Aug. 4, 1931. T. E. REES 1,817,707

SHEET ROLLING AND FINISHING MACHINE

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Fig. 1.

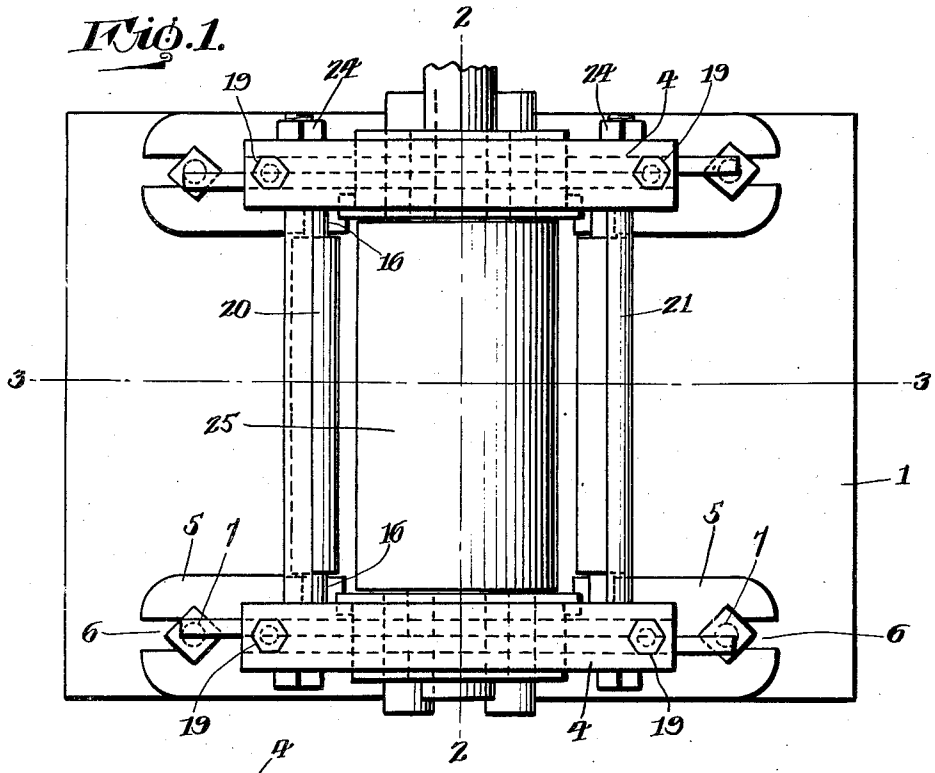
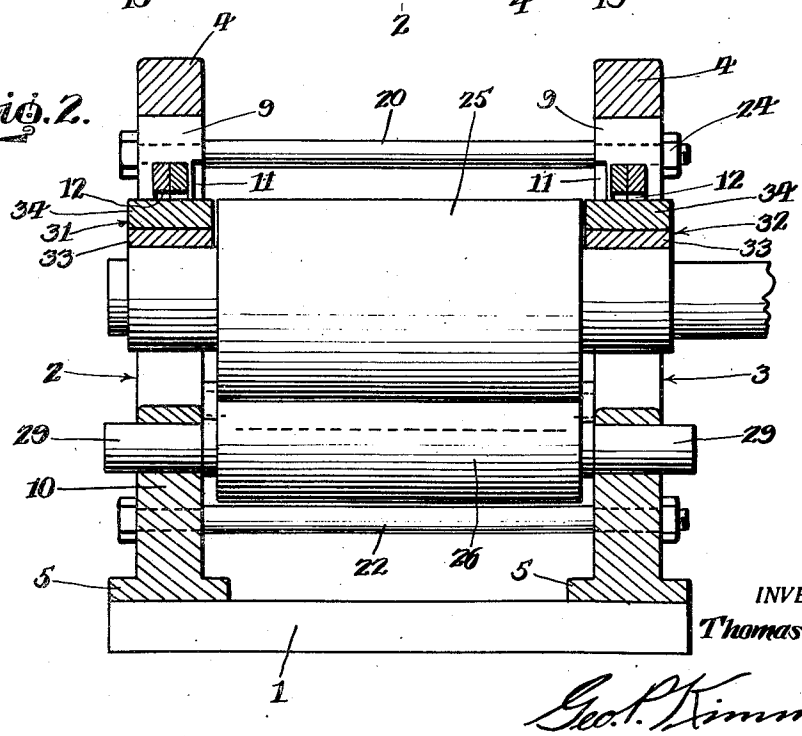


Fig. 2.



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Fig. 3.

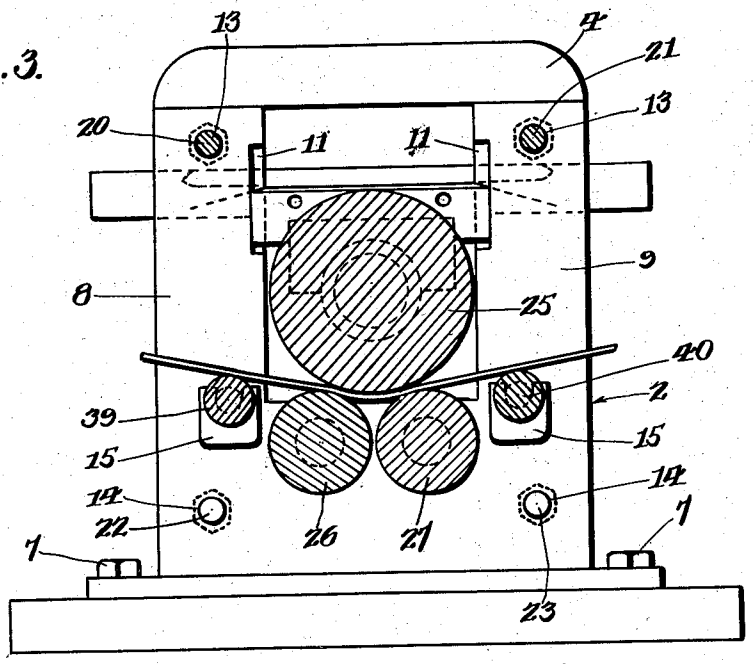
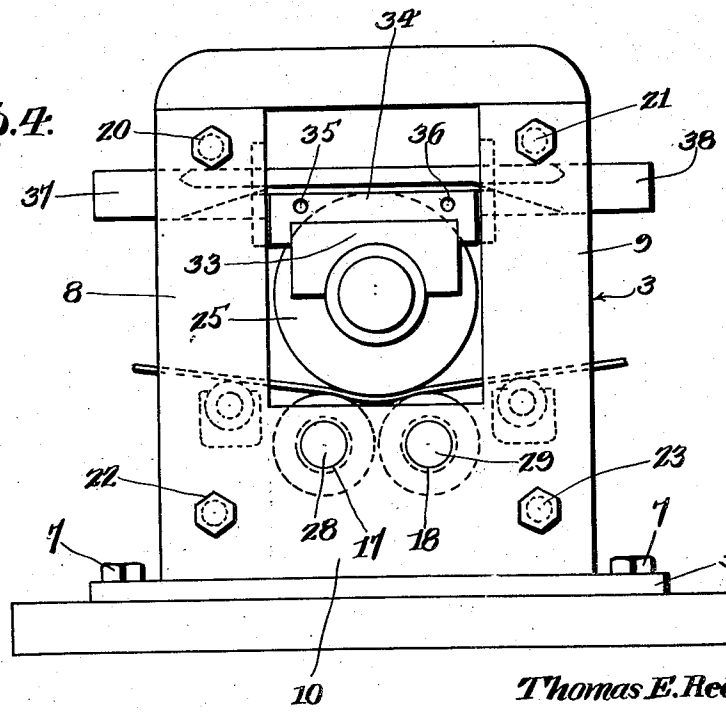


Fig. 4.



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UNITED STATES PATENT OFFICE

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SHEET ROLLING AND FINISHING MACHINE

Application filed February 4, 1931. Serial No. 513,427.

This invention relates to a setting, levelling or straightening machine for rolling and finishing steel, copper, brass, tin and other metallic sheets, and has for its object to provide, in a manner as hereinafter set forth, a machine of the class referred to including a set of rolls, the set comprising an upper and a pair of lower rolls, the upper roll being of greater diameter than the lower rolls, and the set of rolls when active provide for improving the finish and polish of the work acted upon to a materially extent greater than that obtained by having the rolls of the set of like diameters.

A further object of the invention is to provide, in a manner as hereinafter set forth, a machine for the purpose referred to with means for adjustment of the upper roll of the set for the purpose of regulating the pressure and the distance between the upper roll relative to the lower rolls.

Further objects of the invention are to provide, in a manner as hereinafter set forth, a machine for the purpose referred to which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient in its use, readily installed and comparatively inexpensive to set up.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a top plan view of the machine in accordance with this invention.

Figure 2 is a section on line 2—2 Figure 1.

Figure 3 is a section on line 3—3 Figure 1.

Figure 4 is a side elevation.

The machine includes a base 1. A pair of upstanding, aligning U-shaped supports referred to generally at 2, 3 and which are removably connected to the base 1 upon the upper face of the latter. Each support has secured to its top a cross head 4 which acts as a bracing means for the supports, as well as closing the upper ends thereof.

The supports 2, 3 are of like construction, and but one will be described as the description of one will apply to the other. Each support includes an oblong base member 5 which is bifurcated, as at 6 at each end thereof. The member 5 is mounted on and has its outer side edge flush with a side edge of the base 1. Holdfast devices 6 coact with the bifurcated ends of the base member 5 for detachably securing the support 2 to the base 1. Formed integral with the member 5 is a pair of spaced, parallel standards 8, 9 which have their inner lengthwise edges opposing each other and further having their lower portions connected to each other by a coupling part 10 which is integral with member 5 and arranged between and integral with the standards 8, 9. Each standard is in sectional plan is of rectangular contour. Each standard is spaced from the side edges and an end edge of the member 5. The standard 8 is arranged in proximity to one end edge of the member 5 and the standard 9 is arranged in proximity to the other end edge of member 5. The standards 8, 9 project upwardly the desired distance from the coupling part 10. Each standard in proximity to its upper end has its inner side mortised as at 11. The mortise opens at the inner side and inner lengthwise edge of the standards. Each standard in proximity to its upper end is formed with a horizontal channel 12 which opens at the lengthwise edges of the standards. Each standard in proximity to its upper end and in proximity to its lower end is provided with an opening at the vertical median of the standards. One opening is indicated at 13 and the other at 14. The opening 13 is arranged above the channel 12. The purpose of the mortise 11 and the openings 13, 14 will be presently referred to. Each standard is formed on its inner side and in proximity to the opening 14 with a boss 15 formed with a semi-oval seat 16 which opens at the top edge of the boss. The purpose of the boss 15 will be presently

referred to. The coupling portion 10 in proximity to its top edge is formed wi.h a pair of spaced, parallel openings 17, 18 for a purpose to be presently referred to. The cross head 4 has its ends flush with the outer lengthwise edges of the standards 8, 9 and is fixedly secured by the holdfast devices 19.

The standards 8 and 9 of the support 2 align with the standards 8, 9 of the support 3. The openings 13 and 14 of the support 2 align with the openings 13 and 14 of the support 3. The mortises 12 of the standards 8, 9 align with each other but are oppositely disposed. The bosses 15 on the standards of the support 2 align with the bosses 15 on the standards of the support 3.

Extending through the openings 13 of the supports are upper combined bracing and tie bars 20, 21. Extending through the openings 14 of the supports are lower combined bracing and tie bars 22, 23. The tie bars are of the headed type and are also formed with threads. Engaging with the threaded portions of the tie bars are clamping nuts 24.

The setting, levelling, straightening, finishing or polishing rolls are arranged in a set and which consist of an upper adjustable roll 25 and a pair of lower non-adjustable rolls 26, 27. The roll 25 is the pressure applying roll and is of materially greater diameter than the diameters of either of the rolls 26, 27. The roll 25 is disposed over and centrally with respect to the pair of lower rolls 26, 27. The rolls 26, 27 are of like diameters and of a diameter materially less than the diameter of the roll 25. The spindles of the rolls 26, 27 which are indicated at 28, 29 respectively are journaled in the openings 17, 18 respectively. The roll 25 is driven from any suitable source.

Positioned against the spindle or shaft 30 of the roll 25 is a pair of bearing elements 31, 32, each formed of a lower part 33 and an upper part 34, the former seating in and depending from the latter. The part 33 is brass and can be readily removed when worn. The part 34 is of steel and has a pair of openings 35 therein for the insertion of lifts, not shown, to enable for the raising of the bearings to remove the roll 25. The part 34 has its inner side, at each end offset as at 36 which extends into a pair of the opposed mortises 11. That portion of part 34 not formed with the offset 36 is arranged between the opposed inner lengthwise edges of the pair of standards. The part 34 is vertically movable relative to the mortises 11 of the pair of opposed mortises.

Operating upon the top of each bearing element is a pair of oppositely disposed lengthwise shiftable wedging members 37, 38 which pass through the pair of aligning channels 12, to limit the upward movement of the pressure roll 25. The portion of the members 37, 38 of greatest height correspond in height to the height of the channels 12. The members 37, 38 are of a length to project from the pair of standards with which the members are associated. Journaled in the seat 16 of the bosses 15 are idler rolls 39, 40.

The providing of the rolls of the set in the manner as stated, when the sheets are passed between the upper and lower rolls, it will give to the sheet a better finish and polish, than if the rolls of the set were of like diameters. Further it is only necessary to pass the sheet but once between the rolls to complete the finish thereof, under such conditions materially increasing production over the employment of rolls of like diameters, as when the latter is used it is necessary to pass the sheet at least two or three times between them.

What I claim is:—

1. A machine for the purpose set forth comprising a pair of lengthwise opposed lower rolls of like diameter, an upwardly movable upper roll disposed centrally with respect to said lower rolls and of materially greater diameter with respect to the latter, means for varying the upper movement of said upper roll, and a pair of idler rolls, one arranged adjacent to one of the lower rolls and the other adjacent to the other lower roll, said idler rolls having their axes disposed in a plane above the plane containing the axes of the lower rolls and spaced laterally from the latter.

2. A machine for the purpose set forth comprising a pair of lengthwise opposed lower rolls, an upwardly movable upper roll disposed centrally with respect to and of materially greater diameter than said lower rolls, a pair of supports for said lower rolls, a pair of spaced, opposed upwardly movable bearing elements seated on said upper roll, means carried by said supports for varying the upward movement of said elements and upper roll, said supports having spaced opposed mortises, and said elements having offset parts slidably mounted in said mortises.

3. A machine for the purpose set forth comprising a pair of lengthwise opposed lower rolls, an upwardly movable upper roll disposed centrally with respect to and of materially greater diameter than said lower rolls, a pair of supports for said lower rolls, a pair of spaced, opposed upwardly movable bearing elements seated on said upper roll, means carried by said supports for varying the upward movement of said elements and upper roll, and a pair of idler rolls journaled in said supports, said idler rolls having their axes disposed in a plane above the plane containing the axes of the lower rolls and spaced laterally from the latter.

4. A machine for the purpose set forth comprising a pair of lengthwise opposed lower rolls, an upwardly movable upper roll

disposed centrally with respect to and of materially greater diameter than said lower rolls, a pair of supports for said lower rolls, a pair of spaced, opposed upwardly movable bearing elements seated on said upper roll, means carried by said supports for varying the upward movement of said elements and upper roll, said supports having spaced opposed mortises, said elements having offset parts slidably mounted in said mortises, and a pair of idler rolls journaled in said supports, said idler rolls having their axes disposed in a plane above the plane containing the axes of the lower rolls and spaced laterally from the latter adjacent to, spaced from and positioned above said lower rolls.

In testimony whereof, I affix my signature hereto.

THOMAS E. REES.