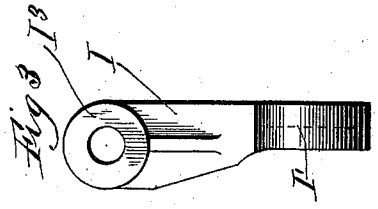
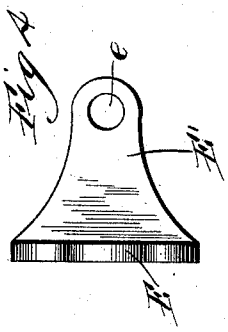
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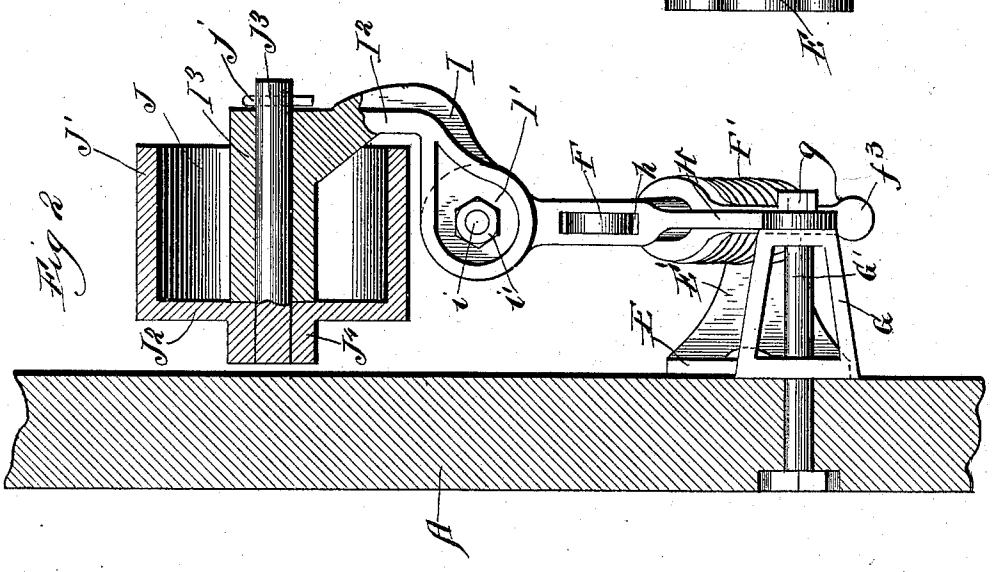
# J. H. GILMAN.

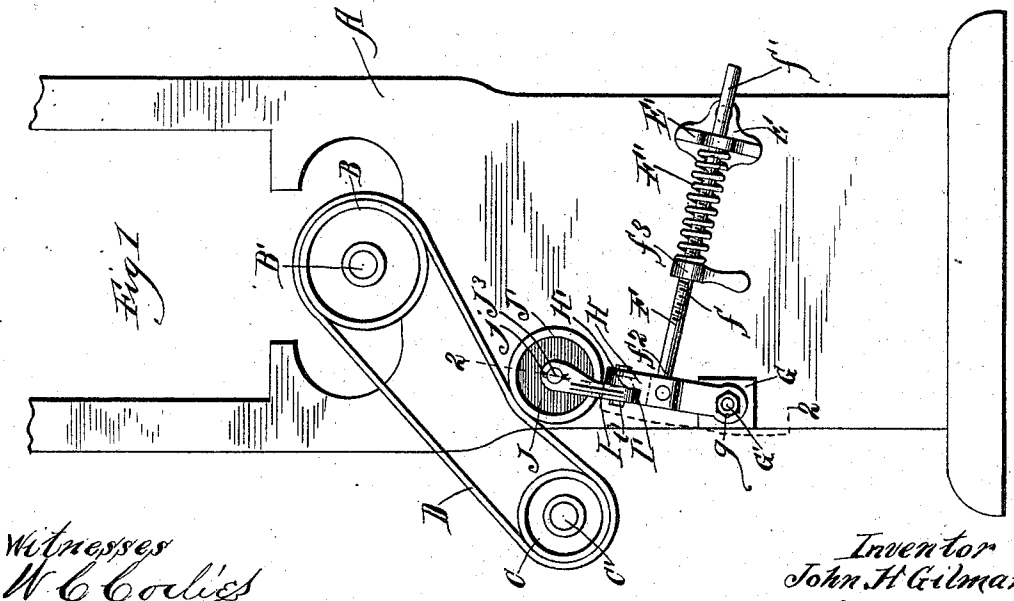
## BELT TIGHTENER.

No. 598,658. Patented Feb. 8, 1898.




Witnesses
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# UNITED STATES PATENT OFFICE.

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## BELT-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 598,658, dated February 8, 1898.

Application filed March 3, 1897. Serial No. 625,823. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. GILMAN, a citizen of the United States, residing at Ottawa, in the county of La Salle and State of Illinois, have invented a certain new and useful Improvement in Belt-Tighteners, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of my belt-tightener. Fig. 2 is an approximately vertical section, on an enlarged scale, on the line 2 2 of Fig. 1. Fig. 3 is a detail view of the journal-bearing casting. Fig. 4 is a detail view of the bracket-casting.

practice I have applied it to belt-tighteners

My invention relates to belt-tighteners. In in connection with corn-shelling machines. It is equally applicable to belt-tighteners in any case of power transmission.

My invention consists principally in the relative arrangement and construction of parts, as set out in the annexed claims, and while I have shown it as embodied in the precise form which I consider best adapted to carry out its purposes and objects it will be understood that it is capable of some slight modifications.

Referring to the drawings by letter, A represents the framework of any mechanism with which such belt-tightener may be employed.

B designates the driving-pulley mounted upon a shaft B′, C the driven pulley mounted upon a shaft C′, and D the belt transmitting the revolution of the former to the latter.

Upon the framework A is mounted a bracket E, comprising an upright portion E′, provided with a perforation *e*. A rod F, screw-threaded, as at *f*, extends at one end *f′* loosely through the perforation *e*, while the other end $f^2$ of the rod is pivoted to the rotatable supporting-arm of the idle-pulley, later described. A thumb-nut $f^3$ is mounted upon the screw-threaded portion of the rod F, and between the said thumb-nut and the bracket E an expanding coiled spring F′ surrounds the said rod, by which construction it is obvious the tension of the spring may be adjusted.

Upon the main frame A, opposite the bracket E, I secure a standard G, upon the outer surface of which, by the bolt G′ and nut *g*, is pivotally mounted the supporting-arm H. In the said supporting-arm is formed an aperture *h*, adapted to receive the end $f^2$ of the rod F, which is there pivotally connected with the said supporting-arm. The arm H is further provided with a clamping-face H′. To the said supporting-arm I secure a journal-bearing casting I, comprising a clamping-face I′, adapted to be clamped by the bolt *i* and nut *i′* against the clamping-face H′, a shank $I^2$, and a journal-bearing $I^3$.

The idle-pulley J, which forms part of my belt-tightener, preferably consists of the pulley-shell J′, inclosing the bearing $I^3$, the web $J^2$, integral with one side of the shell, and the arbor $J^3$, which may be cast integral with the said web, which is reinforced, as at $J^4$. The said arbor is revolubly mounted in the bearing $I^3$ of the journal-casting, in which it is retained by the cotter-pin *j*. This mounting of the idle-pulley brings the strain from the tension of the belt upon the said pulley directly over the arbor and its bearing.

From the construction hereinabove described the operation of my belt-tightener will be apparent. The pulley J would obviously be held against the belt D through the expansive force of the spring F′, the said force of which may be regulated by the thumb-nut $f^3$. The chief function of this construction is, however, that the pulley J can be angularly adjusted with respect to the belt by loosening the nut *i′*, adjusting the two clamping-faces with respect to one another, and again tightening the nut.

It is well known that when two pulleys are connected together by a belt transmitting power from one to the other there is often a tendency for the belt to run off one or both of the said pulleys. This may arise from unevenness originally present in the belt or produced by wear or from other causes. The shorter the belt and the higher the speed at which the pulleys are run the more this tendency becomes marked. Where pulleys are coupled as closely as shown in the drawings and are driven at the high rate of speed necessary in a corn-sheller, as for revolving the fan, &c., it becomes very difficult to prevent the belt from occasionally running off the pulleys. By my improved belt-tightener,

however, the angle of the idle-pulley forming a part thereof can be so adjusted as to counteract any such tendency in whatever direction it may be, and all limit as to the rate of speed of the revolution of the pulleys in respect of this difficulty is removed.

The spring-tension mechanism shown coöperates very intimately with the angular adjustment of the idle-pulley. It is evident that the greater the tension of the idle-pulley against the belt the greater its control over the said belt. The tension of the spring mechanism and the angle of the idle-pulley will therefore be adjusted with respect to one another and to the speed, &c., of the belt, as desired.

It will be obvious that many changes may be made in the specific construction shown and described without at all departing from the general spirit of my invention. It is further apparent that such a belt-tightener may be employed in any other mechanism as well as in a corn-sheller.

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

1. In a belt-tightener, the combination of the pivoted arm, the journal-bearing carried thereby, the idle-pulley mounted in said journal-bearing, and the rod F, with the bracket E acting as a fixed abutment and guide-piece for the rod F, the nut $f^3$ on said rod, and the helical spring F′ surrounding said rod F and interposed between said bracket and nut so that the idle-pulley is held in contact with the belt by a force varying as the tension and capacity of said spring, substantially as described.

2. In a belt-tightener, the combination of the pivoted arm, the journal-bearing carried thereby, the idle-pulley mounted in said journal-bearing, means for adjusting the bearings of said pulley so as to vary the angle at which it shall coöperate with the belt, the rod F pivoted to said arm, with the bracket E acting as a fixed abutment and guide-piece for the rod F, the nut $f^3$ on said rod, and the helical spring F′ surrounding said rod F and interposed between said bracket and nut, substantially as and for the purposes described.

3. In a belt-tightener, the pivoted supporting-arm H, provided with the clamping-face H′; the bracket E; the rod F, pivoted at one end to the supporting-arm, extending at the other through the bracket E; the spring F′; the thumb-nut $f^3$; the bearing-casting I, provided with the clamping-face I′, and with the bearing $I^3$; means for clamping the clamping-faces H′ and I′ in adjusted positions; and the pulley J mounted on an arbor $J^3$ in the bearing $I^3$, and adapted to bear against the said belt.

JOHN H. GILMAN.

Witnesses:
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