A. S. BLACK.

Tempering Umbrella Ribs.

No. 39,210. Patented July 14, 1863.

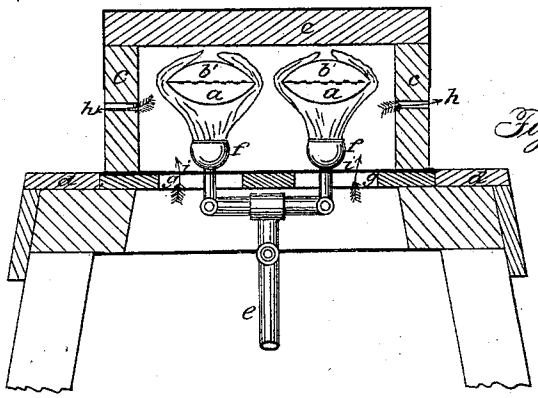


Fig. 1.

Fig. 2.

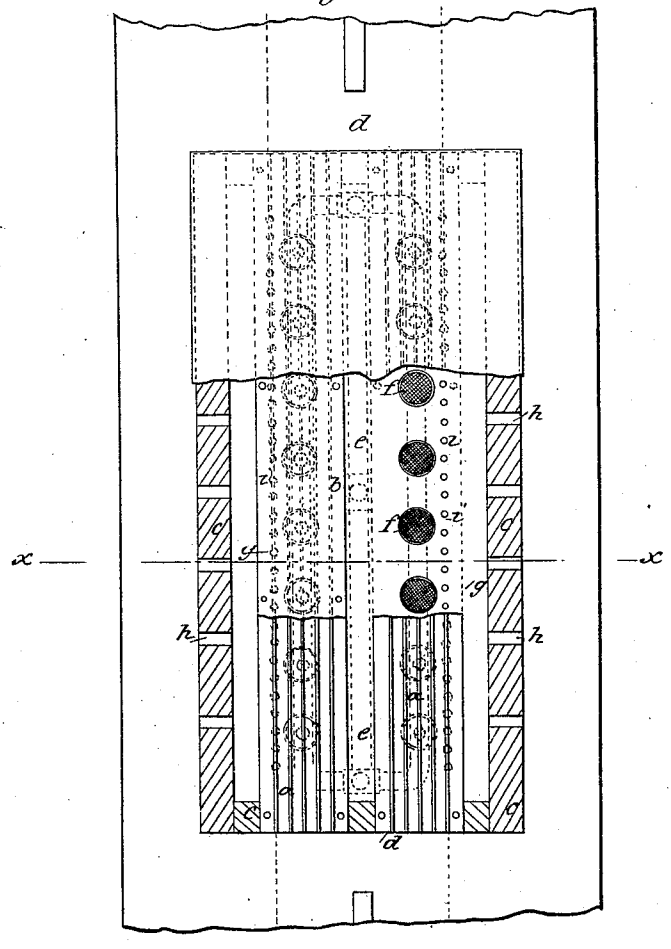
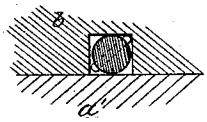


Fig. 3.



Witnesses:

Samuel W. Sewell
Thos. G. Harrold

Inventor:

A. Stewart Black

UNITED STATES PATENT OFFICE.

A. STEWART BLACK, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR TEMPERING UMBRELLA-RIBS.

Specification forming part of Letters Patent No. **39,210**, dated July 14, 1863.

To all whom it may concern:

Be it known that I, A. STEWART BLACK, of the city and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Tempering Umbrella-Ribs and Similar Articles; and I do hereby declare the following to be a full, clear, and exact description of the said improvement, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section of the tempering apparatus at the line *x x* of Fig. 2; and Fig. 2 is a plan of said apparatus, partially in section to show the interior.

Similar marks of reference denote the same parts.

In tempering ribs for umbrellas and parasols, and similar articles, great difficulty is experienced in obtaining a uniform temperature throughout the entire length, so as to temper all parts equally. Some parts are tempered too much and bend in use, and others are not tempered enough and break. Besides this, the hardening operation renders the wire composing such ribs more or less crooked, and they have to be straightened at the time of tempering while in a heated state. Various attempts have been made to effect these operations, however, with but partial success.

The nature of my said invention consists in a peculiar construction of grooved or perforated metallic tempering-die that is heated to a sufficient extent to temper the umbrella-rib or similar steel article, and the groove or opening in said die being straight, and of the size required for containing such article, straightens it at the same time that its temper is drawn to the degree required. I make use of gas flames or jets to heat the said tempering-die, whereby greater uniformity can be obtained in the same than by a fire heat, and said heat can be kept uniform hour after hour without especial attention, thus rendering my apparatus adapted to tempering in the most uniform and delicate manner, even when attended by boys or comparatively unskillful workmen, whereas the tempering of such articles has heretofore required the exercise of great judgment by skillful workmen.

In the drawings, *a* is a metallic bar of the required size and length, with grooves, planed or otherwise formed in the upper surface, as seen in the section, Fig. 1, and these grooves are to be of the size required for admitting the wire forming the umbrella-spoke or other article, and I prefer for such ribs that the grooves be formed with square corners to allow the flattened parts of the ribs to pass, as illustrated in larger size in Fig. 3, said flattened part being made for the reception of the holes required at the ends and near the middle of such ribs, and when placed in the said square groove these flattened portions are diagonal, and are brought properly into line with each other by the groove itself. The grooved bar *a* is to be covered with a second bar, *b*, setting closely to the bar *a*, so as to form a perforated tempering-die. It will be seen that this form of construction is preferable to any other in which the hole might be bored or formed partly in each bar, as this construction is the cheapest and most accurately made, although I do not confine myself in this particular. Where desired, the upper bar, *b*, may also be grooved with the same or a different sized groove or channel, setting intermediate to those in the bar *a*, and the parts *a* and *b* may be held together by screws or otherwise.

The perforated metallic tempering-die made as aforesaid, and heated by competent means, will temper wire umbrella-ribs or similar articles passed through it, and hold the same in a straight position while being tempered, the wire or ribs being pressed in at one end and forcing out the tempered rib at the other end.

In order to heat my perforated metallic tempering-dies in the most perfect manner, I introduce one or more (I have shown two) within a case, *c*, of soapstone or other suitable material, upon a table, *d*. *e* is a pipe supplying gas to the ranges of burners *f f*, which are located below the respective tempering-dies. The flame from such burners, passing below and around these dies, imparts a uniform heat throughout the entire length. *g* is a metallic plate below the burners, perforated at *i i* to admit air, and *h h* are openings in the soapstone to allow the gaseous products of combustion to pass away. By this device the temperature of the dies is rendered uniform and continuous, and can be regulated

with the greatest exactness by the flow of gas admitted.

By making the dies *a* and *b* in two pieces they may be separated for cleaning or removing any rib that may stick in the groove.

What I claim, and desire to secure by Letters Patent, is—

1. Constructing the tempering-die with a square hole corresponding in size to the wire to be tempered, in order that the wire may be straightened in all directions and the flattened portions of the wire be brought on line with each other, as and for the purposes specified.

2. Constructing the tempering-die with grooves in one of the half-pieces coming opposite the flat surface of the other half-piece, whereby the tempering-dies are more easily made and kept in order, as set forth.

3. The tempering-dies, constructed substantially as specified, and inclosed in a suitable casing, in combination with gas-burners, applied substantially as shown, whereby the temperature of the said tempering-dies is easily regulated and maintained with uniformity, as set forth.

In witness whereof I have hereunto set my signature this 10th day of February, 1863.

A. STEWART BLACK.

Witnesses:

LEMUEL W. SERRELL,

THOS. GEO. HAROLD.