F. L. LANE & B. D. STEVENS.

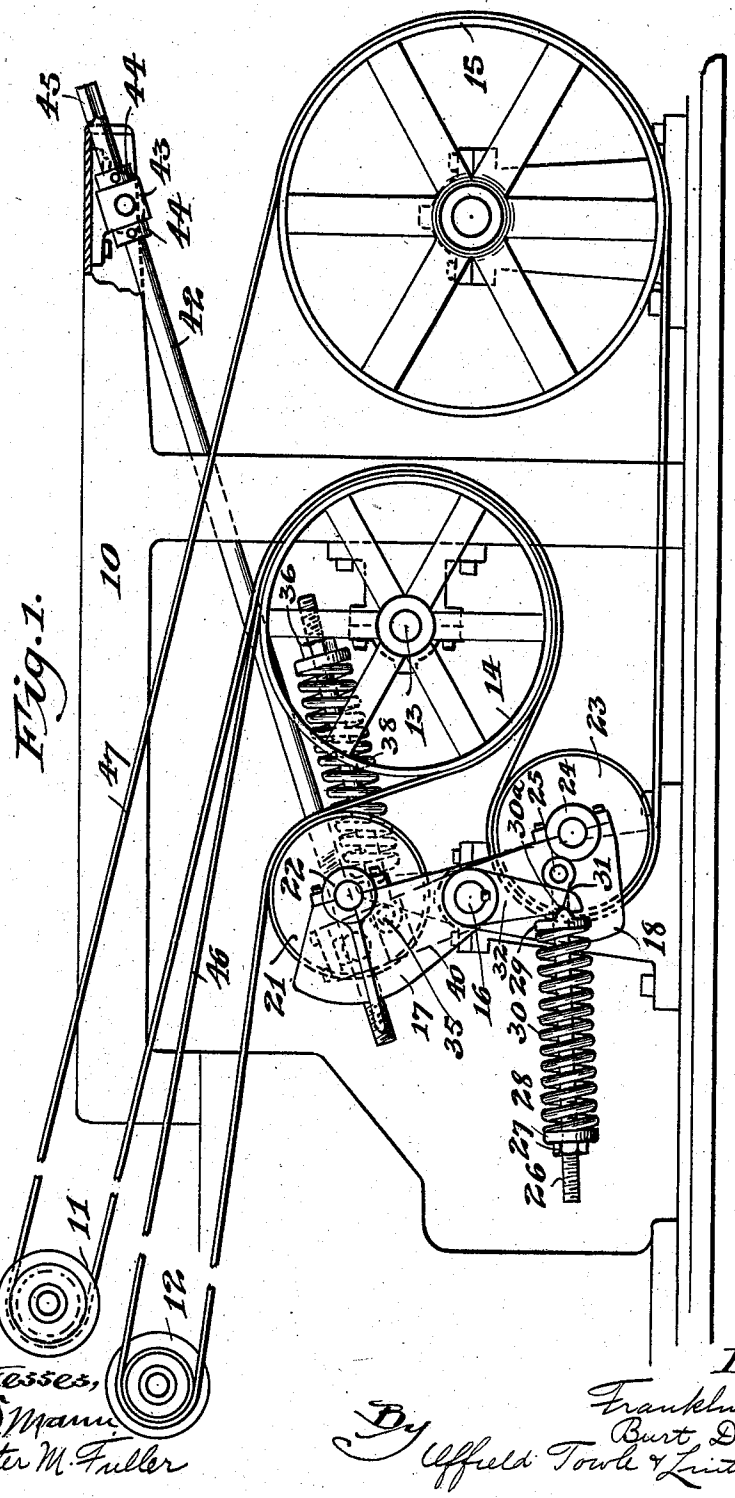
BELT TIGHTENER.

APPLICATION FILED JUNE 24, 1908.

899,741. Patented Sept. 29, 1908.

2 SHEETS—SHEET 1.

Fig. 1.



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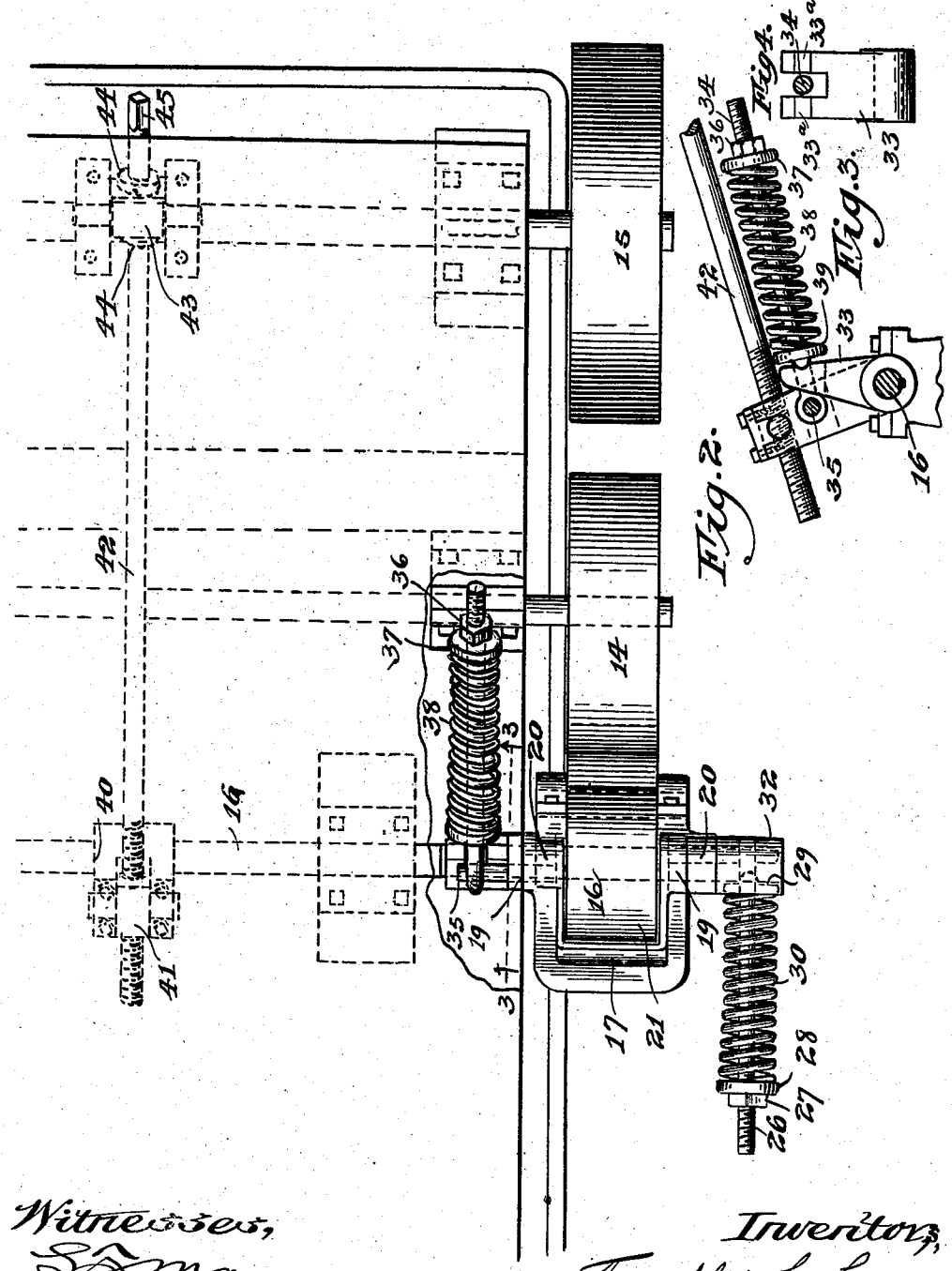

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UNITED STATES PATENT OFFICE.

FRANKLIN L. LANE AND BURT D. STEVENS, OF BELOIT, WISCONSIN, ASSIGNORS TO THE BERLIN MACHINE WORKS, OF BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

BELT-TIGHTENER.

No. 899,741. Specification of Letters Patent. Patented Sept. 29, 1908.

Application filed June 24, 1908. Serial No. 440,147.

To all whom it may concern:

Be it known that we, FRANKLIN L. LANE and BURT D. STEVENS, both citizens of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Belt-Tighteners, of which the following is a specification.

Our invention concerns means for maintaining taut the belts of a planer or similar machine which transmit a considerable amount of power.

In the particular form of planer on which we at present use this invention, the two belts at one side of the machine operating the upper and lower planer heads pass around a single driving pulley, each belt having a tightening pulley, automatically actuated by a spring or weight and independently operative upon their respective belts. In such devices it is frequently desirable to adjust both of the belt tighteners simultaneously, and in our improved mechanism we provide means for accomplishing this result.

On the accompanying drawings forming a part of this specification we have illustrated a single preferred and desirable embodiment of our invention, and on these drawings,—

Figure 1 is a fragmentary side elevation of a wood planer equipped with our improved belt-tightening means; Fig. 2 is a fragmentary plan view of the planer shown in Fig. 1, the belts being omitted to more clearly illustrate the location and arrangement of the various pulleys; Fig. 3 is a section on line 3—3 of Fig. 2 as viewed in the direction indicated by the arrows; and Fig. 4 is a face view of one of the spring-controlled arms forming part of each belt-tightening mechanism.

The planer illustrated has the usual bed or frame 10 and upper and lower planer-head pulleys 11 and 12, respectively. Suitably mounted on the frame of the machine and rotatable in bearings of the ordinary construction, we provide a driving shaft 13 equipped with a driving pulley 14. At the front end of the machine we supply also a rotatable guide pulley 15 employed to determine the proper direction of travel of one of the driving belts described hereinafter. On a transverse shaft 16 which projects outwardly beyond the side of the planer bed or frame, we hinge or swingingly mount an upper casing or housing 17 and a similar lower shell or casing 18. The housing 17 and the casing 18 have pairs of arms or bearing portions 19 and 20, respectively, which lie alongside one another or straddle one another on the shaft, as is clearly indicated, whereby the shaft 16 acts as a common support for both of the casings. A belt-tightening pulley 21 is rotatably mounted in bearings 22 on the casing 17, the pulley being partially covered by the latter, and a similar belt-tightening pulley 23 is rotatably mounted in bearings 24 on the lower casing or housing 18. Pinned or hinged at 25 to the outer face of the casing 18, we provide a screw-threaded rod 26 equipped with an adjustable nut 27 and a washer 28 bearing thereagainst. Abutting against the inner face of the washer 28 at one end, and against a bearing member 29 at its other end, we supply a coil expansion spring 30, the tension of which may be varied by adjusting the nut 27. The outer face of the bearing member 29 is supplied with a pair of curved or rounded projections 30^a fitting in correspondingly shaped seats 31 in the bifurcated end of an arm 32 keyed to the shaft 16. As is clearly indicated, the rod 26 passes centrally through the nut 27, washer 28, spring 30 and bearing member 29, the lower or bifurcated end of the arm 32 straddling the rod, as is clearly indicated. Inside of the frame of the planer, a similar arm 33 is keyed to the shaft 16, the split or bifurcated end of the arm and its rounded seats 33^a being shown in Fig. 4. A threaded rod 34, corresponding in construction and function to the rod 26, is pinned or pivoted to the inner face of the upper casing or housing 17 at 35. This rod 34 is equipped with an adjusting nut 36, washer 37, expansion spring 38 and bearing member 39 co-acting with the arm 33, as do the corresponding parts operative on the casing 18.

Near the center of the machine an arm 40 is keyed to the shaft 16, and has rotatably mounted in its upper end a swinging nut 41, through which passes the threaded end of an inclined adjusting shaft 42, the upper end of which extends through a rocking bearing 43, through which it is prevented from sliding by a pair of collars 44 fixed to the shaft on opposite sides of the bearing. The extreme upper end of this shaft 42 is squared at 45 for the application of a wrench or handle employed to turn or rotate the shaft.

The belt 46 which encircles the lower

planer-head pulley passes around the driving pulley 14, and is acted upon on its under surface by the spring-actuated belt-tightening pulley 21. The belt 47 which encircles the pulley 11 of the upper planer head passes around the guiding pulley or wheel 15, around the lower spring-operated belt-tightening pulley 23, and also around the driving pulley 14 on top or outside of the belt 46.

It will be apparent that, since the shaft 16 is ordinarily stationary and is moved only when it is desired to adjust or simultaneously vary the positions of the pair of belt-tightening pulleys 21 and 23, and since the arm 33 is stationary, the spring 38 acting through the washer 37, nut 36 and rod 34, which is pinned or hinged to the housing or casing 17, operates to swing the pulley 21 upwardly into firm engagement with the under surface of belt 46, maintaining the same taut and in effective driving condition. Also since the arm 32 is correspondingly stationary, the casing 18 and the pulley 23 mounted thereon are spring-pressed to the left as the device is viewed as illustrated in Fig. 1, whereby the pulley 23 keeps the belt 47 tight. Each belt therefore is independently operated upon by its own belt-tightening pulley, and the action of each of these pulleys may be varied as occasion demands by modifying the compression of springs 30 and 38 through manipulation of their controlling nuts 27 and 36. If, however, it is desired to either tighten or slacken both belts simultaneously, this is readily accomplished by applying a wrench or handle to the squared end 45 of shaft 42, and turning the same, which turning causes a partial rotation of the shaft 16 and the arms 32 and 33 keyed thereto. It is obvious therefore that the positions of both belt-tightening pulleys may be modified without varying or changing their independent spring-actuated operating mechanisms. Such change of positions of the arms 32 and 33, of course, acts through the springs 30 and 38 to effect a change of positions of the casings 17 and 18 and their associated pulleys 21 and 23.

To those skilled in this art it will be apparent that we have produced a simple and efficient belt-tightening means which enables us to employ a single driving pulley on each side of the machine, it being understood that, if it is desirable, the mechanism indicated in Fig. 1 may be duplicated on the opposite side of the planer. Furthermore, the two belts driving the planer heads lap around the driving pulley 14 to a considerable extent or degree, thereby receiving therefrom and transmitting to the planer heads a maximum amount of power.

Although we have described in detail the precise structural features characteristic of this particular machine, it is to be understood that this invention is not limited and restricted to the precise structure shown and described, since many minor changes may be made therein without departure from the essence and substance of the invention.

We claim:

1. In a mechanism of the character described, the combination of a pair of driven pulleys, a driving pulley, a belt passed around one of said driven pulleys and said driving pulley, a second belt passed around the other driven pulley and said driving pulley on top of the first belt, a belt tightener for each of said belts, and means to simultaneously adjust both of said belt tighteners to vary their action on the belts.

2. In a mechanism of the character described, the combination of a pair of driven pulleys, a driving pulley, a belt passed around one of said driven pulleys and said driving pulley, a second belt passed around the other driven pulley and said driving pulley on top of the first belt, an independently spring actuated belt-tightener for each of said belts, and means to simultaneously adjust both of said belt tighteners to vary their action on the belts.

3. In a mechanism of the character described, the combination of a pair of driven pulleys, a driving pulley, a belt passed around one of said driven pulleys and said driving pulley, a second belt passed around the other driven pulley and said driving pulley on top of the first belt, a swinging independently spring actuated belt-tightening pulley for each of said belts, and means to simultaneously adjust both of said belt-tightening pulleys to vary their action on the belts.

4. In a mechanism of the character described, the combination of a pair of driven pulleys, a driving pulley, a belt passed around one of said driven pulleys and said driving pulley, a second belt passed around the other driven pulley and said driving pulley on top of said first belt, a shaft, a belt-tightening pulley for each of said belts swingingly and independently mounted on said shaft, a spring connection between each of said belt-tightening pulleys and said shaft, and means to turn said shaft to simultaneously vary the action of both of said belt-tightening pulleys on their respective belts.

5. In a mechanism of the character described, the combination of a pair of driven pulleys, a driving pulley, a belt passed around one of said driven pulleys and said driving pulley, a second belt passed around the other driven pulley and said driving pulley on top of the first belt, a shaft, a pair of bearing members swingingly mounted on said shaft, a belt-tightening pulley rotatable on each of said bearing members, a pair of arms keyed to said shaft, a spring connection between each of said arms and said bearing members, and an operating shaft connected to said first shaft and adapted to turn the same to simultaneously adjust the positions of said

belt-tightening pulleys to vary their action on their respective belts.

6. In a mechanism of the character described, the combination of a pair of driven pulleys, a driving pulley, a guide pulley, a belt passed around one of said driven pulleys and said driving pulley, a second belt passed around the other driven pulley, said driving pulley and said guide pulley, a spring-actuated independently-operative belt-tightener for each of said belts, and means to simultaneously adjust both of said belt-tighteners to vary their action on the belts.

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