

Sept. 2, 1924.

1,506,827

R. F. GELLERT

TONGS AND THE LIKE

Filed Dec. 22, 1923

4 Sheets-Sheet 1

Fig. 1.

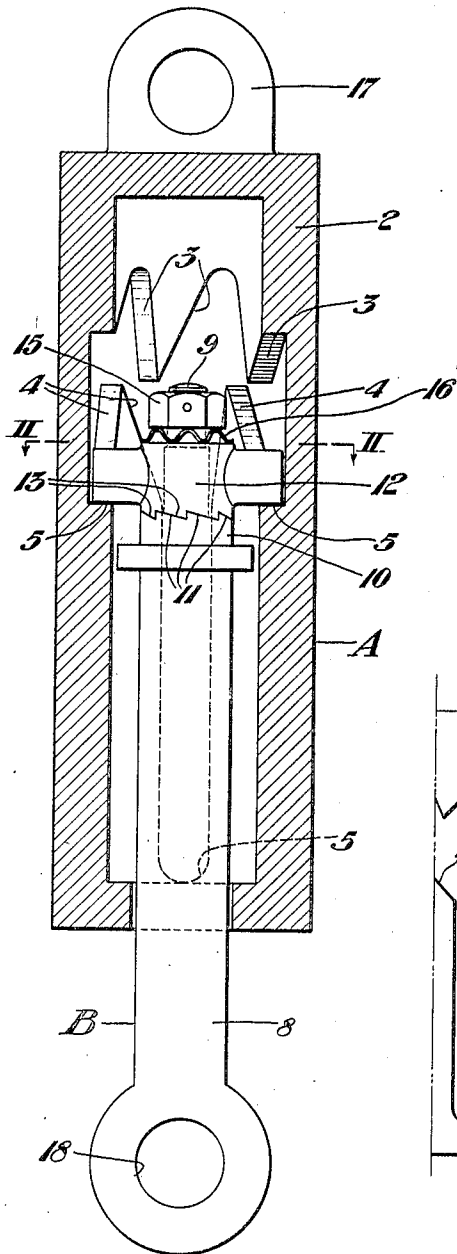


Fig. 2.

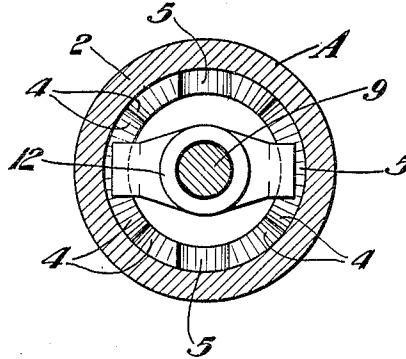
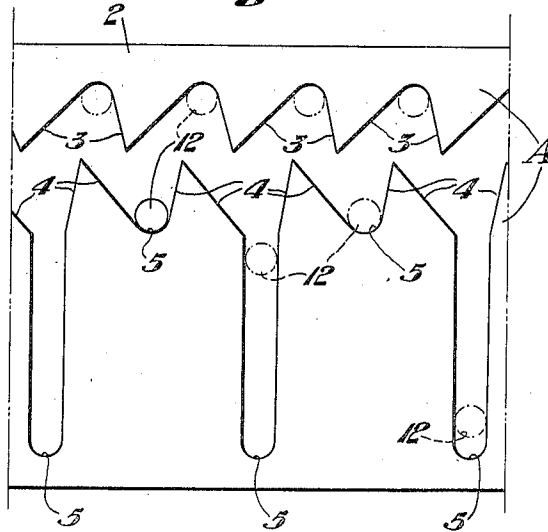


Fig. 3.



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Inventor:

ROLPH F. GELLERT,

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D. Anthony Davis
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Sept. 2, 1924.

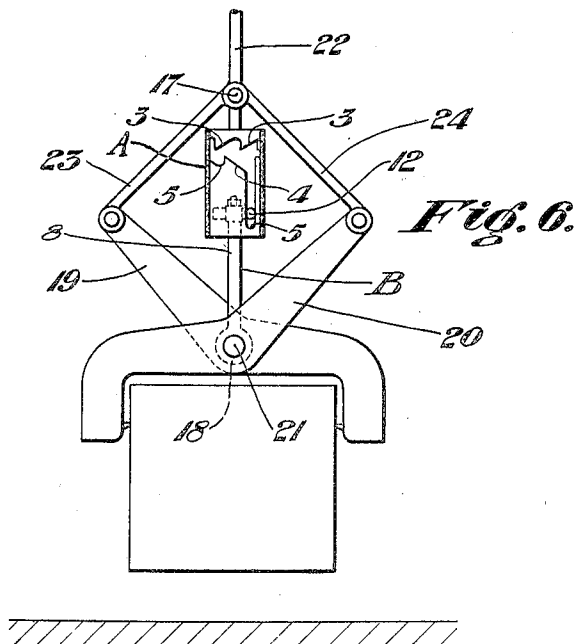
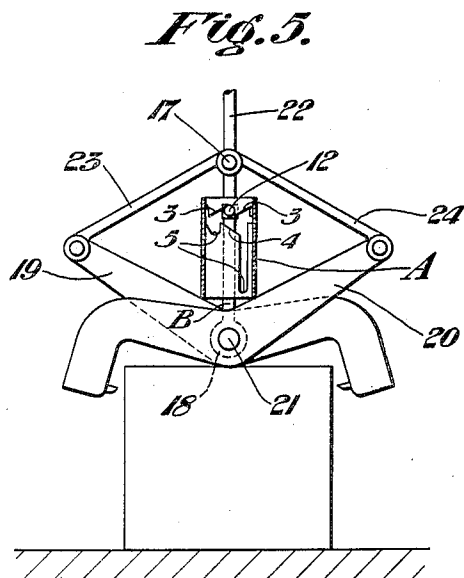
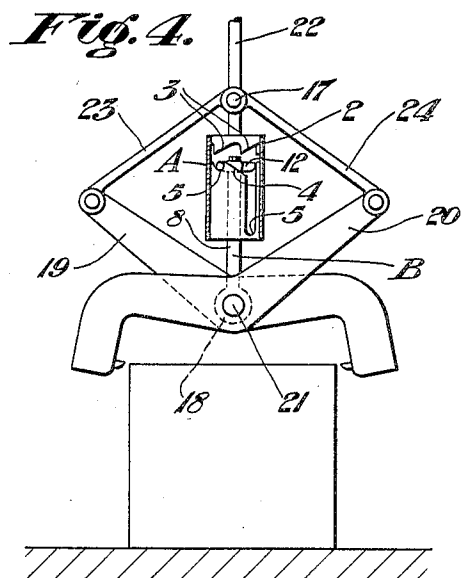
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4 Sheets-Sheet 2



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Sept. 2, 1924.

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Fig. 7.

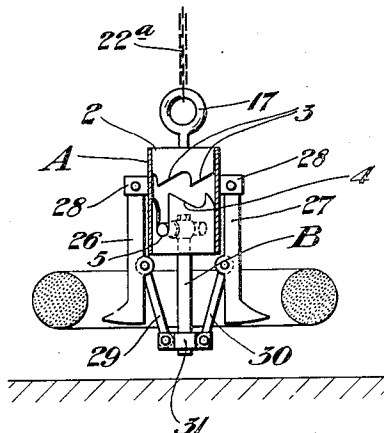


Fig. 8.

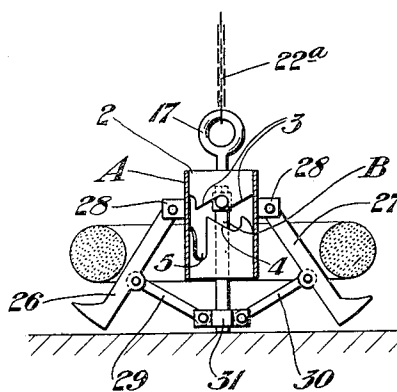
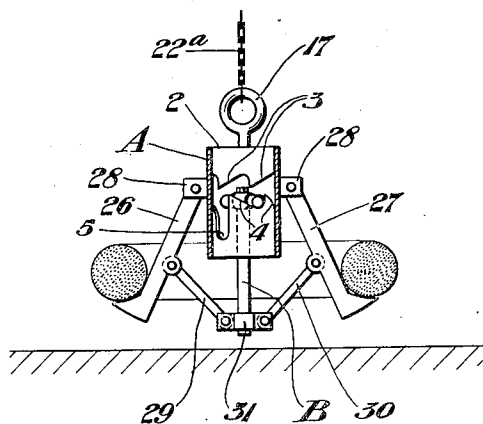


Fig. 9.



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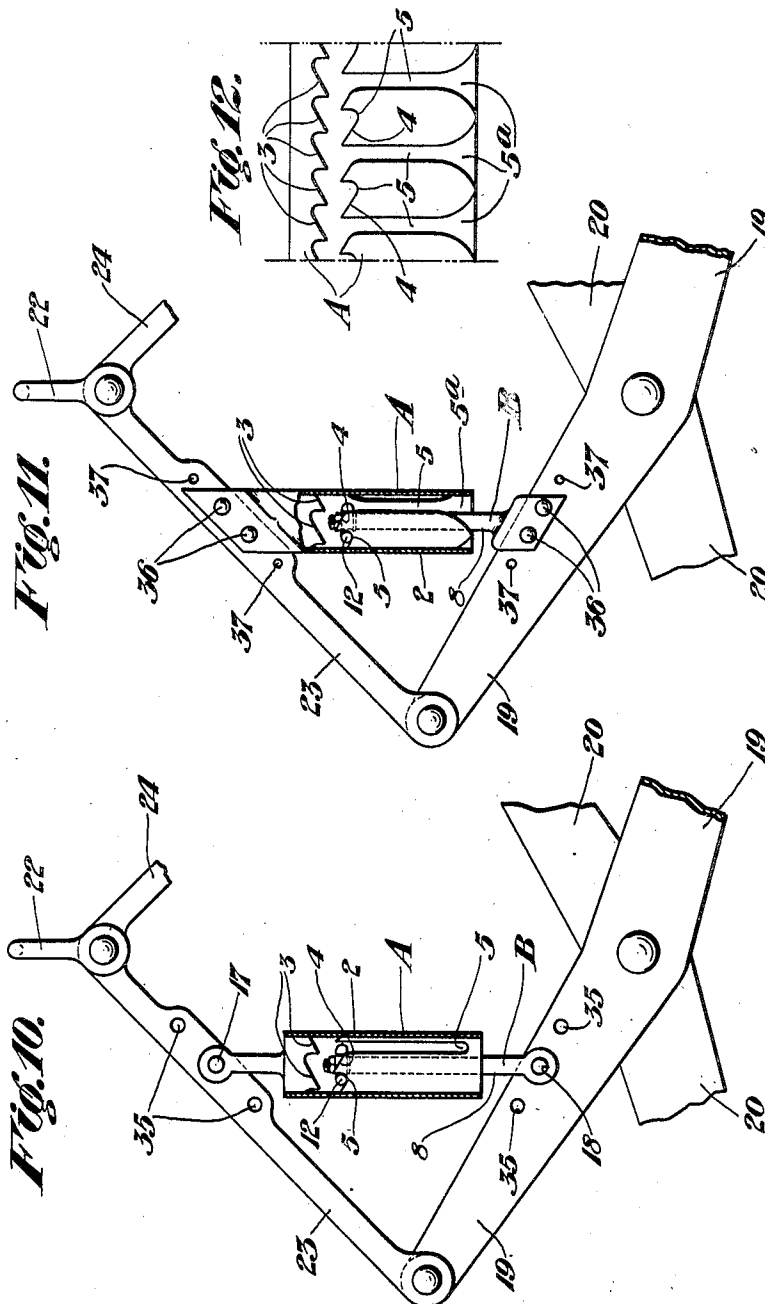
1,506,827

R. F. GELLERT

TONGS AND THE LIKE

Filed Dec. 22, 1923

4 Sheets-Sheet 4



Witnesses:

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UNITED STATES PATENT OFFICE.

ROLPH F. GELLERT, OF MUNHALL, PENNSYLVANIA.

TONGS AND THE LIKE.

Application filed December 22, 1923. Serial No. 682,314.

To all whom it may concern:

Be it known that I, ROLPH F. GELLERT, a citizen of the Republic of Germany, and resident of Munhall, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Tongs and the like, of which the following is a specification.

This invention relates to lifting devices and more particularly to tongs and the like having relatively movable lifting members, and has for its object the provision of means for automatically stopping the tong or lifting arms in different predetermined positions.

Another object is the provision of a device of this class that can be readily attached to any of the well known and common form of tongs and similar lifting devices now in use, without materially altering their construction or design.

A further object is to provide a device of this class having the novel features, construction, combination, and design of parts hereinafter described, and illustrated in the accompanying drawings.

In the drawings, Figure 1 is a sectional elevation of the latching or locking device.

Figure 2 is a transverse section thereof on the line II—II of Figure 1.

Figure 3 is a development of the device, showing the action of the cam faces and slots relative to the latch.

Figures 4 to 6 are elevations of an ingot tongs, having my invention attached thereto and showing the various relative positions of the parts.

Figures 7 to 9 are elevations of a tongs for handling bundles of wire or the like having my invention applied thereto, and showing the various relative positions of the parts.

Figures 10 and 11 are modified forms of my invention in which the locking device is secured to one of the toggle arms and tong levers.

Figure 12 is a development of the cam slots of the modified form of catching member of Figure 11.

Referring more particularly to the drawings, the letter A designates the latching member as a whole, which comprises a hollow cylindrical or tubular body portion 2, having its inner face cut away to form upper and lower series of cam faces 3 and 4, the cam faces 4 being staggered in relation to

the cam faces 3 so that an object moving from one of the cam faces of one series will move onto one of the cam faces of the other series. The spaces between the lower series of cam faces form latch stops 5 and each alternate stop 5 is in the form of an elongated slot, so that a latch being seated in the alternate or slotted stops is permitted to move downwardly a considerably greater distance than when being seated in the unslotted stops.

A latch member B is telescopically mounted in the latching member A and comprises a stem portion 8, having its upper end reduced in cross section, forming a head bearing shank 9 and a shoulder 10. The shoulder 10 has its face provided with ratchet teeth 11. A cross head 12 is rotatably mounted on the shank 9 and is provided with ratchet teeth 13 on its lower face adapted to co-operate with the ratchet teeth 11 on the shoulder 8 so as to prevent the head 12 from rotating in any but one direction. The head 12 is held in position against vertical displacement by a nut 15 and a spring 16 is mounted between the nut 15 and head 12 so as to permit the limited vertical movement of the head necessary for the teeth 13 on the head to ride over the teeth 11 on the shoulder 10.

The latching member A and the latch member B are provided at their outer ends with eyes 17 and 18, respectively, for attachment to the lifting device.

Referring now to Figures 4 to 6, my invention is shown attached to an ingot tongs comprising a pair of tong levers 19 and 20 pivotally connected by a pivot member 21 and connected to a suitable lifting element 22 through a pair of toggle arms or levers 23 and 24. The latching member A of my novel invention is secured by the eye 17 to the lifting element 22, and the latch member B is connected by its eye 18 to the pivot member 21 connecting the tong levers 19 and 20.

In Figures 7 to 9 my invention is shown attached to a wire tongs for lifting coils of wire. These tongs grip the wire from within the coil and, therefore, are of slightly different construction. The tongs of Figures 7 to 9 comprise a pair of lifting or tong arms 26 and 27 pivotally secured to suitable lugs 28 on the outside face of the latching member A. A pair of toggle arms 29 and 30 are pivotally connected to the

arms 26 and 27 and to a cross head 31 on the lower end of the latch B. The cross head 31 being substituted for the eye 18 in the preferred construction. The eye 17 on the latching member is connected to a lifting element 22^a as in the ingot tong construction.

The operation of my device when attached to an ingot tongs is as follows:—
 Assuming that the tongs are engaged with an ingot as in Figure 6 and it is desired to release them, the lifting element 22 will be slackened so as to permit the toggle arms 23 and 24 and tong arms 19 and 20 to move downwardly, thus opening the tong arms and causing the tong arms to rest upon the ingot. As the toggle arms move downwardly the latching member A will move downwardly relative to the latch member B in a telescopic manner. As the relative movement of the latching member and latch progresses, the cross head 12 of the latch will move out of the slotted stop 5 and up against one of the upper cam faces 3. As the head 12 rides on the cam face 3 it will be rotated relative to the shank 8. When the latch B reaches the limit of its upward movement the lifting element is again tensioned, thus causing the toggle arms to raise and move the latching member A upwardly relative to the latch B. As the latching member B moves upward, one of the lower cam faces 4 of the lower series will engage the cross or latch head 12 and rotate it relative to the shank 8 sufficiently to cause it to move into engagement with the short stops 5, whereby further upward movement of the lifting element will elevate the toggle arms and tong arms together with the members A and B, since the engagement of the latch head 12 in the short stop 5 has locked the tong arms and toggle arms against relative movement.

When it is desired to engage another ingot the tongs will be lowered over the ingot until they rest thereon, the lowering movements will be continued so as to cause the latching member A to move relative to the latch B, thus causing the head 12 to engage a cam face 3 and be rotated relative to the shank 8 until the head 12 reaches the limit of its upward movement, whereupon the lifting element is reversed and moved upwardly, thus causing the latching member A to move upwardly and engage a lower cam face 4 with the head 12 of the latch and rotate it sufficiently to cause it to move into the slotted stops 5, whereupon further upward movement of the lifting element will cause the tong arms to close and engage the ingot.

The operation of the latching or locking device which forms the novel feature of my invention is substantially the same when attached to any form of tongs and, there-

fore, it is not thought necessary to detail the operation when it is attached to the apparatus of Figures 7 to 9, since the operation of this construction is thought to be clear from the illustrations in the drawings showing the various extreme positions.

In Figures 10 and 11, I have shown a modified arrangement of tongs and latching mechanism. The tongs of these figures are substantially the same as shown in Figures 4, 5, and 6, and the same reference numerals are applied thereto.

In these modified constructions it will be noted that the latching member A has its upper end 17 secured to the toggle arm 23 and the latch member B has its lower end 18 secured to the tong lever 19, instead of to the lifting eye or element 22 and pivot 21 of the tongs, as in Figures 4, 5, and 6. It will, of course, be understood that the latching member A and latch B may be attached to either of the toggle arms 23 or 24 and tong levers 19 or 20, as desired without changing their operation.

In the construction of Figure 10 the latching and latch members are the same as in the preferred or first described embodiment of the invention, and are pivotally connected to the toggle arm and tong lever, respectively. However, in order to provide for adjusting the limit of movement of the tongs, a plurality of holes 35 are provided in the toggle arm 23 and tong lever 19 to receive the attaching pivot pins, thereby permitting the ready re-positioning of the members A and B.

In the construction of Figure 11, the upper end 17 of the latching member A and the lower end 18 of the latch member B are fixed to the toggle arm 23 and tong lever 19, respectively, by bolts 36 or other removable securing means. A plurality of holes 37 are provided in the toggle arm 23 and tong lever 19 to receive the securing bolts 36 so as to provide for adjusting the position of the members A and B.

Also in the construction of Figure 11, the slots 5 are provided with open lower ends to permit temporary disengagement of the parts A and B when it is desired to make a minimum bite. The side walls of the slots 5 are cut away at their lower ends to form a bell-shaped or flared opening so as to guide the head 12 back into the slots when the parts A and B again move into operative position with the opening of the tong levers.

While I have shown and described specific embodiments of my invention, it will be specifically understood that I do not wish to be limited thereto, since various modifications may be made without departing from the scope of my invention as defined in the appended claims.

I claim:—

1. In a lifting device, relatively movable

lifting members, a lifting connection for said members, and relatively movable inter-engaging locking means carried by said lifting connection and said members, respectively, for periodically stopping said members in different relative positions.

2. In a lifting device, relatively movable lifting members, a lifting connection for said members, and a plurality of relatively rotatable latching members for periodically stopping said members in different relative positions, one of said latching members being operatively connected to the lifting members and movable therewith, and the other of said latching members being carried by the lifting connection.

3. In a lifting device, a pair of pivotally connected lifting arms, a lifting means operatively connected to said arms, a cam shaped latching member supported by and movable with said lifting means, and a latch supported by and movable with said lifting arms, said latch successively engaging different portions of said cam shaped member for rotation thereby to periodically hold said lifting arms in different relative positions.

4. In a lifting device, a pair of pivotally connected lifting arms, a lifting means operatively connected to said arms, a tubular cam shaped latching member supported by and movable with said lifting means, and a T-shaped latch supported by and movable with said lifting arms, said latch successively engaging different portions of said cam shaped member for rotation thereby to periodically hold said lifting arms in different relative positions.

5. In a lifting device, a pair of pivotally connected lifting arms, a lifting means op-

eratively connected to said arms, a tubular latching member supported by and movable with said lifting means, said latching member having a plurality of slots in and cam faces on its inner face, and a T-shaped latch supported by and movable with said lifting arms, said latch being provided with a rotatable head and being telescopically mounted within said latching member, with the head thereof extending transversely of the latching member, the head of said latch being adapted to successively engage different ones of said cam faces for rotation and to be periodically engaged in different ones of said slots to hold said lifting arms in different relative positions.

6. In a tongs, a pair of pivotally connected lifting arms, toggle arms connected to said lifting arms, a tubular latching member supported by and movable with said toggle arms, said latching member having a plurality of slots in and cam faces on its inner peripheral face, and a T-shaped latch supported by and movable with said lifting arms, said latch being provided with a rotatable head and being telescopically mounted within said latching member, with said head extending transversely of said latching member, ratchet mechanism for preventing said head from rotating in any but one direction, the head of said latch being adapted to successively engage different ones of said cam faces for rotation and to be periodically engaged in different ones of said slots to hold said lifting arms in different relative positions.

In testimony whereof I have hereunto set my hand.

ROLPH F. GELLERT.