To all whom it may concern:

Be it known that I, Leif Lee, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Roll-Balancing Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view, partly in vertical section and partly in end elevation, of a rolling mill embodying my invention;

Figures 2 and 3 are sectional views, taken respectively, on lines II—II and III—III of Figure 1;

Figure 4 is a perspective view of the sliding head; and

Figure 5 is a perspective view of the contact end portion of the balancing lever.

My invention has relation to roll balancing mechanism, and is designed to provide a mechanism of this character in which the balancing action is transmitted to the supporting mechanism for the roll bearings through a surface contact device, instead of by a pin connected joint such as has heretofore been used.

By eliminating the pin connecting joint as a means of connection between the supporting and the balancing devices, I provide a construction in which the housings can be readily moved to accommodate various lengths of rolls without changing the position or decreasing the efficiency of the balancing mechanism. My improved construction also permits the roll housings to be entirely removed without in any way disturbing the balancing mechanism. This work can be done without the expenditure of time and labor for making and breaking the connections between the balancing mechanism and the metal housings.

Referring to the accompanying drawings, in which I have shown a preferred embodiment of my invention, the numeral 2 designates the base or foundation of a two-high rolling mill, 3 the roll housings, 4 the top roll, 5 one of the top roll bearings, and 6 the bottom roll. The bearing 5 for the top roll is vertically adjustable in the housings in any usual or suitable manner, and is supported by means of the vertical struts 7 which extend vertically upward through the roll housings.

At their lower ends these struts are supported on an equalizing lever 8 which is pivoted at 9 in a slide block 10, which is vertically movable in suitable guides 11 bolted or otherwise rigidly secured to the bottom of a roll housing. The lower edge of the sliding head is provided with a concave seat 12 on which the contact bar 13 of the balance mechanism acts. This balance lever consists of a multiplying lever 14 which is pivoted at 15 in a suitable support 16 secured in the bed or foundation of the mill independent of the roll housing. The contact bar 13 is mounted at the inner end of this lever and engages with the concave seat of the supporting mechanism. The longer arm of the lever has an adjustable counterweight 17.

The advantages of my invention result from the provision of contact devices for transmitting power and motion from the balancing mechanism to the supporting devices. The contact bar 13 may be provided with more or less of a knife edge, thus eliminating all lost motion due to wear, and permitting the rolls to be changed and the housings to be adjusted with a minimum of time and labor. The construction also provides a high degree of accessibility to the different parts, and also permits their ready renewal and replacement.

I do not wish to limit myself to the particular construction, arrangement and combination of parts which I have herein shown and described, as it will be obvious that various changes can be made from the details thereof without departing from the spirit and scope of my invention as set forth in the appended claims.

I claim:

1. Roll balancing mechanism comprising a vertically movable roll bearing support, a vertically movable crosshead carrying said support, a pivotal connection intermediate said cross head and said support, and a balancing mechanism having a contact engagement with said crosshead, substantially as described.

2. Roll balancing mechanism consisting in the combination with a vertically movable roll bearing, supporting struts therefor, and an equalizing lever upon which the supports are mounted, of a crosshead to which the equalizing lever is pivoted, and a balancing device having a contact engagement with said crosshead, substantially as described.

3. Roll balancing mechanism comprising
a vertically movable crosshead, an equalizing lever pivoted thereto, roll supporting devices carried by the equalizing lever, and a counterweighted balancing lever having a contact engagement with the crosshead, substantially as described.

4. Roll balancing mechanism comprising a vertically movable crosshead, guides in which said crosshead is mounted, an equalizing lever pivoted to the crosshead, roll bearing supports carried by the equalizing lever, and an adjustably weighted balancing lever, said balancing lever having a contact bar provided with a bearing on the crosshead, substantially as described.

In testimony whereof, I have hereunto set my hand.  

LEIF LEE.