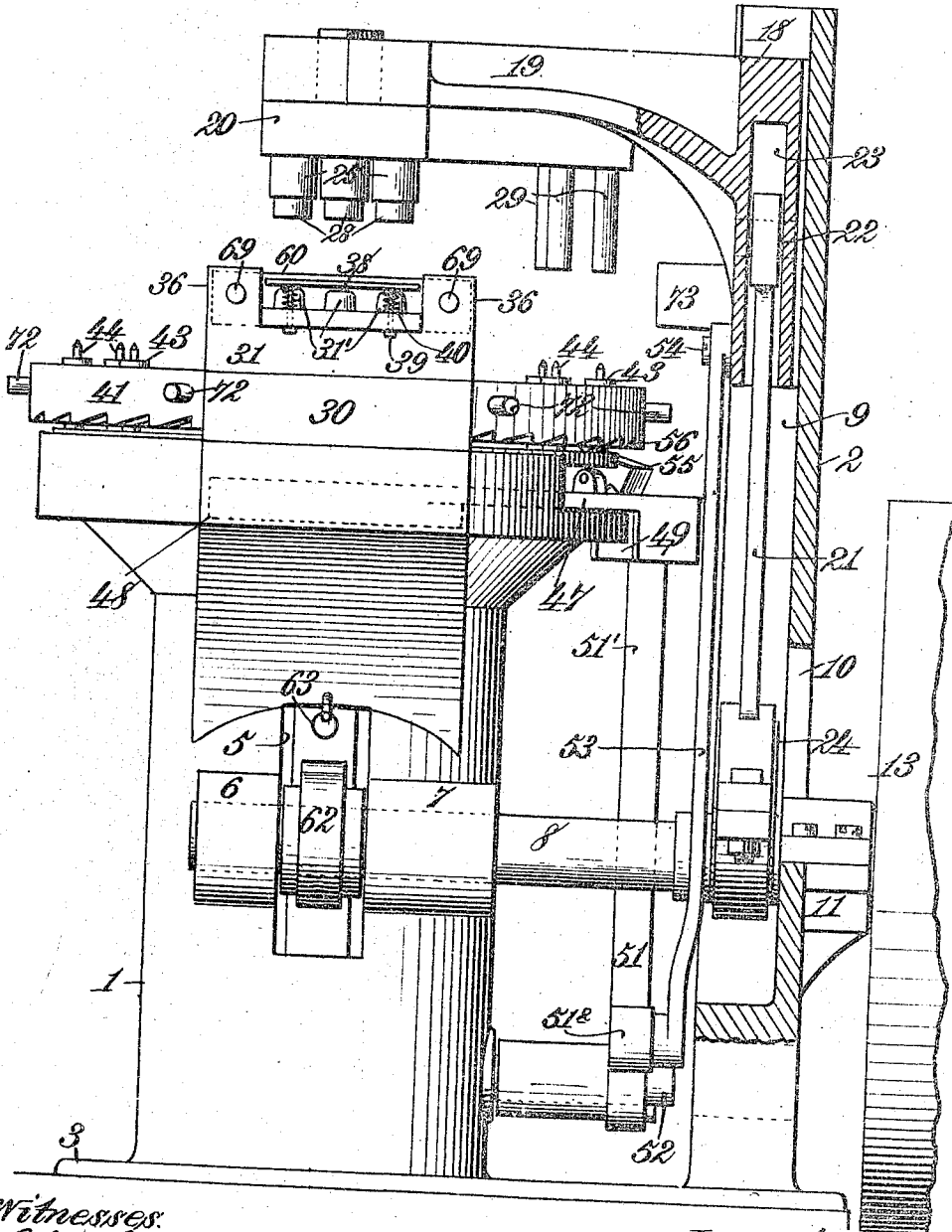


L. P. EISENBEIS.
EYELET MANUFACTURING MACHINE.
APPLICATION FILED DEC. 1, 1910.

1,005,622.

Patented Oct. 10, 1911.
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Robert Conitt.

[Signature]

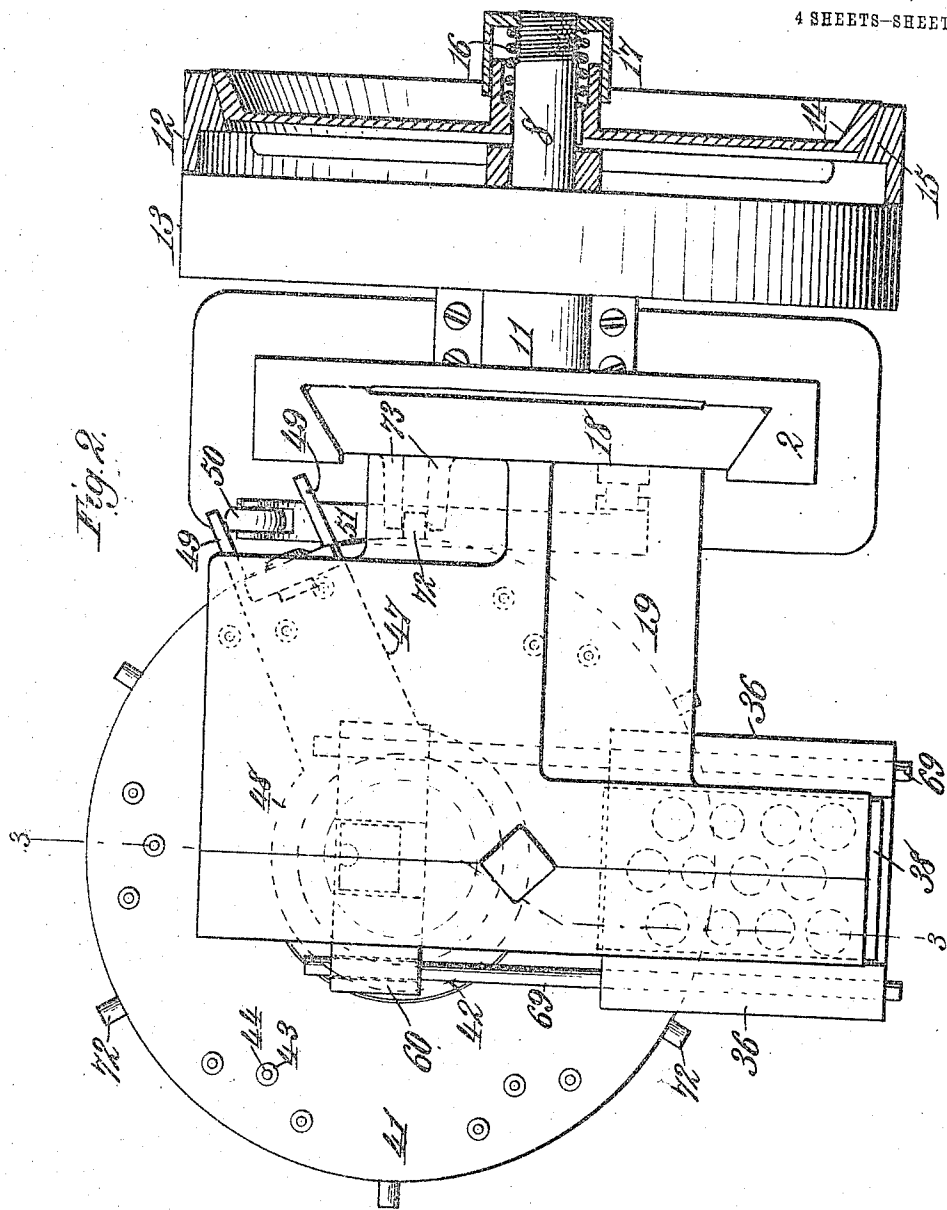
Inventor
Louis P. Eisenbeis.
By *[Signature]* Attorney.

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4 SHEETS-SHEET 2.



Witnesses:
 Robert Smith.
[Signature]

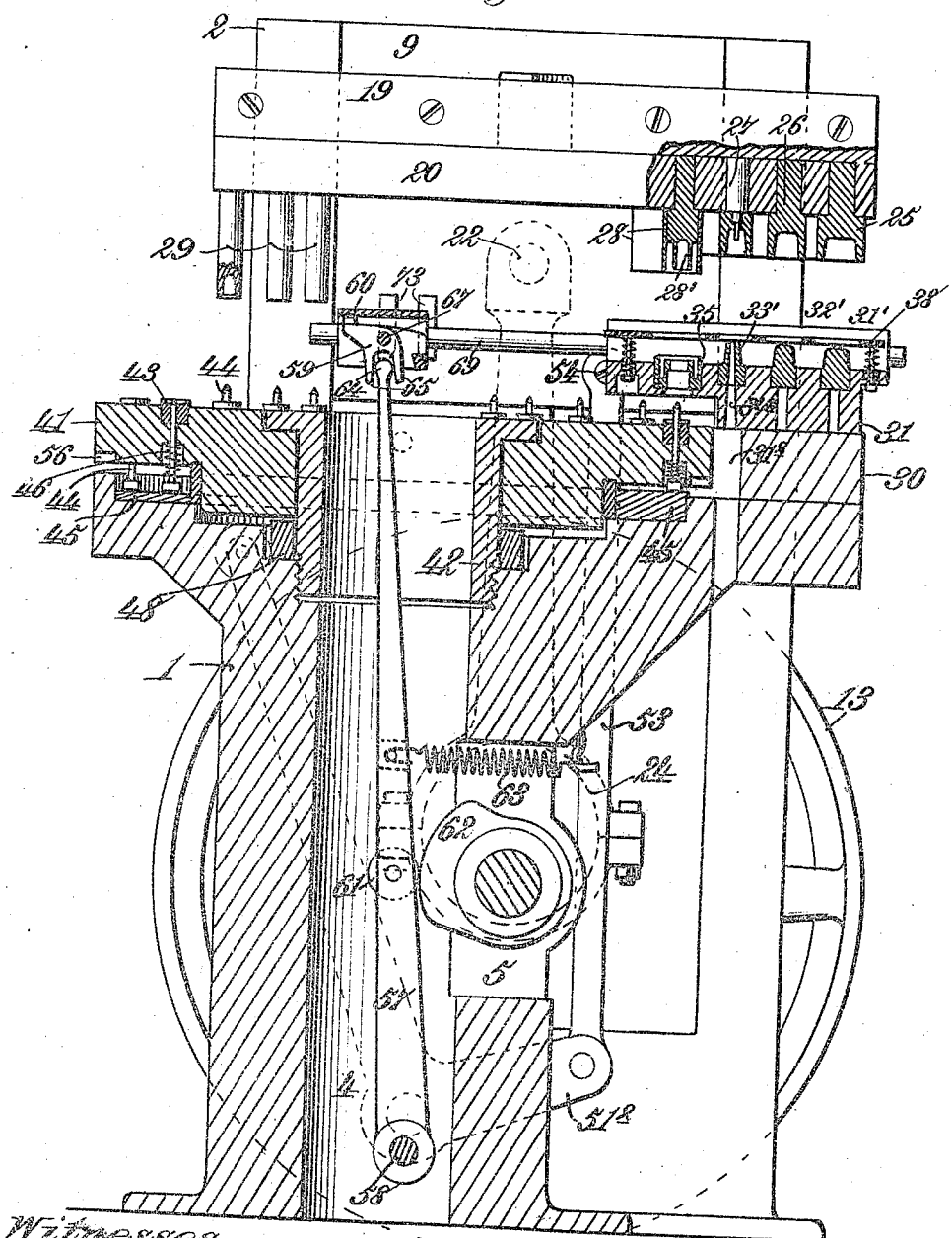
Inventor:
 Louis P. Eisenbeis.
 By *[Signature]*
 Att'y.

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 4 SHEETS—SHEET 3.

Fig 3.



Witnesses.
 Robert Conitt.
[Signature]

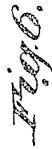
Inventor:
 Louis P. Eisenbeis.
 By *[Signature]* Atty.

1,005,622.

4 SHEETS--SHEET 4.



[Handwritten signature]



Inventor:
Louis P. Eisenbeis.
By Amos A. Norris Atty.

UNITED STATES PATENT OFFICE.

LOUIS P. EISENBEIS, OF OTTUMWA, IOWA, ASSIGNOR OF ONE-FOURTH TO JACOB B. SAX, OF OTTUMWA, IOWA, AND ONE-FOURTH TO EDWARD L. ROTH AND HOMER A. ROTH.

EYELET-MANUFACTURING MACHINE.

1,005,622.

Specification of Letters Patent. Patented Oct. 10, 1911.

Application filed December 1, 1910. Serial No. 595,143.

To all whom it may concern:

Be it known that I, LOUIS P. EISENBEIS, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented new and useful Improvements in Eyelet-Manufacturing Machines, of which the following is a specification.

The present invention has reference to improvements in eyelet manufacturing machines, and it resides generally in the production of a machine wherein are comprehended a series of automatically operated mechanisms by the intermediary of which a blank is fed step by step through the machine and subjected successively to the action of separate dies that form the complete eyelets and carry the same to a point where they may be removed to a suitable receptacle.

A structural embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation, with parts in section, of the complete machine. Fig. 2 is a plan view, likewise with parts in section. Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2. Fig. 4 is an enlarged fragmental section, showing the action of the several sets of dies. Fig. 5 is a perspective view of the feeder block. Fig. 6 is a plan view of the strip, showing the action of the dies thereon.

In said drawings, the frame of the machine is shown as comprising a pair of standards 1 and 2 mounted on a suitable base 3. The first-named standard is formed with a vertical bore 4 that extends completely therethrough and is intersected centrally by a transverse opening or passage 5, at the side walls of which are formed bearings 6 and 7 for the adjacent end of the drive shaft 8. The second-named standard has a height appreciably exceeding that of the first-named standard and is formed with a vertical slideway 9, through the lower portion of which shaft 8 projects, the rear wall of the slideway being cut away for that purpose, as indicated by the numeral 10. This standard is also provided with a bearing 11 for shaft 8, adjacent which bearing said shaft carries fast and loose pulleys 12 and 13 adapted to be driven from the main source of power.

While pulley 12 constitutes the fast driv-

ing element, as above stated, it is considered desirable to provide for the termination of the transmission of its movement to the drive shaft in the event of injury to anyone of the mechanisms hereinafter described. To this end, said pulley is preferably constructed of separate inner and outer members 14 and 15 which constitute, respectively, the male and female members of a clutch. The outer member 15 may, as shown, have the form of an annular shell loosely mounted on the shaft and provided with a conical inner friction surface, while the cone-like inner member 14 may be keyed to said shaft for sliding movement and yieldingly forced into engagement with the first-mentioned friction surface by means of a spring 16 interposed between its hub and a cap nut 17 or the like threaded on the shaft end, the provision of this nut enabling the tension of the spring to be adjusted, as will be understood.

The slideway 9 receives therein a slide 18 formed integral with a cross head 19, to the under face of which there is suitably fastened a die block 20. To this die block or holder are connected the stems of the movable dies for subjecting the metal strip or ribbon to the various shaping, cutting and other steps or treatments, in cooperation with the corresponding complementary or stationary dies, the latter dies being carried by a stationary die block hereinafter referred to. The requisite reciprocatory movement of the cross-head and its associated die block is effected directly from the drive shaft, preferably by the mechanism shown in Figs. 1 and 3, such mechanism comprising a depending link 21 pivoted at its upper end upon a pin 22 seated horizontally in a recess 23 formed in slide 18, and an eccentric 24 carried by said shaft and connected to the other end of said link.

The dies carried by the die block 20 are arranged in two series, one of which is located at one end of the die block, and the other at the opposite end. The first-mentioned series comprises the sets of drawing or shaping dies 25 and 26, perforating dies 27, and cutting and crimping dies 28. These dies are arranged in rows, one row to a set, three dies comprising a set, in the present instance, though no limitation to that exact number is contemplated; the central die of each row may advantageously be located slightly in advance of the two end dies. The

second series of dies consists merely of the finishing dies 29 which are arranged likewise in a row, with the central die slightly out of line with the end dies; this row of dies is located to one side of the first series of dies. The first three rows of dies of the first series have their bodies formed with inwardly-extending recesses 25', 26' and 27' of gradually increasing depth and decreasing diameter, the dies 27 being also provided with depending punches 27² which project centrally into recesses 27'. The dies 28 of the same series are formed with similar recesses 28' and with outer and inner annular walls 28² and 28³ arranged concentrically and in spaced relation, the outer wall having its lower edge sharpened. The dies 29 are also formed with inwardly-extending recesses 29', and their lower edges 29² are concaved, so as to produce a crimping action upon the eyelets.

The upper portion of standard 1 is enlarged, as shown, and is formed at one side with an extension 30 which supports the stationary die block 31, the latter being arranged directly below the first series of dies. Said die block carries the sets of complementary male dies 32, 33, 34 and 35, the arrangement of these dies corresponding to that of the first series of dies carried by the movable die block 20. Dies 32, 33 and 34 are fitted in seats formed in said die block and are provided with heads 31', 32' and 33', which are received in recesses 25', 26' and 27'. The dies 34 are additionally provided with vertical passages 34² which open into similar passages 31² formed through the die block 31, the small particles of metal cut out from the strip by the punches 27² falling through said passages, as will be understood from Fig. 4. There is also formed through said die block a row of larger openings 31³ which are enlarged, in turn, to provide seats for the dies 35, said dies comprising outer and inner spaced concentric walls 35² and 35³ between which the outer walls 28² of the upper dies 28 are adapted to project during the descent of the cross-head. The upper edges of walls 35² are sharpened, so as to coact with the sharpened lower edges of walls 28², and the corresponding edges of the inner walls 35³ are formed with inwardly-projecting shoulders 35⁴.

The side edges of the lower die block 31 are extended upward to produce walls 36 between which the metal strip or ribbon 37 is fed and guided. Between the strip and the adjacent face of the die block is interposed a stripper 38, which, as shown, may advantageously comprise a plate formed with rows of recesses corresponding in size and shape to the male dies and located directly thereabove. This plate is yieldingly supported and normally held in elevated po-

sition through the medium of the depending stems 39 which it carries, said stems being encircled by expansible springs 40 seated in recesses formed in the die block, the latter being provided with additional seats or passages through which the stems slide. See Fig. 4. In the top of standard 1 there is also formed a stepped recess wherein a correspondingly stepped table 41 is seated, said table being rotatably mounted on a bearing sleeve 42 threaded into an enlargement of the bore 4, as shown in Fig. 3. Said table carries in seats formed therein a plurality of sets of crimping dies 43 which coact with the finishing dies 29 on the upper die block 20 their free edges 43² being concaved for that purpose. These dies 43 are provided with axial passages through which slide a series of sets of vertical pins 44, likewise carried by the table, the heads 44' formed on the lower ends of said pins being yieldingly forced downward into contact with a cam ring 45 or the like by means of encircling coil springs 46. Ring 45 is interposed between the uppermost steps of the table and its seat and serves to elevate pins 44 against the action of their controlling springs, as will be understood.

The sets of pins and dies are so arranged as to pass directly beneath the dies 35 in the lower die block, and also beneath the dies 29 on the upper die block when the table is rotated. To effect the rotation of said table there is provided, in the present construction, a horizontally-disposed rocking lever 47 formed at its inner end with an eye 48 which encircles sleeve 42 and is interposed between the lowermost steps of the table and its seat. The outer end of this lever is bifurcated, as shown in Fig. 2, the ears 49 resulting from the bifurcation receiving therebetween a roller 50 mounted in the forked upper terminal of the longer arm 51' of a bell crank lever 51, the latter being pivoted at its apex on a pin or stud shaft 51² located exteriorly of standard 1 and secured thereto in any suitable manner. The shorter arm 51² of said lever is connected by means of a link 53 with slide 18, said link having one end thereof pivoted to a pin 54 with which the slide is provided. See Fig. 1. The space between ears 49 is sufficiently great to allow for a slight play of roller 50 therein. Upon the upper face of the lever 47, adjacent said ears, there is pivotally mounted a gravity pawl 55, the normally elevated working end of which is adapted to engage the ratchet teeth 56 formed upon the lower surface of the table at the edge thereof.

The arrangement of the parts above described is such, therefore, that during the descent of the slide 18, link 53 will have a corresponding downward movement, thereby rocking bell crank lever 51 to the right,

(clockwise), and, in consequence, imparting a clockwise rocking movement to lever 47, the pawl 55 carried by the latter riding idly along the ratchet teeth 56 without effecting movement of the table. When, however, the ascent of the slide takes place, the bell crank and pawl levers will be rocked in a counter-clockwise direction, and the rigid engagement of the working end of said pawl with the ratchet teeth will occasion a rotary movement of said table. During the rocking movements of the bell crank lever in both directions, a slight lost motion will take place, owing to the play of roller 50 between the ears 49 on the pawl lever.

As shown in Fig. 2, there are preferably six sets of pins carried by the table, for which reason it becomes necessary to rotate the table through an arc of 60° at each operation of the pawl lever 47. The operating parts are so proportioned as to effect this movement, as will be apparent.

The compression of the strip takes place when the lower die block reaches the limit of its downward movement, the effect of such compression being illustrated in Figs. 4 and 6. The first sets of dies 25 and 32 serve to initially indent the strip, as indicated by the letter *a* in Fig. 6, the metal being drawn upward and outward to a slight extent; the second and third sets 26 and 33 and 27 and 34 serve to lengthen and further draw out the protuberances thus formed, while at the same time decreasing their diameters, as indicated by the letters *b* and *c*, the punches 27² carried by the dies 27 forming the perforations *c'*; the fourth sets 28 and 35 sever the partially-formed eyelets from the strip and also turn up the lower edges of the same, the openings *d* in Fig. 6 indicating the removal of said eyelets.

It will be understood that the strip is fed step by step through the machine, the extent of each step or movement being equal to the distance between the rows of dies. The preferred mechanism, through the medium of which this feed is obtained, is best shown in Figs. 3, 4 and 5, and it comprises a rocking lever 57 fulcrumed at its lower end on a horizontal pin 58 set crosswise in the bore 4, a rocking clamp 59 operated by said lever, and a sliding block 60 wherein said clamp is mounted and with which it is operatively associated. Lever 57 is provided intermediate its ends with a roller 61 held normally in contact with a cam 62 mounted on shaft 8 by a suitably arranged spring 63. The upper end of this lever projects through the bearing sleeve 42 and terminates in a ball or knob 64 received between a pair of depending legs 65 formed upon the rocker 59, which latter is disposed in a recess 66 produced by cutting away a portion of the slide 60, said rocker being rotatably mounted on a horizontal pin 67

or the like, that has its ends fitted in seats formed in the side walls of said recess. Said slide is further provided adjacent its ends with transverse passages 68 through which project the ends of the two horizontal guide bars 69 that support the slide, said bars being carried, in turn, by the lower die block 31 and being supported in similar passages therein. The strip is inserted through a horizontal slot 70 formed in said slide above rocker 59, and is engaged by a nose 71 formed upon the upper portion of said rocker, the nose being adapted to project through the central openings *d* in said strip.

As a result of the arrangement just described, lever 57 will be rocked to the left against the pressure of spring 63 by the action of cam 62, during which movement rocker 59 will be caused to turn in the opposite direction, thereby raising its nose 71 and engaging the same in the adjacent opening *d* in the strip, while at the same time said strip is clamped between the upper face of the rocker and the top wall of slot 70. The continued movement of the lever will then exercise a positive traction upon the strip, and will cause the latter to advance one step, the slide 60 traveling upon its guides at that time. When the low part of cam 62 comes opposite roller 61, the lever will be free to assume its initial position under the influence of spring 63, carrying the slide with it, and in so doing will swing the rocker to the left, thereby unclamping the strip and withdrawing nose 71 from the perforation therein. It may be stated, in this connection, that the actuation of the feeder takes place during the ascent of the slide 18; this is necessary, since it is obvious that the movement of the strip is impossible until said strip has been raised clear of the lower dies by the upward movement of the stripper. The rotation of the table also takes place at about the same time, so as to bring a set of pins 44 into position to receive the cut out eyelets thereon after the succeeding compression of the strip between the upper and lower dies.

Means is finally provided for locking the table against rotation during the descent of slide 18, to prevent displacement of said table while the compression of the strip is being effected. In the present construction, there are provided for this purpose a series of six latches 72, preferably in the form of lateral studs projecting from the peripheral wall of the table, and a catch 73 carried by said slide and arranged to engage said latches, said catch consisting, as shown, of a fork adapted to straddle that one of the latches which lies directly therebeneath. (See Fig. 2.) During the ascent of said slide, the catch or fork is released from the latch engaged thereby prior to the rotation of the

table, this being due to the lost motion or play of the roller 50 between the ears 49 of the operating lever 47.

The complete operation of the machine is substantially as follows: The metal strip is passed between the guide walls 36 of the lower die block, and across the stripper plate 38. Motion is then imparted to the drive shaft, whereupon slide 18 (which will be assumed to occupy its upper position) will descend, and the strip will be subjected to the action of the main series of dies. At the conclusion of the pressing operation, the slide will commence its ascent, and will carry with it the upper dies, the strip being raised clear of the lower dies by the spring-controlled stripper 38. The partially completed eyelets severed from the strip by the coacting cutting edges of the outer walls 28² and 35² of dies 28 and 35 will tend to rise with the former dies, but will be stripped therefrom on being brought into contact with the shoulders 35⁴ on the inner walls 35³ of dies 35, and will fall through the openings 31³ onto the pins 44 and dies 43 therebeneath. The ascent of said slide 18 will unlock the table, and the latter will be turned or rotated one step through the intermediary of link 53, bell crank lever 51, operating lever 47, and pawl 55. The strip will also be advanced one step through the machine, by means of the cam-operated lever 57, rocker 59, and slide 60, as above described, the free end of the strip having previously been introduced into the slot 70 in slide 60. The eyelets on pins 44 will be carried around with the latter until they reach a point directly beneath the finishing dies 29, at which point their crimping will be completed by said dies and the corresponding dies 43 on which they rest. On passing this point, the pins will be lowered, owing to the travel of their heads on the low part of the cam ring 45, thus leaving the finished eyelets free to be swept from the table by means of any suitable device. Said pins are again raised into operative position on reaching the high portion of the cam ring during the continued rotation of the table.

The entire machine is automatic in its operation, and hence requires no skilled attendants.

I claim as my invention:

1. In a press, the combination of a pair of die blocks; coöperating sets of dies carried by said blocks for compressing a strip interposed therebetween; and progressive feeding means for said strip comprising a traveling hollow member, a clamp movably mounted in said member and adapted to bind the strip thereagainst, and a rocking lever engaged with said clamp for operating the same and for shifting said member.

2. In a press, the combination of a pair of die blocks; coöperating sets of dies carried

by said blocks for compressing a strip interposed therebetween; and progressive feeding means for said strip comprising a traveling hollow member through which the strip is adapted to extend, a rocking clamp mounted in said member, and a rocking lever engaged with said clamp for rocking the same into and out of binding engagement with the strip, and for shifting said member alternately in opposite directions.

3. In a press, the combination of a pair of die blocks; coöperating sets of dies carried by said blocks for compressing a strip interposed therebetween; and progressive feeding means for said strip comprising a slide, a support on which the slide is adapted to travel, a rocking clamp carried by said slide for binding the strip thereagainst, and a rocking lever engaged with said clamp for operating the same and for shifting said slide alternately in opposite directions on said support.

4. In a press, the combination of a pair of die blocks; coöperating sets of dies carried by said blocks for compressing a strip interposed therebetween; and progressive feeding means for said strip comprising a hollow slide through which the strip is adapted to pass, a rocking clamping member mounted in said slide for engagement with said strip, and a single member engaged with the first-named member for clamping and unclamping the same and for shifting said slide alternately in opposite directions.

5. In a press, the combination of a vertically movable die block; a stationary die block; coöperating dies carried by said blocks for compressing a strip interposed therebetween; a drive shaft; means operated by said shaft for actuating the movable block; progressive feeding means for said strip comprising a rocking lever, a clamp engaged therewith, and a member against which said clamp is adapted to bind the strip; and a cam secured to said shaft for rocking said lever.

6. In a press, the combination of a vertically movable die block; a stationary die block; coöperating dies carried by said blocks for compressing a strip interposed therebetween; a drive shaft; means operated by said shaft for actuating the movable block; progressive feeding means for said strip comprising a hollow slide through which the strip is adapted to pass a rocking clamping member mounted in the slide for engagement with the strip, and a rocking lever engaged with said rocking member for clamping and unclamping the same, and for shifting said slide alternately in opposite directions; and a cam secured to said shaft for rocking said lever.

7. In a press, the combination of a reciprocatory cross-head and means for operating the same; a die block carried by said

cross-head; a stationary die block; cooperating sets of forming dies carried by said blocks for acting on a strip interposed therebetween; a standard upon which the stationary block is mounted; a table mounted on said standard and adapted to receive the articles formed by said dies; and connections between said cross-head and said table for rotating the latter during the movement of the former in one direction.

8. In a press, the combination of a reciprocatory cross-head and means for operating the same; a die block carried by said cross-head; a stationary die block; cooperating sets of forming dies carried by said blocks for acting on a strip interposed therebetween; a standard upon which the stationary block is mounted; a table mounted on said standard, said stationary block having a portion thereof overhanging said table and formed with passages leading to the latter from certain of its dies; and connections between said cross-head and said table for rotating the latter during the movement of the former in one direction.

9. In a press, the combination of a reciprocatory cross-head and means for operating the same; a die block carried by said cross-head; a stationary die block; cooperating sets of forming dies carried by said blocks for acting on a strip interposed therebetween; a standard upon which the stationary block is mounted; a table mounted on said standard and adapted to receive the articles formed by said dies; a lever connected with said table, for rotating the same; and connections between said cross-head and said lever for operating the latter during the movement of the former.

10. In a press, the combination, with article-forming means; of a standard; a table rotatably mounted thereon and adapted to receive the articles from said forming means, said table being provided with an annular series of teeth; a lever journaled on said standard and provided with a pawl engaging said teeth; and means for oscillating said lever.

11. In a press, the combination, with article-forming means; of a standard; a table rotatably mounted thereon and adapted to receive the articles from said forming means, said table being provided with an annular series of teeth; a lever journaled on said standard and provided with a pawl engaging said teeth; a rocking lever connected with the first-named lever for oscillating the same; and a reciprocating member for rocking the second-named lever.

12. In a press, the combination, with article-forming means; of a standard; a table rotatably mounted thereon and adapted to receive the articles from said forming means, said table being provided with an annular series of teeth; a lever journaled on

said standard and provided with a pawl engaging said teeth; a bell crank lever having one arm thereof connected with the first-named lever; a reciprocating member; and a connection between said member and the other arm of said bell crank lever.

13. In a press, the combination of a reciprocatory cross-head, and means for operating the same; a standard located beneath the cross-head; companion article-forming elements attached to said cross-head and standard for compressing a strip interposed therebetween; a carrier for the formed articles movably mounted on said standard; connections between said cross-head and said carrier for operating the latter during the movement of the former in one direction; and positive means for locking said carrier against operation during the movement of said cross-head in the opposite direction.

14. In a press, the combination of a reciprocatory cross-head, and means for operating the same; a standard located beneath the cross-head; companion article-forming elements attached to said cross-head and standard for compressing a strip interposed therebetween; a carrier for the formed articles movably mounted on said standard; connections between said cross-head and said carrier for operating the latter during the movement of the former in one direction; and interengaging devices carried by said cross-head and carrier for locking said carrier against operation during the movement of said cross-head in the opposite direction.

15. In a press, the combination of a reciprocatory cross-head, and means for operating the same; a standard located beneath the cross-head; companion article-forming elements attached to said cross-head and standard for compressing a strip interposed therebetween; a carrier for the formed articles movably mounted on said standard; connections between said cross-head and said carrier for operating the latter during the movement of the former in one direction; latch-means secured to said carrier; and a catch secured to said cross-head and adapted to engage said latch means during the movement of the cross-head in the opposite direction, to lock said carrier against movement at that time.

16. In a press, the combination of a reciprocatory cross-head and means for operating the same; a standard located beneath the cross-head; companion article-forming elements attached to said cross-head and standard for acting on a strip interposed therebetween; a table rotatably mounted on said standard for receiving the formed articles; connections between said cross-head and said table for rotating the latter when the former moves in one direc-

tion; and means separate from said rotating means for locking said table against rotation when said cross-head moves in the opposite direction.

17. In a press, the combination of a reciprocatory cross-head and means for operating the same; a standard located beneath the cross-head; companion article-forming elements attached to said cross-head and standard for acting on a strip interposed therebetween; a table rotatably mounted on said standard for receiving the formed articles; connections between said cross-head and said table for rotating the latter when the former moves in one direction; and cooperating devices secured to said table and said cross-head and adapted for mutual engagement when said cross-head moves in the opposite direction, to lock said table against rotation at that time.

18. In a press, the combination of a vertically movable cross-head, and means for operating the same; a die block carried by said cross-head; a standard; a stationary die block secured to said standard directly beneath the first-named block; cooperating forming dies carried by said blocks for acting on a strip interposed therebetween; a table rotatably mounted on said standard for receiving the formed articles; connections between said cross-head and said table, for rotating the latter during the upward movement of the former; and cooperating devices secured to said cross-head and table and adapted for mutual engagement during the downward movement of said cross-head, to lock said table against rotation at that time.

19. In a press, the combination of a reciprocatory cross-head and means for operating the same; a standard located beneath the cross-head; companion article-forming elements attached to said cross-head and standard for acting on a strip interposed therebetween; a table rotatably mounted on said standard for receiving the formed articles; connections between said cross-head and said table for rotating the latter when the former moves in one direction; a series of lateral pins secured to said table; and a fork secured to said cross-head and adapted to engage the adjacent pin when said cross-head moves in the opposite direction, to lock said table against rotation at that time.

20. In a press, the combination of a standard; a stationary die block secured thereto; a movable die block arranged above the stationary die block; cooperating forming dies carried by said blocks; reciprocatory means for lowering the second-named block toward the first-named block, to compress a strip interposed therebetween, and for subsequently raising said second-named block away from said first-named block; a table rotatably mounted on said standard

and adapted to receive the articles formed by said dies; means for locking said table against rotation during each compressing operation; and means for rotating said table upon each succeeding upward movement of said second-named block.

21. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating forming dies adapted to compress a strip interposed therebetween, and means for imparting a reciprocating movement to the movable block; of a rotating table, and a support for the same, said table being adapted to receive the articles formed by said dies; means for rotating said table during the movement of said movable block in one direction; and means for simultaneously feeding the strip between said blocks.

22. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating forming dies adapted to compress a strip interposed therebetween; and means for imparting a reciprocating movement to the movable block; of a rotating table, and a support for the same, said table being adapted to receive the articles formed by said dies; means for rotating said table during the movement of said movable block in one direction; means for simultaneously feeding the strip between said blocks; and means for locking said table against rotation during the movement of said movable block in the opposite direction.

23. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating dies adapted to act upon a strip interposed therebetween; means for operating the movable block; a traveling member; means for clamping the strip thereto; and means for shifting said member bodily forward when the strip is clamped therein; to feed said strip between said blocks.

24. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating dies adapted to act upon a strip interposed therebetween; means for operating the movable block; a traveling hollow slide through which the strip is adapted to pass; a clamp located in said slide and adapted to bind the strip therein; and means for operating said clamp and for shifting said slide bodily forward when the strip is clamped in the latter, to feed said strip between said blocks.

25. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating dies adapted to act upon a strip interposed therebetween; a stripper associated with the dies on one of said blocks, for removing the strip therefrom after the

completion of each compression; a traveling member; means for clamping the strip thereto; and means for shifting said member bodily forward when the strip is clamped therein, to feed said strip between said blocks.

26. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating dies adapted to act upon a strip interposed therebetween; a spring-controlled plate associated with the dies on one of said blocks, for removing the strip therefrom after the completion of each compression; a traveling member; means for clamping the strip thereto; and means for shifting said member bodily forward when the strip is clamped therein, to feed said strip between said blocks.

27. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating dies adapted to compress a strip interposed therebetween, the dies of one block having their working portions projecting above the surface of the corresponding block; a spring-controlled stripper interposed between said surface and the strip, for raising the latter above said projecting portions at the completion of each pressing operation; and means for exerting a positive traction upon said strip after the same has been raised, to feed said strip between said blocks.

28. In a press, the combination, with article-forming means comprising stationary and movable die blocks provided with cooperating dies adapted to compress a strip interposed therebetween, the dies of one block having their working portions projecting above the surface of the corresponding block; a spring-controlled stripper interposed between said surface and the strip, for raising the latter above said projecting portions, at the completion of each compressing operation; a traveling member; means for clamping the strip thereto after the same has been raised; and means for shifting said member bodily forward, to feed said strip through the press.

29. In a press, the combination of a hollow standard; a die block fixed thereto; a movable die block arranged above the first-named block; cooperating dies carried by said blocks for compressing a strip interposed therebetween; means for reciprocating the second-named block; a rocking member journaled in the bore of the standard; means for rocking said member; and means operatively connected with said rocking member for feeding the strip between said blocks.

30. In a press, the combination of a vertical standard having a longitudinal bore

opening through the upper end thereof; a die block fixed on said standard; a movable die block arranged above the first-named block; cooperating dies carried by said blocks for compressing a strip interposed therebetween; means for reciprocating the second-named block; and a feeder for said strip comprising a member movable across the open top of said bore, and a member journaled in said bore and associated with the first-named member.

31. In a press, the combination of a vertical standard having a longitudinal bore opening through the upper end thereof; a die block fixed on said standard; a movable die block arranged above the first-named block; cooperating dies carried by said blocks for compressing a strip interposed therebetween; means for reciprocating the second-named block; and a feeder for said strip comprising a slide movable across the open top of said bore, a rocking clamp mounted in said slide and adapted to bind said strip thereagainst, and a rocking lever journaled in said bore and engaged with said clamp, for operating the latter and for shifting said slide.

32. In a press, the combination of a standard formed with a vertical bore opening through the upper end thereof; a bearing sleeve fitted in the upper end of said bore; a table rotatably mounted on said sleeve and provided with an axial opening in which the same is fitted; a die block fixed to said standard at one side of said table; a movable die block arranged above the first-named block; cooperating forming dies carried by said blocks for compressing a strip interposed therebetween, said table being adapted to receive the articles formed by said dies; means for reciprocating the second-named block; means for rotating said table; and a feeder for said strip comprising a member movable across the open top of said bore, and a member journaled in said bore and projecting through said sleeve into engagement with the first-named member.

33. In a press, the combination of a standard having a seat formed in its top; a bearing sleeve secured centrally in said seat; a table disposed in said seat and rotatably mounted on said sleeve; a die block fixed to said standard at one side of said table; a movable die block arranged above the fixed block; cooperating forming dies carried by said blocks for compressing a strip interposed therebetween, said table being adapted to receive the articles formed by said dies; means for reciprocating the movable block; a lever provided with an eye encircling said sleeve; a member carried by said lever and arranged to engage said table, for rotating the same; means for oscillating

said lever; and means for progressively feeding the strip between said blocks.

34. In a press, the combination of a standard having a seat formed in its top; a bearing sleeve secured centrally in said seat; a table disposed in said seat and rotatably mounted on said sleeve; a die block fixed to said standard at one side of said table; a movable die block arranged above the fixed block; cooperating forming dies carried by said blocks for compressing a strip interposed therebetween; said table being adapted to receive the articles formed by said dies; means for reciprocating the movable block; a lever provided with an eye encircling said sleeve; a member carried by said lever and arranged to engage said table, for rotating the same; a bell crank lever connected with the first-named lever for oscillating the latter; operative connections between said reciprocating means and said bell crank lever; and means for progressively feeding the strip between said blocks.

35. In a press, the combination of fixed and movable die blocks; cooperating forming dies carried thereby for acting on the material interposed therebetween; means for reciprocating the movable block; a movable carrier arranged adjacent one of said blocks, for receiving the articles formed by said dies; means for periodically operating said carrier; and additional means for periodically locking said carrier against operation.

36. In a press, the combination of fixed and movable die blocks; cooperating forming dies carried thereby for acting on the material interposed therebetween; means for reciprocating the movable block; a table rotatably mounted adjacent one of said blocks, for receiving the articles formed by said dies; means for periodically rotating said carrier; and additional means for periodically locking said carrier against rotation.

37. In a press, the combination of fixed and movable die blocks; cooperating forming dies carried thereby for acting on the material interposed therebetween; means for reciprocating the movable block; a movable carrier arranged adjacent one of said blocks, for receiving the articles formed by said dies; connections between said reciprocating means and said carrier for periodically operating the latter; and cooperating devices secured to said carrier and said reciprocating means for periodically locking said carrier against operation.

38. In a press, the combination of a standard; a die block fixed thereto; a movable die block arranged above the first-named block; cooperating forming dies carried by said blocks for acting on the material interposed therebetween; means for reciprocating the second-named block; a movable carrier

mounted on said standard and provided with vertical pins adapted to receive the articles formed by said dies; and means for operating said carrier.

39. In a press, the combination of a standard; a die block fixed thereto; a movable die block arranged above the first-named block; cooperating forming dies carried by said blocks for acting on the material interposed therebetween; means for reciprocating the second-named block; a movable carrier mounted on said standard and provided with vertical pins adapted to receive the articles formed by said dies; means for operating said carrier; and means for imparting an endwise movement to said pins during their travel with said carrier.

40. In a press, the combination of a standard; a die block fixed thereto; a movable die block arranged above the first-named block; cooperating forming dies carried by said blocks for acting on the material interposed therebetween; means for reciprocating the second-named block; a table rotatably mounted on said standard and provided with vertical pins adapted to receive the formed articles from said dies; means for rotating said table; and a cam ring supported on said standard beneath said table, for raising and lowering said pins during their travel with the table.

41. In a press, the combination of a standard; a table rotatably mounted thereon; means for rotating the table; a die block fixed to said standard and having a portion thereof overhanging said table and formed with passages opening toward the same; a movable die block arranged above the fixed die block; means for reciprocating said movable block; cooperating forming dies carried by said blocks, certain of the dies carried by said fixed block being seated in said passages and having an annular form; and a plurality of vertical pins carried by said table in position to pass beneath said passages, to receive the articles falling there-through from said annular dies.

42. In a press, the combination of a standard; a table rotatably mounted thereon; means for rotating the table; a die block fixed to said standard and having a portion thereof overhanging said table and formed with passages opening toward the same; a movable die block arranged above the fixed die block; means for reciprocating said movable block; cooperating forming dies carried by said blocks, certain of the dies carried by said fixed block being seated in said passages and having an annular form; a plurality of slidable vertical pins carried by said table in position to pass beneath said passages, to receive the articles falling there-through from said annular dies; and means for subsequently withdrawing said

pins from said articles during a portion of their travel with said table, to permit the removal of the articles from the table.

43. In a press, the combination of a reciprocating cross-head; means for operating the same; a die block fixed to said cross-head and provided with separate series of forming and finishing dies remote from each other; a standard located beneath said cross-head; a die block fixed to said standard and provided with a series of forming dies cooperating with the corresponding first-named series; a carrier movably mounted on said standard and adapted to receive the articles formed by said series of forming dies; and means for operating said carrier, to bring said articles into position for treatment by said finishing dies.

44. In a press, the combination of a reciprocating cross-head; means for operating the same; a die block fixed to said cross-head and provided with separate series of forming and finishing dies remote from each other; a standard located beneath said cross-head; a die block fixed to said standard and provided with a series of forming dies cooperating with the corresponding first-named series; a carrier movably mounted on said standard and provided with a series of dies cooperating with the first-named series of finishing dies; said carrier dies being adapted to receive thereon the articles from said series of forming dies; and means for

operating said carrier, to bring said articles into position beneath the first-named series of finishing dies, for treatment by the same.

45. In a press, the combination of a reciprocating cross-head; means for operating same; a die block fixed to said cross-head and provided with separate series of forming and finishing dies remote from each other; a rotating table located beneath said cross-head and having a series of perforated finishing dies cooperating with the corresponding first-named series, and a series of vertical pins slidable in said perforations; a support on which said table is mounted; a die block fixed to said support and provided with a series of forming dies cooperating with the first-named series of forming dies, said pins being adapted to receive the articles from said series of forming dies; means for rotating said table, to bring said articles into position beneath the first-named series of forming dies; and means for subsequently withdrawing said pins from said articles to permit the removal of the latter from said table.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS P. EISENBEIS.

Witnesses:

C. E. BOUDE,
LEO. M. DIETZ.