

April 7, 1942.

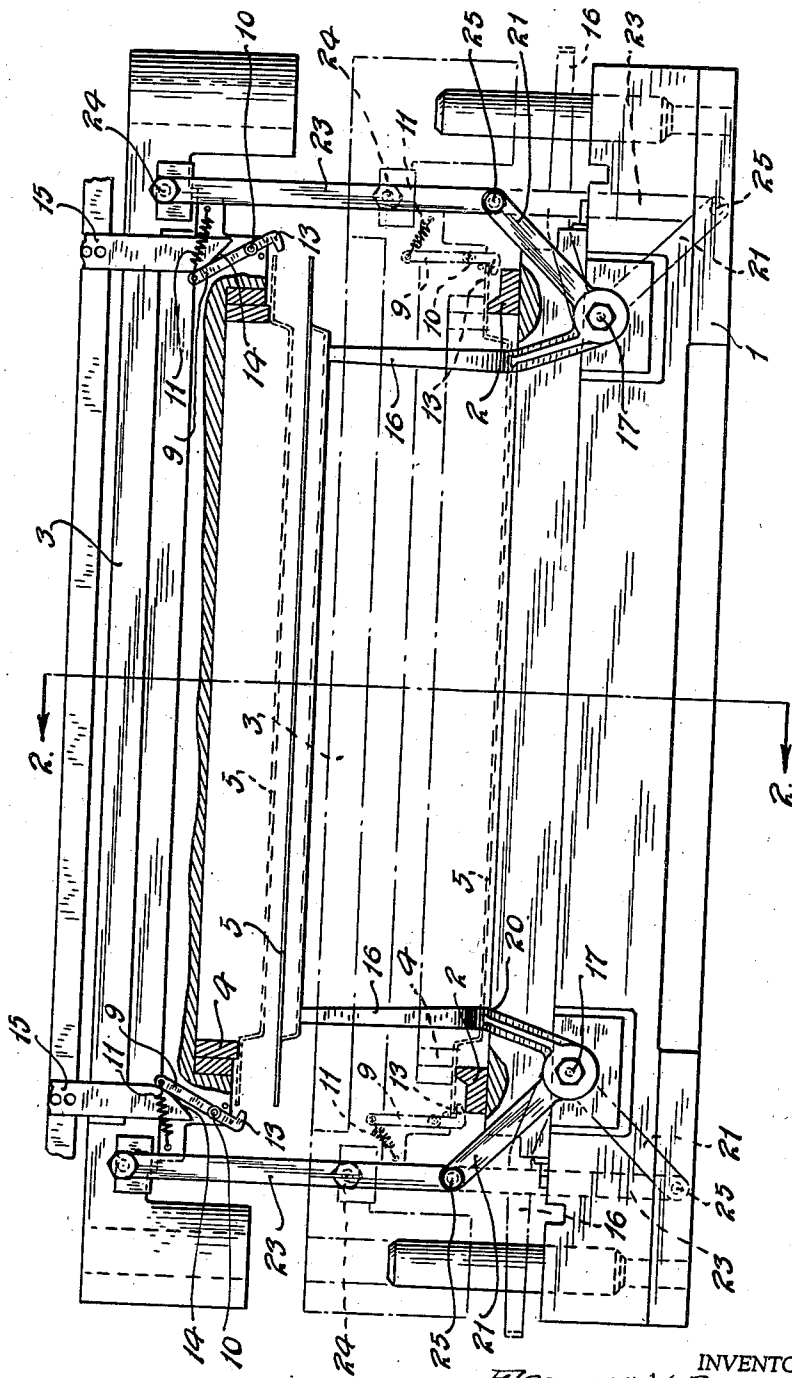
F. W. BRAUN

PRESS UNLOADER

Filed Jan. 22, 1940

2,278,643

2 Sheets-Sheet 1



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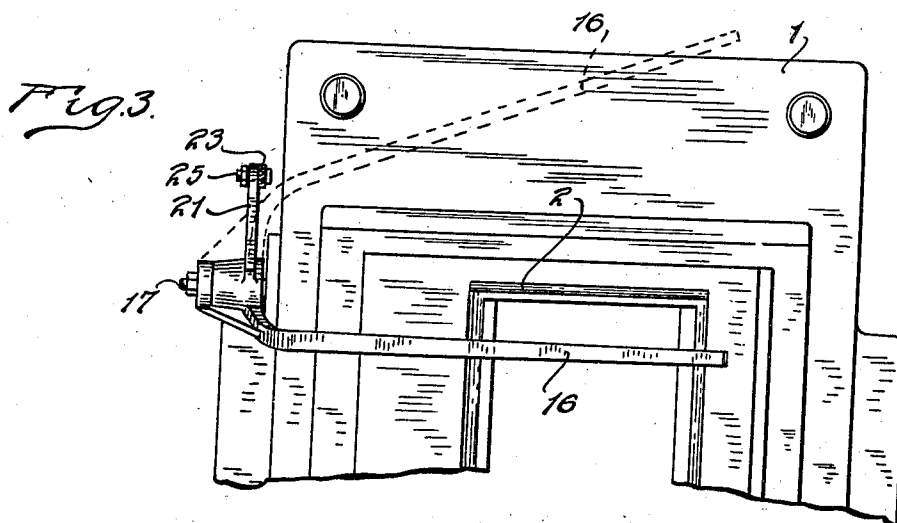
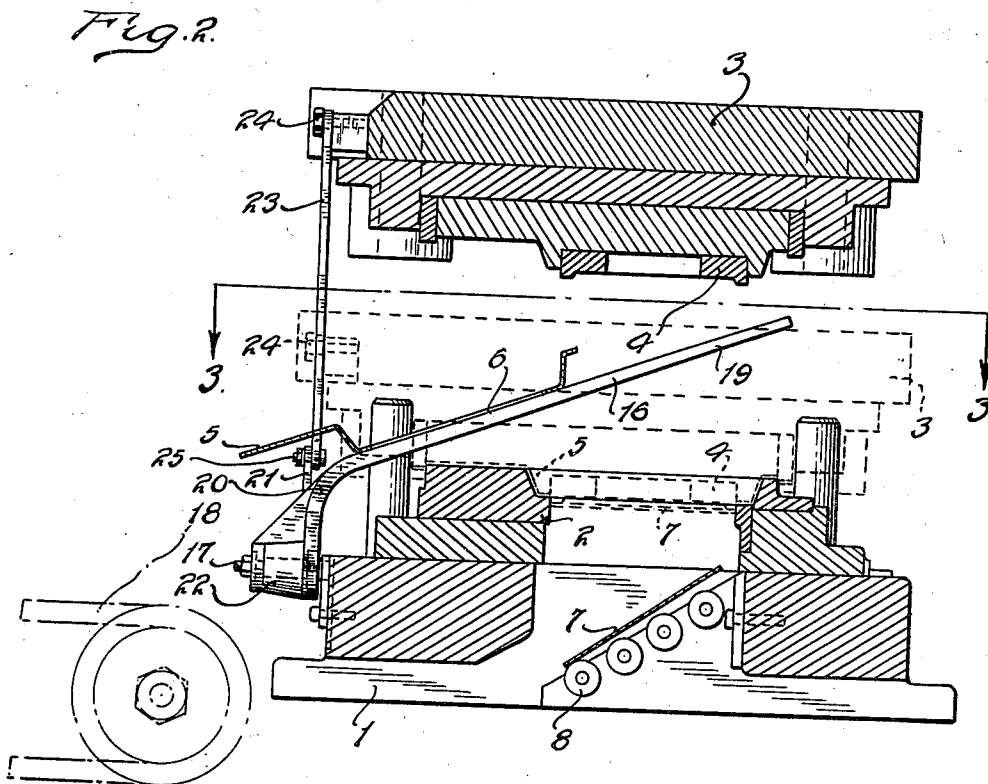
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PRESS UNLOADER

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5 Claims. (Cl. 113—50)

This invention relates to a press unloader and more particularly to a device for automatically unloading metal stampings from a press.

Presses for stamping or drawing sheet metal have proved dangerous instrumentalities and injuries to the operators of these presses occur from time to time. It is the object of this invention to increase the safety of the press operator and obviate some of the dangers inherent in press operation. This object has been achieved by a press unloader of very simple form which automatically unloads the stamping from the press without manual assistance from the operator.

In the drawings:

Fig. 1 is a front elevation of a press showing in the full lines the punch retracted and the press unloader in work removing position, and showing in the dotted lines the punch projected and the press unloader in non-operative position.

Fig. 2 is a vertical section along the line 2—2 of Fig. 1.

Fig. 3 is a partial top elevation of the press unloader viewed along the line 3—3 of Fig. 2.

Referring more particularly to the drawings, there is shown a portion of a press comprising a base member 1 which supports the lower die 2 and the vertically reciprocable member 3 which supports the punch 4. The stamping is designated 5.

As illustrated in the dotted lines, Fig. 2, the stamping 5 is positioned in the lower die 2 and as the punch or upper die 4 descends, thereby cutting an opening 6 in stamping 5, the offal 7 drops through the lower die 2 on to rollers 8 by means of which it is conveyed away. As the reciprocating press member 3 descends, a pair of dogs 9, pivotally mounted as at 10 on member 3, interengage the edge of the stamping 5. A tension spring 11 biases the dogs inwardly. One end of the tension spring 11 is connected to member 3 and the other end to dog 9. Thus, as the punch 4 descends the head 13 of the dog 9 rides over and then snaps under the edge of the stamping 5 so that as the punch is retracted or withdrawn upwardly the dogs 9 remove the stamping from the lower die 2. As the punch nears fully raised position, the upper end of the dogs engage cam surfaces 14 of the cam members 15 which are connected to the stationary frame of the press (not shown). The cams 14 tilt the dogs to release the stamping 5 which falls upon the press unloader which will now be described.

The press unloader comprises a pair of inclined arms 16 which swing about a horizontal

axis in the form of pins 17 fixed to the front of the base 1. The arms 16 when swung to operative position, Fig. 2, are inclined downwardly and outwardly of the press so that they serve as ramps down which the stampings 5 slide out of the press on to the conveyor 18.

The arms 16 comprise two portions, a ramp 19 down which the stamping slides as it is removed from the press and a supporting arm portion 20 which is connected to the lower end of the ramp 19 and supports the ramp. As shown ramp 19 and arm 20 are formed integrally. Arm 20 is positioned perpendicularly to axis 17 whereas ramp 19 is positioned at an acute angle to axis 17. Thus, as ramp 19 rotates about axis 17, it describes a portion of the surface of a cone whereas arm 20 describes a sector of a circle. The arms 16 are shown in raised or operative position in the full lines, Figs. 1, 2 and 3, and in lowered or inoperative position in the dotted lines in the same figures.

As shown, arm 16 in swinging from operative to inoperative position travels through an arc of about 90°. The raising and lowering of the arms 16 is accomplished by means of lever 21 which is fixed to hub 22 of arm 20. Lever 21 is connected by means of link 23 with the reciprocating press member 3. Link 23 is pivotally connected to member 3 as at 24 and to lever 21 as at 25.

The operation of the device is as follows: When the punch is lowered, dotted line showing in the drawings, levers 23 are swung downwardly thereby swinging arms 16 90° outwardly and downwardly from the press to lowered position. This removes arm 16 from between dies 2 and 4. As the punch raises, link 23 and lever 21 swing the arms upwardly about horizontal axes 17 to raised position. The work falls upon the ramp portions 19 of the arms 16 and slides downwardly and outwardly of the press on to the conveyor 18. Thus the operation of the press does not require the operator to put his hands into the press between the fixed and movable press members which has heretofore been necessary to remove the work from the press.

The side of the press upon which the arms 16 are pivoted is referred to herein as the discharge side of the press.

I claim:

1. In a press having cooperating dies, a stationary lower die supporting member and a vertically reciprocating upper die supporting member, an unloader for removing the work from the press in the form of a swingable arm pivoted

on one of the die supporting members, said arm extending at an acute angle to its axis of rotation whereby as the arm swings from operative position between the dies to inoperative position without the dies the arm describes a portion of the surface of a cone, means carried by the upper die supporting member for lifting the work out of the lower die, elevating the work and then dropping the work on the arm when in operative position whereby the work slides down the arm and out of the press, and driving means for said arm synchronized with the upper die supporting member whereby upon upward movement of the supporting member the arm is swung between the dies and upon downward movement of the member the arm is swung from between the dies.

2. In a press having cooperating dies, a lower die supporting member and an upper die supporting member relatively movable upwardly and downwardly toward and away from each other, an unloader for removing the work from the press in the form of a swingable arm mounted on the lower die supporting member, a pivot for said arm mounted on the discharge side of the lower die member, said arm comprising a supporting portion pivotally mounted on the said pivot and swingable in a vertical plane and a ramp portion inclined downwardly and outwardly toward the discharge side of the press when in operative position and swingable along a conical path to a position without the press, driving means for the unloader synchronized with the relative movement of said die supporting members whereby during the relative movement of the members toward each other the ramp swings from operative to inoperative position, and means carried by the upper die supporting member for lifting the work out of the lower die and dropping it upon the ramp when in operative position whereby the work slides by gravity down the ramp and out of the press.

3. In a press having cooperating dies and die supporting members relatively movable upwardly and downwardly toward and away from each other, an unloader for removing the work from the press in the form of swingable arms mounted in spaced relation on one of the die support members and swingable toward each other to a position between the dies when separated with the arms inclined downwardly and outwardly from between the die members, means carried by the upper supporting member for withdrawing the work from the lower die member and discharging the same by gravity upon the said arms

when in operative position between the dies whereby the work slides by gravity down said arms, and driving means for said arm synchronized with said die members whereby the arms are swung from operative position to inoperative position as the supporting members move toward each other and from inoperative to operative position as the supporting members move away from each other.

4. In a press having cooperating dies, a stationary lower die supporting member and a vertically reciprocating upper die supporting member, an unloader for removing the work from the press in the form of swingable arms pivoted in spaced relation on the lower die supporting member, each of said arms extending at an acute angle to its axis of rotation whereby as the arms swing from operative position between the dies to inoperative position without the dies each arm describes a portion of the surface of a cone, means carried by the upper die supporting member for lifting the work out of the lower die, elevating the work and then dropping the work on the arms when in operative position whereby the work slides down the arms and out of the press, and driving means for said arms synchronized with reciprocating die support members whereby upon upward movement of the supporting member the arms are swung between the dies and upon downward movement of the member the arms are swung from between the dies.

5. In a press having cooperating dies and die supporting members relatively movable toward and away from each other, an unloader for removing the work from the press in the form of a pair of arms pivotally mounted in spaced relation on one of said support members, means carried by the upper die supporting member for lifting the work from the lower die and dropping the work on said arms when in operative position, parallel horizontal pivots for said arms whereby said arms swing towards each other about parallel horizontal axes to operative position between the dies, said arms when in operative position being inclined downwardly toward the work discharge side of the press, and driving means for said arms synchronized with said die members whereby the arms are swung away from each other from operative position to inoperative position as the die supporting members move toward each other and are swung toward each other from inoperative to operative position as the supporting members move away from each other.

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