

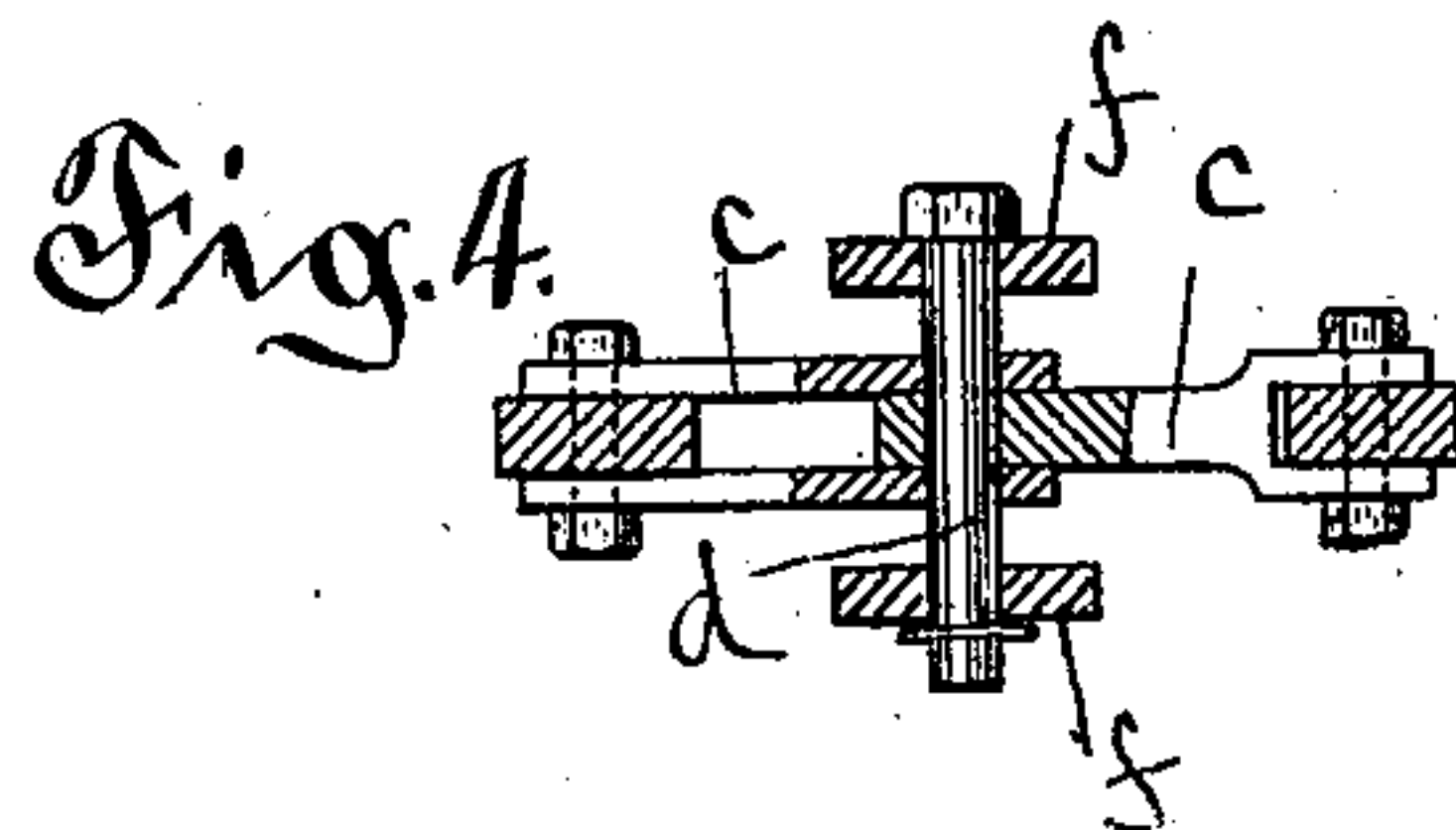
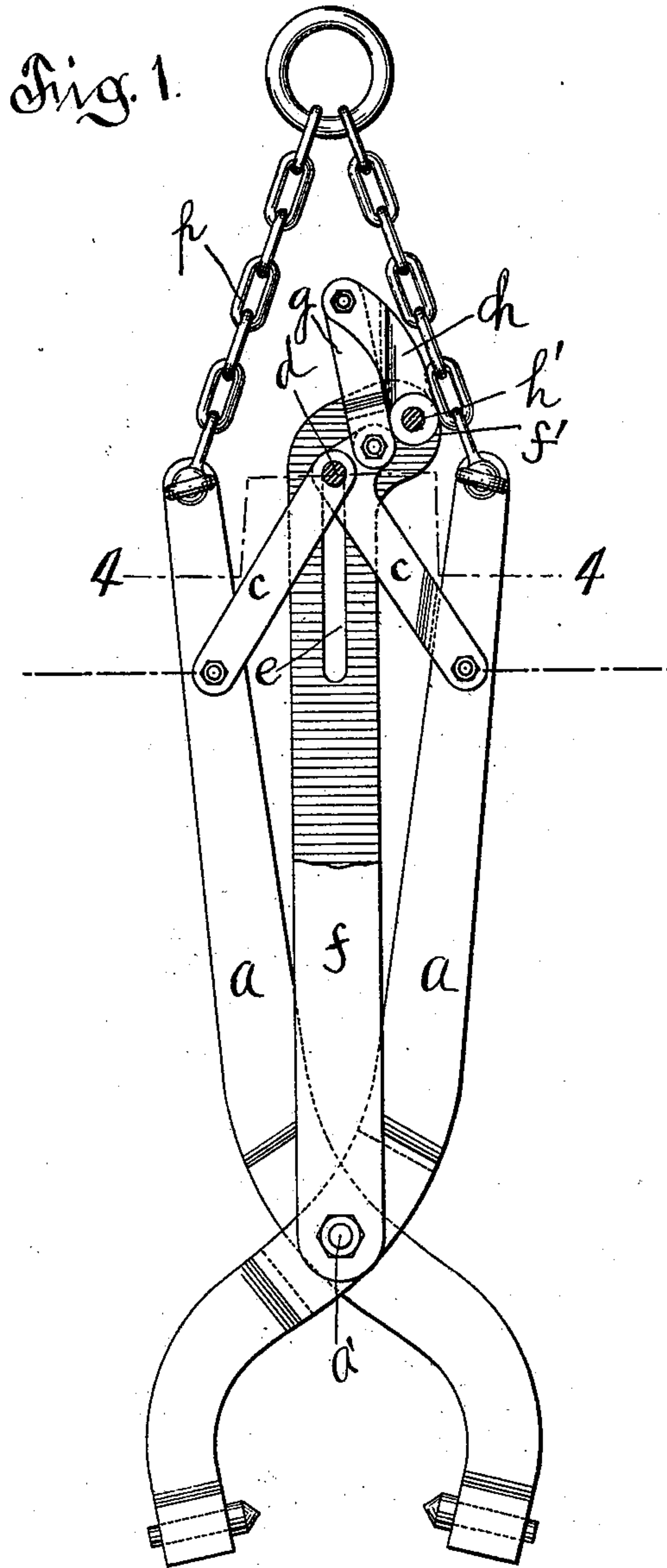
(No Model.)

2 Sheets—Sheet 1.

J. BULMER.  
INGOT TONGS.

No. 550,404.

Patented Nov. 26, 1895.



Witnesses:

Robert C. Totten  
Chas. J. Farrar.

Inventor.  
John Bulmer  
By Ray Totten  
Attys

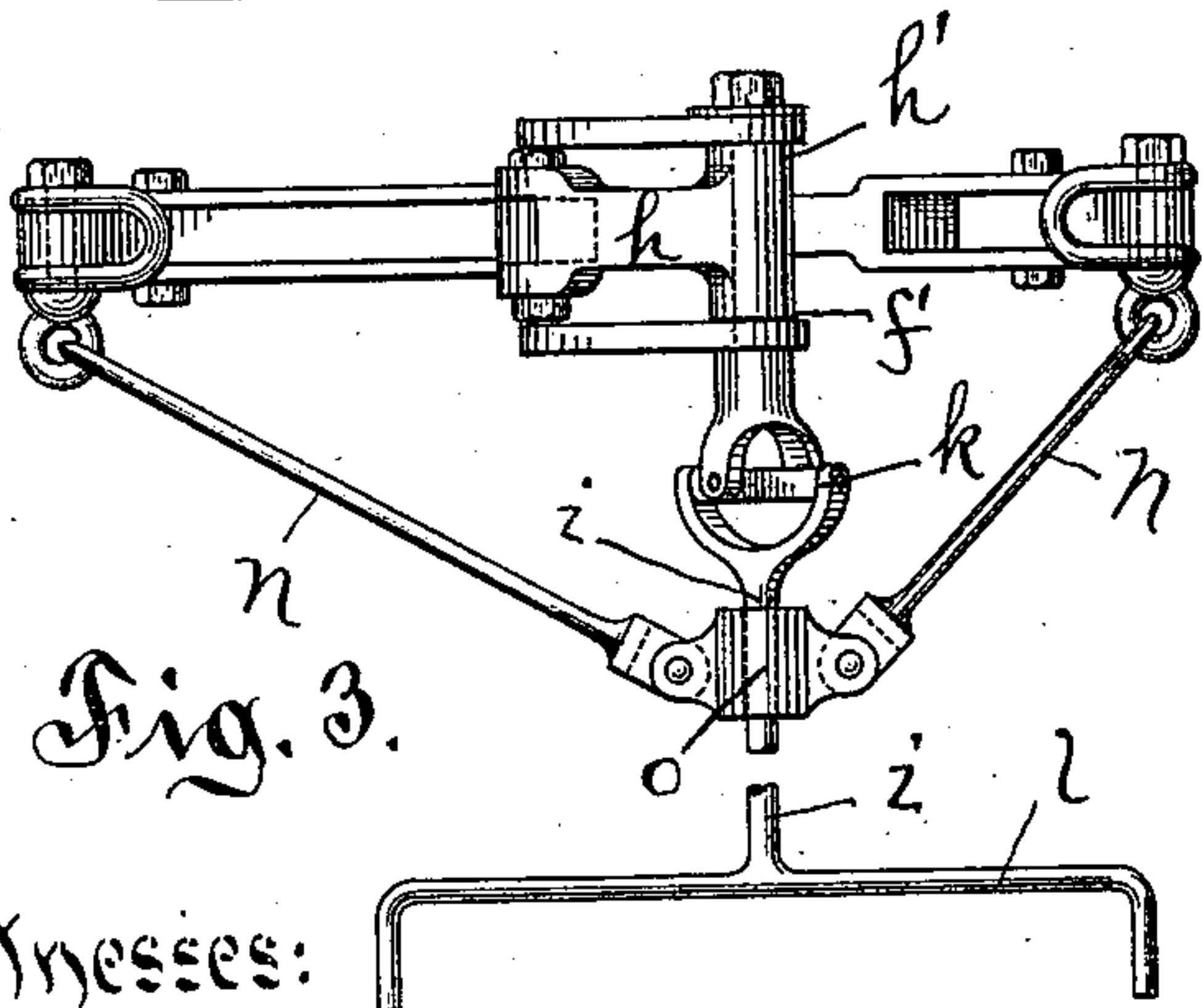
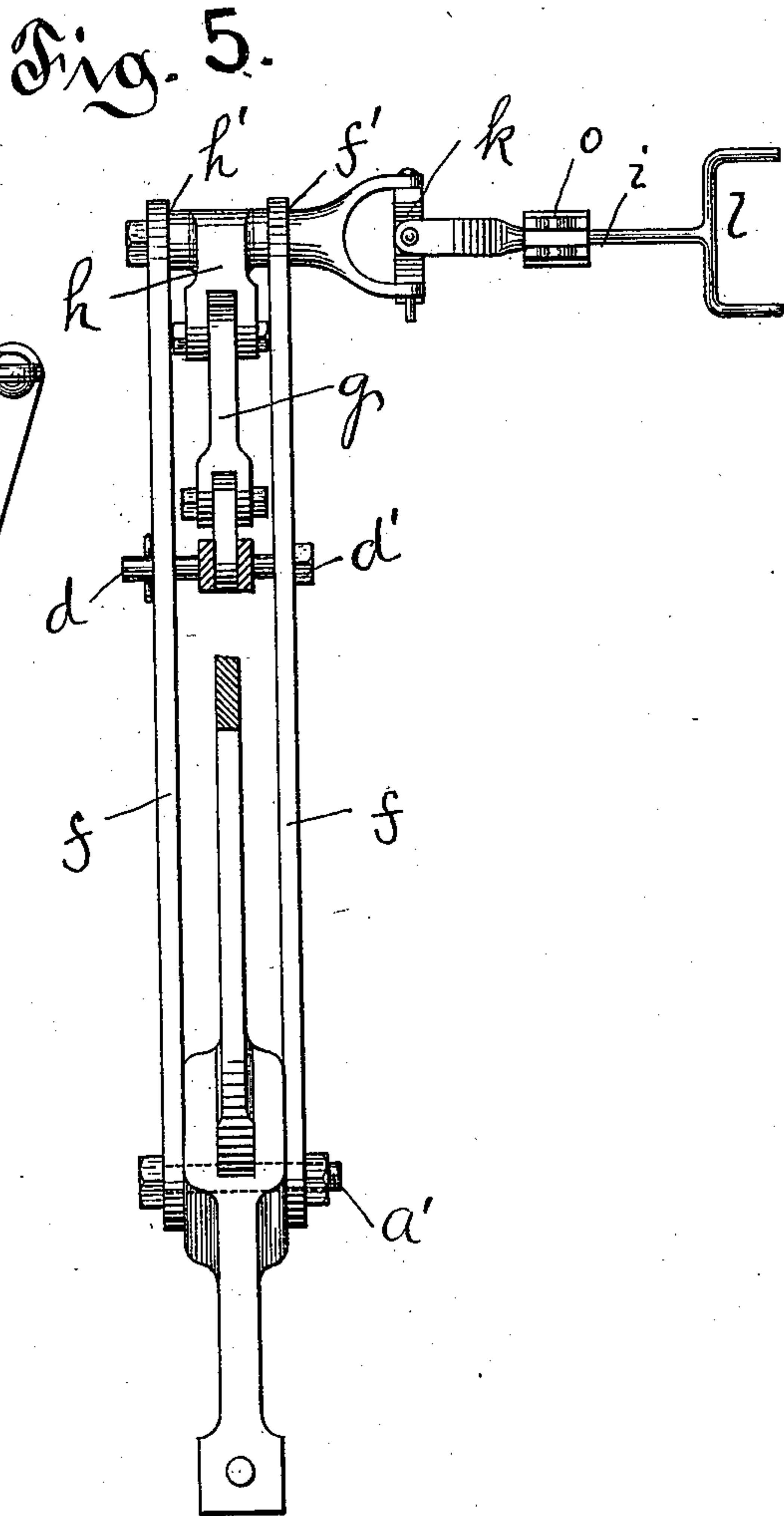
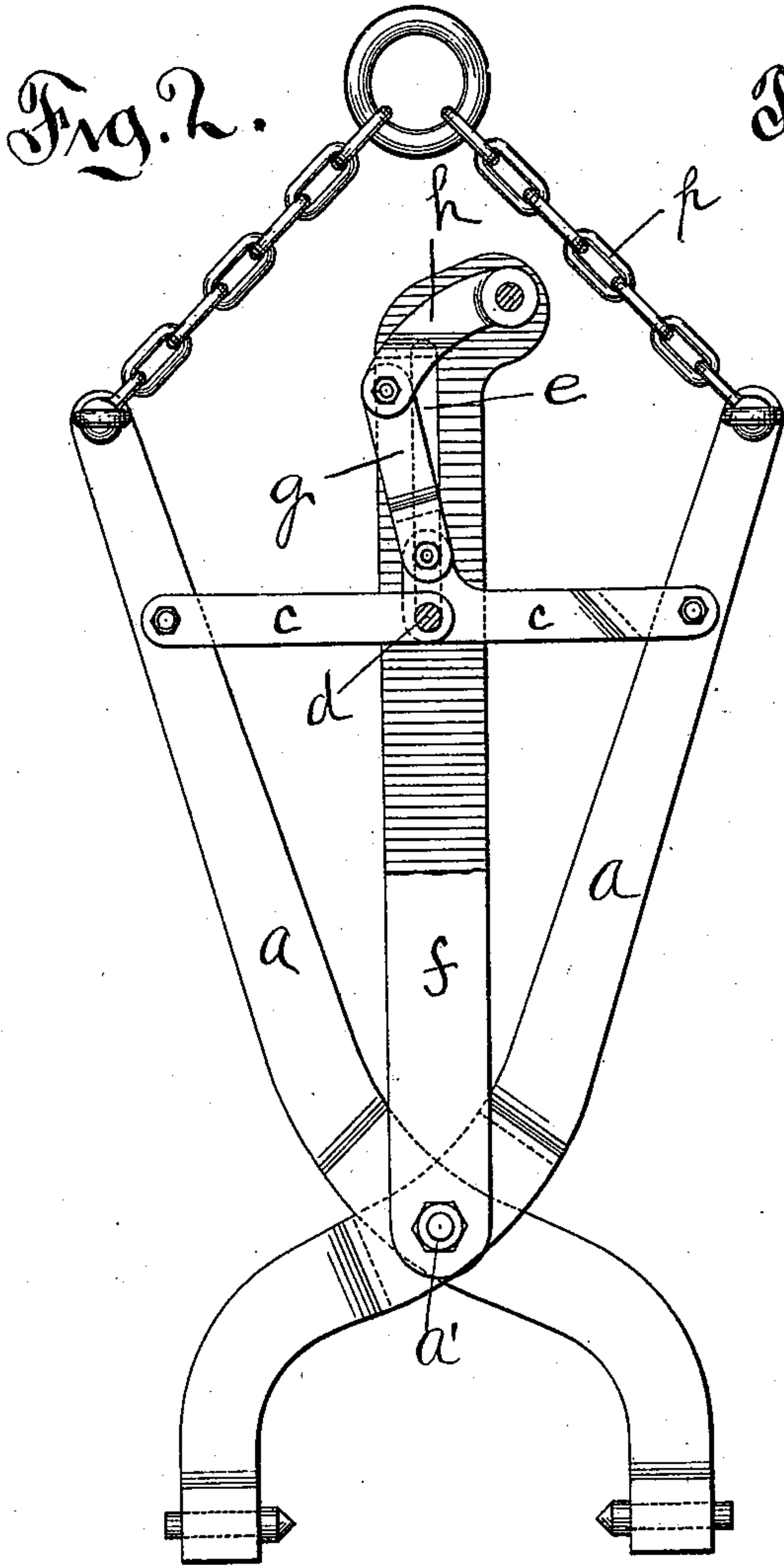
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# UNITED STATES PATENT OFFICE.

JOHN BULMER, OF MUNHALL, ASSIGNOR OF ONE-HALF TO WILLIAM J. LIVINGSTON, OF HOMESTEAD, PENNSYLVANIA.

## INGOT-TONGS.

SPECIFICATION forming part of Letters Patent No. 550,404, dated November 26, 1895.

Application filed April 4, 1895. Serial No. 544,406. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BULMER, a resident of Munhall, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ingot-Tongs; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to tongs for handling ingots or other objects to which it may be found applicable, and it comprises certain improvements in the construction of this class of tongs, all of which will be fully hereinafter set forth and claimed.

To enable others skilled in the art to make and use my invention I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved tongs, showing them in closed position. Fig. 2 is a like view showing the tongs open. Fig. 3 is a top plan view; and Fig. 4 is a section on the line 4 4, Fig. 1. Fig. 5 is a side view, partly in section, of my improved tongs.

Like letters indicate like parts in each of the figures.

In the drawings, *a* represents the tong-levers, pivoted together by a suitable pin *a'*. Pivoted to the levers *a* at suitable points thereon are the bars *c*, said bars being connected at their inner ends by the pivotal pin *d*. This pin *d* is preferably adapted to travel up and down within the slots or guides *e* in the guide-bars *f*, said guide-bars being supported by the pin *a'*, which connects the levers *a*. The pivotal pin *d* is held within the slots or guides *e* by means of the nut *d'* on the said pin. Any other suitable manner of connecting the bars *c* and the guides *e* may be employed. Pivoted to one of the bars *c* is the arm *g*, the other end of said arm being pivoted to the lever *h*. This lever *h* is provided with the bearings *h'*, which are journaled in suitable openings *f'* in the upper ends of the guide-bars *f*. An operating-rod *i*, having the universal joint *k* at the inner end thereof, is connected to one of the journals *h'* of the lever *h*. The universal joint illustrated permits of the flexure of the rod in any direction. The outer end of said operating-rod *i* is provided with the handle *l*.

Attached to the upper ends of the levers *a* are the rods *n*, the opposite ends of said rods being pivoted to the slide *o*, mounted on the operating-rod *i*. Chains *p* are attached to the upper ends of said levers *a*, whereby said tongs may be suspended from the trolley of a suitable crane or other support.

The operation of my improved tongs is as follows: When the tongs are in the position shown in Fig. 2 and it is desired to bring the lower ends of the levers together to grasp the ingot or other object, the operator, by grasping the handle *l*, turns the operating-rod *i*. By this movement the lever *h* is raised, and with it the arm *g*, whereupon the inner ends of the bars *c* will be raised, the pivotal pin *d* traveling up within the slots *e* of the guide-bars *f*. In this manner a steady and positive motion is imparted to the bars *c*, and the arm *g* is raised by practically a vertical movement. By the above construction the power necessary to operate the levers is reduced to a minimum. As the operating-rod *i* is turned and the levers opened or closed, the slide *o* will move to and fro on said rod. The slots or guides in the side bars *f* keep the bars *c* from wobbling and relieve the strain on them in the opening and closing of the levers.

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

1. The combination, with tong-levers, of bars pivotally connected to said levers and to each other, an arm connected to said bars, mechanism for raising and lowering said arm, and guides within which the pivotal pin connecting said bars travels, substantially as and for the purposes set forth.

2. The combination, with tong-levers, of vertical guide-bars pivoted thereto, said guide-bars having slots formed therein, bars pivotally connected to said levers and to each other, the pivotal pin on said bars moving in said slots, an arm connected to said bars, and mechanism for raising said arm, substantially as and for the purposes set forth.

3. The combination, with tong levers, of bars pivotally connected thereto and to each other, an arm connected to said bars, guide-bars pivotally connected to said levers, and a lever supported by said guide-bars and con-

nected to said arm, and mechanism for operating said lever to raise said arm, substantially as set forth.

4. The combination, with tong-levers, of  
5 bars pivotally connected thereto and to each other, an arm connected to said bars, guide-bars pivotally connected to said levers, a lever journaled in the upper ends of said guide-bars and connected to said arm, and a rod  
10 connected to one of the journals of said lever to operate said lever to raise said arm, substantially as set forth.

5. The combination with tong levers, of

bars pivotally connected to said levers and to each other, an arm connected to said bars, 15 mechanism for raising and lowering the said arm, guides, and connections between said bars and said guides, substantially as and for the purposes set forth.

In testimony whereof I, the said JOHN BUL- 20  
MER, have hereunto set my hand.

JOHN BULMER.

Witnesses:

ROBT. D. TOTTEN,  
ROBERT C. TOTTEN.