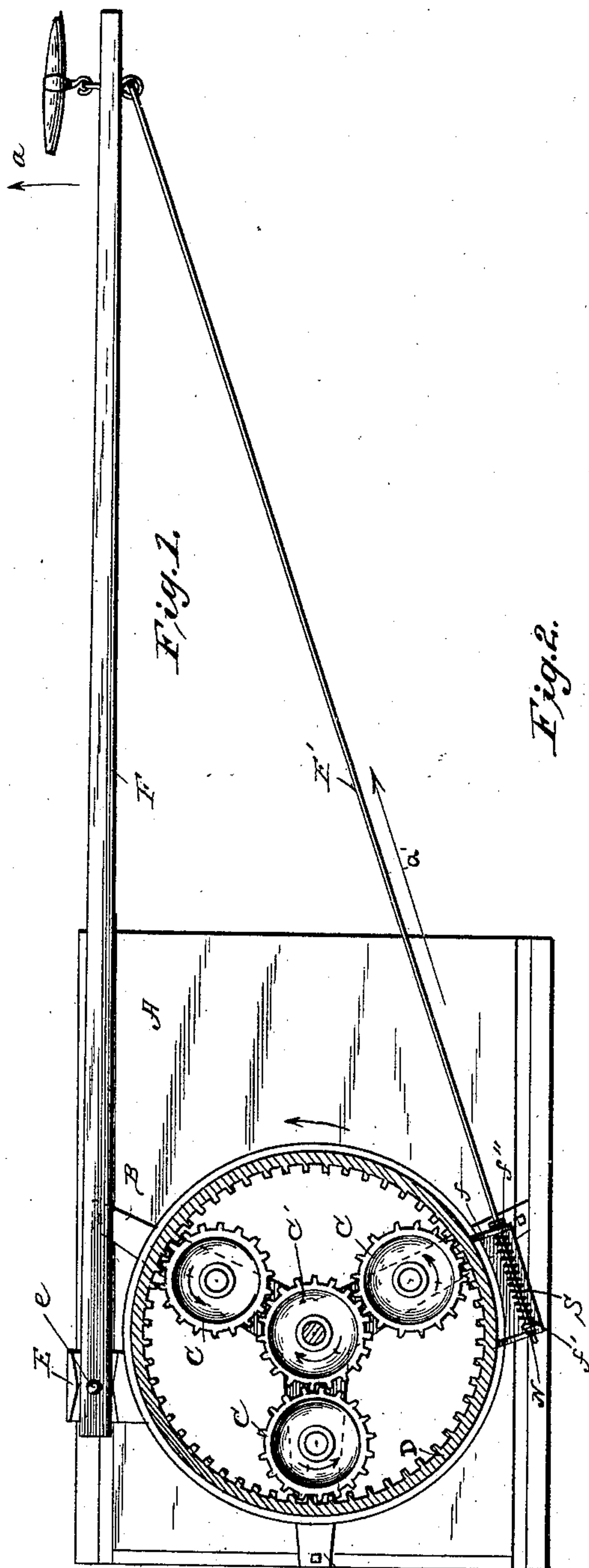


(No Model.)

W. S. LAMB & W. P. EMMERT.  
SWEEP ATTACHMENT FOR HORSE POWERS.

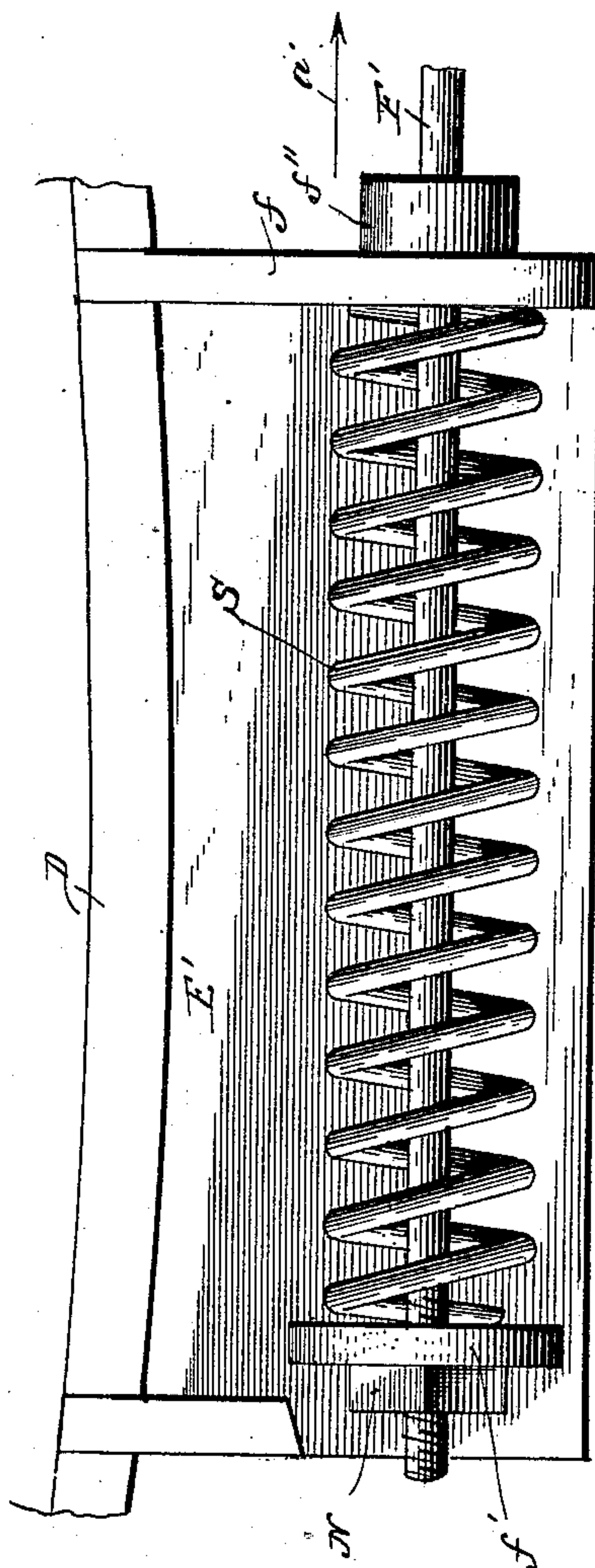
No. 428,615.

Patented May 27, 1890.



**WITNESSES:**

Harry S. Palmer.  
Lee F. Micey



***INVENTOR***

W. S. Lamb  
W. D. Emmert  
BY

BY

*Wiles & Greene,*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WILMER S. LAMB AND WILLIAM P. EMMERT, OF FREEPORT, ILLINOIS; SAID  
EMMERT ASSIGNOR TO SAID LAMB.

## SWEEP ATTACHMENT FOR HORSE-POWERS.

SPECIFICATION forming part of Letters Patent No. 428,615, dated May 27, 1890.

Application filed September 25, 1889. Serial No. 325,033. (No model.)

*To all whom it may concern:*

Be it known that we, WILMER S. LAMB and WILLIAM P. EMMERT, residents of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Sweep Attachments for Horse-Powers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to improvements in sweeps for grinding-mills, and is fully described and explained in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a view partly in top plan and partly in horizontal section illustrating a mill provided with our improved sweep. Fig. 2 is a top plan of a portion of the brace-rod forming a part of the sweep and the parts connecting the brace-rod with the rotating element of the mill.

In the views, A is the ordinary base or box on which feed-grinding mills are usually mounted, and B is a three-armed base-plate resting on and secured to the box. C C C are three pinions pivoted to the base-plate at points equidistant from its center, and C' is a gear pivoted at the center of the base-plate and engaging the three gears C C C.

D is the internally-gearied rim of a rotating grinding-shell, the shell being supported by suitable means resting on the base-plate and its internally-gearied margin being in engagement with the three gears C C C. In the mill of which these parts are elements a grinding-cone (not shown in the drawings) is fastened to the central pinion C', and the rotation of the shell in the direction indicated by the arrow on its periphery rotates the cone in the opposite direction through the movement of the pinions C' C indicated by the arrows on their respective faces.

The details of construction thus far enumerated are not essential to our invention, but are merely shown as parts of a grinding-mill having a rotating element (which in this case is the shell D) adapted to be turned by means of sweeps fastened to it, and any other form of mill embodying such rotating element

would be equally adapted to be combined with our invention, which is hereinafter explained and described.

The shell D is provided with two oppositely-placed lugs E E', a sweep-bar F being pivoted to the lug E by a bolt e, or otherwise. On one side of the free end of the sweep is fastened any suitable device for the attachment of a horse or horses, and from the opposite side thereof a brace-rod F' extends to the lug E', in a line oblique to the sweep-bar F. The outer end of the rod F' is suitably fastened to the sweep-bar and its inner end is fastened to the lug E' in any way adapted to offer a yielding resistance to tensile strain upon the brace-rod. This fastening may have various forms, but that shown in the figure is simple, substantial, and compact, and clearly illustrates our invention. In this construction f is a vertical flange formed on the margin of the lug E'. f' is a washer encircling the brace-rod near its end and adjustable by means of a nut N on the screw-threaded end of the rod. S is a coiled spring encircling the rod and interposed between the flange f and the washer f', and f'' is a collar rigidly fastened to the brace-rod and lying against the outer face of the flange f, whereby any desired tension may be put upon the spring S, when the brace-rod is free from tensile strain. If power be applied to the free end of the sweep to move it in the direction indicated by the arrow a of Fig. 1, the effect is to strain the brace-rod in the direction indicated by the arrow a', Figs. 1 and 2, and to compress the spring S, which thus forms a cushion interposed between the sweep and the rotating element of the mill. In practice, with a sweep of ordinary length and a spring affording such resistance as we believe to be best adapted for the purpose, we have found that the force required to start a two-horse grinder compresses the spring about two inches, the free end of the sweep having moved about twelve or fourteen inches before the rotating element of the mill begins to turn. The force applied to the sweep is thus opposed by a yielding resistance, and the impulse applied to the sweep is not accompanied by any shock either to the sweep or the team. The consequence is that a comparatively light sweep-bar may be used with-



out any danger of breakage, and we have found, in fact, that a sweep having the construction shown and described is much less liable to break than the rigid sweep having 5 double the material.

The special means shown for making a cushioned connection of the rod  $F'$  to the lug of the grinding-shell may evidently be varied without affecting the principle or operation of 10 our invention, and we desire, therefore, not to limit the invention to the forms shown; but,

Having now described and explained it, what we claim as new, and desire to secure by Letters Patent, is—

15 1. The combination of the rotating element of a mill provided with oppositely-placed marginal lugs, a sweep-bar pivoted to one of said lugs, a brace-rod extending from the free end of the sweep-bar to the other lug, and a spring- 20 connection interposed between the brace-rod and said second lug and offering a yielding resistance to tensile strain upon the brace-rod, substantially as and for the purpose set forth.

25 2. The combination, with the rotating shell  $D$ , provided with the lugs  $E E'$ , of the sweep-bar  $F$ , pivoted to the lug  $E$ , a brace-rod  $F'$ , extending from the free end of the sweep-bar to the lug  $E'$ , and a spring interposed between a washer  $f''$  on the brace-rod and a flange  $f$  on 30 the lug  $E'$ , and adapted to be compressed by tensile strain upon the brace-rod, substantially as and for the purpose set forth.

3. The combination of the shell  $D$ , having lugs  $E E'$ , the sweep-bar  $F$ , pivoted to the lug  $E$ , the brace-rod  $F'$ , extending from the free 35 end of the sweep-bar to the lug  $E'$ , the spring  $S$ , interposed between the flange  $f$  on the lug  $E$  and the washer  $f''$  on the brace-rod, and a nut  $N$ , engaging the screw-threaded end of the brace-rod and adapted to adjust the 40 washer  $f''$  upon the rod and hold it in position, substantially as and for the purpose set forth.

4. The combination, with the rotating element of a mill having oppositely-placed lugs  $E E'$ , of a sweep-bar  $F$ , pivoted to the lug  $E$ , a 45 brace-rod  $F'$ , attached at one end to the sweep-bar and at its other end passing through a flange  $f$  on the lug  $E'$ , a nut  $N$ , engaging the screw-threaded end of the brace-rod, a spring  $S$ , interposed between the nut  $N$  and the inner 50 face of the flange  $f$ , and the collar  $f''$ , rigidly fastened to the brace-rod and normally in contact with the outer face of the flange  $f$ , whereby the tension of the spring  $S$  may be readily adjusted by turning the nut  $N$ , substantially as 55 and for the purpose set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

WILMER S. LAMB.

WILLIAM P. EMMERT.

Witnesses:

ROBT. H. WILES,

J. A. CRAIN.