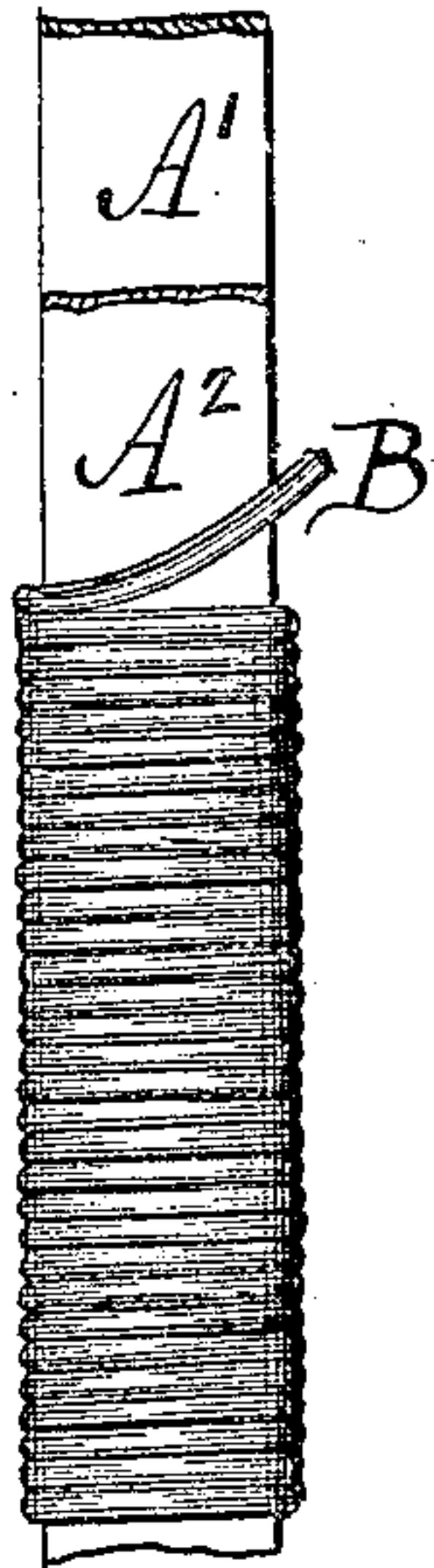


G. HOOKHAM.  
Metallic Sash-Lines.

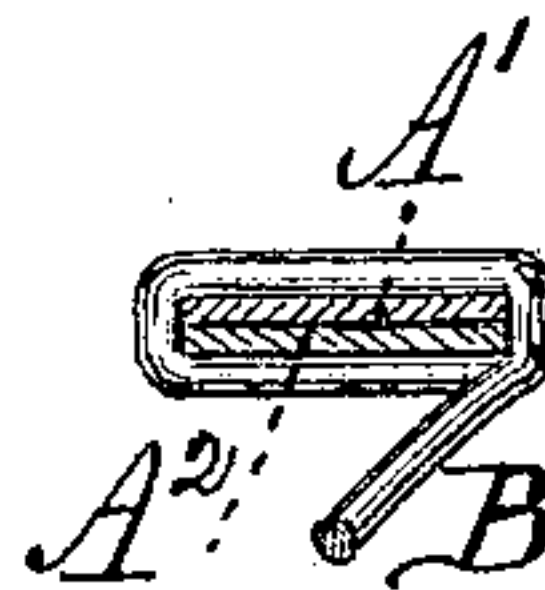
No. 150,040.

Patented April 21, 1874.

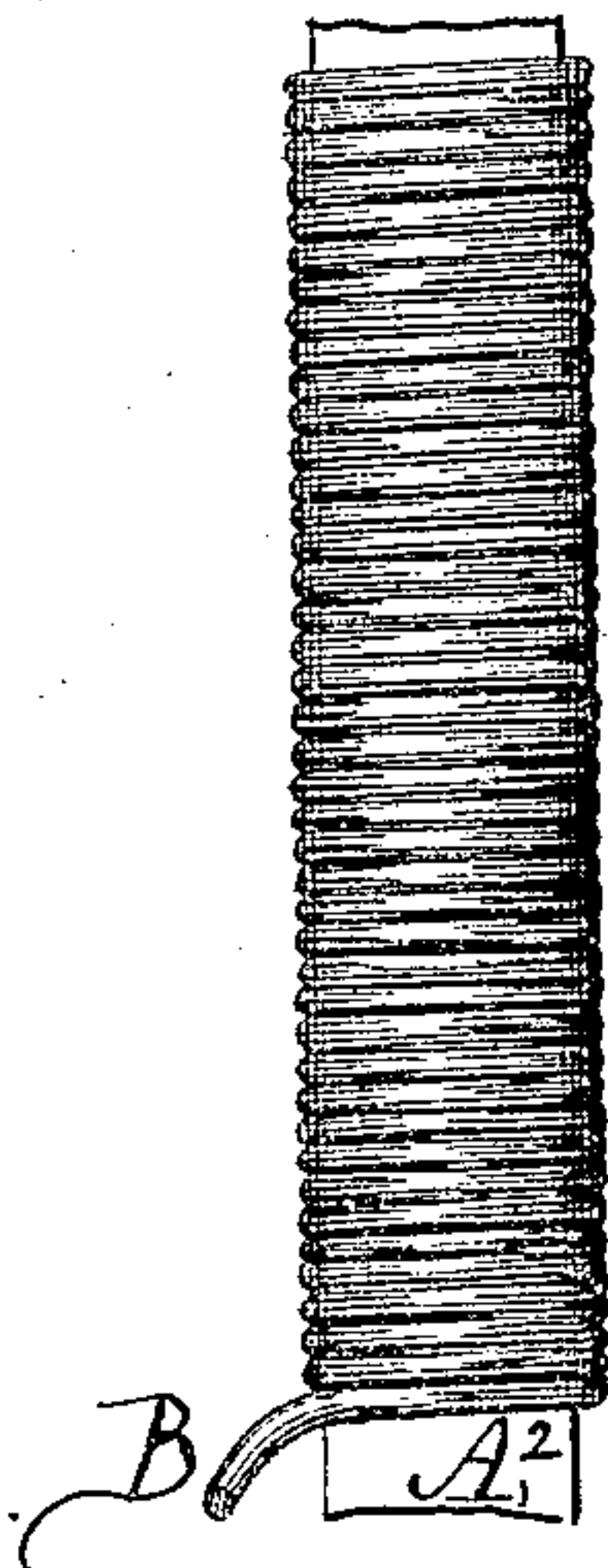
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



*Witnesses.*

*John Becker*  
*Fred Hamer*

*George Hookham*  
*by his attorney*  
*Brown & Allen*

# UNITED STATES PATENT OFFICE.

GEORGE HOOKHAM, OF BIRMINGHAM, ENGLAND.

## IMPROVEMENT IN METALLIC SASH-LINES.

Specification forming part of Letters Patent No. **150,040**, dated April 21, 1874; application filed February 26, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE HOOKHAM, of Birmingham, in the county of Warwick, England, have invented an Improved Metallic Sash-Line, of which the following is a specification:

My invention relates to certain improvements whereby I obtain greater durability and tensile strength than have heretofore been accomplished in the making of metallic sash-lines, with less expenditure of time, labor, and material than formerly. The invention consists in a sash-line composed of two or more strips of flat steel wire covered with round copper wire wrapped spirally around them.

In the accompanying drawing, Figures 1 and 2 represent side elevations, and Fig. 3 a transverse section, of my improved sash-line.

A<sup>1</sup> A<sup>2</sup> represent two flat strips or bands of metal placed face to face, and secured together by round wire B, wrapped spirally around them. The strips may be made of watch-spring steel, or of ordinary flat steel wire, annealed so as to render it tough and flexible without being elastic and brittle. The wire used for binding the strips is an ordinary round copper wire wrapped around said strips in a spiral or helical direction.

The sash-line thus formed has all the strength of a single band of double the thickness of one of the bands, and is more flexible than one of single thickness. It is superior to the ordinary sash-lines in many respects, inasmuch as, being flat, it occupies less space, and requires less cutting away of the sash in order to form the groove for its reception. It lasts longer

than the hemp or cotton line, and retains its exact length better than either hemp, cotton, or wire rope, as it cannot untwist, and consequently cannot lengthen out. It is readily applied to the ordinary sash-pulley, and is fastened in the usual manner.

I do not confine myself to the use of two strips of metal to form the core, as any desired number may be used without changing the principle.

I am aware that it is not new to make a sash cord or band of metal; but such of itself is not claimed by me. It is the object of my invention to render such bands practical and efficient in operation. This I accomplish by covering the flat strip or strips of steel with copper wire, as before described, by which means the spring-like action is removed from the steel, which is of great importance, inasmuch as without such wire covering the band would be somewhat uncontrollable in operation; and, further, by the said covering the band or cord is rendered more rope-like in its operation, thus producing a practical and efficient metallic sash-cord.

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

A sash-line composed of two or more strips of flat steel wire covered with round copper wire wrapped spirally around them, substantially as shown and described.

GEORGE HOOKHAM.

Witnesses:

THOMAS KNOWLES,  
T. P. FATHERS.