No. 870,592. PATENTED NOV. 12, 1907.

J. A. SMITMANS.

COOLING BED AND CONVEYER.

APPLICATION FILED MAR. 15, 1907.

3 SHEETS—SHEET 1.

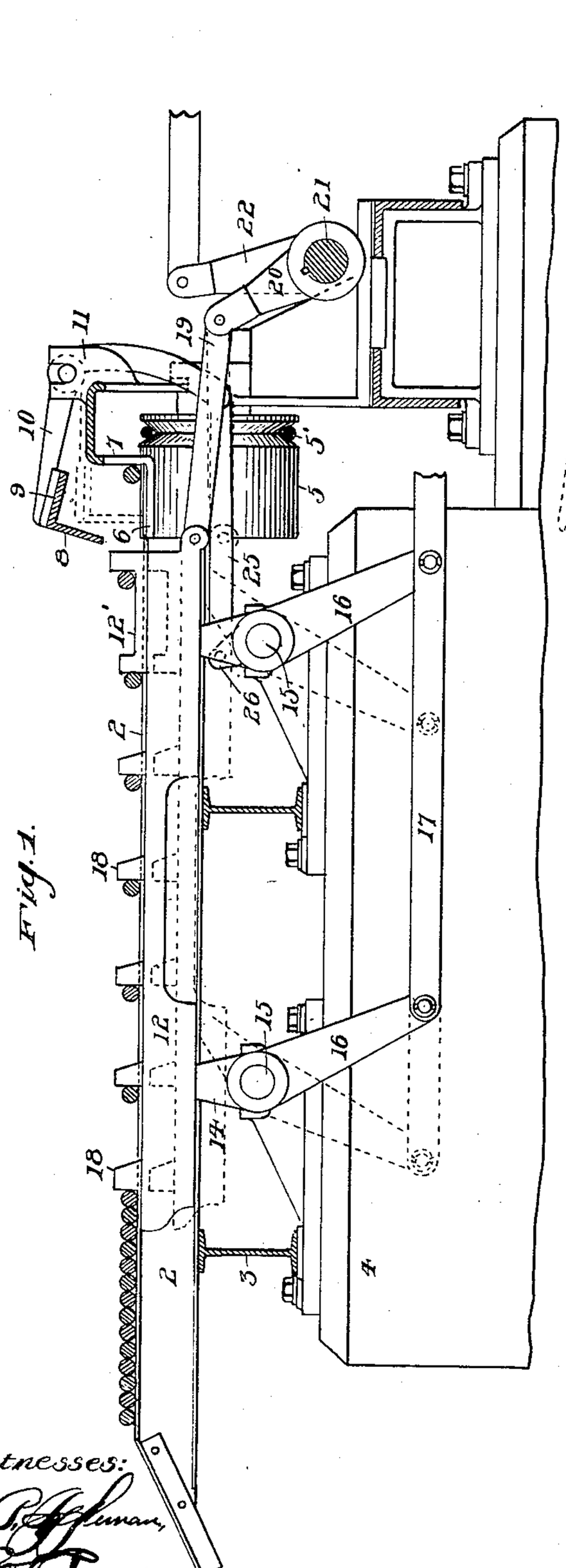

Fig. 1.

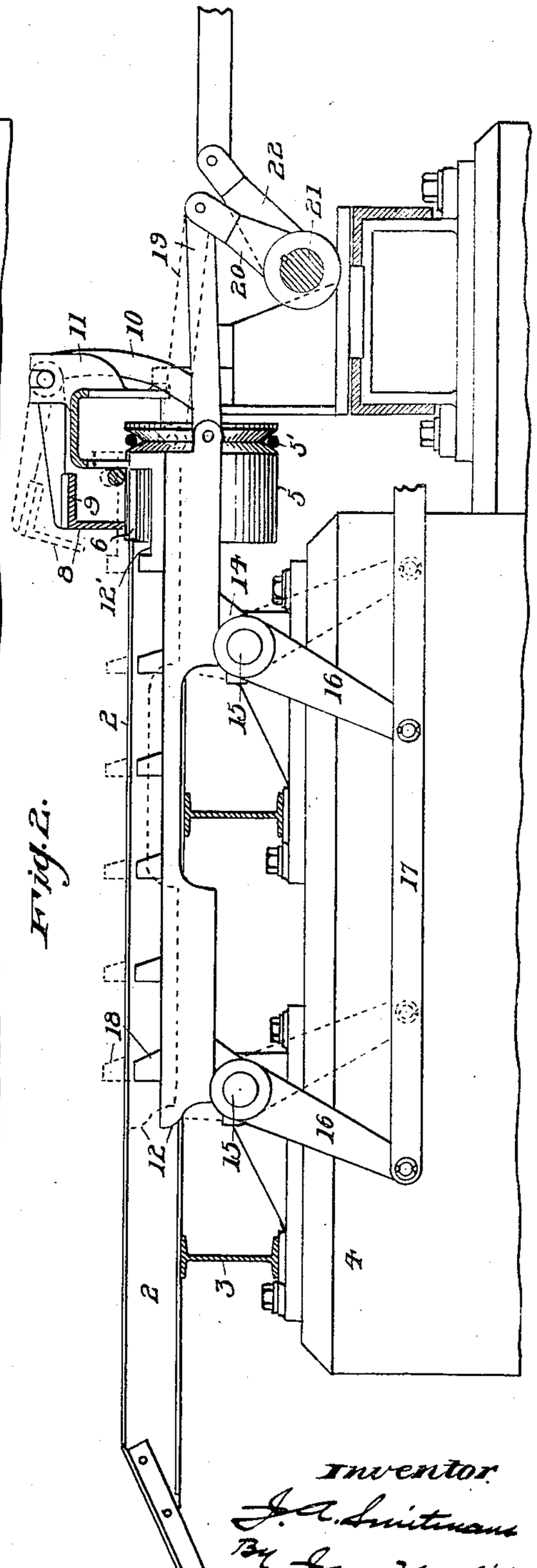

Fig. 2.

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3 SHEETS—SHEET 2.

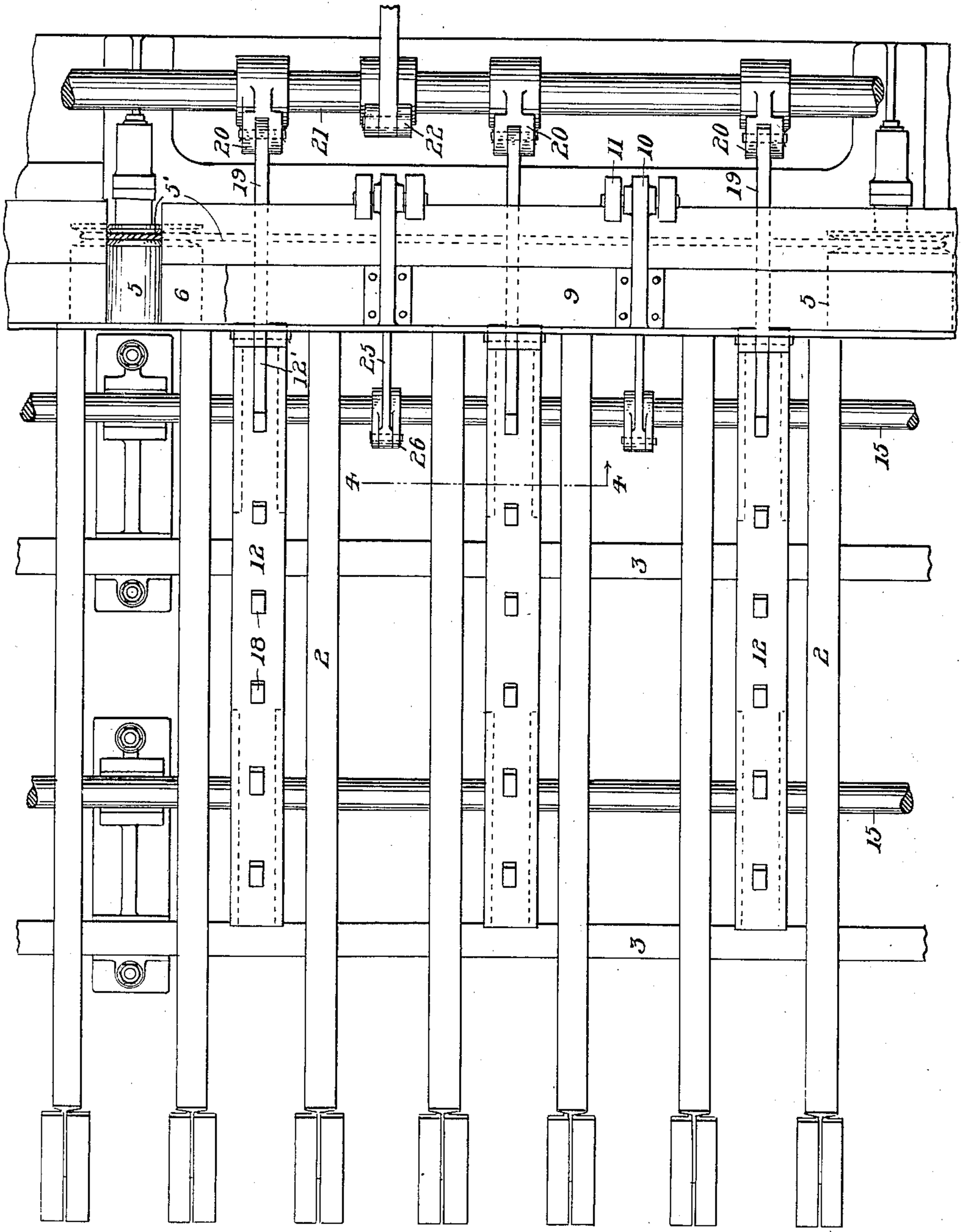

Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

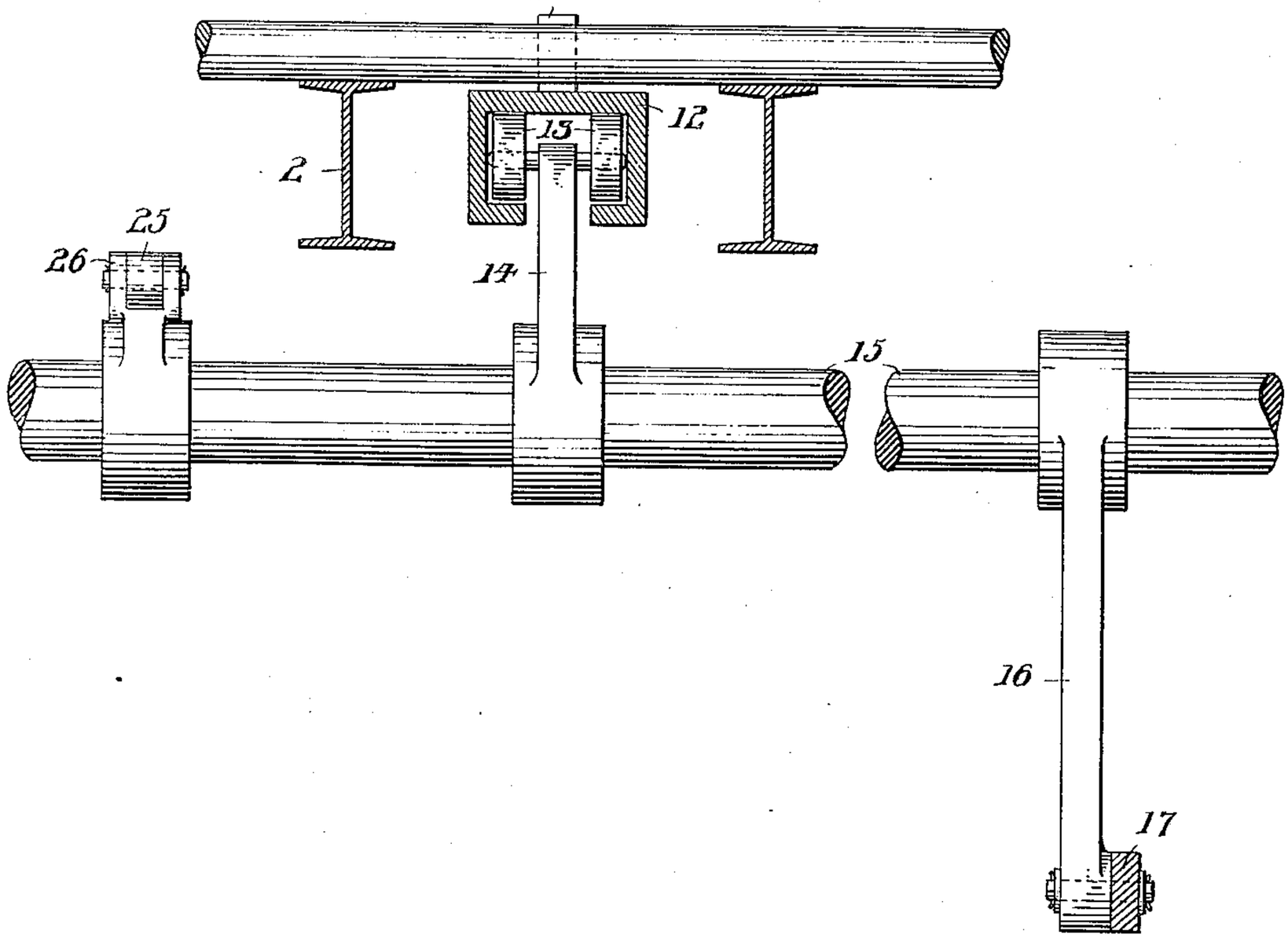
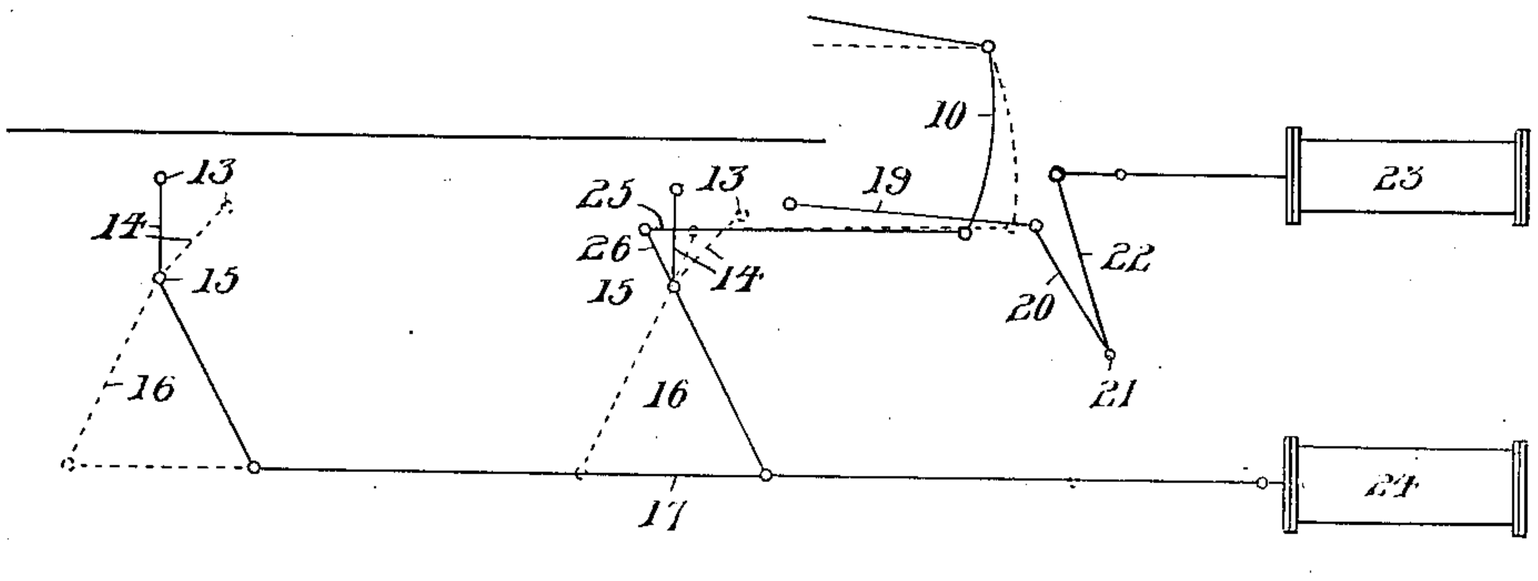


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN A. SMITMANS, OF SHARON, PENNSYLVANIA.

COOLING-BED AND CONVEYER.

No. 870,592. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed March 15, 1907. Serial No. 362,507.

To all whom it may concern:

Be it known that I, JOHN A. SMITMANS, a resident of Sharon, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Cooling-Beds and Conveyers, of which the following is a specification.

This invention relates to a cooling-bed for metal rods and bars, and one object is to provide improved means for confining the rods at the receiving end of the apparatus, which means is operative at the proper times for releasing the bars for movement over the cooling-bed by the conveying mechanism.

A further object is to provide means of improved construction for moving the rods, step by step, from the receiving end of the apparatus toward its delivery end.

A further feature of the invention is the mode of operating the conveyer devices, said device being adapted to move longitudinally of the table and lower vertically with relation thereto, the movements following each other in a cycle of operations which insure rapid and effective work.

In the accompanying drawings, Figure 1 is a view, partly in side elevation and partly in section, of apparatus embodying my invention, the conveyer mechanism being shown raised in full lines and lowered in dotted lines, these two positions being what I term the first and second positions, respectively. Fig. 2 is a view similar to Fig. 1, showing the conveyer mechanism in rearward and lowered position in full lines, and raised from that position in dotted lines, these being the third and fourth positions, respectively. Fig. 3 is a top plan view of a portion or section of the apparatus. Fig. 4 is a cross sectional view, enlarged, of part of the apparatus taken on lines 4—4 of Fig. 3. Fig. 5 is a diagrammatic view, illustrating one method of applying power to the apparatus.

Referring to the drawings, the bed of the apparatus consists of a series of parallel beams 2, which may be supported on girders 3, the latter, in turn, resting on base or foundation 4. At the receiving end of the bed are rolls 5 which operate to move the bars or rods forward from the finishing rolls of the mill, placing them in position to pass forward on the cooling-bed. Rolls 5 are arranged at such intervals as may be necessary, and may be actuated by rope drive 5′ or in any other suitable way. Between the rolls is floor 6, over which the rods slide as they move forward from one roll to the next.

Floor 6 comprises the bottom of what I term a receiving channel or box, 7 being the rear wall thereof which is rigid with bottom 6, while front wall 8 and top 9 are movable so as to release the rods for passage forward onto the bed. For raising and lowering walls 8 and 9, I provide at suitable intervals the angular levers 10, with said parts secured to the horizontal arms thereof, each lever being mounted to rock in a bearing 11, and with operating means, presently to be described, connected to its depending arm. This box-like inclosure confines the long rods or bars in a space of relatively small cross-sectional area, and hence although the rods are hot and very pliable as they emerge from the mill, they are so confined as to be prevented from kinking or forming any pronounced bends or irregularities. In fact, this receiving box or channel has a straining tendency which, in connection with the conveyer devices, causes the rods to pass onto and over the bed and discharge therefrom approximately straight. The driven rolls 5 tend to draw or conduct the rods onto the receiving end of the bed, keeping them substantially straight and preventing kinking or buckling of which there would be danger if dependent alone upon the rolls of the mill for advancing them onto the bed. And the channel or inclosure prevents the long rods or bars from leaving rolls 5 before the entire length of each rod or bar has been fully discharged from the rolls of the mill.

The conveyer element of the apparatus consists of a series of bars 12 extending longitudinally of beams 2, each bar being channeled at its under side to embrace rollers 13 carried by the upper ends of arms 14 on shafts 15. Also carried by shafts 15 are arms 16 connected by pitman 17, which latter extends to a source of power, whereby the shafts are oscillated and the conveyer bars raised and lowered as required for projecting the rod-moving lugs or fingers 18 thereof above and below the plane of the top of beams 2. The bars are thus raised and lowered without interfering with their movement longitudinally of the bed, as they are adapted to move freely backward and forward on rollers 13. For thus reciprocating the bars, each of them is connected by a link 19 with arm 20 of rock shaft 21, the latter in turn having the arm 22 connected with suitable source of power for imparting motion thereto at the proper times. The actuating mechanism here shown consists of a cylinder 23, having its piston connected to arm 22, while a similar cylinder 24 has its piston connected to pitman 17 for raising and lowering the conveyer bars.

The rear portion or section of each of bars 12 is somewhat higher than the remainder of the bar, as indicated at 12′, so that when the bars are in rearward and raised position, as in dotted lines in Fig. 2, they will lift the rods clear of rolls 5. Excepting for these raised portions 12′ bars 12, even when fully raised, are slightly beneath the top plane of beams 2, with the rods resting on the latter and pushed forward thereon, step by step, by lugs 18.

When the apparatus is in use there are four distinct operations. Taking the conveying bars in their forward and raised position, as in full lines in Fig. 1,

they are first lowered to the dotted line position of that figure through the medium of power cylinder 24. After being lowered, the bars are moved rearward to the full line position of Fig. 2 to obtain a new hold on the rods already on the bed and to engage the fresh rod which is then being received from the mill over rolls 5 and floor 6. The lowered and rearwardly drawn conveyer bars are then raised, as in dotted lines in Fig. 2, obtaining the fresh hold on the rods, and from this position the bars and the rods with them are advanced to the full line position of Fig. 1.

In order that the movable portion of the rod-confining channel or box may release the fresh rods at the proper intervals for permitting them to move forward over the cooling-bed, the lower arms of levers 10 are each connected by a link 25 with an arm 26 projecting from one of the shafts 15, so that when those shafts are rocked in the direction for lowering arms 14, levers 10 will be so oscillated as to lower parts 8 and 9 of the receiving box, and when said shafts are oscillated for raising the conveyer bars, the receiving box will be opened, as in full lines in Fig. 1 and in dotted lines in Fig. 2, so that the rod may pass therefrom onto the bed. With the operations thus timed, and occurring one after the other, the work proceeds rapidly and with precision.

It will be understood that power may be imparted to the apparatus in any desired manner, the cylinders here shown being simply for the purpose of illustration. Bars of various cross-sectional shapes may be cooled and conveyed, and the apparatus may be of such size as to receive bars of any desired length. And while I have shown the preferred means of causing the bars to move progressively over the table, this may be accomplished in various ways without departing from the invention.

I claim:—

1. The combination of a cooling bed open from below at its receiving end and forward from said end, rod-receiving rolls in the receiving end of the bed, longitudinally movable conveyer bars adapted to raise and lower, rod moving lugs on the bars adapted to be projected through and above the bed for moving the rods forward on the latter, the rear ends of the bars being higher than their remaining portions to lift the rods from the rolls at the receiving end of the bed.

2. The combination of a cooling-bed, a rod-confining box extending transversely of the receiving end of the bed, the wall closing the delivery side of the box being adapted to raise and lower, levers to which said movable wall is secured, conveyer members movable longitudinally of the bed, supports movable vertically for raising and lowering said members, and an operative connection between the support mechanism and the levers for causing the movable portion of the rod-confining box to operate simultaneously with the raising and lowering of the conveyer members.

3. The combination of a cooling-bed, a rod-confining box extending transversely of the receiving end of the bed, angular levers to which the delivery side of the box is connected for raising and lowering the same, conveyer devices adapted to reciprocate longitudinally of the bed, rock shafts, arms projecting from said shafts on which the conveyer members are adapted to reciprocate, and a connection between one of said shafts and the said angular levers for opening and closing the rod confining box simultaneously with the raising and lowering of the conveyer members.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. SMITMANS.

Witnesses:
HAROLD WHEATLEY,
GEORGE G. L. MARTIN.