Sheet 1.
2 Sheets.

W. E. Frost.

Hoop Skirt Machine.

No. 48766 Patented Jul. 11, 1865.

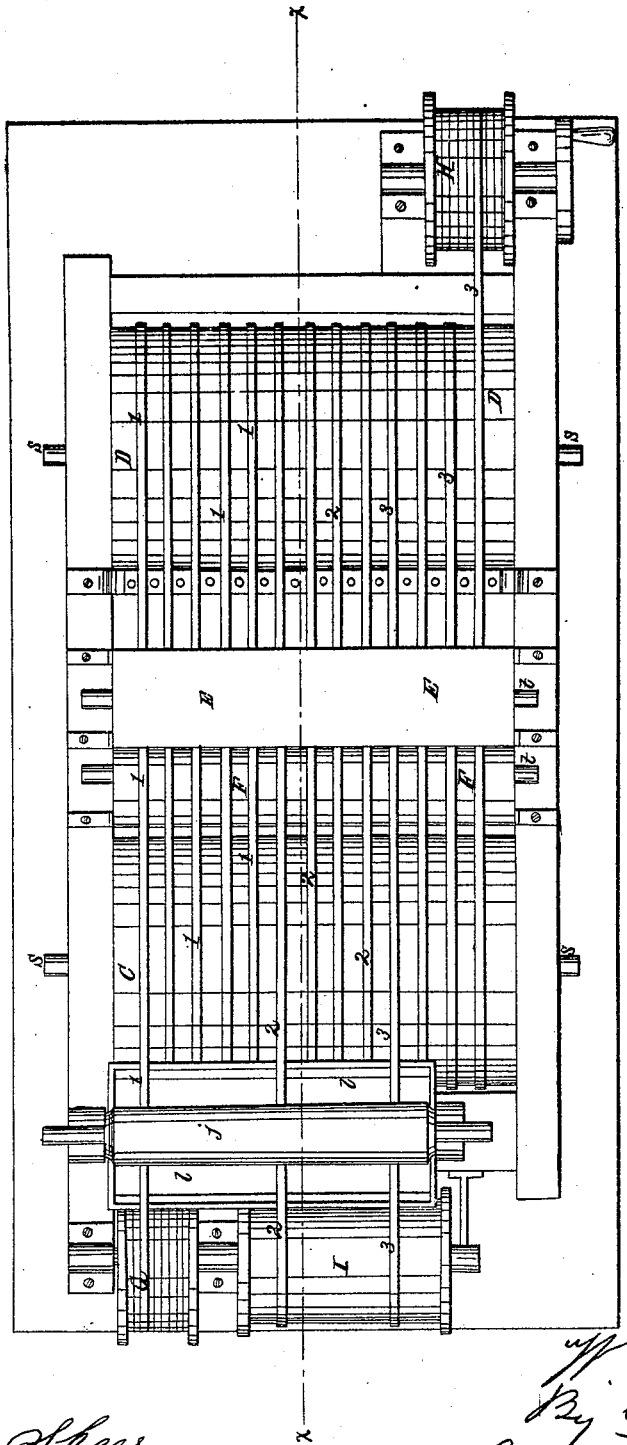

Fig. 1.

Witnesses.

Charles Sheer

A Smith

Inventor.

W. E. Frost.

By his attorney

L. C. McClure

W. E. Frost.

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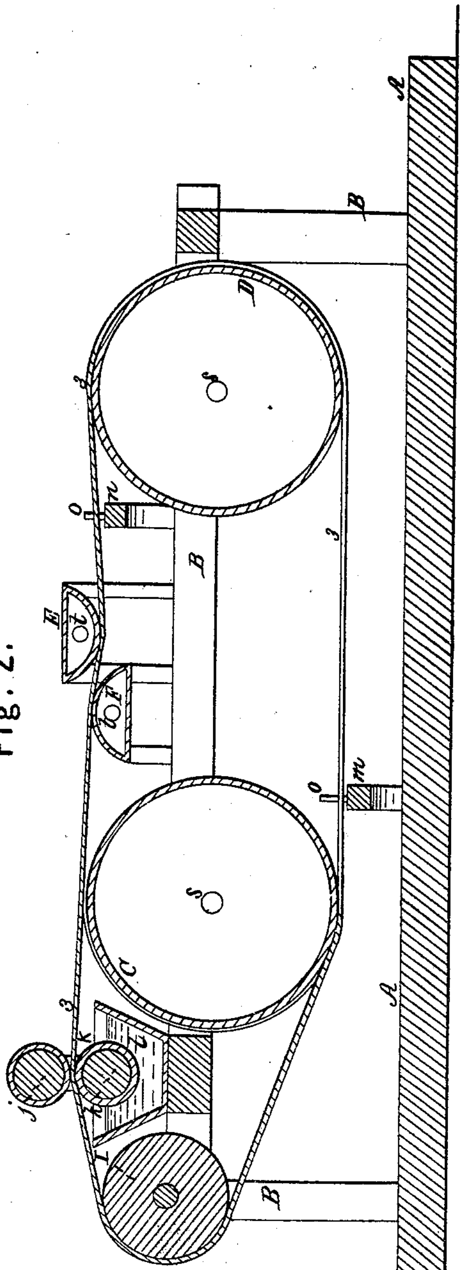

Fig. 2.

Witnesses.

Charles Speer

A. Smith

Inventor.

W. E. Frost.

By his attorney

J. N. McIntire

UNITED STATES PATENT OFFICE.

W. E. FROST, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO I. WASHBURNE AND P. L. MOEN, OF SAME PLACE.

IMPROVEMENT IN SIZING AND FINISHING COVERED SKIRT-WIRE.

Specification forming part of Letters Patent No. **48,766**, dated July 11, 1865.

To all whom it may concern:

Be it known that I, W. E. FROST, of Worcester, of Worcester county, in the State of Massachusetts, have invented certain new and useful Improvements in Machinery for Sizing and Finishing Covered Skirt-Wire; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My present invention relates to a novel arrangement of the sizing and finishing machinery, and of the wire thereupon, whereby I am enabled to apply to the latter a succession of coats of the sizing material while it passes through the machine in such manner that each coating shall be dried before the succeeding coat is applied, as will be hereinafter more fully explained.

My invention consists in causing the wire to be sized and finished to pass from the reel through the starching or sizing medium, and thence over drying-rolls and between ironers, in the manner well known, and as shown and described in other applications for patents by me, and thence back through the starch bath or sizing medium again, from whence it passes again to the drying-rolls and ironers, and so on any number of times, receiving a coating of size each time it passes through the starching device or medium, the several coatings being applied one over the other and dried successively, as will presently be more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe the same more fully, referring by letters to the accompanying drawings, in which—

Figure 1 is a top view, and Fig. 2 a longitudinal vertical section at *x x*, Fig. 1, of a sizing and finishing apparatus embodying my invention.

In the several figures of the drawings the same part is designated by the same letter of reference.

A is the base or floor, upon which the machinery is arranged and supported.

B is the frame-work, of suitable size, in which are supported in suitable bearings the journals *s s* of two hollow cylinders, C and D, which are so hung as to rotate freely in their bearings, and which I propose to supply with steam through their hollow journals or axes.

E and F are two semi-cylindrical ironers, which I propose to make of copper, and have heated also with steam. These ironers or polishers are supported over the frame B about midway between the cylinders D C, and are so arranged that the strand of wire passing from the top of roll C to top of roll D will pass just between the convex surfaces of said ironers and in contact with them, as clearly seen at Fig. 2.

G and H are two reels, from one of which, G, the braided wire is supplied, and by the other of which, H, the said wire is drawn off from the machine in a sized and finished condition.

l is an oblong tank or reservoir, which contains the "size" or starch-mixture with which the wire is coated.

k and *j* are the starch-rolls, one of which is hung in the tank or starch bath *l*, the other immediately over it, the two being so arranged as to turn freely on their axes when the wire is drawn between them, as clearly illustrated at Fig. 2. The rolls *k* and *l* may be made of any desirable material; but I prefer to cover their peripheries with cloth.

I is a loose pulley or drum, which is mounted in suitable bearings on the same shaft which carries the reel G.

The wire to be sized is passed from the supply-reel G between the sizing-rolls *k j*, where it is thoroughly coated with the size or starch-mixture taken up from the tank *l* by the roll *k* and fed onto the periphery of its mate *j*. From thence the coated wire passes over the heated drum C, thence between the convex surfaces of the two stationary polishers E and F, thence half round the drum D, and back under and half round drum C, thence over drum D again, and so on back and forth around the drums C D, after the fashion of a pulley-belt, three, four, six, or any desirable number of times, until the coated wire is sufficiently dried. The wire then passes back and partially around the drum I, from whence it is conducted a second time through the sizing-rolls *k j*, as shown at 2 2, Fig. 1, where a second coat of the starch-mixture is put onto it, and thence it passes back and forth again over the drums C D a suitable

number of times, as already explained, until this second coating is sufficiently rolled down and dried. The doubly-coated wire is then passed a second time around the loose drum I and a third time between the sizing-rolls *k j*, and thence around the drums C D several times, and thence off onto the take-up reel H. The motive power is applied to the reel H, which draws the wire through the machine and takes it up in a finished condition.

It will be understood that by thus putting one coat over another of the size on the wire as it is drawn through the machine all the interstices of the braiding or wire-covering will be thoroughly filled in and a fine, smooth surface will be produced.

The number of times which the wire is to be passed through the starch bath and around the finishing-drums will of course depend upon the surrounding circumstances—that is, the heat of the drums, the character of the size, the article to be produced, &c.—and will be determined by the judgment of the operator of the machinery.

It is obvious that the ironers E F may be dispensed with and the arrangement of the drums and the "stringing up" be varied without departing from the spirit of my invention, so long as the wire is passed successively through the sizing and finishing operation a number of times, so as to apply a succession of coats of size to the surface of the wire, in the manner substantially as set forth.

I do not, therefore, wish to be understood as limiting myself to any detail of construction; but,

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

Causing the covered or braided wire to pass from the supply-reel through the sizing medium and back and forth over drums, and thence back through the sizing medium again, and then over drums again to dry the second coat, and so on any number of times desired, for the purpose of applying successive coats of size one over the other, in the manner substantially as set forth.

In testimony whereof I have hereunto set my hand and seal this 13th day of May, 1865.

W. E. FROST. [L. S.]

Witnesses:

J. N. McINTIRE,

ANDREW I. TODD.