(No Model.)

J. A. FITZSIMMONS.

GRAPPLE OR GRIP TONGS.

No. 490,866. Patented Jan. 31, 1893.

Fig. 1.

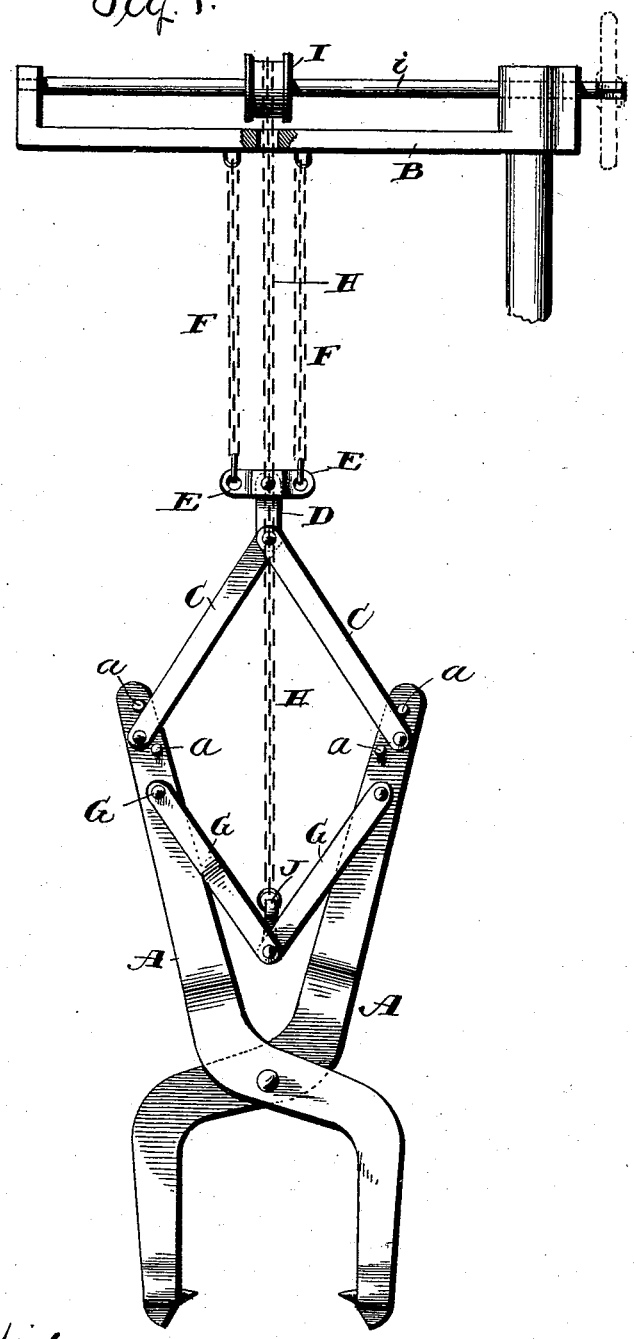
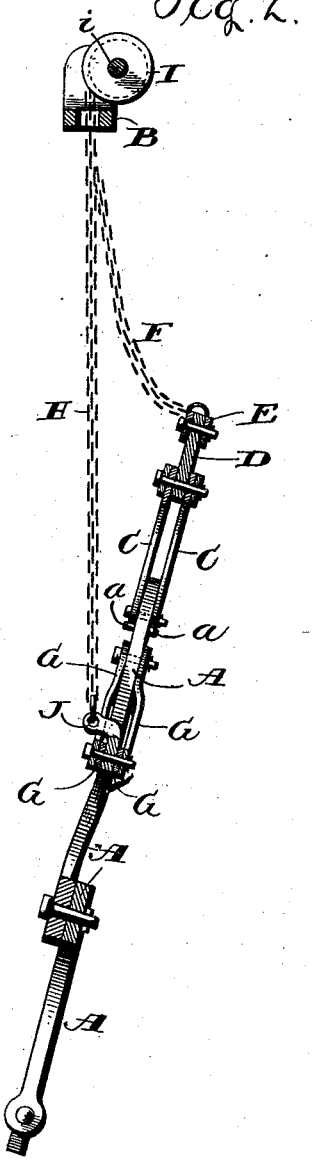


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES A. FITZSIMMONS, OF WHEELING, WEST VIRGINIA.

GRAPPLE OR GRIP-TONGS.

SPECIFICATION forming part of Letters Patent No. 490,866, dated January 31, 1893.

Application filed November 7, 1892. Serial No. 451,214. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. FITZSIMMONS, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Grapples or Grip-Tongs; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to grapples or grip-tongs for handling steel ingots, and it has for its object, among others which will hereinafter appear, the provision of tongs that will work automatically, both in opening and closing, and which will be cheap and durable.

To this end and to such others as the invention may pertain, the same consists in the peculiar construction, and in the novel combination arrangement and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and then specifically defined in the appended claims.

The invention is fully illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which;—

Figure 1, is a side view of my tongs when closed, and, Fig. 2, is a vertical section, with the parts in their positions when the tongs are opened and being lowered at an angle to the vertical.

The particular kind of tongs or grapples that I have sought to improve, are those which are used with hydraulic-cranes, and the tongs themselves are of the usual construction, consisting simply of two crossed levers A, A pivoted together at the point of intersection, and suspended from the jib B of the crane, by means of which they are raised and lowered. Pivotally attached to each lever A near the upper end thereof is a pair of parallel bars C, and the free ends of one pair of these bars or links are pivotally connected to the free ends of the other. The links C are of such length, relative to the degree of opening of the levers A, A, that from their point of connection with the levers they incline upward. Pivotally mounted on the same pin that connects the upper ends of the links C, is a short vertical bar D, to whose upper end at its center is pivoted a short horizontal bar E. The ends of the latter are connected to the jib B, by two chains F running substantially parallel. The links C and the chains constitute the means for closing the tongs as will be obvious, since an upward movement of the united ends of the links will result in drawing inward the upper ends of the levers A, A.

I employ two suspending chains in order to prevent twisting of the tongs, there being with the two separated chains two points of support. The horizontal bar E forms an equalizer.

For automatically opening the tongs I employ the following means; Pivoted to each other and to the levers A, A a short distance below the connection therewith of the links C, are two pairs of like links G. These however extend downward from their point of connection with the levers A, A to their connection with each other, so that if they be drawn upward at the point of their connection with each other they will cause the spreading apart of the tongs. Attached to the links at their point of connection with each other is a chain H that depends from a wheel or drum I mounted on a shaft *i* that is journaled on the jib B. The shaft is provided with suitable means for its convenient rotation to wind or unwind the chain H from the drum. It will be seen, if the chain H be shortened by winding it upon the drum so that the weight of the tongs falls upon said chain, instead of the two chains F, F, that the weight of the tongs upon the outer ends of the links G, will pull said ends up and thus spread the levers A, A apart. To cause the latter to close, it is simply necessary to unwind the chain H and thus lengthen and throw the weight upon the chains F, F.

In order to prevent the tongs from opening too wide, or closing too much, a stop-pin *a* is provided on each lever A each side of the links C, against which pins said links strike when moving to a certain extent in either direction.

In order to lower the tongs in an inclined position so that they can in such position grapple an object, I attach the chain H to one

side of their center of gravity, so that when suspended by the said chain the lower object engaging part stands at one side of a vertical line and the upper part at the other side of such line, as indicated in Fig. 2. To accomplish this object I employ an inverted L shaped arm J, whose vertical member at its lower end is mounted on the bolt connecting the ends of the links G, G, and whose horizontal member, to the free end of which the chain is attached, extends to one side of said links. Of course the chain H can be attached to the links G, G directly in line with the center of gravity of the tongs, so that they will always stand in a vertical position.

What I claim as new, is;—

1. In a grapple, in combination with the tongs, the two sets of bars or links pivoted to said tongs one set being adapted to cause closing of the tongs and the other their opening, the suspending means connected to the former set, and the suspending means connected to the other set and adapted to be lengthened and shortened, substantially as specified, and for the purpose described.

2. In a grapple, in combination with the tongs, the links pivoted thereto and to each other, the horizontal bar pivotally connected to said links at their point of connection, and the two separated suspending chains connected to the opposite ends of said bar.

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

JAMES A. FITZSIMMONS.

Witnesses:
GEO. J. MATHISON,
HERMAN BENTZ.