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PATENT SPECIFICATION

DRAWINGS ATTACHED

1002,543

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COMPLETE SPECIFICATION

Band Saw

I, SHINNOSUKE FUNAKUBO, of 19, 3-chome, Fukagawa Takabashi, Koto-ku, Tokyo, Japan, a Japanese subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

THE PRESENT INVENTION relates to band saws.

The present invention consists in a band saw having a saw blade of narrow width with tooth projections on one edge and a supporting blade of broad width, the said blades when mounted on the wheels of a band sawing device being in abutting contact with each other at the trailing edge of said saw blade and the leading edge of said supporting blade.

The present invention also consists in a band sawing device with such a saw and having a driving saw wheel and two driven wheels, the blades being engaged over the driving wheel and over respective driven wheels.

The present invention avoids the conventional troubles which have arisen when forming the whole portions of a saw by using steel plate for saw-manufacturing, and in welding the tooth plate portion and the guiding plate portion thereof, or in producing complicated joining parts therefor.

Thus, the present band saw, as compared with conventional band saws, can be manufactured at a lower cost, with easier processes, and also can be more effective in operation.

The present band saw may be used with any conventional band sawing device. However, it is desirable to use a specially designed sawing device in which the two blades of the band saw are engaged at one end over a driving saw wheel and at their other ends

over respective separately movable driven saw wheels which have respective automatic tension adjustments, because by these steps said two blades inevitably come to be closely in abutment with each other under a constant tension adequate for cutting operations.

The invention will now be described with reference to the accompanying drawing, in which:

Figure 1 is a front view which shows a part of a band saw embodying the present invention,

Figure 2 is a front view of the same in place on a sawing device, and

Figure 3 (a & b) is a pair of graphs which illustrate the rolling of the blades of the present invention and the distribution of tension caused thereby in said blades.

Now referring to the drawings, 1 is a saw blade of narrow width having tooth projections, formed by hardening a high speed alloy steel plate or strip and 2 is a supporting blade of broad width made from a moderately hardened carbon steel. Further both blades are figured so as closely to abut with each other at their opposite inner edges 1a, 2a.

The blade 1 and the supporting blade 2 are formed as endless bands and are disposed parallel to each other in the same plane, one end of each loop being engaged over a driving saw wheel 3, and the respective other ends being engaged over separately movable driven saw wheels 4, 5 which are equipped with respective automatic tension adjustments for adjusting independently the tension of the blade 1 and the supporting blade 2.

Of the existing methods of increasing tension in a band saw in operation, rolling a saw blade, for producing a tensioning zone thereon, is well-known to the skilled in the art. That is, further to enlarge: the saw blade is rolled inwardly from both edges

[Price 4s. 6d.]

thereof to make a spread and a sag extending longitudinally at its centre zone so that a strong tension is produced in both side zones thereof when the blade is pulled.

5 Here, seeing that the rolled portion of the saw blade has naturally a small tension, with its reserve power added to the unrolled portion thereof, the saw blade is often exposed to possible dangers of inducing unexpected cracks and breakages if the un-rolled portion, that is, the tensioning zones on leading and trailing edges thereof, are made extremely narrow, yielding an unnecessarily excessive power of tension thereupon.

10 On the other hand, in a band saw it is desirable that the tooth line side and the trailing edge side thereof should have respective great tensions in order to avoid any bending of the saw blade in operation, but this involves the risk of inducing cracks and breakages as mentioned above.

15 The un-rolled portions of a band saw blade, that is, the tensioning zones which strain the blade are adapted to form contact faces between the saw blade and the saw wheel, and the contact with the face of the wheel should be close.

20 Thus, when the tensioning zone is too narrow in breadth, it causes undesirable slip in operation, which makes it impossible to maintain the tension thereof, and further causes lateral movement of the saw on the face of the wheel.

25 The invention makes it possible to meet these incompatible conditions in a band saw, that is, 1) the tension of the tooth line side and the trailing edge side of a saw blade should be increased to the maximum in sawing operation so that the saw blade may not be accidentally bent in operation, and 2) simultaneously the tensioning zone should be as wide as possible so that reliable contact thereof may be made with the wheel face, effectively and economically.

30 Thus, the band saw according to the present invention comprises a narrow width blade 1 and a separate broad width supporting blade 2, which enables the two blades to be rolled separately. Thus, comparatively great tensioning zones can be formed, especially compared with the saw breadth thereof, and both the tension on the tooth line side of the saw blade and the tension on the trailing edge side of the supporting blade may be respectively produced at will by independent rolling. Also especially when compared with any conventional band saw, my saw has the advantages that it can have a contact portion with the wheel face even at the centre thereof, by which heat can be removed effectively during operation from said blade 1, through the closely adjacent supporting blade 2, and that it is endurable well enough against any stress, and is fit for long-term use, and further that the sawing operation thereof can be done smoothly

without causing any hindrance by the play of tension which in operation effectively and suitably act against the thermal expansions of both blades 1 and 2, because said blade 1 and supporting blade 2 have respective movable driven saw wheels 4, 5 properly engaged therewith.

In rolling the present band saw, it is possible to roll the blade 1 only, using a supporting blade made of steel strip which is given no special rolling or hardening.

It will be appreciated that, as illustrated by Figure 3 (a & b), it may be possible here that both the blade 1 and the supporting blade 2 are processed by rolling them respectively into a blade possessed of a strong tooth line tension, and a supporting blade possessed of a hard trailing edge side tension. By these rolling processes, the tensioning zones which form abutting portions between the blades, can be situated parallel in the same plane, creating close abutment with each other at their edges in operation. At the same time these abutting edges keep suitably in contact with the wheel face, serving the saw blade as a transfer means for the heat generated during sawing.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms may be adopted within the scope of the claims which follow.

WHAT I CLAIM IS:—

1. A band saw having a saw blade of narrow width with tooth projections on one edge and a supporting blade of broad width the said blades when mounted on the wheels of a band sawing device being in abutting contact with each other at the trailing edge of said saw blade and the leading edge of said supporting blade.

2. A band saw as claimed in claim 1, in which said saw blade is processed by rolling a highly hardened high-speed alloy steel plate so that it is possessed of a strong tooth line tension and said supporting blade is processed by rolling a carbon steel plate so that it is possessed of a trailing edge tension, so that said blades when mounted on the wheels of a band sawing device come into contact with each other at the edge line extending longitudinally along their aforesaid edges while remaining in contact with the said wheels.

3. A band sawing device with a band saw as claimed in claim 1 or 2, comprising a driving saw wheel and a pair of driven rotary wheels which all are rotated by being connected by said saw blade and said supporting blade which are in contact with each other at their abutting edges, said saw blade being engaged over the driving wheel and over a first driven wheel and the supporting blade being engaged over the driving wheel and a second driven wheel.

4. A device as claimed in claim 3, in which

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thereof to make a spread and a sag extending longitudinally at its centre zone so that a strong tension is produced in both side zones thereof when the blade is pulled.

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without causing any hindrance by the play of tension which in operation effectively and suitably act against the thermal expansions of both blades 1 and 2, because said blade 1 and supporting blade 2 have respective movable driven saw wheels 4, 5 properly engaged therewith.

In rolling the present band saw, it is possible to roll the blade 1 only, using a supporting blade made of steel strip which is given no special rolling or hardening.

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2. A band saw as claimed in claim 1, in which said saw blade is processed by rolling a highly hardened high-speed alloy steel plate so that it is possessed of a strong tooth line tension and said supporting blade is processed by rolling a carbon steel plate so that it is possessed of a trailing edge tension, so that said blades when mounted on the wheels of a band sawing device come into contact with each other at the edge line extending longitudinally along their aforesaid edges while remaining in contact with the said wheels.

3. A band sawing device with a band saw as claimed in claim 1 or 2, comprising a driving saw wheel and a pair of driven rotary wheels which all are rotated by being connected by said saw blade and said supporting blade which are in contact with each other at their abutting edges, said saw blade being engaged over the driving wheel and over a first driven wheel and the supporting blade being engaged over the driving wheel and a second driven wheel.

4. A device as claimed in claim 3. in which

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the driven wheels are separately movable and are provided with respective independent automatic tension adjustment means.

5. A band saw substantially as herein described with reference to the accompanying drawing.

6. A band sawing device substantially as herein described with reference to Figure 2 of the accompanying drawing.

MARKS & CLERK,
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Agents for the Applicant(s).

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