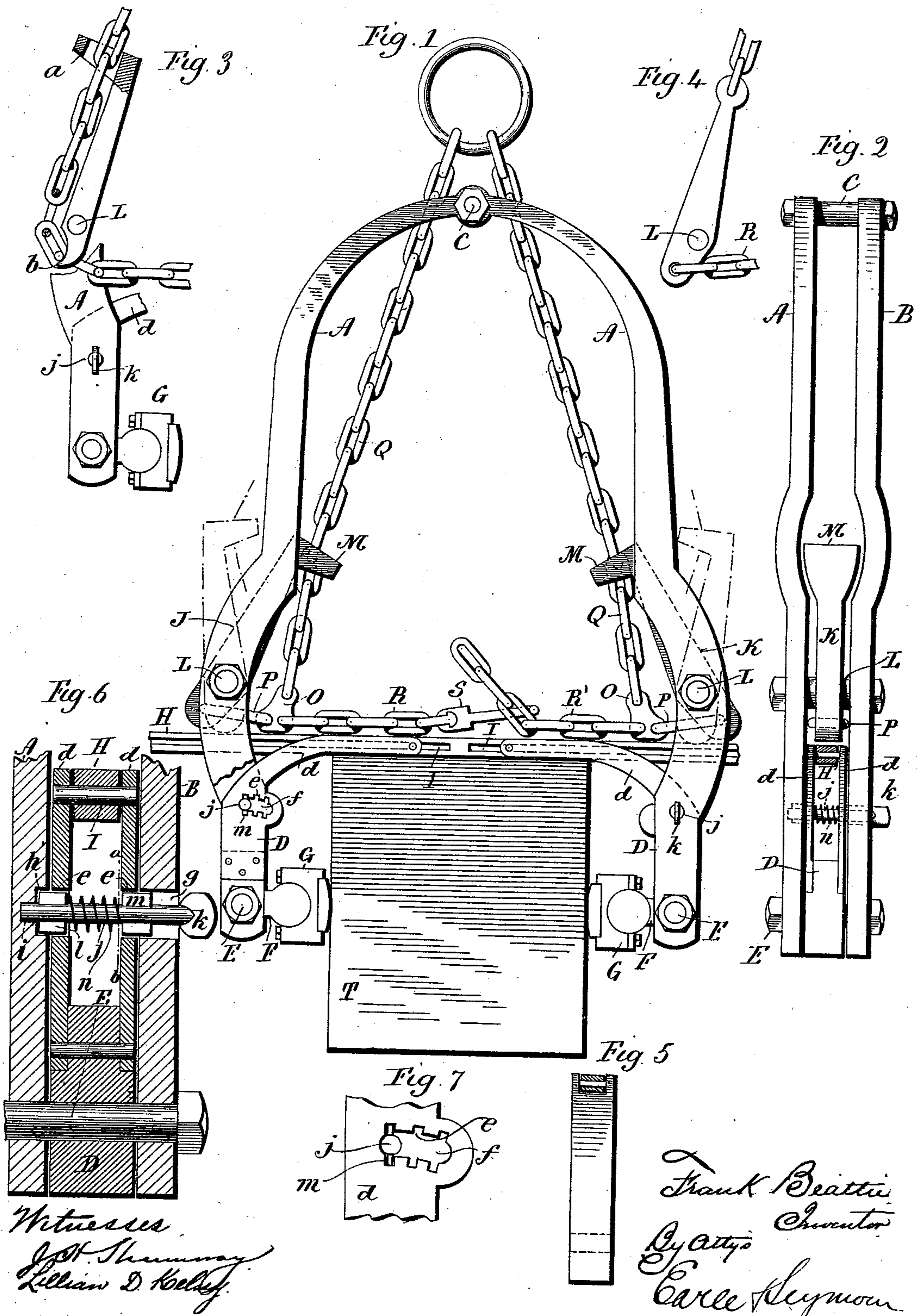


(No Model.)

F. BEATTIE.
LIFTING DOG.

No. 542,231.

Patented July 9, 1895.



UNITED STATES PATENT OFFICE.

FRANK BEATTIE, OF LEETE ISLAND, CONNECTICUT.

LIFTING-DOG.

SPECIFICATION forming part of Letters Patent No. 542,231, dated July 9, 1895.

Application filed December 8, 1894. Serial No. 531,203. (No model.)

To all whom it may concern:

Be it known that I, FRANK BEATTIE, of Leete Island, in the county of New Haven and State of Connecticut, have invented a new Improvement in Lifting-Dogs, (Case B;) and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the apparatus as engaged with a stone; Fig. 2, an inside view of one of the legs of the tongs, showing the upper end of the jaw and the grooved rod in section; Figs. 3 and 4, modifications in the formation of the arms and arrangement of the lifting and connecting chains; Fig. 5, a modification in the form of the jaws; Fig. 6, a section of a portion of the tongs and jaws enlarged; Fig. 7, a section on line *a b* of Fig. 6.

This invention relates to an improvement in lifting-dogs, and particularly such as are applicable for raising narrow stones, and is an improvement on the apparatus described in the application filed by me September 7, 1894, Serial No. 522,315, and an apparatus described in an application filed in even date herewith, Serial No. 531,202.

In both the applications above referred to difficulty is experienced in engaging the jaws with a narrow stone.

The object of this invention is to so arrange the jaws whereby their operating faces may be brought close together; and it consists in the construction hereinafter described, and particularly recited in the claims.

The device consists of a pair of tongs the legs of which are formed of two plates *A B*, connected at their upper ends by a pivot *C*. Between their lower ends jaws *D D* are hung upon a pivot *E*, which pivot also serves to connect the lower ends of the plates *A B*. The jaws *D D* are each preferably formed of two side plates *d d*, secured at their lower ends to inwardly-projecting arms *F F*, to the ends of which bearing-blocks *G G* are secured, and provided with connections, so as to form a universal joint therewith. The upper ends of said jaws extend inward and pass upon opposite sides of a rod *H*, which is constructed with long slots *I*, and through which a pin ex-

tends into the ends of the jaws *D D*, so as to connect the ends of said jaws to the rod *H*, yet permit them to slide therein. Through each of the plates *d d*, and opposite each other, are slots *e*, each on a radius from the pivot *E* upon which the jaws are hung, and the said slots are crossed by a segmental slot *f*. In the side of one of each of the plates forming the legs of the tongs is a vertical slot *g*, corresponding in length to the length of the slots *e*. In the other plates of the tongs recesses *h* are formed exactly opposite and corresponding in size to the slots *g*, and in the inner wall of said recesses is a cavity *i*, which, if desired, might extend entirely through the plates. Extending through the slots *g*, through the slots *f* in the jaws *D*, and into the cavity *i*, is a pin *j*, formed at its outer end with a finger-piece *k*, and with wings *l m*, corresponding in length and width with the slots *e g*, and in thickness somewhat greater than the thickness of the plates *d d*, and the distance between the wings corresponds to the distance between the said plates *d d*. Around the pin *j*, between the wings, is a spiral spring *n*, one end of which bears upon the inner face of the wing *l* and the other against the inner face of the opposite plate *d*, the tendency of said spring being to force the pin *j* inward. When in position, the wings of the pin stand partially in the slots *e* and partially in the slot *g* and groove *h*, and hence the arms *D D* are held between the plates of the tongs, and this is desirable when a large number of stones of about the same size are to be raised, as it will only be necessary to slide their upper ends outward to bring the bearing-blocks into proper position for engaging a stone. If larger or smaller stones are to be raised, the pin *j* is drawn outward, so that the wing *m* stands entirely within the slot *g* and the wing *l* between the plates *d d*, in which position the jaws are free to be turned. When at the desired position, the pin *j* is released and the wings enter the slots *e*, which again secures the jaws.

Between the plates *A B*, and above the rod *H*, arms *J K* are suspended upon pivots *L L*, the upper ends of said arms preferably formed with eyes *M M*. The lower ends *N N* of the arms, which extend below the pivots *L L*, are connected to bell-crank levers *O O* by links *P P*, the upper ends of said bell-crank levers

being connected to the ends of a chain Q, which extends upward through the eyes M M into engagement with a raising apparatus. (Not shown.) Also, extending from each of the bell-crank levers O is a chain, the end of one, as R, being provided with a link S, adapted to engage at different points with the other chain R'.

In operation, the blocks G G are placed on opposite sides of a stone T, and the arms J K thrown outward, as indicated in broken lines, the chains R R' drawn together as far as possible by hand, and the link S engaged with the chain R'. This draws the lower ends of the plates A B toward each other, and also the jaws D D, their upper ends sliding in the grooved rod H. Lifting force then applied to the chain Q, draws the upper ends of the arms J K toward each other, which, through their connection to the legs of the tongs, draws the lower ends of said tongs together, clamping the jaws against the stone, and so as to grip it with sufficient force to support its weight. The rod H holds the ends of the jaws upward, so that they are readily placed in position on a stone, the apparatus being lowered until said rod rests upon the top of the stone, in which position the bearing-blocks G will rest against the sides of the stone.

Instead of forming the jaws D D as above described, they may be formed from single pieces of metal, to the lower ends of which the bearing-blocks G are secured, and bifurcated at their upper inwardly-projecting ends, so as to pass upon opposite sides of the rod H for connection therewith, as shown in Fig. 5. In such a construction the adjusting slots and pins would not be employed.

Instead of forming the arms J K as above described and connecting their lower ends to bell-crank levers O and chains R R', the arms may be formed as described in the application filed of even date herewith, and as shown in Fig. 3, in which the arms are formed with outwardly-projecting eyes *a* and a depending bifurcated hook *b* below the point of connection between the arms and the legs of the tongs.

In this apparatus a continuous chain may be employed which extends between the lower ends of the arms and upward through the eyes thereof, or the chains R R' may be connected directly to the lower ends of the arms J K and the lifting-chain connected directly to the top of said arms, as shown in Fig. 4. I do not, therefore, wish to be understood as limiting

my invention to either of the particular arrangements of the arms and chains.

I claim—

1. A lifting apparatus consisting of a pair of tongs, the legs of which are vertically divided, jaws hung in the lower ends of said legs, and provided with bearing-blocks, the upper ends of said jaws bifurcated, a slotted transverse rod with which the said upper ends of the jaws are connected, arms hung in said legs above the said rod, connections between the lower ends of said arms, and a lifting chain in connection with the upper ends of said arms, and whereby they are drawn together in the raising operation, substantially as described.

2. A lifting apparatus consisting of a pair of tongs, the legs of which are vertically divided, jaws hung in the lower ends of said legs, and provided with bearing-blocks, the upper ends of said jaws bifurcated, a slotted transverse rod, with which the said upper ends of the jaws are connected, arms hung in said legs above said rod, bell-crank levers connected with the lower ends of said arms and with the lifting-chain which extends upward through eyes at the upper ends of said arms, said bell-crank levers also connected by an adjustable chain, substantially as described.

3. A lifting apparatus consisting of a pair of tongs, the legs of which are vertically divided, jaws hung in the lower ends of said legs, and provided with bearing-blocks, the upper ends of said jaws formed from two plates connected at their outer ends, a slotted transverse rod with which the said upper ends of the jaws are connected, each of said plates constructed with radial slots crossed by a segmental slot, the legs of the tongs formed with slots, there being recesses corresponding to said radial slots in the jaws, spring-pins extending through said slots, with wings to engage therewith, arms hung in said legs above the said rod, connections between the lower ends of said arms, and a lifting chain in connection with said arms, and whereby they are drawn together in the raising operation, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANK BEATTIE.

Witnesses:

M. C. BEATTIE,
C. I. BEATTIE.