No. 677,333. Patented July 2, 1901.

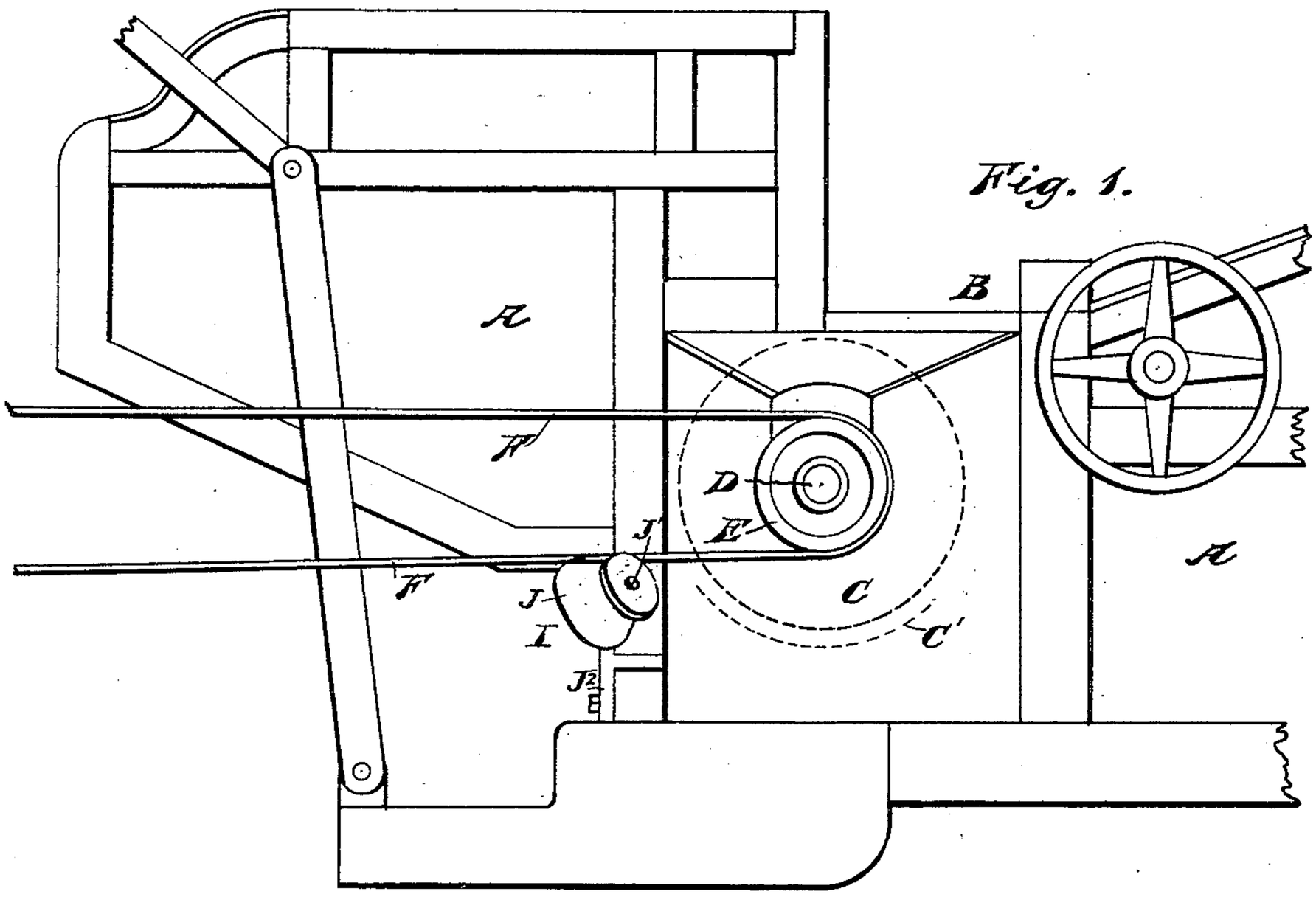
J. B. BARTHOLOMEW.

THRESHER BELT GUIDE.

(Application filed Dec. 7, 1900.)

(No Model.)

Fig. 1.



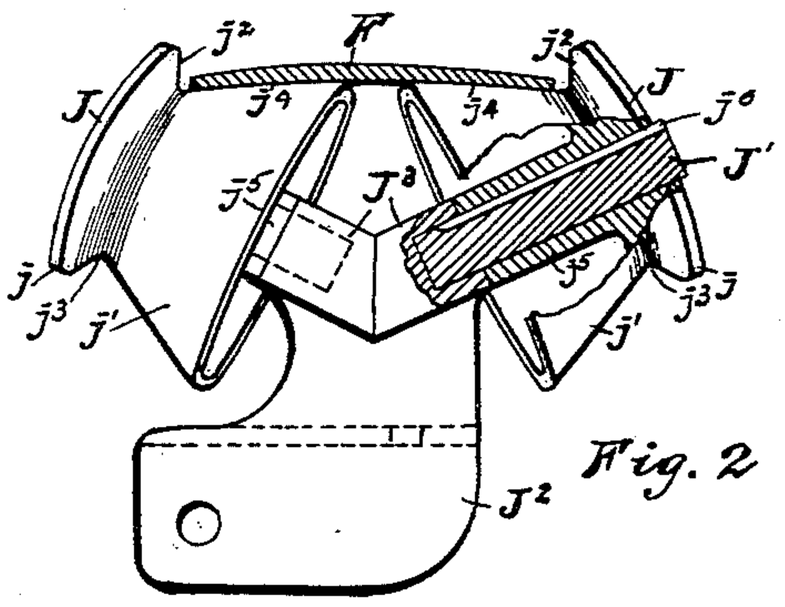
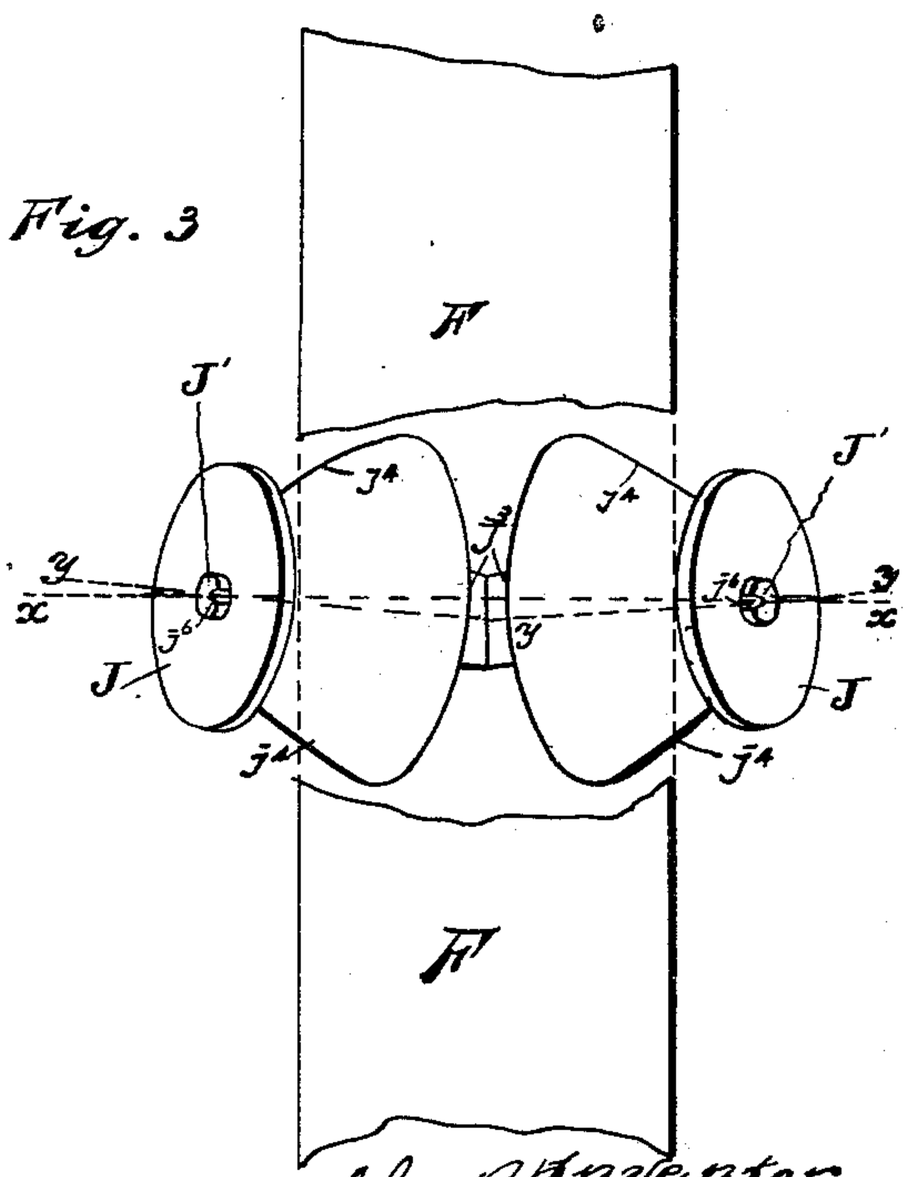


Fig. 2.

Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN B. BARTHOLOMEW, OF PEORIA, ILLINOIS.

THRESHER-BELT GUIDE.

SPECIFICATION forming part of Letters Patent No. 677,333, dated July 2, 1901.

Original application filed May 4, 1900, Serial No. 15,526. Divided and this application filed December 7, 1900. Serial No. 39,055. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. BARTHOLOMEW, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Thresher-Belt Guides, of which the following is a specification, reference being had therein to the accompanying drawings.

The present case is a division of my application, Serial No. 15,526, filed May 4, 1900, for improvements in straw-stackers, this division relating more particularly to improvements in the devices for directing and supporting the belt which drives the cylinder.

Figure 1 is a side elevation, more or less conventional, showing a sufficient portion of a threshing mechanism to illustrate the manner of applying my improvement thereto. Fig. 2 is a front view of the belt-guide, part of one of the pulleys being broken away. Fig. 3 is a plan view of the same, part of the belt being broken away.

In the drawings, A indicates a part of the framework and the casing of a thresher, the letter B indicating that part of the casing which is more immediately adjacent to the cylinder and the concave. The dotted lines at C indicate the cylinder and those at C′ the concave. Illustration or description in detail of these parts is not necessary, inasmuch as they can be of any of the preferred forms or of any approved construction.

D represents the cylinder-shaft, and E the driving-pulley thereon, with which engages the belt F, that extends forward in the usual manner to the engine or other motor.

Much difficulty has been experienced in using belting for the driving of threshing mechanisms of the class here generally indicated because of the difficulty of keeping the belt in proper place. Usually the power is generated by a steam-engine, which is placed for several reasons at a distance from the thresher of from sixty to one hundred feet. Consequently the belt must be long, and inasmuch as it is generally comparatively narrow it is subject to vibrations and swaying not only under the influence of the motion transmitted thereby from the engine, but also from the wind and other causes. The belts of threshing-machines must be kept accurately in line between the driving-wheels and the driven pulleys, and if they become out of line they are liable to be misplaced and accidents frequently result. To obviate these difficulties, I have devised the support and guide herein illustrated at I for the belt F.

J J indicate two pulleys or sheaves of peculiar form and arrangement, situated at a suitable point for holding and guiding the belt. Preferably two of these are arranged in a pair on lines transversely of the belt, and of these pairs any desired number can be employed. For supporting and guiding the belt of a threshing-machine, however, I have found that a single pair situated substantially as illustrated in the drawings is sufficient. They are carried by a bracket J^2, which is firmly fastened to the thresher-frame at a point somewhat in advance of the cylinder or other shaft.

Each pulley J is formed with a body part j' and a flange or rim j. The body portion j' is conical and arranged to have the larger end under the central portion of the belt and the narrower part under the edge of the latter. The rim or flange j is adjacent to the narrower end of the body and is wide enough to extend above the belt. The pulley is mounted on an axis inclined to the horizontal at such an angle as to have the upper part of its surface horizontal or approximately horizontal where it contacts with the belt. The inner surface of the flange j is at such an angle to the surface of the body part j' that the upper part of this flange j shall be vertical or approximately vertical, as seen at the lines indicated by j^2—that is to say, the flange j has a frusto-conical inner surface terminating at the junction-line j^3 with the body. By preference the external surface of the body part j' is not rectilineal in longitudinal section, but somewhat rounded, as shown at j^4, for a purpose to be described.

The bracket J^2 has at J^3 an inclined socket, into which can be fitted the end of the shaft J′, upon which the pulley is mounted, or the shaft and the bracket may be cast integral, as desired. At j^6 there is a groove or passage-way in the shaft for a lubricant, and the latter can be introduced at the aperture thus

provided, as shown in Figs. 2 and 3. The two pulleys of the pair are placed opposite to each other transversely of the belt, each being constructed and arranged in the way above described.

The manner in which the parts of the guide operate will be readily understood from the drawings and the above description. The belt F rests upon the top of the conical body part j', upon which it can be placed and from which it can be drawn as readily as from an ordinary pulley. The flanges at $j\,j$ effectually prevent any displacement from the cylinder-pulley by swayings or vibrations of the belt caused by the wind or otherwise. By having the surfaces of the pulleys somewhat rounded, as at j^4, in the manner above described, the same results are obtained which are well known to be incident to the slight rounding of ordinary pulleys, the belt tending under such circumstances to maintain a longitudinal central position. To increase the "draw" of the belt, I also throw the axes of the pulleys somewhat away from the vertical transverse plane. By referring to Fig. 3 it will be seen that the axes lie in the vertical planes of the line $y\,y$ and not in the vertical plane of the line $x\,x$, the latter being the plane which is at right angles to the travel of the belt. As a consequence it will be seen that each contact-point of each pulley not only has a motion which is longitudinal of and with the belt, but also a motion toward the central line of the belt. In other words, the pulleys tend to draw the belt toward the center line and overcome its tendency to creep or slip in either direction laterally.

While the belt-engaging surfaces of the pulleys are substantially conical or frusto-conical—that is to say, are of greater diameter at one end than at the other end—said surfaces are nevertheless preferably somewhat rounded, as already described, to promote the centering of the belt upon the pulleys irrespective of the confining action of the flanges j. It will be understood that the same result can be effected and the belt given a convex contour in cross-section (as seen in Fig. 2) by the setting of the axes of said pulleys, so that their inner edges are somewhat higher than their outer and narrower portions at the point or points where the belt engages or rests on said pulleys.

What I claim is—

1. A belt-guide having a pulley of substantially conical form provided at its smaller end with a flange, and an axial support for said pulley inclined to the plane of the belt, substantially as set forth.

2. A belt-guide having a conical body portion adapted to lie under one side of a belt, and a flange which extends vertically by the side of the belt and having an inner surface which is also conical, substantially as set forth.

3. A belt-guide having a support for one side edge of the belt, consisting of a pulley with a conical body, mounted on an axis inclined to the plane of the belt, and a flange at the small end of the conical body having an inner surface at right angles to the plane of the belt, in combination with a suitable support for the other side of the belt, substantially as set forth.

4. A belt-guide comprising a pair of belt-supporting pulleys having their axes inclined toward each other and adapted to support a belt partly on each pulley, and each formed with a belt-retaining flange at its outer end, substantially as set forth.

5. A belt-guide comprising a pair of belt-supporting pulleys of substantially conical form having their wider ends turned inward, and having their axes inclined toward each other, substantially as set forth.

6. A belt-guide comprising a pair of belt-supporting pulleys of substantially conical form with slightly-rounded surfaces, and having their axes inclined to each other, substantially as set forth.

7. A belt-guide having a pair of belt-supporting pulleys with their axes inclined toward the plane of the belt, and also inclined longitudinally of the belt, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. BARTHOLOMEW.

Witnesses:
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A. L. GREGORY.