

No. 757,028.

PATENTED APR. 12, 1904.

F. EGGE.

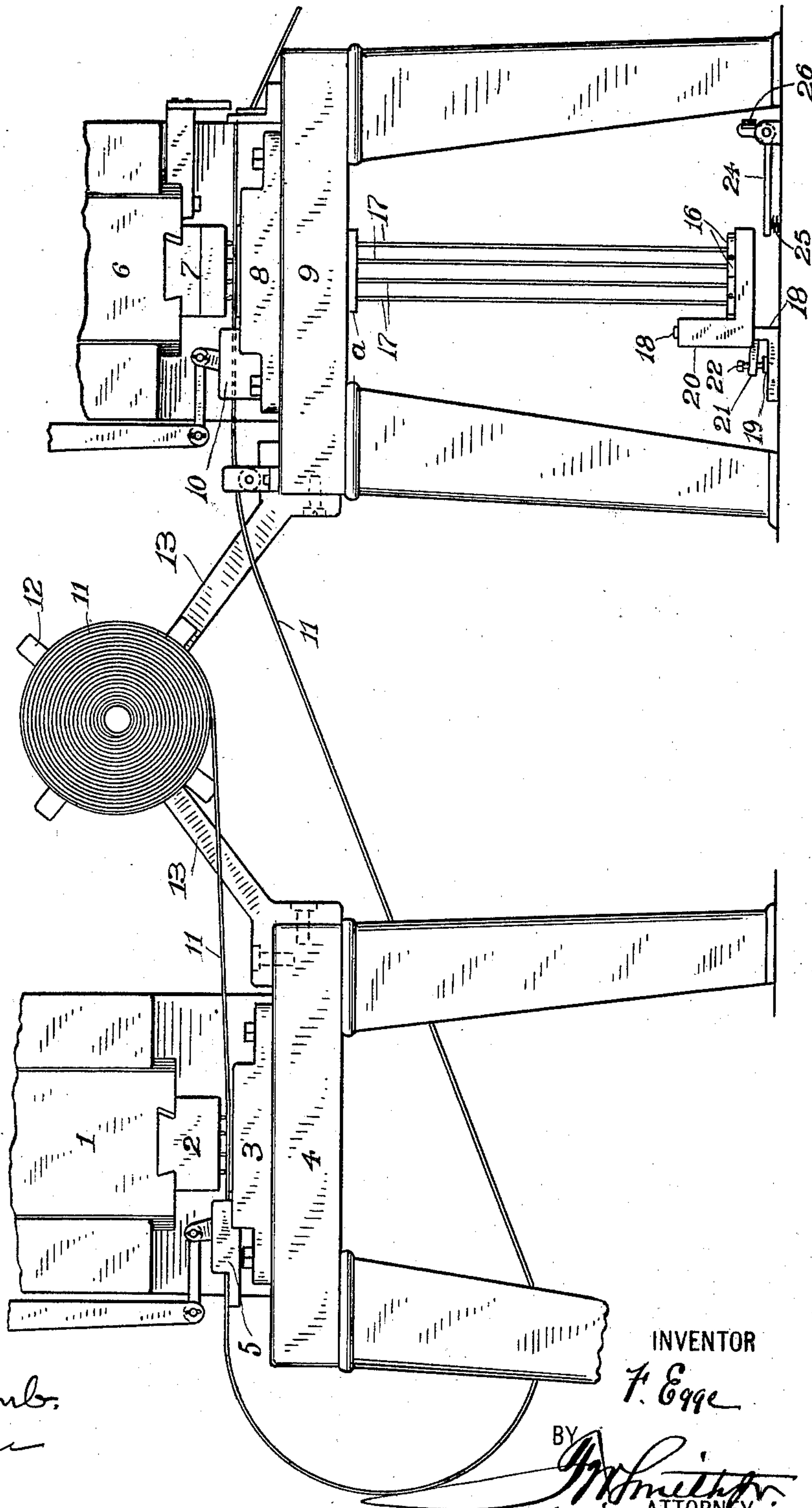
MACHINE FOR CUTTING OUT SHEET METAL BLANKS FOR CHAIN LINKS.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



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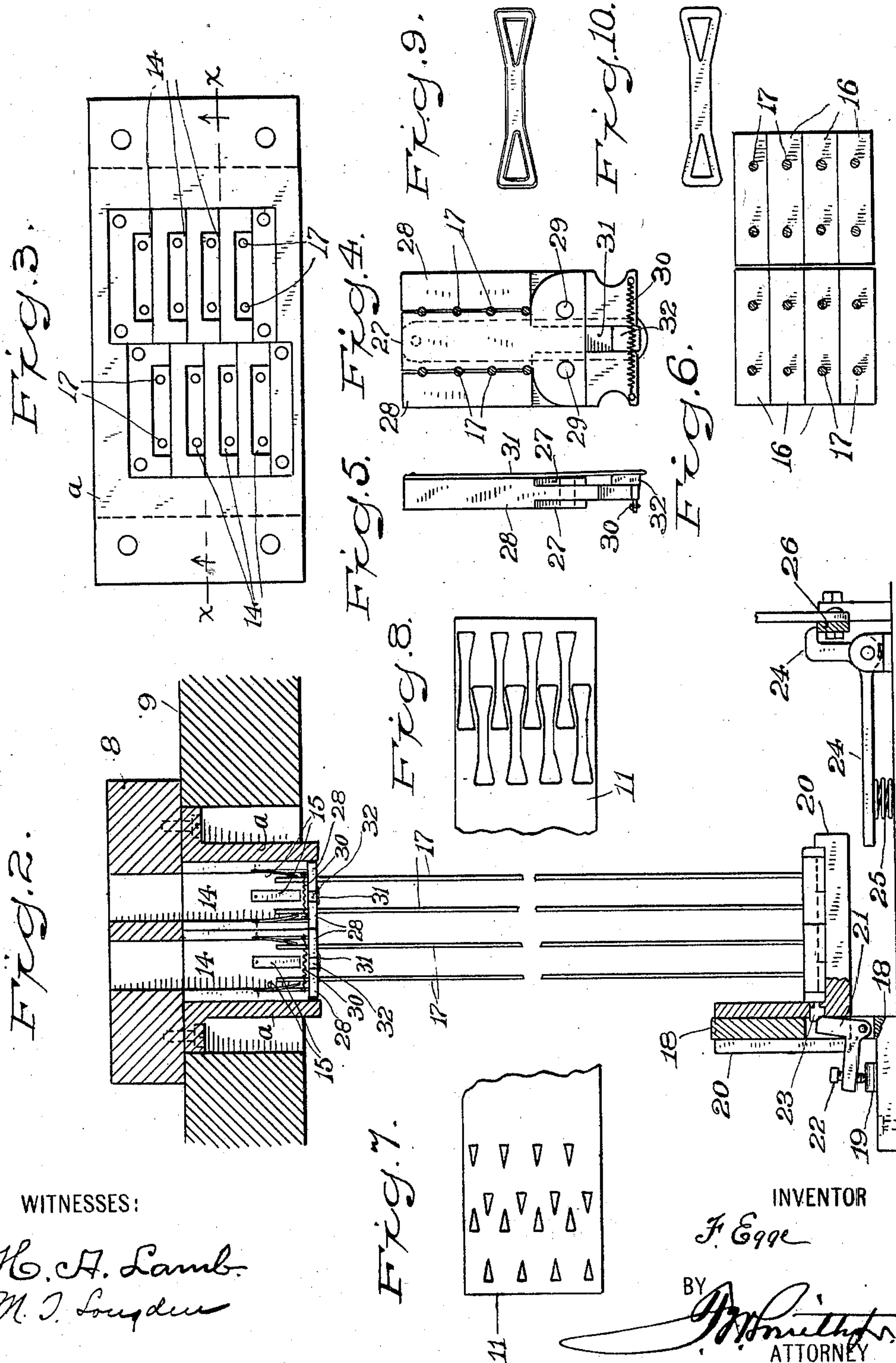
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2 SHEETS—SHEET 2.





# UNITED STATES PATENT OFFICE.

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## MACHINE FOR CUTTING OUT SHEET-METAL BLANKS FOR CHAIN-LINKS.

SPECIFICATION forming part of Letters Patent No. 757,028, dated April 12, 1904.

Application filed February 24, 1903. Serial No. 144,850. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK EGGE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for Cutting Out Sheet-Metal Blanks for Chain-Links; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in machines for cutting out sheet-metal blanks for chain-links, and has for its object to prevent the formation of any bur except on one side of the blank, and, furthermore, to cut out and assemble these blanks expeditiously and in such form that they may be readily utilized in a separate machine for making the completed chain.

With these ends in view my invention consists in certain details of construction and combination of parts, such as will be hereinafter fully set forth and then specifically be designated by the claims.

In the accompanying drawings, which form a part of this application, Figure 1 is a side elevation of my improved machine; Fig. 2, a vertical sectional elevation at the line *xx* of Fig. 3; Fig. 3, a plan view looking down upon the bed of the machine which cuts out the links. Fig. 4 is a plan view of what will hereinafter be termed the "guide-block;" Fig. 5, an edge elevation of said block. Fig. 6 is a plan view of the series of keeper-blocks. Fig. 7 shows a plan of a piece of sheet metal as it appears after the eyes of the blanks have been punched out. Fig. 8 is a similar view illustrating the sheet-metal strip as it appears after the links have been cut out therefrom; and Figs. 9 and 10 are detail plan views of opposite sides of a completed link.

Similar numbers of reference denote like parts in the several figures of the drawings.

In carrying out my improvement I employ the usual form of power-press, and the eyes of the blanks are cut out first, and afterward the blanks themselves are cut out, as is usual

in machines for cutting out blanks from sheet-metal. I cut out simultaneously the eyes for eight blanks, and although this is an immaterial matter I merely mention it in order that the plurality of wells in the bed of the machine into which the blanks are forced may be readily understood.

It is the object of my improvement to cut out the blanks and cause them to be threaded upon wires which pass through the eyes, so that a column of blanks will be assembled upon the wires, these wires, with the blanks thereon, being subsequently transferred to another machine, which automatically feeds these blanks as they drop one by one from the wires and makes them up into the completed chain. This scheme of making chain is old and well known, but has heretofore been attended with a material disadvantage in that there was a bur on each face of every blank, and, moreover, since only one face of the sheet metal was operated against to cut out both the eyes and the blanks themselves said blanks would be slightly bowed. When the blanks were threaded upon the wires, they did not pack closely together and the wires would bind within the eyes, owing to the presence of the bur on both sides of each blank and because the blanks themselves were not flat. Also when these blanks were operated upon by the chain-making instrumentalities the bur on the outside of the link after bending into U shape would interfere seriously with the threading of flat blanks through the eyes of previously-bent blanks, and the chain made from such defective blanks would not present a neat and smooth finish on the outside. I therefore have contrived a machine made in two sections, each of which employs a complete power-press, one section being utilized to cut out the eyes of the blanks from one face of the continuous sheet-metal strip, while the other section is utilized to cut out the blanks from the opposite face of said strip, so that it will be clear that the burs around the eyes and around the outer edges of the blanks are on the same face of such blank.

In carrying out my invention I employ or-



dinary power-presses, ordinary punches and dies, ordinary feeding mechanism for intermittently delivering the sheet-metal strip to the punching and cutting-out tools, and the  
 5 ordinary form of clutch mechanism, which connects the shaft of each press with the fly-wheel thereof, and I therefore have not illustrated these parts; nor will I describe them herein, but will merely refer briefly to such  
 10 of them as appear in the drawings.

My improvement comprises two similar power-presses, as shown at Fig. 1, the one at the left-hand side of said figure operating to punch out the eyes, while the one at the right-  
 15 hand side operates to cut out the blanks.

Referring to the machine for punching out the eyes, 1 is the gate of the press; 2, the punch-carrying block, which is keyed to said gate; 3, the die-plate, which is mounted upon  
 20 the bed 4 of the press, and 5 is a suitable feed-block, which operates to pull the metal strip a predetermined distance at each punching operation.

Referring to the press which cuts out the  
 25 blanks, 6 is the gate; 7, the block carrying the punches and keyed to said gate; 8, the die-plate, secured upon the bed 9 of the press, and 10 is any suitable feed-block which operates to thrust the sheet-metal strip forward at the  
 30 end of each blank-cutting-out operation. The sheet-metal strip 11 is wound on any suitable roll 12 that is supported on an ordinary frame 13 extending from the machine intermediate of the sections of the same. The metal in  
 35 this strip form is first passed through the eye-punching machine and then bowed around and carried in the reverse direction through the machine for cutting out the links, and it will thus be seen that this bowing of the metal and  
 40 the carrying of the same in reverse direction causes the eyes and the blanks themselves to be punched out from opposite sides of the metal strip, and this will of course cause the  
 45 burs to be formed on the same side of the blank.

In the drawings, Fig. 9 illustrates a blank that has been cut out, and the double lines around the eyes represent the burs caused by punching out these eyes, while the double  
 50 lines around the outside of the blank itself represent the bur caused by cutting the blank out from the sheet-metal strip. The opposite face of the link (shown at Fig. 10) exhibits a perfectly smooth face without any bur whatever. This is a very important improvement  
 55 in the art of making sheet-metal chains by machinery, and I consider the same to be broadly new, since I am not aware that any one has heretofore succeeded in overcoming  
 60 the defects caused by the presence of burs on opposite faces of the blanks. It is also true that the punching out of the eyes and the cutting out of the blanks from opposite faces of the sheet-metal strips produce a flatter  
 65 blank—that is, a blank that is not bowed—

and this is quite an advantage when it is essayed to pile the blanks one on top of the other, with the wires threaded through the eyes thereof, as heretofore set forth.

In connection with the press which cuts out  
 70 the blanks I employ certain devices which I will now describe for automatically receiving these blanks and for automatically causing this press to be stopped when a sufficient number of the blanks has been received in the form  
 75 which I consider best adapted for the purposes of making the completed chain. Immediately beneath the die-plate 8 are ordinary wells 14, into which the blanks successively  
 80 drop as they are cut out. These wells are suitably assembled and secured within a block *a*, which is in turn fastened to the bed. Near the lower ends of these wells are secured flat  
 85 springs 15, whose free extremities point downwardly and normally extend toward each other, the object of these springs being to prevent the blanks from dropping clear  
 through the wells, except in the manner hereinafter set forth. As the blanks successively  
 90 drop within these wells they form columns, which will be held in place by these springs; but when the wells are full the lowermost blank will be forced beyond said springs whenever a fresh blank is supplied at the upper  
 95 end of a well.

16 represents keeper-blocks, which are as many in number as there are separate wells, each block having projecting upwardly therefrom two parallel wires 17.

Immediately beneath the bed 9 and secured  
 100 to the floor is an angle-iron 18, which has an ordinary bow-spring 19 on its flat base portion, while the vertical leg of an L-shaped block 20 is adapted to slide freely upon the  
 105 vertical member of said angle-iron.

21 is a bell-crank lever pivoted near the lower end of the iron 18 and provided at its outer extremity with an adjusting-screw 22, which normally rests upon the bow-spring 19, while the upper extremity of the lever 21 is  
 110 engaged by a bevel-nosed dog 23, which is secured to and carried by the block 20, and from this construction it will be readily understood that when a weight is placed upon the horizontal or platform portion of the block 20 it  
 115 will be sustained solely by the resistance offered by the spring 19, and when said weight is sufficient to overcome said resistance the dog 23 will force the lever to one side and the L-shaped block will drop.  
 120

Pivoted to the floor and also beneath the bed 9 is a lever 24, whose tail end is backed up by a spring 25 and is immediately beneath the horizontal or platform element of the block 20, while the nose of said lever is adapted  
 125 to normally engage with a bar 26, which latter is connected in any ordinary manner with the clutch mechanism of the press.

When the parts are in the position as shown at Fig. 2, the clutch elements of the fly-wheel  
 130



and shaft of the press will be engaged and the press will be in complete operation; but when the lever 24 is operated so that its nose is raised away from the bar 26 said clutch elements will immediately become disengaged and the operation of the press will cease.

The keeper-blocks 16 are placed upon the platform element of the block 20 and properly secured in position, and the wires 17 extend vertically up within the wells 14. It becomes necessary that the extremities of these wires should be in such position that the blanks will not fail to become threaded upon said wires through the medium of the eyes of the blanks, and therefore it becomes necessary to initially steady the upper ends of these wires and fix them in such position that the blanks will thread themselves thereon. For this purpose I employ a guide-block, which is composed of a middle jaw 27, which is stationary, and lateral movable jaws 28, which are pivoted intermediate of their ends at 29, near the heel end of the stationary jaw. The rear ends of the jaws 28 beyond the pivotal points are connected by a coil-spring 30, which operates to normally open these jaws. Secured to the forward part of the jaw 27 and on the bottom thereof is a flat spring 31, having at its opposite or free end a shoulder 32, and when the movable jaws are closed the force of this spring will project this shoulder between the heel ends of these jaws, and thereby keep them in closed condition. In utilizing this guide-block the jaws are closed around the wires 17 and then pushed upward until the block is forced snugly within a correspondingly-shaped seat in the lower part of the block *a*, as is shown at Fig. 2, and the extremities of the wires will then be in position to receive the blanks as they pass through the wells. When a sufficient number of blanks have been threaded on the wires, the guide-blocks will be forced out of the block *a* and will drop down and are then removed, and thereafter the blanks themselves within the wells will serve to steady the wires and keep them in proper position.

As the blanks drop down upon the keeper-blocks 16 they will form vertical columns, and when these columns have risen to about the bottom of the block *a* the weight on the blocks will be sufficient to cause the platform of the block 20 to drop against the lever 24, and thereby effect the stopping of the press. The keeper-blocks and wires, with the blanks thereon, are now removed and other blocks and wires substituted therefor in the manner hereinbefore set forth and the platform of the block 20 elevated to normal position, and the several parts are thus ready for the continued operation of the press after the clutch mechanism has again been engaged. As the blanks pile up after they are received upon the wires it will be clear that the burs on the blanks will be uppermost, and therefore the bur sides of the blanks will come in contact with the

smooth sides of such blanks, so that when the wires are removed and utilized in inverted position in connection with machines for making the completed chain the bur sides of the blanks will be lowermost and are accordingly on the inside of the chain-links when they are bent into U shape and formed into the completed chain.

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

1. In a machine for cutting out sheet-metal blanks for chain-links, the combination of two independently-operating presses, one for punching out the eyes of the blanks and the other for cutting out the blanks themselves, with means for feeding a sheet-metal strip between the two presses and for reversing the faces of said strip while thus fed whereby the eyes and blanks are cut from opposite faces of the strip thereby bringing the burs on the same side of the blanks.

2. In a machine for cutting out sheet-metal blanks for chain-links, the combination of the independently-operating presses, one for punching out the eyes of the blanks and the other for cutting out the blanks themselves, means for first passing a continuous sheet-metal strip beneath the eye-punching devices and then reversing said strip and passing it beneath the blank-cutting devices, an elevated platform beneath the bed of the press for cutting out the blanks and capable of sustaining a predetermined weight, a series of keeper-blocks supported on said platform and having elongated wires projecting upwardly therefrom into the blank-receiving wells of the press, and a lever immediately beneath said platform and which controls the disengagement of the clutch mechanism of the press for cutting out the blanks.

3. In a machine for cutting out sheet-metal blanks for chain-links, the combination of the bed of the press which cuts out the blanks themselves having a block secured therein, the die-plate secured upon said bed immediately above said block, the wells for the blanks secured within said block immediately below the openings in the die-plate, the keeper-blocks suitably supported and having wires which extend upwardly therefrom within said wells, and the guide-blocks each composed of a centrally-disposed stationary jaw and laterally-movable jaws normally distended, and means for holding said jaws in closed position, said guide-blocks capable of being clamped around said wires and forced upwardly within suitably-shaped openings in the bottom of the block which contains said wells, whereby said wires will be steadied and maintained in proper position to receive the blanks, substantially as set forth.

4. In a machine for cutting out sheet-metal blanks for chain-links, the combination of a lever which controls the disengagement of the



clutch mechanism of the press for cutting out the blanks, a spring-sustained platform immediately above said lever, instrumentalities for cutting out said blanks and delivering them  
5 into suitable receptacles, a series of keeper-blocks supported on said platform and having projecting upwardly therefrom wires whose free ends extend within said receptacles, and means for initially holding and steadying the  
10 ends of said wires, substantially as set forth.

5. In a machine for cutting out sheet-metal blanks for chain-links, the combination of a press containing punches for cutting out the eyes of the blanks, a second press containing  
15 punches for cutting out the blanks themselves and having suitable well-like receptacles in the bed thereof and immediately beneath the die-

plate, a series of keeper-blocks properly supported and having wires whose free ends project upwardly within said receptacles, and the  
20 continuous strip of sheet metal initially passed through the first-named press whereby the eyes may be punched out and then bowed and passed in the reverse direction through the  
25 second-named press whereby the blanks themselves may be cut out and delivered upon said wires with all the burs on the uppermost faces of said blanks, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK EGGE.

Witnesses:

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