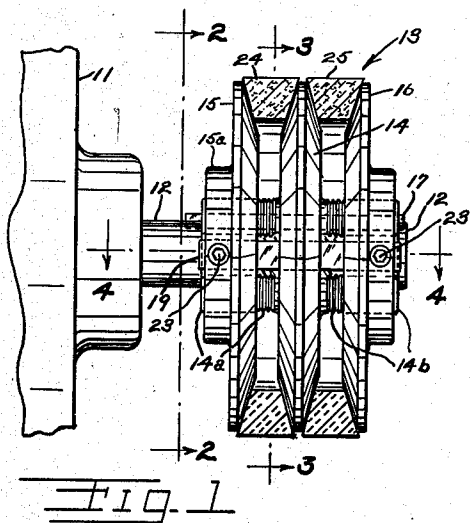
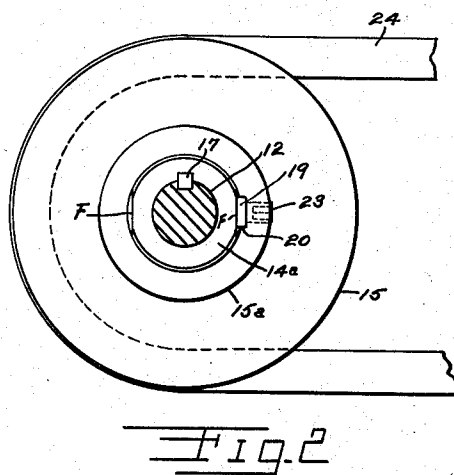
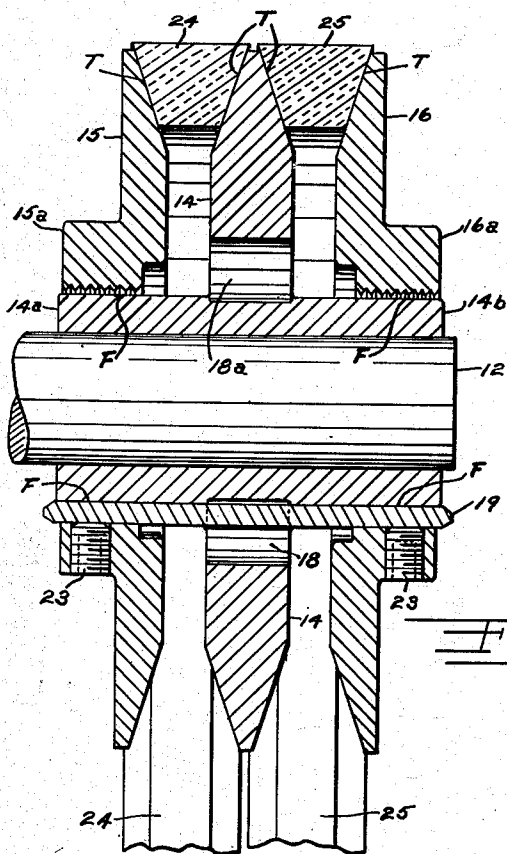
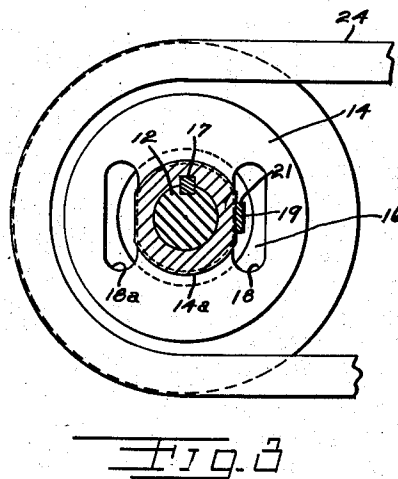


March 31, 1953

J. N. BROWNING
VARIABLE PITCH SHEAVE
Filed Jan. 24, 1951

2,633,031



INVENTOR.
JOHN N. BROWNING
BY
Hyde Meyer, Baldwin & Doran
ATTORNEYS

UNITED STATES PATENT OFFICE

2,633,031

VARIABLE PITCH SHEAVE

John N. Browning, Maysville, Ky., assignor to
Browning Manufacturing Company, Inc.,
Maysville, Ky., a corporation of Kentucky

Application January 24, 1951, Serial No. 207,584

2 Claims. (Cl. 74—230.17)

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The invention relates to novel and improved variable pitch sheave construction, wherein provision is made for variation in the relative distance between the belt-containing members. The sheave is particularly designed for V-belts, and the variability resides in the novel and improved means for controlling and readily fixing and maintaining the distance between the angular sides of the belt groove. Therein lies the object of the present invention.

Other objects and advantages will be apparent from a study of the following description, in conjunction with the accompanying drawing, in which:

Fig. 1 is a view, partly in section and partly in plan, showing a sheave constructed in accordance with the teaching of the present invention.

Figs. 2, 3, and 4 are sectional views taken on the lines 2—2, 3—3 and 4—4 of Fig. 1, Fig. 4 being somewhat enlarged.

It will be understood that the embodiment here shown is merely one exemplification of the invention, since, as will appear obvious upon a study of the following description, other embodiments can be constructed embodying the invention which will respond to the terms of the appended claims. Merely to illustrate this, the sheave shown in the drawings is a compound one having two belt grooves. One, three, four, or more grooves could be provided while still embodying the invention.

Referring now to the drawings, there is shown, fragmentarily, a motor 11 which drives a shaft 12 upon which is fixed a sheave assembly indicated generally by reference character 13. The sheave of course could be driven from another power source, not shown, in which case shaft 12 would be driven by the sheave, instead of driving the sheave, and member 11 could be a generator instead of a motor.

The sheave comprises what I will term for convenience a fixed member 14, centrally disposed, and cooperable with a pair of movable members 15 and 16 which are placed one on each side of the fixed member, and each spaced therefrom. The distance between each movable member and the fixed member may be varied as follows:

Fixed member 14 has a pair of opposed, axially aligned hubs 14a and 14b which are centrally bored to receive shaft 12 (Fig. 4) there being alignable grooves in the shaft and hubs for the reception of a key 17 whereby member 14 is fixed to rotate with shaft 12. The hubs are externally threaded, and the movable members are provided with bored bosses 15a and 16a, internally threaded for convenient endwise movement, each on a re-

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spective hub. When suitable predetermined distances have been established by such endwise movement, the movable members are secured in place in the following novel and improved fashion.

The hubs 14a and 14b are chordally flattened at diametrically opposed zones F, and member 14 is perforated at opposed locations 18 and 18a in longitudinal alignment with said flattened zones. The movable members are provided with key grooves 20 and 21 which are alignable with said flattened zones and said perforations 18 and 18a at each 180° rotational point of said movable members. At any such predetermined aligned position a flattened key 19 is insertible through grooves 20 and 21 and aperture 18 or 18a (through 18 as shown in Fig. 4) and set screws 23 are then advanced to clamp the assembly in said predetermined position. The opposed complementary peripheries of members 14, 15, and 16 are tapered, at T, to receive conventional V-belts 24 and 25, and it will be apparent that variation in the spacing between 14 and 15, for example, will result in variation of the radial distance of belt 24 from the axis of shaft rotation with consequent variation in the arc of effective belt contact, so as to, in effect, vary the pitch of the sheave. The same is true, of course, with respect to belt 25.

Since the flat key 19 lies in a fitted groove in each of the movable members 15 and 16 it is obviously impossible to rotate the members either with respect to each other without removing the key 19. Since the key 19 has one face in contact with the flattened zones F, the members 15 and 16 cannot be rotated with respect to hubs 14a and 14b while the key 19 is in place. The arrangement is greatly superior to the use of a set screw in a hub which binds on a shaft, since the set screw may gouge the shaft with resultant undesirable free play. It is superior to an ordinary key and groove assembly since such last named key cannot be readily removed for quick adjustments. When the present set screws 23 are advanced to tightened position they have no tendency to gouge key 19 because they are not rotatable with respect to the contacted surface of the flat key, and key 19 is obviously not rotatable around the hubs because the flat contacting surfaces are not coplanar with a cylindrical surface of rotation around the rotational axis. Actually the main purpose of the set screws is to hold key 19 in predetermined position until it becomes desirable to change the belt groove adjustments.

While we have described the hubs 14a and 14b as having diametrically opposed, flattened por-

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tions, it is obvious that a plurality of peripherally spaced, flattened portions could be provided, spaced in any desirable way, such as at 90° intervals, so as to multiply the number of potential stopping places, to thereby give a greater sensitivity in the adjustment of groove width. Such an arrangement is comprehended within the coverage of the appended claims.

What I claim is:

1. A variable pitch sheave comprising a discoidal central member, the peripheral edge face portions being convergently beveled, said central member having opposed hubs extending axially away from said member, a pair of movable discs each having a central threaded bore, the outer peripheries of said hubs being threaded so as to each receive one of said discs thereon, such threaded engagement permitting each of said discs to be rotatably advanced towards, and retracted from, said central member, each said hub having a longitudinally flattened zone thereon, each said disk having a keyway on its internal periphery adjacent said hub and alignable, by disc rotation, with said flattened portions, a key longitudinally insertible in said keyway and having its external face in contact with said flattened portions whereby, when said key is in such position, to prevent relative rotation between the disc and the hub, each said disc having a peripheral edge face portion beveled to match the bevel on the adjacent side of the discoidal member, said bevels being matched whereby to afford seats for a pair of V-belts, one

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each side of said central member, said flattened portions of the respective hubs being in longitudinal planar alignment, said central member having an aperture therethrough in alignment with both said flattened portions, whereby to permit a single key to extend completely along the flattened portions of both said hubs simultaneously.

2. A variable pitch sheave as defined in claim 1 wherein each said hub has an additional flattened portion, the flattened portions on each hub being located one on each side of each hub at diametrically opposed points, whereby the key groove of each said movable disc may be brought to fixable registry at either one of two opposed positions.

JOHN N. BROWNING.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
650,154	Owens	May 22, 1900
784,014	Steel	Feb. 28, 1905
2,151,045	Ploehn	Mar. 21, 1939
2,324,681	Dekker	July 20, 1943
2,549,823	Kost	Apr. 24, 1951

FOREIGN PATENTS

Number	Country	Date
872,177	France	June 1, 1942