J. DUNBAR.

Seam for Woven-Wire in Paper-Machines.

No. 218,003. Patented July 29, 1879.

Fig. 1.

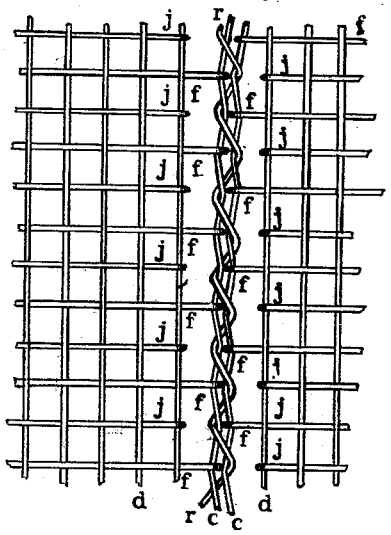

Fig. 3.

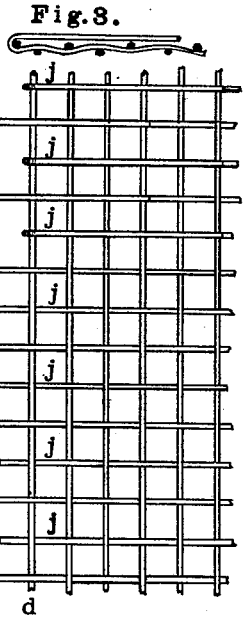

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN DUNBAR, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN SEAMS FOR WOVEN WIRE IN PAPER-MACHINES.

Specification forming part of Letters Patent No. **218,003**, dated July 29, 1879; application filed April 23, 1879.

To all whom it may concern:

Be it known that I, JOHN DUNBAR, of Springfield, in the county of Hampden and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Seams for Woven Wire in Paper-Machines, of which the following is a specification.

Heretofore the seams in the woven wire of paper-machines have been made by first binding the edges of the wire-cloth and then drawing the edges together with a wire. This is objectionable, for the reasons that it leaves a mark on the paper wherever it comes in contact with the pulp, and it easily fills with pulp, which must be removed. In the process of removal or cleaning the seam becomes worn, and gives out long before the wire-cloth is so worn as to be unfit for use.

Seams have also been made by making a series of loops upon the inside of the wire-cloth, and drawing the edges together with a wire running from side to side through these loops. This seam is objectionable because it is very difficult to make, and as the extreme edges are not bound down they are very liable to turn up. Especially is this seen when this seam is made with large wire, or if it is drawn tight, thus causing the edges to project beyond the surface of the rest of the cloth, and leaving a water-mark on the paper wherever it touches the pulp. Again, if the seam is not drawn sufficiently tight, or if there be kinks in any of the loops, the edges will draw apart when the cloth is used. Another objection to either of these seams is that it is necessary to skip very many meshes, thus making the seam much weaker than the rest of the sheet; and it is found that small wire must be used to make a very nice seam.

The object of my invention is to make a seam which, while being easy to make, may be made of wire as large as the wire of which the sheet is made; one in which the stitches shall be shorter and more numerous than in those now in use, and a stitch which will neither project nor allow the edges to project above the surface of the cloth.

My invention consists in first raveling out several threads of either the warp or filling, then bending the projecting ends backward, and afterward drawing the edges together with a wire running over and around the outer strand, as hereinafter more fully set forth.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is an enlarged view of my seam as seen from the outside. Fig. 2 is a view of a piece of woven wire, showing the steps taken preparatory to making the seam; and Fig. 3 is a side view of one wire or strand after being bent.

To make this seam, which is intended for use on all woven wire in paper-machines, but more especially for covering cylinders and dandy-rolls, I cut the sheet from one-fourth to three-eighths of an inch larger than required to form the cylinder. I then unravel the edges which are to be brought together. This leaves the ends projecting, as at *f'*, Fig. 2. I then bend the projecting ends backward on the side which is to be the inside, carrying each wire back as far as it will bend without bending the strand against which it bears. This will leave the edges as shown at the upper part of Fig. 2, leaving each alternate wire *f* bent around the strand *c*, and those between bent around the strand *d*, thus allowing the wire or strand *c* to turn, as seen in Fig. 1. It will be seen that the same result will be accomplished if the wires *j* were cut off back of the strand *c*, as this would allow the strand *c* to turn as above described.

I do not confine myself, therefore, to the particular method of turning each alternate wire *j* back around the strand *d;* but I deem it much the best way, and much easier than to cut the wires as suggested. This, it will be seen, effectually prevents the unraveling of the edge. The edges then being brought together are secured with the wire *r* running around the wires *cc*. (See Fig. 1.) The wires or strands *c c* turning allow the wire *r* to be of the same size as the wire of the cloth; and the crimp in the wires *c* prevents any slipping side motion, which might result were these strands straight. This crimp also gives a pout, into which the thread or wire *r* slips as soon as drawn tight.

It will be seen that this seam joins the edges much more securely than with other seams, as the connecting-wire *r* passes from side to side oftener than in any other seam now in use, the stitch in this seam being as often as each al-

ternate mesh. It will be seen that the same result will be accomplished if the warp be drawn out, instead of the filling, preparatory to bending the projecting ends backward.

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

1. A seam for woven wire in paper-machines made by unraveling the edges, bending the projecting strands backward, and joining the edges with the wire *r*, substantially as shown.

2. A seam in wire-cloth for paper manufacture made by drawing a number of the outer strands from the cloth, cutting each alternate strand *j* back of the strand *c*, and bending the projecting strands *f* backward and securing the edges, substantially as shown.

3. A seam in which the edges of the wire-cloth to be joined are prepared by pulling out a number of the woven warp-threads and folding inward the woven filling-threads, or vice versa, substantially as and for the purposes specified.

4. The joining of the edges by the wire *r* running around the wires *c c*, substantially as and for the purposes specified.

5. In a seam, the crimped wires *c c*, turned as described, in combination with the wire *r*, substantially as and for the purposes stated.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

JOHN DUNBAR.

Witnesses:
FRED. H. COLTON,
ALLEN WEBSTER.