

(No Model.)

W. F. PATTERSON.

METHOD OF MANUFACTURING HOODED SKEINS.

No. 412,411.

Patented Oct. 8, 1889.

Fig. 1.

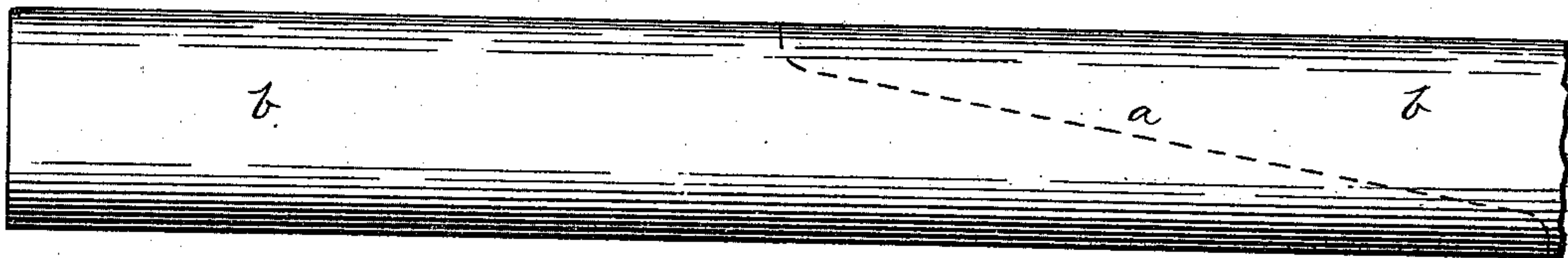


Fig. 2.

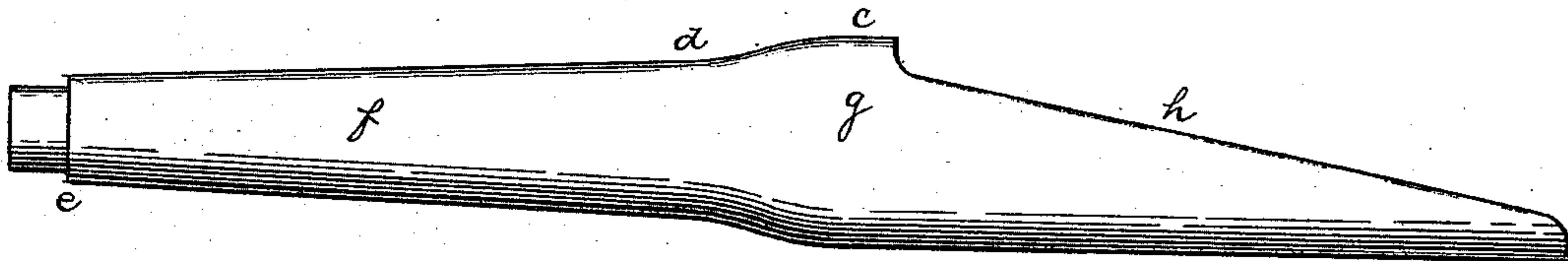


Fig. 3.

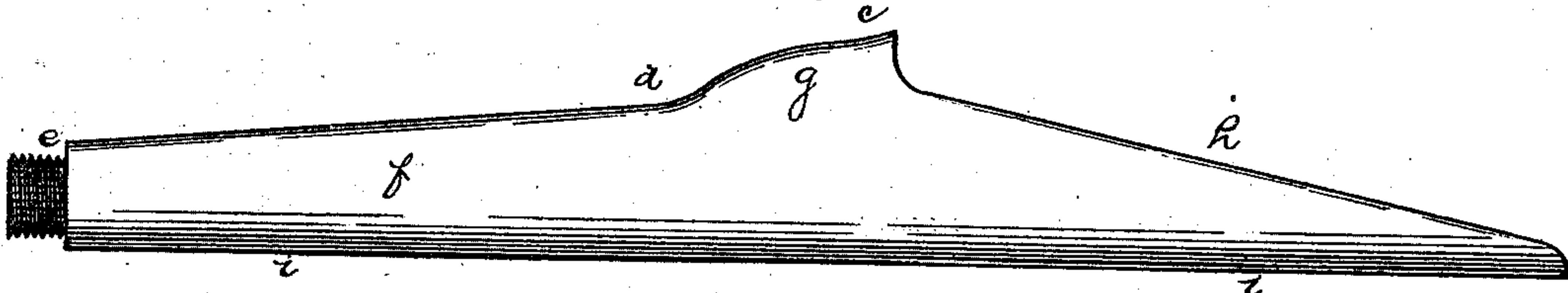
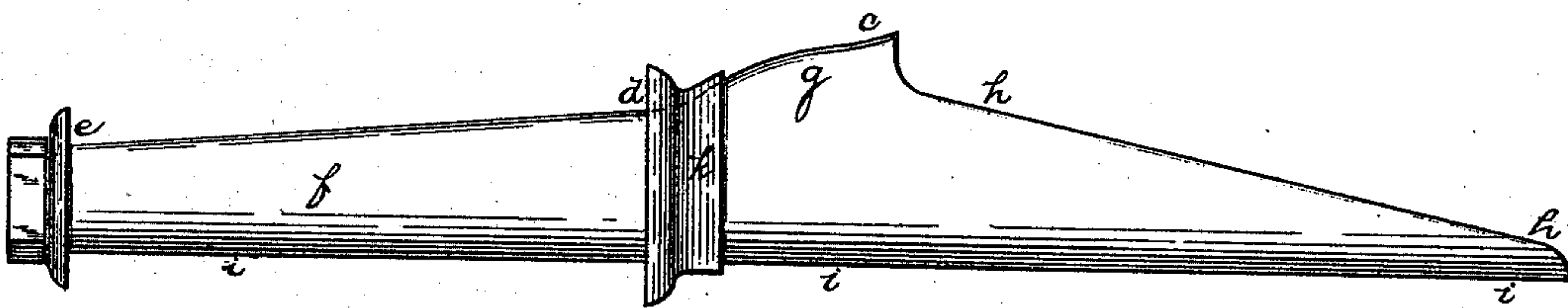


Fig. 4.



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WILLIAM F. PATTERSON, OF ALLEGHENY, PENNSYLVANIA.

METHOD OF MANUFACTURING HOODED SKEINS.

SPECIFICATION forming part of Letters Patent No. 412,411, dated October 8, 1889.

Application filed February 25, 1889. Serial No. 301,119. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. PATTERSON, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods of Manufacturing Hooded Skeins; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the manufacture of axle-skeins from metal tubes, and has special reference to the manufacture of what are known as "hooded" skeins, or skeins having enlargements above the spindle portions thereof to fit around the body of the axle-tree, while the tail of the skein extends under the axle-tree and is secured thereto by bolting.

My invention has reference specially to the manufacture of such articles by the methods described in Reissue Letters Patent to Robert Gracey, No. 10,776, November 7, 1886, and Letters Patent Nos. 371,311 and 371,312, to said Gracey, dated October 11, 1887.

The method of forming axle-skeins from tubular metal is generally practiced, as set forth in said patents, by tapering a blank of tubular metal, so as to form the spindle portion, and setting back the tail portion of the blank in proper line with the spindle portion. This method of manufacture, followed strictly in accordance with the description of said patents, produced an ordinary axle-skein in which only the spindle portion fitted around the axle-tree, while the tail portion extended under the same, and, though such a skein can be cheaply and easily produced in accordance with said patents, yet the hooded skein has many advantages, in that it extends around or embraces a thicker portion of the axle-tree and distributes the strain on the spindle portion to a better advantage than where only the spindle portion embraces or surrounds the axle-tree; and the object of my invention is to provide a method of manufacturing a hooded axle-skein from tubular metal and to increase the strength of the skein by increasing the proportion of metal at the parts where it is subjected to the greatest strain.

To these ends my invention consists, generally stated, in tapering or reducing the tube on two different lines—namely, that for form-

ing the spindle portion of the skein and a tapered portion extending from the larger end of the spindle portion to the wider portion of the skein—so forming the hood, and subsequently drawing the metal in said enlarged tapered portion to the one side of the blank to form the hood of the skein, sufficient metal being thus obtained to form the enlarged hood portion above the spindle portion, while by the greater reduction of the spindle portion in forming the skein the metal thereof is thickened and the skein strengthened.

To enable others skilled in the art to practice my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 shows the tube from which the skein is to be formed. Fig. 2 shows the blank having the two reductions or tapers therein. Fig. 3 shows the finished blank ready to receive the collar, and Fig. 4 shows the finished axle-skein.

Like letters of reference indicate like parts in each.

In forming a skein according to my invention, I generally take a tube of a size inclosing approximately the same area in cross-section as that inclosed by the largest part of the hood in the finished skein; and, as described in the said Gracey patent, No. 371,311, I generally employ a metal tube which is of such length as to form the tail portions of two skeins from the same part of the tube, and the body portions thereof from the tube on each side of the tail portion, the tube being separated by a diagonal cut in the central part thereof, so forming said tail portions. The tubing employed may be either wrought-iron or steel, and either a seamless tube or a tube bent and welded to shape in the ordinary manner of making tubing. For the purpose I prefer to employ a tube formed of a soft or low-grade steel, as the greatest strength is obtained in such a tube, while the surface thereof is harder and therefore has greater wearing properties than iron. After the tube has been cut diagonally, as shown at *a*, Fig. 1, forming the tube-blanks *b*, such a blank is heated in a suitable furnace, and is then reduced in suitable dies or rolls, being first reduced from the point adjoining the tail, as at *c*, with a rather abrupt taper or curve to

the point *d*, and then reduced from said point *d* with a more gradual taper proper for the thimble portion of the skein to the opposite end *e*. For this purpose I prefer to employ 5 reciprocating dies of proper shape and taper corresponding to that of the blank, though any other apparatus for reducing or tapering the blank may be employed. By the reduction of the tube while at a comparatively 10 high heat it is evident that in addition to elongating the blank it is thickened considerably, the blank being thickened in proportion to the reduction imparted to it, and the spindle portion *f*, as it receives a greater reduction than the hood portion *g*, having its 15 walls thickened to a greater degree and its strength proportionately increased. The blank as thus produced is shown in Fig. 3, the three parts, namely, the spindle portion *f*, 20 the hood portion *g*, extending from the point *d* to the point *c* and increasing in diameter between said points, and the tail *h*, and the base-line *i* of the blank corresponding to these parts. It is evident, however, that to form 25 the complete finished skein the base-line *i* of the blank must be made practically straight, so as to give the desired set to the skein and throw the wheel journaled on the axle at a slight incline and so bring the pressure di- 30 rectly upon the spokes of the wheel, and also to cause the wheel to press against the collar of the axle and relieve the nut securing the wheel on the skein from any great pressure from the wheel. In accomplishing this, as the 35 blank is operated on by suitable forming apparatus, the lower part of the blank along the base-line *i* is drawn so as to form a practically straight line between the end *e* of the blank and the extreme end of the tail, and 40 in so doing the spindle portion *f* is drawn down to impart the set to the skein, while the metal of the hood portion *g* of the blank is drawn upwardly and forms the enlargement or hood *g* at the upper part of the skein, this 45 enlarged portion receiving the enlarged part of the axle-tree, as is customary in the ordinary cast-metal axle-skein. The metal for forming this enlarged portion or hood is thus obtained from the tube without the forma- 50 tion of any special shape of plate for the purpose and this metal thrown to one side of the blank in producing the hood of the skein. In finishing the skein all that is necessary is to

secure the collar *k* thereon by shrinking or otherwise, and to thread the screw-plug to re- 55 ceive the nut or washer.

I am thus enabled by my invention to produce hooded skeins from tubular metal, and in so doing to form the skein without any weld or such union except that as may be 60 found in the tube, and to increase the thickness of the metal in the spindle portion and so strengthen it at the part where the greatest wear is brought upon the skein, and therefore I am enabled to produce a wrought-metal 65 hooded axle-skein of fine quality. As the cost of the skein is but very little higher than the cost of forming the ordinary skeins by the Gracey processes, as above described, very cheap hooded skeins can therefore be ob- 70 tained.

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

1. The herein-described improvement in the manufacture of hooded axle-skeins, con- 75 sisting in reducing or tapering a wrought-metal tube on two different lines, forming the spindle portion and an enlarged tapered portion for the hood above the same, and drawing or setting the metal in said hood por- 80 tion to one side of the blank, so as to form the hood of the skein, substantially as and for the purposes set forth.

2. The herein-described improvement in the manufacture of hooded axle-skeins, con- 85 sisting in reducing or tapering a wrought-metal tube on two different lines, forming the spindle portion and an enlarged tapered portion for the hood above the same, and then drawing the metal in said hood portion to one 90 side of the blank and setting the spindle, hood, and tail of the skein in proper line, substantially as and for the purposes set forth.

3. The herein-described step in the art of forming hooded axle-skeins, consisting in re- 95 ducing or tapering a wrought-metal tube on two different lines, forming the spindle portion and an enlarged tapered portion above the same for the hood, substantially as and for the purposes set forth. 100

In testimony whereof I, the said WILLIAM F. PATTERSON, have hereunto set my hand.

WILLIAM F. PATTERSON.

Witnesses:

ROBT. D. TOTTEN,
J. N. COOKE.