June 30, 1925. 1,544,192

S. S. SMITH

BELT TIGHTENER

Filed Nov. 25, 1921

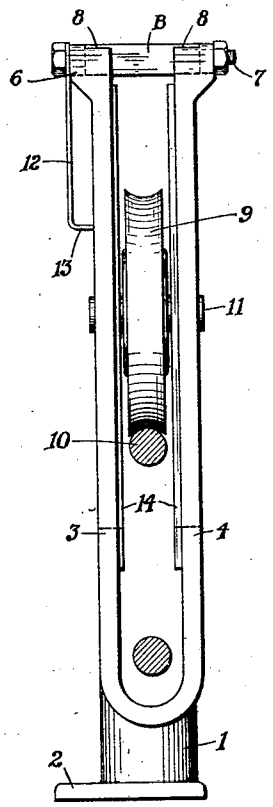


Fig. 1

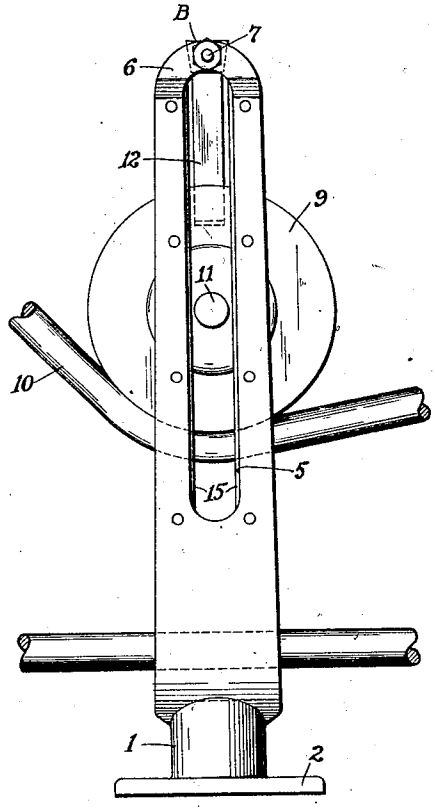


Fig. 2

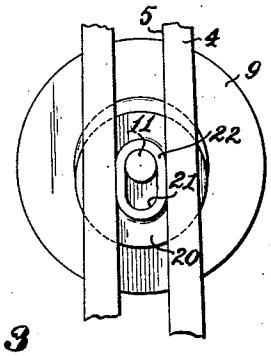


Fig. 3

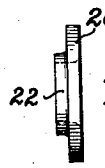


Fig. 4

INVENTOR
Sidney S. Smith
BY
Duell, Warfield & Duell
ATTORNEY

Patented June 30, 1925. 1,544,192

UNITED STATES PATENT OFFICE.

SIDNEY S. SMITH, OF SENECA FALLS, NEW YORK, ASSIGNOR TO GOULDS MANUFACTURING COMPANY, OF SENECA FALLS, NEW YORK, A CORPORATION OF NEW YORK.

BELT TIGHTENER.

Application filed November 25, 1921. Serial No. 517,426.

To all whom it may concern:

Be it known that I, SIDNEY S. SMITH, a citizen of the United States, residing at Seneca Falls, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Belt Tighteners, of which the following is a full, clear, and exact description, such as will enable other skilled in the art to which it appertains to make and use the same.

This invention relates to tightening devices, and more particularly in some of its details to a belt tightening device especially adapted to maintain constant tension on driving belts.

This application is a continuation in part of prior application No. 405,781, filed August 25, 1920, for water system.

It is an object of the invention to provide an improved belt tightening device which is simple in design, practical, efficient, and reliable in operation and inexpensive in manufacturing costs.

A further object is to provide an improved belt tightening device which is particularly effective in service, wear resistant and practically noiseless in operation.

Other objects will be in part obvious in connection with the following detailed description and in part specifically pointed out therein.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings in which an illustrative but preferred embodiment of the invention is disclosed,

Fig. 1 is an end elevation and Fig. 2 a side elevation of a belt tightening device constructed in accordance with this invention;

Fig. 3 is a fragmentary side elevation of a modified form of belt tightener; and Fig. 4 is an elevation of a cushioning member for the modified form.

Referring now to the drawing for a detailed description of the embodiment there shown, a stand 1, preferably of cast metal, is provided with a base flange 2 for securing the device to any suitable support. This stand is provided with upwardly extending spaced arms 3 and 4 provided with opposed slots 5 closed at their upper ends by integral thickened off-set portions 6. The arms are connected together at their upper ends by a spacing block B and a bolt 7 is adapted to pass through an opening therein and through corresponding openings in the upper thickened ends of the arms, holding the spacing block securely in position and bracing and rigidifying the arms. The upper thickened ends of the arms are formed on their inner surfaces with opposed slots 8 in which the ends of the spacing block are seated. These slots 8 register with and form continuations of the slots 5 to provide means for the insertion of the idler or pulley 9, as will be later described.

Disposed between the arms 3 and 4 is a floating idler or pulley 9 adapted to ride on the belt 10, and preferably being formed with a groove for receiving the belt. The belt 10 is preferably circular in cross-section but it is to be understood that the device is applicable to belts of other cross-sectional configuration. This idler is of sufficient weight to provide the requisite belt tension and is fitted with a transverse shaft 11, the ends of which extend into the slot 5. The idler is thus guided in its upward and downward oscillating movement by engagement of the shaft ends on the sides of the slots. In practice, however, it has been noted that the idler acts liks a gyroscope, floating freely upon the belt and only occasionally contacting with any part of the stand, so there is very little friction or wear, and in operation the device is practically noiseless.

In order to support the idler in raised position out of engagement with the belt so the latter may be adjusted or placed in position, a spring latch 12 is provided held in position by means of the bolt 7 and having an inturned projection or hook 13 for engagement with the end of the shaft 11. The projection 13 is adapted to engage with the under side of the shaft to hold the idler in raised position in a manner which will be obvious.

In order to deaden noise and lessen jar in cases where the shaft contacts with the sides of the slots 5, and where the idler pulley itself contacts with the inner sides of the arms 3 and 4, cushioning means are provided. This cushioning means preferably

consists of strips of leather 14 or other suitable material, secured to the inner faces of the arms, and of similar strips of cushioning material 15 secured to the edges of the slots 5.

When it is desired to insert the idler in position between the arms, or to remove the same, the bolt 7 is removed and the terminal or spacing block 6 slipped out of its seat in the slots 8. The ends of the idler shaft will then pass freely through the slots 8 in the thickened end portion of the arms. To form a proper seat for this block the sides of these slots may be tapered. When the block is removed the ends of the idler shaft may pass freely through the slots 8 in the offset thickened end portions of the arms.

In the modification shown in Figs. 3 and 4 the general construction of the idler stand may be the same as in the other modification, but a different and preferred type of cushioning means is provided. This cushioning means comprises a pair of buffers of like construction, one being provided for each side of the idler pulley 9. These buffers may be made of a tough resilient material, leather being preferred and each has a base or body 20 adapted to lie between the idler pulley and the arm 3 or 4. There is an elongated opening 21 extending through the member for receiving the idler shaft, and surrounding this opening and disposed at an angle to the base is a flange 22. This flange is adapted to lie between the idler shaft and the walls of the slot 5 providing an effective cushion between these parts. The base 20 provides the desired cushioning between the sides of the idler and the arms 3 and 4.

The elongated shaft opening 21 with the flange 22 surrounding the same prevents the buffer from rotating and at the same time provides a large bearing surface contacting with the walls of the slot 5, thereby increasing the wear resisting qualities of the device and prolonging the life thereof. It will be understood that the buffers are slipped on the ends of the idler shaft before the idler is placed in position in the stand. As the idler oscillates up and down in operation the buffers oscillate therewith.

In either of the embodiment of the tightener herein described, the operation of the idler pulley is practically noiseless due to the effective arrangement of cushioning means, and friction is largely avoided resulting in long life and satisfactory operation.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a belt tightener, in combination, a tightener bracket having spaced members formed with slots therein, a belt tightening idler disposed between said members and having a shaft extending into said slots and adapted to float therein under the influence of the belt, and a cushioning means for said idler and shaft.

2. In a belt tightener, in combination, a tightener bracket having spaced members with slots therein, a belt tightening idler disposed between said members and having a shaft extending into said slots, cushioning material on the inner sides of said members for engaging said idler and cushioning material on the edges of said slots for engaging said shaft.

3. In a belt tightener, in combination, a tightener bracket having spaced members with slots therein, a floating belt tightening idler disposed between said members and being guided by said slots for free oscillation therein under the influence of the belt, cushioning means for said idler and shaft, and a detachable spacing block connected to the extremities of said members and closing said slots.

4. In a belt tightener, in combination, a tightener bracket having spaced members with slots therein, a floating belt tightening idler disposed between said members and being guided by said slots for free oscillation therein under the influence of the belt, a detachable spacing block connecting the extremities of said members and closing said slots, and a latch for holding said idler out of contact with the belt.

5. In a belt tightener, in combination, a tightener bracket having spaced members with slots therein, an idler disposed between said members and having a shaft extending into said slots, extension slots at the extremities of said members, and a detachable spacing block fitting in said extension slots and being removable to permit the removal of said idler through said extension slots.

6. In a belt tightener, in combination, a tightener bracket having spaced arms provided with slots, an idler disposed between said arms and having a shaft extending into said slots and cushioning means for said idler interposed between the latter and said

arms and between said shaft and the walls of said slots.

7. In a belt tightener, in combination, a tightener bracket having spaced arms provided with slots, an idler disposed between said arms and having a shaft extending into said slots and cushioning means for said idler interposed between the latter and said arms and between said shaft and the walls of said slots, said slots being closed at the extremities thereof and the closed extremities being provided with extension slots for permitting entry or removal of said idler.

8. In a belt tightener, in combination, a tightener bracket having spaced arms provided with slots, an idler disposed between said arms and having a shaft extending into said slots, cushioning means for said idler interposed between the latter and said arms and between said shaft and the walls of said slots, said slots being closed at the extremities thereof and the closed extremities being provided with extension slots for permitting entry or removal of said idler, and a detachable terminal block seated in said extension slots and extending between said arms.

9. In a belt tightener, in combination, a tightener bracket having spaced arms provided with slots closed at adjacent extremities thereof, said extremities being provided with slots forming extensions of said first mentioned slots, and a terminal block extending between said arms and seated in said extension slots.

10. In a belt tightener, in combination, a tightener bracket having spaced arms provided with vertical slots, a gravity controlled idler movable in said slots and a cushioning means for said idler disposed between said arms and the idler and movable with the latter.

11. In a belt tightener, in combination, a tightener bracket having an arm provided with a slot, an idler having a shaft extending into said slot to guide said idler and a cushioning member disposed between said idler and said arm and between the edges of said slot and said shaft and movable with the latter.

12. In a belt tightener, in combination, a gravity controlled idler adapted to ride on the belt, vertical guiding means for said idler, and a movable cushioning member for cushioning said idler with respect to said guiding means, said member having angularly disposed cushioning portions co-operating with said guiding means.

13. In a belt tightener, in combination, an idler adapted to ride on the belt, guiding means for said idler, and a movable cushioning member for cushioning said idler with respect to said guiding means, said member having an elongated opening for allowing relative movement thereof with respect to said idler.

14. In a belt tightener, in combination, an idler adapted to ride on the belt, guiding means for said idler, and a movable cushioning member for cushioning said idler with respect to said guiding means, said member having an elongated opening for allowing relative movement thereof with respect to said idler and a flange adjacent said opening for co-operation with said guiding means.

15. A cushioning member for belt tighteners having a body portion with an elongated opening therein and an angularly disposed portion adjacent said opening.

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

SIDNEY S. SMITH.

Witnesses:

HENRY G. MEACHAM,

ROBERT M. HOLCOMB.