M. FALCONE.

BRICKLAYING MACHINE.

APPLICATION FILED DEC. 15, 1908.

941,137.

Patented Nov. 23, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

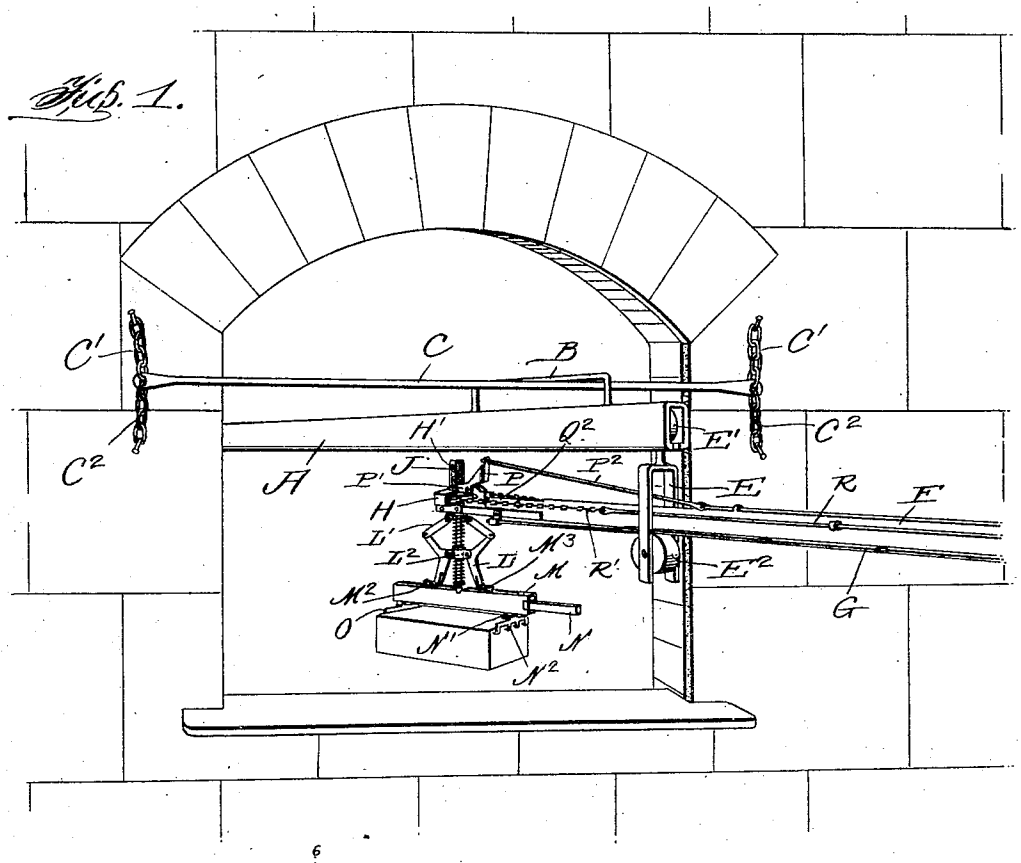


Fig. 5.

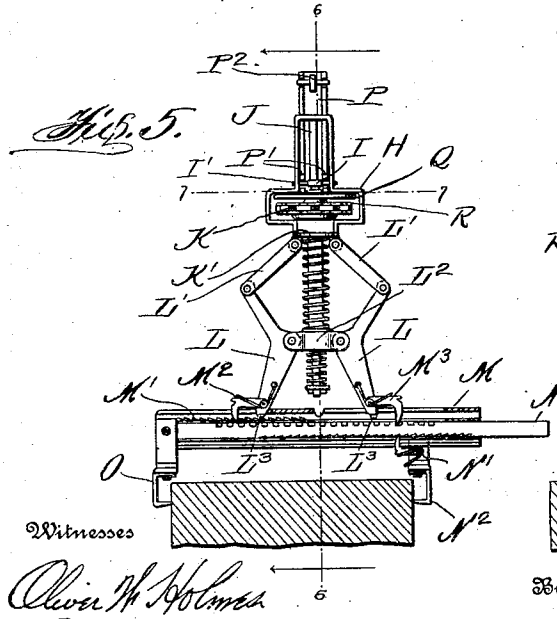
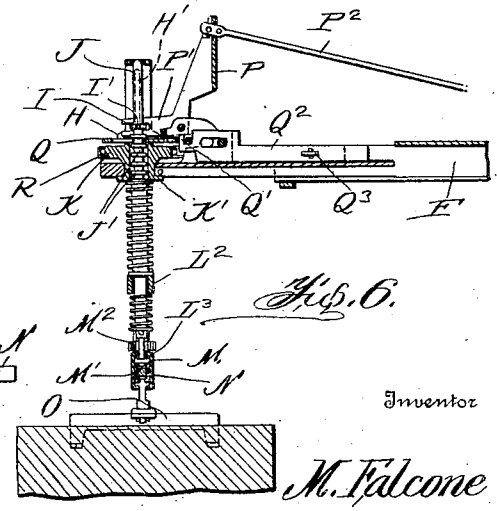


Fig. 6.



Witnesses

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4 SHEETS—SHEET 2.

Fig. 2.

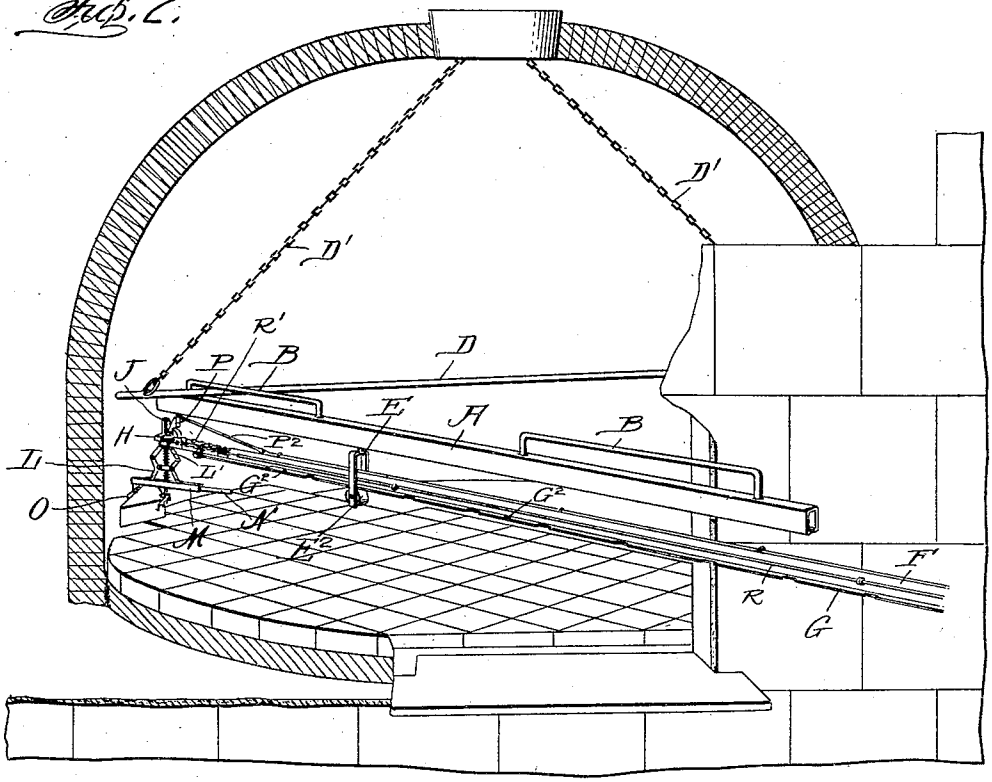


Fig. 7.

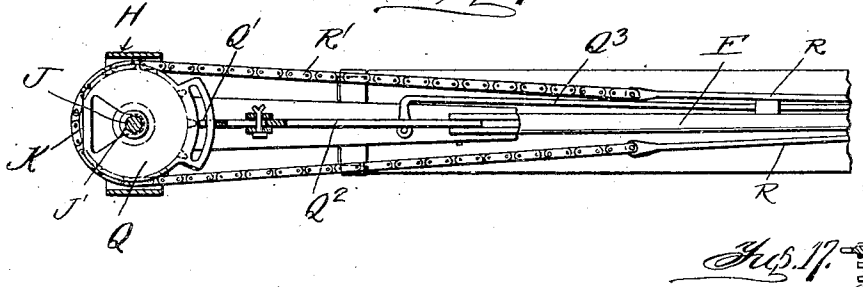


Fig. 17.

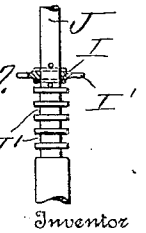
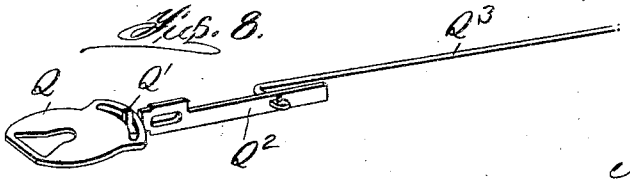


Fig. 8.



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4 SHEETS—SHEET 3.

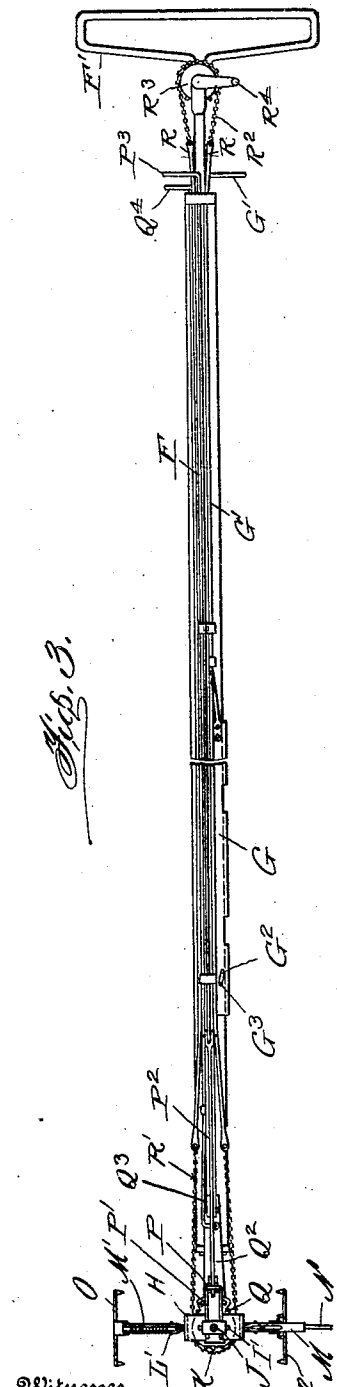

Fig. 3.

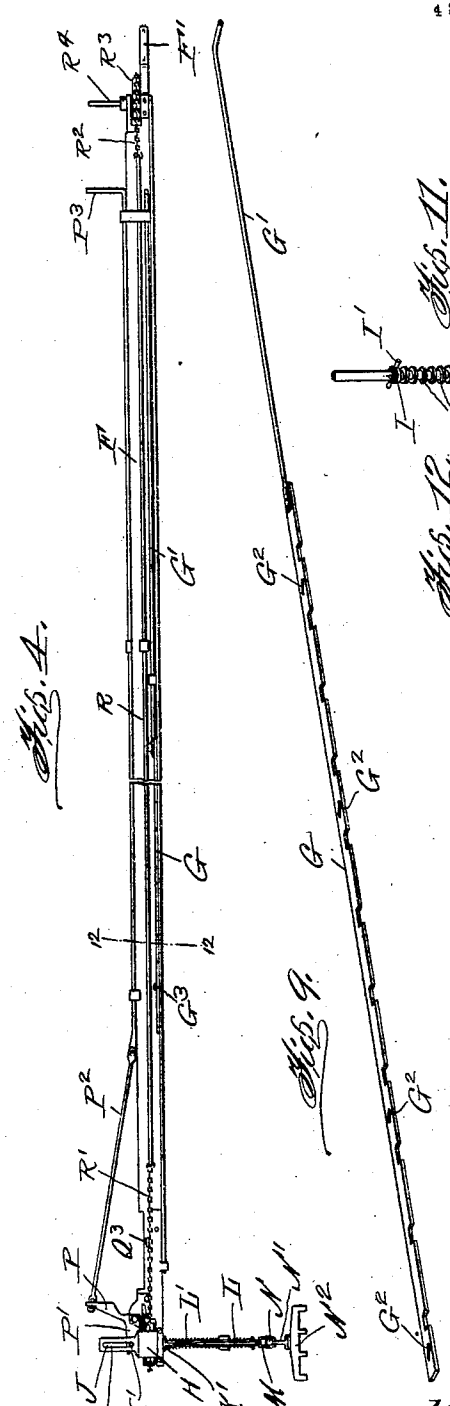

Fig. 4.

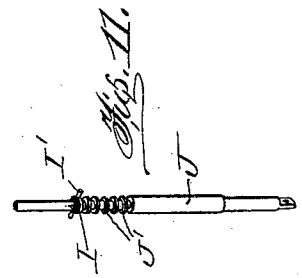

Fig. 11.

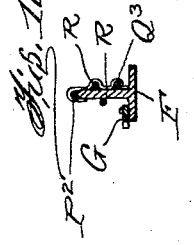

Fig. 12.

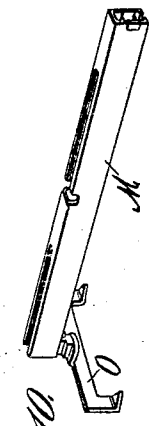

Fig. 10.

Fig. 9.

Witnesses

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4 SHEETS—SHEET 4.

Fig. 13.

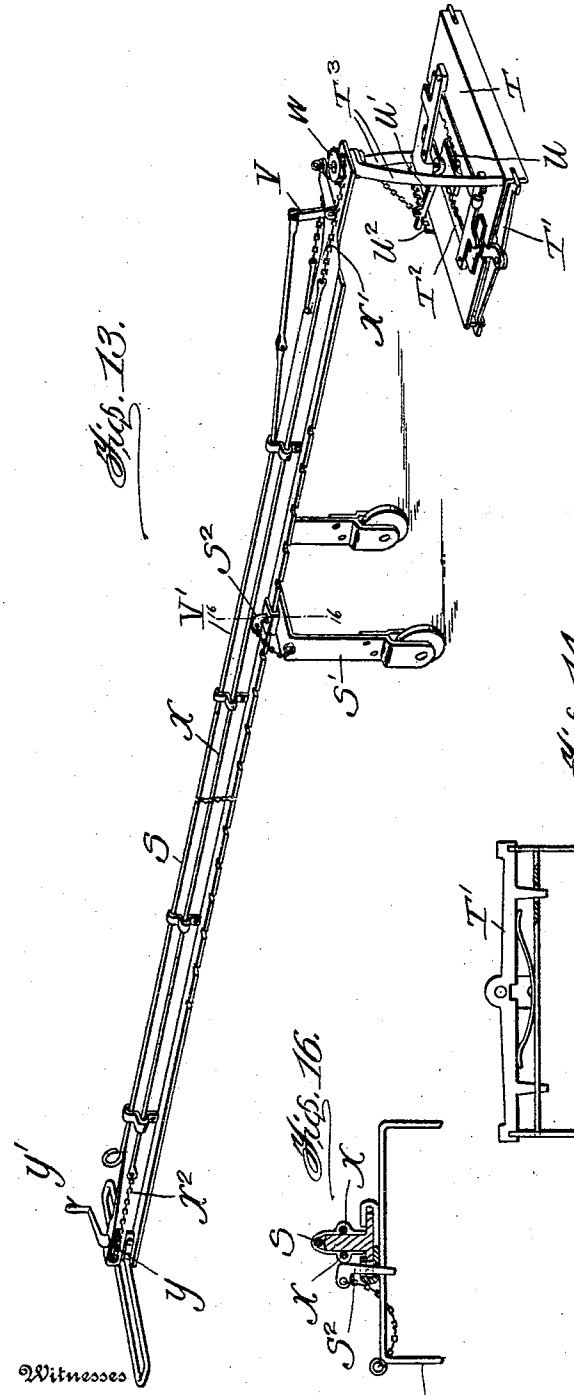

Fig. 15.

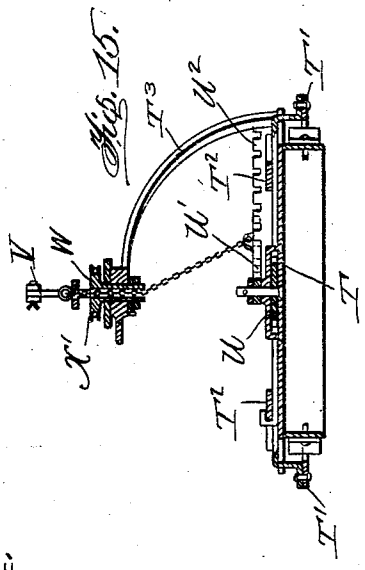

Fig. 14.

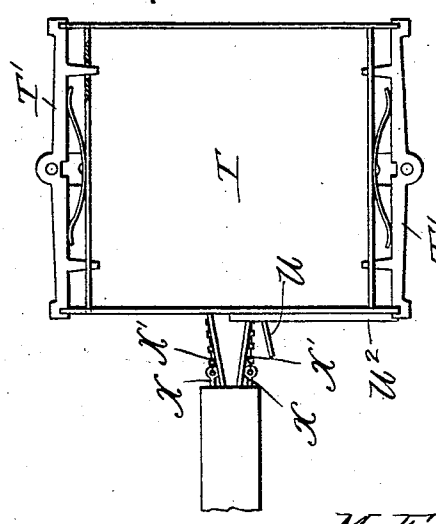

Fig. 16.

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UNITED STATES PATENT OFFICE.

MICHELE FALCONE, OF COKEDALE, COLORADO.

BRICKLAYING-MACHINE.

941,137. Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed December 15, 1908. Serial No. 467,646.

To all whom it may concern:

Be it known that I, MICHELE FALCONE, a citizen of the United States, residing at Cokedale, in the county of Las Animas and State of Colorado, have invented a new and useful Improvement in Bricklaying-Machines, of which the following is a specification.

This invention relates to brick laying machines for laying brick floors in coke ovens, roasters and smelters, and more particularly for laying bricks in bee-hive coke ovens where the floors wear out very fast, the object being to provide a brick laying device which can be readily placed in position in the oven so that the old floor can be removed and a new one laid without shutting down the oven.

Another object of my invention is to provide novel means for supporting the handle carrying the grapple whereby it can be moved in such a manner that all the parts of the oven can be reached so as to remove or place a brick therein in the desired position.

A further object of the invention is to provide a novel form of grapple which is so mounted on the end of the handle that it can be readily turned into any position desired so as to lay the brick in the proper place.

A still further object of the invention is to provide novel means for operating the grapple from the end of the handle so that the operator will not be affected by the heat of the oven.

A still further object of my invention is to provide a track adapted to be loosely supported within the oven and mounted within the track is a trolley on which is adjustably mounted the handle carrying the grapple.

Another object of the invention is to provide the grapple with adjustable jaws so that the jaws can be adjusted to suit different size bricks.

A further object of the invention is to provide locking means for the jaws of the grapple which can be released from the end of the handle.

With these various objects in view, my invention consists in the novel features of construction, arrangement and combination of parts hereinafter fully described, pointed out in the claims and shown in the accompanying drawings, in which:—

Figure 1 is a perspective view of my improved brick laying machine showing the application of the same. Fig. 2 is a similar view, the coke oven being broken away so as to show the grapple with a brick in position to be laid. Fig. 3 is a top plan view of the handle and grapple. Fig. 4 is a side elevation of the same. Fig. 5 is an end elevation, partly in section showing a brick secured between the jaws. Fig. 6 is a section taken on the line 6—6 of Fig. 5. Fig. 7 is a section taken on the line 7—7 of Fig. 5. Fig. 8 is a detail perspective view of the grapple supporting shaft locking member. Fig. 9 is a perspective view of the trolley locking member and operating rod. Fig. 10 is a perspective view of the jaw carrying bar of the grapple. Fig. 11 is a perspective view of the grapple supporting shaft. Fig. 12 is a section taken on line 12—12 of Fig. 4. Fig. 13 is a perspective view of a modified form of brick laying machine. Fig. 14 is an inverted plan view of the grapple. Fig. 15 is a vertical section through the grapple partly broken away. Fig. 16 is a section taken on line 16—16 of Fig. 13, showing the trolley in elevation and partly broken away, and Fig. 17 is a detail enlarged vertical section of the grapple supporting shaft.

In carrying out my improved invention, I employ a hollow track A provided with U-shaped supporting rods B adjacent each end through which bars C and D are adapted to extend, the bar C being arranged across the door of the oven and secured thereto by chains C′ and the bar D being supported by chains D′ and secured to the funnel head of the oven, it of course being understood that these bars are supported in the same horizontal plane so that the track will be held level, and it will be seen by this arrangement that the track can be moved on the bars to any desired position and for preventing the bar C from moving outwardly when the track is drawn outwardly chains C^2 are secured thereto having their ends secured to the oven which holds the bar steady.

Mounted in the hollow track A is a trolley wheel E′ carried by the stem of a trolley E which is also provided with a wheel E^2 on which is mounted a handle F which is substantially inverted T-shaped in cross section, and is provided with a loop F′ at its outer end in order that it can be readily handled.

The trolley E is locked on the handle F by a locking bar G which is provided with a plurality of notches adapted to receive one of the vertical bars of the trolley frame, said bar being mounted on the flange of the handle and provided with oblique slots G^2 through which pins G^3 extend so that when the bar is moved longitudinally by the handle G′ which extends along the handle adjacent the loop F′ and is mounted in suitable guides, the bar will also be moved transversely to engage or disengage one of the vertical bars of the trolley frame. It will be seen by this arrangement that it is only necessary to force the locking bar G longitudinally of the handle in order to lock or unlock the trolley.

Secured on the end of the handle F is a frame H provided with guide slots H′ through which extend the oppositely disposed pins I′ of a collar I loosely mounted on a supporting shaft J which extends through the end of the handle, and has a sprocket wheel K loosely mounted thereon which is provided with a sleeve portion K′ which extends through the end of the handle and is provided with oppositely disposed apertured ears on which are pivotally mounted links L′ having their free ends connected to levers L pivotally mounted in bifurcated lugs formed on a sleeve L^2 loosely mounted on the supporting shaft J. The shaft is surrounded by coil springs above and below the sleeve L^2 which normally has the tendency to force the sleeve downwardly on the shaft.

The ends of the levers L are provided with guide members L^3 which are slidably mounted in T-shaped grooves formed in the supporting bar M which is provided with a fixed rack portion M′ adapted to be engaged by a pivoted spring actuated dog M^2 carried by one of the levers and with a movable rack bar N which is engaged by a spring actuated dog M^3 and it will be seen by this arrangement that the position of the levers can be adjusted with respect to the bar as will be hereinafter fully described. Secured to one end of the bar M is a pivoted jaw O and mounted within the bar is a movable supporting jaw member N′ having a pivoted jaw N^2 connected thereto, said jaw supporting member N′ being provided with a spring actuated dog adapted to engage the rack N so as to lock it in its adjusted position whereby the jaws can be adjusted with respect to each other so as to fit different size bricks. It will be seen that by adjusting the rack bar N with respect to the supporting bar M the jaws can be adjusted to accommodate different sized bricks.

For operating the supporting shaft J so as to cause the levers to be contracted or expanded, I employ a crank P provided with bifurcated arms P′ which extend over the pins I′ of the collar I and to the other arm of the crank is connected an operating rod P^2 which extends along the handle and guides secured thereto and is provided with an angled end forming a handle P^3 for operating the same, and it will be seen that when the rod is drawn rearwardly or toward the operator the supporting shaft J of the grapple will be moved upwardly so as to cause the upper ends of the operating levers to be forced outwardly by the links L′ thereby causing the inner ends to be drawn toward each other so as to draw the jaws into engagement with the brick so as to clasp the same between the jaws.

For locking the jaws together over a brick, I employ a locking bar Q provided with a substantially V-shaped slot adapted to be forced into one of the annular grooves J′ formed in the grapple supporting shaft J so as to lock the shaft in its raised position, said locking bar Q being slidably mounted on the sprocket wheel K and having a curved slot formed thereon through which extends a finger Q′ of a bar Q^2 to which is connected the end of an operating rod Q^3 which extends rearwardly on the handle in guides and is also provided with a handle portion Q^4 at its free end for operating the same and it will be seen that by drawing the bar rearwardly the enlargement of the slot will be drawn around the supporting shaft J and by forcing the same forwardly the converging portion of the V-shaped slot will be brought into engagement with the annular groove of the shaft so that the shaft will be locked in its raised position, it of course being understood that the operating rod of the crank has been previously operated so as to clamp the jaws over a brick.

In order that the grapple may be turned to any position desired so as to place a brick in the correct position, I employ a pair of operating rods R mounted in guides secured to the handle, the free ends of the rods carrying sprocket chains R′, R^2, the sprocket chains R′ passing over the sprocket K and the sprocket chain R^2 passing over a sprocket R^3 mounted on the handle adjacent the loop portion F′ and provided with a crank arm R^4 for operating the same, and it will be seen that by turning the crank arm, the jaws of the grapple can be swung into any desired position.

It will be seen that I have provided a handle which is supported by a trolley, said handle having a grapple mounted on one end which is so constructed and connected to the operating rods that the jaws of the grapple can be opened and closed from the end of the handle and the grapple itself swung into any position desired.

In Fig. 13, I show a perspective view of a modified form of brick laying machine which

comprises a handle S adjustably mounted on a trolley S′ which is locked in its adjusted position by a pin S^2, said handle also being provided with a loop at its end forming a handle portion proper in order that it can be readily operated. Pivotally mounted on the end of the handle S is a grapple which is supported by arms and comprises a body T having spring actuated jaws T′ to which are concreted rack portions T^2 slidably mounted in guide members secured upon the body T and adapted to engage a gear wheel U mounted upon the body to which is connected a lever U′ for operating the jaws T′, said lever being locked by a rack U^2 so as to lock the jaws over a brick, and it will be seen by this arrangement that the body is placed over a brick and by moving the lever, the jaws are brought together and clamped over the brick in such a manner that the brick will be firmly held. The body T is substantially a rectangular frame, the ends having openings through which the jaws T′ extend and engage the brick when placed over the same.

For releasing the brick when it has been placed over the place where it is desired to be laid, I employ a crank V which is mounted on the handle S and has a chain connected to one end which passes down through the handle and arms of the body and is connected to the lever U′ and connected to the other end of the crank V is an operating rod V′ mounted in guides secured on the handle S and provided with a handle portion for operating the same.

The arms T^3 of the body T are fixed to a hollow shaft which is loosely mounted in the end of the handle S and has secured thereon a sprocket wheel W over which passes a sprocket chain X′ which has its end connected to operating rods X mounted in guides on the handle S, the free ends of the operating rods X being connected to the ends of a sprocket chain X^2 which passes over a sprocket wheel Y mounted on the handle and is provided with a crank arm Y′ for operating the same, and it will be seen that when the arm is turned the grapple at the end will be turned so as to place the brick in the correct position.

From the foregoing description, it will be seen that I have provided a brick laying machine which is supported by a trolley and comprises mainly a handle having a grapple arranged at one end which is so constructed that the jaws of the same and the grapple proper can be operated from the other end of the handle whereby a person can lay bricks in a hot oven thereby overcoming the disadvantages now existing with coke ovens now in use as it is necessary to put out the fire for at least two weeks before the oven becomes cool enough so as to allow a bricklayer to enter the same.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a brick laying machine the combination with a handle, of a grapple mounted on one end of said handle comprising levers, a supporting bar carried by said levers and jaws carried by said supporting bar operated by said levers.

2. In a brick laying machine the combination with a trolley supported handle, of a grapple mounted on one end of said handle comprising levers, a supporting bar carried by said levers, a fixed jaw and a movable jaw carried by said supporting bar, said movable jaw being operated by said levers.

3. In a brick laying machine the combination with a trolley supported handle, of a pair of levers carried by one end of the handle, a supporting bar carried by said levers provided with a fixed and a movable jaw and means for operating said levers so as to operate the movable jaw.

4. In a brick laying machine, the combination with a trolley supported handle, of a grapple mounted on one end of the handle comprising a supporting shaft carrying levers, a supporting bar carried by said levers, a fixed jaw and a movable jaw carried by said supporting bar, and means for operating said supporting shaft.

5. In a brick laying machine, the combination with supporting rods, of a track adjustably mounted on said supporting rods, a trolley mounted in said track, a handle carried by the trolley, means for locking said handle with respect to the trolley, and a grapple carried by an end of the handle.

6. A brick laying machine comprising a handle, a trolley adjustably mounted on said handle, and a grapple carried by the handle provided with means for operating the same.

7. A brick laying machine comprising a trolley supported handle, a grapple mounted on one end of the handle comprising a supporting shaft carrying pivoted levers, a bar adjustably mounted on the ends of said levers carrying jaws, and a crank for moving said supporting shaft vertically whereby said jaws will be opened and closed.

8. In a brick laying machine, the combination with an oven, of rods supported by said oven in a horizontal plane, a hollow track provided with rods loosely mounted on the first mentioned rods, a trolley wheel mounted in said track supporting a trolley, a handle supported by said trolley, a grapple carried by the end of said handle, and means for locking said handle with respect to the trolley.

9. In a brick laying machine, the combination with supporting rods, of a track movable on said rods, a trolley mounted in said track, a handle supported by said trolley, and a grapple mounted on the end of said

handle provided with means for operating the same.

10. In a brick laying machine, the combination with an adjustably mounted track, of a trolley carried by the track, a handle carried by said trolley, means for locking said handle with respect to the trolley, and a grapple carried by the end of the handle together with means for operating said grapple.

11. In a brick laying machine, the combination with a trolley supported handle, of a grapple mounted on the end of the handle comprising a vertical shaft, a sleeve mounted on said shaft, levers carried by said sleeve, a supporting bar carried by said levers, jaws carried by said supporting bar, and means for raising said shaft for forcing the jaws together over a brick.

12. In a brick laying machine, the combination with a trolley supported handle, of a grapple carried by one end of the handle comprising a supporting shaft, a sleeve mounted on the shaft carrying levers, a supporting bar adjustably mounted on the ends of said levers, jaws carried by said supporting bar, a crank for raising said shaft, and means for locking said shaft in a raised position.

13. In a brick laying machine, the combination with a trolley supported handle, of a grapple carried by one end of the handle, comprising a frame provided with guide slots, a shaft extending through said handle provided with a collar having laterally projecting pins extending through said guide slots, a crank provided with bifurcated arms extending over said pins, levers carried by the shaft, a supporting bar carried by said levers, jaws carried by said supporting bar, and a locking bar adapted to engage said shaft, for the purpose described.

14. A brick laying machine comprising a trolley supported handle, a grapple mounted on the end of the handle comprising a shaft provided with annular grooves, a sleeve mounted on the shaft carrying levers, a sprocket wheel loosely mounted on the shaft connected to said levers by links, a supporting bar carried by said levers provided with a fixed and a movable rack, dogs carried by said levers engaging said racks, a jaw carried by said bar, a second jaw adjustably mounted on the movable rack, means for operating said sprocket together with means for raising and locking said shaft.

15. In a brick laying machine, the combination with a handle supported by a trolley, means for locking said handle with respect to the trolley, a grapple carried by the end of the handle provided with jaws and means for operating said jaws together with means for locking said jaws and for turning the said grapple.

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Witnesses:
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