Dec. 8, 1931. W. C. STEWART 1,835,617

AUTOMATIC BELT TIGHTENER

Filed July 24, 1928

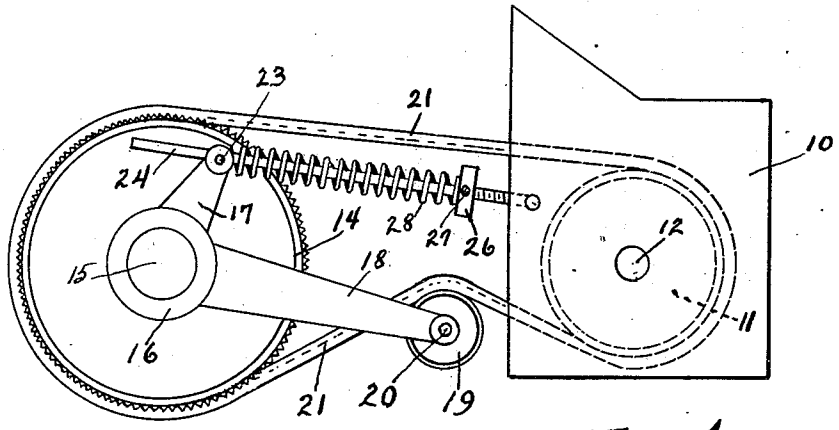


Fig. 1

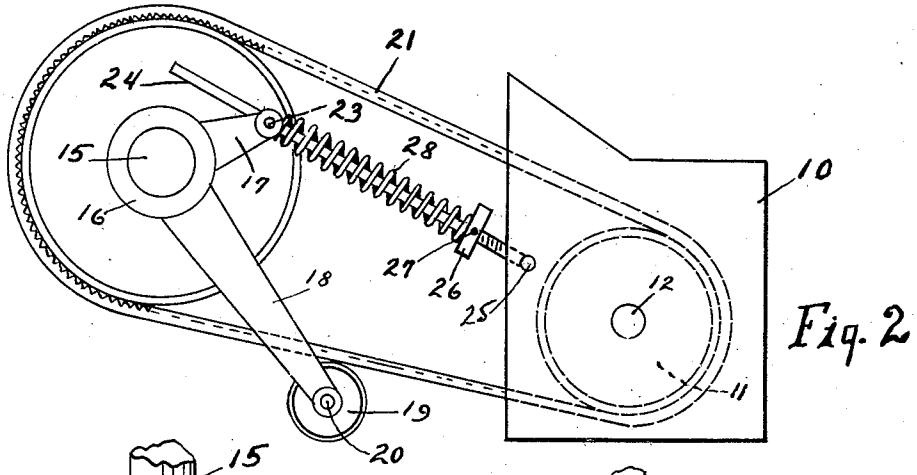


Fig. 2

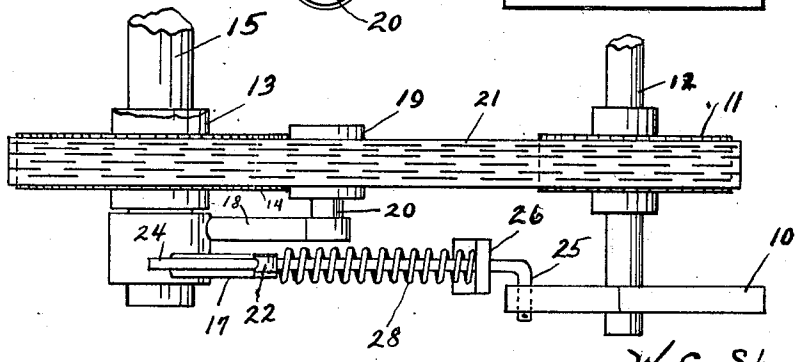


Fig. 3

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UNITED STATES PATENT OFFICE

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AUTOMATIC BELT TIGHTENER

Application filed July 24, 1928. Serial No. 295,037.

This invention relates to automatic means for preserving the tautness of belts of various types when mounted on wheels which are affixed to shafts with said shafts moving vertically with relation to each other.

My invention relates to a belt tighter for roving frames and has means for preserving the tautness of the chain belt running on wheels mounted on the roving frame differential sleeve and the gearing for driving the bobbin shafts.

It is well known that the bobbin shafts and the housing move vertically with relation to the roving frame differential and as a result of said movement the chain belt running between the roving frame differential and the bobbin shaft gearing becomes very loose when the two shafts are in the same horizontal plane, but when the bobbin shaft and bobbin shaft gearing move to a point below the horizontal plane of the roving frame differential then the belt becomes more taut and it is an object of this invention to provide automatic means for taking up the slack in the belt as the same occurs from time to time.

Some of the objects of my invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which:—

Figure 1 is an end elevation of the roving frame differential shaft and the bobbin shaft gear housing with a belt running there between and showing my invention applied;

Figure 2 is a similar view, but showing the position of parts when the bobbin shaft gear housing is in a lowered position;

Figure 3 is a plan view of the two preceding views.

Referring more specifically to the drawings, the numeral 10 indicates the bobbin shaft gear housing of a roving frame carrying the bobbin shafts which are driven by the gear wheel 11 on the shaft 12 and, as is well known in the art, this bobbin shaft gear housing moves vertically with relation to the roving frame differential during the operation of the machine. The roving frame differential sleeve 13 has mounted thereon the wheel 14, which sleeve bearing the wheel 14 is rotatably mounted on the shaft 15, the wheel 14 and the shaft 13 being secured to each other for unitary movement.

Mounted on the main drive shaft 15 is the member 16 which has the short crank 17 and the long crank 18 integral therewith and in the end of the long crank 18 is mounted the tightening pulley 19 on the pin 20, which pulley is adapted to engage the lower side of the chain belt 21 to take up the slack as it occurs. The end of the short crank 17 is forked and loosely secured therein is the member 22 which is rotatably secured on the pin 23, and slidably mounted in the member 22 is the rod 24 which has the portion 25 engaging the bobbin shaft gear housing 10, and adjustably mounted on this rod 24 by means of the set screw 27 is the abutment 26 against which the coiled spring 28 rests, the other end of the coiled spring abutting against the member 22 in the end of the arm 17.

It is thus seen that the rod 24 is slidably mounted with relation to the crank arm 17 and when the parts are in the position shown in Figure 2, the belt will be taut and no tightening will be necessary and as a result the arm 18 will drop downwardly into the position shown, but when the bobbin shaft gear housing rises as shown in Figure 1, the coiled spring 28 on the rod 24 will push on the arm 17 and cause the tightening pulley 19 to lift the slackened portion of the belt upwardly and prevent the same from dangling and rattling.

It is intended that this mechanism is to be applied on chain belts and the belt 21 is presumed to be a chain belt and the wheels 11 and 14 are presumed to be gear wheels, although this mechanism may be applied to ordinary pulleys and ordinary belts.

In the drawings and specification I have set forth a preferred embodiment of my invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the appended claims.

I claim:—

1. In an automatic adjuster for the taut-

ness of belts and the like in roving frames, a driving wheel, a drive shaft on which said driving wheel is mounted, a bobbin shaft, a housing for said bobbin shaft, a wheel on said bobbin shaft, said bobbin shaft being movable in a vertical plane while rotating, a belt mounted on the two wheels on said shafts, a crank arm mounted on the first named shaft, a tightening pulley in one end of said bell crank, a rod slidably mounted in the other end of said bell crank, the other end of said rod being connected to the housing for the bobbin shaft, an adjustable member mounted on said rod, a tension spring between said adjustable member and the one end of said bell crank, said mechanism being adapted to release the pressure on the belt as the bobbin shaft lowers, and to increase the pressure on the belt as the bobbin shaft raises.

2. In an automatic belt tightener, two rotatable shafts, one of said shafts being movable in a vertical plane, a wheel mounted on each of the shafts, a belt on said wheels, a housing for one of the shafts, a bell crank lever mounted on one of the shafts, an idler pulley on one end of said bell crank lever, a rod slidably mounted in the other end of the said bell crank lever, the other end of said rod being mounted in said housing, an adjustable member mounted on said rod, a compression spring mounted between said adjustable member and the end of the bell crank lever through which the rod passes, said mechanism being adapted to automatically adjust the tension of the belt on said wheel.

3. In a device for automatically maintaining tautness in a belt, a drive shaft, a wheel on said drive shaft, a second drive shaft, a wheel on said second shaft, a housing for said second shaft, said second shaft being vertically movable while rotating, a bell crank lever mounted on said first shaft, an idler pulley mounted in one end of said bell crank lever, and being adapted to press on the outer side of a belt mounted on the two wheels, the other end of said bell crank lever having a hole therethrough, a rod slidably mounted in said hole, the other end of said rod being secured to the housing, an adjustable member mounted on said rod, a tension spring mounted on said rod between said adjustable projection and the end of the bell crank lever through which the rod slidably projects, all of said mechanisms being adapted to maintain a constant tautness in the belt which is mounted on the two wheels.

4. In a driving mechanism for a roving frame, a main drive shaft, a bobbin shaft, a housing for the bobbin shaft, a bell crank lever mounted on the main drive shaft, a wheel mounted on the main drive shaft, a wheel mounted on one of the bobbin shafts, a belt on said wheels, one end of said bell crank lever having an idler pulley therein adapted to press against the lower side of the belt mounted on the two wheels, the other end of said bell crank lever having slidably mounted therein a rod, the other end of said rod being connected to said housing, a projection adjustably mounted on said rod, a compression spring mounted between said projection and the end of said bell crank lever, said spring being adapted to press the idler pulley against the lower side of said belt, and to maintain a constant tautness in the belt as the bobbin shaft moves with relation to the drive shaft.

In testimony whereof I affix my signature.

WALTER C. STEWART.