(No Model.) 2 Sheets—Sheet 1.

J. H. BRINGOLD.

BELT TIGHTENER.

No. 382,587. Patented May 8, 1888.

Fig. 1.

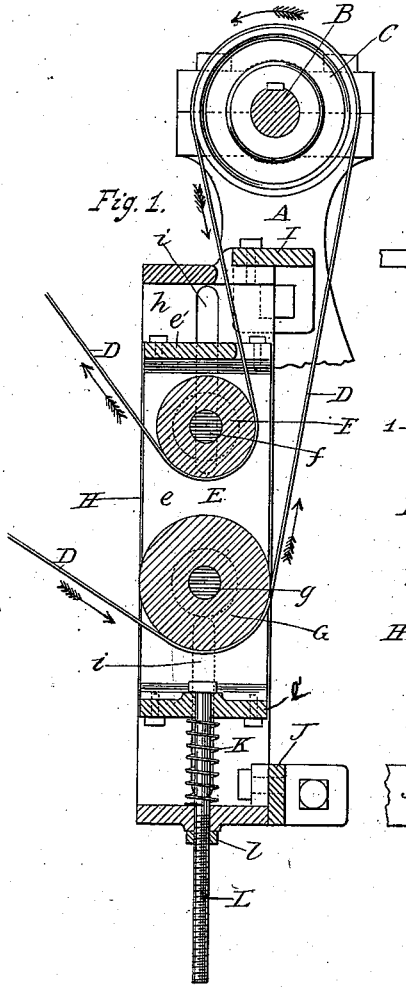


Fig. 2.

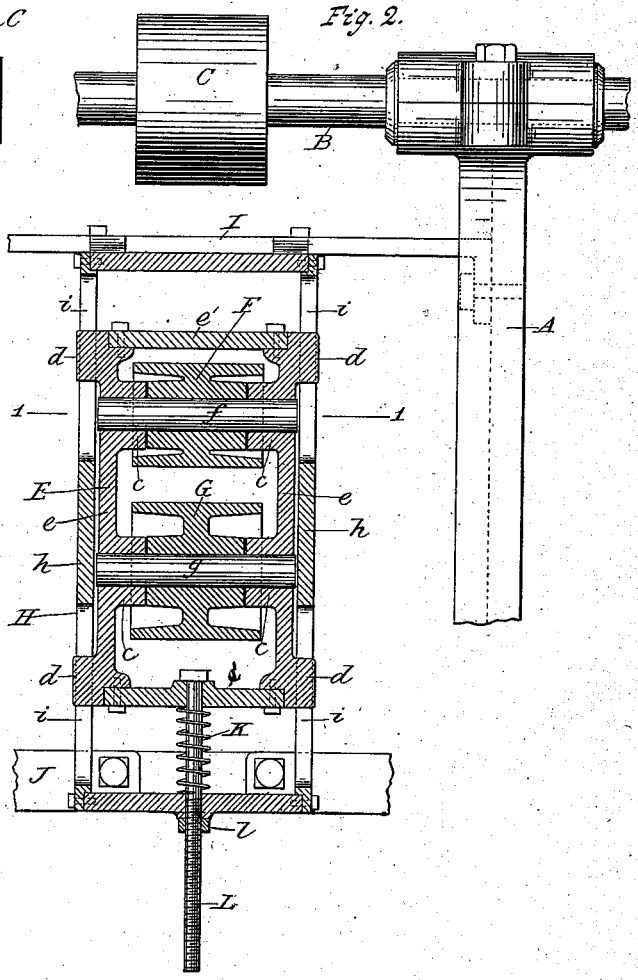
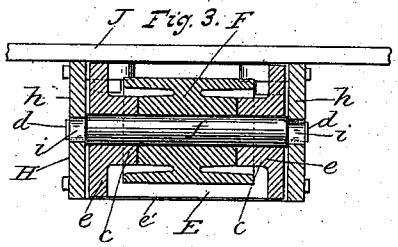


Fig. 3.



Witnesses:
Charles Wetherspoon.
Charles Seeseng.

John H. Bringold.
Inventor.
by his Attorney
Alex. Gilkinson.

(No Model.) 2 Sheets—Sheet 2.

J. H. BRINGOLD.

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Fig. 4.

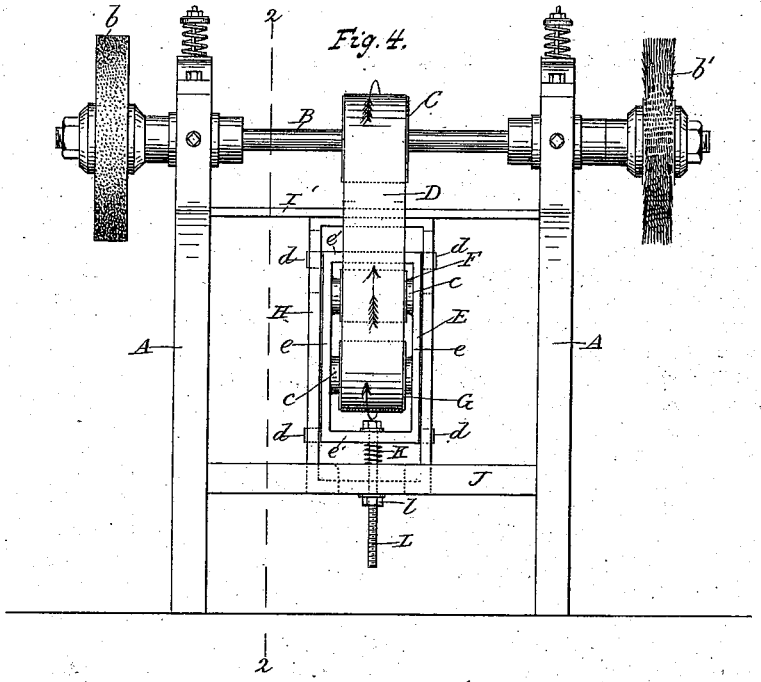
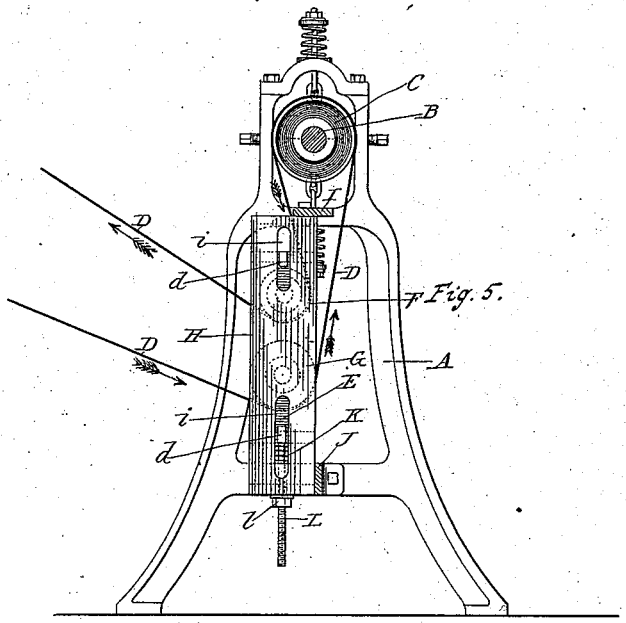


Fig. 5.



Witnesses:
Charles Wilkinson
Charles Breckinridge

John H. Bringold
Inventor.
by his Attys
Alex. Gilkinson.

UNITED STATES PATENT OFFICE.

JOHN H. BRINGOLD, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-HALF TO WILLIAM N. PERCY, OF SAME PLACE.

BELT-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 382,587, dated May 8, 1888.

Application filed July 19, 1887. Serial No. 244,783. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BRINGOLD, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Belt-Tighteners for Machines for Dressing Metals, of which the following is a specification.

My invention relates to improvements in belt-tighteners for machines which employ a revolving shaft for revolving a cutting or dressing wheel or device—as, for instance, for dressing the surfaces of metal plates or pieces; and it consists in the combinations of devices and parts hereinafter described, and specifically set forth in the claim.

The objects of my invention are, first, to provide in machines employing a shaft which is revolved in bearings which are fixed in relation to the main frame of the machine, and on which is mounted a driven pulley and a cutting or dressing wheel or device, a frame which is below the said shaft, and can at will be adjusted in a vertical direction toward or from the same, and be secured so as to hold two pulleys which are fixed in said frame from moving, and which operate to change the direction of the endless driving-belt after its portions or halves have been run downwardly from the driven pulley of the revolving shaft, so that the pull of the endless belt will be downwardly and in substantially a vertical line on the said shaft, with the said pulleys at all times reacting against any force which is applied to the periphery of the cutting or surface-dressing wheel or device in a line of direction at an angle to a vertical line through the axis of said wheel, and thereby cause the said wheel or device to revolve steadily without jumping; and, further, to provide a specific combination of devices and parts by which my improvement can be put into practice. I attain these objects by the means illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a sectional elevation of my improvements attached to a machine. Fig. 2 is a transverse sectional view of the same. Fig. 3 is a cross-sectional view taken at line 1 in Fig. 2. Fig. 4 is a side elevation, on a smaller scale, of a machine carrying an emery-wheel and a brush-wheel, and having my improvements connected therewith, the shaft of the machine being provided with yielding or elastic bearings. Fig. 5 is an elevation of the same, and illustrating my improvements connected therewith, and taken at line 2 in Fig. 4.

The same letters of reference refer to similar parts throughout the several views.

In the drawings, A represents the frame-work of an emery-wheel or brush-wheel, which frame can be of any known form of construction.

B is the revolving shaft which carries the emery-wheel *b* or wire brush-wheel *b'*, or both, or a buffing-wheel or equivalent wheel for dressing or finishing the surfaces of metal.

In Figs. 1 and 2 the machine is shown to be provided with an unyielding wheel-shaft, B, the shaft being held in rigid bearings. In Figs. 4 and 5 this shaft is shown to be supported in flexible or elastic bearings.

C is the driven pulley on shaft B, and is revolved by belt D, which is actuated by any suitable driving-wheel from a counter-shaft or other suitable shaft.

E is a pulley-frame, which consists in its essential parts or elements of the side pieces, *e e*, and end pieces, *e' e'*, and the bearings or boxes *c c*.

F and G are pulleys mounted on shafts *f* and *g*, respectively, which shafts have bearing in boxes *c c*. In practice I prefer to make the upper pulley, F, smaller than the lower pulley; yet these pulleys can be made of the same size.

The drawings, Figs. 2 and 3, show these pulleys F and G to be loosely mounted on their respective shafts *f* and *g*. While these shafts are themselves free to revolve in their respective bearings or boxes *c c*, yet, if desired, these pulleys can be fixed on their respective shafts, while the latter are free to revolve; or the pulleys can be loose to revolve while the shafts can be fixed. The bearings of these shafts *f* and *g* can be of any known form of construction, and be made with the side pieces, *e e*, or attached thereto.

H is a guiding-frame of any suitable form of

construction, which will be capable of being readily connected with the main frame of the machine and hold the pulley-frame E so that the pulleys F and G will be relatively below or beneath the pulley C on the shaft B. This guiding-frame is shown to be composed of the side pieces, *h h*, having in them slots *i i*, which extend in a vertical direction, so as to receive the tongues or projections *d d*, made with the side pieces, *e e*, of the pulley-frame E, for holding and guiding the latter. These pieces *h* are shown to be secured to the cross-bars I and J of the machine by bolts; yet they can be secured to the frame of the machine in any suitable manner.

K is a spring having sufficient strength to lift the pulley-frame E and its adjuncts. This spring is arranged between the pulley-frame E and the guiding-frame H, so as to raise the former in relation to the latter.

L is an adjusting set-bolt, provided with a head on one end and a screw-threaded nut, *l*, on the other, and made with a length sufficient to allow the frame E to be raised to its full height in relation to frame H. This bolt is shown to pass from above through the lower end bar, *e'*, of the pulley-frame E, and through spring K and the lower end bar of the guiding-frame H, with the nut *l* screwed on the lower portion of the bolt against the lower side of the lower cross-piece of frame H, as shown in Figs. 1 and 2. Yet, if desired, the spring K can be employed with the bolt L reversed, and provided with two nuts similar to nut *l*, with one of the nuts working upwardly against the lower side of the lower end piece, *e'*, of the pulley-frame E and the other on the upper side of the same.

When the guiding-frame H has been secured to the main frame of the machine and the pulley-frame has been placed in position in said guiding-frame, the pulleys F and G will be relatively below pulley C on the operating-shaft B, as shown. The nut *l* on the adjusting-bolt L will be loosened to allow the pulley-frame to be raised, and the belt D will pass from the counter-shaft pulley or wheel, or other suitable driving pulley or wheel, (not shown,) to the under side of lower pulley, G, and thence upwardly to and around pulley C on the operating-shaft B, and thence downwardly and on the lower side of the upper pulley, F, and thence to and around the driving pulley or wheel (not shown) or point of beginning, all substantially as indicated by arrows in Fig. 1. The operator will then tighten the pulleys F and G on belt D by means of the adjusting-bolt L and its nut *l*, which will be done by turning nut *l* in direction to draw the pulley-frame E downwardly in relation to its guiding-frame H, when the belt D will be made to pull tightly on pulley C on shaft B and cause the journals of the latter to lie close at the bottoms of their respective bearings or boxes, when the machine will be ready for operation.

In operation the belt D is pulled down on pulley C, and the shaft of said pulley is made to run or revolve rapidly without any jumping or tendency to jump when the pressure on the emery-wheel or brush-wheel or polishing-wheel is increased or lessened, which is of great advantage, as the journals of the wheel-shaft B will in all cases run at the bottoms of the bearings or boxes with a sufficient amount of elasticity between the belt and the several pulleys to prevent the shaft B being absolutely rigid. By this improvement the wheel-shaft B will revolve steadily when the bearings and journals become worn, and when used with elastically-supported wheel-shafts, as shown in Figs. 4 and 5, these improvements operate to hold that shaft B from having excessive lateral movement, so that the use of the side set-screws to limit such lateral movement of said shaft are obviated, and the shaft is made to run steady under great or less pressure on the wheels *b b'*.

In the rapid wear attending the journals and bearings or boxes of the shaft B in machines for grinding, polishing, or dressing surfaces of metal there is required to be expended a considerable amount of care and labor to keep these parts in repair and in condition to do ordinarily good work. By my above-described improvements the wear of those parts will not materially affect the working of the machine, and no particular care or attention is required to preserve in the machine the proper conditions of the revolving shaft B for producing the best of work or results.

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

The combination of the guiding-frame H, secured to the machine and provided with slots *i i*, the pulley-frame E, carrying pulleys F and G, and provided with projections *d d*, working in said slots, adjusting-bolt L, and spring K between said guiding-frame and the pulley-frame, with the pulley C of the wheel operating shaft B and the belt D, substantially as and for the purposes set forth.

JOHN H. BRINGOLD.

Witnesses:
ALEX. SELKIRK,
CHARLES SELKIRK.