

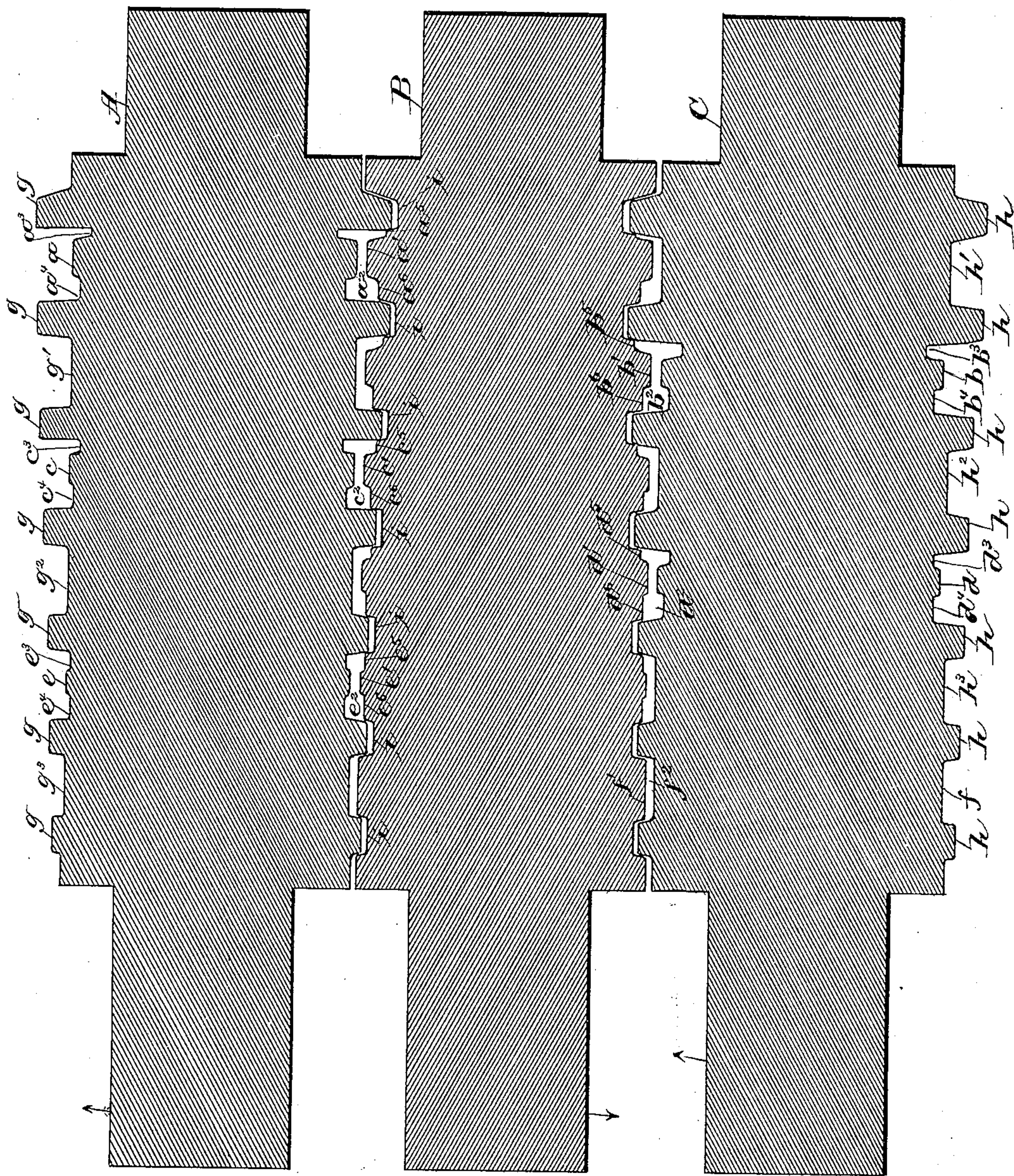
(No Model.)

J. H. BROWN.

ROLL FOR REDUCING OLD RAILS.

No. 333,385.

Patented Dec. 29, 1885.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN H. BROWN, OF BAY VIEW, WISCONSIN.

ROLL FOR REDUCING OLD RAILS.

SPECIFICATION forming part of Letters Patent No. 333,385, dated December 29, 1885.

Application filed September 14, 1885. Serial No. 177,023. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BROWN, of Bay View, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Breaking-Down Rolls for Rolling-Mills; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to a system of utilizing old steel rails of any length, from a broken piece a foot long to a full-length thirty-foot rail, whereby they are "broken down" and converted into merchant steel of square-edged flats without showing any seam whatever; and the said invention consists, primarily, of three rolls having peculiar conformations on their circumferences, whereby this object is accomplished.

The drawing is a vertical central section of my improved breaking-down rolls.

Heretofore the utilization of old steel rails has been attempted, and what are known as "billets" have been made therefrom consisting of square bars of steel; but, so far as known to me, these billets have shown seams where the flanges of the rails had been broken down against the web or stem in the formation of the billet, and this is a serious objection, to obviate which my present invention is devised. Another system is to cut a rail into three parts by separating the flange and the head (or "tread") by cutting from the web or stem; but this leaves the old rail in three pieces, whereas with my invention all of the metal of the old rail is utilized in the formation of the flat, and that, as stated, without showing any seam.

My breaking-down rolls are three in number, A, B, and C, and the rolls A and C are geared so as to revolve in the same direction, while the roll B, intermediate therewith, is geared so as to revolve in the opposite direction, as indicated by the arrows, the train of gears for accomplishing this object being of the well-known and ordinary construction common to rolling-mills, and hence I have not deemed it necessary to show the same in the drawings.

The roll A is provided on its operative part between its journals with seven circumferential guiding-collars, $g g g$, &c., of different and gradually-diminishing diameters from one end toward the other, as shown. Between the first two of these guiding-collars $g g$ is an operative

collar, a , while the space between the second and third guiding-collars $g g$ (as shown from right to left in the drawings) is a blank or even surface, g' , and so on, the blank even spaces $g' g^2 g^3$ alternating with the operative collars a , c , and e , while on each side of said operative collars are circular depressions or circumferential grooves of different depths, marked, respectively, $a^3 a^4$, $c^3 c^4$, and $e^3 e^4$, the said pairs of grooves growing, generally, shallower from right to left, as shown.

The roll B is provided with seven deep circumferential guiding-grooves, $i i i$, &c., to admit of the guiding-collars $g g$ of the upper roll, A, revolving therein, and consequently these grooves $i i$ grow shallower from right to left, corresponding with the decreasing diameters of said collars $g g$. Between the first and second grooves $i i$ (always counting from right to left) are other and shallower grooves, $a^5 a^6$, (of different depths,) having between them the (relatively) raised portion a' , of the same diameter as that of each end of said roll B. Between the second and third grooves $i i$ are the grooves $b^5 b^6$ and intermediate higher portion, b' , of same diameter as the portion a' , just described, and so on, the roll being provided between others of its grooves $i i$ with the grooves $c^5 c^6$, $d^5 d^6$, and $e^5 e^6$, and intermediate portions c' , d' , and e' , respectively, up to the point between the last two of the guiding-grooves $i i$, which is free from other grooves, but has the level portion f' only.

The roll C is more nearly a counterpart of the roll A, except that the arrangement of its collars and its circumferential grooves and blank or even spaces is alternate with relation to the position of the like parts in said roll A. It has seven guiding-collars, $h h$, &c., corresponding to the said guiding-collars $g g$ of roll A, three smooth or even surfaces, $h' h^2 h^3$, and an extra even surface, f , at the left-hand end, (between the last two guiding-collars $h h$,) and hence two (instead of three) operative collars, b and d , and grooves $b^3 b^4$ and $d^3 d^4$, respectively, on each side of said operative collars.

The operation of my device is as follows: The steel rail or section thereof to be broken down is introduced at the point a^2 between the rolls A and B, which, as stated, revolve in opposite directions, and carry the rail between them, slightly breaking it down, and then the

said rail is brought back through the space b^2 between the rolls B and C, (similarly revolving in opposite directions to each other,) and next the rail is carried through at the point c^2 , brought back at the point d^2 , carried through the point e^2 , and finally brought back at the point f^2 , which results in the production of a "flat" of steel made from the original rail without the slightest seam or any evidence of its original shape at the beginning of the operation.

My rolls A, B, and C are made of cast-iron.

The steel "flats" produced from the old rails by my described rolls and system of operating the same can be manufactured into the following-named articles: No. 4, No. 5, and No. 6 wire rod; also, one-fourth, five-sixteenths, and three-eighths inch "rounds" and "squares;" also, three-fourths up to two inches in width and three-sixteenths up to seven-sixteenths inch in thickness of round-edge tire; also, the same proportions of square-edge flats, and also into hoops and bands from one to four inches in width, and from No. 14 gage to three-sixteenths of an inch thick; hence it will be seen that my improvement is of great value in utilizing what has been before largely waste material.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A series of breaking-down rolls for con-

verting old steel rails into steel flats, consisting of three rolls, one above the other, provided with circumferential collars and intermediate grooves and level portions, the operative portions for the reception of the rails being everywhere of the same width, substantially as set forth.

2. A series of breaking-down rolls for converting old steel rails into steel flats, consisting of three rolls, the upper and lower rolls adapted to revolve in the same direction and the intermediate roll to revolve in the opposite direction, the upper and lower rolls having circumferential guiding-collars of different and diminishing diameters, and the intermediate roll having corresponding circumferential guiding-grooves of different and diminishing depths, together with operative circumferential collars and grooves between the guiding collars and grooves, the operative portions of the rolls for the reception of the rails being everywhere of the same width, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JOHN H. BROWN.

Witnesses:

H. G. UNDERWOOD,
MAURICE F. FREAR.