

(No Model.)

E. JAGGER.
STEP PROTECTOR FOR SPINDLES.

No. 517,573.

Patented Apr. 3, 1894.

Fig. 1.

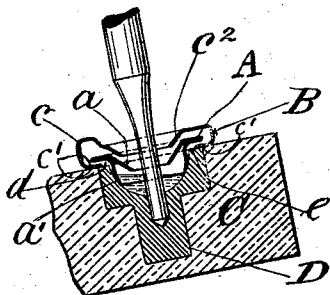


Fig. 3.

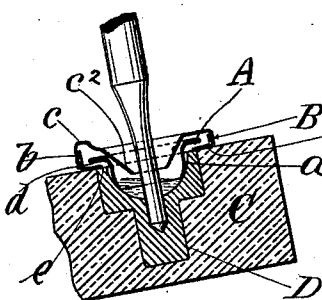


Fig. 5.

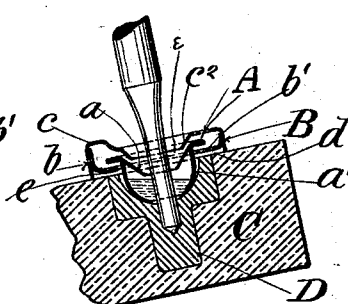


Fig. 2.

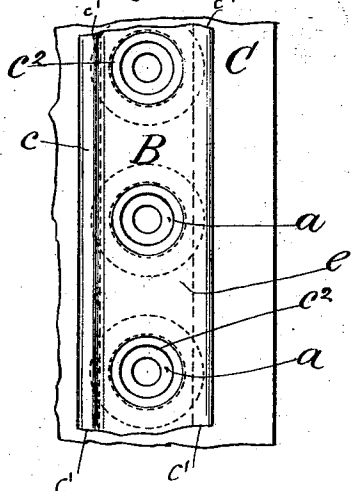


Fig. 4.

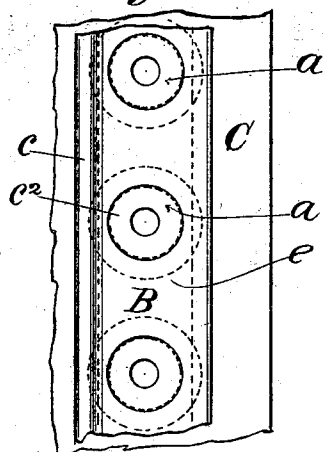


Fig. 6.

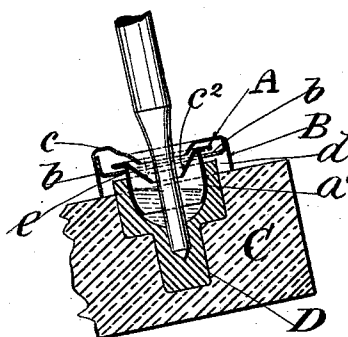


Fig. 7.

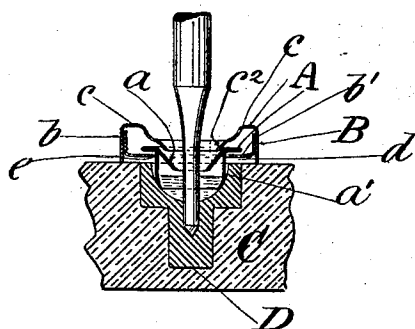
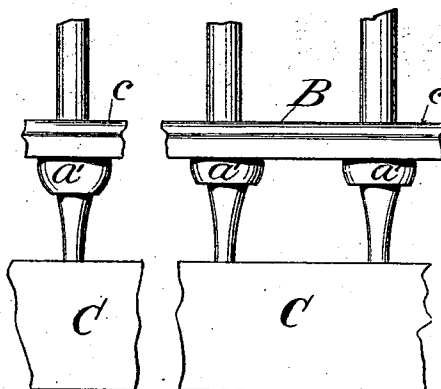


Fig. 8.



Witnesses.
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Stanley Bramall.

Inventor.
Eli Jagger.
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Attorney

UNITED STATES PATENT OFFICE.

ELI JAGGER, OF OLDHAM, ENGLAND.

STEP-PROTECTOR FOR SPINDLES.

SPECIFICATION forming part of Letters Patent No. 517,573, dated April 3, 1894.

Application filed September 29, 1892. Serial No. 447,308. (No model.) Patented in England September 18, 1891, No. 15,858.

To all whom it may concern:

Be it known that I, ELI JAGGER, a subject of the Queen of Great Britain, residing at Werneth, Oldham, in the county of Lancaster, Kingdom of Great Britain, have invented a new and useful Step-Protector for Spindles, (for which I have obtained a patent in Great Britain, No. 15,858, bearing date September 18, 1891,) of which the following is a specification.

My invention relates to means for protecting the foot steps of mule, twiner, and the like spindles for which Letters Patent No. 357,226, dated February 8, 1887, were granted to George Pickford and myself, and has for its object to prevent the step protectors from falling off the spindle rail and thereby getting lost, while at the same time they are more readily placed in position or removed, and permit of the spindle's being freely raised without disturbing the protectors and no loss of oil is caused in lubricating the same, as heretofore has been the case. I attain these objects by the means illustrated in the accompanying drawings, in which—

Figures 1, 3, 5, 6 and 7 are cross sections and Figs. 2 and 4 are respectively plans of various forms of my improved step protector in position on the spindle rail. Fig. 8 shows the same in a raised position.

Similar letters refer to similar parts throughout the several views.

In carrying out my invention and referring to Figs. 1 and 2, I combine a number of foot step protectors A (say about six) having an inverted shield *a* and rim *a'*, with a plate or frame B, which has a flange or bead *c* on one side and is adapted to rest loosely on the spindle rail C, the flange or bead *c* serving to prevent the oil from running over at the back of the spindle rail C and the plate or frame B to prevent the oil running around the protectors A, during the process of oiling the footstep D, as has been the case when employing protectors A without a plate or frame B. The step protectors A are held jointly in position in the plate or frame B either by two lips *c'* formed underneath near each edge thereof, see Figs. 1 and 2, or by a plate *b'*, (Figs. 3 and 4) having holes *e* through which the step protectors A project, and individually in every instance by countersunk holes or bevel flanges

*c*² projecting respectively from the face of the plate or frame B into the shield *a* of each protector A, in such a manner, that a small space is provided between the flange and lips *c'* and the step protector A which affords the latter some play in the plate or frame B sufficient to render the same laterally as well as vertically movable and cause them to adjust themselves individually to the steps D fitting inside the latter just as if not combined. Around the protector rim *a'* an air space *d* is provided, which prevents the oil being drawn out of the steps D by capillary attraction.

The plate or frame B, which I may form in two parts *b, b'*, suitably secured together, as shown in Figs. 3 and 4, say by solder, may be stamped out with a prolonged bevel flange *c*², which in this case has the double function of a protector shield, as well as retaining the protector rim *a'* in a comparatively concentric position therewith.

Another way of forming the plate or frame B in two parts *b, b'*, consists in forming holes *e* see Fig. 5, through the lower part *b'*, in size larger than those in the upper part *b* and that of the diameter of the rim *a'*, which holes *e* are adapted to receive the step protector rim *a'* loosely, while the holes *e* in the upper part *b* are respectively formed with a bevel flange *c*² as previously described, projecting into the foot step protector shield *a*. The rim *a'* and hole *e* and space aforesaid between the same and the two plate or frame parts *b, b'*, are of such a size as to give the protectors A laterally as well as vertically sufficient play, also to cause the same to accommodate themselves independently of each other individually to the foot steps D and spindles. By these means I form a footstep protector which, although covering a number of foot steps D with one protector plate or frame B, offers facility for the proper adjustment of each protector rim *a'* to its individual foot step D.

Fig. 6 shows the plate or frame B made suitably for raised foot steps D and Fig. 7 for frames with vertical spindles by forming it with a flange or bead *c* on each edge to prevent the oil running over on either side.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In protectors for footsteps for mule,

twiner and the like spindles the combination
of a number of foot step protectors A with a
plate or frame B, the protectors A being rendered
laterally as well as vertically movable
5 in the plate or frame B so as to facilitate the
manipulation and proper adjustment of each
individual protector A to its spindle footstep
D in the spindle rail C, substantially as set
forth.

10 2. In protectors for footsteps for mule,
twiner and the like spindles the combination
of a number of step protectors A with a frame
or plate B having a bead or beads c adapted

to keep the oil off the spindle rail C upon
which the said plate is placed and bevel flanges 15
c² projecting into the protectors A and adapted
to hold the latter in position and conduct
the oil into the foot steps D, substantially as
set forth.

This specification signed and witnessed 20
the 20th day of September, 1892.

ELI JAGGER.

Witnesses:

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STANLEY E. BRAMALL.