A. T. KELLER.

HOTBED.

APPLICATION FILED JAN. 15, 1916.

1,187,744.

Patented June 20, 1916.

3 SHEETS—SHEET 1.

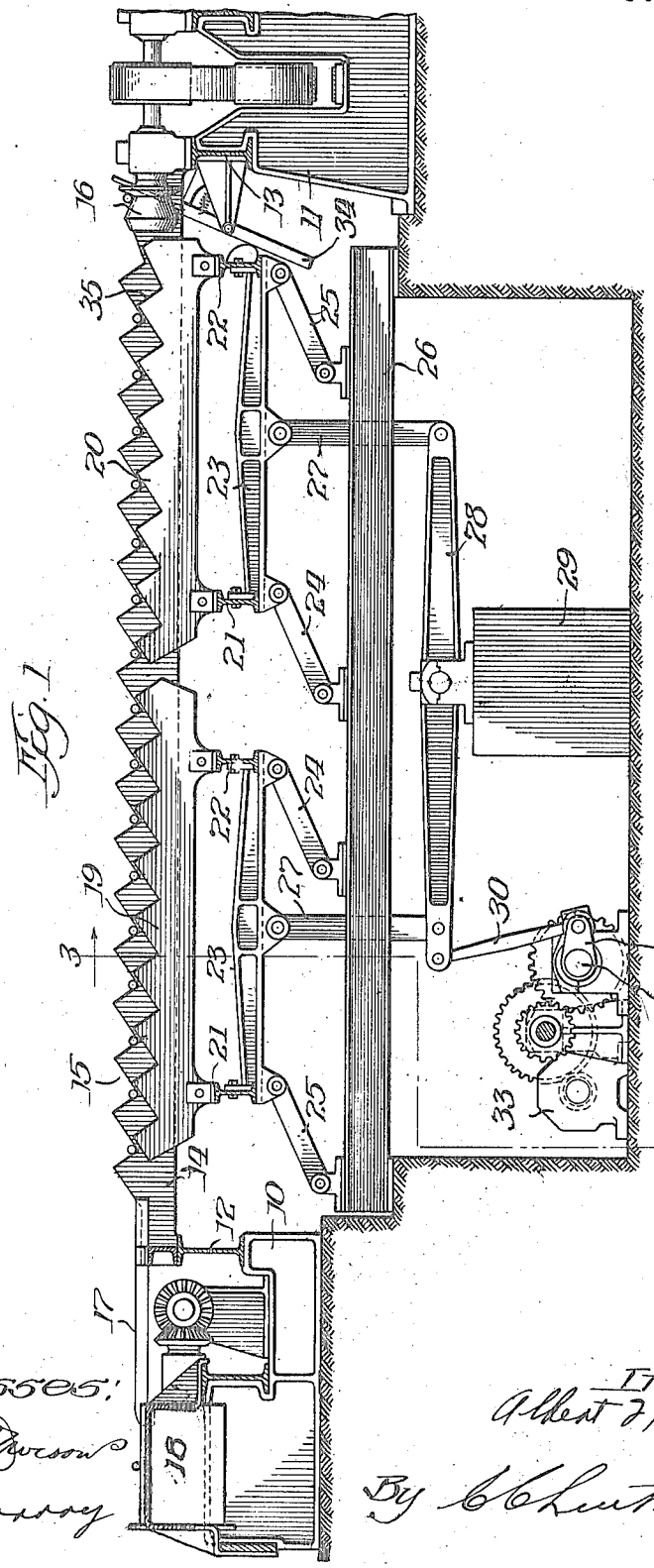


Fig. 1

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3 SHEETS—SHEET 2.

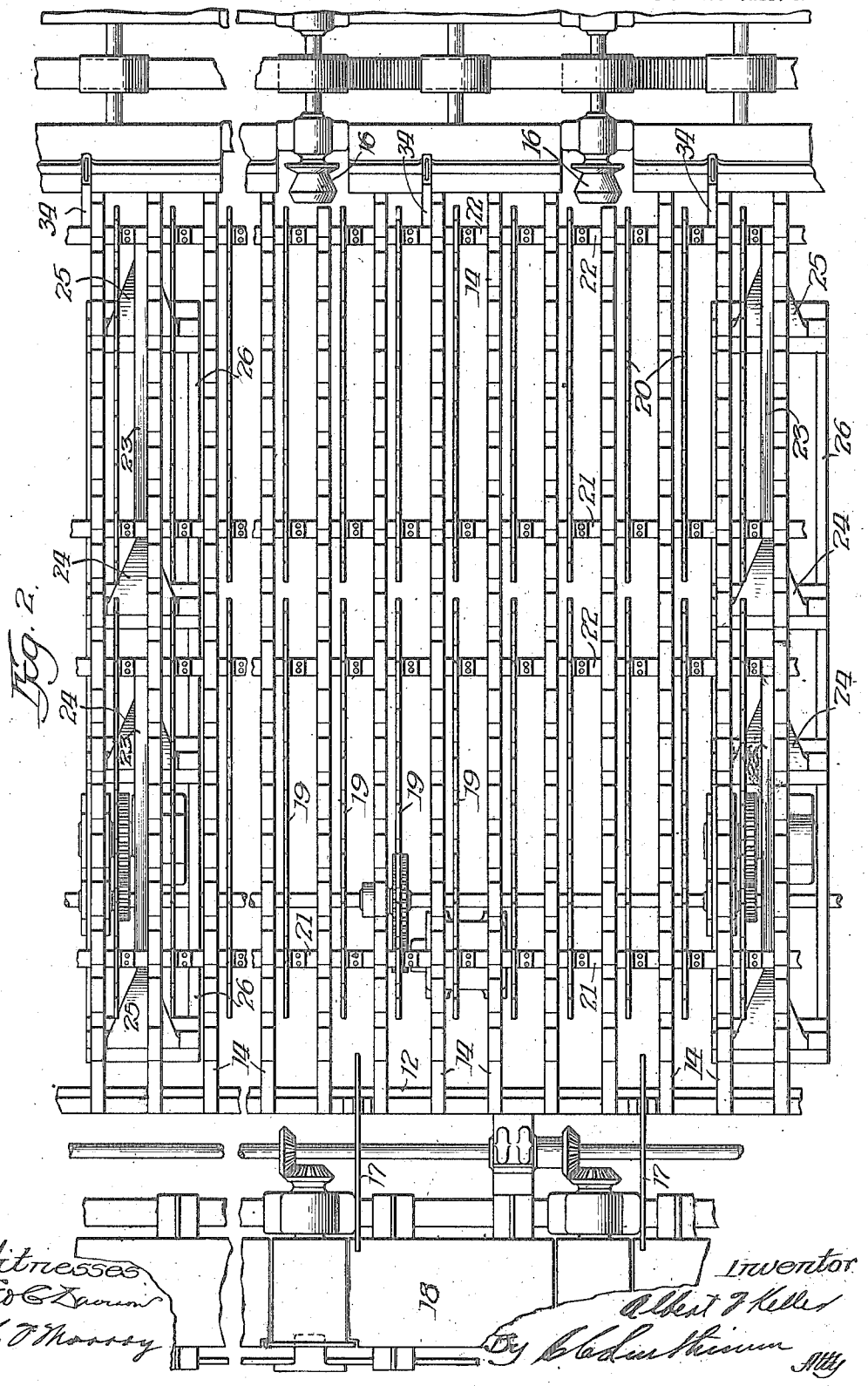


Fig. 2.

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3 SHEETS—SHEET 3.

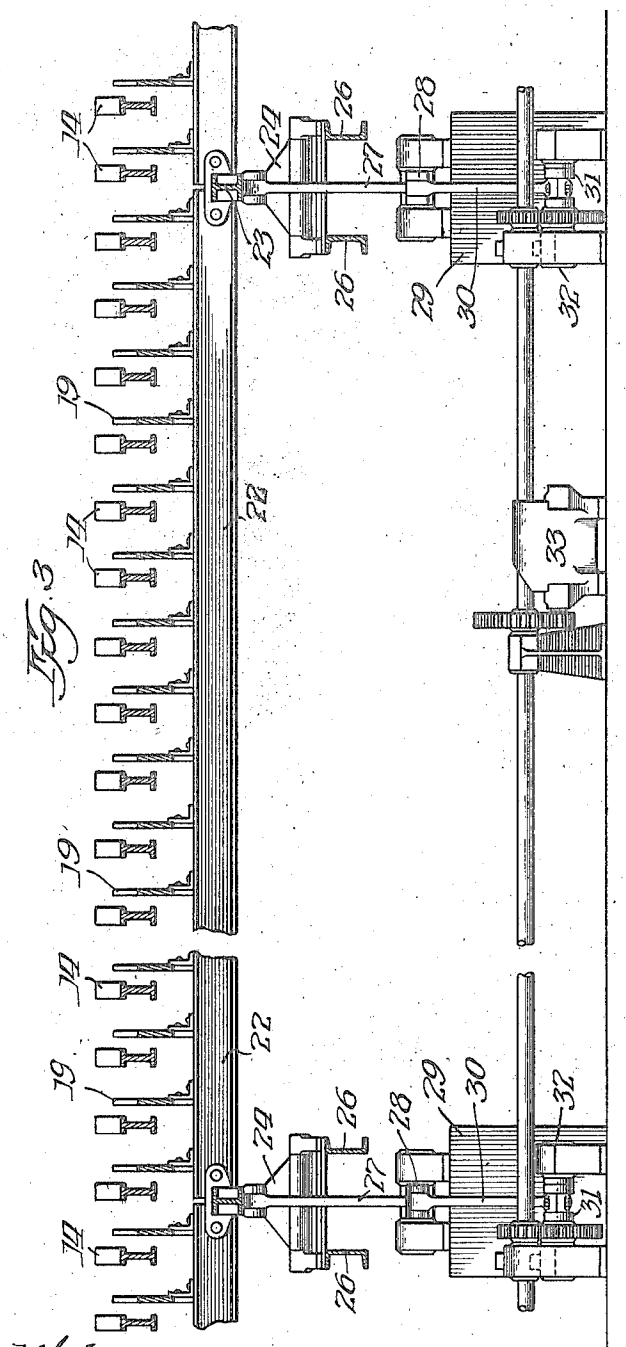


Fig. 3.

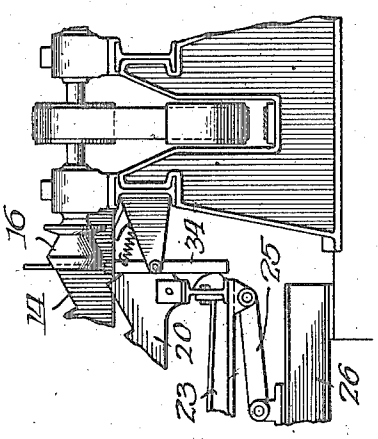


Fig. 4.

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UNITED STATES PATENT OFFICE.

ALBERT T. KELLER, OF CHICAGO, ILLINOIS.

HOTBED.

1,187,744. Specification of Letters Patent. Patented June 20, 1916.

Application filed January 15, 1916. Serial No. 72,214.

To all whom it may concern:

Be it known that I, ALBERT T. KELLER, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hotbeds, of which the following is a specification.

My invention relates to the steel industry, and has particular reference to a novel hot-bed adapted for use in the handling of long, slender shapes during the cooling thereof.

An object in the present construction is to provide a bed of the character described which shall be, for all practical purposes, perfectly balanced, *i. e.*, one in which the load to be lifted is in effect counterbalanced by a descending load in another portion of the device. Much less power is required for the operation of a balanced bed, and this is an important consideration for the reason that the entire load must be lifted a very large number of times during a day's operation.

A further object is the provision of a bed in which the rods or bars shall be maintained in parallelism, or, in other words, kept straight. This is secured in the present instance by providing stationary notched skids, the rods or bars being moved step by step into adjacent notches and kept straight while cooling.

A still further object is the provision of an apparatus which shall combine the desired result in a simple and economical manner and without the use of parts which become worn and require frequent replacement.

The invention will be more readily understood by reference to the accompanying drawings, wherein—

Figure 1 is a side elevation of a hot bed constructed in accordance with my invention; Fig. 2 is a plan view thereof; Fig. 3 is a section on the line 3—3 of Fig. 1, and Fig. 4 is a fragmentary end elevation of the means for discharging the bars onto the hot bed.

In the drawings, it will be seen that on suitable supports 10, 11, I mount transverse girders 12, 13, which serve to support the longitudinal skids 14 having notches 15 therein. One end of the stationary skid is located in proximity to the feeding-in rolls 16, and the other end to the discharge skids 17 and feeding-out rolls 18.

Spaced between each pair of the stationary skids are the lifting bars 19, 20. Instead of providing a single lifting bar which is of a length substantially equal to that of the stationary skid, I sever the lifting bar into two lengths and provide duplicate mountings for each length. These mountings comprise girders 21, 22, which extend transversely from side to side of the bed. A connecting beam 23 joins the girders 21, 22, and provides bearings for links 24, 25, secured to the longitudinal girders 26 at their opposite ends. By providing two links of equal length, I secure a parallel motion of the lifting bars, the motion of any point of which being in the arc of a circle, the radius of which is the effective length of the links 24. A downwardly-extending link 27 is connected to the middle portion of each of the connecting bars 23, the lower ends of the links being pivoted to a walking or balanced beam 28, having a bearing on the foundation block 29. A pitman 30 is connected at one end to the walking beam and at the other end to a crank 31 on a shaft 32 through which motion is imparted, through suitable slow down gearing, by means of a motor 33. It will be noted, by reference to Fig. 3, that the connections described are duplicated on the opposite sides of the bed.

The rods, such as shown in Fig. 1, are received by the feeding-in rolls 16, and, after reaching the proper point, are discharged into the first notch of the stationary skids by means of the lever 34, the discharging position of the lever being shown in Fig. 4. Assuming that the shaft 32, which carries the crank 31, is moving in a clockwise direction, the lifting bars 20 will be elevated or moved in the arc of a circle whose radius is the length of the links 24, 25. The rod will then be lifted until it passes the high point of the notches 15 in the stationary skids, riding easily over the high point and being caught by the incline of the notches 35 in the lifter bars. The crank 31, having then passed the low point in its travel will cause the descent of the lifter bar 20, the rod sliding easily down the incline of the notch in the stationary skids, being held by the notch 35 in the lifter bars until it reaches practically the low point of the notches 15. As the lifter bars 20 are traveling upward, the lifter bars 19 are traveling downward and are supporting a portion of the weight of the bars on the latter half of the bed. Thus it will be seen

that the load is equalized, or balanced, to a certain extent; at any rate the weight of the lifter bars and parts thereof, which weight is considerable, is exactly balanced, and the only power necessarily exerted is that used to overcome friction and move the rod up the incline to the high point of the notches.

Mechanism constructed as described will be found to be efficient in operation, of very simple construction and not liable to become out of repair.

I claim:

1. In a hot bed, the combination of a plurality of fixed longitudinal skids having notches in their upper surfaces, a pair of lifting bars disposed in end-to-end relation and located between a pair of fixed skids, means for supporting said bars in balanced relation, and means for causing up and down motion of said lifting bars in opposed relation to each other, substantially as described.

2. In a hot bed, the combination of a plurality of fixed supporting bars having notches in their upper surfaces, a pair of lifting bars disposed between each adjacent pair of supporting bars, said lifting bars being disposed in end-to-end relation, means for supporting said bars in balanced relation, means for maintaining said lifting bars in a horizontal position and means for alternately raising and lowering said lifting bars in opposed relation, substantially as described.

3. In a hot bed, the combination of a series of notched stationary supports, a pair of lifting bars between adjacent supports, the combined length of said pair of lifting bars being substantially equal to the length of the stationary bars, a balanced beam centrally pivoted and connected to each of said lifting bars whereby the weights of said lifting bars are balanced, means for oscillating said balanced beam and means for maintaining said lifting bars horizontal, substantially as described.

4. In a hot bed, the combination of a plurality of stationary notched supports, a pair of lifting bars located between adjacent supports and disposed in end-to-end relation, said lifting bars being provided with notches which, in one position of said lifting bars, are staggered with relation to the notches in said stationary support, a balanced beam for supporting and substantially balancing said lifting bars, and a motor for oscillating said balanced beam and thereby causing an alternate raising and lowering of said lifting bars in opposed relation, substantially as described.

5. In a hot bed, the combination of a plurality of fixed, notched supports, a plurality of pairs of lifting bars, one pair of said bars being disposed between adjacent stationary supports, each pair of lifting bars being disposed in end-to-end relation, each lifting bar being connected to a support in such manner as to be maintained in a horizontal position, a balanced beam having a fulcrum at its middle point and being connected at its end to each of said pair of lifting bars whereby the weight of said bars are balanced, and means for oscillating said balanced beam, substantially as described.

Signed at Chicago, Illinois, this 5th day of January, 1916.

ALBERT T. KELLER.

Witnesses:

NORRIS E. CRULL,

HARRY I. ALLEN.