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PATENTED JUNE 25, 1907.

C. H. GANGELHOFF & M. JORDAN.

MACHINE FOR COVERING WOODEN RAILS FOR BED SPRINGS WITH METAL.

APPLICATION FILED DEC. 22, 1905.

3 SHEETS—SHEET 1.

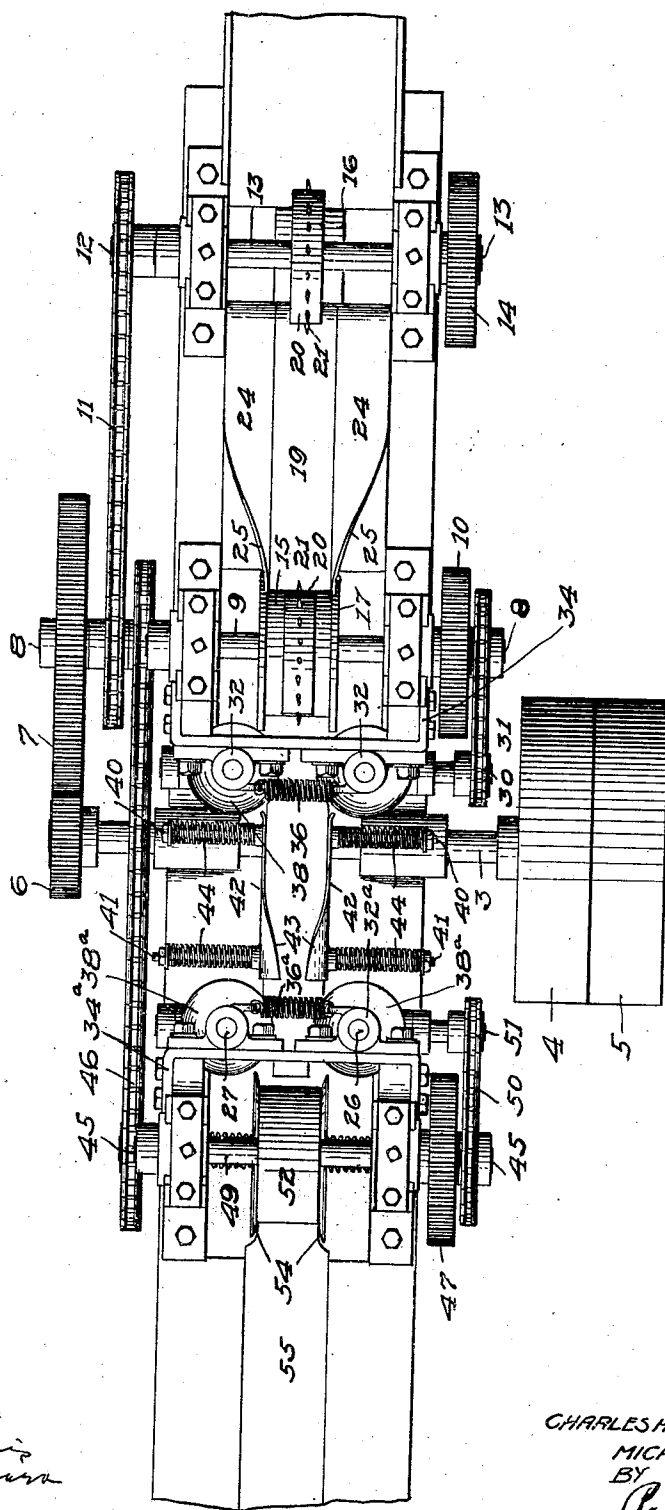


FIG. 1.

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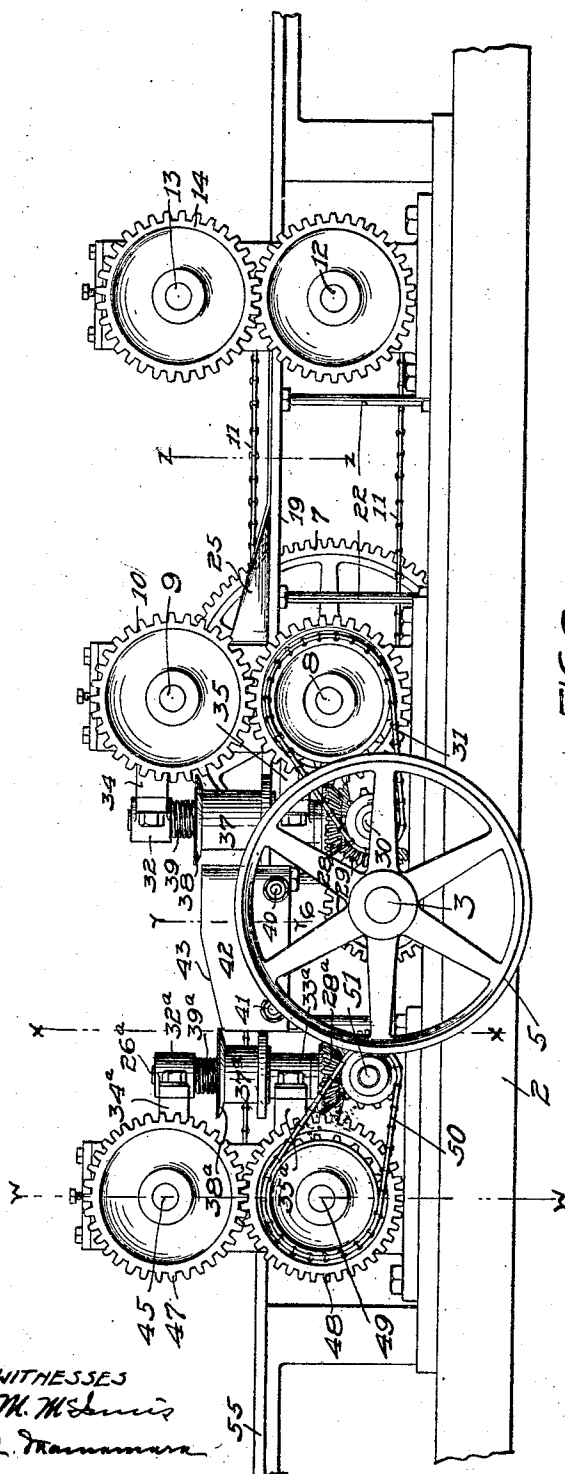
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3 SHEETS—SHEET 2.



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FIG. 2.

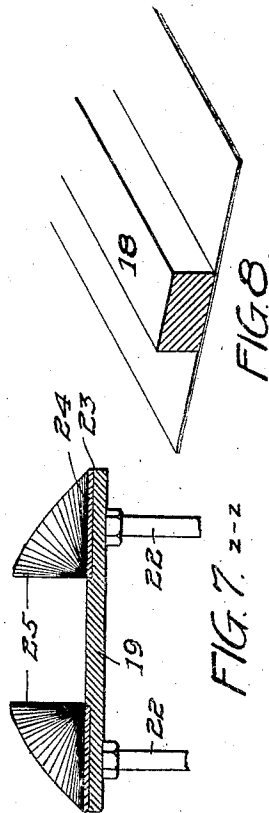


FIG. 7. Z-Z

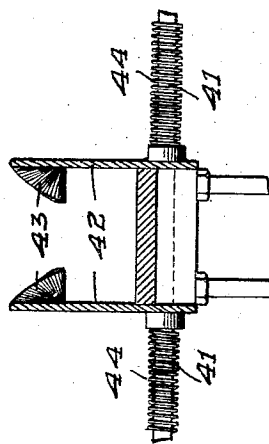


FIG. 6. Y-Y

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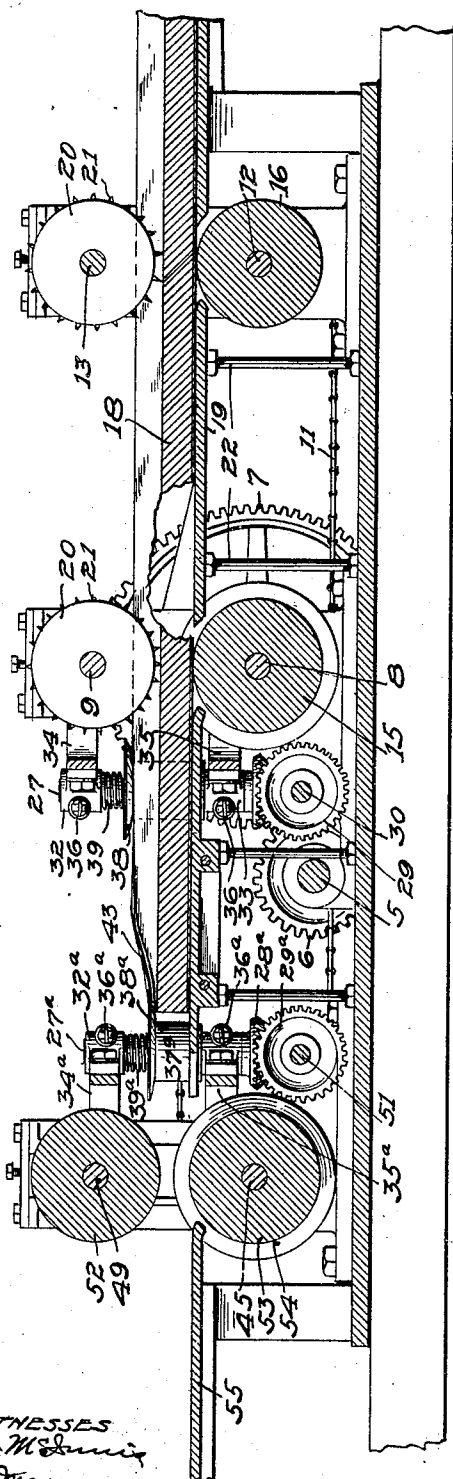
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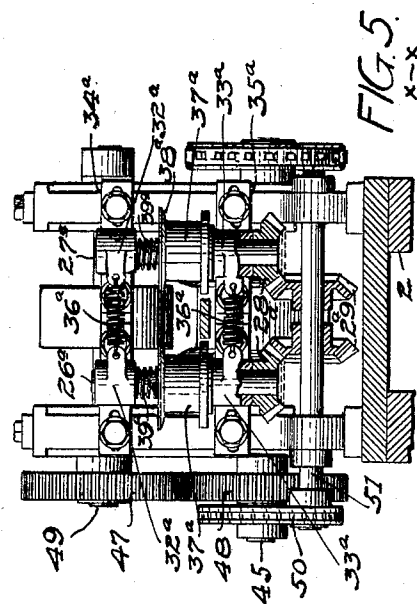
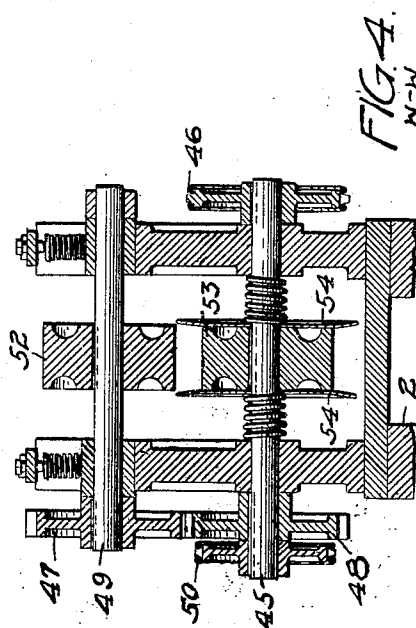
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES H. GANGELHOFF AND MICHAEL JORDAN, OF MINNEAPOLIS,
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MACHINE FOR COVERING WOODEN RAILS FOR BED-SPRINGS WITH METAL.

No. 857,799.

Specification of Letters Patent.

Patented June 25, 1907.

Application filed December 22, 1905. Serial No. 292,887.

To all whom it may concern:

Be it known that we, CHARLES H. GANGELHOFF and MICHAEL JORDAN, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Machines for Covering Wooden Rails for Bed-Springs with Metal, of which the following is a specification.

The object of our invention is to provide a rail and particularly an end rail for a bed spring, which will be neat and ornamental, having the appearance of a solid metal rail, and which will not warp or twist out of shape.

A further object is to provide a machine for covering the rail with metal, and doing the work in a neat and expeditious manner, which heretofore has been a laborious hand operation.

The invention consists generally, in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan view of a machine embodying our invention. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal vertical section. Fig. 4 is a transverse vertical section on line $w-w$ of Fig. 2. Fig. 5 is a similar view taken on line $x-x$ of Fig. 2 near the discharge end of the machine. Fig. 6 is a sectional view on the line $y-y$ of Fig. 2. Fig. 7 is a similar view on the line $z-z$ of Fig. 2. Fig. 8 is a perspective view showing the sheet of metal and the rail resting thereon.

In the drawing, 2 represents a suitable frame, and 3 a driving shaft mounted therein having the usual loose and fixed pulleys 4 and 5 on one end, and a pinion 6 on its other end meshing with a gear 7 on a shaft 8. A shaft 9 above the shaft 8 has a gear 10 meshing with a similar gear on the opposite end of the shaft 8 from the gear 7. The shaft 8 is connected by a chain 11 with a shaft 12 near the receiving end of the machine, and a shaft 13 above the shaft 12 has a gear 14 meshing with a similar gear on the shaft 12 beneath. These pairs of shafts are therefore operated in unison when power is applied to the driving shaft of the machine. The lower shafts 8 and 12 are provided with narrow faced rolls 15 and 16, the former having flanged ends 17, between which the wooden end rail 18 resting

upon the feed table 19 is moved. Upon the shafts 9 and 13 I provide rolls 20, also narrow faced having pins or spikes 21 in their peripheries which engage the top of the wooden rail and feed it through the machine.

The table 19 is supported upon suitable standards 22, and said table has recesses 23 on each side of the center, and in these recesses plates 24, preferably of metal, having upwardly turned wings 25 at one end, are secured, said wings being curved inwardly toward the middle of the table, as indicated in Fig. 1, for the purpose of engaging the edges of the metal sheet and bending them over and around the edges of the end rail. The ends of the wings 25, as indicated in Fig. 1, project between the flanges 12 of the roll 15 to direct the end rail therein, and insure the proper folding of the metal sheet up beside its edges. Between the driving shaft and the shaft 9 we provide a pair of upright shafts 26 and 27 having pinions 28 at their lower ends driven by gears 29 on a shaft 30, which has a belt connection 31 with the shaft 8. The boxes 32 and 33 of the said upright shafts are slidably mounted on cross bars 34 and 35, and the opposite side of the boxes are connected by spring 36 which tend to draw the shafts toward one another. Spools 37 are mounted on the upright shafts and between which the wooden end rails are fed, and said spools have upper flanges 38 which are vertically slidable on their shafts, and are normally held in a depressed position against the upper ends of the spools by springs 39. These vertically yielding flanges have conical under surfaces, as shown, to engage the edges of the metal and press them toward each other, the springs being of suitable tension to resist the upward pressure of the sheet metal and direct it over upon the top of the rail. Near the spools 37 we provide horizontal transversely arranged rods 40 and 41 upon each side of the machine, and slidably mounted plates 42 thereon having wings 43, which are curved inwardly in position to engage the edges of the sheet metal and bend it still farther over upon the end rail. These plates are held with a yielding pressure against the sides of the rail, by means of springs 44 mounted on said rods. Near the ends of the wings 43 we provide a pair of upright shafts with spools thereon cor-

responding substantially to those heretofore described, and operating in substantially the same way to aid in the folding operation. These last named spools and shafts we will designate by the same reference numerals as those first described with the addition of the exponent *a*. Near this last pair of upright shafts is a transverse shaft 45 driven through a belt 46 from the shaft 8 and having a gear 47 meshing with a similar gear 48 on a shaft 49 below, said shaft 45 being connected by a belt 50 with a shaft 51, from which the upright shafts 26^a and 27^a are driven. Upon the shafts 45 and 49 rolls 52 and 53 are secured, the latter having flanges 54 between which the rail with its metal covering is fed, and the former roll having a smooth periphery to bear upon the top of the rail and press the sheet metal edges down snugly upon the top of the same, with one edge lapping over the other and completely concealing the wooden core of the rail. After leaving the rolls 52 and 53 the rail will pass out upon a table 55 at the discharge end of the machine, and is then ready to be secured to the fabric to form the finished bed spring. An end rail made in this way will be much lighter than one made entirely of metal; will not warp or twist as a solid angle iron rail is apt to do, and will have the neat ornamental appearance of a metal surface in the bed spring without any of the objectionable features incident to a frame or end rail made entirely of metal.

I claim as my invention:

1. The combination, with a frame and feed table whereon a sheet of metal is placed and a wooden bar arranged centrally on said sheet, of lower feed rolls operating through openings in said table and engaging the under side of said metal sheet, upper feed rolls having toothed peripheries adapted to engage the top of said bar and whereby said sheet and bar are moved lengthwise, folding means adapted to engage the edges of said metal sheet and bend the same up and around the longitudinal edges of said bar and means for forcing said folded edges down upon the top of said bar and whereby said bar will be entirely inclosed by said metal sheet, substantially as described.

2. The combination, with a frame and feed table whereon a sheet of metal and a wooden bar centrally placed thereon are arranged, of a lower feed roll adapted to engage the under side of said metal sheet and having flanged ends, an upper feed roll having a toothed periphery to engage the said bar, plates mounted on said table and having upwardly turned wings projecting between the flanges of said lower feed roll and whereby the edges of said metal sheet will be folded up and around the edges of said wooden bar, substantially as described.

3. The combination, with a frame having

a feed table whereon a metal sheet is placed with a wooden bar centrally arranged thereon, the edges of the sheet on each side projecting beyond said bar, of feed rolls between which said sheet and roll are moved lengthwise, and means for engaging the edges of said sheet and folding them up and over the longitudinal edges of said bar, and vertically yielding means for engaging and forcing the edges of said sheet down upon the top of said bar, substantially as described.

4. The combination with a suitable frame having a feed table, of upper and lower feed rolls, folding devices provided on one side of said rolls above said table and adapted to engage and bend upwardly the edges of sheet metal plates thereon, upright spools provided near said rolls and mounted in yielding bearings, and said spools having vertically yielding flanges at their upper ends, for the purpose specified.

5. The combination with a suitable frame having a feed table, of upright shafts and means for driving the same, spools mounted on said shafts, and said spools having vertically yielding flanges at their upper ends provided with conical under surfaces, for the purpose specified.

6. The combination, with a frame and feed table, of means for feeding a flat metallic sheet and a wooden bar centrally placed thereon, means for folding the edges of said sheet up over the longitudinal edges of said bar, vertical shafts having laterally yielding bearings, spools mounted on said shafts and having flanged upper ends provided with conical under surfaces and between which spools said bar and metal sheet are fed, substantially as described.

7. The combination, with a frame having a feed table and means for feeding a sheet of metal and a wooden bar centrally placed thereon, means for folding the edges of said plate up around the longitudinal edges of said bar and plates having inwardly turned wings yieldingly mounted on each side of said table and between which plates said bar is fed, substantially as described.

8. The combination with a suitable frame having a feed table, of rods provided on each side of said table, plates slidably mounted on said rods and having inwardly curved wings overhanging said table, and springs arranged to hold said plates toward said table with a yielding pressure, substantially as described.

9. The combination with a feed table, of horizontally arranged feed rolls, spools arranged vertically near said feed rolls and having yielding bearings, and plates having wings overhanging said table and yieldingly supported on each side thereof, substantially as described.

10. The combination with a feed table, of plates having inwardly curved wings yieldingly supported on each side of said table,

upright shafts arranged in the front and rear of said plates and having yielding bearings and spools mounted upon said shafts, and having vertically yielding flanges at their upper ends, for the purpose specified.

11. The combination, with a feed table adapted to receive a metal sheet with a wooden bar or rail centrally placed thereon, of means for feeding said sheet and rail, means for folding the edges of said sheet up around the longitudinal edges of said bar, vertically yielding means having conical under surfaces for directing the edges of said sheet over the top of said bar, laterally yielding means having inwardly curved wings for pressing the edges of said metal sheet down toward said bar and means for folding the edges of said sheet upon the top of said bar, substantially as described.

12. The combination, with a feed table whereon a metal sheet is placed with a wooden bar centrally arranged thereon, the edges of said sheet on each side extending beyond the edges of said bar, means for bending the edges of said metal sheet up and around the edges of said bar, means for forcing the edges of said sheet when so bent, down upon the top of said bar and said forcing means comprising spools having vertically yielding flanges, substantially as described.

13. In a machine of the class described, the combination, with an upright pair of spools having vertically yielding flanges at their upper ends, of laterally yielding plates near said spools, having inwardly curved wings and a second pair of spools also upright but shorter than said first named pair and also having vertically yielding flanges at their upper ends, for the purpose specified.

14. The combination, of a feed table and means for feeding a sheet of metal and a wooden bar lengthwise thereon, of rods projecting laterally on each side of said table, plates mounted on said rods and having inwardly inclined wings overhanging said table and springs yieldingly holding said plates toward said table, substantially as described.

15. The combination, with a feed table and means for feeding a sheet of metal and a wooden bar lengthwise thereon, said table having horizontal recesses in its upper surface on each side of its middle line, plates se-

cured in said recesses, the outer ends of said plates being flush substantially with the middle portion of said table and the inner ends of said plates upwardly and inwardly curved and adapted to engage the edges of said metal sheet, for the purpose specified.

16. In a machine of the class described, a pair of upright spools having vertically yielding flanges at their upper ends provided with conical under surfaces, substantially as described.

17. In a machine of the class described, the combination with the upright spools having vertically yielding flanges, and the laterally yielding plates having inwardly curved wings located near said spools.

18. In a machine of the class described, the combination, with a pair of spools having vertically yielding flanges and a second pair of spools, shorter than said first named pair and also having vertically yielding flanges.

19. The combination, with a feed table whereon a metal sheet is placed, and a wooden bar arranged centrally on said sheet, of means for bending the edges of the metal sheet around the edges of said bar and means comprising upright spools having vertically yielding flanges for engaging and pressing the edges of said sheet when so bent, against the surface of said bar, whereby it will be entirely inclosed by said metal sheet.

20. The combination, with a feed table, whereon a metal sheet is placed, and a wooden bar arranged centrally on said sheet, of feed rolls engaging the under side of said metal sheet, upper feed rolls engaging the top of said bar and whereby said sheet and bar are moved lengthwise, folding means adapted to engage the edges of said metal sheet and bend the same around the longitudinal edges of said bar, and means for forcing said folded edges against the surface of said bar, whereby it will be entirely inclosed by said metal sheet, substantially as described.

In witness whereof, we have hereunto set our hands this 11th day of December 1905.

CHARLES H. GANGELHOFF.
MICHAEL JORDAN.

Witnesses:

RICHARD PAUL,
C. MACNAMARA.