

929,785.

2 SHEETS—SHEET 1.



Fig. 2.

Witnesses.
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Fig.3.

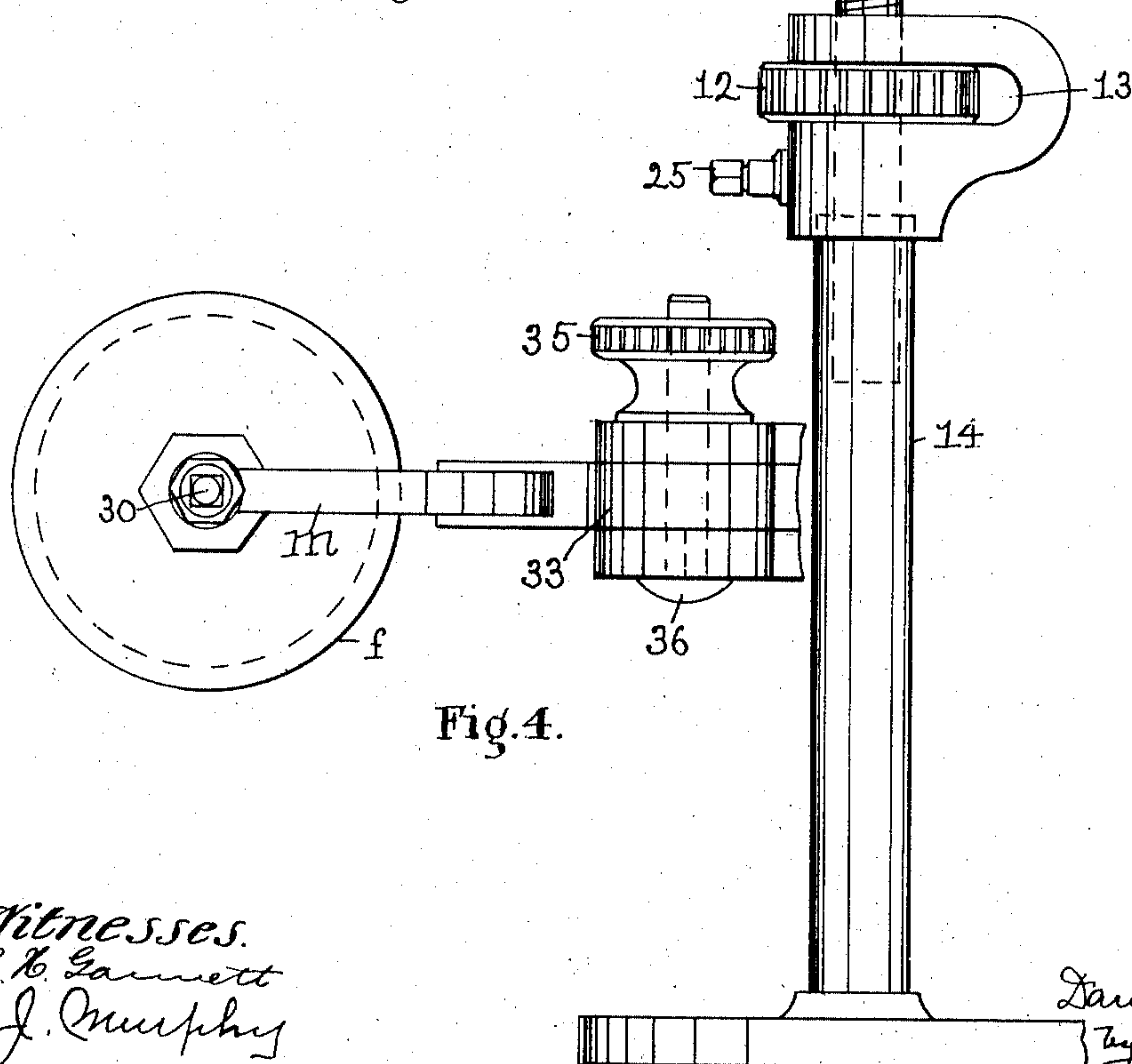


Fig.4.

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UNITED STATES PATENT OFFICE.

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SHARPENING APPARATUS.

No. 929,785.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed February 21, 1908. Serial No. 416,988.

To all whom it may concern:

Be it known that I, DANIEL P. O'BRIEN, a citizen of the United States, residing in Woburn, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Sharpening Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a novel sharpening apparatus or attachment for use on belt knife splitting machines.

The invention has for its object to provide a simple and efficient apparatus with which the belt knife is maintained in efficient condition. For this purpose, I employ a grinding or sharpening stone or device for acting on the edge of the belt knife, and positively rotate said device by a driving member, which in turn is frictionally driven by the belt knife.

The invention further consists in providing a simple and efficient support for the sharpening device and its driving member. Provision is also made for permitting the driving member and preferably also the sharpening stone to move so as to conform to any irregularities in the belt knife.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation with parts in section of an apparatus embodying this invention. Fig. 2, a detail in elevation looking toward the left in Fig. 1. Fig. 3, a partial elevation and section of a modification to be referred to, and Fig. 4, a detail in plan of the apparatus shown in Fig. 3.

Referring to Fig. 1, *a* represents the belt or band knife of a leather splitting machine, which may be of any suitable or desired construction and which is not herein shown, as it is unnecessary for a full understanding of the present invention, which relates more particularly to apparatus for sharpening the cutting edge of a knife *a*.

The apparatus referred to, consists essentially of a grinding, whetting or other sharpening disk *b*, which may be of stone or metal and is secured to a shaft *c* by a key *d* or otherwise, said stone being designed to engage the side of the knife *a*, shown in the present instance as the underside, and having a central cavity *e* for clearance. The disk *b* may be referred to as a whetstone, as in practice, it

will generally be used as a supplement to the ordinary grinding wheels, not shown, but which are common to belt-knife splitting machines.

The present invention has for its object to positively rotate the whetstone *b*, so as to subject one side of the cutting edge of the knife to the action of a stone which is positively driven by a driving disk or member *f*, which is secured to the shaft *c* to rotate therewith by the key *d* or otherwise, and which is driven by frictional contact with the opposite side of the knife *a*. The driving disk or member *f* is provided on its underside with a beveled surface *g*, which is engaged by the upper surface of the knife *a*, which latter is inclined with relation to the contacting surface of the whetstone *b*. The driving disk *f* is yieldingly held in engagement with the upper surface of the knife by a helical spring *h*, encircling the shaft *c* between the disk *f* and a nut *i* on said shaft, and the whetstone may also be yieldingly engaged with the opposite side of the knife by the helical spring *j* encircling the shaft *c* between the whetstone *b* and a nut *k*. The shaft *c* is mounted to turn in arms *m*, *n*, which may be separate from each other and pivoted between the arms *o*, *p*, of a fork attached to a supporting rod *r*, which is provided at its lower end with screw-threads 10 adapted to engage a nut 12 located in a transverse slot 13 formed in the upper end of a hollow standard 14. The pivoted arms *m*, *n*, may be secured to the forked arms *o*, *p*, in fixed relation thereto by thumb-nuts 16, 17 engaging the threaded end of the pivot pins 19, 20 for said arms. The arms *m*, *n* are capable of being turned after their clamping nuts 16, 17 are loosened, so as to adjust the whetstone *b* and the driving disk *f* to the knife *a*, and while said arms are thus loose, they are retained in engagement with the ends of the shaft by a helical spring 21, which is attached to one arm as *n*, and to a rod 22 extended through the other arm *m* and provided with an adjusting nut 23. The supporting rod 10 may be adjusted in its hollow standard 14 by the nut 12 and may then be firmly fastened in its adjusted position by the set screw 25. The shaft *c* may be provided with turning points 26 attached to the nuts *i*, *k*, and which enter sockets 27 in the arms *m*, *n*, as shown in Fig. 1, or it may be mounted to turn on centering screws 30 as shown in Fig. 3, wherein said screws are shown as extended through the

arms *m, n*, which in this case are joined together in the form of a yoke having an arm 33 extended substantially at right angles to the yoke at its center. The arm 33 is passed between ears 34 on the head of the rod *r* and is secured thereto by the nut 35 which engages the threaded end of the pivot pin 36 for the yoke. The threaded rod *r* is extended into the hollow standard 14, adjusted therein by the nut 12 and secured in its adjusted position by the set screw 25.

In both Figs. 1 and 3, the whetstone *b* as shown bears against the underside of a collar or flange 37 on the shaft *c* and rests upon a collar 38 keyed to the said shaft and provided with pins 39, which enter holes in the underside of the stone.

In operation, the sharpening device is adjusted to the belt knife after the manner shown in Figs. 1 and 3, with the driving disk *f* in contact with one side or surface of the knife and the stone *b* in contact with the opposite side or surface of said knife. As a result, the traveling knife turns the disk *f*, which in turn rotates the shaft *c* and the stone *b*, which latter is thus positively driven and acts on the knife to maintain its cutting edge in a most efficient condition. The driving disk *f* and the stone *b* are free to move in opposite directions on the shaft, to compensate for any irregularities in the surfaces of the knife.

Claims.

1. The combination with the belt knife of a leather splitting machine, of a sharpening device comprising a stone to engage one side or surface of the knife, a rotatable shaft on which said stone is mounted to rotate therewith, a driving member for said stone mounted on said shaft to rotate therewith and arranged on said shaft to engage the

surface of the knife opposite that with which said stone makes contact to cause the said stone to be positively driven by said knife, substantially as described.

2. In a sharpening device of the class described, in combination, a rotatable shaft, a sharpening disk mounted thereon to rotate therewith, a driving member mounted on said shaft to rotate therewith, one of said parts being movable longitudinally on said shaft independently of the other and means to yieldingly force the movable member toward the other member, substantially as described.

3. In a sharpening device of the class described, in combination, a rotatable shaft, a sharpening disk mounted thereon to rotate therewith, a driving member mounted on said shaft to rotate therewith, both of said parts being movable longitudinally on said shaft, and means to yieldingly force said parts toward each other, substantially as described.

4. In a sharpening device of the class described, in combination, a rotatable shaft, a sharpening member mounted thereon to rotate therewith and provided with a substantially central recess, a driving member mounted on said shaft to rotate therewith and provided with a beveled surface adjacent to said sharpening member and means to move said driving member longitudinally on said shaft with a yielding pressure, substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL P. O'BRIEN.

Witnesses:

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J. MURPHY.