

(No Model.)

G. W. BORROWE & G. H. WINSLOW.
CAM.

No. 586,417.

Patented July 13, 1897.

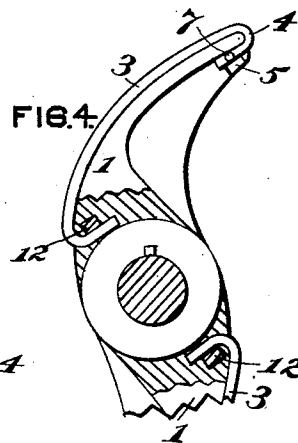
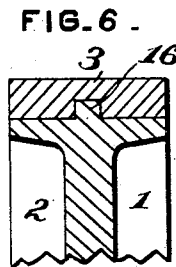
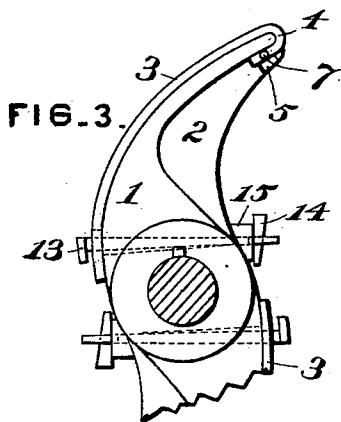
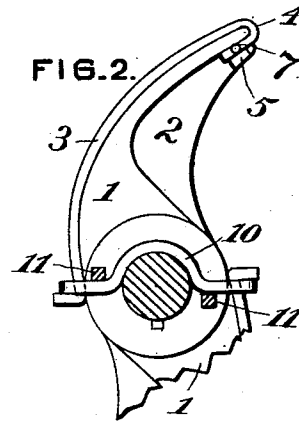
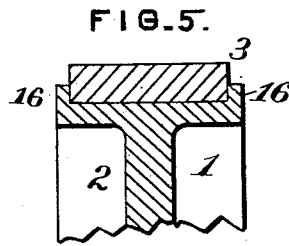
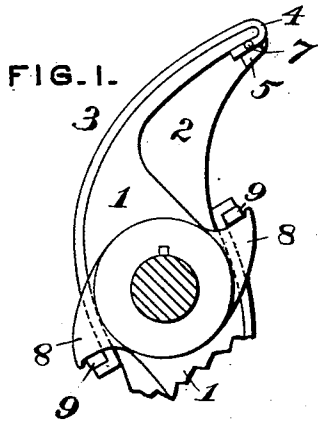
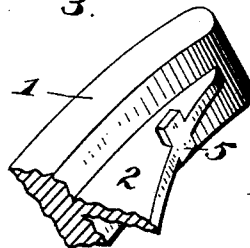
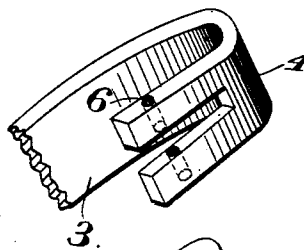


FIG. 7.



WITNESSES:

Danvers B. Wolcott
Chas F. Miller.

INVENTORS:

George W. Borrowe
George H. Winslow
by George N. Christy
Att'y.

UNITED STATES PATENT OFFICE.

GEORGE W. BORROWE, OF BODIE, CALIFORNIA, AND GEORGE H. WINSLOW,
OF PITTSBURG, PENNSYLVANIA.

CAM.

SPECIFICATION forming part of Letters Patent No. 586,417, dated July 13, 1897.

Application filed March 22, 1894. Serial No. 504,607. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. BORROWE, residing at Bodie, in the county of Mono and State of California, and GEORGE H. WINSLOW, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented or discovered certain new and useful Improvements in Cams, of which the following is a specification.

The invention described herein relates to certain improvements in cams, especially to that class or kind employed for operating the stamps in a stamping-mill. These cams are usually made of cast iron or steel and become worn and flattened at the point or highest portion, so that the stamp is not raised to the required height, and a considerable increase in power is required to operate the stamps on account of the increase of the angle of impact of the cam against the tappet. Hence it is necessary for an economical operation of the mill that the cams should be removed as soon as they become worn to any considerable extent and a new one inserted.

As the stamping-mills are usually constructed a series of these cams are keyed on the same shaft. Hence in order to remove a worn cam it is frequently necessary to remove two or more which are in good condition. This operation requires considerable time and labor and the driftways in the shaft are liable to be injured, thus necessitating their repair.

The object of the present invention is to construct the cams with removable wearing-faces or shoes which can be easily and quickly removed and new ones placed in position without removing any of the other cams or their shoes. In general terms the invention consists in the construction and combination substantially as hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view in side elevation of a portion of a double cam having our improvement applied thereto. Figs. 2, 3, and 4 are similar views illustrating certain modifications in the means for securing the inner end of the shoe to the cam. Figs. 5 and 6 are transverse sections of the

cam, illustrating different means for holding the shoes as against lateral movement; and Fig. 7 shows perspective views of the outer ends of the cam and shoe.

In the practice of our invention the cam, as regards the wings 1, is constructed in the usual manner, having broad bearing-faces and strengthening ribs or webs 2. The shoes 3, which are preferably formed of steel, are provided with hooks 4, adapted to engage the points or toes of the cam, such hook portion being slotted to pass on opposite sides of the webs 2. In order to prevent any straightening of the hooks, ears 5 are formed on opposite sides of the web and project over the ends of the hooks. In lieu of employing ears on the web for holding the ends of the hooks in position holes 6 may be formed through the prongs of the hooks and pins 7 passed through said holes and a correspondingly-located hole in the webs.

In the construction shown in Fig. 1 projections 8, having hooks or lugs at their outer ends, are formed on the hub of the cam, and the inner ends of the shoes pass between these projections and are held in position by wedges 9, passing between the outwardly-turned ends of the shoes and the projections and also between the shoes and the hooks or lugs on the projections. By driving the wedges in the shoes are not only held firmly against the faces of the cams, but drawn tightly along such faces. In case of any stretching of the shoes the wedges may be driven in farther, thereby causing the shoes to again hug the faces of the cam tightly.

In the construction shown in Fig. 2 the bent ends of the shoes engage the ends of a bar 10, passing transversely across the hub of the cam and between pins 11, inserted in holes in the hub. By making these pins with wedge-like heads the shoes may be drawn tightly against the faces of the cam.

As shown in Fig. 4, the inner ends of the shoes are bent so as to be projected into recesses formed in the wings 1 near their junction with the hub and the shoes caused to fit tightly against the faces of the wings by wedges 12, arranged in grooves in the wings transversely of the ends of the shoes.

In the construction shown in Fig. 3 the

shoes are drawn firmly against the faces of the cams by a wedge-like pin 13, passing through the shoes and the wings 1. The holes through the wings and shoes are made somewhat larger than the wedges, so as to permit the wedges to be driven in, and the holes in the shoes are so located with reference to those in the wings that when the wedges are driven in the shoes will be drawn tightly against the faces of the wings. The pin 13 is held in position by a key or cotter 14, which is made in the form of a wedge, so that by driving in the cotter the pin 13 may be drawn in. In order to provide a firm bearing for the key 14, a washer 15, having one face shaped to fit the curved surface of the cam, while the opposite face is made straight, is interposed between the key and cam.

As shown in Figs. 5 and 6, the shoes may be held from lateral movement on the faces of the wings 1 by ribs 16, formed along the edges of the wings, or by a single central rib, the under faces of the shoes being grooved for the reception thereof. While the ribs 15 are not essential to prevent lateral movement of the shoes, as they are held by the fastening at each end, it is desirable in some cases to employ the ribs to prevent strain on the fastening devices.

We claim herein as our invention—

1. The combination of a cam, a removable shoe or wearing-plate, and means for locking the shoe to the cam and constructed to take up any stretch or elongation of the shoe, substantially as set forth.

2. The combination of a cam having two

wings or operative portions, wearing-plates or shoes provided with hooks for engaging the ends of the wings, and means for adjustably securing the opposite ends of the shoes in position, substantially as set forth.

3. The combination of a cam having two wings or operative portions, wearing-plates or shoes provided with hooks for engaging the ends of the wings, locks for holding the hooks in position, and means for adjustably securing the opposite ends of the shoes in position, substantially as set forth.

4. The combination of a cam having wings or operative portions, wearing-plates or shoes provided with hooks for engaging the ends of the wings, wedge-like pins for drawing the shoes against the faces of the wings, and keys for drawing the pins in, substantially as set forth.

5. The combination of a cam having two wings or operative portions, wearing-plates or shoes provided with hooks for engaging the ends of the wings, and wedges engaging the wings and projections on the opposite ends of the shoes, substantially as set forth.

In testimony whereof we have hereunto set our hands.

GEORGE W. BORROWE.
GEORGE H. WINSLOW.

Witnesses as to George W. Borrowe:
R. C. TURNER,
C. F. HECTOR.

Witnesses as to George H. Winslow:
F. E. GAITHER,
DARWIN S. WOLCOTT.