J. H. HELM.

Rolls for Rolling Round Iron Bars.

No. 165,927. Patented July 27, 1875.

Fig. 1.

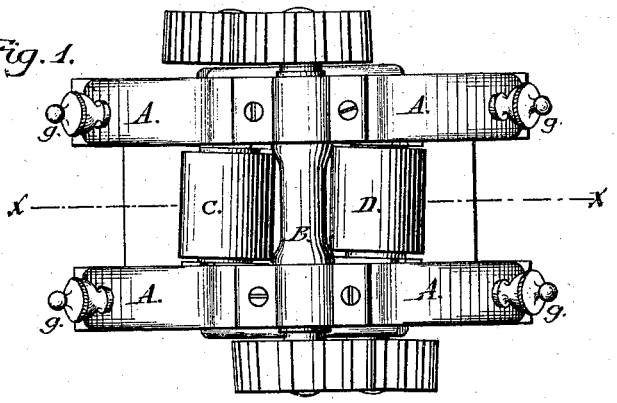


Fig. 2.

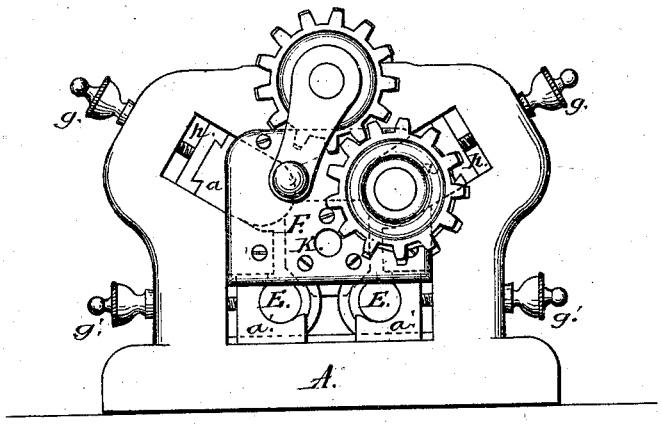
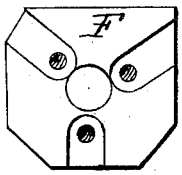


Fig. 3.

Fig. 5.



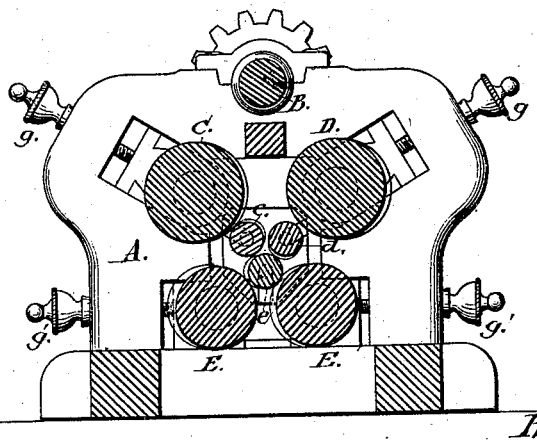
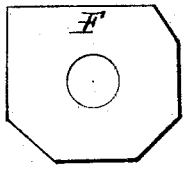


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

J. HENRY HELM, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN ROLLS FOR ROLLING ROUND IRON BARS.

Specification forming part of Letters Patent No. **165,927**, dated July 27, 1875; application filed December 5, 1874.

To all whom it may concern:

Be it known that I, J. HENRY HELM, of the city of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Machine for Rolling Round Iron Bars; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a plan view. Fig. 2 is an end elevation. Fig. 3 is a section through the line *x x*. Figs. 4 and 5 are detail views of the center-blocks F F.

Like letters of reference refer to like parts.

This invention relates to a new and improved machine for rolling iron bars, by which they are rolled perfectly round, producing, also, thereon a smooth, finished surface, without any grooves or other inequalities, whereby I produce a superior article of commerce.

It consists of a pair of housings, A A, driving-shaft B, gearing with two driving-rolls, C and D; also, three smaller rolls, *c*, *d*, and *e*, two carrying-rollers, E E, the center-blocks F F, and the set-screws *g g* and *g' g'*, all of which I will now more fully describe.

A A are the housings, provided with places or slots in which are placed the bearing-boxes *a a*, and bearing-blocks *a' a'*. Ordinary bearing-boxes are also cast into the said housings for receiving the driving-shaft B. B being the driving-shaft, is provided with two cog-wheels gearing with similar ones attached to the rolls C and D, respectively. C and D being the driving-rolls, are placed so as to revolve in the bearing-boxes *a a*. C being parallel with the small roll *c*, and D parallel to the small roll *d*, they are held in position and are adjusted by means of set-screws *g g* and blocks *h h*, to which they are attached by means of dovetails in the bearing-blocks *a a*. The small rolls *c*, *d*, and *e* are cylindrical, and are placed so that while their respective centers, at all perpendicular points, form a true triangle, the axis of each roll is inclined spirally to their common axis, which is also the axis of the bar being rolled. The degree of inclination is precisely the same in each of the rolls, which are held in such position by means of pins on their respective ends, which revolve in slots provided for that purpose in the center-blocks F F.

While the driving-rolls C and D both drive and re-enforce the small rolls *c* and *d*, respectively, the roll *e* is carried or re-enforced by the carrying or friction rollers E E, which latter are placed, therefore, parallel with *e*, and are adjusted and held in position by the set-screws *g' g'* acting on the bearing-blocks *a' a'*.

The center-blocks F F are attached to the housings *e* by means of bolts, and serve both to keep the rolls *c*, *d*, and *e* in the position above indicated, as also to guide the bar which is to be rolled into its proper place, which they do by means of the central hole K.

The above being a brief description of my invention in its various parts, I will now describe its operation.

The machine being in motion in the proper direction, the end of the bar which is to be rolled is inserted in the hole K of the center-block F, by which it is guided between the rolls *c*, *d*, and *e*, these being tapered on one end for the purpose of more easily receiving the same. The rolls *c* and *d* are thereby pressed against the driving-rolls C and D, respectively, and thus caused to revolve, which motion is communicated to the bar, and by this again to the roll *e* and rollers E E successively. Owing to the peculiar way, however, in which the rolls *c*, *d*, and *e* are placed with reference to each other and the bar, not simply a rotary, but also a longitudinal, motion is given to the said bar, which passes from the machine, perfectly round and finished, into a receiving-box provided for that purpose.

The advantages which I claim for this machine over all previous ones are, first: By this arrangement all sliding or grinding of the surface of the rolls upon the bar is avoided; second, the combination of the rolls *c*, *d*, and *e* with driving-rolls C and D and the carrying-rollers E E enables me to give all the necessary strength to the working-rolls *c*, *d*, and *e*, and yet to make them so small as to roll the smallest size of iron without providing them with grooves or collars, as has been done heretofore for that purpose, which latter, as well as

any sliding or grinding produced on the bar, either partially or even totally, prevent the production of a smooth and finished surface upon the same.

I do not claim as new the rolling of iron longitudinally upon rolls; nor do I claim as my invention giving a spiral motion to the bar while being rolled by inclining the axis of either of such rolls, which I admit to be old; but

What I do claim is—

The interior rolls *c*, *d*, and *e*, the driving-rolls C and D, and friction-rollers E E, as combined, arranged, and for the purpose specified.

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Witnesses:

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