Sept. 5, 1944. O. A. ABENDROTH 2,357,492

FOURDRINIER WIRE

Filed June 5, 1943

Fig. 1.

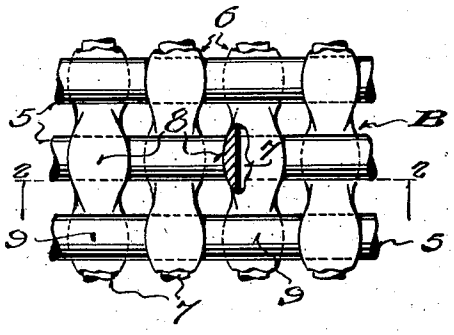



Fig. 2.

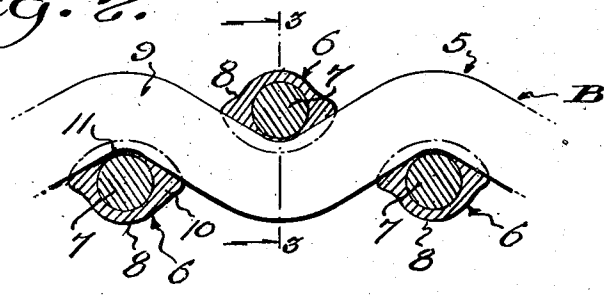



Fig. 3.

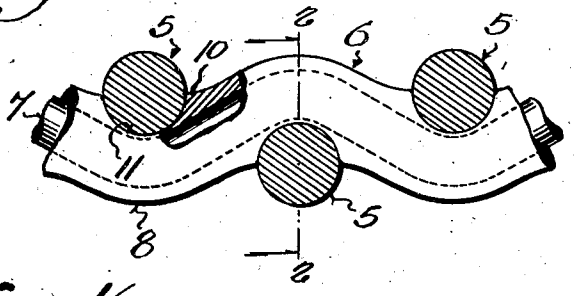
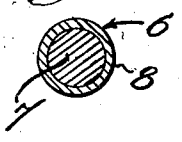



Fig. 4.




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2,357,492

## FOURDRINIER WIRE

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Application June 5, 1943, Serial No. 489,867

4 Claims. (Cl. 139—425)

This invention appertains to wire fabrics and more particularly to woven wire belts of the character used on paper making machines of the Fourdrinier type.

Much difficulty is experienced in the actual use of wire belts, in that when the wires are woven, relatively sharp bends and deep valleys are formed where the wires cross. Due to the sharp bends the belt is weakened at these points and during the continuous operation of the belt over the end rollers the wires break or snap. Also the sharp bends and valleys tend to mark the wet paper passing over the belt.

It is therefore, one of the primary objects of my invention to provide a Fourdrinier wire of a flat nature, in which the sharp bends and deep valleys are eliminated to a great extent, whereby to prevent the strain on the wires due to the sharp bends and to prevent the marking of the paper sheet by such sharp bends and deep valleys.

Another salient object of my invention is to provide a Fourdrinier belt, in which certain parallel wires (preferably the weft wires) are provided with a soft outer metal shell or sleeve, so that the hard metal warp wires will imbed themselves in the soft metal shell of the weft wires, thereby eliminating to a great extent, the sharp bends and thus provide a substantially flat belt.

A further important object of my invention is to provide a woven wire Fourdrinier belt in which the weft wires only consist of a hard metal core and an outer sleeve or shell of soft metal.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, which will be hereinafter more specifically described, claimed and illustrated in the accompanying drawing, in which drawing:

Figure 1 is an enlarged, fragmentary, detail, plan view of a part of a belt of a Fourdrinier machine, a part of the view being shown broken away and in section.

Figure 2 is a detail, sectional view taken substantially on the line 2—2 of Figure 1 looking in the direction of the arrows, the view being on a greater scale than Figure 1.

Figure 3 is a sectional view taken at right-angles to Figure 2 and substantially on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is an enlarged, detail, sectional view through one of the weft wires before being woven in a belt.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter B generally indicates a fragment of a woven wire belt for a Fourdrinier machine. This belt B comprises a plurality of longitudinally extending warp wires 5 and a plurality of transverse cross or weft wires 6. These wires are woven together in accordance with standard practice.

In accordance with my invention the warp wires 5 are formed from relatively hard metal, such as steel or hard bronze.

The weft wires 6 each include a hard metal core 7 and this core can be constructed from steel, iron, Monel or hard bronze. The hard metal core 7 is provided with an outer sleeve or shell 8 formed from relatively soft metal, such as brass or soft bronze.

Before weaving, the warp and weft wires 5 and 6 are substantially of the same diameter and during the weaving process the tension on the wires will be such that the hard warp wires 5 will embed themselves in the soft outer sleeve or shell 8 of the weft wires 6. Due to the fact that the warp wires embed themselves in the weft wires, enlarged bights or bends will not be formed and by referring to Figures 2 and 3, it can be seen that the bends 9 of the woven wire are on a relatively large arc of a circle and consequently the belt is flattened. During the imbedding of the hard warp wires 5 in the soft outer metal shell of the weft wires the soft metal will be displaced and the metal displaced will tend to flow around the warp wires as indicated by the reference character 10. Consequently a seat 11 is formed for the warp wires at each bend. This prevents shifting of the warp wires transversely and the drainage opening through the belt will hold true to size.

Due to the fact the elongated bends can be formed in the wire no undue strain is placed on the wires and consequently the breaking of the wires is reduced to a minimum. As stated, relatively flat belts are formed which will not mark the sheet.

Changes in details may be made without departing from the spirit or scope of my invention, but what I claim as new is:

1. A woven wire belt particularly adaptable for use on Fourdrinier machines comprising woven weft and warp wires, one of said groups of wires being formed from hard metal and the other of said groups of wires having a hard metal core and an outer shell of soft metal in-

casing said core, said first named group of wires being adapted to imbed themselves in the soft shells of the second mentioned group of wires during the weaving of the belt.

2. A belt particularly adaptable for use in Fourdrinier machines comprising hard metal warp wires, and weft wires each consisting of a hard metal core and a soft outer shell, said warp wires being adapted to imbed themselves in the soft sleeves of the weft wires during the weaving of the belt.

3. A belt particularly adaptable for use in Fourdrinier machines comprising hard metal warp wires, and weft wires each consisting of a hard metal core and a soft outer shell, said warp wires being adapted to imbed themselves in the soft sleeves of the weft wires during the weaving of the belt, the metal displaced by the warp wires tending to flow around said warp wires.

4. Wire fabric for paper-making machines, comprising interwoven warp and weft wires, said weft wires having a hard metal core and having a soft protective casing to permit embedding of the warp wires during the weaving operation.

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