G. KNAUS.

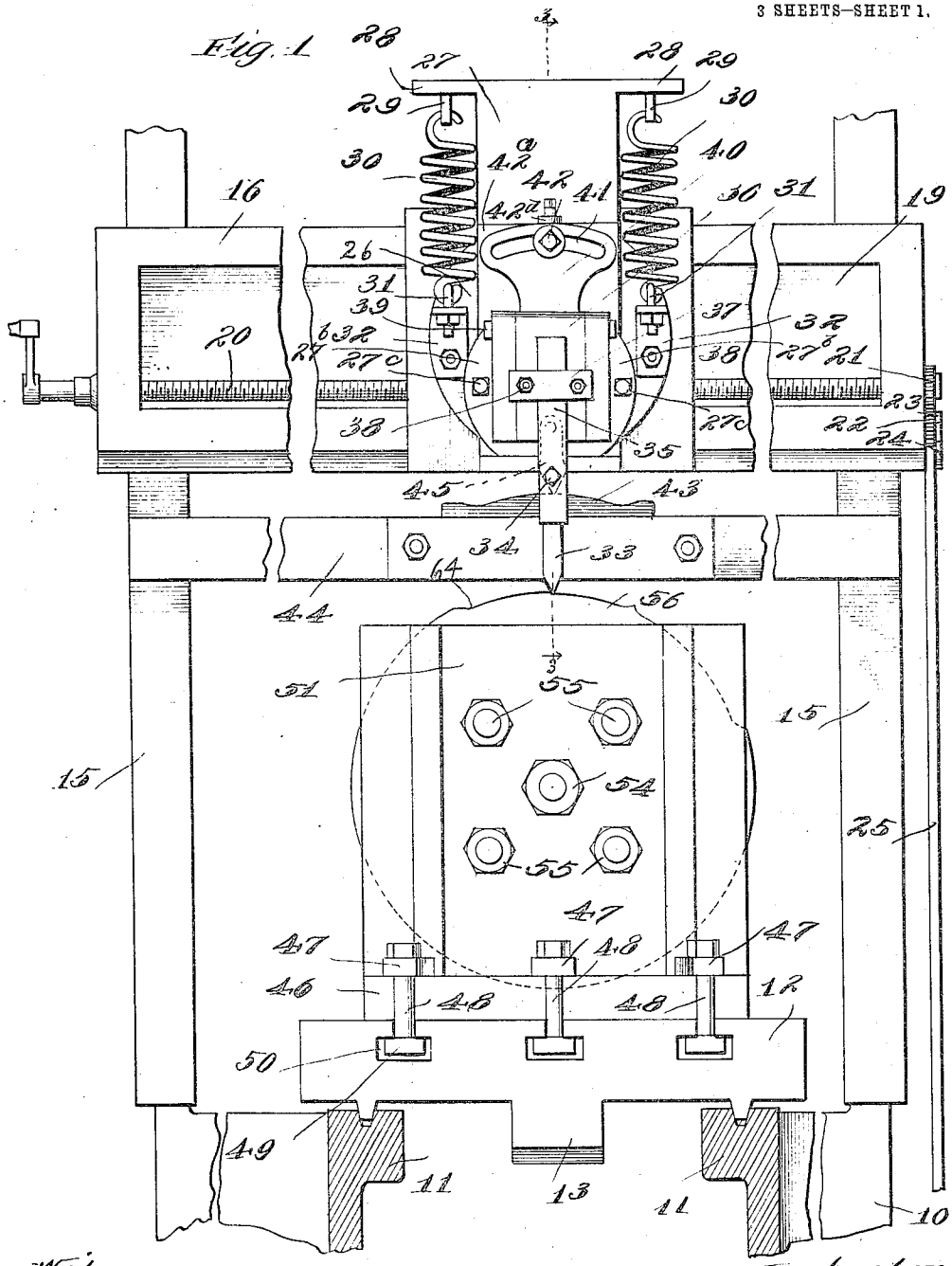
MACHINE FOR CUTTING METAL ROLLS.

APPLICATION FILED FEB. 5, 1910.

980,969. Patented Jan. 10, 1911.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses:

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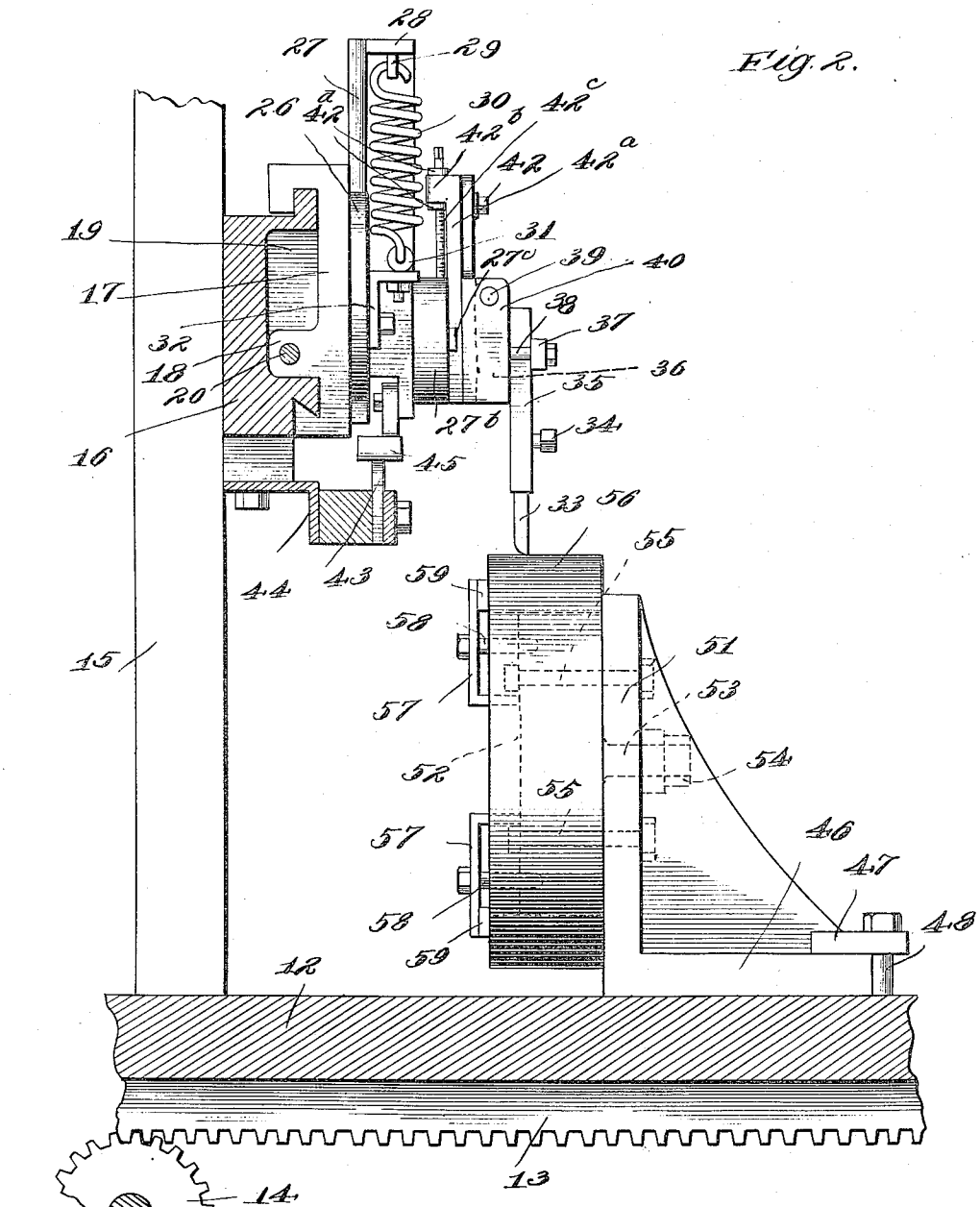
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4.

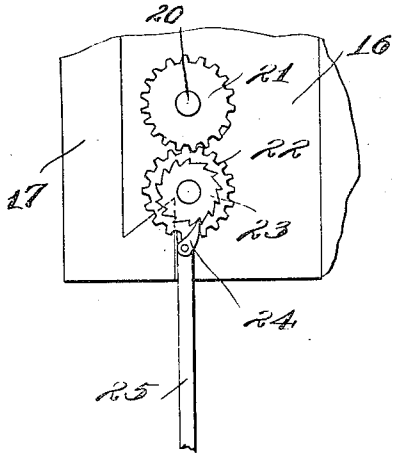


Fig. 3.

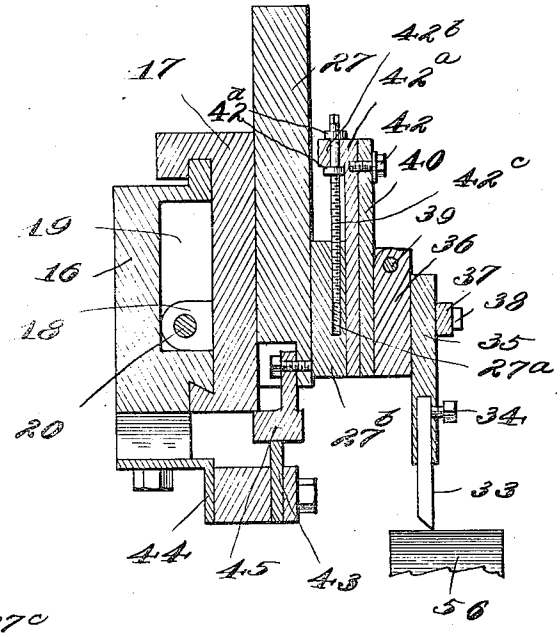


Fig. 5.

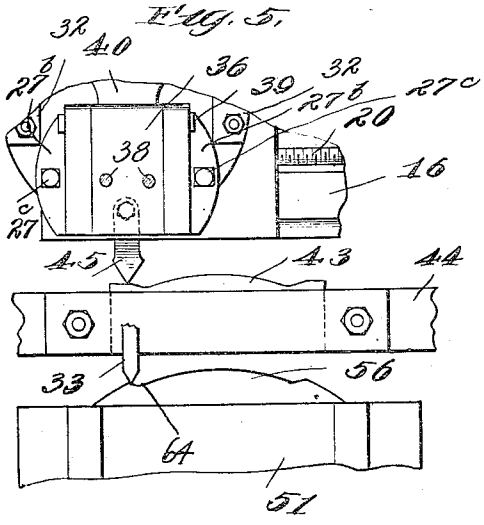


Fig. 6.

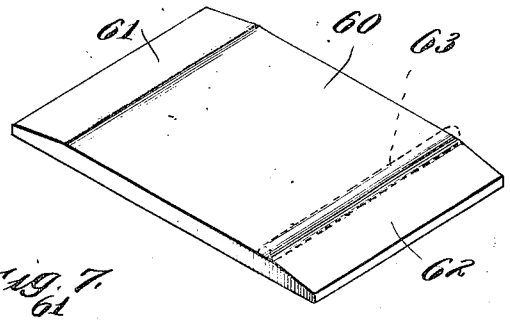
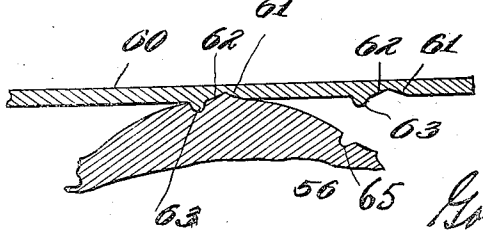


Fig. 7.



Witnesses

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By

Attorney

UNITED STATES PATENT OFFICE.

GOTTFRID KNAUS, OF CHICAGO, ILLINOIS, ASSIGNOR TO SELLERS MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MACHINE FOR CUTTING METAL ROLLS.

980,969. Specification of Letters Patent. Patented Jan. 10, 1911.

Application filed February 5, 1910. Serial No. 542,317.

To all whom it may concern:

Be it known that I, GOTTFRID KNAUS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Cutting Metal Rolls, of which the following is a specification.

My invention relates to a machine for cutting, planing and finishing metal rolls to be used for rolling tie plates and the like; the machine being particularly adapted for cutting the pattern on a roll of such character as the upper roll shown in the application of David H. Lentz, filed December 4, 1909, Serial No. 531,471, for "Composite rolls for forming tie plates.

The object of the invention is to provide certain new and improved constructions and arrangement relating to a machine of this character which will be hereinafter described and claimed.

The invention is illustrated in a preferred form in the accompanying drawings, wherein—

Figure 1 is a front elevation of the machine. Fig. 2 a side elevation with certain parts in section. Fig. 3 a detail sectional view taken on line 3—3 of Fig. 1, looking in the direction of the arrows. Fig. 4 a fragmentary side view illustrating the intermittent feed for the head. Fig. 5 a fragmentary front elevation with parts broken away so as to illustrate the relation between the templet and the cutting tool. Fig. 6 a view in perspective of the tie plate, the upper surface of which is formed by the roll shown in the preceding figures, and Fig. 7 is a diagram illustrating the relation between the roll and the tie plate.

Like characters of reference indicate like parts in the several figures of the drawings.

Referring to the drawings, 10 represents the base of the machine, preferably formed with the grooved ways 11 in which travels the carriage 12; the latter being given reciprocating movement by any desired form of driving mechanism, the under side of the carriage, for example, being provided with the rack 13 which is meshed by one or more driving pinions 14. On the base 10 are the vertical supports 15 to which is secured the transverse bar or track 16 on which is mounted the horizontal sliding head 17. The latter is formed with the lugs 18 which extend into the recess 19 in the bar 16 and have threaded openings for the worm 20.

In forming the pattern, which will be hereinafter described, intermittent movement is given to the head 17 between cutting operations so as to gradually shift the head, and the cutting tool which it carries, crosswise of the machine. This movement of the head may be effected by any familiar form of mechanism. For example, I have shown the worm shaft 20 as provided with the pinion 21, which is meshed by the pinion 22 having rigidly secured thereto the ratchet wheel 23 which is engaged by a pawl 24 on the pawl carrier 25, the latter being rocked back and forth in connection with the movements of the carriage by mechanism not shown.

The head 17 is formed with the circular projection 26 having the dove-tailed slot which receives the correspondingly formed portion of a slide 27. The latter is formed at its upper end with the lugs 28 having staples 29 on their under surfaces into which individually are hooked the ends of the coiled springs 30, the other ends of these springs engaging with the staples 31 on brackets 32 which are secured to the circular projection 26 on the head 17.

The cutting tool 33 is secured by means of a screw 34, or otherwise, in the tool holder 35 which is secured to a block 36 by means of the strip 37 and bolts 38. The block 36 is mounted on a pivot 39 in the forked end of a plate 40 in such a way that the tool holder may tilt forwardly. The plate 40 has a curved slot 41 through which extends the bolt 42 by means of which the plate is secured to the slide 42^a, the latter formed with a lug 42^b, through which extends loosely the end of an adjusting screw 42^c, formed with collars 42^d on opposite sides of lug 42^b, and a squared end for a wrench. The screw 42^c enters a threaded perforation 27^a in a block 27^b secured by bolts 27^c to the slide 27.

A templet 43 is bolted, or otherwise secured to a templet holder 44 which is fastened to the under side of the bar 16. The templet 43 is so arranged as to engage with a follower 45 which is secured to the lower end of the slide 27.

If the roll on the surface of which the pattern is to be cut is of annular form, it may be supported on the carriage by a supporting

device constructed as follows: 46 is a plate which is clamped to the carriage 12 by means of the clamps 47 and bolts 48, the heads 49 of the latter lying in the enlarged portions of slots 50 formed in the bed of the carriage 12. Obviously, any other means might be employed for making this attachment. On the plate 46 is a standard or vertical plate 51 to which is secured a cylindrical block 52 having a diameter exactly that of the diameter of the opening of the roll to be operated upon. The standard 51 is shown as perforated and the block 52 formed with a stud 53 which extends through this perforation and is threaded to receive the clamping nut 54. The block 52 may be further secured to the standard by the bolts 55. The roll 56 is placed on the block 52 and is clamped to the standard by means of the clamps 57 and screw bolts 58. If necessary, blocks 59 may be interposed between the clamps and the roll.

I do not lay claim in the present application to the form of supporting means for the annular roll above described, as this device is claimed in my co-pending application, Serial No. 542,316, filed February 5, 1910.

In Fig. 6, 60 represents a tie plate, the upper surface of which is formed by a roll having a pattern which may in part be formed by the machine above described. It will be noted that the tie plate has the beveled edges 61 and 62 and the rib 63. The machine above described is designed particularly for cutting a roll which will form these bevels. The groove for forming the rib 63 is preferably cut in the roll by a separate operation.

In Fig. 7 is shown the relationship between the finished roll and the strip of metal, which is afterward severed so as to form the separate tie plates. On the surface of the roll 56 is cut a series of transverse grooves 64. This operation is accomplished by the machine which has been just described. Thereafter the grooves are deepened at one side, so as to form the recesses 65 which roll out the ribs 63. The templet 43 is given a curvature which will produce the circumferential curvature of the grooves 64 as initially cut.

I do not limit myself to the particular forms, constructions and arrangements shown, as modifications thereof will readily occur to those skilled in the art which would come within the scope of my invention as defined by the claims herein.

The operation of the machine, when utilized for the purpose above described, is as follows: The roll support is clamped to the carriage at right angles to the travel thereof and the roll is clamped thereto in the proper position for making the first cut. A templet 43 of the proper configuration is bolted to the templet carrier 44 and the carriage thereupon moved back and forth under the tool 33. When the carriage moves forwardly, that is to the left in Fig. 2, the cutting tool is brought into contact with the roll. With the reverse movement of the carriage the block 36 rocks outwardly so that the tool rides over the roll. The head 17, carrying the cutting tool 33 with it, is intermittently moved transversely of the machine. As this movement takes place the vertical position of the tool is changed in accordance with the movement of the templet follower 45 on the templet 43. The tool is raised against the tension of springs 30 which are interposed between the slide 27 and the head 17, which is fixed so far as vertical movement is concerned. Ordinarily it will be necessary to adjust the tool downwardly several times before a given cut or groove on the surface of the roll is finished. This can be done from time to time by screwing down the screw 42^c which lowers the slide 42^a with relation to slide 27.

As often as need be the position of the collar on the support may be shifted by loosening the clamps 57 and turning the collar on block 52.

I claim:

1. In a machine for cutting the peripheral surfaces of metal-working rolls, the combination with a stationary frame-work, of a head guided so as to have horizontal movement, a vertically movable slide on said head a tool carried by said slide, springs interposed between the slide and the head, a carriage having reciprocating movement with respect to the tool, means on said carriage for supporting the roll so as to present the peripheral surface of the same to the tool, a templet on the frame under said head, and a follower on said slide which travels on said templet and causes the slide to move upwardly against the tension of said springs and in conformity to the pattern to be cut on said roll.

2. In a machine for cutting the peripheral surfaces of metal-working rolls, the combination with a stationary frame-work, of a head guided so as to have horizontal movement, a vertically movable slide on said head a tool carried by said slide, springs interposed between the slide and the head, a carriage having reciprocating movement with respect to the tool, means on said carriage for supporting the roll so as to present the peripheral surface of the same to the tool, a templet on the frame under said head, a follower on said slide which travels on said templet and causes the slide to move upwardly against the tension of said springs and in conformity to the pattern to be cut on said roll, and means for shifting the head sidewise as the cutting operation progresses.

3. In a machine for cutting the peripheral surface of metal working rolls, the combina-

tion with a stationary frame work, of a head guided so as to have horizontal movement, a vertically movable slide on said head, a pair of springs attached to the upper end of said slide, one at each side, and to said head so as to be put under tension when the slide is raised, a second vertical slide on said first mentioned vertical slide provided with an overhanging lug, an adjusting screw extending through said lug and engaging said first mentioned slide, a tool holder on said second mentioned slide provided with a planing tool, a templet on said stationary frame work, a carriage adapted to be reciprocated under said tool, means on the carriage for supporting the roll, a follower on the slide which is adapted to travel over said templet so as to cause the slide to move upwardly against the tension of said springs, and means for shifting the head horizontally.

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Witnesses:
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