(No Model.)

2 Sheets—Sheet 1.

C. B. SILL.

ROLLING MILL.

No. 260,246. Patented June 27, 1882.

Fig. 1

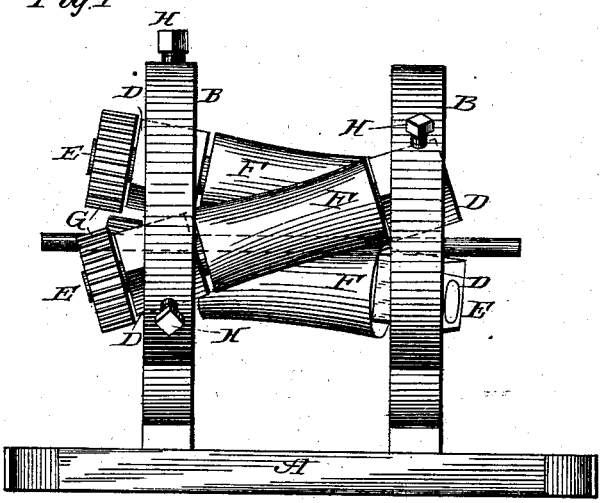


Fig. 2

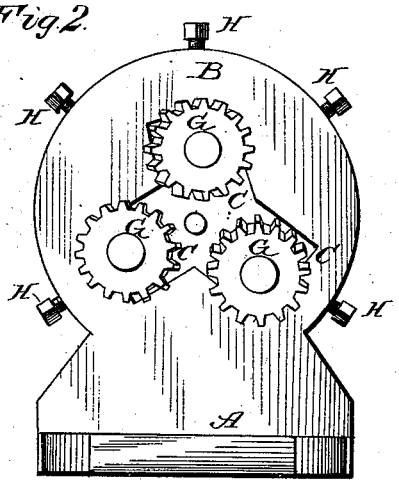
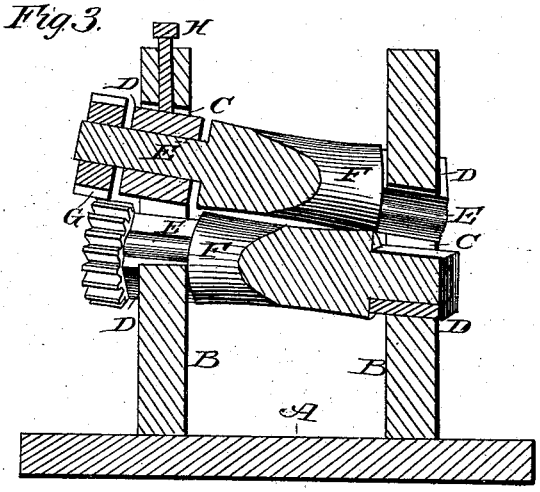


Fig. 3



WITNESSES:

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(No. Model.)

2 Sheets—Sheet 2.

C. B. SILL.

ROLLING MILL.

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Fig. 4

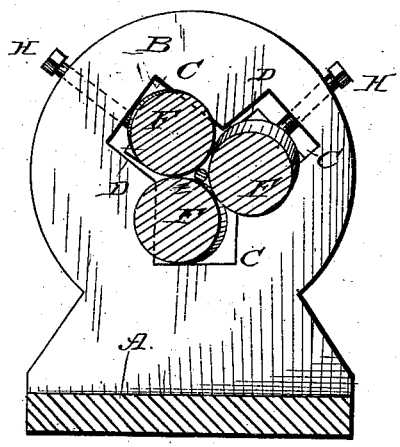


Fig. 5

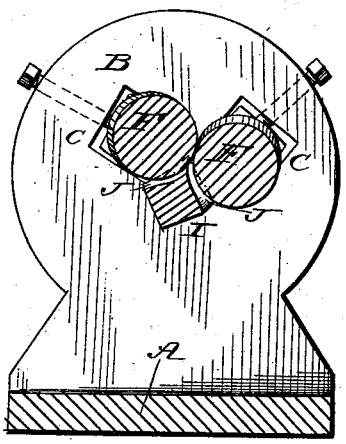
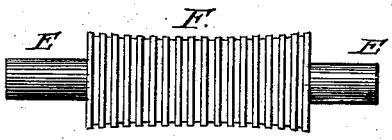


Fig. 6.



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UNITED STATES PATENT OFFICE.

CYRUS B. SILL, OF YOUNGSTOWN, OHIO.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 260,246, dated June 27, 1882.

Application filed February 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, CYRUS B. SILL, of Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Rolling-Mills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a side view of my improved rolling-mill. Fig. 2 is an end view of the same. Fig. 3 is a longitudinal sectional view. Fig. 4 is a vertical cross-section. Fig. 5 is a cross-section showing a modification in the construction of the machine; and Fig. 6 is a detail view, showing a modification in the construction of one of the rolls.

Corresponding parts in the several figures are denoted by like letters of reference.

This invention relates to rolling-mills for rolling, finishing, and reducing pipes, shafting, and other cylindrical or tubular articles; and it consists in certain improvements in the construction of the same, which will be hereinafter fully described, and particularly pointed out in the claim.

The principle of my invention consists in the arrangement, to be hereinafter described, in a common frame of a set of two or more rollers arranged with their axes at an angle to each other and to the axis of the article to be rolled, whereby the said article receives not only a rotary but also a progressive movement while passing between the rolls, so as to be in this manner reduced to the proper dimensions and to a true cylindrical shape.

In the drawings hereto annexed, A represents the frame of the machine, the sides or housings of which, B B, are provided with seats C for the blocks or boxes D, in which the shafts E of the rolls F are journaled. The rolls F, of which in the drawings hereto annexed I have shown three, are arranged spirally, as it were, around a central longitudinal axis, so that the axes of the several rolls shall be in different planes, and all at an angle to the said central longitudinal axis, which is that of the article to be rolled.

The rolls F may be cylindrical in form; or they may, as in the drawings, have concave sides, which is perhaps the most desirable form. To this, however, I do not wish to limit myself, as the said rolls may, as stated, be cylindrical; or they may be conical or of any other suitable shape. I would also state that the faces of the said rolls may be either plain and smooth or, as in Fig. 4 of the drawings, corrugated, without changing the spirit of my invention.

It will be found that when the rolls are concave-sided, as in Figs. 1, 2, 3, and 4, the lines of contact between the several rolls are straight lines, apparently wound around a central longitudinal axis, which is the axis of the article to be rolled. Thus when the said rolls revolve the said article receives a spiral or combined rotary and progressive movement, which results in forming it to the true cylindrical shape which it is the object of this machine to impart, and at the same time feeding it forward through the rolls.

The rolls F may all be of the same size or of different sizes, as may be preferred.

The shafts of the rolls F are provided at one or either end with pinions G, to which power for rotating the said rolls in the same direction may be connected. Such power may be connected to said rolls separately or in pairs or all together.

The boxes D are made radially adjustable in their seats in the housings by means of set-screws H, in order that the rolls may be adjusted so as to produce cylindrical articles of different sizes.

When articles of a small diameter are to be rolled I prefer to substitute for one of the rolls F a fixed bar, I, (shown in Fig. 5 of the drawings,) and having two spiral sides or faces, J J, to correspond with the faces of the adjoining rolls, between which it is fitted. This enables the rolls to be adjusted more closely together, and in close proximity to the said bar I, the result of which is that even with large rolls a very small article, or one of a small diameter, may be manipulated.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. With it metal may at a single operation be rolled, either hot

or cold, to a true cylindrical shape and to the desired size. It is simple, convenient, durable, and may be attended by fewer hands than the more complicated rolling-mills now generally used for producing cylindrical articles.

I am aware that rolling-mills have been heretofore constructed with concave-sided rolls arranged spirally around a longitudinal axis. I am also aware that spirally-arranged rolls have been made adjustable at their ends, and neither of these constructions do I herein claim.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The combination and arrangement, as herein described, of the housings B B, having seats C and set-screws H, the radially-adjustable boxes D, the concave-sided rolls F, having shafts E, mounted in said boxes, all said boxes being independently adjustable, and the gear-wheels G, secured upon the ends of the shafts which project beyond the housings, as and for the purpose herein set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CYRUS BLACK SILL.

Witnesses:
P. F. GELLIES,
M. C. MCNABB.