No. 851,323. PATENTED APR. 23, 1907.

M. SKLOVSKY.

BEAM SETTING PRESS.

APPLICATION FILED MAY 19, 1905.

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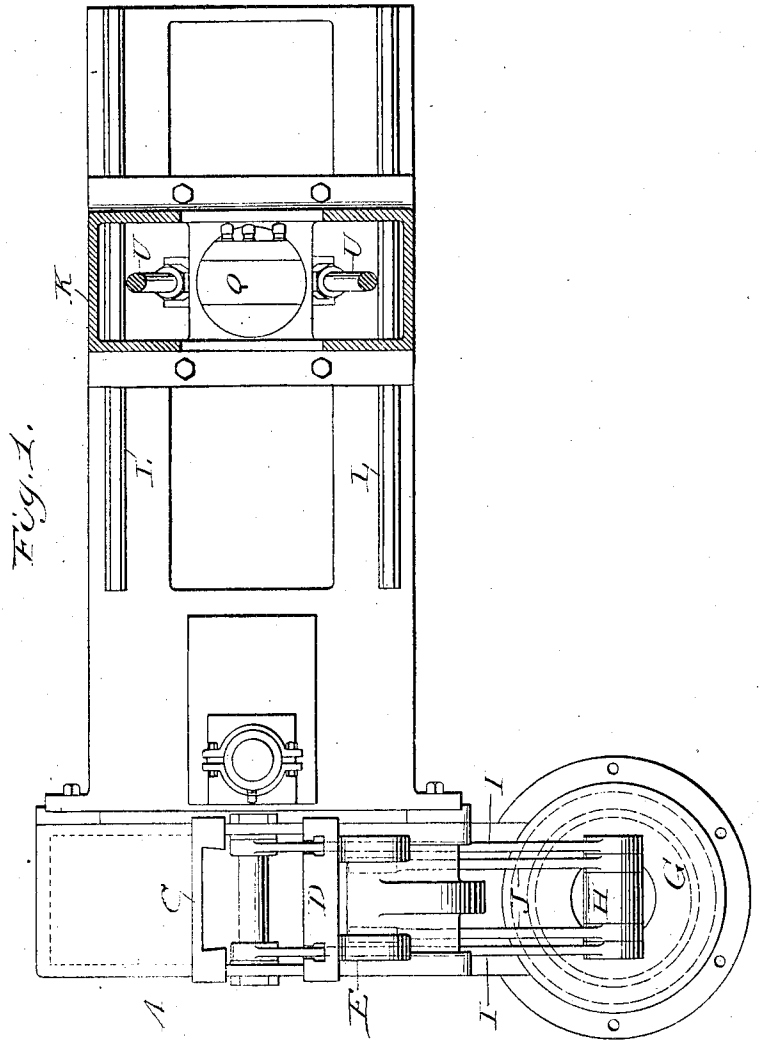


Fig. 1.

Witnesses

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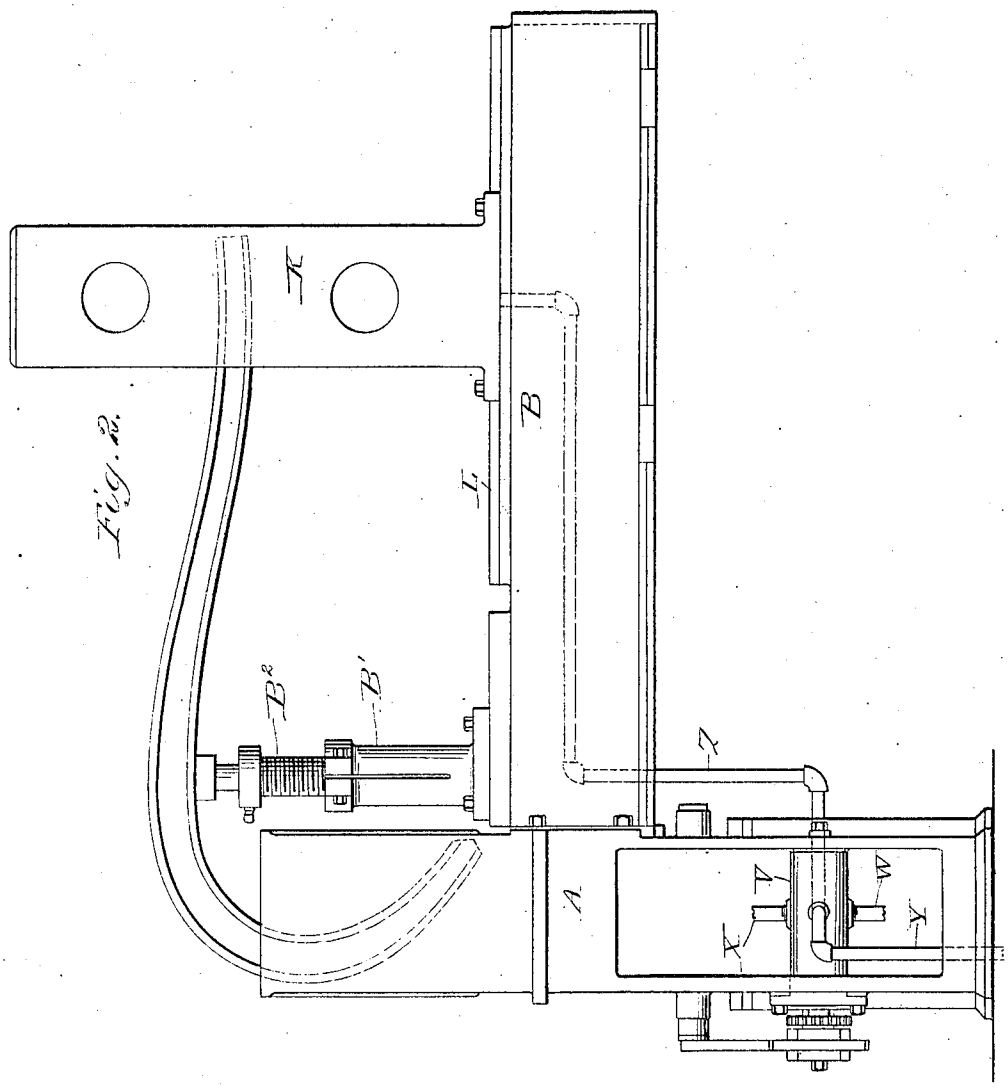
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4 SHEETS—SHEET 2

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 4.

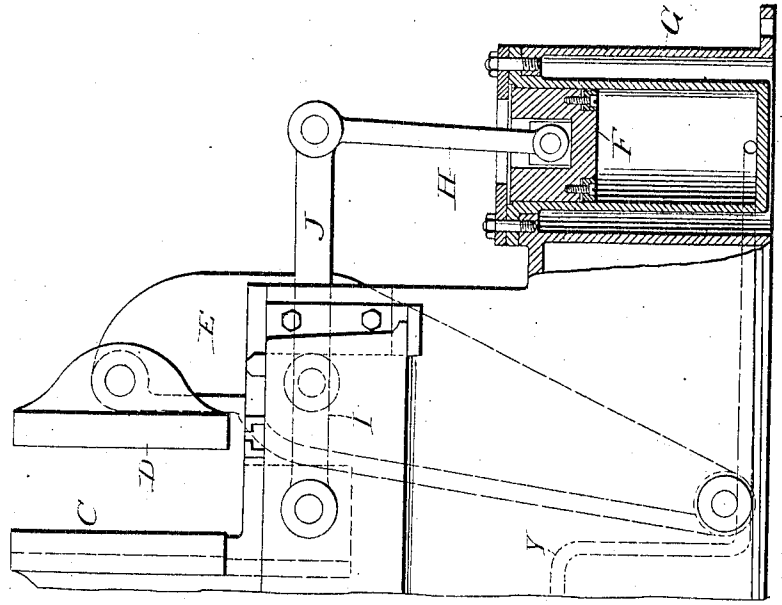
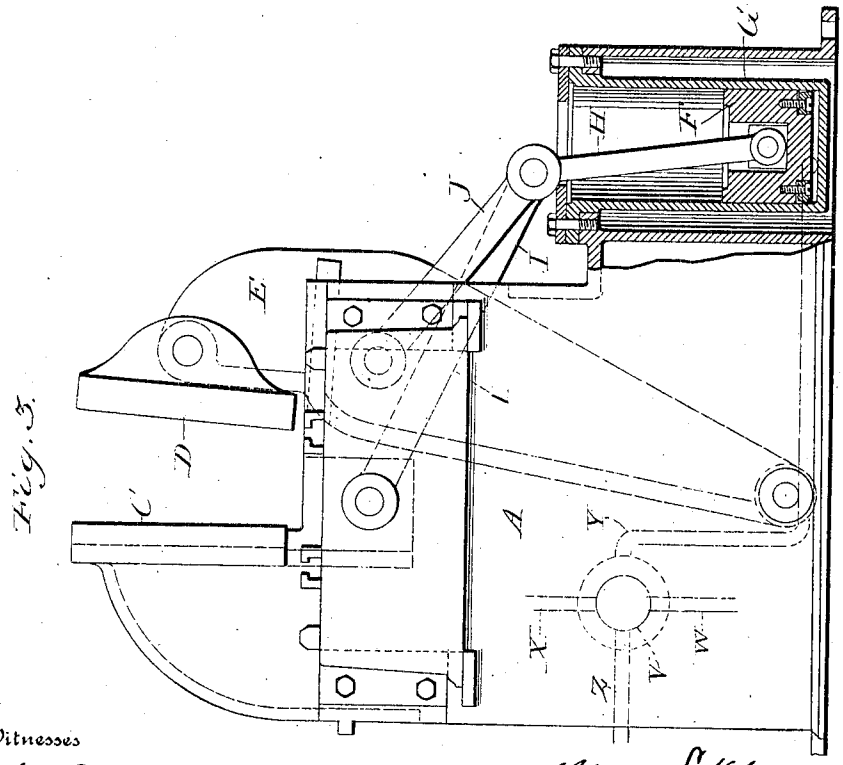


Fig. 5.



Witnesses

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4 SHEETS—SHEET 4.

Fig. 6.

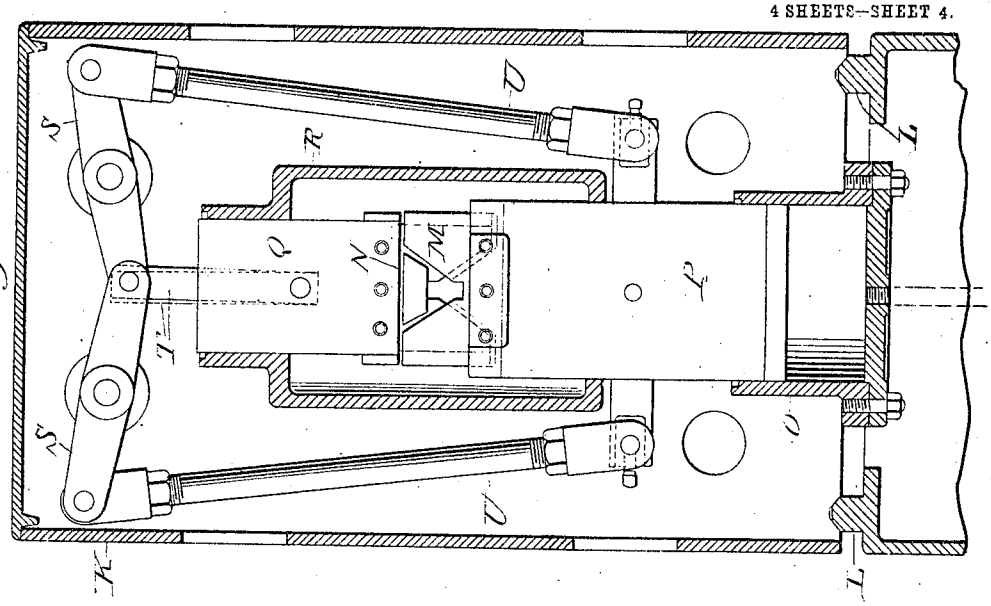
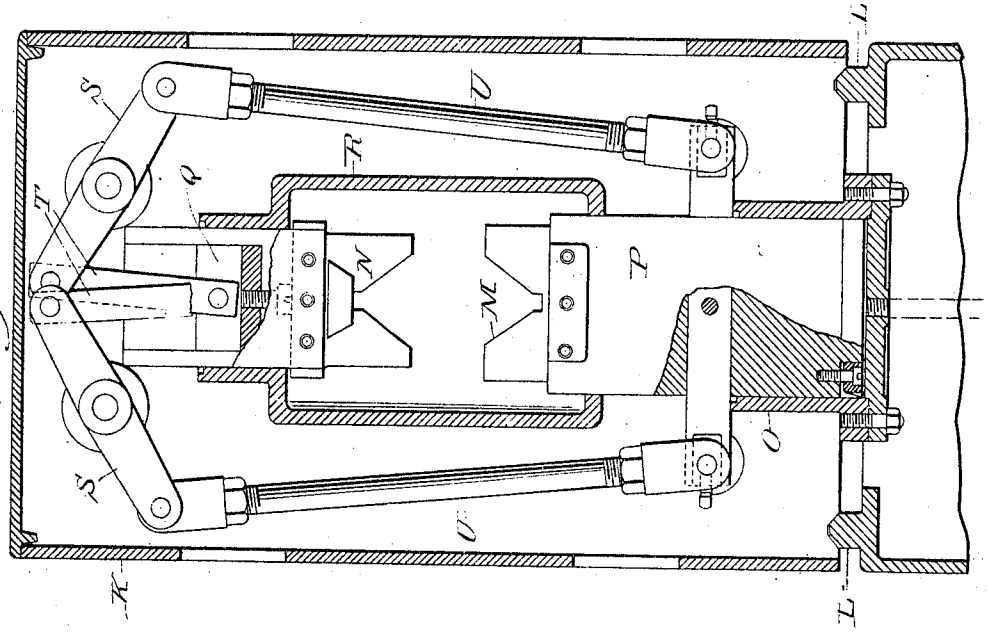


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

MAX SKLOVSKY, OF MOLINE, ILLINOIS, ASSIGNOR TO DEERE & COMPANY, OF MOLINE, ILLINOIS, A CORPORATION OF ILLINOIS.

BEAM-SETTING PRESS.

No. 851,323. Specification of Letters Patent. Patented April 23, 1907.

Application filed May 19, 1905. Serial No. 261,270.

To all whom it may concern:

Be it known that I, MAX SKLOVSKY, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented a certain new and useful Beam-Setting Press; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The subject of the present invention is a machine intended for clamping iron plow-beams while they are in heated condition so as to bring their respective parts in proper alignment and so that future bending or straightening by hand will be avoided.

Heretofore the plow-beam was bent to its curved shape, and while still hot was held in place by a support, and the workman would hit one side or the other of the beam to straighten or true it up by the eye. The results obtained in this way were of course more or less unsatisfactory as they involved considerable expense and were accompanied by more or less inaccuracy.

The main function of the present machine is, first, to clamp the rear end of the beam in a fixed position, and then automatically to bring the front or clevis end of the beam to its proper relation with respect to the rear end. It will be understood that the rear end is the one to which the plow is attached and in relation to which the front end must have a particular set and exact location.

The accompanying drawings, which form a part of this specification, illustrate one preferred embodiment of my invention, which however is susceptible of various modifications and capable of embodiment in other forms. Without limiting myself, therefore, to the specific construction illustrated, the invention will hereinafter be fully described with reference to said drawings, and then particularly pointed out and defined in the claims following this description.

In said drawings: Figure 1 is a top plan view of said machine embodying my invention, in which the relative location of the mechanisms is fully shown. Fig. 2 is a side elevation of the same, with a plow-beam represented in its position in the machine. Fig. 3 is a rear elevation, showing the clamping-jaws for the rear end of the beam open, and representing the cylinder and its piston for operating said jaws in vertical section. Fig. 4 is a similar rear elevation, showing the said clamping-jaws closed; this view being fragmentary and omitting a part of the machine frame at the left. Fig. 5 is an enlarged transverse vertical section through the mechanism which sets the forward or clevis end of the beam, showing the clamping-jaws thereof open. Fig. 6 is a similar section showing the clamping-jaws closed.

A particular explanation of the illustrated construction is as follows:

A indicates a vertically disposed casing or frame at the rear end of the machine, and B denotes a horizontally arranged bed extending forward therefrom.

The clamping apparatus for the rear end of the beam is shown in rear elevation in Figs. 3 and 4. C and D denote the clamping-jaws, shown open in Fig. 3 and closed in Fig. 4. These jaws are vertically disposed, to clamp the plow-beam sidewise between them. C is shown as a fixed jaw, and D as a movable jaw carried by the rocker-arm E. The jaw D is pivotally attached to the upper end of said rocker-arm, to permit it to come flatwise against the plow-beam when the jaws are closed. These jaws are operated by the piston or plunger F which works in the cylinder G, to which suitable motive fluid, preferably compressed air, is admitted for propelling said piston. In this case, the cylinder is shown vertically disposed and located laterally beside the rocker-arm E, which carries the movable jaw. The pitman H of the piston is connected to the knuckle of a toggle I J, the arms or links of which are of different lengths. The longer toggle-link I has a stationary pivot or fulcrum, while the shorter toggle-link J is pivotally connected to the rocker-arm E. When the apparatus is in the position shown in Fig. 3, the piston being at its lower position, the toggle-links are out of alignment and the jaws C and D are held open. But when compressed air is admitted to the cylinder behind the piston, the pitman lifts the knuckle of the toggle, bringing the toggle-links into alignment and thereby positively closing the jaws, to clamp the rear end of the plow-beam rigidly between them. On exhausting air from the cylinder, the piston will fall by gravity, and this is assisted by the rocker-arm E, which is self-movable in the direction to open the

jaws, its lower fulcrum or pivot being disposed to the left of the center of gravity of the rocker-arm.

The apparatus for setting and clamping the front end of the beam is carried by a frame or carriage K, which is slidably mounted on rails L, arranged longitudinally of the bed B. This permits said carriage to be moved toward the front or rear of the machine, so as to locate it at the proper distance from the foot of the beam, to adapt the mechanism to plow-beams of greater or lesser lengths. This front mechanism is shown fully in Figs. 5 and 6. The alignment and setting of the front end of the beam is accomplished by the co-acting V-shaped jaws M and N, which travel vertically to and from each other. The lower jaw M is carried by a heavy piston or plunger P, which works in the cylinder O, rigidly attached to the lower part of the carriage K. The upper jaw N is carried by a block Q. The piston P and block Q are guided in their up and down movements by the guide-frame R, which is rigid with the carriage K, and has top and bottom openings in which said piston and block are respectively fitted. The upper block Q is operated by the levers S S, which are intermedially fulcrumed on pivots attached rigidly to the frame or carriage K. The inner ends of said levers are connected respectively to the links of a toggle T, the knuckle of which is pivotally connected to the block Q. The outer ends of said levers are connected by pitmen U with the piston P. The jaws M and N are operated to close and clamp the beam by admitting motive fluid, preferably compressed air, to the cylinder O, which forces up the piston P, thereby lifting the lower jaw, while the lever and link connection U S T simultaneously forces down the upper jaw. On exhausting the air from the cylinder O, the piston P will fall by its own weight, thus separating the jaws. It is designed that the jaws shall always travel toward and away from each other equally, that is, as the lower jaw rises the upper jaw will travel downward exactly the same distance, this being accomplished by properly pivoting the levers S. The jaws are arranged to pass or overlap each other when close together, as shown in Fig. 6, so as to restrict the opening between the V-shaped jaws and clamp the beam. The vertices of these V-shaped jaws may be suitably squared, to conform to the angular formation of the beam. By virtue of this mechanism, it is obvious that whether the plow-beam which is to be clamped between the jaws is above or below the center, or to the right or left thereof, it will be automatically drawn to an exact center, being engaged by the opposed closing V-shaped jaws, and clamped between the vertices thereof. The jaws M and N are preferably adjustably secured to the cylinder P and block Q respectively, and secured by set-screws as shown in Figs. 1, 5 and 6, to permit lateral adjustment thereof in accordance with the "land" or lateral deflection to be given to the beam.

The compressed air or other motive fluid may be admitted to and exhausted from the cylinders G and O by any appropriate means. In Fig. 3 I have indicated diagrammatically a suitable valve V, having air supply and exhaust pipes W and X, and supply-pipes Y and Z leading therefrom to the cylinders G and O respectively.

The operation is as follows. The plow-beam is first placed in position in the machine, its rear part being properly located between the laterally-movable clamp-jaws C D, and its front part extending between the vertically-movable clamp-jaws M N. The compressed air or motive fluid is first let into the cylinder G, which actuates the piston F, and through the mechanism H I J closes the clamp-jaws C D and securely clamps the rear part of the beam. The air is then let into the front cylinder O, which actuates the piston or plunger P, thereby closing the clamp-jaws M N, which brings the front or clevis end of the beam exactly to its proper relation with respect to the rear end. When the beam is properly set, the air is exhausted from the front cylinder, and then from the rear cylinder, and the entire beam is released.

In Figs. 1 and 2, B′ denotes a vertically disposed post and B^2 a vertically adjustable screw or plug therein, adapted to support the beam in proper position to permit its being clamped by the respective clamping mechanisms, and act as a gauge to prevent the intermediate portion of the beam resting on said support from being forced down below its proper position. Said support, while constituting a valuable feature of my invention, is not an indispensable element of the combination of the front and rear clamping mechanisms, since the heated beam may be held by other suitable means in proper position until clamped by the rear mechanism.

In the following claims, the expression "beam-setting" is to be understood as including any analogous work to which the machine may be applied.

I claim as my invention and desire to secure by Letters Patent of the United States:

1. A beam-setting machine for operating on curved or goose-neck metal plow-beams while in heated condition, the same comprising, in combination, a clamp-mechanism arranged for clamping rigidly the rear curved portion of the beam, and centering-mechanism arranged in relation thereto to operate on the front end portion of the beam and draw or set the same to a predetermined relation to the rear portion of the beam.

2. A beam-setting machine having, in combination, clamp-mechanisms arranged

for engaging the rear and front portions respectively of a curved or goose-neck metal plow-beam, the one mechanism comprising clamp-jaws operative to clamp the rear portion of the beam laterally or sidewise, and the other mechanism comprising coacting V-shaped jaws operative to move oppositely together upon opposite sides of the front portion of the beam, whereby the front portion of the beam will be set or drawn to a predetermined relation to the rear portion.

3. A beam-setting machine having, in combination, a support for holding a curved or goose-neck metal plow-beam at an intermediate point, clamp-mechanism located at one side of said support and comprising clamp-jaws operative to clamp the rear portion of the beam laterally or sidewise, and mechanism located at the opposite side of said support operative to engage the front portion of the beam and draw or set the same to a predetermined relation to the rear portion, said mechanisms being operative in succession.

4. A beam-setting machine having, in combination, upright clamp-jaws arranged and operative to clamp the rear portion of a curved or goose-neck plow-beam laterally or sidewise between them, and centering-mechanism relatively arranged to operate on the front portion of the beam and comprising devices arranged to provide a relatively large enclosure around the beam and operative to restrict said enclosure to clamp the beam, thereby setting or drawing the front end of the beam to a predetermined relation to the rear portion.

5. A beam-setting machine for setting the front end of a curved or goose-neck plow-beam relative to the rear end, the same comprising a clamp-mechanism having upright jaws arranged to clamp the rear portion of the beam laterally, a bed or track arranged forwardly thereof and longitudinally of the beam, a carriage movable longitudinally thereon, and centering or setting mechanism carried thereby arranged for engaging the front portion of the beam.

6. A beam-setting or aligning machine having, in combination, mechanisms relatively arranged for engaging different portions of a beam, one mechanism comprising means operative to rigidly clamp the beam, and the other comprising devices operative to engage the beam in various unaligned positions around and substantially displaced or removed from a central position and to draw or set the beam to such central position.

7. A beam-setting machine having, in combination, clamp-mechanisms arranged for engaging different portions of a beam, one mechanism comprising clamp-jaws operative to rigidly clamp the beam, and the other mechanism comprising opposed V-shaped jaws arranged to provide a relatively enlarged enclosure around the beam and operative to restrict said enclosure and clamp the beam between the vertices or vertical parts of the jaws, whereby the one portion of the beam will be set or drawn to a predetermined relation to the portion clamped by the first mechanism.

8. A beam-setting machine having, in combination, a frame or bed, clamping-apparatus mounted thereon arranged for clamping the rear portion of a heated beam, and a second clamping-apparatus mounted on said bed arranged for clamping the front portion of the beam, the latter apparatus comprising co-operating opposed V-shaped jaws adapted to come together upon the beam, cylinders for the respective apparatus, working pistons therein operatively connected with the respective apparatus, and means for admitting and exhausting motive-fluid successively to the respective cylinders.

9. A beam-setting machine having, in combination, a clamping-apparatus comprising clamp-jaws arranged to open and close laterally for clamping the rear portion of a heated beam sidewise between them, and a second clamping-apparatus comprising V-shaped clamp-jaws arranged to open and close vertically for clamping the front portion of the beam between them, the second apparatus being so relatively located as to set the front portion of the beam at a predetermined relation to the rear portion.

10. A beam-setting machine having, in combination, a clamping-apparatus for clamping the rear portion of a heated beam comprising fixed and movable jaws, a toggle having a link connected with the movable jaw, a cylinder and working piston therein operatively connected with the knuckle of the toggle, straightening of the toggle by said piston effecting a closing movement of the jaw; and a clamping-apparatus for engaging the front portion of the beam comprising opposed V-shaped clamp-jaws arranged to pass or overlap on their closing movement, a cylinder and piston therein carrying the lower jaw, intermediately-fulcrumed levers having a toggle connection with the upper jaw and pitman connections with said piston; and means for operating said pistons by motive-fluid.

11. A beam-setting machine having, in combination, a support for a heated plow-beam, a mechanism arranged for clamping the rear portion of the beam in rigid position, and cooperative vertically-movable V-shaped clamp-jaws arranged to engage the front portion of the beam, said jaws adapted to pass or overlap on their closing movement.

12. A beam-setting machine having, in combination, a frame or bed, a stationary clamping-apparatus mounted thereon for rigidly holding the rear portion of a heated beam, a carriage mounted on the bed and

movable longitudinally thereof, and clamping-apparatus carried thereby and comprising opposed V-shaped jaws adapted to come together for engaging and setting the front portion of the beam with relation to the rear portion.

13. A beam-setting machine having, in combination, a clamping-mechanism arranged for clamping the rear portion of a heated beam, a cylinder, a piston therein operatively connected with said clamping-mechanism, a second clamping-mechanism comprising coacting V-shaped clamp-jaws arranged to come together upon the front portion of the beam, a cylinder and piston working therein operatively connected with said second mechanism, and a multiple valve and suitable pipe-connections adapted for supplying motive-fluid to the respective cylinders.

14. A beam-setting machine having, in combination, a support for holding a beam in an elevated horizontally-disposed position, a clamping apparatus at one side of said support adapted for clamping one portion of the beam and hold the same rigid, and apparatus at the opposite side of said support adapted to engage a different part of the same and set the same in proper relation to the first-mentioned part.

15. A beam-setting machine having, in combination, a bed, a standard or support thereon for supporting a beam horizontally at an intermediate part, a clamping-apparatus at one side of said support adapted to clamp the beam laterally or sidewise and hold the same rigid, a carriage at the opposite side of said support movable on the bed longitudinal of the beam, and apparatus carried thereby for engaging and setting the beam.

16. A beam-setting apparatus comprising a clamp having opposed V-shaped jaws between which the beam can be arranged, and means for vertically reciprocating the clamp-jaws, whereby the jaws will close oppositely on the beam, said jaws being arranged to pass or overlap on their closing movement, and the vertices thereof being formed to fit the opposite sides of the beam when the jaws are closed.

17. A clamp for a beam-setting apparatus comprising a frame, a cylinder rigid therewith, a piston working therein, a movable head in alignment with the piston, a guide therefor carried by the frame, opposed V-shaped clamp-jaws carried by the piston and head respectively, means for operating the piston, a lever intermediately fulcrumed on the frame, a link connecting one arm of the lever and head, and a pitman connecting the opposite arm of said lever and the piston.

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

MAX SKLOVSKY.

Witnesses:
CHAS. H. POPE,
ROMEO R. OWENS.