No. 792,854. PATENTED JUNE 20, 1905.

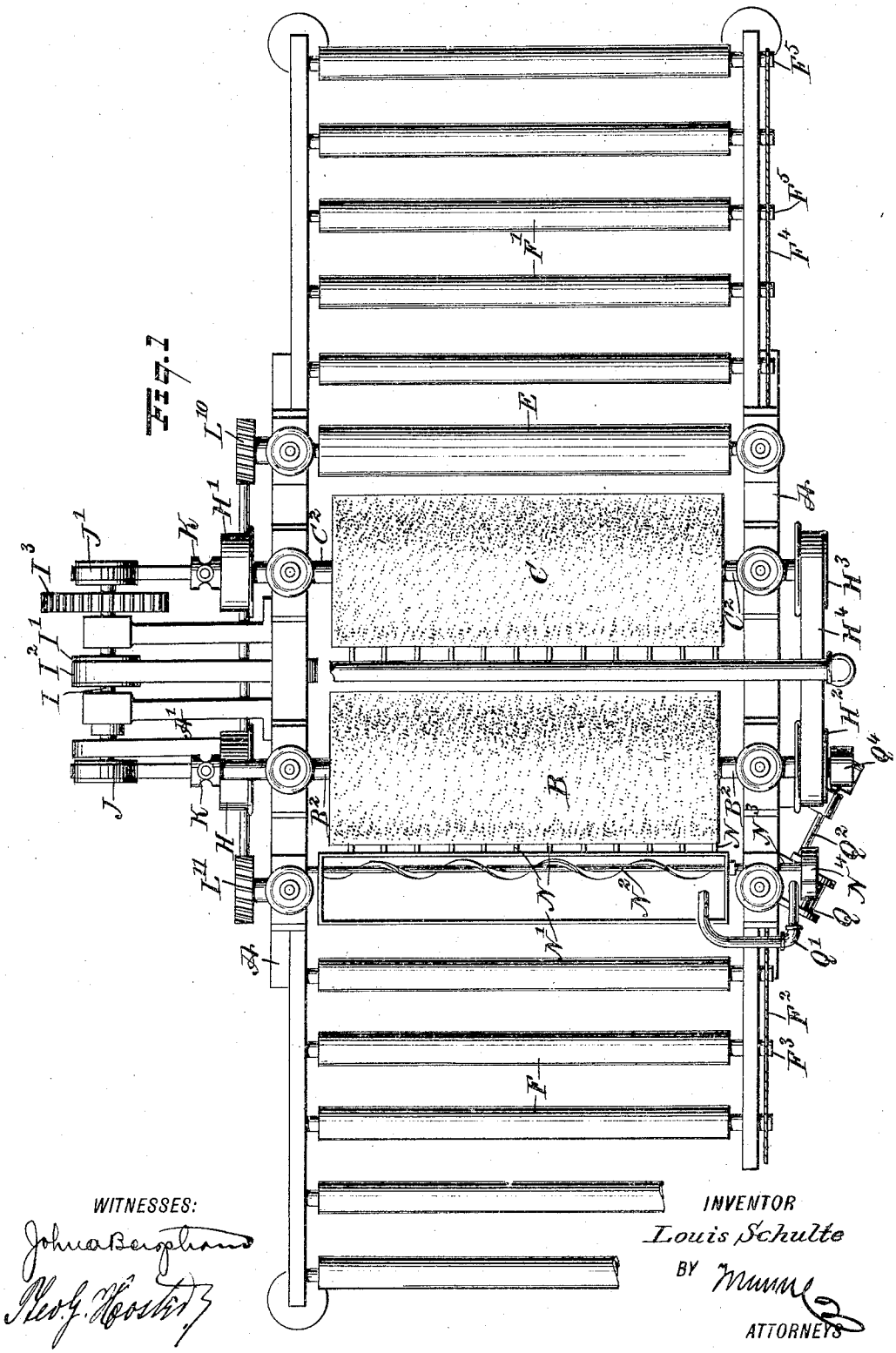
L. SCHULTE.

GRINDING AND SCOURING MACHINE.

APPLICATION FILED SEPT. 28, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

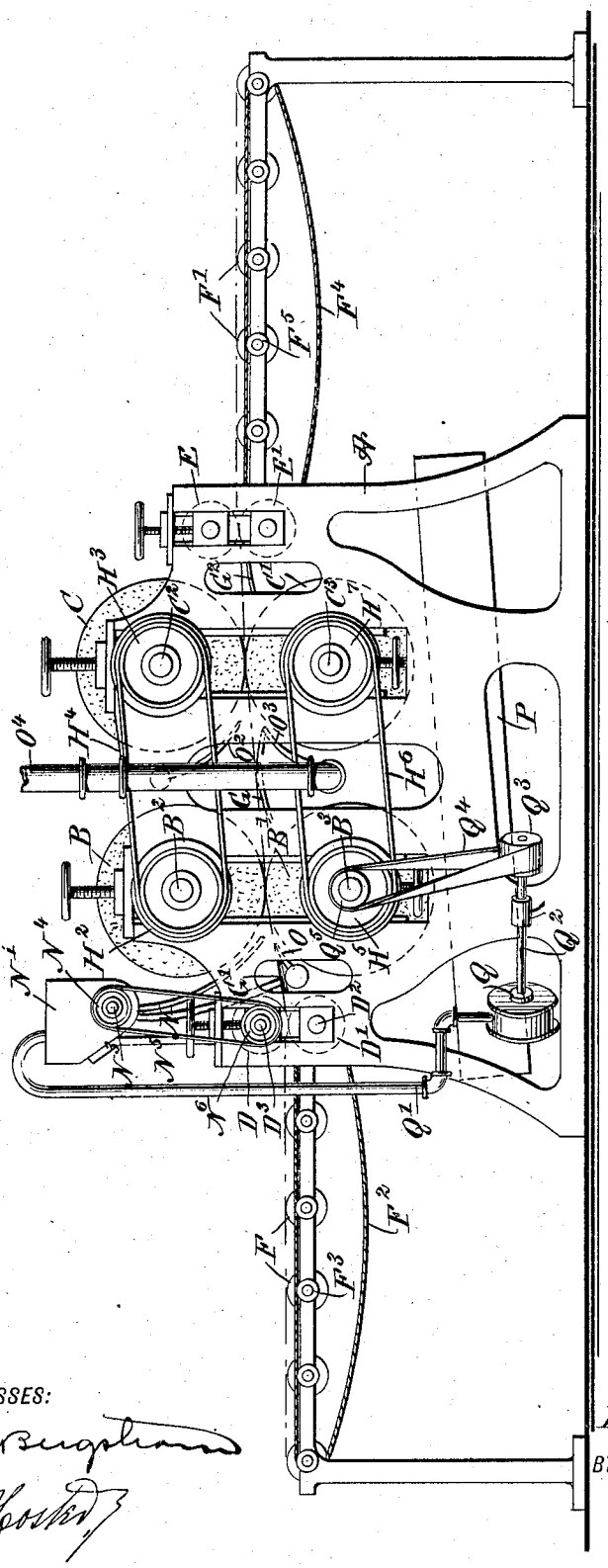


Fig. 2.

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3 SHEETS—SHEET 3.

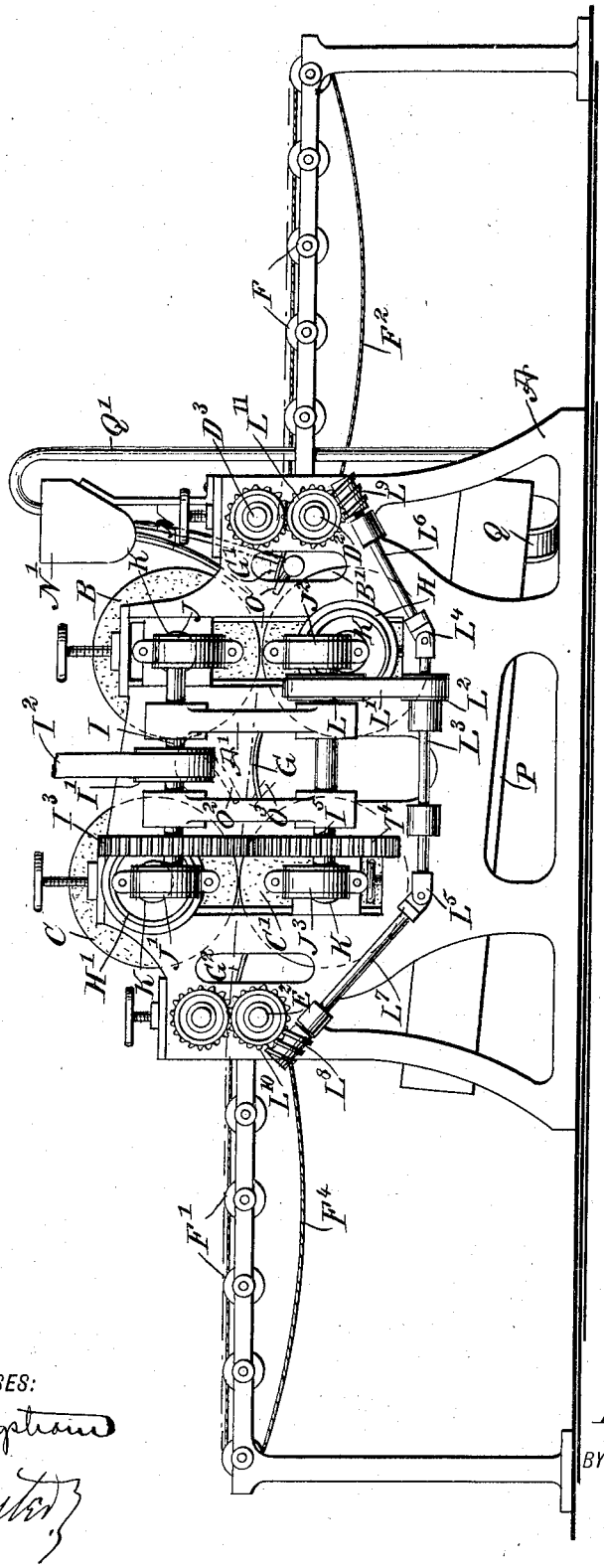


Fig. 3.

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No. 792,854. Patented June 20, 1905.

UNITED STATES PATENT OFFICE.

LOUIS SCHULTE, OF NEW YORK, N. Y.

GRINDING AND SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 792,854, dated June 20, 1905.

Application filed September 28, 1904. Serial No. 226,301.

To all whom it may concern:

Be it known that I, LOUIS SCHULTE, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Grinding and Scouring Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for grinding, scouring, scratch-brushing, buffing, and sand-buffing sheet metal, band-iron, wire, and like metal articles and arranged to simultaneously treat both faces of the article in a comparatively short time without requiring skilled labor.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a front side elevation of the same, and Fig. 3 is a rear side elevation of the same.

On a suitably-constructed frame A are journaled pairs of rollers B B′ and C C′, arranged to rotate in unison and to be shifted bodily in the direction of their axes, the first pair of rollers B B′ being somewhat lower than the second pair of rollers C C′, so that the sheet metal or other article to be treated passes in an inclined position between the rollers B B′ and the rollers C C′. A pair of driven feed-rollers D D′ are arranged somewhat in front of the pair of rollers B B′ to feed the article in a slightly-inclined position to and between said pair of rollers B B′, and a pair of driven delivery-rollers E E′ is arranged in the rear of the pair of rollers C C′ to receive the article from the latter pair of rollers.

The article to be treated is placed on driven rollers F, journaled on the left-hand end of the main frame A, and these rollers carry the article to and between the feed-rollers D D′, and similar driven rollers F′ are journaled on the right-hand end of the frame A to receive the article from the delivery-rollers E E′ and to carry the article off the machine without assistance on the part of an operator.

A supporting-plate G, slightly convexed, is attached to the sides of the main frame A between the pairs of rollers B B′ and C C′ to support the article between the said pairs of rollers and to insure a ready passage of the article from the pair of rollers B B′ to and between the pair of rollers C C′. A similar supporting-plate G′ is arranged between the feed-rollers D D′ and the rollers B B′, and a like supporting-plate G^2 is arranged between the rollers C C and the delivery-rollers E E′.

As previously stated, the rollers rotate in unison, and for this purpose the rear ends of the shafts B^3 and C^2 for the rollers B′ and C are provided with pulleys H and H′, (see Figs. 1 and 3,) connected by belts with other machinery for imparting a rotary motion to the said rollers B′ and C. On the front ends of the shafts B^2 and C^2 for the rollers B and C are secured pulleys H^2 and H^3, connected with each other by a belt H^4, so that when the roller C is rotated, as above mentioned, then the roller B is driven in unison with the said roller C. On the front end of the shaft B^3 for the roller B′ is secured a pulley H^5, connected by a belt H^6 with a pulley H^7 on the front end of the shaft C^3 for the roller C′, so that when the roller B′ is rotated, as previously described, a rotary motion is transmitted by the said pulleys H^5 and H^7 and the belt H^6 to the roller C′. In order to impart a transverse bodily movement to the said pairs of rollers B B′ and C C′, the following device is provided: A shaft I is journaled on the extension-arm A′ of the main frame A, and on this shaft I is secured a pulley I′, connected by a belt I^2 with other machinery for imparting a rotary motion to the shaft I. On the latter is secured a gear-wheel I^3, in mesh with a gear-wheel I^4, (see Fig. 3,) secured on a second shaft I^5, likewise journaled on the extension A′ of the frame A. On the ends of the shafts I and I^5 are held eccentrics J, J′, J^2, and J^3, connected at their eccentric-rods by universal joints K with the rear ends of the shafts B^2 C^2 B^3 C^3 for the rollers B C B′

C′, and hence when the machine is in operation and the shafts I and I⁵ are rotated in unison then the eccentrics thereon impart a transverse sliding motion to the shafts for the rollers B B′ C C′ to move the said rollers bodily in a transverse direction. As shown in the drawings, the eccentrics J and J² for the rollers B and B′ are arranged in such a manner that the rollers slide in opposite directions to each other, and the eccentrics J′ and J³ are similarly arranged to cause a like movement of the rollers C and C′.

The feed-rollers D D′ and the delivery-rollers E E′ are driven from the shaft I⁵ above referred to, and for this purpose the following device is provided: On the shaft I⁵ is secured a pulley L, connected by a belt L′ with a pulley L², secured on a shaft L³, journaled in suitable bearings on the rear side of the main frame A, and the ends of the said shaft L³ are connected by universal joints L⁴ L⁵ with angularly-disposed shafts L⁶ L⁷, likewise journaled on the rear side of the main frame A and provided with worms L⁸ L⁹, in mesh with worm-wheels L¹⁰ L¹¹, of which the worm-wheel L¹⁰ is secured on the shaft D² for the feed-roller D′ and the worm-wheel L¹¹ is secured on the shaft E² for the delivery-roller E′. The shafts D² and D³ of the feed-rollers D and D′ are connected with each other by suitable gear-wheels to rotate the feed-rollers in unison, and the rollers E E′ are similarly connected for a like purpose.

Suitable grinding material—such as water, sand, pumice-stone, and the like—is fed onto the top and bottom of the article to be treated immediately previous to the article passing between the rollers B and B′, and for this purpose a number of nozzles N and O are employed, connected with the lower end of a tank N′, supported on the top of the frame A and containing the grinding material referred to. Now as the article moves forward between the rollers B and B′ the grinding material discharged onto both faces of the article is carried along by the latter, and consequently the rotating and transversely-shifting rollers B and B′ grind, rub, and scour both surfaces of the article. In order to keep the material in the tank N′ properly mixed, a stir-up and transversely-extending screw N² is arranged in the bottom of the said tank, and on the outer end of the shaft N³ of the said screw is secured a pulley N⁴, connected by a belt N⁵ with a pulley N⁶, secured to the shaft D³ for the upper feed-roller D, so that when the latter is rotated the screw N² in the tank N′ is rotated to agitate and keep the ingredients of the grinding material properly mixed. It is understood that instead of the screw N² other suitable means may be employed.

Water is discharged on the upper and lower faces of the article to be treated previous to the article passing between the second pair of rollers C and C′, and for this purpose nozzles O² and O³ are provided, connected with a water-supply pipe O⁴, leading from a suitable source of water-supply. Now by the article passing between the rollers C and C′ while the latter are rotated and shifted bodily and water is discharged onto the plate at both faces it is evident that the article receives a final scrubbing, so that the article finally passes in a ground and scoured condition to the delivery-rollers E and E′ and the transporting-rollers F′ for carrying the finished article off the machine.

The grinding material used, as well as the water, drips and flows into a trough P, arranged in the lower portion of the main frame A below the rollers B′ and C′, and this trough P is connected with the suction end of a pump Q, having its discharge-pipe Q′ leading into the overhead tank N′, so that the grinding material and water is returned to the said tank N′ to be again discharged to the nozzles N onto both faces of the next article to be treated, thus allowing reuse of the grinding material. The shaft Q² of the pump Q is provided with a pulley Q³, connected by a belt Q⁴ with a pulley Q⁵ on the shaft B³ of the roller B′, so that when the latter is rotated the rotary pump Q is set in motion to pump the material from the trough P into the overhead tank N′.

It is understood that when the machine is in operation both faces of the article are ground and scoured by the use of the grinding material discharged onto both faces of the article previous to its passage between the rollers B and B′.

The pairs of rollers B B′ and C C′ are made of wood or other suitable material or covered with a fabric, according to the nature of the material under treatment and according to the particular finish to be given to the article—that is, whether the same is to receive a scratch-brushing, buffing, sand-buffing, or the like. By passing the article in an inclined position through the pairs of rollers the grinding material and water readily flow back on the article and finally into the trough.

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

1. A machine for treating sheet metal, band-iron, wire and like articles, comprising a pair of rollers mounted to turn in unison and to slide bodily in the direction of their axes, a supply-tank for a composite scouring substance, and means for feeding said substance onto both faces of the article at the entrance side of the said pair of rollers.

2. A machine for treating sheet metal, band-iron, wire and like articles, comprising a pair of rollers mounted to turn in unison and to slide bodily in the direction of their axes, a water-supply pipe, and inclined nozzles connected with the water-supply pipe and arranged on the entrance side of the said pair of rollers, for spraying water on both faces of

the article immediately previous to its passage between the rollers.

3. A machine for treating sheet metal, band-iron, wire and like articles, comprising two pairs of rollers, for the article to pass between each pair, the second pair of rollers being set at a higher level than the first pair of rollers, whereby the material to be treated passes in an inclined position between the rollers and means for feeding a composite cleansing mixture on both faces of the article in front of the lower or first pair of rollers.

4. A machine for treating sheet metal, band-iron, wire and like articles, comprising two pairs of rollers, for the article to pass between each pair, one pair of rollers being set at a higher level than the other pair of rollers, whereby the material to be treated passes in an inclined position between the rollers means for feeding a composite cleansing mixture on both faces of the article in front of the lower or first pair of rollers, and means for feeding water onto both faces of the article, in front of the other pair of rollers.

5. A machine for treating sheet metal, band-iron, wire and like articles, comprising two pairs of rollers, for the article to pass between each pair, the second pair of rollers being set at a higher level than the first pair of rollers, and a fixed guide comprising a convexed supporting-plate between the pairs of rollers, to guide the article from the first pair of rollers to the second pair of rollers.

6. A machine for treating sheet metal, band-iron, wire and like articles, comprising two pairs of rollers, for the article to pass between each pair, one pair of rollers being set at a higher level than the other pair of rollers, whereby the material to be treated passes in an inclined position between the rollers means for rotating the rollers of each pair in unison, and means for shifting the rollers bodily in the direction of their axes.

7. A machine for treating sheet metal, band-iron, wire and like articles, comprising two pairs of rollers, for the article to pass between each pair, the second pair of rollers being set at a higher level than the first pair of rollers, whereby the material to be treated passes in an inclined position between the rollers means for rotating the rollers of each pair in unison, means for shifting the rollers bodily in the direction of their axes, and means for feeding water and scouring materials to the article in front of the pairs of rollers.

8. A machine for treating sheet metal, band-iron, wire and like articles, comprising two pairs of rollers, for the article to pass between each pair, the pairs of rollers being of the same size, and the second pair of rollers being set at a higher level than the first pair of rollers, whereby the material to be treated passes in an inclined position between the rollers means for rotating the rollers of each pair in unison, means for shifting the rollers bodily in the direction of their axes, a driven feeding device for feeding the article to one pair of rollers, and a driven delivery device for receiving the article from the other pair of rollers.

9. A machine for grinding and scouring metal articles, provided with a pair of rollers, between which the article is to pass, means for rotating the said rollers, means for bodily moving the rollers in opposite directions and in the line of their axes, a grinding-substance-supply tank, and sets of nozzles connected with the said tank, one of the sets of nozzles discharging onto the upper face of the article and the other set of nozzles discharging onto the under face of the article.

10. A machine for grinding and scouring metal articles, provided with a pair of rollers, between which the article is to pass, means for rotating the said rollers, means for bodily moving the rollers in opposite directions and in the line of their axes, a grinding-substance-supply tank, sets of nozzles connected with the said tank, one of the sets of nozzles discharging onto the upper face of the article and the other set of nozzles discharging onto the under face of the article, a trough for receiving the used grinding substance, and a pump connecting the said trough with the said tank, for returning the grinding substance to the tank.

11. A machine for grinding and scouring metal articles, comprising two pairs of rollers, means for rotating the rollers, means for imparting a bodily transverse movement to the rollers of each pair and in opposite directions, a grinding-substance-supply tank means for discharging the grinding substance onto both faces of the article, in front of the first pair of rollers, means for discharging water onto both faces of the article, in front of the second pair of rollers, a trough for receiving the grinding material and water used, and a pump connecting the said trough with the said tank for returning the grinding material and water to the tank.

12. A machine for grinding and scouring metal articles, comprising a pair of rollers mounted to turn in unison, and to slide bodily in the direction of their axes, a grinding-substance-supply tank, sets of nozzles connected with the said tank, one set of nozzles discharging onto the upper face of the article and the other set discharging onto the under face of the article, the nozzles discharging at the entrance side of said pair of rollers.

13. A machine for grinding and scouring metal articles, comprising two pairs of rollers mounted to turn in unison and to slide bodily in the direction of their axes, a grinding-substance-supply tank, sets of nozzles connected with the said tank, one set of nozzles discharging onto the upper face of the article and the other set of nozzles discharging onto the under face of the article, the sets of noz-

zles discharging in front of the first pair of rollers, and water-jets at the entrance side of the second pair of rollers for spraying water on both faces of the article.

14. A machine for grinding and scouring metal articles, comprising two pairs of rollers, means for rotating the rollers of each pair in unison, shafts mounted to rotate and provided with eccentrics having their eccentric-rods connected with the shafts of said rollers to move the rollers in the direction of their axes, a pair of geared feed-rollers for feeding the article to one pair of rollers, a pair of geared delivery-rollers for receiving the article from the other pair of rollers, and means for driving said feed and delivery rollers from one of the said shafts carrying the eccentrics.

15. A machine for grinding and scouring metal articles, comprising a pair of rollers mounted to turn in unison and to slide bodily in the direction of their axes, a grinding-substance-supply tank, means for feeding the grinding substance to the article to be treated, and an agitating device for the grinding substance.

16. A machine for grinding and scouring metal articles, comprising a pair of rollers mounted to turn in unison and to slide bodily in the direction of their axes, a grinding-substance-supply tank, a feeding device for feeding the grinding substance onto both faces of the article, an agitating device for the grinding substance arranged in said tank, a trough for receiving the used grinding substance, and means for returning the grinding substance from the trough to the tank.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS SCHULTE.

Witnesses:
HENRY SCHULZ,
CHARLES BURCHARD.