W. BANSEN.

Manufacture of Wire.

No. 204,787. Patented June 11, 1878.

Fig. 3.

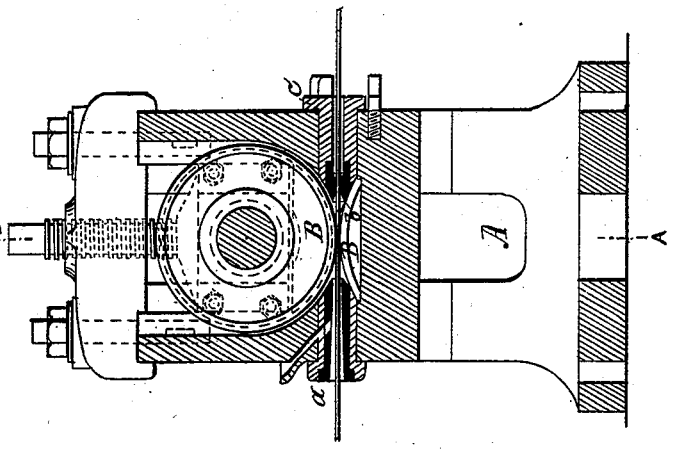


Fig. 2.

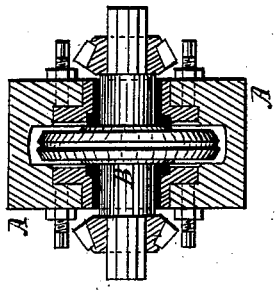
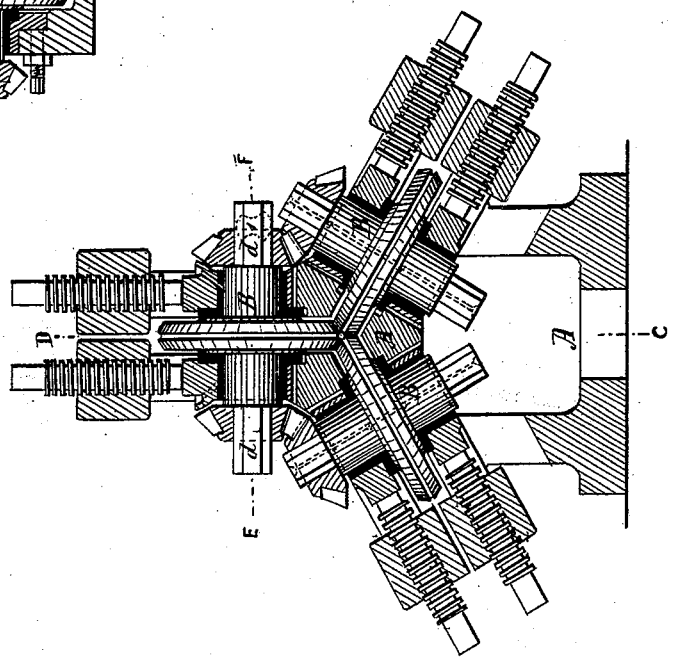


Fig. 1.



Witnesses.

Alf. L. L. Leonard

Henri Guillaume

Inventor.

Wilhelm Bansen

per Henry Orth

atty.

UNITED STATES PATENT OFFICE.

WILHELM BANSEN, OF BODENBACH-ON-THE-ELBE, AUSTRIA.

IMPROVEMENT IN MANUFACTURE OF WIRE.

Specification forming part of Letters Patent No. **204,787**, dated June 11, 1878; application filed February 1, 1878.

To all whom it may concern:

Be it known that I, WILHELM BANSEN, of Bodenbach-on-the-Elbe, Empire of Austria, have invented a certain new and useful Improvement in the Manufacture of Wire, of which the following is a specification:

My invention relates to new and useful improvements in machines for rolling wire; and consists in the arrangement of a set of three or more grooved wheels so that their peripheries will meet upon a common center, and their respective grooves form the circular aperture through which the wire is rolled, in combination with a guide, a finisher-plate adapted to remove the inequalities of the wire after coming from the rollers or wheels, and a suitable frame to support the mechanism.

According to this invention, a set of three grooved rollers or wheels arranged at angles of one hundred and twenty degrees to each other is used for the manufacture of wire of small gage, or a set of four grooved rollers or wheels arranged at angles of ninety degrees to each other for the manufacture of wire of larger gage, and with these rollers or wheels I employ a suitable feed-guide and a finisher-plate, through which latter the wire is forced after leaving the rollers or wheels.

Among other advantages obtained by this invention, wire of a smaller gage can be rolled than has been hitherto the case, because the rollers or wheels have a tendency to force the passing wire to the center of the space formed by their respective grooves, and, further, the texture and strength of the wire is less subject to injury.

In the accompanying drawings, Figure 1 is a section of Fig. 3 on line A B, showing the arrangement of a set of three rollers. Fig. 2 is a part section of Fig. 1 on line E F, and Fig. 3 is a section of Fig. 1 on line C D.

a is the guide-box leading the wire to the rollers or grooved wheels. *b* is the finisher-plate, mounted in box *c*, and through which the wire is forced after passing between the rollers, and which removes all inequalities or irregularities which may have been formed on the wire by the rolls or wheels, and may be employed to polish the wire, as is the case with the ordinary draw-plate.

B are the wheels, of which I have shown three in the annexed drawings, mounted in and inclosed by the frame A, which latter may be made of any suitable material. Of course, it will be readily understood that the diameter of each groove in the periphery of each of the wheels B is such that the grooves collectively will form at the meeting-point or junction of the peripheries of said wheels a groove of a predetermined diameter, the wheels B being for that purpose mounted within the frame at an angle of one hundred and twenty degrees to each other, as above set forth.

By completely inclosing the grooved wheels or rollers within the frame all danger of accident is removed, and the lubricating of the parts is facilitated.

The operation is as follows: Wire, for instance, of eight-thirty-seconds ($\frac{8}{32}$) inch gage is passed through the guide *a*, Fig. 3, between the three rollers, the collective grooves of which form a space of, for instance, seven-thirty-seconds ($\frac{7}{32}$) inch, or between a set of four wheels or rollers, the collective grooves of which form a space of that diameter, and, having passed between these rollers, is forced through the finisher-plate having a perforation the diameter of which is equal to that formed by the set of three or four rollers. The wire, proceeding from here, is then passed through another similar set of rollers having grooves of smaller diameter, which operation is repeated until the wire is of the desired gage.

Thus it will be seen that the operation of rolling and finishing is accomplished at one and the same time, the wire passing from one set or series of rollers or wheels to the next or succeeding set, and so on from set to set until the wire is of the required gage, when it is wound upon reels, as it issues from the last set, in the usual manner.

The aperture in the finisher-plate through which the wire passes, being of a diameter equal to that of the collective grooves of the rollers, is not employed to reduce the size of the wire by "drawing," but merely to finish the said wire by removing all inequalities which may be produced during the process of rolling.

It is obvious, therefore, that comparatively little power is required to draw the wire through the finisher-plate, and by passing said wire to a second set of rolls having grooves of smaller

diameter than the first set, or, if the proper gage is obtained, passing said wire to the ordinary reel, but little power over and above that required for the operation of the rolls is needed to draw the wire through the finisher-plates of each set.

The rollers are driven by any suitable power coupled to the shaft *d* or *d'* of one of the rollers. In this manner wire down to one-twelfth-inch gage may be rolled.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for rolling wire, the combination, with a set of three or more grooved rollers having their axes at an angle to each other, as shown and described, to form an annular rolling-surface, of a finisher-plate through which the wire passes after leaving the rollers, and is finished at one and the same operation, substantially as described.

2. A machine for rolling wire, consisting of the following elements: three or more grooved rollers or wheels having their axes at an angle to each other, their respective grooves coinciding at one point to form the groove in which the wire is rolled, a feeding device to feed and guide the wire properly between the rollers, a finisher-plate to remove all inequalities in the wire after leaving the rollers, an inclosing-frame within which the above-described mechanism is mounted, and suitable driving mechanism, all combined and operating as set forth, for the purpose specified.

In witness that I claim the foregoing I have hereunto set my hand this 29th day of August, 1877.

WILHELM BANSEN.

Witnesses:
C. O. PAGET,
T. BARTA.