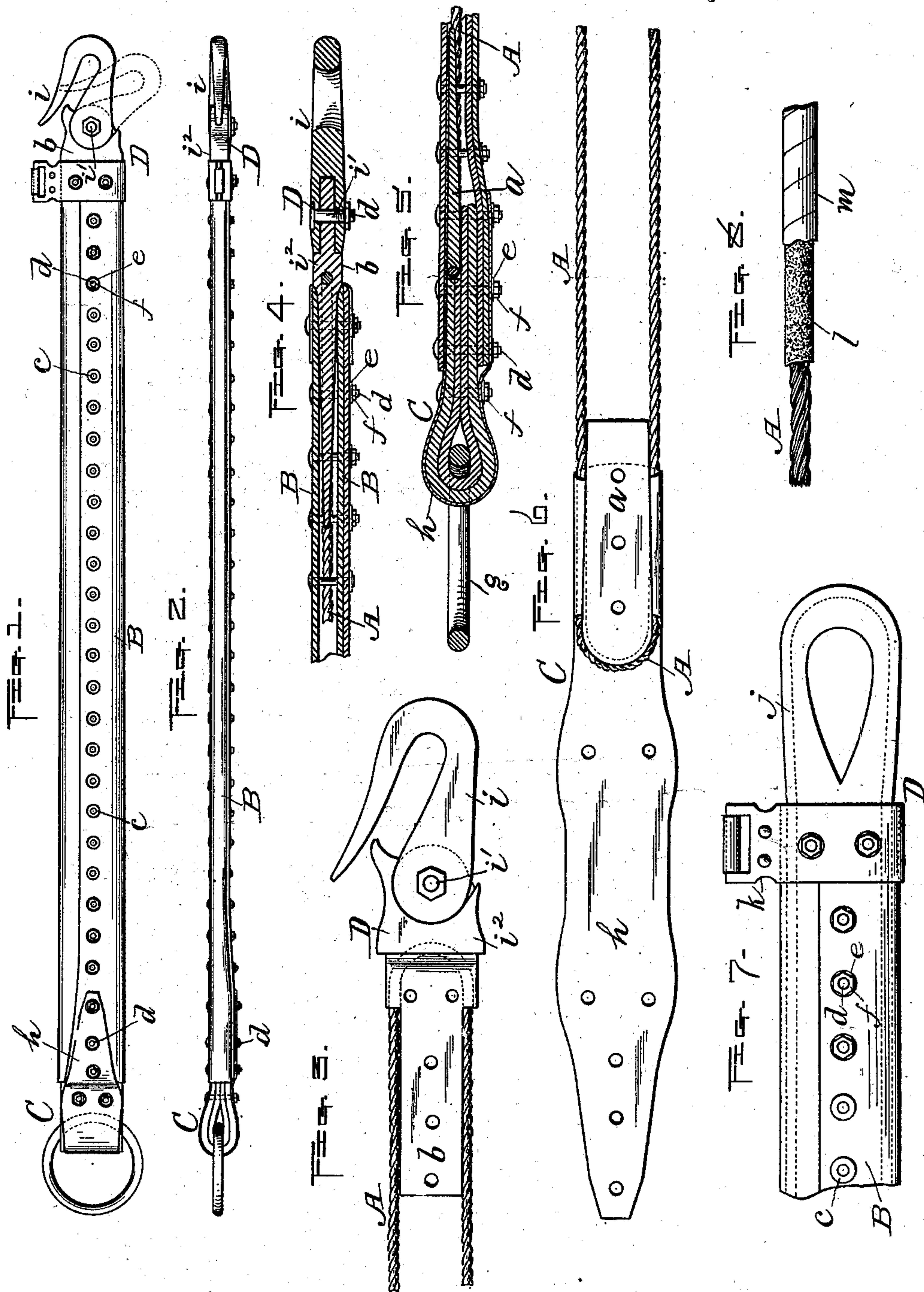


(No Model.)

A. J. KRANTZ.  
HARNESS TUG.

No. 560,724.

Patented May 26, 1896.



WITNESSES,

W. B. Nourse,  
C. Forrest Wesson.

INVENTOR,

Alfred John Krantz,  
By A. A. Parker, Att'y



# UNITED STATES PATENT OFFICE.

ALFRED JOHN KRANTZ, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF  
ONE-HALF TO GUSTAF SMITH, OF SAME PLACE.

## HARNESSTUG.

SPECIFICATION forming part of Letters Patent No. 560,724, dated May 26, 1896.

Application filed October 5, 1895. Serial No. 564,712. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED JOHN KRANTZ, of the city and county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Harness-Tugs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figures 1 and 2 represent a side and edge view, respectively, of my improved harness-tug. Fig. 3 represents, upon an enlarged scale, a side view of the outer free end of the tug, with the leather covering removed to more fully illustrate the construction of said end of the tug. All the following figures are also upon an enlarged scale. Fig. 4 is a central longitudinal section through the parts shown in Fig. 3, with the leather covering fitted over said parts. Fig. 5 is a similar section to Fig. 4 of the opposite or front end of the tug. Fig. 6 is a side view thereof with the leather covering removed. Fig. 7 is a side view of the outer free end of the tug, similar to that shown in Fig. 3, except that the leather covering is left on, showing a modification in the construction, which will be hereinafter described; and Fig. 8 shows a side view of a piece of wire rope, such as is used in the construction of my improved tug, covered with cotton and leather, as and for the purpose hereinafter described.

My invention relates more especially to heavy and double harnesses used in teaming, but may be adapted to lighter harnesses used for pleasure-driving and light work. Its object is to provide a harness-tug which shall be very strong and durable against torsional strain and at the same time of light weight and neat appearance.

Said invention consists in combining with an endless wire rope a suitable leather covering therefor, and metal devices at the ends for attachment to the harness and vehicle, as will be hereinafter more fully set forth, and pointed out in the claim.

In order that others may better understand the nature and purpose of my said invention, I will now proceed to describe it more in detail.

In the drawings, A represents the endless

wire rope; B, its leather covering or case; C, the metal attaching device and its ring at the front or inner end of the tug, and D the metal attaching device at the back or outer free end of said tug.

At each end of the tug are arranged the metal blocks *a* and *b*, respectively, the block *a* being at the inner end and the block *b* at the outer end of said tug. Both are similar in construction so far as relates to their connection with the wire rope and are flat in shape, of about the thickness of the diameter of the wire rope, and lie inside of the loops formed at the ends of said wire rope, the end of each loop thereof fitting in a circular groove formed in the outer ends of the blocks and the straight portions of the wire rope next to said end loops lying against the side edges of said blocks, which are grooved to receive the same. The wire rope extends in substantially parallel lines between one block and the other and forms the outer edges of the tug.

In making the tug a piece of wire rope of the proper length is taken, and having been fitted over the blocks, as described, the individual wires of which said rope is composed are untwisted for a short distance at the ends, and being lapped are intertwined or braided one into the other to form a strong smooth splice and an endless rope, as described. The blocks and wire rope are then covered with leather by winding it around said parts with the longitudinal edges of said leather overlapping. Rivets or other suitable fastenings *c* are now passed through. Said edges are then riveted the whole length of the tug at short distances apart. At the ends where the blocks come short screws *d* are passed through the leather and said blocks and fastened by means of washers and nuts *e f*, as is shown in the drawings.

Aside from the aforesaid grooved blocks *a* and *b* the means employed for attaching the tug to the harness and usual chain connected with the vehicle are similar to those in common use, and I make no claim thereto, except in combination with my improvements hereinbefore described. At the inner or forward end of the tug is attached the usual ring *g* for connection with the tug-strap or



other portion of the harness, said ring being fastened in this instance by means of a sheet-metal strip *h*, passed through the ring and fitted against each side of the tug over the leather and end blocks, to which it is fastened by means of screws, nuts, and washers, as previously described.

The opposite or outer free end of the tug may be provided with the usual pivoted hook *i* or an eye-loop *j*, as preferred, or as occasion may require, said connection constituting in this instance an extension *i*<sup>2</sup> of the end block *b*, formed integral therewith, and the hook *i* being pivoted at *i*<sup>1</sup> to said extension *i*<sup>2</sup> when the tug is made with the eye-loop *j* the latter is formed integral with the extension *i*<sup>2</sup>.

The part *k* represents the usual loop connections whereby the tug, when used more especially with a double harness, may be supported by the customary supporting-strap extending down from the breeching of the harness. The same may be used or not, as preferred, with my improved tug. As said improved tug is dependent mainly upon the wire rope for its strength, (although of course the leather covering contributes considerably to said strength,) it is designed to use only one thickness of leather as a covering, instead of two or more thicknesses, laid one against another, as is ordinarily done in the construction of heavy tugs. I am therefore enabled to greatly augment the strength of the tug without increasing its weight, while at the same time retaining the customary flexibility of a heavy tug.

Although, as previously stated, my invention is designed for use more especially with

heavy and double harnesses, it may be adapted with good results for the lighter weight of harnesses by slight modifications in the construction coming within the scope of said invention. The wire rope *A* may be provided, if desired, with a covering, first, of oiled cotton or other soft material *l*, and then with leather *m*, as shown in Fig. 8, to protect the same from rusting, and also to protect the outer covering of the tug from wear upon the inside where the wire rope comes against the same; but I do not limit myself thereto, as it is not an essential feature of my invention.

Having now described said invention, what I claim therein as new, and desire to secure by Letters Patent, is—

The combination of the endless, wire rope *A* and the leather covering *B* riveted along the center at a short distance apart between the parallel sides of said endless, wire rope, with the end block *a* grooved upon its outer edge to receive said wire rope, the leather loop and metal band passed over said block, the ring passed therethrough and the fastening screws and nuts for fastening said leather loop, metal band, leather covering and end block *a* together; the end block *b* provided with a circular, transverse passage for the wire rope, and with means for attachment to the vehicle connections, and the screws and nuts for fastening said end block and the leather covering together, substantially as and for the purpose set forth.

ALFRED JOHN KRANTZ.

Witnesses:

A. A. BARKER,  
W. B. NOURSE.