

Onions & Bagnall,

Band Pulley,

No. 113,782.

Patented Apr. 18. 1871.

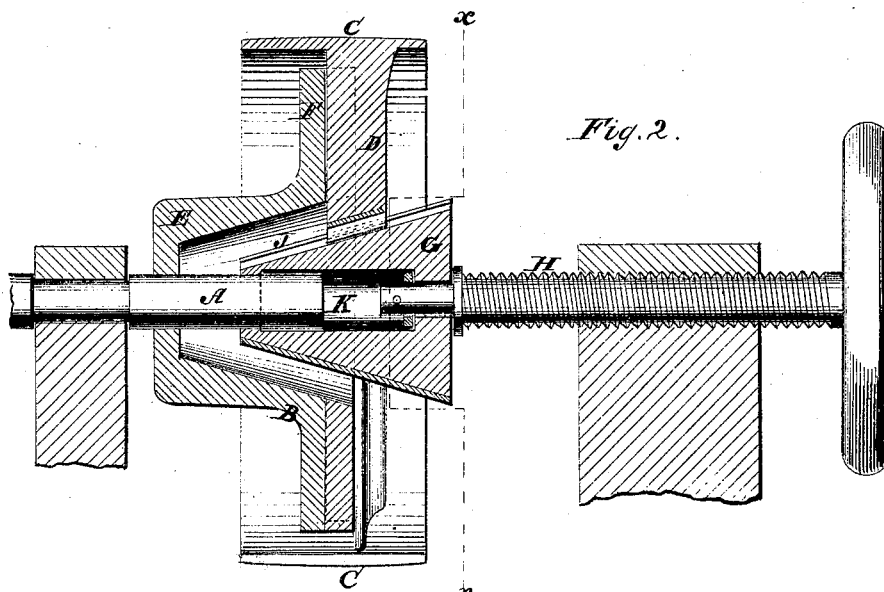
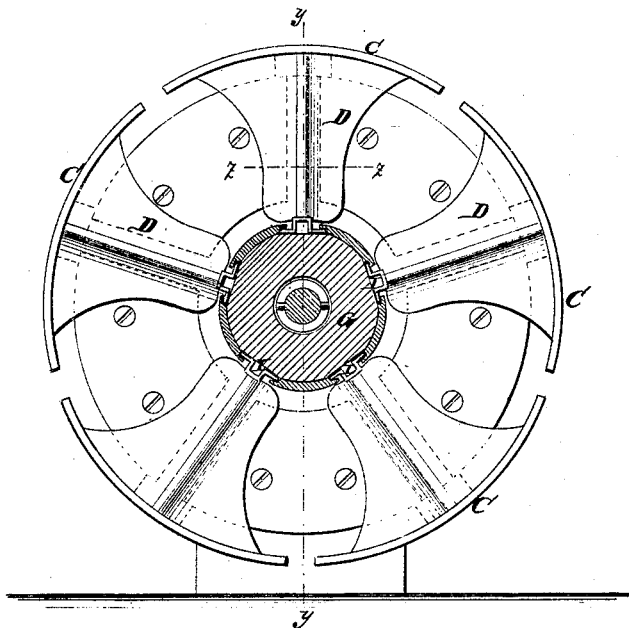


Fig. 2.

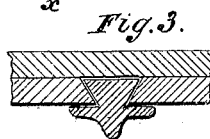


Fig. 3.

Witnesses:

E. Woff
L. S. Haber

Inventors:

W. Onions
J. Bagnall
per *[Signature]*
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM UNIONS AND ISAAC BAGNALL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN EXTENSION-PULLEYS.

Specification forming part of Letters Patent No. 113,789, dated April 18, 1871.

To all whom it may concern:

Be it known that we, WILLIAM UNIONS and ISAAC BAGNALL, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Extension-Pulley; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

Our invention relates to expansible pulleys; and consists in an improved mode of adjusting them while the machinery is in motion.

The principal object is to adjust the velocity without stoppage in the continuous trains of rolls used in iron-mills.

In the accompanying drawing, Figure 1 is a sectional view, looking at the pulley from the line *x x* of Fig. 2. Fig. 2 is a vertical section of the pulley, taken on the line *y y* of Fig. 1. Fig. 3 is a section of Fig. 1, taken on the line *z z*.

Similar letters of reference indicate corresponding parts.

A represents the shaft to which the pulley is attached. B is the body of the pulley, and C is the sectional rim. The rim is divided into four (more or less) sections, each of which sections has an arm, D, which is dovetailed into the face or flange of the pulley. The body of the pulleys consists of a hub, E, and a flange, F, the former of which is hollow, and the latter less in diameter than the least diameter of the rim. The arms D of the sections are made to slide freely in their dovetails radially from the center of the shaft. G is a cone, which is made to move in and out on a line central with the shaft by means of a screw, H, or by a lever, or by any other mechanical appliance. The sections of the pulleys are expanded or contracted by connecting their arms to the cone G. The arrangement is seen in Fig. 1. I represents angular pieces on the ends of the arms D, and fastened rigidly thereto. These pieces have lips projecting in opposite direc-

tions, leaving recesses between the lips and the ends of the arms. J represents a series of plates on the face of the cone, one for each arm. These plates taper in width, so that when placed on the cone their edges are parallel with each other, and sufficiently raised from the face of the cone to admit the lips of the pieces I, as seen in Fig. 1. K is a hole in the cone, which receives the end of the shaft, so that the cone is supported thereby as it is moved back and forth. The cone is so arranged and the arms D are of such a length that, when the sections are contracted to their smallest diameter, the ends of the plates J will enter the spaces between the lips of the pieces I and the ends of the arms, thus connecting the cone and the arms together.

It will be seen that, when the cone is moved by the screw or otherwise in and out, the arms will be forced outward from the center or drawn inward toward the center, thus expanding or contracting the pulley.

By this arrangement the speed of any piece of machinery may be increased or diminished, as may be required, while the shaft is in motion, which renders the device particularly valuable in rolling iron where continuous rolls are employed.

In this example of our invention we attach the expansion-pulley to the end of a shaft; but it may be placed anywhere on the shaft, and operated by means of a lever or otherwise instead of a screw.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

A hollow sectional pulley, C D E F I, fast upon its shaft, combined with a hollow cone, G J K, movable on the said shaft, for the purpose of graduating the velocity imparted thereto without stopping the machinery.

WILLIAM UNIONS.
ISAAC BAGNALL.

Witnesses:

EDWARD HERMENS,
BENJAMIN F. HUNNEWELL.