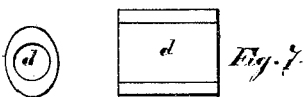
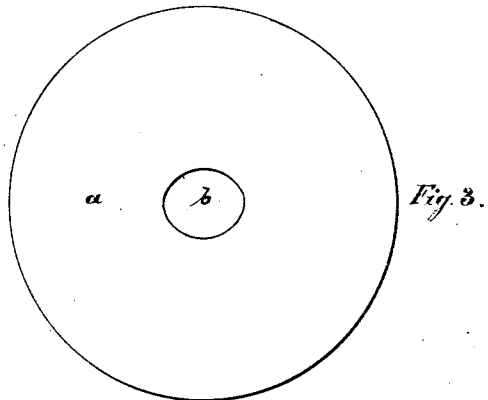
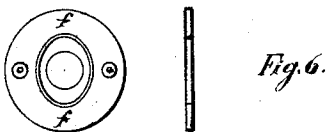
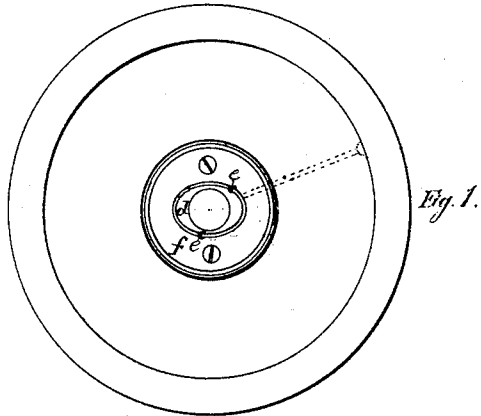
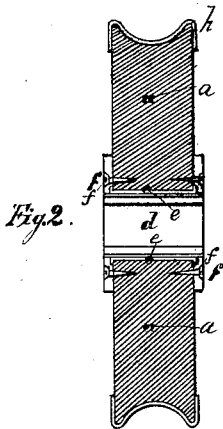


H. Nick,
Pulley Block.

No. 113913.

Patented Apr. 18. 1871.



Witnesses:
Phil. T. Dodge
Wm. J. Hutchinson

Inventor:
Henry Nick
by Dodge & Munroe
his attys.

United States Patent Office.

HENRY NICK, OF PARIS, FRANCE.

Letters Patent No. 113,913, dated April 18, 1871; antedated April 8, 1871.

IMPROVEMENT IN SHEAVE OR PULLEY-BLOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, HENRY NICK, resident at Paris, France, have invented an Improved Sheave or Pulley for Ships' Blocks or other purposes, for which Letters Patent have been granted to me in the Empire of France for a term of fifteen years from the date of 7th December, 1867; and that I do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the annexed drawing making a part of this specification.

My invention relates to the sheaves or wheels of pulley or ships' blocks, and consists in constructing them of wood and metal in a novel manner, as hereinafter explained.

The sheaves or pulley-wheels heretofore used in ships' blocks have generally been made of "*lignum-vitæ*," and turned out of a single piece. They have sometimes been made of cast-iron, bronze, or porcelain, but these have been very little used.

The many disadvantages presented by these sheaves and the expense of the material they required determined me to seek for and make a new kind of sheave out of wood and metal combined.

I will state in a few words some of the principal disadvantages of the present sheaves, and then clearly show how my new sheave of wood and metal avoids them necessarily by its construction, arrangement, and the manner of its improvement.

In the first place, the present method of making these sheaves is very expensive, for the reason that it is necessary to use a particular kind of very hard wood.

In the next place, although the wood may be of a close texture and very tough, yet the sheave is so constantly used at its center that the opening becomes oval and consequently the sheave unserviceable.

And finally, the groove which is made around the sheave being very shallow, a pretty notable wear and tear of the cord and cables follow.

It is also necessary to take account of the unavoidable heating of the wood in its rotary movement.

My new sheave, which I call a wood-and-metal sheave, (*ligno-metallique*), avoids the above-mentioned disadvantages. Its easy construction and excellent operation are certain guarantees of the advantages that are secured by its use.

Instead of taking *lignum-vitæ* for making the disk of the pulley, I use beech or any other ordinary wood of a similar kind, and cover its periphery with a band or strip of copper, iron, or other metal.

In this way I am able to give the sheave or pulley-wheel a deep groove, which will prevent the slipping of the cord.

In order to prevent the wear which occurs at the center, or at least to readily and economically substi-

tute a nave, I make in the disk of beech forming a part of the sheave an oval aperture, into which I forcibly insert a tube of copper or other metal having an oval interior and periphery.

In this tube I adjust a movable cushion, oval on its exterior and cylindrical in its interior. This movable cushion can be replaced by another and similar one whenever it shall have become so worn as to require it.

The other parts may be removed and others substituted in like manner.

To each side of the disk, about the center, I attach a metallic shield, which serves to prevent any contact and consequent wear between the disk and its case or block.

The construction and arrangement of this composite sheave will be better understood by reference to the drawing.

Figure 1 is a side view;

Figure 2 is a cross-section;

Figure 3 is a side view of the wooden disk;

Figure 4 is a cross-section of the same; and

Figures 5, 6, and 7 are views of parts detached.

A disk, *a*, of any size and thickness desired, is made of beech or other similar wood, and an oval hole or aperture, *b*, is made through its center, as shown in fig. 3, and a groove, *g*, is turned in its periphery, as shown in fig. 4.

Within the hole *b* is inserted a false nave, *c*, made of copper or other suitable metal, as shown in figs. 1 and 2. It is in the form of an oval tube externally and internally, and is secured in any suitable manner, and is shown in detail in fig. 5.

Into this oval tube or false nave *c* is driven a cushion, *d*, of metal, as shown in figs. 1 and 2. The exterior of this cushion is of the same size and form as the interior of the tube *c*, so as to fit it close and tight, while its interior is cylindrical.

In fig. 7 is shown an end view and a section of this cushion *d*. Its cylindrical opening is for the purpose of mounting it on the axis of the block.

To each side of the disk and about the tube *c* is attached, by means of screws or other suitable devices, a shield, *f*, as shown in figs. 1 and 2. These shields *f* are so made and arranged that when in position on the disk their outer face will extend far enough beyond the sides of the disk to prevent its coming in contact with its case. In fig. 6 is shown a side view and section of this shield.

The groove *g* of the disk is lined with sheet-copper, *h*, or other suitable material, as clearly shown in fig. 2. This lining is made to fit the groove closely, and its edges are turned over the edges of the groove and formed down smoothly on the sides of the disk, as clearly shown in the same figure.

It is obvious that the false nave or tube *c* may be

made in other forms, and may have projections on its side to secure it in place, and may, in fact, be secured in a variety of ways; that the sides of the disks may have swelling faces for diminishing the friction, and that any suitable metal or wood may be used.

Having thus described my invention,

What I claim is—

1. A sheave, consisting of a wooden disk, *a*, having a false nave or tube, *c*, in its center, with a removable cushion or bearing, *d*, therein, also having its groove protected by a metal lining and its sides with metal shields, substantially as herein described.

2. A wooden sheave having its groove lined with sheet metal, substantially as herein described and for the purpose set forth.

3. In combination with a wooden sheave the convex metallic shields *f*, arranged substantially as herein described and for the purpose set forth.

4. In combination with a wooden sheave, the removable cushion or bearing *d*, when constructed and arranged substantially as and for the purpose set forth.

5. The combination of the false nave *c* and removable cushion *d*, when constructed and arranged substantially as and for the purpose set forth.

HENRY NICK. [L. S.]

Witnesses:

J. U. ZUST,

T. BASSET.