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GRINDSTONE-FLANGE.

No. 867,965.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT J. FRINK, a citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Grindstone-Flanges, of which the following is a specification.

This invention relates to improvements in wood grinders, and is particularly adapted for holding grindstones of large dimensions as commonly used for grinding or reducing to a pulpy mass blocks of wood which are used in paper making. It has been found by experience in this class of devices that after the stone has become worn down nearly to the clamping flanges and it is then necessary to replace the old stone with a new one that the clamping flanges have become so firmly united to the grinder-shaft, because of rust and the great frictional resistance between the flanges and the stone, that it is often impossible to remove the stone without breaking it out and thus preventing its further use, as desired in smaller grinding machines. It is also sometimes necessary to break the flanges in order to remove them from the shaft, thus spoiling them for further use. It is understood in this class of structures that the grinder-shaft is provided with right and left-hand screw-threads for receiving the clamping flanges and when the stone is in use the rotary movement of the shaft is constantly exerting torsional strain to thread the flanges on the shaft and bring them solidly against the opposite sides of the stone. When it is attempted to unscrew the clamping flanges it is generally found that they have been turned up so firmly against the opposite faces of the stone that it is impossible to overcome the great frictional resistance existing between the stone and flanges, together with the rusted condition of the threads on the grinder-shaft. Such a state of affairs often makes it impossible to start the flanges away from the stone. The workmen are then obliged to destroy the old stone and sometimes the flanges also in order to free the grinder-shaft, thus materially increasing the cost of putting in a new stone.

By means of my improvement, it is possible to remove the old clamping flanges without breakage so that they can be used over and over again for a long time, and also to remove the old stone without breakage, permitting the same to be used in other places where it is very desirable and at a comparatively small cost.

The invention, broadly stated, consists in making the clamping flanges in two parts (preferably dividing the same on the diametrical line) each part being threaded so as to engage the grinder-shaft in the ordinary way; and, further, in providing a continuous ring or disk for uniting the two part flange into a solid structure; and, further, in providing means for readily removing the continuous ring from the two part flange; and, further, in placing a ring on the inner end of the hub of the two-

part flange after assembling the same, and means for readily removing this ring after the removal of the continuous ring so that each member of the divided flange can be readily separated from the grinder-shaft on the dividing line and the old stone can then be readily removed from the shaft in an unbroken condition.

In the drawings forming part of this application,—Figure 1 is an end elevation of the assembled parts of the hanger. Fig. 2 is a vertical sectional elevation on the line 2—2, Fig. 1. Fig. 3 is a view similar to Fig. 2 but showing the continuous rings or disks separated from the two-part clamping flange and also showing one of the two-part flanges removed from the shaft-hanger.

Referring to the drawings in detail, *a* designates the grinder-shaft proper which is provided with the usual right and left-hand threaded portions.

b and *c* designate respectively the two part members of the clamping flange and, preferably, are divided on the diametrical line indicated at *d*. In each part of the clamping flange is cut a thread for engaging the threaded portion of the grinder-shaft, as indicated at *e*.

f designates a suitable packing material that is placed immediately in contact with the stone *g* and against which the clamping flanges are forced for obtaining the usual cushioning and truing effect on the stone.

A recessed portion *h* is turned or cast in the outer face of the two-part clamping flange for receiving a continuous ring or disk *i*, the same being shown bolted in place in Fig. 2. The two-part clamping flanges *b*, *c*, and ring *i* are provided with registering openings *j* and *k* respectively for receiving the bolts *m* for holding together the two-part clamping flanges. The inner faces of the clamping flanges are provided with recessed portions *n* in order to permit the head *o* of the bolt *m* to lie flush with the inner face of the flanges, as shown. The clamping flanges are also provided on their inner faces with a hub portion *p* for engaging an annular cut-out portion *q* in the stone *g*.

The hub-portion *p* of the two-part flanges *b* and *c* is provided with an annular shoulder portion *r* for receiving a ring *s* for securely holding the inner ends of the hubs together and prevent any springing apart of the flanges at this point.

After the assemblage of the parts of the flanges,—that is by placing the ring *s* on the annular shoulder portion *r* and the ring *i* bolted to the members *b* and *c* of the two-part flanges, the stone *g* is placed in position on the grinder-shaft, suitable packings *f* having been placed against the opposite faces thereof, and the flange is screwed tightly against the packing *f* by means of a suitable wrench or lever.

u designates jack-screws that are threaded into the openings *v* of the ring *i*. These jack-screws are for the purpose of forcing the rings *i* away from the members *b* and *c* of the clamping flanges when it becomes neces-

sary to remove the same and hang a new stone, it being understood that the nuts s'' are first unscrewed from the bolts m ; then by turning the jack-screws u inward against the bottom of the recessed portion h the rings i will be forced outward free from the members b and c of the clamping flanges, as shown at the left of Fig. 3.

In order to drive off the ring s after the removal of the ring i , I provide a hole s' in each of the flanges b and c and located diametrically opposite each other, as shown. After the removal of the ring i , which normally closes the ends of the holes s' , rods t are inserted in the holes with their inner ends bearing against the ring s , as clearly shown in Fig. 3. Then, by means of light blows on the outer ends of the rods t , the ring s can be readily driven off from the inner end of the hub p . The cut-out portion of the stone is made deep enough to readily permit the ring s to be driven off the annular shoulder portion r of the hub p . This operation leaves the parts b and c so that they can be freely removed from the grinder-shaft a , there being sufficient space between the hub p and the annular cut-out portion q so that the parts b and c can be drawn radially away from the threaded portion of the shaft a without being obliged to rotate the same. This operation can usually be accomplished by slight blows on the parts b and c so that they will be freely disengaged from the threads of the shaft. They can then be drawn laterally away from the stone and parallel with the shaft. In this manner all of the clamping parts on both sides of the stone can be readily removed without danger of breaking the same, thus permitting a new stone to be hung and the same clamping parts used again; also permitting further use of the old stone in places where a small stone is desirable.

What I claim, is:—

1. In an improvement of the class described, a shaft, a two-part clamping flange for engaging said shaft, each part being provided with a recessed portion on its outer face, a continuous ring or disk for engaging said recessed portions, and means for connecting each part of the clamping flange to the ring.

2. In an improvement of the class described, a shaft, a

two-part clamping flange for engaging said shaft, each part being provided with a recessed portion on its outer face, a continuous ring or disk for engaging said recessed portions, and means for connecting each part of the clamping flange to the ring, said ring being provided with means for forcing the same out of the recessed portions when the means for connecting each part of the clamping flange to the ring is removed.

3. In an improvement of the class described, a shaft, a two-part clamping flange divided on the diametrical line and provided with a recessed portion on its outer face, a continuous ring element for engaging the recessed portion of each part, means for securing the ring and two-part clamping flange together, said ring being also provided with jack-screws for engaging the bottom of the recessed portion of each flange element whereby when the means for securing the ring and two-part clamping flange together are removed, the ring will be forced outward and the members of the two-part clamping flange may be removed from the shaft, as described.

4. In an improvement of the class described, a shaft, a two part flange for engaging the shaft, and having a hub on its inner side, and means on the hub for holding the two-part flange together.

5. In an improvement of the class described, a shaft, a two part flange for engaging the shaft, and having a hub on its inner side, and means on the hub for holding the two-part flange together, and means for removing the means on the hub.

6. In an improvement of the class described, a shaft, a two-part flange engaging the same and provided with a hub on its inner side, an annular shoulder on the hub, a ring for engaging the annular shoulder, and means for disengaging the ring from said shoulder.

7. As an article of manufacture, a two-part flange, each flange element having a recess, a ring for engaging the recess, each flange element also having a hub-portion, and means for engaging the hub portion for clamping the same together.

8. As an article of manufacture, a two-part flange, each flange-element having a recess, a ring for engaging the recess each flange element also having a hub-portion, and an opening extending from the recess to the hub portion, a ring engaging the hub-portion whereby when the ring for engaging the recess is removed, the ring on the hub portion may be removed, as described.

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Witnesses:

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