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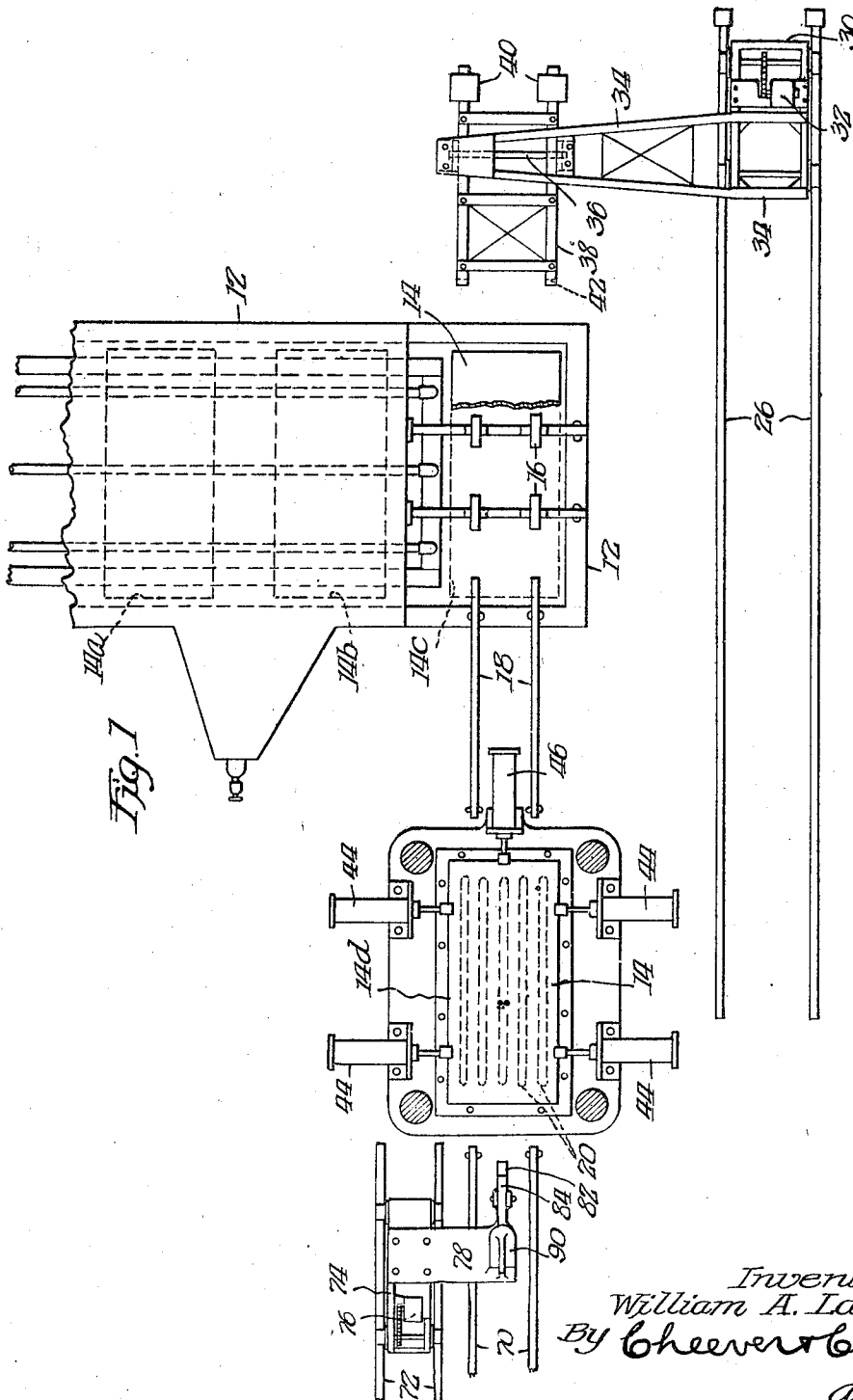
W. A. LACKE

1,451,879

MECHANISM FOR STAMPING LARGE HOT METAL SHEETS

Filed May 23, 1921

3 Sheets-Sheet 1



Inventor:
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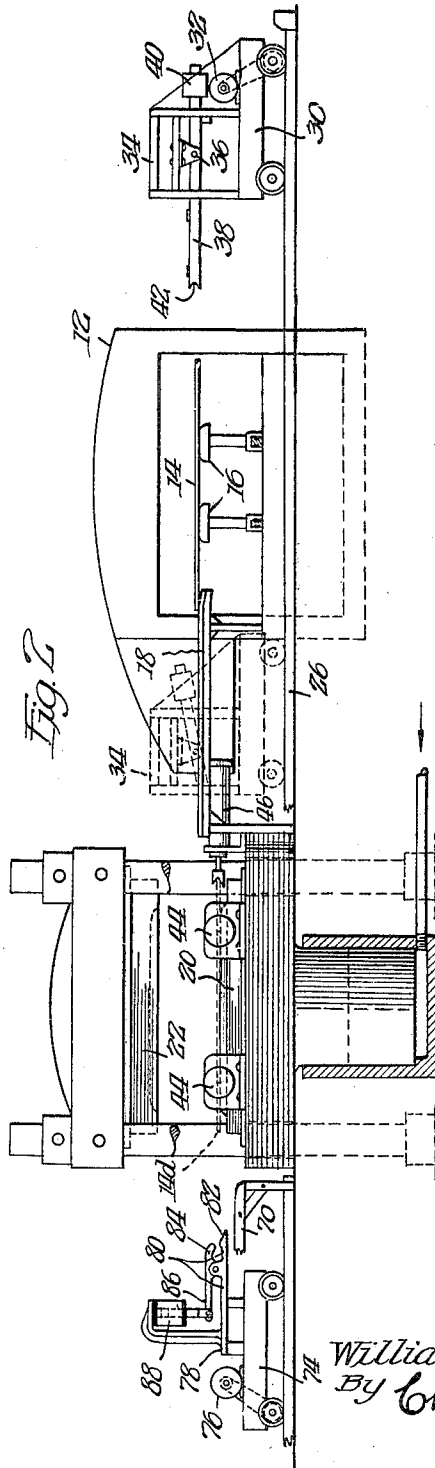
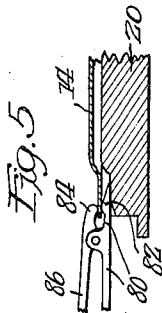
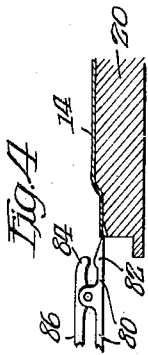
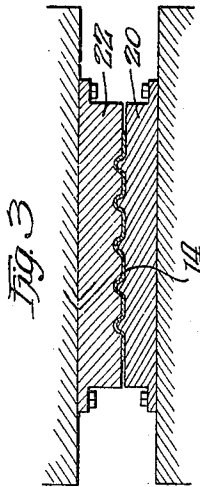
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3 Sheets-Sheet 2



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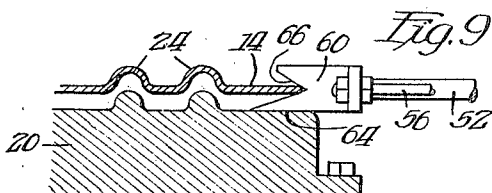
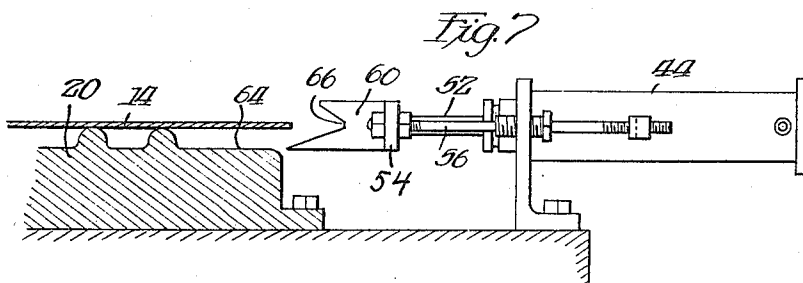
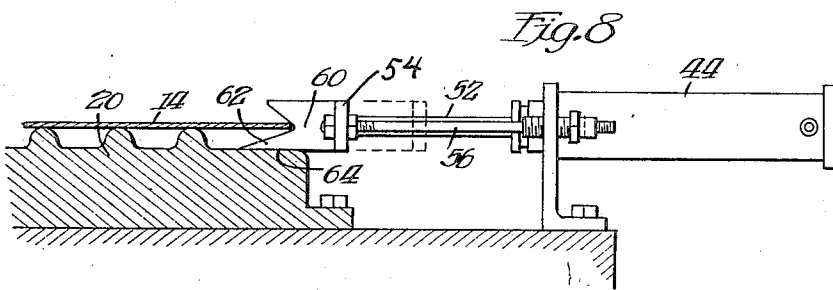
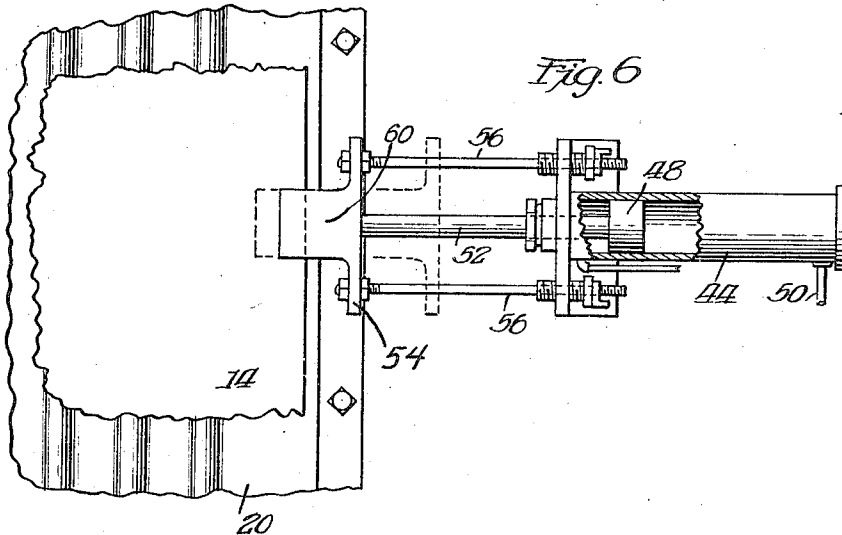
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W. A. LACKE

MECHANISM FOR STAMPING LARGE HOT METAL SHEETS

Filed May 23, 1921

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

WILLIAM A. LACKE, OF CHICAGO, ILLINOIS.

MECHANISM FOR STAMPING LARGE HOT METAL SHEETS.

Application filed May 23, 1921. Serial No. 471,702.

To all whom it may concern:

Be it known that I, WILLIAM A. LACKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Mechanism for Stamping Large Hot Metal Sheets, of which the following is a specification.

This invention relates to mechanism for handling large hot metal sheets, such as are used for corrugated freight car ends from the time they come from the heating furnace until they have passed thru and removed from the corrugated or other stamping machine and to do it in such a way that a large production can be handled one after the other with accuracy and precision as to the placing and removing of the plates and with comfort to the operator.

The invention consists in mechanism for attaining the foregoing objects which is comparatively economically constructed, is very satisfactory in use, and is not readily liable to get out of order. More particularly the invention consists in many features and details of construction more fully set forth in the specification and claims.

Figure 1 of the drawing is a plan view showing a portion of the plate heating furnace claimed in a prior application Serial No. 466,184, filed May 2, 1921; the corrugating press; the mechanism for delivering a sheet from the furnace to the corrugating press; the mechanism for there centering it and finally the mechanism for removing the plate from the press.

Figure 2 is a side elevation of the mechanism of Figure 1.

Figure 3 is a vertical sectional detail view showing the press members in the operation of corrugating a sheet.

Figure 4 is a detail view showing the withdrawing tongs in the position which they assume as they start to grip a sheet.

Figure 5 is a changed position view of Figure 4 showing the tongs gripping the sheet.

Figure 6 is a detail plan view of means for positioning the plate in the corrugating press.

Figure 7 is a side view of the mechanism of Figure 6 in withdrawn position ready to let a plate pass on to the press and starting to position the plate before corrugating or to remove it after corrugating.

Figure 8 is a changed position view of the parts of Figure 7 with the plate in position for corrugating.

Figure 9 shows the major portion of the parts of Figure 8 in the position assumed after a plate has been corrugated after the mechanism shown has lifted the plate off from the die so that it is ready for removal from the press.

Figure 1 shows approximately one half of a furnace 12 thru which sheet metal plates 14 are successively fed thru positions 14^a, 14^b to delivery position 14^c by the mechanism fully set forth in said prior application. On arriving at position 14^c plate 14 rests upon supports 16 and is adapted to be moved to the left as viewed in Figure 1 along tracks 18 to the position 14^d where it is between corrugation forming die members 20—22, Figure 3 ready to have corrugations 24 (Figure 9) impressed thereon.

In order to move the plate 14 from position 14^c to position 14^d, a pair of track rails 26, are provided as shown in Figure 1, extending along the end of the furnace parallel to the rails 18, heretofore referred to. On these rails 26 travels a car 30 driven by any suitable means as for instance electric motor 32. Extending from the side of this car over center line of rails 18 is a girder mechanism 34, provided with a pivoting shaft 36 on which is journaled a plate pushed frame mechanism 38 normally sustained in full line position by a counterweight 40. This frame mechanism 38 is provided on its edge, adjacent to plate 14 to be moved, with a set of notches 42 normally movable horizontally in the plane of plate 14, with the result that when the operator starts motor 32 to move car 30 to the left as viewed in Figures 1 and 2 notches 42 engage the plate 14 to force the plate off from support 16 on to and along rails 18 until the plate reaches almost exact position over die member 20. Because of the fact that the level of this die is below rails 18 the plate 14 drops down off from the ends of the rails 18 and frame member 38 partially follows it, in its fall by tilting it to the dotted line position of Figure 2. As soon as the plate has taken its new position on the die 20 the operator reverses motor 32, thus withdrawing the pushing mechanism carried by the car 30, from the

dotted line to the full line position of Figure 2, where the apparatus is ready to take care of the new plate 14 coming out of the furnace 12.

5 In ordinary practice this pushing mechanism operated by car 30 will put the plate 14 within approximately a half an inch of correct position at 14^a, but this is not accurate enough as it is very desirable and
10 essential to avoid the expense of trimming a large amount of metal off from the plate, for all metal so cut off is substantially waste. For this reason it is necessary to provide means for accurately positioning the plate.
15 This mechanism includes four air cylinders 44 placed on opposite sides of the die 20 and on opposite sides of the line of travel of the plate as it enters the corrugating press and an additional one cylinder 46
20 placed at the entrance end of the press below the level of track 18 so that it is out of the way of plate 14 as it travels into the die press, in the manner described.

Each of these cylinders is provided with a
25 conventional form of piston 48 controlled by the admission and withdrawal thru air control pipe 50 under the control of an operator. Each piston 48 drives a piston rod 52 which extends outward from the end
30 of the cylinder toward the die press and carries a crosshead 54 guided by a rod 56. Crosshead 54 carries on its face which is away from the cylinder a notched block 60 having a relatively long projecting lowered
35 wedge finger 62 adapted to travel on the upper surface of the edge portion 64 of the die 20. The travel of each of these jaws 60 is such that when in the position of Figure 7 they are entirely out of the way of
40 plate 14, which is being moved on to or off from die 20, and that when moved to the position of Figure 8 in the act of placing the plate, the bottom 66 of the notches engage the edges of the plate to accurately position it on the press and that when after
45 the plate has been stamped as shown in Figure 9, they are again moved from the position of Figure 7 to that of Figure 9, with these lower sharp fingers 62 wedged under the plate, the result is that the plate
50 is lifted by the inward movement of these blocks 60 from the position of Figures 3 and 4 to that of Figure 9 where the plate entirely clears the corrugations in the die and
55 can be removed.

When the operator has manipulated cylinders 44 to accurately position the plate over the die 20, he manipulates the press by mechanism not here involved, to lower
60 the die 22 from the position of Figure 2 where it contacts and corrugates the plates as shown in Figure 3, and then withdraws it. The operator then again manipulates the cylinders to lift the plate into the position
65 of Figure 9 in which position the plate is

ready to be withdrawn from the corrugating press. Special mechanism for this purpose is provided as follows:

Track rails 70 are located on the side of the corrugating press opposite to rails 18
70 in such position that the plate 14 removed from position 14^a moves along these rails.

Parallel to the rails 70 other rails 72 are provided on which travels a car 74 suitably
75 propelled by any suitable means as for instance electric motor 76. Overhanging the side of this car 74 is a truss 78 extending over to the center line of the rails 70 at which point is placed a gripping tong mechanism consisting of a fixed jaw 80 having a sharp-
80 ened wedge shaped point 82 adapted to pass from the position of Figure 4 to that of Figure 5 with the result that the plate 14 is lifted up as shown in Figure 5. Piv-
85 oted to this jaw 80 is another jaw 84 manipulatable by a lever 86 adapted to be pulled upward by the operation of an electric solenoid 88 carried in a suitable frame 90 on
90 the truss 78. In the operation of this part of the device of the mechanism just described, the parts normally stand in the position shown in Figure 2. When a finished plate is to be removed from the press the operator manipulates the motor 76 to ad-
95 vance the tong mechanism first to the position of Figure 4, then to that of Figure 5, whereupon he operates the solenoid 88 to grip the plate and hold it. He now manipulates the motor 76, to drive the car 74
100 in the opposite direction, thus withdrawing the plate 14 from position 14^a out of the press and over onto the rail 70 from which it is removed and further handled by any suitable mechanism, as for instance that
105 shown in said prior patent application.

In actual practice the mechanism of this invention has been used in connection with that of said prior application to commercially produce very large savings in connection with the manufacture of plates of
110 this class.

The term "truss," used in the claims, is not used in any limited sense but generically to cover any rigid arm in the position of
115 member 34.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In mechanism of the class described, in combination with a track along which a
120 sheet is to be moved, another track parallel to the first track, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to
125 engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, and a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical
130

plane to follow vertical movement of a sheet being moved.

2. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track on a different level, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, and a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved.

3. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, power means for driving the car and a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved.

4. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track on a different level, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, means for propelling the car in either direction along its track, and a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved.

5. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved, and means tending to hold said plate engaging means at a given normal level.

6. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track on a different level, a car adapted to travel along the second track, a

truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved, and means tending to hold said plate engaging means at a given normal level.

7. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, means for propelling the car in either direction along its track, a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved, and means tending to hold said plate engaging means at a given normal level.

8. In mechanism of the class described, in combination with a track along which a sheet is to be moved, another track parallel to the first track on a different level, a car adapted to travel along the second track, a truss carried by the car extending over across the first track, means supported by the truss adapted to engage a sheet on the first track whereby movement of the car on the second track propels the sheet on the first track, means for propelling the car in either direction along its track, a pivotal mounting for the sheet engaging means, permitting it to tilt in a vertical plane to follow vertical movement of a sheet being moved, and means tending to hold said plate engaging means at a given normal level.

9. In mechanism of the class described, a car, means for propelling it, a truss extending from the car to one side thereof, a frame pivoted on the end of the truss to tilt up and down in a plane parallel to the direction of movement of the car, means at one end of the frame for engaging a sheet, and means normally holding the frame in one predetermined tilted position.

10. In mechanism of the class described, a car, means for propelling it, a truss extending from the car to one side thereof, a frame pivoted on the end of the truss to tilt up and down in a plane parallel to the direction of movement of the car, means at one end of the frame for engaging a sheet, and a counterweight normally holding the frame in one predetermined tilted position.

11. In mechanism of the class described, a car, means for propelling it, an arm extend-

ing from the car, a frame pivoted on the end of the arm to tilt up and down in a plane parallel to the direction of movement of the car, means at one end of the frame for engaging a sheet, and means normally holding the frame in one predetermined, tilted position.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM A. LACKE.

Witnesses:

DWIGHT B. CHEEVER,
VELNA GRIFFITH.