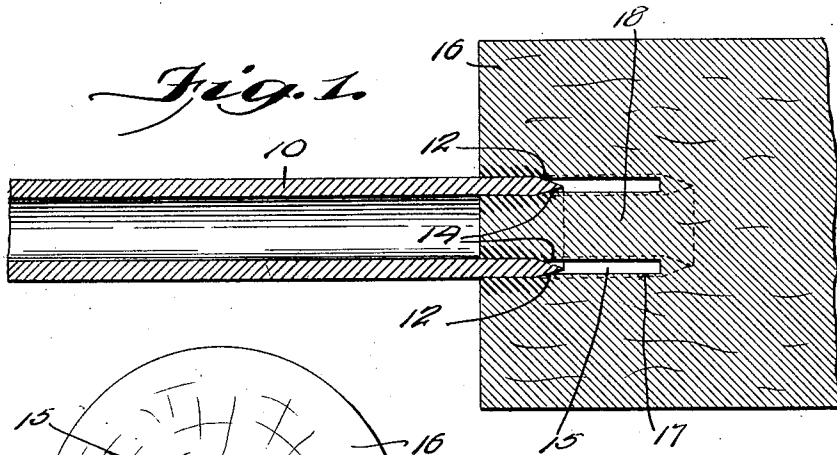
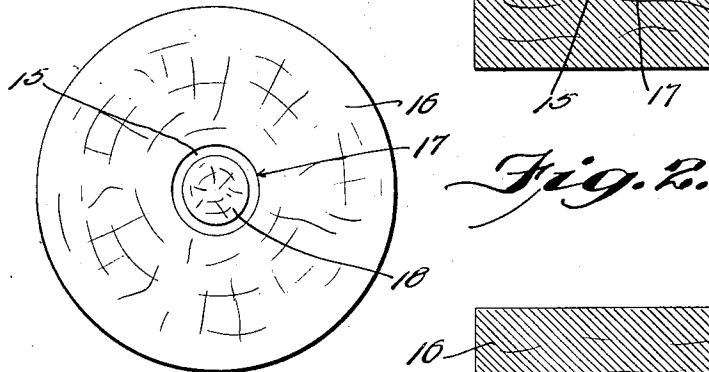
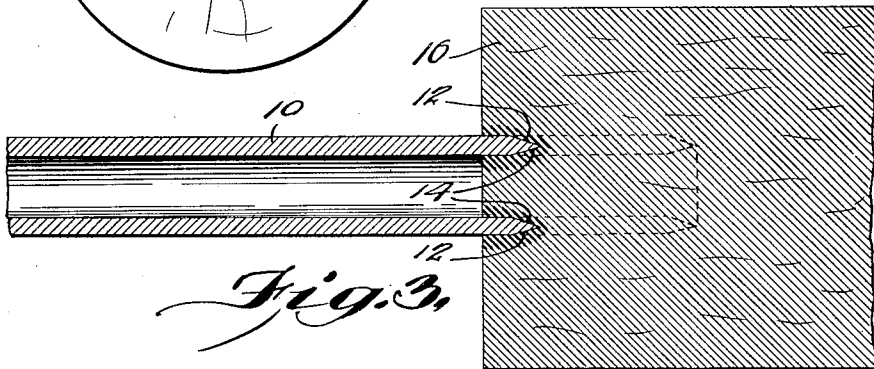
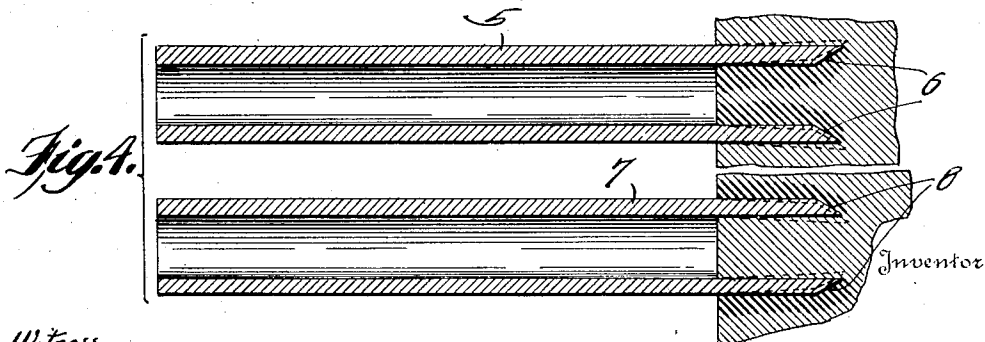


J. B. ANDERSON.  
MINE PULLEY OR ROLLER.  
APPLICATION FILED FEB. 3, 1920.

1,349,183.

Patented Aug. 10, 1920.



Witness

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# UNITED STATES PATENT OFFICE.

JAMES BOYD ANDERSON, OF PHILADELPHIA, PENNSYLVANIA.

MINE PULLEY OR ROLLER.

1,349,183.

Specification of Letters Patent.

Patented Aug. 10, 1920.

Application filed February 3, 1920. Serial No. 356,087.

*To all whom it may concern:*

Be it known that I, JAMES BOYD ANDERSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Mine Pulleys or Rollers, of which the following is a specification.

This invention relates to improvements in gudgeons for use in mine rollers or pulleys for rope haulage and to the method of inserting the gudgeons therein, the present invention being an improvement on my prior device disclosed in Patent No. 1,218,505, granted March 6, 1917.

Mine pulleys are constructed of hard wood and are provided with metal bearing pins or gudgeons which project from opposite ends. Prior to my invention disclosed in said patent it was common practice to employ a single spindle which was driven through a hole bored through the axis. As it is exceedingly difficult to bore the hole accurately from end to end the gudgeon pins were frequently out of alinement with each other, which caused the rollers to wobble badly, resulting in destructive wear upon the bearings.

When the gudgeon pins are inserted from each end of the pulley or roller, there is not only difficulty in securing accurate alinement but also in making them sufficiently secure and rigid to withstand the heavy strains to which they are subjected.

The object of my present invention is to provide a method of inserting tubular gudgeon pins, which assumes accurate alinement of the pins upon opposite ends of the roller, facilitates the insertion of the pins and renders them absolutely rigid and fast in the rollers.

In the following description I shall refer to the accompanying drawings in which—Figure 1 is a longitudinal sectional view of a gudgeon embodying my invention and illustrating one method of inserting it in the end of a pulley or roller; Fig. 2 is an end view of the pulley showing the annular kerf to receive the gudgeon; Fig. 3 is a longitudinal sectional view showing another method of inserting the gudgeon pin; and Fig. 4 is a longitudinal sectional view of two gudgeon pins having defects which my invention overcomes.

Referring first to Fig. 4, I have shown a tubular pin 5 having the inner cutting end beveled on the inside at 6. When this is

driven into the wood, a core equal to the outer diameter of the pin is contracted and forced into the bore of the pin, resulting in an enormous outward pressure which tends to spread the outer cutting edges outwardly as indicated in dotted lines. For this reason it is difficult to insert the pin and almost impossible to drive it to a proper depth.

If a pin 7 is employed having the inner cutting end beveled inwardly as indicated at 8, the wood is compressed and forced outwardly, resulting in an exterior compression upon the pin which tends to crush it inwardly as indicated in dotted lines and practically prevents the pin from being driven in but a very short distance.

My present invention completely overcomes the difficulties above mentioned and provides a gudgeon pin which is readily forced into the wood and travels in the predetermined direction. I have illustrated my improved gudgeon pin at 10 in Figs. 1 and 3. The front cutting end is beveled equally from the inside and outside peripheries as shown at 12 and 14 so that the sharp annular cutting edge is centrally disposed between the inner and outer surfaces.

In the method of inserting the pin illustrated in Fig. 1, an annular kerf 15 is cut in the ends of the pulley or roller 16 to a depth slightly less than the distance to which the pin is to be driven. This kerf is narrower than the thickness of the tubular wall of the gudgeon pin and the diameter of the kerf is such that the annular cutting edge of the pin will be midway between the inner and outer walls of the kerf. Consequently as the pin is driven into the roller it will compress the outer surrounding wall 17 of the kerf outwardly with substantially the same pressure that it compresses the inner core portion 18 inwardly. The pressure upon the inner and outer walls of the tubular gudgeon pin being substantially equal, there is no tendency to distort the pin or to divert it from its predetermined path. The pin may, therefore, be driven into the pulley accurately and without difficulty. I prefer to force the forward end of the pin somewhat beyond the inner end of the kerf so that the end is embedded in the solid wood.

In some cases I may employ the method illustrated in Fig. 3, and drive the double beveled pin into the end of the pulley or roller without first cutting a guiding kerf. For the reasons pointed out above, the pres-

5 sures exerted by compressed wood are substantially equal upon the inner and outer walls of the pin so that there is no tendency to distort the pin or to divert it from the predetermined path or course.

10 In both methods illustrated in Figs. 1 and 3 the wood adjacent the inner and outer walls of the tubular gudgeon is compressed so that the pin is doubly wedged in the position to which it is driven. This not only holds the pin fast but causes the pin to be braced both interiorly and exteriorly against lateral bending and shearing strains which is quite important in mine pulleys.  
15 Again the fiber of the wood is forced back as the pin is driven forward in such a manner that it resists any force tending to withdraw the pin. It will be apparent to engineers that I have produced a gudgeon pin  
20 which is vastly superior to prior construc-

tions and that my method of inserting the pins insures the proper alinement of the pins, and renders the resulting pulley or roller exceedingly strong and rigid.

I claim:—

1. The method of forming a mine pulley or roller which comprises cutting circular axially disposed kerfs in opposite ends of a solid wooden cylinder and driving into each of said kerfs a tubular metal gudgeon having outer and inner diameters respectively larger and smaller than the diameters of the outer and inner walls of the kerf.

2. A gudgeon for wooden pulleys and rollers comprising a metal tube having the end adapted to be driven into the pulley provided with a cutting edge beveled in opposite directions.

In testimony whereof I affix my signature.

JAMES BOYD ANDERSON.