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J. RAFFLOER.

COILING MACHINE FOR CHAIN LINKS.

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UNITED STATES PATENT OFFICE.

JULIUS RAFFLOER, OF DÜSSELDORF, GERMANY.

COILING-MACHINE FOR CHAIN-LINKS.

No. 803,132.

Specification of Letters Patent.

Patented Oct. 31, 1905.

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To all whom it may concern:

Be it known that I, JULIUS RAFFLOER, a citizen of the German Empire, residing at Düsseldorf, Germany, have invented new and useful
5 Improvements in Coiling-Machines for Chain-Links, of which the following is a specification.

My invention relates to a machine to be used in the manufacture of chain-links and of the kind designed to wind a rod of wire or a bar
10 of iron or other material on a core, giving the said material the shape of a cylindric spiral which is afterward cut to pieces as open rings, each piece or ring being by a subsequent operation closed and welded.

15 The objects of my invention are, first, to provide a tool of the kind described, where the material to be fed upon the said core passes by a slide or carriage made to travel in the bed of the machine at a speed controlled by
20 the operator during the revolution of the aforesaid core, who thus controls also the pitch of the spiral; second, to protect the aforementioned core against any distortion even when strained to the utmost, and, third, to permit an easy
25 removal of the said spiral from the said core.

I attain my objects by the improvements illustrated on the drawings herewith, in which—

30 Figure 1 is a front view of the tool; Fig. 2, a vertical transverse section through the same on the line A B of Fig. 1, and Fig. 3 a plan view of my device.

In a bed similar in appearance and construction to the bed of a lathe there moves a slide
35 or carriage *b* in horizontal longitudinal direction, being set in motion by a lead-screw *f* or other suitable device as employed for moving the slide or carriage in a lathe. The said slide comprises a guide *a*, through which the rod
40 or bar intended for operation is fed upon a core *g*, oblong in cross-section, for winding up the same and rotated by means of gear-wheels *m*, *n*, meshing with each other, the said wheel *m* being mounted on the said shaft *g* and deriv-
45 ing its motion from the said wheel *n* on a power-shaft *i*, which may be rotated by any suitable means, a step-pulley being shown on the drawings.

On one end of the machine are provided the
50 gear-wheels *c* and *d*, which are removable and may be exchanged for gear-wheels of different sizes. The office of the last-mentioned gears is to regulate the ratio of revolutions of the said lead-screw *f* and the said core *g*, thus
55 permitting a control of the pitch of the spiral, it being preferable to raise the said pitch with

the size or volume of the rod or wire intended for operation. Another gearing is provided near the end of the machine toward which the aforesaid slide *b* travels, which comprises a
60 cog-wheel *h*, mounted upon the aforesaid shaft *i*, and another cog-wheel *k*, provided on the aforesaid core-shaft *g*, preferably near the bearing *l*. By setting in motion the said core
65 *g* by means of the aforesaid gear-wheels *m*, *n* on the slide *b* simultaneously with the said gear-wheels *h*, *k* a distortion of the core will be obviated even when strained to the utmost, as in the winding up of thick iron rods re-
70 quired for the manufacture of heavy chains, such as are used on ships and cranes.

A serious difficulty encountered in the coil-
ing of such strong wire or rods is the removal from the said core of the spiral, which to per-
75 mit such winding up must be hot, but contracts in cooling and clings fast upon the core. My machine constructed as described permits, as aforesaid, the winding up of the material at a steeper pitch than is actually desired for
80 the finished spiral. When the said winding up has been done, the slide or carriage *b* may be moved in retrograde direction, and thus work upon the end of the spiral, compressing the latter. By this compression the several
85 rings of the spiral become somewhat larger in diameter, and thus permit an easy removal from the said core *g* by a mere stripping off as soon as the spiral ceases to press upon the core.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. In a coiling-machine for chain-links, the combination of a power-shaft with a core ob-
90 long in cross-section, a slide, a pair of gear-wheels mounted upon the slide and adapted to move along the power-shaft and core respec-
95 tively, a screw-spindle for operating the slide, and means for intergearing the power-shaft with said spindle, substantially as specified.

2. In a coiling-machine for chain-links, the combination of a power-shaft with a core ob-
100 long in cross-section, fast and slidable gear-wheels on the power-shaft, cooperating fast and slidable gear-wheels on the core, a slide, a screw-spindle for operating the same, and means for intergearing the power-shaft with
105 the spindle, substantially as specified.

Signed by me at Düsseldorf, Germany, this
23d day of November, 1904.

JULIUS RAFFLOER.

Witnesses:

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