

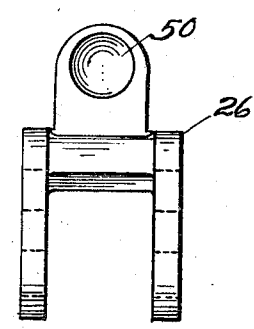
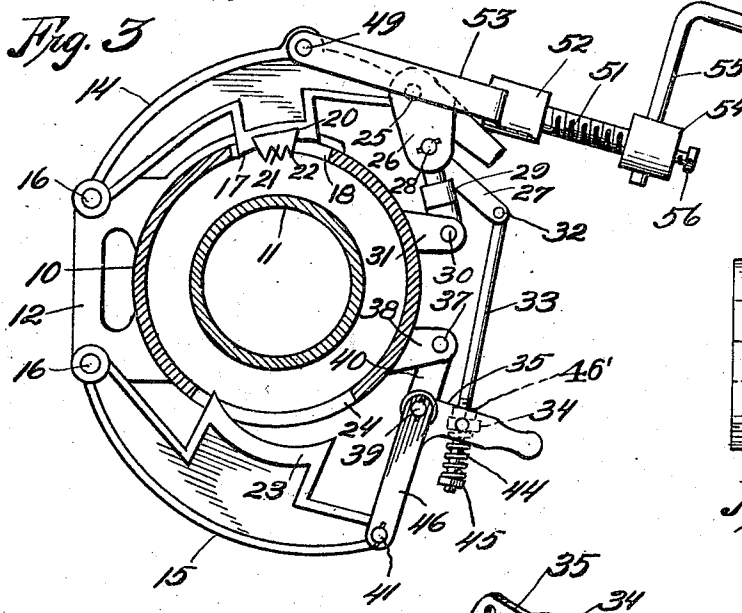
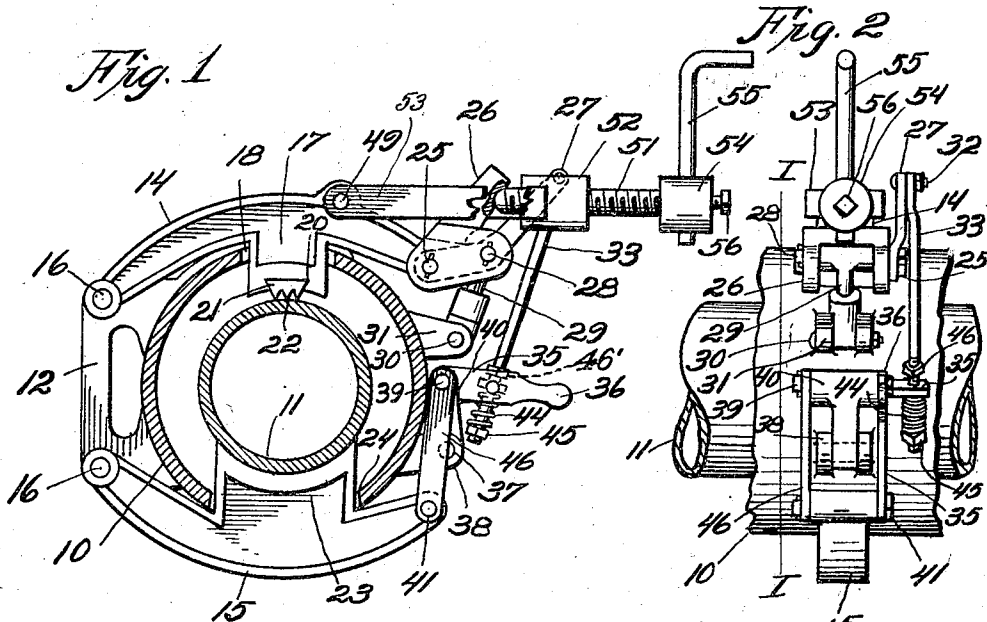
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1,495,706

J. J. MAHONEY

CLAMP MECHANISM FOR PIPE LAYING MACHINES

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Fig. 5

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UNITED STATES PATENT OFFICE.

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CLAMP MECHANISM FOR PIPE-LAYING MACHINES.

Application filed April 10, 1922, Serial No 551,378. Renewed October 27, 1923.

To all whom it may concern:

Be it known that I, JOHN J. MAHONEY, a citizen of the United States, and resident of Kansas City, county of Jackson, State of Missouri, have invented a certain new and useful Improvement in Clamp Mechanism for Pipe-Laying Machines, of which the following is a complete specification.

The present invention relates to pipe-laying machines, and aims to provide an improved clamping means for locking the carriage of such machines in firmly clamped engagement with the pipe along which the carriage of the pipe-laying machine is adapted to travel in the operation of laying the pipe.

Accordingly, I have devised an improved arrangement and construction of clamping means which comprises a pair of clamping members adapted for engagement with the opposite sides of the pipe, and having operating connections between these members for actuating the same either into or out of clamping engagement with the pipe, and adapted to support said members out of engagement with the pipe when the members are in their inoperative position.

With this general object in view, the invention will now be described by reference to the accompanying drawing illustrating one form of construction which I have devised for embodying the proposed improvements, after which the novel features therein will be particularly set forth and claimed.

In the drawing—

Figure 1 is a vertical sectional view of the carriage portion of a pipe-laying machine, in its operative relation to a pipe, and representing a section taken on the line I—I of Figure 2, and showing a clamping means constructed in accordance with the present invention, with said clamping means shown in operative engagement with the pipe;

Figure 2 is a side elevation of the same; Figure 3 is a sectional view similar to that shown in Figure 1, with the clamping means shown in inoperative position, or out of clamping engagement with the pipe;

Figure 4 is an enlarged detail view showing the bell crank member which forms one of the parts of the toggle operating mechanism; and

Figure 5 is a perspective view of one of the lower toggle members.

Referring now to the drawing in detail, this illustrates the improved device in its

operative relation to the carriage 10 of a pipe-laying machine of the type fully shown and described in Patent No. 1,210,824, issued January 2nd, 1917, in which form of machine the carriage is arranged to travel along a pipe 11 and is adapted to be securely locked or clamped to the pipe from time to time during the operation of connecting up successive lengths of pipe, all as more fully explained in the patent referred to. The present invention aims to provide an improved form of clamping means for the purpose of locking the carriage in firmly clamped relation to the pipe 11 during the intervals at which this clamping operation is required.

Accordingly, at one side of the carriage 11 is formed a rigid supporting bracket portion 12 for pivotally carrying an upper clamping member 14 and a lower clamping member 15, these clamping members being provided with pivotal connections with the bracket portion 12, as indicated at 16. The inner face of the clamping member 14 is provided with a clamping projection 17 operating through an opening 18 in the carriage 10 for engagement with the pipe 11, for which purpose the projection 17 is formed with an undercut recess 20 for receiving a wedge-shaped clamping plate 21 formed with the ribs or serrations 22 adapted to effect a clawlike clamping engagement with the pipe 11; this plate 21 is of suitably tempered metal to give it wearing qualities and the construction shown provides a renewable plate construction in connection with the upper clamping member 14. The lower clamping member 15 is likewise provided with an inwardly projecting portion 23, of materially greater size as compared with the projection 17 from the upper clamping member 14, and operating through an opening 24 in the carriage 10 for clamping engagement with the under side of the pipe 11, the inner margin of this projecting portion 23 being suitably curved in order to conform properly to the curvature of the pipe 11.

The free end portions of the clamping members 14 and 15 are provided with suitable connections for either throwing the members out of clamping engagement with the pipe or swinging said members in the opposite direction for effecting the desired clamping operation. These connections comprise a toggle mechanism associated

with each of the clamping members, and further connections between these toggle mechanisms for producing a simultaneous operation of the clamping members. To the free end of the upper clamping member 14 are pivotally connected, by means of the same pivot pin 25, what may be termed a bell crank lever 26 and a toggle lever 27, the midpoint of which lever 27, as well as one of the arms of the lever 26, is pivotally connected, as indicated at 28, to a fulcrum post 29 which is mounted for rocking movement about a pivot pin 30 carried in lugs 31 projecting outwardly from the carriage 10. The outwardly projecting arm of the toggle lever 27 is pivotally connected, as indicated at 32, to the upper end of a toggle rod 33, the lower end portion of which is threaded through a lug 34 projecting laterally from a bell crank lever 35 which is provided with a handle portion 36. The midportion of the lever 35, together with a companion toggle link 46, are provided with a pivotal connection, as indicated at 39 with one end of a toggle link 40, the other end of which is fulcrumed at 37 between lugs 38 projecting out from the carriage 10 in the same manner as the lugs 31. The link 46 and lever 35 are also pivotally connected, as indicated at 41, to the free end of the rod by means of a nut 45, with the upper end of the spring 44 in engagement with the under side of the lug 34 on the lever 35. In this manner, a yielding operating connection is provided between the upper toggle mechanism formed by the lever 27 and rod 33, and the lower toggle mechanism which is formed by one arm of the bell crank lever 35 and the toggle links 34 and 40. A stop nut 46' is provided on the rod 33 above the lever 35 and, by engagement with the lug 34, limits the action of the spring 44 tending to retract said rod through the lug 34 by pulling down on the rod.

The outer or free end of the bell crank lever 26 is formed with a suitable recess 50 for engagement with the inner end of an operating screw 51 which operates through a nut 52 carried by the outer end of a yoke member 53, the leg portions of which extend on opposite sides of the bell crank 26 and are pivoted, as indicated at 49, on opposite sides of the clamping member 14. The outer end of the screw 51 carries a block 54 to which is fitted the handle member 55 retained in place by means of a set screw 56.

Referring now to the operation of the above described construction, it will be noted by reference to Figure 3 that the connections provided between the upper and lower clamping members 14 and 15 are adapted to support said members in their inoperative position, and out of clamping engagement with the pipe 11, due to the lower toggle mechanism, comprising the inner arm of the lever 35 and the toggle links 46 and 40, being swung into depending relation to the lugs 38, while the lever 27 is rocked downwardly about the pivot 28 at the same time as the post 29 is rocked rearwardly upon the supporting lugs 31, whereby the link 29 and one arm of the lever 27 form a supporting toggle for the upper clamping member 14 for maintaining the latter in its upper or inoperative position, as clearly represented in Figure 3.

When it is desired to operate the clamping means into engagement with the pipe 11, for retaining the carriage 10 in axial alinement with the pipe, the yoke member 53 and its screw 51 are lifted sufficiently to allow the lever 26 to be rocked upwardly into engagement with the inner end of the screw 51, whereupon the handle 36 of the lever 35 is pulled upwardly for simultaneously actuating the upper toggle elements into the position shown in Figure 1, and also the lower toggle mechanism into its upper position, with the toggle joint 39 above and in past the center of the lower pivot 37, by which operation the clamping portion 23 of the lower member 15 is brought into engagement with the under side of the pipe 11. To effect the final clamping operation, the screw 51 is operated by means of the handle 55, and, the inner end of the screw being seated in the recess 50 of the lever 26, the latter is further rocked and thus acts to firmly and securely lock the upper clamping member in effective clamping engagement with the upper side of the pipe 11. In this action, the pivot 28 at the outer end of the link 29 serves as the fulcrum support for the lever 26, and accompanying this action is a further tightening of the connection with the lower toggle mechanism by the final rocking of the lever 27 and pulling upward upon the toggle rod 33 against the tension of the spring 44, as will be readily understood.

It is thus apparent that I have provided a simple, practical and efficient means for firmly and securely locking the carriage of the pipe-laying machine with reference to the pipe 11 for the purpose of preventing any rotation of either the carriage or pipe with reference to the other, and also to guard against the possibility of any movement of the carriage longitudinally of the pipe. While I have shown and described what I now regard as the preferred form of construction for embodying the improvement, I desire to reserve the right to make such changes as may fairly fall into scope of the following claims.

What I claim is:

1. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members

carried by said carriage and adapted to clamp opposite sides of the pipe, and connections between said members and operable to spread the same and support them out of engagement with said pipes.

2. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, and connections between said toggle mechanisms adapted to actuate the latter for moving said members either into or out of clamping engagement with said pipe.

3. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, and connections between said toggle mechanisms and including a handle member adapted to operate said toggle mechanisms for moving said clamping members either into or out of clamping engagement of said pipe.

4. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, and yielding operative connection between said toggle mechanisms adapted to actuate the latter for moving said clamping members either into or out of clamping engagement with said pipe.

5. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, and a connection between said toggle mechanisms adapted to cause simultaneous operation thereof, one of said mechanisms being provided with a screw operated lever for actuating said mechanisms and thereby operating said members into clamping engagement with said pipe.

6. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said members comprising clamping

members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, a connection between said toggle mechanisms adapted to cause simultaneous operation thereof, a bell crank lever pivotally interposed between one of said clamping members and its toggle mechanism, and a screw operative to rock said lever and thereby operate said clamping members into clamping engagement with said pipe.

7. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, a connection between said toggle mechanisms adapted to cause simultaneous operation thereof, a bell crank lever mounted on said carriage and pivotally connecting one of said clamping members and its toggle mechanism, and a screw operative to rock said lever and thereby operate said clamping members into clamping engagement with said pipe.

8. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members pivotally connected with said carriage and adapted to clamp opposite sides of the pipe, a toggle mechanism associated with each of said members, a connection between said toggle mechanisms adapted to cause simultaneous operation thereof, a bell crank lever pivotally interposed between one of said clamping members and its toggle mechanism, a yoke pivoted to said last named clamping member, and a screw mounted in said yoke and adapted to be engaged with one arm of said bell crank lever for rocking the same and thereby operating said clamping members into clamping engagement with said pipe.

9. In a pipe-laying machine, the combination with a carriage, of means for clamping the carriage in axial alinement with the pipe, said means comprising clamping members by said carriage and adapted to clamp opposite sides of the pipe, one of said members having a removable serrated clamping plate for engagement with said pipe, and means for moving said clamping members into and out of engagement with the pipe.

In witness whereof I hereunto affix my signature.

JOHN J. MAHONEY.