No. 812,281. PATENTED FEB. 13, 1906.

A. MASION.

ROLLING MACHINE.

APPLICATION FILED JAN. 5, 1905.

2 SHEETS—SHEET 1.

Fig. 1

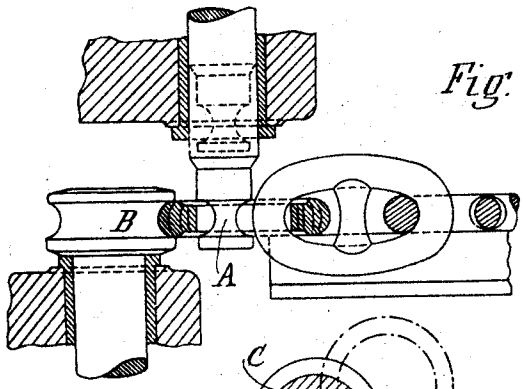


Fig. 2

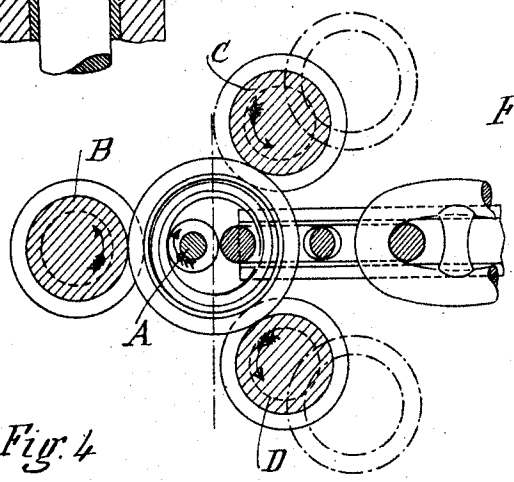
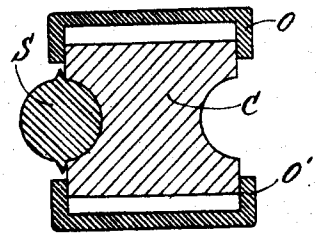


Fig. 4



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2 SHEETS—SHEET 2.

Fig. 3

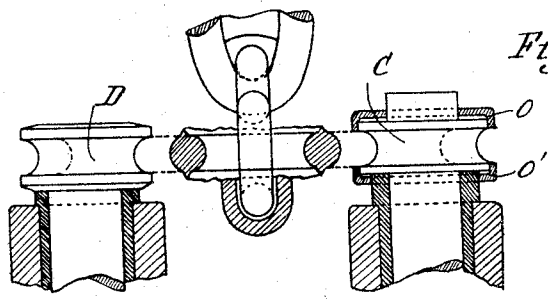


Fig. 5

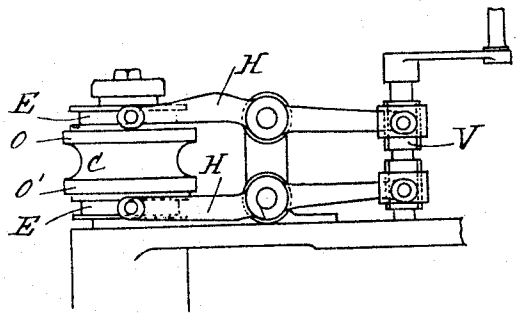
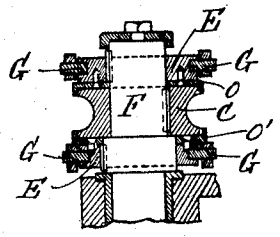


Fig. 6



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UNITED STATES PATENT OFFICE.

ALFRED MASION, OF MOLENBEEK, BELGIUM, ASSIGNOR TO SOCIÉTÉ GÉNÉRALE DU LAMINAGE ANNULAIRE, OF BRUSSELS, BELGIUM.

ROLLING-MACHINE.

No. 812,281. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed January 5, 1905. Serial No. 239,756.

To all whom it may concern:

Be it known that I, ALFRED MASION, a subject of the King of Belgium, and a resident of Molenbeek, St. Jean, Belgium, have invented certain new and useful Improvements in Rolling-Machines, of which the following is a specification.

This invention has reference more especially to the manufacture of weldless chains by close coiling and rolling a bar of metal, wherein a rolling-mill is used with circumferentially-grooved rolls of the kind described in the specification of the United States Patent No. 658,722, dated the 25th day of September, A. D. 1900, and illustrated in Figs. 1 and 2 of the drawings accompanying that specification; but the invention may be applied to apparatus for similarly rolling analogous bodies; but it is presumed links are to be operated on. The aforesaid rolling-mill imparts circular cross-section to chain-links of square or rectangular section formed by the close coiling of a bar of metal, and the said rolling-mill comprises two compressing-rolls, one of which is movable and is introduced into the link to be rolled and then brought nearer to the other roll, which is stationary. Tangential rolls (the axes of which may be shifted) are used to limit the enlargement of the link and guide it during the rolling operation. The work cannot be well performed unless such an amount of metal be used as will insure powerful compression and to make up for inequalities in the metal and for losses which occur in heating it, these losses varying according to the way the heating-furnace is worked. The rolling operation causes the excess of metal to pass between the two first-named rolls (when the one roll is almost in contact with the other roll) and form a bur, both above and below, around the rolled link. The ridges or burs thus formed have hitherto been removed by a milling-cutter revolving at high speed and brought into contact with the link while it revolves in the rolling-mill. This milling operation is slow and very costly on account of the milling-cutters soon losing their cutting edges while in contact with metal at high temperature. According to this invention the removal of the burs from the links is effected by improved means, as hereinafter described.

Figure 1 is a sectional elevation, and Fig. 2 a sectional plan of a portion of the rolling-mill, the positions of the movable roll A being shown in dotted and full lines, respectively, and B showing the stationary roll. The tangential rolls are marked C and D, respectively. Fig. 3 shows in vertical section the device applied to a roll. Fig. 4 is a similar view drawn to a larger scale. Figs. 5 and 6 are an elevation and a vertical section illustrating the said device and means for operating it.

The principle of the device consists in obtaining a shearing action by providing one of the tangential rolls or an additional roll with flat collars, which by coming sidewise into contact with the burs formed between the two rolls A and B will cut them off. It is not practicable to use such flat collars on the grooved rolls to remove the burs while the rolling operation is taking place, as then the burs would be torn off as they are being formed, the debris thereof would pass between the rolls A and B, and be compressed and become embedded in the metal of the link and spoil it. It is of course possible to use a special grooved roll with flat collars, provided this roll be kept away from the link while it is being rolled; but in order to obtain good results the rolling-mill must have three external rolls in contact with the link and there is no room for a fourth roll and its gearing. In the apparatus constructed in accordance with this invention the usual grooved tangential rolls are in contact with the link during the rolling operation; but one or more of these can be provided with flat collars, which are brought into operative position after the rolling has been performed—that is, after the movable roll A has been moved away from the roll B and the burs are completely formed. To effect this, the apparatus shown in Figs. 3 and 4 consists of two circular flanged disks O and O′, arranged round one of the rolls C and constituting what may be termed "knives" or "shears," which are, as shown in Fig. 4, kept away from the grooves of the roller, and consequently from the link S and the burs thereon while the rolling is proceeding; but they are brought nearer together when the rolling operation is finished and the burs are completely formed. Figs. 5 and 6 illustrate the apparatus, with means for operating it, the two knives or shears being in the position they assume when shearing has been effected—that is, flush with the edges of

the groove in the roll C. As each of the knives or shears O O′ is fixed (by means of screws, for example) to a collar E, which is connected by a groove-and-feather arrangement to the shaft F, on which is keyed the roll C, the said collars rotate with the shaft F and roll C, but can be moved up and down on the shaft F while rotating. The vertical movements of the collars E, and consequently of the knives or shears O O′, are controlled by two pins G, engaging in peripheral grooves in the collars E and controlled by levers H, operated by a screw V, with right and left hand threads, so that when one of the levers rises the other descends. During the rolling operation the screw V is so turned that the knife or shear O is raised and the knife or shear O′ is lowered. When the burs are completely formed and the roll A is moved away from the roll B, the screw V is rotated in a direction such that the flat collars of the knives or shears O and O′ are moved flush with the edges of the groove of the roll C. In order not to crush the burs, it is advisable not to bring the knives or shears toward each other when they are above and below the burs, as is the case during the rolling operations shown in Fig. 4; but after rolling the roll C is taken off the link for a moment, so that the knives or shears instead of crushing the burs attack them sidewise and shear them neatly off the surface of the link. The burs are then removed without affecting the rotary motion of the link, which continues to rotate while the burs are being sheared off, and owing to their circular form the knives or shears continue to shear, so that the link is completely deprived of the burs both at top and bottom, and this may be done in one revolution only of the circular knives or shears, or thereabout.

The aforesaid device is of course not confined to the precise application shown, as it can be mounted on a roll of other apparatus for similarly rolling analogous bodies. If space should permit of it, a special roll, with flat collars acting as knives or shears, may be used, the said roll being brought nearer the link only after the burs are formed, this special roll acting in the same manner as the knives or shears in the arrangement illustrated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a rolling-machine, the combination with a roll, of knives or shears connected with the roll to rotate therewith, and movable toward and from each other in the direction of the axis of the roll, and means for simultaneously adjusting the knives or shears.

2. In a rolling-machine, the combination with a roll, of a circular knife or shear connected with said roll, means for locking the shear to the roll to prevent independent rotation and to permit the shear to be adjusted in the direction of the axis of the roll, and means for adjusting the knife or shear.

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

ALFRED MASION.

Witnesses:
GUSTAVE PIERRY,
EMILE NUYBS.