Aug. 25, 1925. 1,550,907

W. A. LACKE

MECHANISM FOR MOVING LARGE HOT METAL SHEETS

Original Filed May 23, 1921

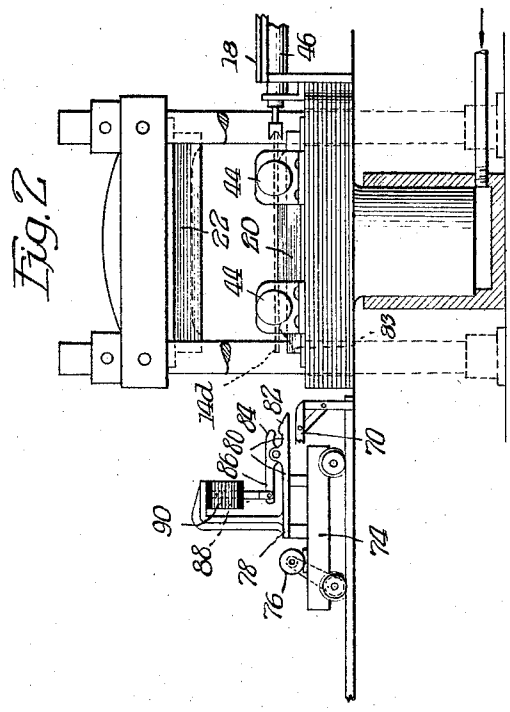

Fig. 2

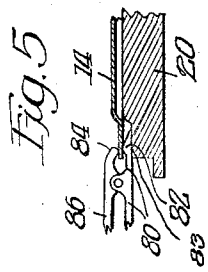

Fig. 5

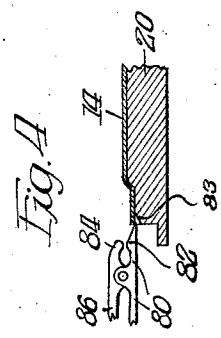

Fig. 4

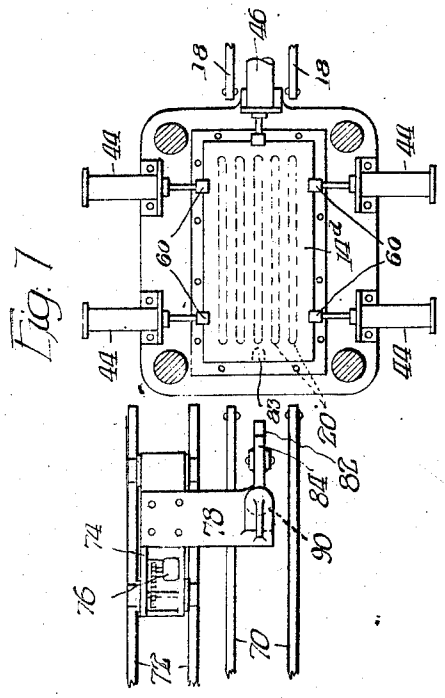

Fig. 1

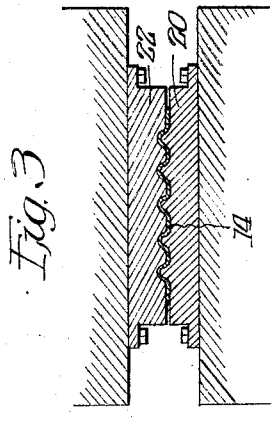

Fig. 3

Inventor:
William A. Lacke,
By Cheever & Cox
Attys.

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UNITED STATES PATENT OFFICE.

WILLIAM A. LACKE, OF CHICAGO, ILLINOIS.

MECHANISM FOR MOVING LARGE HOT METAL SHEETS.

Original application filed May 23, 1921, Serial No. 471,708. Divided and this application filed December 8, 1922. Serial No. 605,735.

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 certain new and useful Improvements in Mechanism for Moving Large Hot Metal Sheets (being a division of my application filed May 23, 1921, Serial No. 471,708, now Patent 1,451,879, dated April 17, 1923), of which the following is a specification.

This invention relates to mechanism for handling large hot metal sheets or plates, such as are used for corrugated freight car ends and requiring removal from the corrugating or other stamping machine; the present mechanism having been designed to accomplish this work in such a way that a large production of plates can be handled with accuracy and precision.

The invention comprises novel mechanism for lifting a plate, usually a stamped and corrugated one, from the lower die of the press; which mechanism is of economical construction, not readily liable to get out of order, and highly satisfactory in use.

More particularly, my invention comprises many features and details of construction more fully described hereinafter; reference being had to the accompanying drawings, in which:

Figure 1 is a plan view showing the corrugating press, and the mechanism for removing the plate from the press.

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

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

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

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

In Figs. 1 and 2, of the accompanying drawings I have shown a stamping press having a lower die 20 adapted to receive a plate, indicated in said drawings at 14^a, which plate may be subsequently corrugated by properly manipulating the press to bring said lower die with its superposed plate into contact with the upper die 22. The plate has been positioned on the lower die by plate engaging members 60, and after the pressing operation, which is effected by mechanism not here involved, the dies of the press are separated leaving the corrugated plate on the lower die 20, with its forward edge, that indicated at the left, in the position shown in Fig. 4. After the corrugating operation is complete, the mechanism forming the subject of the present invention is brought into use to remove the plate from said lower die.

The plates are successively introduced to the press from rails 18 and delivered by the latter onto the lower die 20 of the press. Extending in line with these rails 18, and disposed on the opposite side of the press, are rails 70, and after the plates are removed from the press, they are moved along these rails.

Parallel to the rails 70, I provide other rails 72, upon which a car 74 is arranged to travel; suitably propelled by any suitable means—as, for instance, an electric motor indicated at 76. Overhanging the side of this car 74 is an arm 78 of any conventional construction which may extend to the center line of the rails 70; such arm being provided with gripping mechanism comprising a fixed jaw 80, having a relatively sharp, wedge-shaped point 82, which may be presented to the end of the die member 20, as indicated in Fig. 4, and moved from that position to the position indicated in Fig. 5, thereby lifting the plate from the die. To facilitate entrance of the wedge-shaped point 82, between the plate and the die member 20, the latter may have a beveled notch 83, toward which the movement of said point 82 is directed. Pivotally connected to the jaw 80, is another jaw 84 operable by a lever 86, arranged to be pulled in an upward direction by any suitable means but preferably by a solenoid core 88, disposed in a suitable coil 90, mounted on the arm 78, and operable through conventional conductors not entering into this invention, which may extend to a point some distance out of the heat area of the plates being handled.

In operation, the parts normally stand in the position shown in Figure 2. When a finished plate 14 is to be removed from the press, the attendant operates the motor 76 to advance the car mechanism so as to bring the gripping jaws first to the position shown in Fig. 4, then to the position shown in

Fig. 5, after which the solenoid is energized to effect such movement of the core as will cause the jaw 84 to grip the plate against the jaw 82. The attendant now operates the motor 76 to drive the car 74 in the opposite direction, thus withdrawing the plate 14 from position 14[a] out of the press and over onto the rails 70, from which it is removed and further handled by mechanism not entering into this present invention.

All parts of the mechanism are quite rigid so that the operator may stand near rails 72, away from the heat of plate 14, and operate the gripping jaw mechanism accurately in straight lines in the axis of the press, to insure that the pointed member 82 may always be presented to the notch 83 and inserted between the stamped plate and the lower die 20, a condition required to avoid serious injury to the gripping jaws, if not to die or plate and facilitating removal of the latter from the press.

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

What I claim as new and desired to secure by Letters Patent is:

1. In mechanism for handling large, hot plates from a press, the combination of a car adapted to travel on rails disposed adjacent to said press, means for propelling said car, an arm overhanging one side of the car, a pair of gripping jaws supported on the end of said arm and extending therefrom parallel to the path of travel of the car and in line with the axis of the press, and means for causing said jaws to grip a plate.

2. In mechanism for handling large, hot plates from a press, the combination of a car adapted to travel on rails disposed adjacent to said press, means for propelling said car toward and from the press, a laterally extending arm at one side of the car, a pair of gripping jaws supported on the end of said arm and extending therefrom in line with the axis of the press, and means carried by the car for causing said jaws to grip a plate.

3. In mechanism for handling large, hot plates from a press, the combination of a car adapted to travel on rails disposed adjacent said press, means for propelling said car, a second set of rails paralleling the first and disposed in line with said press, an arm extending laterally from the side of the car and extending to the center of the second set of rails, a pair of gripping jaws supported on the end of said arm and extending therefrom in line with the axis of the press, and means for causing said jaws to grip a plate.

4. In mechanism for handling large, hot plates from a press, the combination of a car adapted to travel on rails disposed adjacent said press, means for propelling said car, a second set of rails paralleling those upon which the car travels and disposed in line with said press, an arm overhanging one side of the car and extending to the center of the second set of rails, a pair of gripping jaws supported on the end of said arm and extending in line with the axis of the press parallel to the path of travel of the car, and means carried by the car for causing said jaws to grip a plate.

5. In mechanism for handling large, hot metal plates from a press, the combination of a car adapted to travel on rails, means for propelling said car, an arm overhanging one side of said car, a pair of gripping jaws supported at the end of said arm in line with the axis of the press, and means for causing said jaws to lift and grip a plate on the platen of said press; one of said jaws being rigid so that its point may always travel in a path parallel to the rails.

6. In mechanism for handling large, hot metal plates from a press, the combination of a car adapted to travel on rails, means for propelling said car, a second set of rails paralleling the first, a laterally projecting arm at one side of said car with its end extending to the center of the second set of rails, a pair of gripping jaws supported at the end of said arm in line with the axis of the press, and extending toward the press parallel to the path of travel of the car, and means for causing said jaws to lift and grip a plate on the platen of said press; one of said jaws being rigidly supported by said arm so that its point may always travel in a path parallel to the rails.

7. In mechanism for handling large, hot metal plates from a press, the combination of a car adapted to travel on rails, means for propelling said car, a second set of rails paralleling the first, an arm overhanging said car with its end extending to the center of the second set of rails, a pair of gripping jaws supported at the end of said arm and extending outwardly therefrom parallel to the path of travel of the car, means carried by the car which may be operated from a point remote therefrom for causing said jaws to lift and grip a plate from the lower die of said press; one of said jaws being pointed and the die having a notch into which said jaw point may enter to lift a plate from the die.

8. In mechanism for handling large, hot metal plates from a press, the combination of a car adapted to travel on rails, means for propelling said car, a second set of rails paralleling the first, a laterally projecting arm on said car with its end extending to the center of the second set of rails, a pair of gripping jaws supported at the end of said arm in line with the axis of the press

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and extending toward the latter and parallel to the path of travel of the car, means carried by the car which may be operated from a distant point for causing said jaws to lift and grip a plate from the lower die of said press; one of said jaws being rigid so that its point may always travel in a path parallel to the rails and the die having a notch into which said jaw point may enter to lift a plate.

9. In mechanism for handling large, hot sheet metal plates from a press, the combination of two sets of rails forming parallel tracks; one set of rails being disposed in line with the press and being designed to support a plate and the other set of rails being designed to support a traveling car, a car arranged to travel on said latter rails, means for imparting reciprocable movement to said car, an arm carried by said car and extending over the other set of rails, a pair of gripping jaws carried by the arm in line with the axis of the press and parallel to said first track and in position to grasp a plate located adjacent to the end of the second track, and means carried by the car which may be operated from a distant point for closing said gripping jaws on a plate whereby movement of the car away from the press draws said plate onto and along the second set of rails.

10. In mechanism for handling large, hot sheet metal plates from a press, the combination of two sets of rails forming parallel tracks; one set of rails being disposed in line with the axis of the press and being designed to support a plate, a car arranged to travel on the other set of rails, means for imparting reciprocable movement to said car, an overhanging arm carried by said car and extending over the other set of rails, a pair of gripping jaws carried by the arm in line with the axis of the press and in position to grasp a plate located adjacent to the end of the first track, and a solenoid carried by the car which may be operated from a distant point for closing said gripping jaws on a plate whereby movement of the car away from the press draws said plate onto and along the set of rails in line with the press; one of said jaws serving to lift a plate from the die before gripping the same for removal from the press.

In witness whereof, I have hereunto subscribed my name.

WILLIAM A. LACKE.