(No Model.) 3 Sheets—Sheet 1.

H. AIKEN.

TONGS.

No. 498,498. Patented May 30, 1893.

Fig. 1.

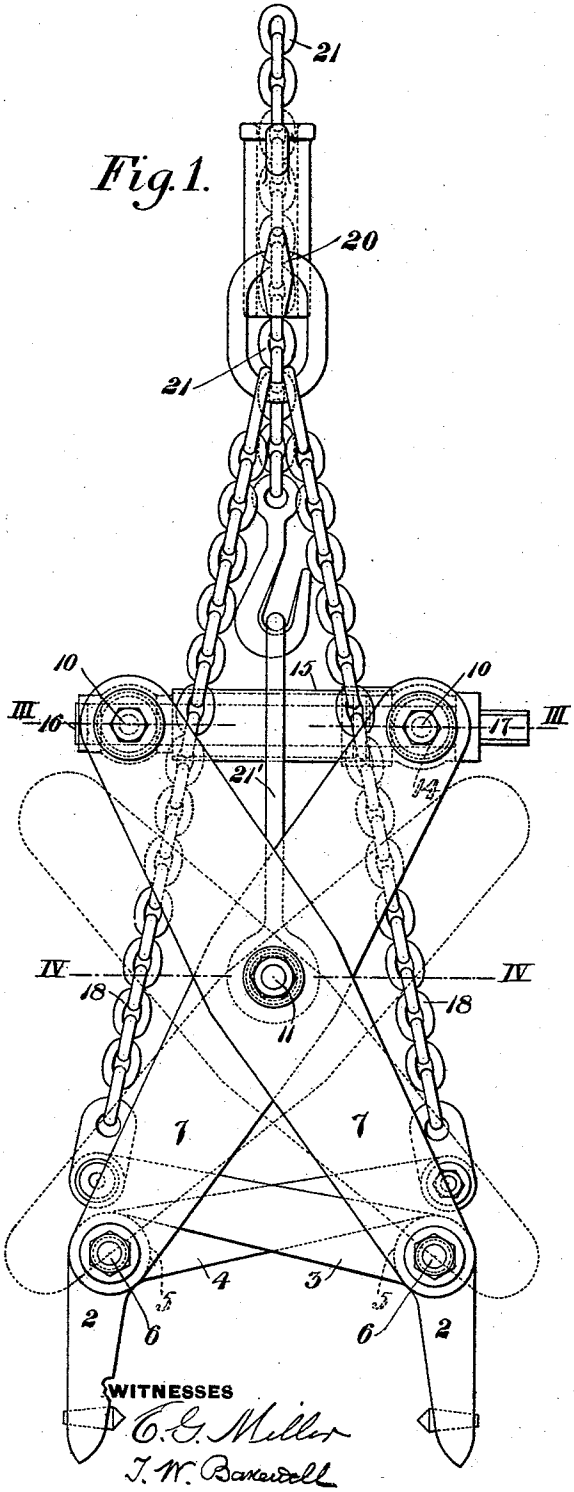
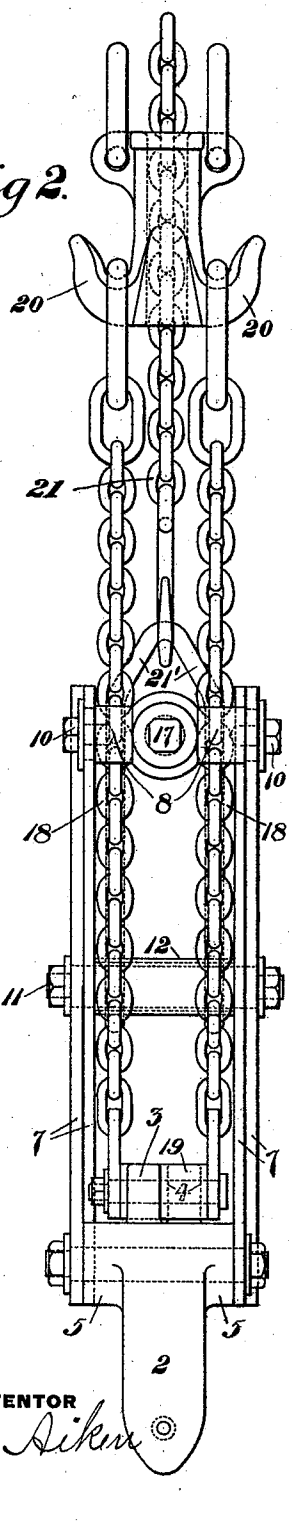


Fig 2.



WITNESSES

C. G. Miller

J. W. Barnsdell

INVENTOR

Henry Aiken

(No Model.) 3 Sheets—Sheet 2.

H. AIKEN.

TONGS.

No. 498,498. Patented May 30, 1893.

Fig. 3.

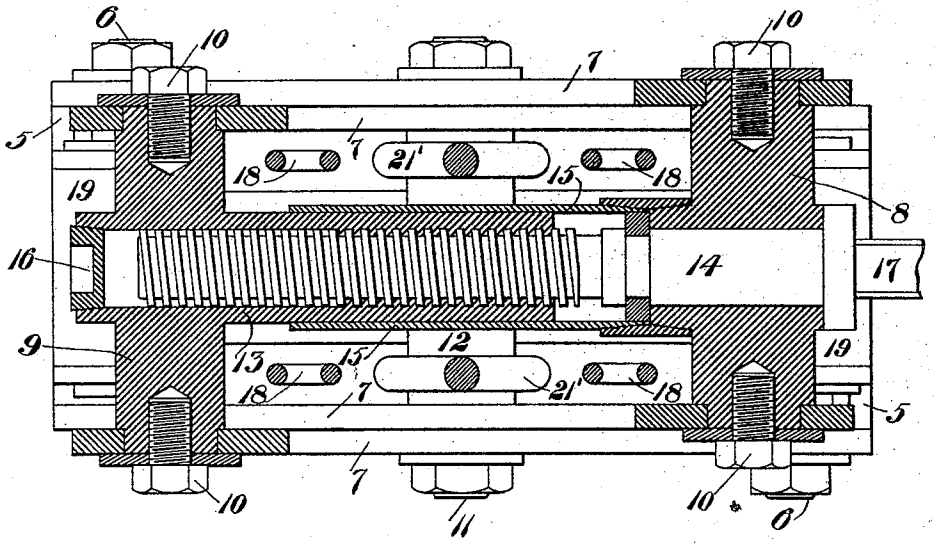
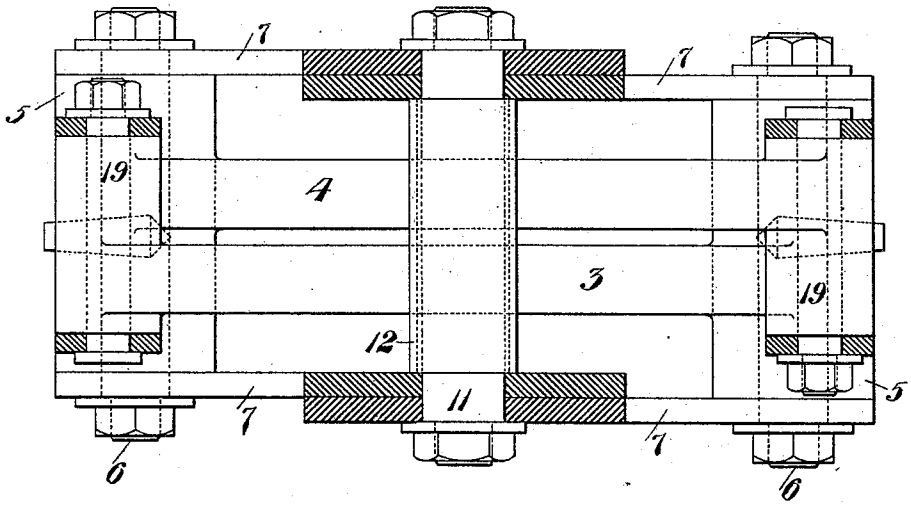


Fig. 4.



WITNESSES

J. W. Baxendell

E. G. Miller

INVENTOR

Henry Aiken

(No Model.)

3 Sheets—Sheet 3.

H. AIKEN.

TONGS.

No. 498,498. Patented May 30, 1893.

Fig. 5.

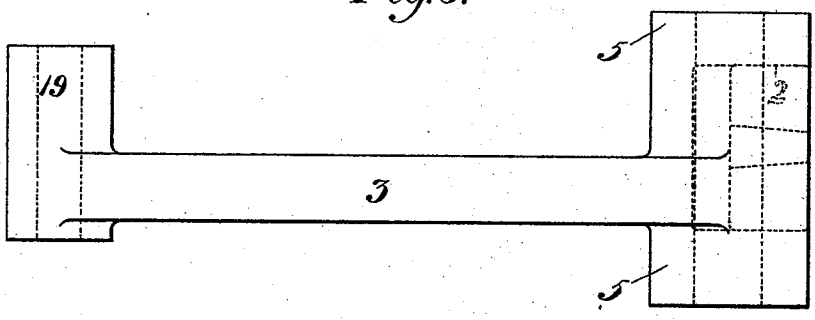
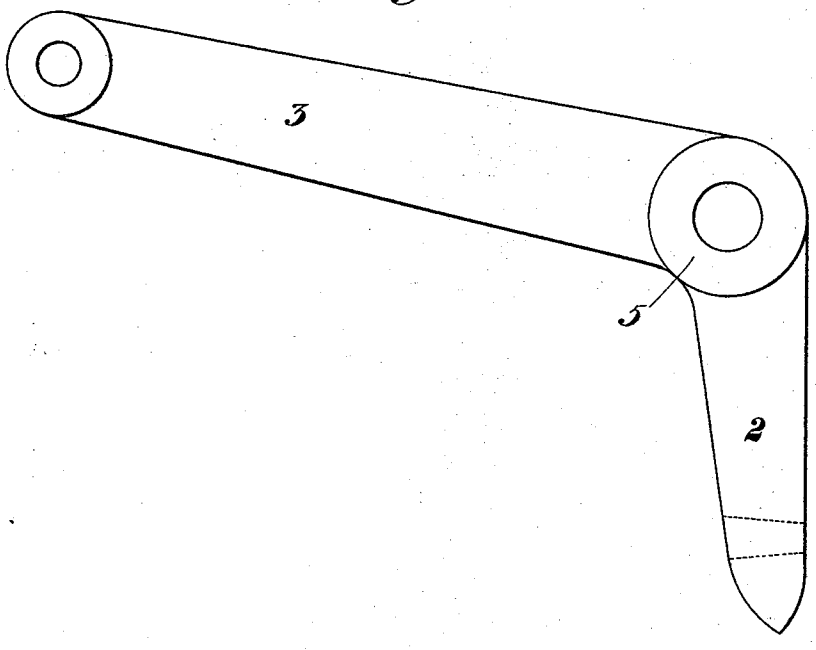


Fig. 6.



WITNESSES

Thomas W. Bakewell

N. M. Corwin

INVENTOR

Henry Aiken

UNITED STATES PATENT OFFICE.

HENRY AIKEN, OF PITTSBURG, PENNSYLVANIA.

TONGS.

SPECIFICATION forming part of Letters Patent No. 498,498, dated May 30, 1893.

Application filed January 3, 1893. Serial No. 456,987. (No model.)

To all whom it may concern:

Be it known that I, HENRY AIKEN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Tongs, of which the following is a full, clear, and exact description.

My invention relates to an improvement in tongs adapted especially for charging and drawing vertical pit furnaces or for handling ingots for any other purpose. It is illustrated in the accompanying drawings, in which—

Figure 1 shows in side elevation tongs constructed in accordance with my invention. Fig. 2 is an end elevation thereof. Fig. 3 is a horizontal section on the line III—III of Fig. 1. Fig. 4 is a horizontal section on the line IV—IV of Fig. 1. Fig. 5 is a plan view of the jaw; and Fig. 6 is a side elevation of the same.

The object of the invention is to enable tongs to be adjusted rapidly and with facility to fit ingots of varying sizes.

In the drawings, 2, 2, represent the jaws of the tongs, provided with arms 3, 4. At the junction of the jaws and arms are sleeves or hubs 5, and bolts 6 pass through these hubs and pivotally connect the jaws to the ends of frames 7, each consisting preferably of two side bars extending upwardly and parallel with each other. At their upper ends the frames constituted by the side bars are pivotally connected and are held by bolts 10 to cross-heads 8, 9. These cross-heads are provided with mechanism by which they may be caused to approach or diverge, and may be adjusted in desired position, and as the frames 7 are connected at their middle point of crossing by a bolt 11, such approach or separation of their upper ends will cause a corresponding approach or separation of their lower ends, the frames acting in this manner after the fashion of the blades of a pair of scissors.

The central pivot is clearly illustrated in the drawings. The bolt 11 passes through the frames, and there is an interposed separating sleeve 12 holding them apart, but permitting them to move radially on said bolt as a pivot. The devices by which the cross-heads 8, 9, are moved to and from each other are illustrated in Fig. 3. One of the heads 9 is provided with a tubular socket 13, part of which is screw-threaded so as to constitute a nut, and the other cross-head 8 has a screw-shaft 14, the threaded portion of which fits within said nut. As it is desirable that the threads of the screw and nut should be inclosed so as to protect them from injury by scale and dirt, to which they are subject when in use, I provide the cross-head 8 with a tubular sleeve 15, which fits telescopically around the sleeve 13, so as to be capable of moving over the same, and of inclosing and excluding dirt from the screw. The end of the sleeve 13 is, for the same purpose, provided with a cap 16, and the screw-shaft 14 has a squared end 17, enabling the application of a spanner to turn it.

The operation of the parts in adjusting the tongs so as to separate the fulcra of the jaws, is effected by turning the screw-shaft 14. When rotated in one direction this shaft, acting on the nut of the sleeve 13, will cause the divergence of the heads 8, 9, to which the ends of the frame 7 are pivotally connected, and a consequent divergence of the lower ends of the frame on which the jaws have their fulcra. This separates the jaws of the tongs so as to cause them to have a greater range of gripping action. By turning the screw-shaft 14 in the other direction, the lower ends of the frame 7 are caused to approach and to bring the fulcra of the jaws nearer together.

The arms 3, 4, of the tongs are provided in the usual manner with lifting-chains 18, and as in order to permit crossing of the arms I cause them to project from the hubs 5 at the end portion of the latter, and not at the middle. I prefer also to strengthen the construction by providing each arm, 3, 4, at its end with a sleeve 19, having a central bolt, to the ends of which the links of the suspending chains are applied. These suspending chains 18 may converge to a common supporting hook 20; and as it is desirable, in order to effect the automatic opening of the jaws of the tongs, to have a lifting device connected with the fulcra of said jaws, or their frame, I employ a chain 21 connected by a suitable link 21′ with the pivot 11, and extending up to the lifting device above through the hook 20, which, for this purpose, is made hollow. By actuating this lifting device so as to raise

the chain 21, the weight of the tongs is thrown upon the frames 7, and the chains 18 being thus relieved, permit the arms 3, 4, to drop, and to open the jaws. If, however, the lifting device be actuated so as to permit the chain 21 to descend, the weight of the tongs is thrown upon the chains 18 and arms 3, 4, thereby causing the jaws to be moved inwardly and to grasp an interposed ingot.

It is clear that the gripping action of the tongs will take place equally well at every adjustment of the frames 7. The tongs thus afford convenient means of grasping ingots of various sizes. They are adjustable readily, and the adjusting mechanism being shielded from scale and heat, is not apt to be disordered.

Within the scope of my invention as stated in the claims, modifications may be made in the form, construction and relative arrangement of the parts of the tongs.

I claim—

1. In tongs, the combination of jaws, separable frames to which the jaws are connected, and independent actuating mechanism connected with the jaws and adapted to move them to and from each other to grasp an article; substantially as described.

2. In tongs, the combination of jaws, separable frames to which they are pivoted, independent suspending devices connected with the jaws and adapted to cause their approach, and adjusting mechanism for separating the frames; substantially as described.

3. In tongs, the combination of pivotally connected frames, jaws carried at the lower end thereof and movable to and from each other to grasp an article to be lifted, means for operating the jaws, and adjusting mechanism connected with the frames and adapted to move said frames on their pivot to effect adjusting of the tongs to suit articles of different sizes; substantially as described.

4. Tongs, having pivotally connected frames to which the jaws are pivoted, in combination with heads pivotally connected to said frames, and a screw shaft and nut connecting the heads; substantially as described.

5. Tongs, having pivotally connected frames to which the jaws are pivoted, in combination with heads pivotally connected to said frames, a screw-shaft and nut connecting the heads, and a telescopically fitted sleeve shielding said parts; substantially as described.

6. Tongs, having pivotally connected frames to which the jaws are pivoted, in combination with heads pivotally connected to said frames, and a screw-shaft and nut connecting the heads, said nut being formed in a sleeve projecting from one of the heads; substantially as described.

7. In tongs, the combination of separable frames, jaws pivoted thereto, and movable on their pivots to and from each other to grasp an article to be lifted, and separate supports for suspending the frame and the jaws; substantially as described.

8. Tongs having, in combination, pivotally connected frames, each comprising two parallel side bars, and jaws pivoted thereto between the side-bars and having oppositely extending arms and supporting devices connected with the arms; substantially as described.

9. In tongs, the combination of frames pivotally connected at a middle point, jaws carried at the lower end thereof and movable to and from each other to grasp an article to be lifted, means for operating the jaws, and adjusting mechanism connected with the upper ends of the frame and adapted to move said frames on their pivots to effect adjustment of the tongs to suit articles of different sizes; substantially as described.

In testimony whereof I have hereunto set my hand.

HENRY AIKEN.

Witnesses:
W. B. CORWIN,
H. M. CORWIN.