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J. J. RIGBY.

MEANS FOR CONTROLLING THE FEEDING OF SHEETS.

APPLICATION FILED MAY 11, 1907.

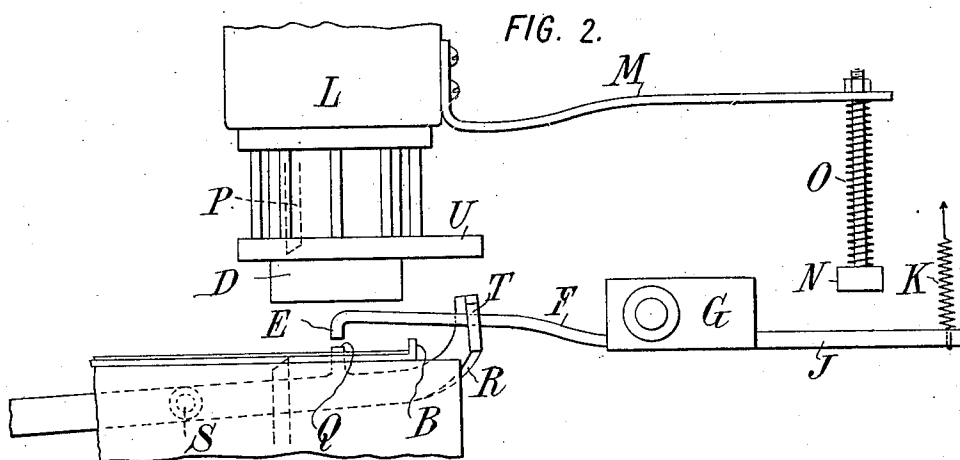
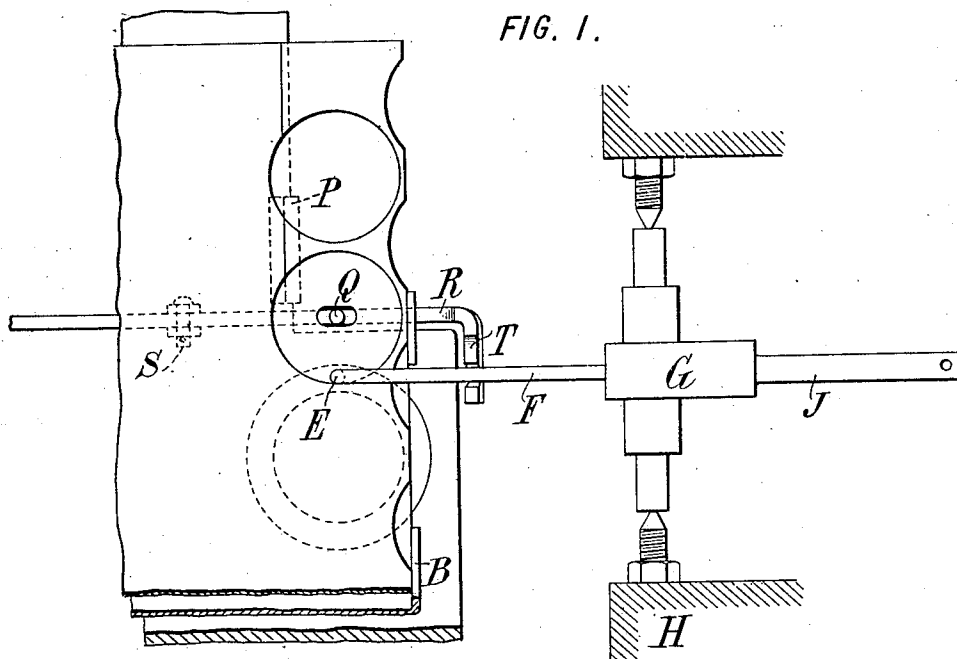


FIG. 3.

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MEANS FOR CONTROLLING THE FEEDING OF SHEETS.

No. 882,125.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed May 11, 1907. Serial No. 373,095.

To all whom it may concern:

Be it known that I, JOHN J. RIGBY, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Means for Controlling the Feeding of Sheets, of which the following is a specification.

This invention aims to provide an improved device for use in punching and similar machines, in which a sheet of metal or the like is fed by hand to a reciprocating punch. In these machines in order to economize metal the successive lines of punchings are staggered relatively to each other. Consequently the lines of punchings are in two series alternating with each other, the lines of the first series having their first punchings as near the advancing side or edge of the sheet as possible, and the lines of the alternate series having their first punchings set an extra distance back from the advancing side. Some difficulty and loss of time has heretofore been involved in the accurate spacing of the first punching of the lines of the alternate series which are set back from the advancing side of the sheet.

This invention aims to facilitate the locating of the sheet for this series of punchings.

The accompanying drawings illustrate an embodiment of the invention.

Figure 1 is a plan of the feed table and adjacent parts of a punching machine showing a sheet of metal thereon; Fig. 2 is an end elevation thereof omitting the supports; Fig. 3 is a sectional view of a detail of construction.

Referring to the drawings, the feed table A (which is usually inclined downward) has at its front or lower edge a flange B against which the side edge of the sheet C rests. A punch D reciprocates and is in vertical line with a die in the bed of the machine. A gage E is arranged a slight distance beyond the punch and is pressed down on the table when the punch lifts out of the die. During the first upward movement of the punch the gage E remains slightly above the table, being lifted on the downward movement of the punch. To effect this operation the punch carries an arm F which is mounted in a block G pivoted between the main uprights H of the machine, and having a tail J connected to an upwardly pulling spring K tending to hold the gage down on the table. The

cross head or slide L of the punch carries an arm M with a spring-pressed foot N adapted to engage the tail J of the gage E so as to lift the latter when the punch comes down. As the punch rises the spring O of the foot N holds the latter down and holds up the gage until the punch has passed sufficiently above the table to allow the operator to slip the sheet forward. The gage then comes down and the operator moves the sheet forward until the gage is struck by the edge of the metal, as shown in Fig. 1, after which the next punching operation takes place. This same gage E serves for controlling the successive punchings in a line at a determined uniform distance apart, and also serves as a stop for the forward edge of the sheet when the first punching is made close to the edge. As the sheet is fed forward a pair of shears, indicated at P, cuts the scrap between the successive punchings, and is used to sever the entire line of scrap so as to leave the sheet with a new edge such as that shown in Fig. 1.

The mechanism above described is not illustrated in detail, being old and well understood by those familiar with the art.

For locating the first punching of the next line there is provided in the machine illustrated a second gage Q adapted to project upward through the table at such a point that when the forward edge of the sheet is brought against it the punching will take place in the desired position. After the first punching of the line, however, the gage Q is rendered inoperative by withdrawing it below the table so as not to interfere with the further feed of the sheet. When the gage Q is rendered operative by lifting it above the sheet, the gage E is at the same time rendered inoperative. For example the gage Q may be mounted on a hand lever R pivoted frictionally at S so as to remain in any position to which it is shifted, and having an arm T which underlies the arm F of the upper gage. When the lever R is depressed to lift the gage Q to operative position, the arm T lifts the gage E to inoperative position, so that there is no interference with the movement of the sheet until its forward edge strikes the gage Q. Thereupon the operator trips the clutch and the punch comes down in the proper staggered position. Upon the downward movement of the punch a portion U thereof strikes the arm T, as indicated in Fig. 3, and returns the gage Q to inoperative

position, leaving the gage E again operative so as to serve for the spacing of the successive punchings in the line in the manner previously explained.

- 5 In operation, the gage Q is normally down beneath the table so as to be inoperative. The operator punches the first row of holes by use solely of the gage E in the usual manner. In so doing the scrap cutter removes
10 the scrap and leaves a new edge along the front of the sheet. When this first row is finished the operator moves the sheet to the right and feeds it up for the second row. For making the first punching he presses
15 down the lever R which elevates the gage Q into operative position and lifts the normal gage E above its operative position. The operator then feeds the advancing side or edge of the sheet against the gage Q and
20 starts the press, which in its first punching stroke pushes down this gage to its inoperative position again, and thereby renders the normal gage E operative, after which the normal feeding continues. For the third
25 and each odd-numbered row the sheet is gaged for the first punching by the gage E, while for the intervening or even-numbered rows it is gaged by the gage Q.

My invention thus provides a very simple
30 and effective means for insuring starting of the even-numbered rows of punchings in such manner as to alternate them with the odd-numbered rows, so as to afford the desired economy in scrap. This is done by an
35 extra gage which coöperates readily with the normal gage and requires no change in the latter or in the structure of the press.

What I claim is:—

1. Means for controlling the feeding of a
40 sheet to a punch to form successive lines of punchings staggered relatively to each other, including in combination means for controlling the spacing of successive punchings in a line at a determined uniform distance
45 apart, and means for locating the sheet in a position to effect the first punching of a line at a determined greater distance from the advancing edge of the sheet.

2. Means for controlling the feeding of a
50 sheet to a punch to form successive lines of punchings staggered relatively to each other, including in combination a pair of gages against which the advancing edge of the sheet may be set in succession to determine
55 the positions of the first punchings in two successive lines and means for controlling the spacing of successive punchings in a line at a determined uniform distance apart.

3. Means for controlling the feeding of a sheet to a punch to form successive lines of
60 punchings staggered relatively to each other, including in combination a gage for controlling the spacing of the first punchings of one series of lines from the advancing edge of the sheet and also the spacing of the suc-
65 cessive punchings in each line, a second gage for controlling the spacing of the first punching of an alternate series of lines, means for rendering the second gage operative and the first inoperative at the beginning of one of
70 the alternate series of lines, and means for automatically rendering the second gage inoperative and the first operative upon the first punching operation of such line.

4. Means for controlling the feeding of a
75 sheet to a punch to form successive lines of punchings staggered relatively to each other, including in combination a feed table, a gage E above the feed table and adapted to be lowered thereto when the punch is lifted,
80 a gage Q adapted to be projected upward through the table to gage the first punching of a row, means for lifting the gage E while the gage Q is projected up through the table, and means operative upon the descent of
85 the punch for depressing the gage Q below the table, said gage Q being arranged to remain depressed during a number of operations of the punch to permit the forming of all the punchings of a row after the first un-
90 der control of the gage E.

5. Means for controlling the feeding of a sheet to a punch to form successive lines of punchings staggered relatively to each other, including in combination a feed table, a gage
95 E above the feed table and adapted to be lowered thereto when the punch is lifted, a gage Q adapted to project upward through the table, a lever carrying said gage frictionally mounted and having an arm under-
100 lying a part of the gage E whereby the elevation of the gage Q lifts the gage E to inoperative position, and said lever adapted when so elevated to stand in the path of a
105 part of the punch to be pressed down thereby upon the descent of the punch to render the gage Q inoperative and restore the gage E to operative position.

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

JOHN J. RIGBY.

Witnesses:

CHARLES EDWIN POLLARD,
B. W. STONE.