EMBOSSING PRESS INCLUDING AN ARCUATE OSCILLATING DIEHOLDER

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ABSTRACT

An embossing press for impressing markings and inscriptions into metal sheets traveling through the press on a roller bed, wherein the punch-holder of the press is hingeably attached to one arm of a two-armed lever for deflection in a vertical plane against a restoring force, whereas the other arm of the two-armed lever is operable by an electric actuator for lowering and raising the punch-holder.

9 Claims, 2 Drawing Figures
EMBOSSING PRESS INCLUDING AN ARCUATE OSCILLATING DIEHOLDER

BACKGROUND OF THE INVENTION

This invention relates to an embossing press fitted with steel punches for impressing markings or inscriptions into sheet metal fed through the press on a roller bed.

In hitherto conventional embossing presses of this kind the impression is stamped into the sheet metal by impact. This has several drawbacks. The feeding of the sheet metal must be stopped immediately prior to each stamping operation, causing an undesirable loss of time. Furthermore, the inscriptions cut into the steel punches often form impressions of uneven depth and some of these impressions are less clearly defined than others so that they cannot be easily read. Finally the impact of the steel punches on the sheet metal leads to rapid wear of the punches.

SUMMARY OF THE INVENTION

It is the object of the present invention to eliminate these shortcomings of conventional embossing presses for impressing marks in sheet metal.

To attain this object the present invention provides an embossing press for impressing markings and inscriptions into metal sheets, comprising a roller bed for continuously feeding metal sheets through the press, a bridge spanning the roller bed, a two-armed lever pivotally secured for deflection in a vertical plane on said bridge, a punchholder hingedly attached to one arm of the two-armed lever for deflection in said vertical plane, an electric actuator adapted to operate the other arm of the two-armed lever for lowering and raising said punchholder, and restoring means arranged between said two-armed lever and said punchholder for urging the latter into its starting position.

In contradistinction to conventional embossing presses for marking sheet metal the proposed arrangement functions by rolling the markings or inscriptions into the sheet so that the feeding motion of the sheet metal need not be interrupted immediately prior to each pressing operation. Moreover, the proposed press ensures that the impressions squeezed into the sheet will always be of uniform depth and therefore clearly defined so that they can be easily read. Finally, the rolling action subjects the punches to far less wear than impact.

BRIEF DESCRIPTION OF THE DRAWING

The invention will now be described by way of example and with reference to the accompanying schematic drawing in which:

FIG. 1 is a side elevational view of an embossing press according to the invention; and

FIG. 2 is a reduced-size partial rear elevational view of the press.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Numerals 1 is a deflectable punchholder, 2 is an exchangeable punchholder head containing exchangeable punches 3. The cut faces of the several punches are arranged on a circular arc. On each side of the punchholder head 2 is a readily exchangeable arcuate flange 4 which determines the depth of penetration into the metal sheet of the marking or inscription to be cut into the face of each punch. The reference numeral 5 denotes a two-armed lever which is pivoted for deflection in a vertical plane on the horizontal arm of a bridge 6 at 7. The end of the punchholder 1 remote from the punchholder head 2 is likewise hinged for deflection in a vertical plane to one of the arms of the two-armed lever 5 at 8. A coiled tension spring 9 constantly urges the punchholder 1 into its starting position, one end of said spring 9 being attached to the two-armed lever 5, whereas its other end is anchored to the punchholder 1. The other arm of the two-armed lever 5 is linked to an electric actuator generally indicated at 10. Numerals 11 is a limit switch cooperating with the punchholder 1, whereas 12 is a resilient stop on the two-armed lever 5 limiting the movement of swing of the punchholder 1. A metal sheet 13 which is to be provided with an impression travels on a roller bed 14 under the bridge 6. One live roller 15 of the roller bed 14 is located below the deflectable punchholder 1 and functions as a backing roller when the impression is being squeezed into the metal sheet 13.

This embossing press functions as follows:

An electrical signal applied by a controlling switch to the electric actuator 10 causes the latter to contract and to apply downward thrust to the punchholder 1 through the two-armed lever 5 until a preset squeezing pressure is reached. The metal sheet 13 traveling on the roller bed 14 entrains the punchholder 1 which rolls on the sheet 13 with the application thereto of the pressure generated by the electric actuator 10 and causes the cut faces of the punches 3 to squeeze a corresponding impression into the sheet 13 where this is backed by the live roller 15 of the roller bed 14.

The punch or tool holder arm 1 includes a projection 1a. The pivotally mounted impressing element or punchholder 1 is entrained or caused to move by contact with the sheet 13. During the movement, the arcuate face 4 with the punches 3 forms the desired impression in the sheet 13. Control means including the limit switch 11 in this specific embodiment is disposed adjacent the impressing element 1. The element 1 swings or moves to a predetermined position until the projection 1a strikes the limit switch 11. The striking of the switch 11 will send an electrical signal in a conventional manner to cause the electric actuator 10 to release. That is, the bellows portion 10a will be extended and the impressing element 1 will be lifted clear of the sheet 13 by tilting the lever 5. The punchholder 1 is at once deflected back by the tensioned restoring spring 9 until intercepted in its starting position by the stop 12.

Naturally the embossing press may be so attached to the bridge 6 that it can be traversed across the full width of the roller bed 14, thereby permitting the sheet 13 to be provided with an impressed inscription anywhere across its width. Moreover, several independently acting punching assemblies may be mounted on the bridge 6 side by side, as shown at FIG. 2.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive.

What is claimed is:

1. In a press assembly for impressing markings onto sheets which are in continuous movement with respect to the assembly, the combination comprising:
   a. means for transporting a sheet along a predetermined path,
   b. lever means pivotally mounted on a support means located on the press assembly thereby providing pivotal movement of the lever means in a plane perpendicular to the direction of movement of said sheet,
   c. an impressing element pivotally mounted on one end of said lever means and having an arcuate face for contacting said sheet,
   d. actuator means being mounted to effect the pivotal movement of said lever means,
   e. said pivotal movement of the lever means being effective to move the impressing element between a contacting condition and a noncontacting condition with respect to said sheet,
   f. said pivotally mounted impressing element being moved by contact with said sheet between a start position and a disengagement position to have said arcuate face form an impression on said sheet while the impressing element is in said contacting condition,
   g. control means located in the path of movement of said pivotal movement of the impressing element and being responsive to the pivotal movement of the said impressing element to a predetermined position to actuate said ac-
3. An actuator means to move said impressing element to the non-contacting condition.

2. In a press assembly as defined in claim 1 wherein said lever means is mounted at a point intermediate of its two ends, said actuator means is connected to the end of the lever means opposite said impressing element.

3. In a press assembly as defined in claim 1 wherein said control means includes a spring means connected to said impressing element to effect pivotal movement of the impressing element while in the noncontacting condition for a return to the contacting condition and stop means mounted on said assembly for engagement with the impressing element to limit the pivotal movement thereof under the action of said spring means.

4. In a press assembly as defined in claim 1 wherein said sheet-transporting means is a roller bed and said sheet is transported horizontally through said press assembly.

5. In a press assembly as defined in claim 1 wherein said sheet-transporting means includes a roller bed, said support means comprises a bridge spanning the roller bed and a plurality of said impressing devices is mounted on said bridge in side by side relation to each other.

6. An impressing device for impressing markings onto sheets which are in continuous movement with respect thereto comprising:
   a. means for transporting a sheet along a predetermined path,
   b. means for pivotally supporting a lever means at a point intermediate of its two ends for pivotal movement in a plane perpendicular to the direction of movement of said sheet,
   c. an impressing element pivotally mounted on one end of said lever means and having an arcuate face for contacting said sheet,
   d. actuator means mounted at the other end of said lever means to effect the pivotal movement of said lever means, said pivotal movement of the lever means being effective to move the impressing element between a contacting condition and a noncontacting condition with respect to said sheet,
   e. said pivotally mounted impressing element being moved by contact with said continuously moving sheet between a start position and a disengagement position when placed in contact therewith while in said contacting condition to have the arcuate face form an impression on the sheet, and
   f. control means disposed adjacent said impressing element and being responsive to the pivotal movement of said impressing element to a predetermined position while in the contacting condition for effecting pivotal movement of said impressing element to the noncontacting condition after forming an impression on the sheet.

7. An impressing device as defined in claim 6 wherein said control means comprises a spring means acting on said impressing element during pivotal movement thereof.

8. An impressing device as defined in claim 6 wherein said actuator means is an electric actuator and said control means comprises a limit switch.

9. An impressing device as defined in claim 6 wherein said sheet-transporting means includes a roller bed, said impressing element comprises a tool holder arm and an arcuate impression forming tool face mounted on the end of the tool holder arm.