Nov. 14, 1939. I. NEWMAN 2,179,755

METAL SCORING MACHINERY

Filed Nov. 30, 1937 3 Sheets-Sheet 1

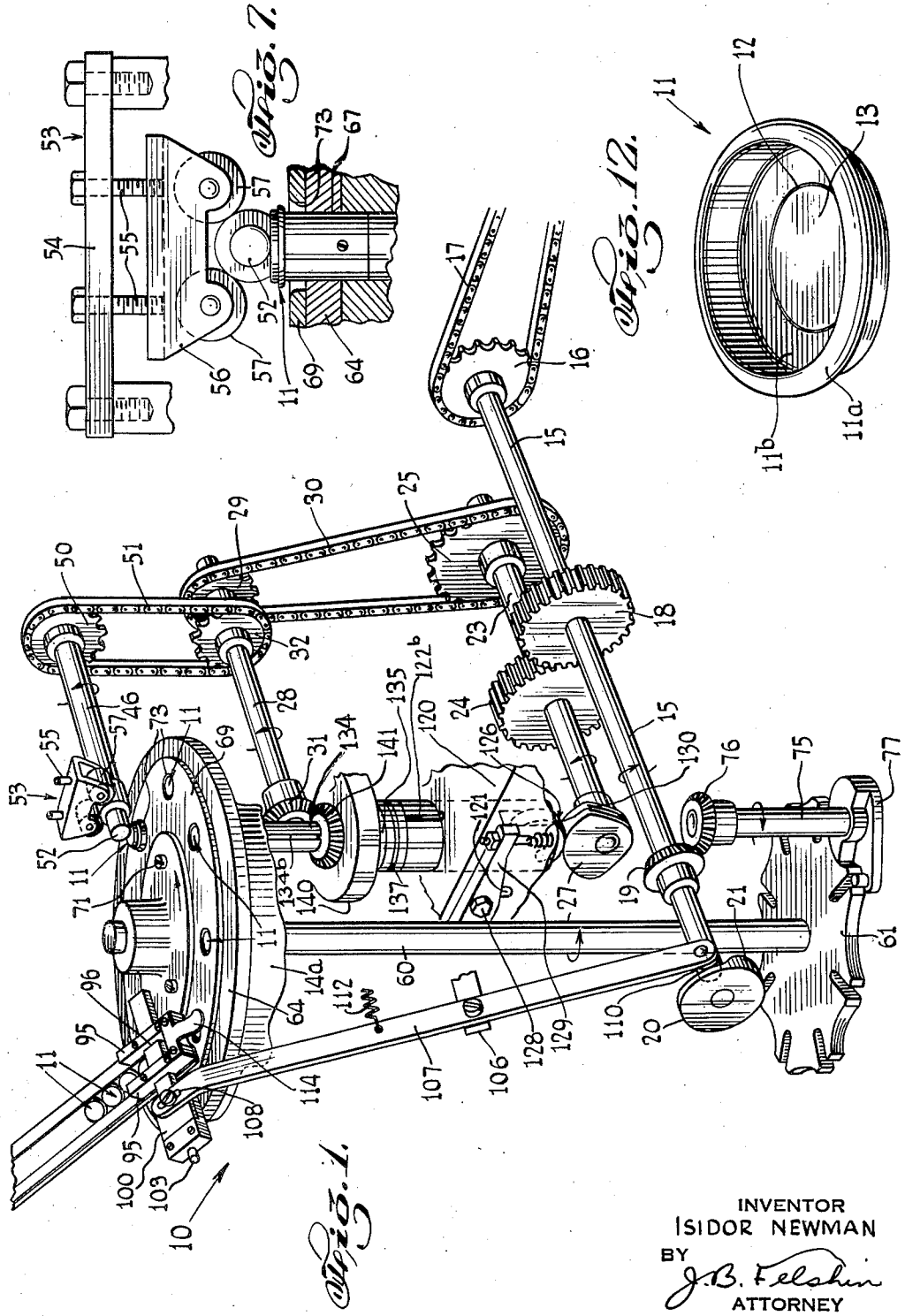


Fig. 1.

Fig. 7.

Fig. 12.

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Fig. 2.

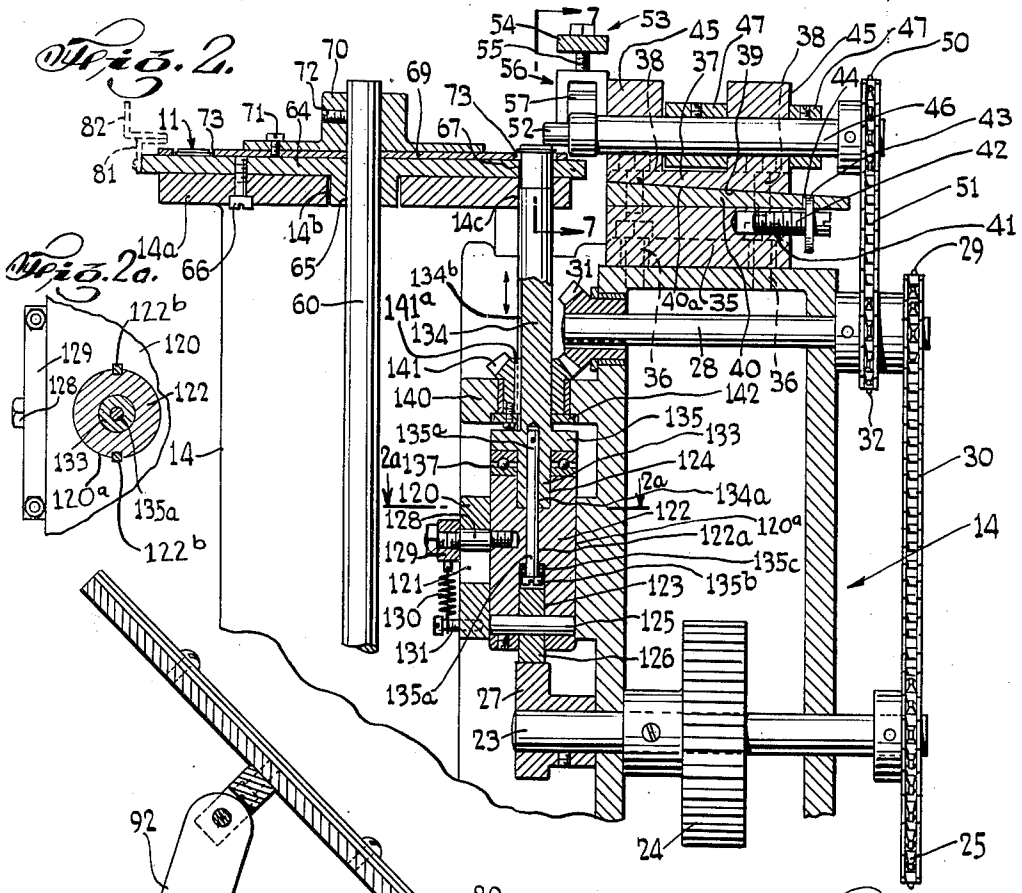


Fig. 2a.

Fig. 3.

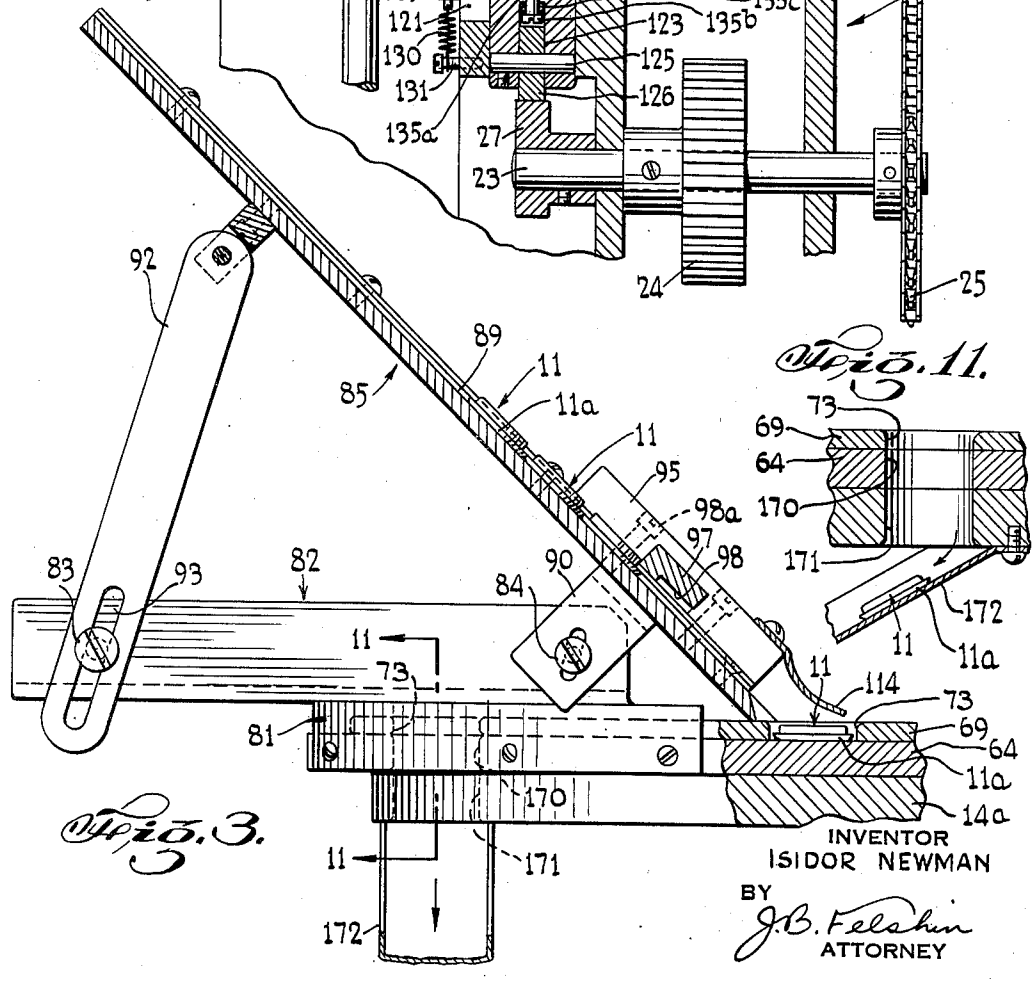


Fig. 11.

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METAL SCORING MACHINERY

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Fig. 4.

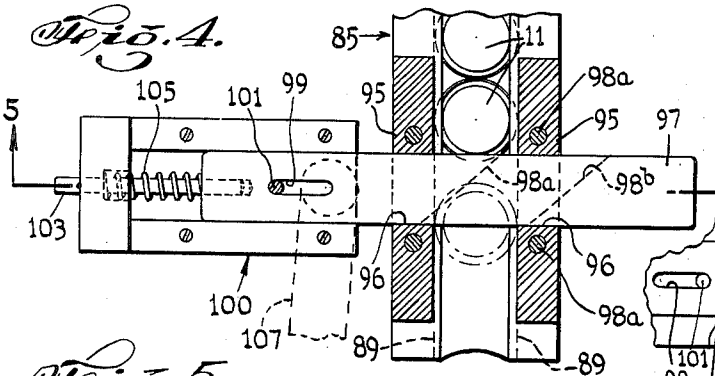


Fig. 6a.

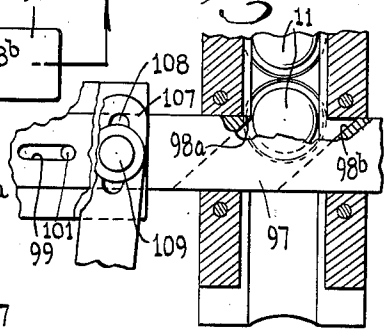


Fig. 5.

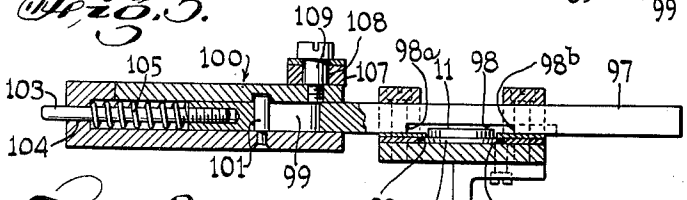


Fig. 6.

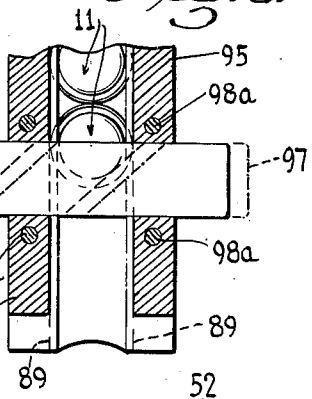


Fig. 9.

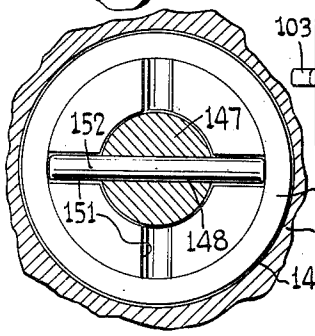


Fig. 8.

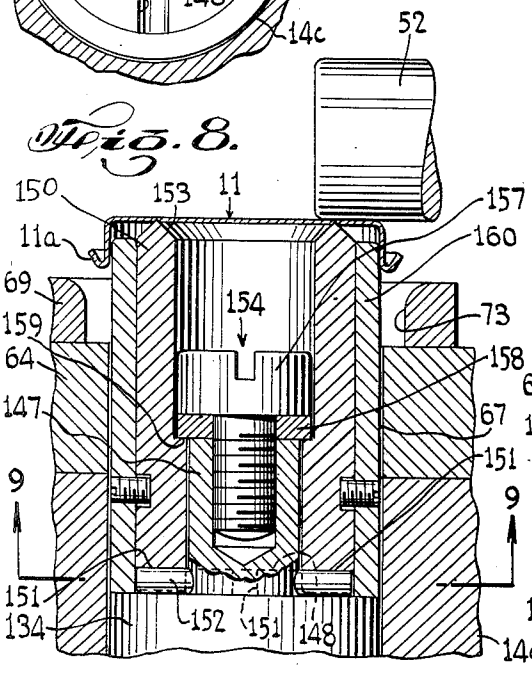
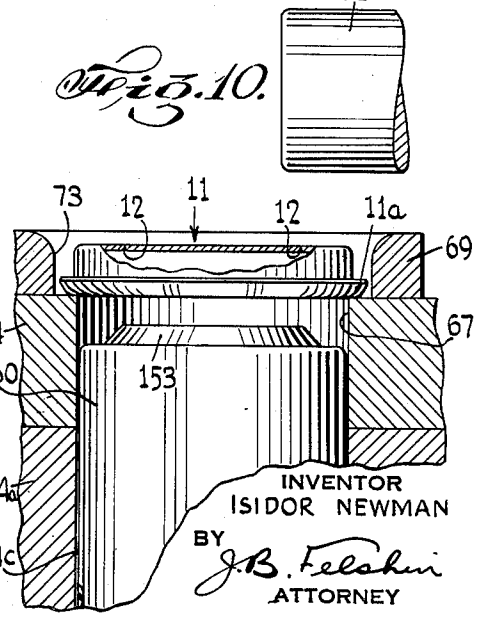


Fig. 10.



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Patented Nov. 14, 1939

2,179,755

UNITED STATES PATENT OFFICE

2,179,755

METAL SCORING MACHINERY

Isidor Newman, New York, N. Y.

Application November 30, 1937, Serial No. 177,343

21 Claims. (Cl. 113—15)

This invention relates to metal scoring machinery. It is particularly directed to a machine for scoring metal can caps, covers or closures to define an area which may be punched in with a tool to make an opening for emptying the can.

In prior cap scoring machines, such as the machine disclosed in my Patent No. 2,017,103 issued October 3rd, 1935, the caps were fed onto a plurality of parallel, rotary annular cutters on an intermittently rotating turret, and as each cutter reached a horizontal radial roller, the cap was rotated and pressed against the cutter by a roller, to score the cap. With such a scoring machine, a plurality of cutters were necessary, and difficulty has been experienced therewith because the cutters could not be evenly ground, resulting in uneven scoring of the caps, and increased maintenance cost. It is therefore an object of this invention to overcome this difficulty by providing a machine of the character described, in which only a single die or cutter is employed for scoring caps fed on an intermittently rotating turret.

A further object of this invention is to provide in a machine of the character described, highly improved means for feeding caps to the turret, prior to scoring, and improved means for removing the scored caps therefrom.

A still further object of this invention is to provide in a machine of the character described, improved means to feed the pieces of stock to be scored, to the turret, including a chute, and a reciprocating transverse bar thereon constructed to permit passage of the pieces of stock down the chute and past the bar one at a time as the bar reciprocates, and improved means to reciprocate the bar, including a connection between the reciprocating means and the bar which will permit the reciprocating means to continue operating without breaking if the bar becomes jammed and cannot move.

Another object of this invention is to provide a strong, rugged and durable machine of the character described, which shall be relatively inexpensive to manufacture, positive in operation, and yet practical and efficient to a high degree in use.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a perspective view of a metal scoring machine embodying the invention;

Fig. 2 is an elevational cross-sectional view through the axis of the cutter support;

Fig. 2*a* is a cross-sectional view taken on line 2*a*—2*a* of Fig. 2;

Fig. 3 is a side elevational view of the cap feed mechanism;

Fig. 4 is a partial, front elevational view of the cap feeder with parts in cross-section, showing the feed in position directly after ejecting a cap to the turret;

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 4, but showing the feeder in position for receiving a cap;

Fig. 6*a* is a view similar to Fig. 6, but showing the position of the parts when the bar is stuck and cannot move;

Fig. 7 is a cross-sectional view taken on line 7—7 of Fig. 2;

Fig. 8 is an enlarged vertical cross-sectional view of the rotary die or cutter and roller in scoring position;

Fig. 9 is a cross-sectional view taken on line 9—9 of Fig. 8;

Fig. 10 is a view similar to Fig. 8, but showing the cutter lowered after the scoring operation;

Fig. 11 is a cross-sectional view taken on line 11—11 of Fig. 3; and

Fig. 12 is a perspective view of the scored side of a scored cap.

Referring now in detail to the drawings, **10** designates a machine embodying the invention for scoring sheet metal articles, for example, caps **11** for cans, to define an area which may be punched in with a tool to make an opening for emptying the can.

In Fig. 12 there is shown a cap **11** for a metal can, having a brim **11***a* and a crown **11***b* scored on my improved machine on the inner surface thereof, as at **12**, to define a circular disc **13** which may be punched in with a tool to provide an opening for emptying the can.

The machine **10** comprises a frame **14** having a horizontal wall **14***a* formed with spaced, circular openings **14***b* and **14***c*. On wall **14***a* is a circular plate **64** formed with a central through opening **65** coaxial with the opening **14***b* and provided with a hub extending therein. Plate **64** may be attached to wall **14***a* by screw **66**. It is formed with a through opening **67** registering with the opening **14***c*. Extending through the opening **65** in plate **64**, is a vertical turret shaft **60**, projecting above said plate. Fixed to the upper project-

ing portion of said shaft, as by set screw 72, is a hub 70, to which is attached, as by screw 71, a circular turret plate 69 resting on plate 64. Said plate 69 is formed with a plurality of similar, equiangularly spaced, through openings 73 of larger diameter than opening 67. As shown in Fig. 2 of the drawings, one of the openings 73 registers with the openings 67 and 14c in plate 64 and wall 14a, respectively.

Means is provided to intermittently rotate the turret plate 69 at regular intervals through angles equal to the angles between the opening 73, for successively bringing said openings into registration with the opening 67. To this end, turret shaft 60 carries, at its lower end, a Geneva gear wheel 61. Journaled in the frame 14 in any suitable manner is a horizontal shaft 15, carrying at one end a sprocket wheel 16, connected by chain belt 17 to any suitable drive. Shaft 15 also carries a beveled gear 19. There is also journaled in the frame 14, in any suitable manner, a vertical shaft 75 provided with a beveled gear 76, meshing with gear 19. At the lower end of shaft 75 is a Geneva gear pawl adapted to cooperate with the Geneva gear wheel 61 for intermittently rotating said wheel at regular intervals through predetermined angles. The wheel 61 has as many radial slots, as there are openings 73 in the plate 69. The openings 73 are so located in plate 69 that as shaft 15 rotates, the openings 73 will successively register with the opening 67 during regular intervals, when wheel 61 and hence plate 69, are stationary.

Means is provided for feeding caps 11 to the openings 73 in advance of the opening 67. To this end, there is fixed to the edge of plate 64 a curved bar 81, carrying a horizontal angle-shaped bar 82, to which there is screwed a pair of spaced, headed screws 83, 84. Supported by member 82 is a chute 85 provided with inner grooves 89 to receive the brims 11a of caps 11 fed to the upper end of the chute. Attached to the lower end of the chute 85, is a bracket 90 having a slot receiving the screw 84. Pivoted to the upper end of the chute is an arm 92 formed with a slot 93 receiving screw 83. It will now be understood that by properly manipulating screws 83, 84, the angle of the chute 85 may be adjusted.

Attached to the side edges of chute 85, adjacent the lower end thereof, are a pair of parallel bars 95 formed with aligned openings 96. Slidably mounted in the openings 96 is a bar 97 formed, on the inner surface thereof, with an inclined groove 98 forming parallel inclined edges 98a and 98b at the sides of the groove. The bar 97 is formed with a longitudinal slot 99 adjacent one end thereof. Slidably received over one end of the bar 97 is a sheath or housing 100 provided with a pin 101 extending through slot 99, normally disposed at the left end of said slot, looking at Fig. 4. Screwed to one end of the bar 97 is a longitudinal pin 103 passing through an opening 104, at one end of the housing 100. A compression spring 105 surrounds the pin 103, and is interposed between the bar 97 and said end of said housing.

Means is provided for reciprocating bar 97 to intermittently feed the caps at regular intervals to the opening 73 in the turret plate, directly at the lower end of the chute, each time rotation of the turret plate is interrupted. To this end, the shaft 15 carries an annular disc cam 20 having a cammed humped portion 21 on the inner face thereof.

Attached to the frame 14 is a bracket 106, and pivoted thereto, is a lever 107 having at the upper end thereof a pin and slot connection 108 with the housing 100. At the lower end of the lever 107 is a roller 110 engaging the side of the cammed disc 20. A coil tension spring 112 interconnects the lever 107 with the frame to maintain the roller 110 in contact with the cam 20. The caps 11 are fed at the upper end of the chute and slide down the chute until they contact bar 97. Upon rotation of the shaft 15, lever 107 will oscillate at regular intervals due to the engagement of the cammed portion 21 with the roller 110. Oscillation of the lever 107 will cause reciprocation of the housing 100 for reciprocating the bar 97.

Looking at Fig. 4 of the drawings, it will be seen that the crown 11b of the lowermost cap 11 contacts the upper edge of the bar 97. Upon moving the bar 97 to the left of the position shown in Fig. 6, the lowermost cap 11 will drop down into groove 98, the crown 11b contacting the inclined edge 98b.

When the lever 107 thereafter oscillates in the opposite direction, bar 97 will move to the right, the inclined edge 98a engaging the crown of the cap while the cap moves through groove 98, to push the cap downwardly below the bar 97 and into the opening 73, which is at that time adjacent the lower edge of the chute. The cap falling into the opening 73 will rest on the plate 64. The cam 20 is so arranged that as the bar 97 pushes a cap down, the turret plate is stationary, and while the bar 97 is retracted, the turret plate rotates to bring the next opening 73 to the lower end of the chute.

A spring finger 114 fixed to the lower end of the chute prevents the cap from jumping out of the opening 73. The caps are thus fed to the openings 73 in advance of the opening 67 where the scoring takes place, as will be described hereinafter.

Should a cap get stuck in the groove 98 so that the bar 97 cannot slide to the right, the housing 100 may move relative to said bar compressing spring 105 to prevent the parts from breaking. As shown in Fig. 6a, the housing 100 may reciprocate while bar 97 is jammed against movement.

Means is provided for scoring each cap as it reaches a position directly over the openings 67. To this end, there is rotatably mounted in the frame 14, a horizontal shaft 23 carrying a spur gear 24. On shaft 15 is a spur gear 18, meshing with gear 24. Said shaft 23 carries a cam 27 disposed directly below opening 67.

Said frame 14 has a portion 120 formed with a vertical bore 120a and with a vertical slot 121. Slidably mounted within the bore 120a is a sleeve 122 formed with a slot 123, at its lower end, and provided with a socket 124 at its upper end. Sleeve 122 is splined to portion 120 by splines 122b. Traversing the slot 123 is a pin 125 carrying roller 126 contacting the edge of the cam 27. Screwed to the sleeve 122 is a screw 128 passing through the vertical slot 121 and carrying a cross bar 129 connected by coil tension springs 130 to screws 131 screwed to the portion 120 of the frame. Rotation of shaft 15 will cause rotation of shaft 23 and hence rotation of the cam 27 for lifting the sleeve 122. The roller 126 is retained in contact with the edge of the cam 27 by the springs 130 for pulling the sleeve downwardly, whereby roller 120 remains in contact with cam 27.

Within the socket 124 in sleeve 122 is rotatably received the pilot end 133 of a vertical spindle 134.

Said spindle is formed with a flange 135 spaced from the sleeve 122. A thrust bearing 137 is interposed between the sleeve and the flange 135.

The lower end of the spindle 134 is formed with an axial opening 134*a*, and sleeve 122 is formed with a similar axial opening 122*a* communicating with the slot 123. Within the opening 134*a* is a connecting rod or pin 135*a* fixed to the spindle and having a head 135*b* disposed within the slot. A thrust bearing 135*c* is interposed between the head of the pin and the sleeve 122. It will now be understood that the pin 135*a* connects the spindle 134 to the sleeve 122 for reciprocation therewith while permitting rotation of the spindle.

Frame 14 is also formed with a bearing opening 140 in which is journaled a bevel gear 141 splined to the spindle 134. Attached to the underside of the gear 141 is a retaining plate 142 engaging the underside of the bearing 140. Spindle shaft 134 has a keyway 134*b*, and gear 141 has a key 141*a* received therein for splining the gear to the shaft.

The upper end of the spindle 134 is provided with an upstanding central pilot 147. The base of the pilot is formed with a horizontal diametric through opening 148 for the purpose hereinafter appearing.

On the spindle is a cutter or die 150 in the form of a cylindrical sleeve, the lower end of which receives the pilot 147. The lower edge of the die has pairs of aligned grooves 151 disposed at right angles to one another. One pair of aligned grooves 151 register with opening 148 to receive a pin 152 passing through said openings to prevent rotation between the cutter relative to said spindle. The cutter, as shown in the drawings, has an upper annular edge 153*a* of inverted V-shaped cross section. The die may however be of any other suitable shape and need not be circular.

Screwed to the upper end of the pilot is a screw 154, the head whereof retains the cutter on the upper end of the spindle. A washer 158 may be interposed between the head of the screw 157 and a shoulder 159 on the inner surface of the cutter 150.

A sleeve 160 surrounds the cutter 150 and rests on the upper end of the spindle. Set screws 161 serve to hold the sleeve against rotation relative to the cutter. The upper end of the sleeve is disposed below the upper edge of the die.

As shown in Fig. 10 of the drawings, the die 150 and sleeve 160 project into the openings 14*c* and 67. In the lowermost position of the spindle 134, the upper edge of the die is below the upper surface of plate 64 to permit rotation of turret plate 69. Upon rotation of the shaft 23, the cam 27 will lift the sleeve 122 and spindle 134 to raise the cutter to the position shown in Fig. 8 of the drawings. As the cutter and its sleeve move upwardly, the upper edges thereof will enter within the crown of the cap 11 to lift the cap above the turret plate. The cam 27 is designed to cause the cutter to dwell in its lowermost position, as well as in its uppermost position. The cam 27 furthermore is so arranged on the shaft 23 that when the spindle is down, the turret plate is rotating to bring a new cap above the opening 67 and when the turret plate is at rest, the spindle is being raised, then held in its uppermost position, and then moved down under the influence of the springs 130. The cap need not be lifted entirely out of the opening 73, as long as it is moved into contact with roller 52.

Means is provided to rotate the spindle continuously during operation of the machine. To this end, there is rotatably mounted in the frame 14, a horizontal shaft 28 disposed directly above the shaft 23. On shaft 28 is a sprocket wheel 29. On shaft 23 is a sprocket wheel 25 connected to the wheel 29 by a chain belt 30. On shaft 28 is a beveled gear 31, meshing with the beveled gear 141, as shown in Fig. 2 of the drawings.

It will now be understood that when the machine operates, shafts 15 and 23 will cause the rotation of the shaft 28 and hence spindle 134 through the meshing gears 141. The spline connection between the gear 141 and the spindle 134 permits reciprocation of the spindle as the same rotates. Between the wheel 29 and gear 31, and on shaft 28, is a sprocket wheel 32. On the frame 14 is a block 35 bolted thereto by bolts 36. On the block 35 is a cap 37 bolted thereto by bolts 38. The cap 37 has an inclined undersurface 39. Between blocks 35 and cap 37 is a horizontal tapered cotter member 40 having an inclined surface 40 contacting surface 39. The block 35 is formed with a horizontal screw threaded opening 41 receiving a screw 42 formed with an annular flange 43. The cotter pin 40 is formed with a groove 44 to receive the flange. Upon loosening bolts 38 and rotating the flange 43, the cotter member 40 is moved longitudinally to raise or lower the cap 37, depending upon the direction of movement. After adjusting the vertical height of the cap, the bolts 38 may again be tightened. The cap 37 is formed with a pair of spaced aligned bearings 45 in which is journaled a horizontal shaft 46. A pair of collars 47 on the shaft 46 serve to prevent longitudinal shifting of the latter.

At one end of the shaft 46 is a sprocket wheel 50 connected to the sprocket wheel 32 by a chain belt 51. It will now be understood that the level of the shaft 46 may be adjusted by properly manipulating the cotter adjustment. The slack in the chain belt 51 permits this adjustment. At the opposite end of the shaft 46 is an integral roller or rod extension 52 disposed almost directly above the face cam 27.

Fixed to the frame 14 in any suitable manner, is a bracket 53 comprising a horizontal bar 54 to which there is attached by screws or nuts 55, a bracket 56 carrying a pair of rollers 57 contacting the shaft 46 and serving to take the strain off the roller and to hold the roller during the scoring operation, as will be described hereinafter.

When the turret plate 69 is at rest, the spindle 134 will be raised by the cam 27, as shown in Fig. 8, to lift the cap, until the cap contacts the roller 52. Both the rollers and the cutter rotate for rotating the cap and scoring the underside thereof, as the same rotates. By properly adjusting the cotter plate, the depth of the cut on the underside of the cap may be properly adjusted. After the scoring operation, the spindle comes down below the top surface of the plate 64, and the scored cap remains seated on said plate above opening 67. The turret plate 69 thereafter rotates through another angle to bring a new cap into position over the opening 67, and carry the scored cap beyond said opening. It will now be understood that the cutter lifts the cap (or piece of stock) against the roller which is arranged to act at a single point at a time to press the cap or piece of stock against the cutting edge of the scoring die, and acting progressively thereon as the die and cap rotate,

whereby the cap is scored annularly to define the area which may be punched in.

Means is provided to remove the scored caps. To this end, the plates 64 and 14a are formed with registering openings 170 and 171 beyond opening 67. Registering with said openings 170, 171 is a downwardly inclined chute 172 leading to any suitable receptacle. When the scored caps carried beyond opening 67 come into registration 170 and 171, the same will pass into the chute 172 and to the receptacle.

It will be understood that other pieces of stock may be scored with my improved machine, the metal caps being shown and described only for the purpose of illustration.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

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

1. In combination with a member formed with an opening, means for scoring pieces of stock deposited at regular intervals on said member and over said opening, comprising a die having an axis perpendicular to said member disposed below said opening, a scoring element on said die, a second member disposed above said first member and overlapping said opening, means for reciprocating said die longitudinally of its axis to move the same upwardly through said opening to lift each piece of stock deposited on said first member and over said opening, upwardly into contact with said second member, and means for rotating said die while the piece of stock is in contact with said second member.

2. In combination with a member formed with an opening, means for scoring pieces of stock deposited at regular intervals on said member and over said opening, comprising a die having an axis perpendicular to said member disposed below said opening, a scoring element on said die, a second member disposed above said first member and overlapping said opening, means for reciprocating said die longitudinally of its axis to move the same upwardly through said opening to lift each piece of stock deposited on said first member and over said opening, upwardly into contact with said second member, means for rotating said die while the piece of stock is in contact with said second member, and means to adjust the distance between said first and second members.

3. A scoring machine comprising a flat support having an opening, a turret plate rotatable thereon and having a plurality of equiangularly spaced openings adapted to receive articles to be scored, said opening in said support registering with one of said plurality of openings, means to intermittently rotate said turret plate at regular intervals through angles equal to the angles between the openings therein, to bring said spaced openings successively into registration with the opening in said support, a member overlapping said opening and spaced from said plate, a die disposed in alignment with the opening in said support, a scoring element on said die, and means synchronized with said first means, for reciprocating said die through the opening in said support and the opening in said plate registering therewith, toward said member.

4. In a scoring machine, a flat horizontal support formed with an opening, a turret plate rotatably mounted thereon and having a plurality of equiangularly spaced openings adapted to receive articles to be scored, means for intermittently rotating said turret plate at regular intervals step by step through predetermined angles, equal to the angles between the spaced openings, to bring said openings successively into registration with the opening in said support, a horizontal roller above said plate and disposed radially of said opening in said support, a vertical spindle aligned with said opening in said support, a die mounted on the upper end of said spindle, for rotation therewith, said die having an upper die edge, means synchronized with said first means, for intermittently reciprocating said spindle and die for moving the die edge up through the opening in said plate registering with the opening in the support for lifting an article to be scored upwardly against the roller, and means for concurrently rotating said spindle and roller.

5. A scoring machine comprising a horizontal flat support formed with an opening, a turret plate rotatably mounted thereon and having a plurality of equiangularly spaced openings arranged in a circle, and adapted to receive articles to be scored, said opening in said support registering with one of said plurality of openings, means to intermittently rotate said turret plate at regular intervals through angles equal to the angles between the openings therein, to bring said spaced openings successively into registration with the opening in said support, a horizontal roller above said plate and disposed radially of said opening in said support, a vertical die aligned with the opening in said support and having an upper die edge, means synchronized with said first means, for reciprocating said die for moving the same through the opening in said plate registering with the opening in the support, toward said roller, and means for concurrently rotating said die and roller.

6. A scoring machine comprising a horizontal flat support formed with an opening, a turret plate on said support, formed with a plurality of equiangularly spaced openings arranged in a circle, the openings in the turret plate being adapted to register with the opening in said support upon rotating the turret plate, a vertical spindle aligned with the opening in said support, a die mounted on the upper end of the spindle for rotation therewith, a horizontal roller mounted for rotation above said plate and adapted to overlap said opening in said support, an inclined chute above said plate adapted to receive articles to be scored, the lower end of said chute being disposed adjacent said plate, means for intermittently rotating the turret plate to bring the openings therein into registration with the opening in said support at regular intervals, means synchronized with said first means, for intermittently reciprocating said spindle and die upwardly through the opening in said support and the opening in said plate registering therewith, means for rotating said spindle and roller, and means synchronized with said first means, for releasing the articles to be scored intermittently at regular intervals, one at a time to drop from said chute into the opening in said plate disposed at the lower end of the chute.

7. A scoring machine comprising a flat support having an opening, a turret plate rotatable thereon and having a plurality of equiangularly spaced openings, said opening in said support registering with one of said plurality of openings, means to intermittently rotate said turret plate at regular intervals through angles equal to the angles between the openings therein, to bring said spaced openings successively into registration with the opening in said support, a member overlapping said opening and spaced from said plate, a die disposed in alignment with the opening in said support the axis of said die being perpendicular to said plate, said die having an annular die edge, means synchronized with said first means, for reciprocating said die through the opening in said support and the opening in said plate registering therewith, toward said member, an inclined chute above said plate adapted to receive articles to be scored, the lower end of said chute being disposed adjacent said plate, a member mounted for reciprocation transversely of said chute and being formed with a passage to permit articles in said chute to pass to the turret plate upon reciprocating said member, and means synchronized with the intermittent rotation of said plate, to intermittently reciprocate said member.

8. A scoring machine comprising a flat support having an opening, a turret plate rotatable thereon and having a plurality of equiangularly spaced openings, said opening in said support registering with one of said plurality of openings, means to intermittently rotate said turret plate at regular intervals through angles equal to the angles between the openings therein, to bring said spaced openings successively into registration with the opening in said support, a member overlapping said opening and spaced from said plate, a die disposed in alignment with the opening in said support the axis of said die being perpendicular to said plate, said die having a die edge, means synchronized with said first means, for reciprocating said die through the opening in said support and the opening in said plate registering therewith, toward said member, an inclined chute above said plate adapted to receive articles to be scored, the lower end of said chute being disposed adjacent said plate, a member mounted for reciprocation transversely of said chute and being formed with a passage to permit articles in said chute to pass to the turret plate upon reciprocating said member, means synchronized with the intermittent rotation of said plate, to intermittently reciprocate said member, and a chute to carry away the scored articles after scoring the same.

9. A scoring machine comprising a member formed with an opening, means for intermittently depositing a piece of stock to be scored at regular intervals on said member and over said opening, a die having an axis perpendicular to said member and disposed below said opening, a second member disposed above said first member and overlapping said opening, a scoring element on said die, means for reciprocating said die longitudinally of its axis to move the same upwardly through said opening to lift the piece of stock deposited on said first member and over said opening, upwardly into contact with said second member, means for rotating said die while the piece of stock is in contact with said second member, said depositing means comprising a chute adapted to receive pieces of stock to be scored, a bar mounted on said chute for transverse reciprocation thereon and adapted to hold the pieces from dropping down the chute, said bar being formed with a passage adapted to permit the pieces to drop therethrough one at a time, upon reciprocating the bar, and means synchronized with said first means, for reciprocating said bar.

10. A scoring machine comprising a member formed with an opening, means for intermittently depositing a piece of stock to be scored at regular intervals on said member and over said opening, a die having an axis perpendicular to said member disposed below said opening, a second member disposed above said first member and overlapping said opening, means for reciprocating said die longitudinally of its axis to move the same upwardly through said opening to lift the piece of stock deposited on said first member and over said opening, upwardly into contact with said second member, means for rotating said die while the piece of stock is in contact with said second member, said depositing means comprising a chute adapted to receive pieces of stock to be scored, a bar mounted on said chute for transverse reciprocation thereon and adapted to hold the pieces from dropping down the chute, said bar being formed with a passage adapted to permit the pieces to drop therethrough one at a time upon reciprocating the bar, means synchronized with said first means, for reciprocating said bar, and a yielding connection between said bar and its reciprocating means to permit said reciprocating means to operate while the bar is stationary when the latter is jammed against movement.

11. A scoring machine comprising a rotary turret plate having a plurality of equiangularly spaced openings, means to intermittently rotate said turret plate at regular intervals, step by step, through angles equal to the angles between the openings therein, a die disposed in alignment with one of said openings and below said plate, a scoring element on said die, a member disposed above the plate and in alignment with said die, means synchronized with said first means, for feeding pieces of stock to be scored to the openings in said turret plate in advance of said die, means synchronized with said first means, for reciprocating said die each time rotation of the turret plate is interrupted, for lifting a piece of stock in the opening aligned with the die to move said piece of stock into contact with said member, and means for rotating said die to score said piece of stock.

12. A scoring machine comprising a rotary turret plate having a plurality of equiangularly spaced openings, means to intermittently rotate said turret plate at regular intervals, step by step, through angles equal to the angles between the openings therein, a die disposed in alignment with one of said openings and below said plate, a scoring element on said die, a member disposed above the plate and in alignment with said die, means synchronized with said first means, for feeding pieces of stock to be scored to the openings in said turret plate in advance of said die, means synchronized with said first means, for reciprocating said die each time rotation of the turret plate is interrupted, for lifting a piece of stock in the opening aligned with the die to move said piece of stock into contact with said member, and means for rotating said die to score said piece of stock, said feeding means comprising a chute above said plate and adapted to receive pieces of stock to be scored, the lower end of said chute being disposed adjacent said plate, a bar mounted on said chute for transverse re-

ciprocation thereon and adapted to permit the pieces of stock to move down the chute, past the bar one at a time as the bar is reciprocated and means synchronized with said first means to reciprocate said bar.

13. A scoring machine comprising a rotary turret plate having a plurality of equiangularly spaced openings, means to intermittently rotate said turret plate at regular intervals, step by step, through angles equal to the angles between the openings therein, a die disposed in alignment with one of said openings and below said plate, a scoring element on said die, a member disposed above the plate and in alignment with said die, means synchronized with said first means, for feeding pieces of stock to be scored to the openings in said turret plate in advance of said die, means synchronized with said first means, for reciprocating said die each time rotation of the turret plate is interrupted, for lifting a piece of stock in the opening aligned with the die to move said piece of stock into contact with said member, means for rotating said die to score said piece of stock, said feeding means comprising a chute above said plate and adapted to receive pieces of stock to be scored, the lower end of said chute being disposed adjacent said plate, a bar mounted on said chute for transverse reciprocation thereon and adapted to permit the pieces of stock to move down the chute, past the bar one at a time as the bar is reciprocated, means synchronized with said first means to reciprocate said bar, and a yielding connection between the bar and its reciprocating means to permit said reciprocating means to operate while the bar is stationary and jammed against movement.

14. In a scoring machine, a horizontal rotary turret plate having a plurality of equiangularly spaced openings, means for intermittently rotating said turret plate at regular intervals, step by step, through predetermined angles, equal to the angles between the spaced openings, means synchronized with said first means, for feeding pieces of stock to be scored to said openings, a horizontal roller above said plate, a vertical spindle aligned with said roller and disposed below said turret plate, a die at the upper end of the spindle, means synchronized with said turret plate for intermittently reciprocating said spindle and die for moving the die through an opening in the plate each time rotation of the turret plate is interrupted, for lifting a piece of stock in said opening upwardly against the roller, and means for concurrently rotating said spindle and roller.

15. In combination with a plate formed with an opening, means for scoring a piece of stock placed in alignment with said opening, comprising a member on one side of the plate, aligned with said opening and adapted to move through said opening, a second member on the other side of said plate and overlapping said opening, means for reciprocating said first member through said opening to move said piece of stock into contact with said second member, a scoring element on one of said members, and means independent of the cap, for positively rotating said members about their axes while said piece of stock is in contact with said second member, to rotate and score said piece of stock.

16. A scoring machine comprising a horizontal flat support formed with an opening, a turret plate on said support, formed with a plurality of equiangularly spaced openings arranged in a circle, the openings in the turret plate being adapted to register with the openings in said support upon rotating the turret plate, a vertical spindle aligned with the opening in said support, a die mounted on the upper end of the spindle for rotation therewith, a horizontal roller mounted for rotation above said plate and adapted to overlap said opening in said support, an axial vertical shaft on the turret plate, a second vertical shaft journalled in said machine, means for intermittently rotating the first vertical shaft when said second vertical shaft rotates continuously, means for rotating said second vertical shaft, means synchronized with said second vertical shaft for intermittently lifting said spindle, means for rotating said spindle, and means for rotating said roller.

17. A scoring machine comprising a horizontal flat support formed with an opening, a turret plate on said support, formed with a plurality of equiangularly spaced openings arranged in a circle, the openings in the turret plate being adapted to successively register with the opening in said support upon rotating the turret plate, a vertical spindle aligned with the opening in said support, a die mounted on the upper end of the spindle for rotation therewith, a horizontal roller mounted for rotation above said plate and adapted to overlap said opening in said support, an inclined chute above said plate adapted to receive articles to be scored, the lower end of said chute being disposed adjacent said plate, a member mounted for reciprocation transversely of said chute and being formed with a passage to permit articles in said chute to pass to the turret plate upon reciprocation of said member, an axial vertical shaft on the turret plate, means for intermittently rotating said vertical shaft, means synchronized with said first means for intermittently lifting said spindle, means for rotating said spindle, means for rotating said roller, and means synchronized with said first means for reciprocating said member.

18. In a scoring machine a flat horizontal support formed with an opening, a turret plate rotatably mounted thereon and having a plurality of equiangularly spaced openings adapted to receive articles to be scored, means for intermittently rotating said turret plate at regular intervals, step by step, through predetermined angles equal to the angles between the spaced openings in the turret plate, to bring said openings successively into registration with the opening in said support, a horizontal rotary member above the opening in said support, a vertical member aligned with the opening in said support, a scoring element on one of said members, means synchronized with said first means for intermittently reciprocating said vertical member, for moving the upper end thereof through the opening in said plate registering with the opening in the support, for lifting an article to be scored upwardly against the horizontal member, and means for rotating said members.

19. In a scoring machine, a member having a plurality of equally spaced openings adapted to receive articles to be scored, means for intermittently moving said member at regular intervals, step by step, a member on one side of said first member, means for supporting said second member for reciprocation longitudinally of its axis and for rotation about its axis, a third member on the other side of said first member, means for mounting said third member for rotation, a scoring element on one of said rotatably mounted members, means synchronized with the first means for intermittently reciprocating said sec-

ond member for moving a portion thereof through one of the openings in said first member and toward said third member, and means for concurrently rotating said rotary members.

20. In combination with a plate formed with an opening, means for scoring pieces of stock deposited intermittently at regular intervals on said plate and over said opening, said means comprising a member having an axis perpendicular to said plate and disposed below said opening, a second member disposed above said plate and overlapping said opening, means for reciprocating said first member longitudinally of its axis to move the same upwardly through said opening to move each piece of stock deposited on said plate and over said opening, upwardly into contact with said second member, one of said members being provided with a scoring element, and means independent of the cap for positively rotating said members while the piece of stock is in contact with said second member.

21. A scoring machine comprising a flat support having an opening, a turret plate rotatable thereon and having a plurality of equiangularly spaced openings adapted to receive articles to be scored, said opening in said support registering with one of said plurality of openings, means to intermittently rotate said turret plate at regular intervals through angles equal to the angles between the openings thereof, to bring said spaced openings successively into registration with the opening in said support, a member disposed in alignment with the opening in said support and disposed below said support, a second member above said turret plate and overlapping said opening in the support, a scoring element on one of said members, means synchronized with the first means for reciprocating said first member through the opening in the support, and the opening in the turret plate registering therewith toward said second member, and means for rotating at least one of said members.

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