are delivered from the machine to any suitable receptacle, not shown. As the cutters approach closely to the retaining wires or bands 65 the latter may be removed so as not to interfere with the passage of the cutters.

Radiation of the heat from the zinc sheets which is generated by the action of the cutters is obtained by the series of projections 61 on the interior of the rotary drum, whereby the heat is radiated into the body of air passing through the drum. The small amount of water is used simply to moisten the fins or pins and increase the radiation.

In the use of the term "radiation" herein, both in the specification and claims, we mean the properties of radiation considered physically in the sense that radiation is the transformation of the molecular energy of a hot body,—that is, any body above absolute zero, (-273° C.)—, into the wave motion of the surrounding ether and the propagation of these ether waves through space.

What we claim is:

1. In a zinc shaving machine, a drum for supporting the sheets of zinc, cutting means, means for radiating the heat generated from cutting to the interior of the drum, and means for maintaining an air current through the drum to increase the heat radiation.

2. In a zinc shaving machine, a drum for supporting the sheets of zinc, cutting means, means for radiating the heat generated from cutting to the interior of the drum, means for maintaining an air current through the drum to increase the heat radiation, and means for deflecting the inflowing air toward the wall of the drum and around the projections to secure perfect circulation and heat elimination throughout the entire interior of the drum.

3. In a zinc shaving machine, a zinc supporting drum, cutting means, heat radiating

means on the inner wall of the drum, and means for moistening the heat radiating means to increase the heat elimination.

4. In a zinc shaving machine, a zinc supporting drum, cutting means, heat radiating means on the interior of the drum, and means for admitting air and water to promote the radiation of heat from the said heat radiating means.

5. In a zinc shaving machine comprising a rotary drum provided with means for binding sheet metal thereon, flexible retaining means extending under the drum to serve as a guide for the sheet metal, removable guiding means at each end of the drum, and means for removably supporting sheet metal in position for feeding to the drum.

6. In a machine for cutting shavings from sheet metal, a frame, a drum rotatably mounted thereon and provided with means for fastening sheet metal thereon, a removable flange at each end, and flexible retaining means extending under and partly around the drum to engage and guide the sheet metal on the drum.

7. In a machine for cutting shavings from sheet metal, a frame, a drum rotatably mounted thereon and provided with means for fastening sheet metal thereon, a removable flange at each end, flexible retaining means extending under and partly around the drum to engage and guide the sheet metal on the drum, and rollers rotatably mounted at one side of the drum to support

said metal in position for feeding to the drum and onto the flexible retaining means.

8. In a machine for shaving sheet metal, a drum, means for binding sheet metal thereon to form a roll, a cutter for engaging with the end of the roll to cut the said shavings therefrom, an upwardly extending arm on the cutter means having a horizontal rest, means for supporting said cutter and for moving the same longitudinally of the roll of sheet metal, rollers adapted to receive the metal shavings between them and to deliver the same, and means for driving said rollers to feed the shavings therebetween.

9. In a machine for shaving sheet metal, a rotary drum provided with means for fastening said metal thereto, means for supporting the drum, means for rotating the drum, cutting means for shaving the sheet metal on the drum, said drum being hollow and formed with a plurality of inwardly extending projections to radiate the heat therefrom, and means for conveying fluid through the interior of the drum to carry away said heat.

In testimony whereof, we have hereunto set our hands at Los Angeles, California, this 22nd day of June, 1909.

FREDERICK W. BRAUN.

OSCAR C. BEACH.

In presence of—

J. A. HANLEY,

M. B. PATTERSON.