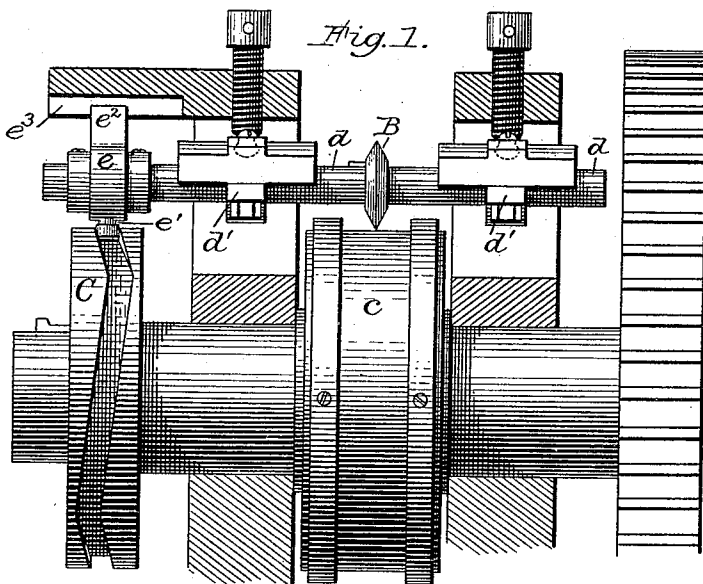
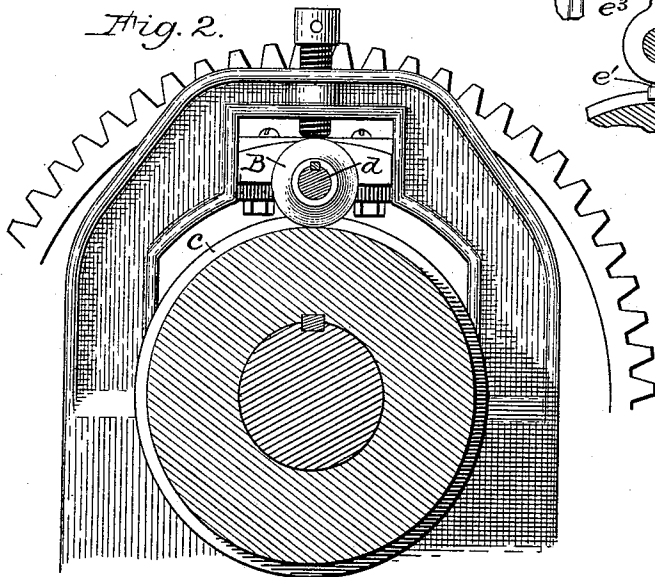
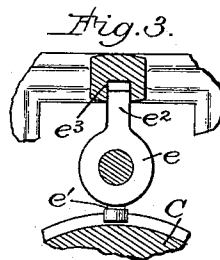
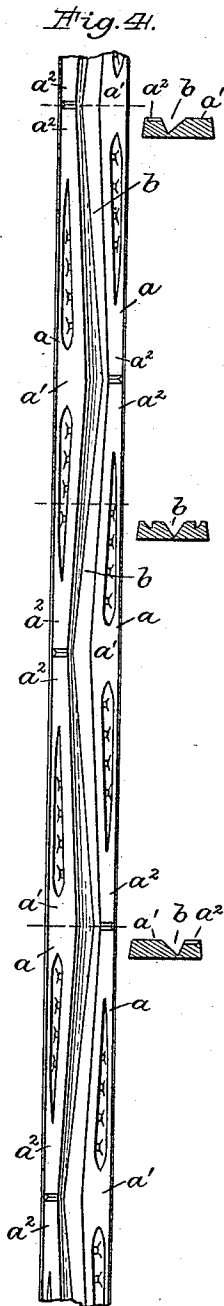


(No Model.)

C. H. PERKINS.
METAL SLITTING MACHINE.

No. 449,057.

Patented Mar. 24, 1891.



Attest:
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UNITED STATES PATENT OFFICE.

CHARLES HENRY PERKINS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
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METAL-SLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 449,057, dated March 24, 1891.

Application filed October 6, 1890. Serial No. 367,171. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY PERKINS, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Metal-Slitting Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

My said machines are adapted to the slitting or splitting of metal in bars, plates, or sheets in zigzag lines, and although of value in various connections they were devised with special reference to their use in the manufacture of horseshoe-blanks of the "toe-weighted" variety. In my application for Letters Patent filed August 14, 1890, Serial No. 361,963, I have disclosed a novel method and various means for the production of such blanks, including the novel slitting-machine, which is now made the special subject of this specification.

My said machine embodies, in combination, a circular edged slitting tool or cutter, which is free to revolve and to move bodily to and fro laterally, according to such impulses as may be imparted thereto during the passage of the metal between it and a suitable co-operating-bed, on which reliance is had for progressively feeding or presenting the metal to the slitting-tool. This bed in its best form is a simple grooved roll several times larger in diameter than the tool, the said groove serving to restrict the bar of metal to a right-line movement, while the cutter moves to and fro in lines inclined to and equally across a right line adjacent to the middle of the groove in the bed. As used by me in making horseshoe-blanks, this machine slits a bar which has been previously quite deeply grooved in zigzag lines, and hence said bar serves as its own guide or pattern or templet for causing the cutter to split the bar on the zigzag line, which is well defined at the bottom of the groove in the bar, the metal at that point being quite thin. If, however, the machine were intended to cut strips of thin metal plate in zigzag lines, no such grooves would be practicable, and hence the cutter would then be

accompanied by some special controlling medium, which would embody as a part thereof a pattern-groove carried on or movable in harmony with the bed.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1, in front elevation, illustrates one of my machines adapted to either split angularly-grooved horseshoe-blank bars or thin metal which may or may not have been grooved or corrugated in zigzag lines. Fig. 2 illustrates the same in section on a line passing at the side of the slitting-tool. Fig. 3 is a similar section through the controlling devices, which impart to and control the cutting-tool in its to-and-fro movement. Fig. 4 illustrates in plan and several sections a horseshoe-blank bar having a zigzag parting groove.

I will first describe the machine as organized for the one service of slitting such horseshoe-blank bars as are shown in Fig. 4, wherein there are tapered or toe-weighted horseshoe-blanks *a*, which lie in the bar with the broad toe portion *a'* of each blank laterally opposite the narrow ends or heel portions *a''* of laterally-adjacent blanks, said blanks being in two series, occupying separate lines, but having between them longitudinally the zigzag groove *b*. This blank-bar is quite thin at the bottom of said groove, and the sides of the groove are variably beveled; but the machine would operate in like manner thereon if the sides of said groove were beveled with uniformity. The bed here shown is in substance a grooved roll, although it has two adjustable collars, the space between them constituting a guiding-groove *c*, which will restrict the bar to a right-line movement while carried on or by the upper surface of the roll. This roll is positively driven, preferably by means of suitable gearing, so that a blank-bar having straight edges and of a width to which the bed-roll groove *c* properly corresponds will be practically prevented from lateral deflection when fed to the cutter or slitting-tool *B*, the latter being properly entered at the end of the bar-groove *b*. This slitting-tool *B* is a beveled-edged hard-

ened-steel disk of such limited diameter that it can without undue twisting strains freely follow the zigzag line desired by readily passing from one angle to another. The said tool or cutter is rigidly mounted on a shaft *d*, which is free to slide longitudinally in its journal-boxes, which are on top of the shaft, and actuated by screws, and have stirrups *d'*, which merely support the shaft when the cutter is not at work on a bar. The edge of the cutter is adjusted quite closely to the surface of the bed and sometimes in running contact therewith. As thus far described, and on reference to Fig. 2 it will be readily understood that when a blank-bar is properly fed to the cutter the latter will be revolved while performing the cutting service, and that it will move bodily to and fro laterally and follow closely the bottom of the zigzag groove in the blank-bar. The beveled sides of the groove operate in this case as the guiding medium for the cutter with reference to its lateral bodily movements, and as each bar serves as its own guide or templet no special guide is needed as a separate element in the organization.

If thin plate or bar metal is to be cut in zigzag lines to be afterward cut in lengths, affording, for instance, such angular braces as would be useful in various connections, the metal might be first so corrugated during the rolling operation incident to its production as to serve a fairly-good purpose for guiding the cutter; but when not thus fitted for that service special guiding or cutter controlling devices should be employed. In Figs. 1 and 3 one form of special controlling-guide is shown. In this case a zigzag grooved roll *C* serves as a guiding-templet. Above said roll on the cutter-shaft there is a sleeve *e*, loosely journaled thereto between two collars, which are fixed on said shaft. This sleeve has a downwardly-projecting spur *e'*, provided with an anti-friction roller, which properly occupies the zigzag groove in the roll-templet. Said sleeve has on top another stud *e''*, vertically extending into a guiding-slot *e'''*, provided therefor in a suitable bar or arm supported by the frame of the machine. Said slot *e'''* is parallel with the axis of the cutter-shaft and prevents the sleeve *e* from rotating with said shaft, while permitting the sleeve and shaft to slide freely in response to the guiding influences of the zigzag groove in the guiding-templet.

It will be understood that in many instances a complete severance of the metal is not essential, so long as it is so far cut as to render easy separation, and with the edge of the slitting-tool in close proximity to the surface of

the bed good work will be performed; but it can be desirably operated with its edge in rolling contact with the bed.

A machine of this kind is useful for right-line slitting—as, for instance, in separating such horseshoe-blank bars as have a straight central parting groove. In performing this service it is desirable that the cutter-shaft should at least have a limited capacity for longitudinal movement, so that the cutter cannot be cramped or broken in following a groove which by accident may not be as straight as was intended. It will be obvious that my machine can slit metal in curved zigzag lines as well as in those illustrated, this wholly depending upon the character of the means relied upon for inducing and guiding the to-and-fro lateral bodily movement of the cutter.

While I prefer that the co-operating support or bed should be located below the cutter, a reversal of their positions would involve no departure from the main feature of my invention, nor would the application of power to the cutter, whether the bed was positively driven or not.

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

1. In a metal-slitting machine, the combination, substantially as hereinbefore described, of a rotative circular slitting tool or cutter free to move laterally to and fro, and a co-operating bed for delivering or presenting metal to the cutter in a right line, whereby the metal may be slitted in zigzag lines in accordance with the lateral movements of the cutter during the progressive delivery of the metal thereto.

2. In a metal-slitting machine, the combination, substantially as hereinbefore described, of a positively-driven grooved bed for delivering the metal to be slit in a right line, and a circular slitting tool or cutter which is free to revolve and to move bodily to and fro laterally for cutting metal in zigzag lines while passing between said grooved bed and the cutter.

3. In a metal-slitting machine, the combination, substantially as hereinbefore described, of a positively-driven bed, a circular cutter which is rotative and free to be moved bodily to and fro laterally, and means for controlling and guiding said bodily movement for enabling the cutter to operate in slitting the metal on zigzag lines during its passage between the bed and the cutter.

CHARLES HENRY PERKINS.

Witnesses:

R. W. COMSTOCK;
CHARLES R. STARK.