

No. 770,448.

PATENTED SEPT. 20, 1904.

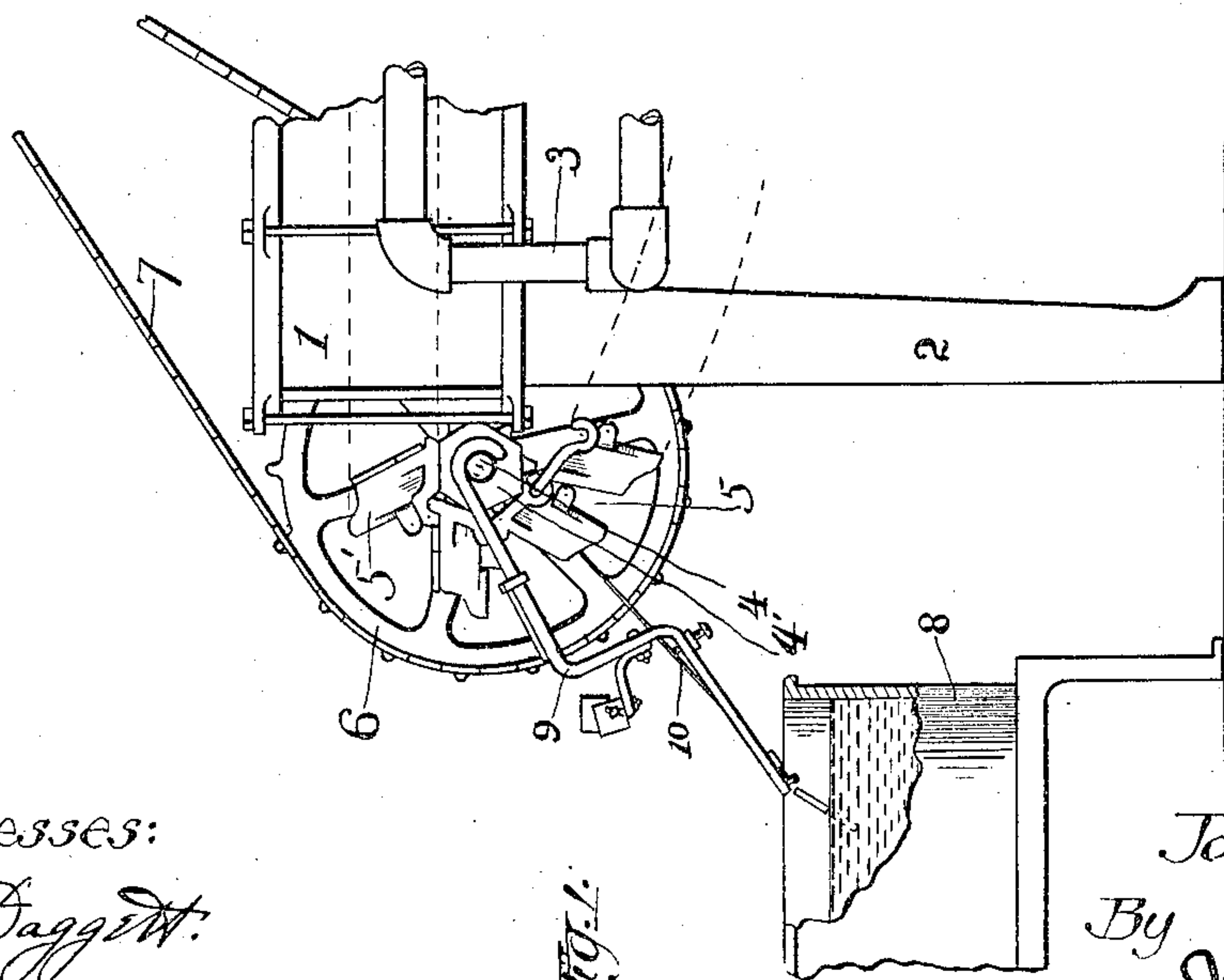
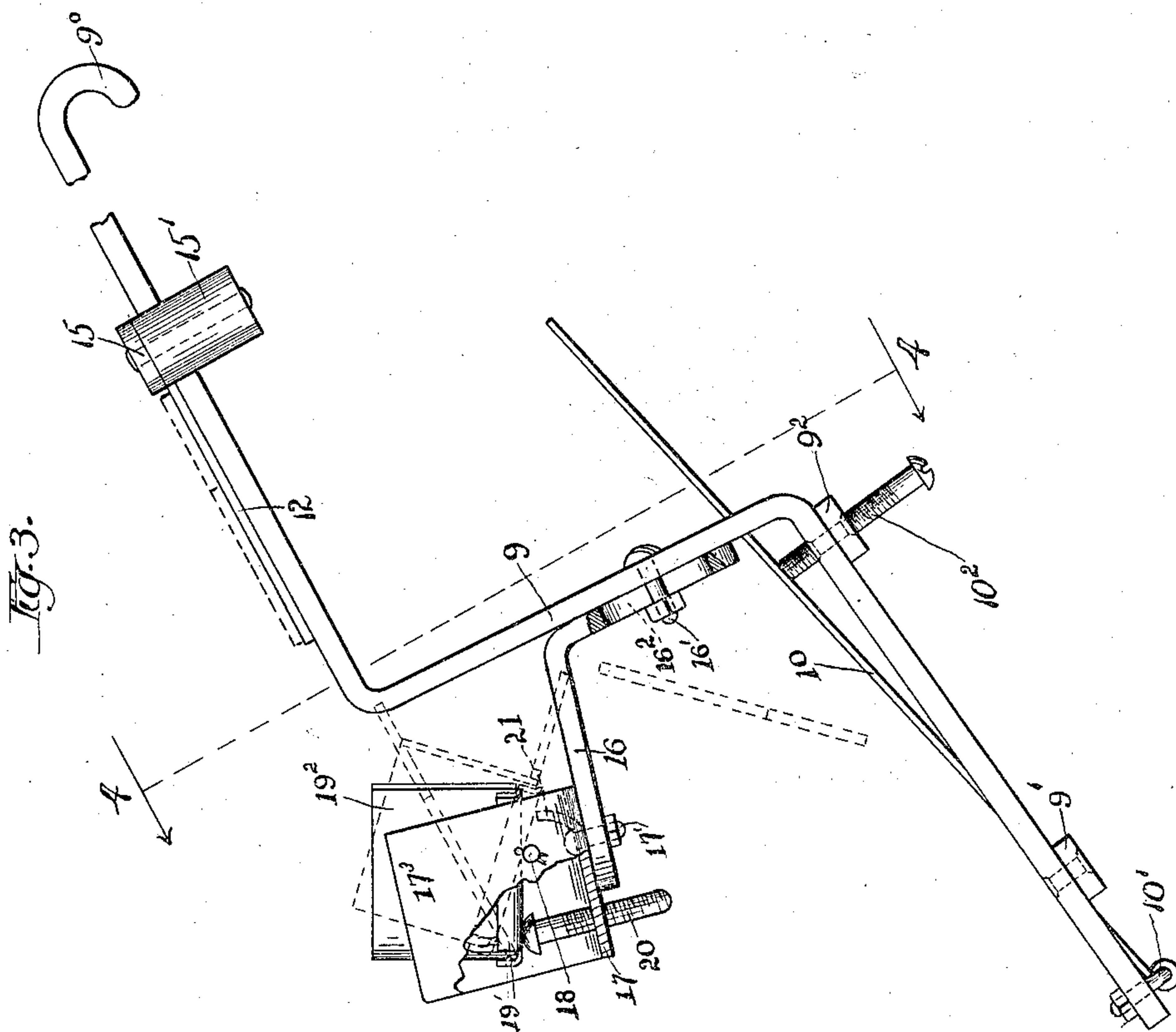
J. A. WEEDING.

ATTACHMENT FOR SECTION TEMPERING FURNACES.

APPLICATION FILED JULY 7, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



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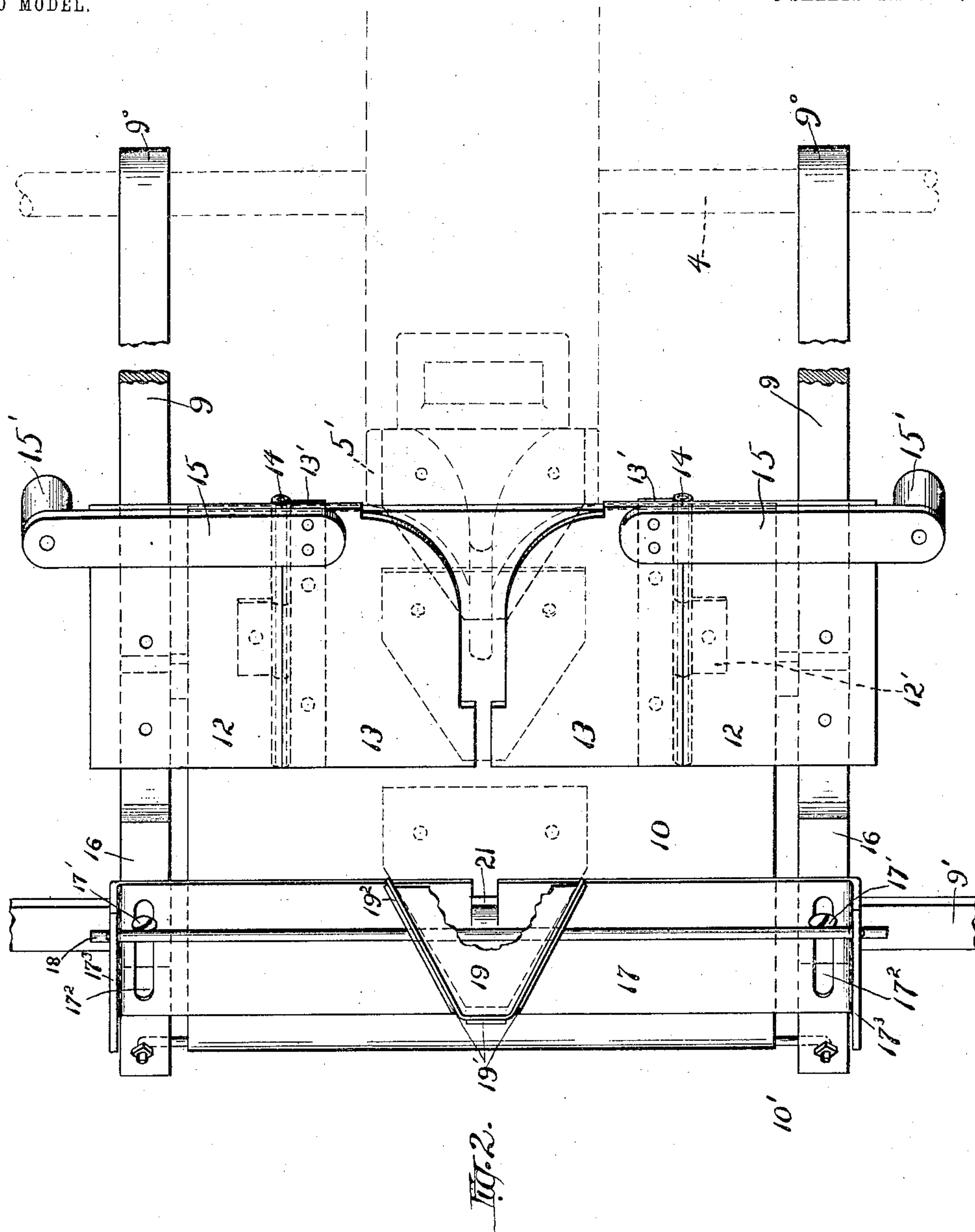
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3 SHEETS—SHEET 2.



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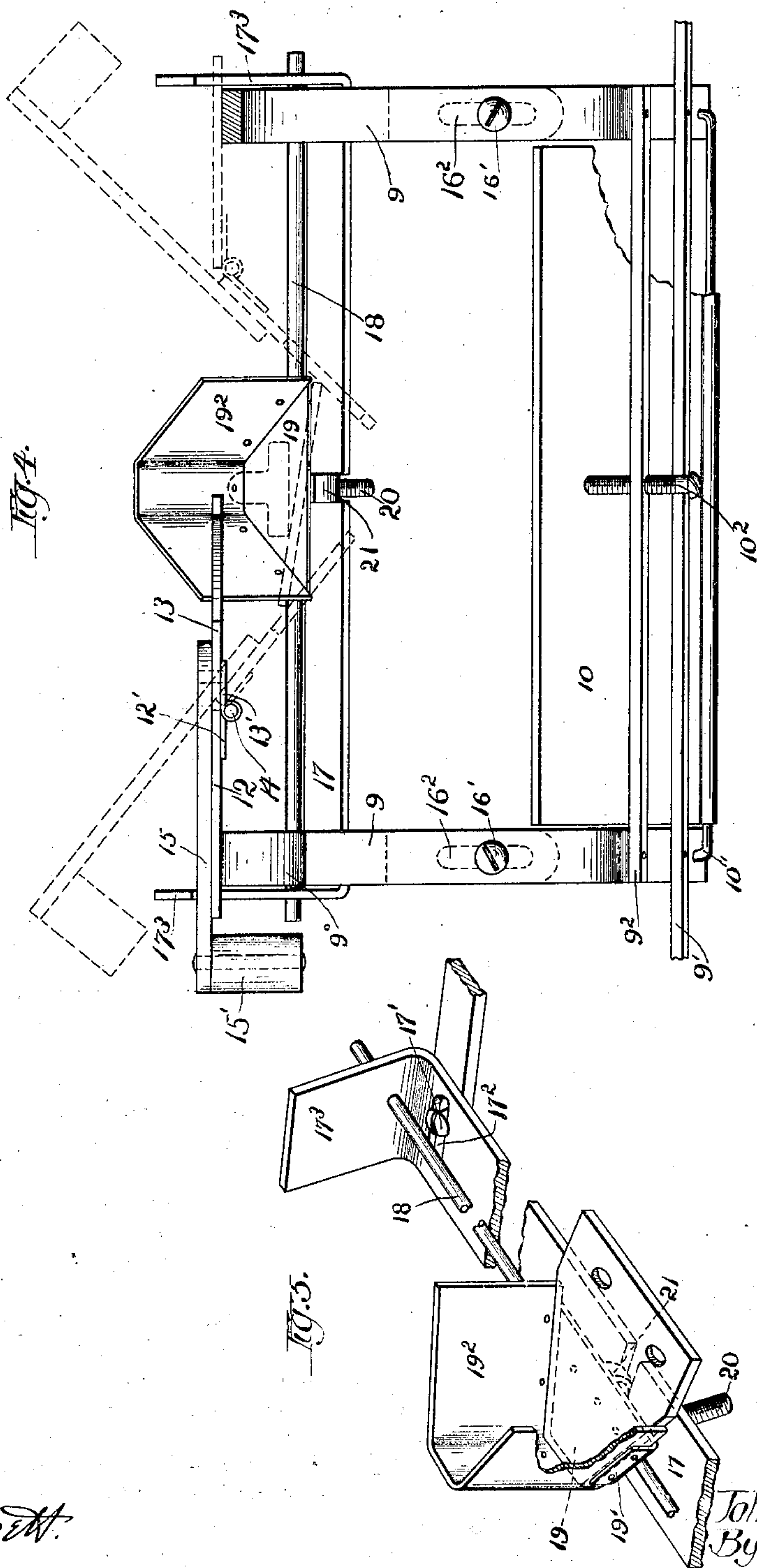
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN A. WEEDING, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

ATTACHMENT FOR SECTION-TEMPERING FURNACES.

SPECIFICATION forming part of Letters Patent No. 770,448, dated September 20, 1904.

Application filed July 7, 1904. Serial No. 215,579. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. WEEDING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Attachment for Section-Tempering Furnaces, of which the following is a complete specification.

This invention consists in novel means for controlling and reversing the movement of knife-sections after their delivery from the machine and before their precipitation into the cooling medium.

It is a well-understood principle that in tempering articles which are provided with cutting edges considerable caution must be exercised in order to avoid excessive hardening of these parts. The degree of hardness is ordinarily regulated by the peculiar manner in which the articles are immersed into the cooling-tank, the heavier or thicker portions being usually introduced first and the lighter or edge-forming portions last.

The object of this invention is to provide an improved device by means of which the knife-sections after being delivered by the carrier-chain are reversed in position while falling, and thus made to enter the cooling-bath heel first—*i. e.*, the wide portion of the sections which rivet to the bar are first subjected to the cooling action of the bath instead of the points thereof, as heretofore practiced in this style of tempering-furnace. By the adoption of this device the percentage of cracked sections is greatly reduced and a substantial saving thereby effected both in labor and in material.

The preferred form of the invention has been embodied and illustrated in the accompanying drawings, in which—

Figure 1 represents the delivery end of a section-heating furnace and my improved attachment in connection therewith constituting, with the cooling-tank, the tempering-furnace. Fig. 2 is an enlarged plan of the attachment, the adjacent cooperating carrier-chain and driving-shaft being shown in dotted lines. Fig. 3 is a side elevation of the attachment detached from the machine. Fig. 4

represents a front end view, partly in section, of same; and Fig. 5 is a perspective illustrating the operation of the section-reversing mechanism.

Referring to the drawings, 1 designates the delivery end of the frame of a section-tempering furnace, for a full description of which reference may be had to Patent No. 717,906 granted to G. W. Packer, January 6, 1903. While the application of the improvement is preferably made to the style of machine disclosed in the patent above cited, it could equally as well be applied to other types of machines from which the sections are similarly discharged.

The frame 1 is supported upon the legs 2, only one of which appears in the drawings, and 3 designates the feed-pipe for the burners. 4 is the driving-shaft, to which is rigidly secured the hexagonal-shaped sprocket-wheel 4', which supports and drives the rear end of the carrier-chain 5. The links 5' of the carrier-chain 5 are of a peculiar construction, which adapts them to receive and retain the knife-sections while passing through the furnace. On the shaft 4 is also rigidly secured the driving-sprocket 6, engaging the driving-chain 7, which extends to the source of power. The carrier-chain 5, as heretofore operated, was made to discharge the knife-section direct and point downward into the cooling-bath contained by the tank 8. Between the cooling-tank 8 and the delivery end of the carrier-chain 5 is interposed the mechanism for reversing the knife-sections in their fall. Such mechanism constitutes the essence of this invention and will now be described.

The side members of the frame are formed by the bars 9 9, having the two longitudinally-extending end portions arranged parallel with each other and having the transversely-disposed intermediate portions, as shown. The upper end of the bars 9 terminate in the downturned ends 9⁰, which engage the driving-shaft 4. The lower end of the bars 9 are connected by the cross-tie 9', which affords a rest or support for the lower end of the frame, the ends of this cross-tie projecting laterally a sufficient distance to rest upon the edges of

the cooling-tank 8. Pivotaly connected between the lower end of the said bars 9 is the deflecting-plate 10, having an eye formed on the lower end of said plate which engages the rod 10', as shown in Figs. 3 and 4. To the lower limbs of the bars 9 near the angle thereof is secured the cross-tie 9², which receives near the center portion thereof the cap-screw 10², thus forming an adjustable support for the upper end of the deflecting-plate 10 and means by which the inclination of said plate can be increased or decreased at will. The free or upper end of the said deflecting-plate extends some distance beyond the transversely-extending portions of the said bars 9 and to a position beneath the section-receiving platform, hereinafter described.

Since gravity instead of some positive means is depended upon to eject the knife-sections from the carrier-chain, it becomes necessary to make provisions for the occasional instance in which the sections do not become disengaged from the said chain before the engaging portion thereof passes through the gate in the section-receiving platform. Such provision is made as follows: To each of the upper limbs of the bars 9 are rigidly secured the inwardly-extending platform-supports 12, the securement thereof being effected by rivets or other suitable means. To the inner edges of these platform-supports are hinged the section-receiving platforms 13, the connection being effected by means of the double hinge-straps 13', which are riveted to the said platform 13, and the single hinge-straps 12', which are secured to the platform-support 12, the rod 14 being engaged by said straps and forming the pivotal axis thereof. To hold the hinged platforms 13 in their normal position or in a plane substantially parallel with the supports 12, the weighted bars 15, which extend transversely to the pivotal axis thereof and in opposite directions relative thereto, are secured rigidly to the upper portions of said platforms. These bars are provided with the weights 15' at their outer ends. The bars 15, lying upon the platform-support 12, will cause the hinged platforms 13 to occupy the proper position and at the same time prevent them from being raised too high at their free ends. The inner or adjacent ends of the hinged platforms have their upper or forward corners and a portion of their ends cut away in such a manner that an opening or gate is formed through which the outer or section-carrying portions of the carrier-chain passes. It will thus be seen from this construction that the carrier-chain deposits the knife-sections upon the inner ends of the hinged platform, which are free to swing downwardly, but tend normally to lie in a common plane longitudinally inclined. The function of this yielding platform is to receive the sections as they are delivered from the carrier-chain, the platform being at such an inclination to the hori-

zontal and in such a relation to the delivery end of the carrier-chain that the sections will be caused to drop from said chain by gravity upon the above-described hinged platform, from which, owing to its rearward inclination, they will be immediately delivered, also by gravity, upon the reversing-table hereinafter to be fully described. In the event that an occasional knife-section does not become completely disengaged from the carrier-chain the chain carries the disengaged section down between and beyond the yielding platforms, after which the platforms will be returned to normal position (see Fig. 4) by the weights 15', and the knife-section will be deposited on the upper end of the deflecting-plate 10 and thence into the cooling-tank.

To the transversely-extending portion of the bars 9 are secured the brackets 16, the securement of said brackets being effected by means of the bolts 16', which are received by slots 16² in said brackets, thus affording vertical adjustment for same. To the outer end of the brackets 16 is adjustably secured the table-support 17, which consists, preferably, of a flat bar or plate. The screws 17' in the brackets and the slots 17² in said support effect such adjustable securement. At each end of the support 17 are provided the upturned ends 17³, which afford a bearing for the tipping-rod 18, on which is centrally mounted the reversing-table. This reversing-table consists of a quadrilateral plate 19, having substantially the form of the point of a knife-section, and is provided with the upwardly-projecting flanges 19' on three sides thereof. To these flanges are secured the walls 19², placed also on three sides and leaving the upper and wider side of the reversing-table open. This reversing-table is free to tilt or tip to a limited extent, the degree of the tilt rearwardly being regulated by the screw 20, located beneath the table and in the support 17, while the lug 21, which is formed preferably of an upturned portion of the support 17, limits the tip or tilt forwardly of the table on its pivotal axis.

The tipping or reversing table is arranged longitudinally coincident with the carrier-chain 5 and also with the gate or opening between the hinged platforms 13, so that as the sections are deposited by the said carrier-chain upon the platform they will be caused by gravity to slide therefrom upon the said reversing-table point first. The tilting table is large enough to receive only the point of the knife-section, the heel necessarily projecting forwardly therefrom, as clearly shown in Figs. 2, 3, and 5. The pivotal axis of the reversing-table, which is formed by the rod 18, is arranged forward of the center of gravity of said table, and hence normally the rear of the table will rest upon the head of the screw 20. When, however, a section is deposited upon the table with the heel overhanging, as above explained, the combined center of gravity of

the two bodies will lie forward of the pivotal axis, thus causing the table to tilt forwardly and drop the knife-section therefrom, as illustrated in Fig. 3. In this figure the forwardly-tilted position of the table is indicated by dotted lines. In dropping from the reversing-table the knife-section will fall heel first and simultaneously with its dropping from the table a slight rotative movement will be given to the said section, which will cause it to be deposited with the heel in the advance and the point following upon the plate 10. Its position has thus been reversed while in transit from the hinged platforms 13 to the deflecting-plate 10. The inclination of this deflecting-plate 10 will cause the knife-section to slide by gravity therefrom into the cooling-tank 8. In passing over the lower margin of the deflecting-plate 10 the section will be given another slight rotative movement, which will cause it to assume a position nearly vertical before it reaches the surface of the cooling medium in the tank.

The operation of the device is obvious. The knife-sections are deposited by the carrier-chain upon the yielding platform. From here they slide down upon the section-reversing table, point first, from whence they drop, heel first, upon the deflecting-plate, and thence into the cooling-tank. The details of these several steps have been already described and need not be again repeated.

Slight modifications of the improvements could be made—for instance, the yielding platforms might be spring-actuated or the arrangement of the various adjustment devices might be varied or the inclination of the deflecting-plate might be reversed and other changes be made and still come within the spirit and scope of the invention. While the reversing-table is preferably given a rocking or tilting movement, the degree of this tilt might be varied, and in some instances by close adjustment the rocking movement might be dispensed with altogether.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a section-heating furnace and a tank containing a cooling medium, a rearwardly-inclined section-receiving platform arranged at the delivery end of said furnace and a section-reversing mechanism interposed between the said tank and the said receiving-platform, substantially as set forth.

2. In combination, a section-heating furnace, a tank containing a cooling medium and a section-reversing mechanism interposed therebetween, substantially as set forth.

3. In combination with a section-heating furnace and a tank containing a cooling medium, a rearwardly-inclined section-receiving platform arranged at the delivery end of said heating-furnace, a section-reversing mechanism located in the path of and adapted to be impinged by the sections when delivered from the said receiving-platform and a deflecting-

plate interposed between the said cooling-tank and the said section-reversing mechanism, substantially as set forth.

4. In combination with a section-heating furnace and a tank containing a cooling medium, a yielding, longitudinally-inclined section-receiving platform arranged at the delivery end of said heating-furnace, a section-reversing mechanism located in the path of and adapted to be impinged by the sections as they are delivered from the said receiving-platform, and a deflecting-plate placed beneath the said section-reversing mechanism, substantially as set forth.

5. In combination with a section-heating furnace and a tank containing a cooling medium, a two-part section-receiving platform yieldingly arranged at the delivery end of said heating-furnace, a section-reversing mechanism located in the path of and adapted to be impinged by the sections as they are delivered from the said receiving-platform and a deflecting-plate placed beneath the said section-reversing mechanism, substantially as set forth.

6. In combination with a section-heating furnace and a tank containing a cooling medium, a rearwardly-inclined section-receiving platform arranged at the delivery end thereof and a section-reversing mechanism located in the path of and adapted to be impinged by the sections when delivered from the said receiving-platform said reversing mechanism comprising a pivotal axis upon which is mounted a table and a table adapted to tilt about said pivotal axis in a longitudinal direction and to a limited extent, substantially as set forth.

7. In combination with a section-heating furnace and a tank containing a cooling medium, a rearwardly-inclined section-receiving platform arranged at the delivery end of said heating-furnace, a section-reversing mechanism located in the path of and adapted to be impinged by the sections when delivered from said receiving-platform, the said reversing mechanism comprising a pivotal axis upon which is mounted a table and a table adapted to tilt about said pivotal axis in a longitudinal direction and to a limited extent and means for regulating the degree of the tilting movement of said table, substantially as set forth.

8. In combination with a section-heating furnace and a tank containing a cooling medium, a rearwardly-inclined section-receiving platform arranged at the delivery end of said furnace and a section-reversing mechanism located in the path of and adapted to be impinged by the sections when delivered from the said receiving-platform, the said section-reversing mechanism being longitudinally adjustable relative to the said receiving-platform, substantially as set forth.

9. In combination with a section-heating furnace and a tank containing a cooling me-

dium, a rearwardly-inclined section-receiving platform arranged at the delivery end thereof, a section-reversing mechanism located in the path of and adapted to be impinged by
5 the sections when delivered by the said receiving-platform and an angularly-adjustable deflecting-plate arranged beneath the said section-reversing mechanism, substantially as set forth.

10 10. In combination with a section-heating furnace and a tank containing a cooling medium, a rearwardly-inclined yielding two-part

section-receiving platform arranged at the delivery end of said heating-furnace, a section-reversing mechanism arranged to rock to a
15 limited extent in a longitudinal direction and adjustable relative to said receiving-platform and a rearwardly-inclined adjustably-arranged deflecting-plate placed beneath the said reversing mechanism, substantially as set forth. 20

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