

(No Model.)

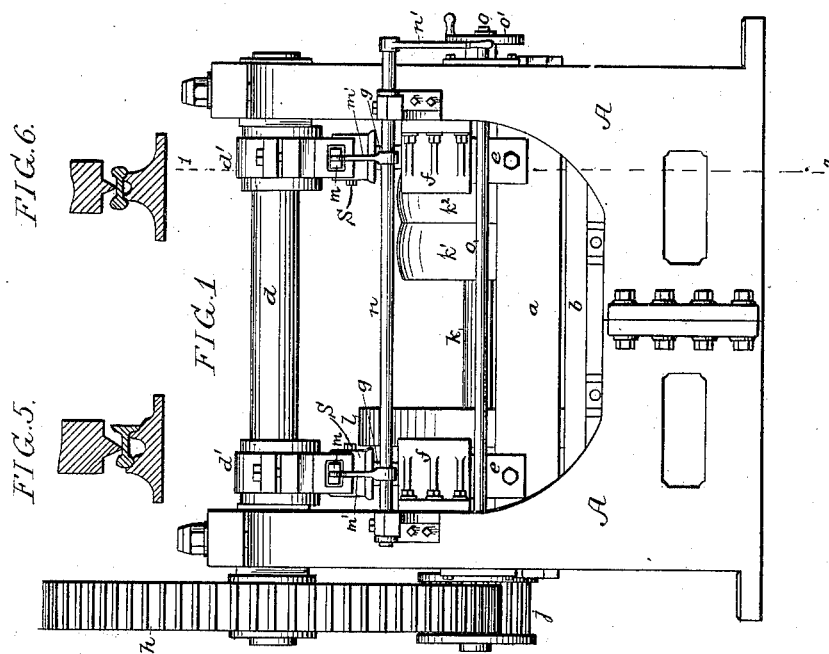
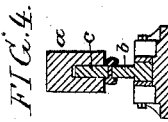
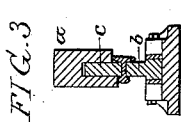
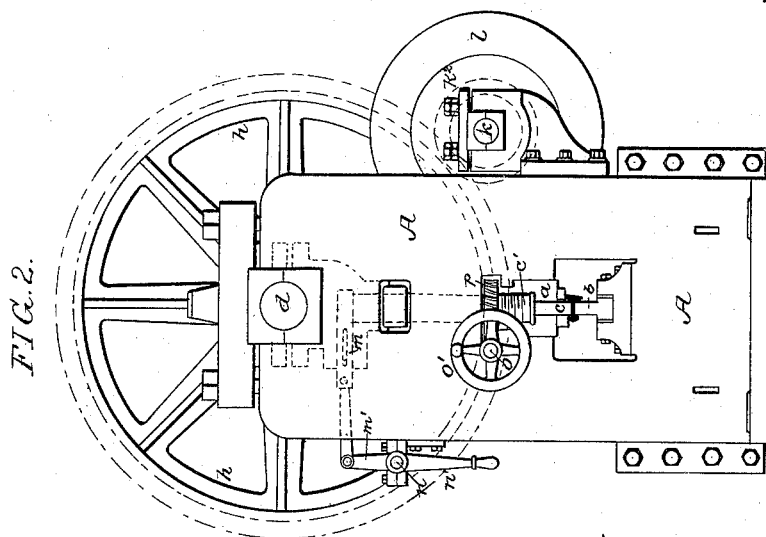
2 Sheets—Sheet 1.

A. & R. HILL & C. M. BEVAN.

RAIL BREAKING MACHINE.

No. 344,735.

Patented June 29, 1886.



Witnesses:
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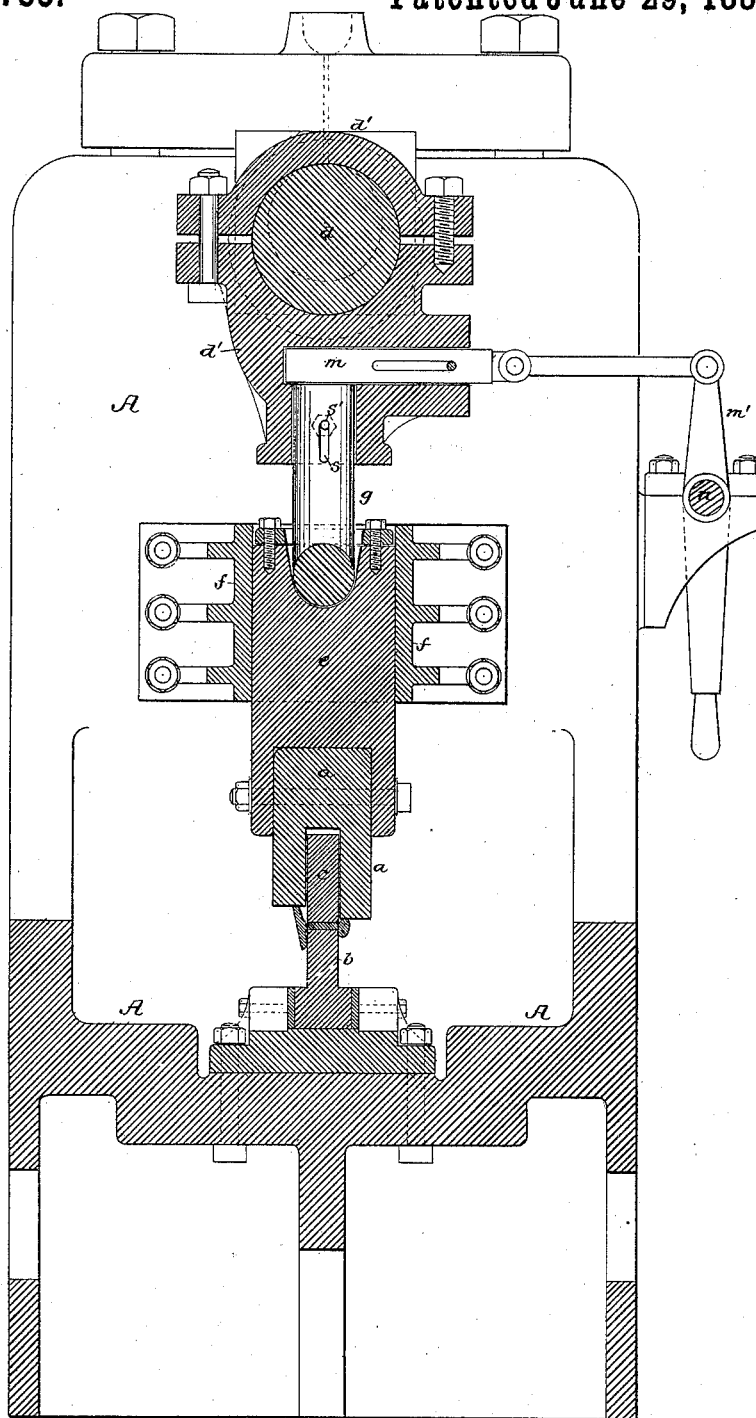
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FIG. 7.



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UNITED STATES PATENT OFFICE.

ALFRED HILL, RICHARD HILL, AND CYRIL MOUNTAIN BEVAN, OF MIDDLESBOROUGH, COUNTY OF YORK, ENGLAND.

RAIL-BREAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,735, dated June 29, 1886.

Application filed April 30, 1885. Serial No. 163,956. (No model.) Patented in England May 23, 1884, No. 8,151.

To all whom it may concern:

Be it known that we, ALFRED HILL, RICHARD HILL, and CYRIL MOUNTAIN BEVAN, wire-manufacturers, subjects of the Queen of Great Britain and Ireland, and residing at Middlesborough, in the county of York, England, have invented certain Improvements in Machinery or Apparatus for Dividing Rails into Longitudinal Strips or Sections, (for which we have made application for patent in Great Britain, No. 8,151, dated May 23, 1884,) of which the following is a specification.

Our invention consists of a machine for dividing rails or rail ends into longitudinal sections suitable for the manufacture of wire or for other analogous purposes.

The rails or rail ends to be split are first nicked along the desired line of fracture and are then broken into longitudinal strips or sections by means of our improved machine, hereinafter described.

In the accompanying drawings, Figure 1 is a side view, and Fig. 2 is an end view, of a machine embodying our invention. Fig. 3 is a detached sectional view showing a flat-bottomed rail fixed in position between the breaker and anvil, to be broken into three longitudinal strips or sections. Fig. 4 is a similar sectional view illustrating a modification of the breaker for dividing double-headed rails into three longitudinal strips or sections; and Figs. 5 and 6 are similar sectional views, drawn to a larger scale, and showing the form of breaking apparatus adapted for splitting rails into two longitudinal strips or sections when the intended line of division is taken along the web. Fig. 7 is a vertical sectional view, drawn to an enlarged scale, on the line 1 2, Fig. 1.

Our improved splitting or breaking device may be operated by any suitable mechanism, but we prefer the construction illustrated in Figs. 1, 2, and 7, in which A is the frame of the machine carrying on the bed a longitudinal anvil, *b*. Above this anvil is carried the breaker *a*, which in these figures is shown as of a construction for breaking flat-bottomed rails into three strips or sections, as illustrated also in the sectional view, Fig. 3. This breaker-bar *a* has two wings, between which we prefer to ar-

range an adjustable holding-down bar, *c*, for securing the rail in position while undergoing the operation of breaking.

The breaker-bar *a* is in the present instance suspended from the shaft *d* through the medium of motion-bars *e*, securely fixed to the breaker-bar *a* and guided by plates *f*, secured to the frame. The motion-bars *e* are connected by bars *g* to straps *d'*, working on cams, eccentrics, or their equivalents on the shaft *d*. Rotary motion is imparted to the shaft *d* through the medium of a spur-wheel, *h*, carried by the shaft and geared into the pinion *j*, keyed to the end of the driving-shaft *k*, the latter being provided with fast and loose pulleys *k'* *k''*, and a suitable fly-wheel, *l*, so that when a rapid rotary motion is imparted to the shaft *k*, a slow rotary motion of great power is imparted to the shaft *d*, and is converted into a reciprocating motion to operate the breaker-bar *a*.

When a rail is laid upon the anvil *b*, and reciprocating motion is imparted, as described, to the breaker-bar *a*, the rail will be fractured in a manner which will be readily understood. A similar result will be obtained by reversing the device and mounting the anvil on the moving part of the machine while the breaker-bar *a* is fixed, the rail in this case being brought up by the anvil to the fixed breaker to be split.

The preliminary nicking of the rails on the lines on which they are to be split is preferably carried out in a separate machine; but the mechanical parts requisite for each operation may be combined and worked from one source of motive power, or may form parts of one machine or apparatus. The rails or rail ends may be nicked on one or both sides along the intended lines or line of fracture to the usual depth, according as the rail is soft and tough or hard and brittle.

In order to impart breaking-pressure from the shaft *d* to the reciprocating breaker-bar *a* only when required, or at the will of the attendant, the straps *d'* are slotted for the reception of chucks *m*, intervening between the ends of the connecting-rods *g* and the straps *d'*, so that when these chucks are withdrawn and a block or other device introduced be-

tween the breaker-bar and the anvil *b*, the connecting-rods *g* and consequently the breaker-bar will not receive reciprocating motion, although the shaft *d* will continue to rotate.

5 A lifting connection of any suitable character may be made between the connecting-rod *g* and the straps *d'*, and in the drawings I have shown screw-studs or pins *s* fitted into the straps and adapted to vertical slots *s'* in
10 the connecting-rods, so that when the chucks *m* are returned to the position shown in Fig. 7 the studs will be at the upper ends of the slots, and the connecting-rods with the breaker-bar will then be compelled to reciprocate
15 with the straps *d'*.

We prefer to connect the chucks *m* by links or arms *m'* on a horizontal shaft, *n*, mounted in bearings in the fixed frame, and provided at one end with a handle, *n'*, by operating
20 which both chucks may be simultaneously inserted or withdrawn.

The holding-down bar *c* is carried by screws *c'* at each end of the frame, which screws, and consequently the bar *c*, may be raised and lowered by means of a worm-wheel, *p*, into which
25 gear worms on a transverse shaft, *o*, provided with a hand-wheel, *o'*, so that by turning this hand-wheel the bearing-down bar *c* may be raised or lowered.

30 By modifying the construction of the breaker-bar, as shown in Fig. 4, double-headed rails may be broken into three longitudinal strips or sections, and in the modifications shown in

Figs. 5 and 6 we have shown a construction for breaking the rails into two longitudinal
35 sections, the holding-down bar in this case being dispensed with, while both anvil and breaker-bar are modified somewhat in shape.

We claim as our invention—

1. The herein-described apparatus for breaking or dividing rails longitudinally, said apparatus consisting of a longitudinal anvil to receive the rail, and a corresponding longitudinal breaker-bar to act upon the rail in the direction of its length, and operating mechanism, substantially as described.
40 45

2. The herein-described apparatus for breaking or dividing rails longitudinally, said apparatus consisting of a longitudinal anvil to receive the rail, a breaker-bar for bearing
50 upon the rail in the direction of its length, and a holding-down bar to bear upon the web of the rail, and operating mechanism, substantially as described.

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

ALFRED HILL.
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CYRIL MOUNTAIN BEVAN.

Witnesses:

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