

(No Model.)

T. MURPHY.

METHOD OF AND APPARATUS FOR EQUALIZING LINKS.

No. 478,454.

Patented July 5, 1892.

Fig: 1.

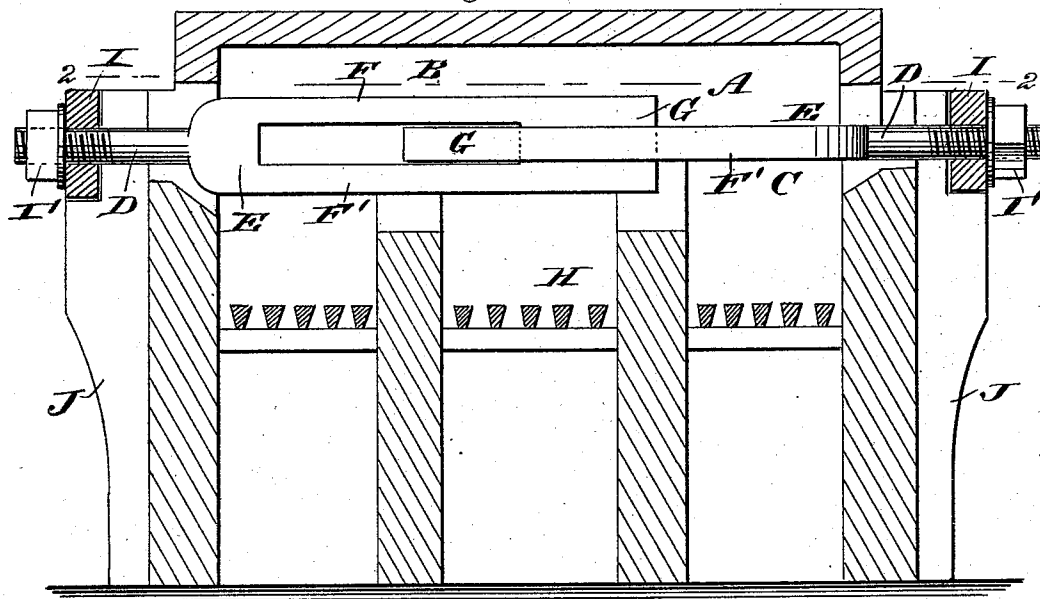
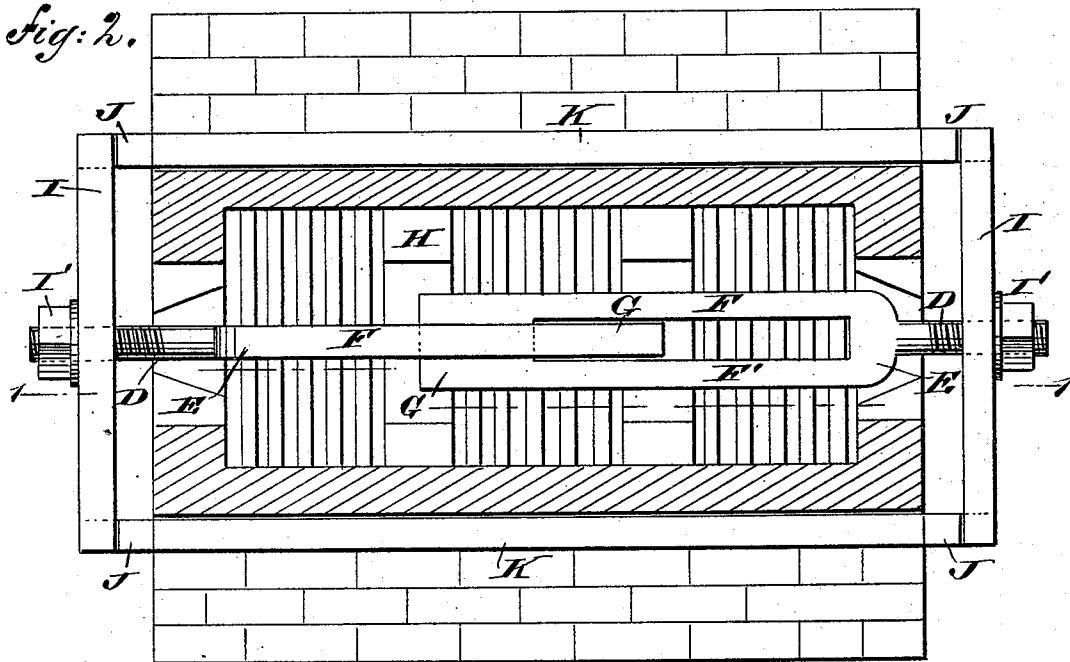


Fig: 2.



WITNESSES:

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THOMAS MURPHY, OF SEWICKLEY, PENNSYLVANIA.

METHOD OF AND APPARATUS FOR EQUALIZING LINKS.

SPECIFICATION forming part of Letters Patent No. 478,454, dated July 5, 1892.

Application filed November 23, 1891. Serial No. 412,732. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MURPHY, of Sewickley, in the county of Allegheny and State of Pennsylvania, have invented a new
5 and Improved Method of and Apparatus for Equalizing Links, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved apparatus for equalizing
10 the members or links used in deep-well-drilling machines and for other purposes and to prevent the links from breaking when subjected to a heavy strain or sudden jerk.

The invention will be hereinafter described
15 and claimed.

In the accompanying drawings, in which similar letters of reference indicate corresponding parts, Figure 1 is a sectional side elevation of the device on the line 1 1 of Fig.
20 2, and Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1.

The method is more especially designed for equalizing the lengths of reins of drilling-jars used in deep-well-drilling machines, the said
25 jars consisting of two engaged links, one fitted to slide on the other, so that when the jars are lowered and the drill has engaged the rock the lower link remains stationary, while the upper link or jar is caused to slide
30 downward a short distance farther to disengage its head from the head of the lower link.

Now in pulling up the jars the upper jar slides upward quickly and its head engages the head of the lower jar with a jerk, so as to
35 pull the drilling-tool out of the rock. In case the two members or reins of the jars are unequal in length, caused in the process of manufacture by hammering, welding, or otherwise, then the entire strain of the jerk comes
40 on one of the members or reins and a break is unavoidable and the drilling-tools are lost in the well. In order to remedy this invisible defect in the length of the members or reins of the jars and to prevent breaking of the latter, I subject the manufactured links to heat
45 in a suitable furnace and at the same time apply power to the ends of the jars, so as to stretch the reins or members. By the heating and simultaneous gradual stretching of the jars the shorter rein or member expands
50 and is lengthened to gradually catch up to

the expansion and slower stretching of the larger rein or member, it being understood that the power applied for stretching is mostly expended on the shorter member, and consequently the latter is stretched more than the other one. As the members are heated, their particles readily yield to the power applied at the ends to stretch, as described. When the length of the shorter member equals that of
55 the other and the heating and stretching is continued, both members will stretch alike, or nearly so. As soon as the members are of equal length, the heating is discontinued, but the jars are held in a stretched position until
60 cooled sufficiently for convenient removal.

I do not limit myself to the particular construction of the jars, as the method can be readily applied to links used for other purposes but of a similar construction.
65

As shown in the drawings, the jar A is provided with the two links B and C, which are alike in construction, each comprising a shank D, projecting from a cap E, connected by the two reins or members F and F' with the head
70 G, and thus completing the link. The head of one jar is fitted to slide between two reins of the other jar, as is plainly shown in the drawings. When the jars have been manufactured in the usual manner, they are placed
75 into a furnace H of any approved construction, arranged so as to heat the jars, the latter being placed horizontally and their shanks extending through the end walls of the furnace.
80

The outer threaded ends of the shanks D of the two jars B and C pass through a transversely-extending bar I, on which about the nuts I', screwing on the threaded shanks and against the said bar I. The latter rests with
85 its outer ends on vertical standards or posts J, abutting against the ends of the furnace H, the said posts being reinforced by longitudinally-extending bars K, passing through the wall of the furnace and connecting opposite-
90 ly-arranged posts J with each other, as is plainly indicated in Fig. 2.

Now it will be seen that when the heat is applied to heat the two jars until the latter reach a welding heat then the operator turns
95 the nuts I' so as to stretch the two jars in opposite directions, it being understood that the

heads G of the two jars engage each other, as shown in the drawings. This heating and stretching process is continued until the reins F and F' of each of the jars are of the same
5 length. The heating is then discontinued, but the nuts I' remain screwed up until the jars have cooled sufficiently to admit of convenient removal from the furnace H.

Having thus fully described my invention,
10 I claim as new and desire to secure by Letters Patent—

1. The herein-described method of equalizing the lengths of the two sides of a link, which consists in subjecting it to the action of heat
15 and at the same time to a gradual strain un-

til its sides or members are of equal lengths, substantially as set forth.

2. The herein-described method of equalizing the lengths of two sides of a link, which consists in subjecting two connected links to
20 the action of heat and at the same time straining the said links apart until the two sides or members are of equal lengths and then permitting the links to cool while under strain, substantially as set forth.

THOMAS MURPHY.

Witnesses:

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C. SEDGWICK.