

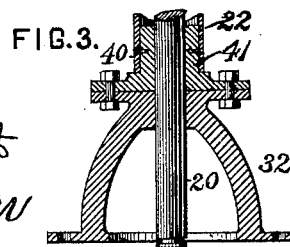
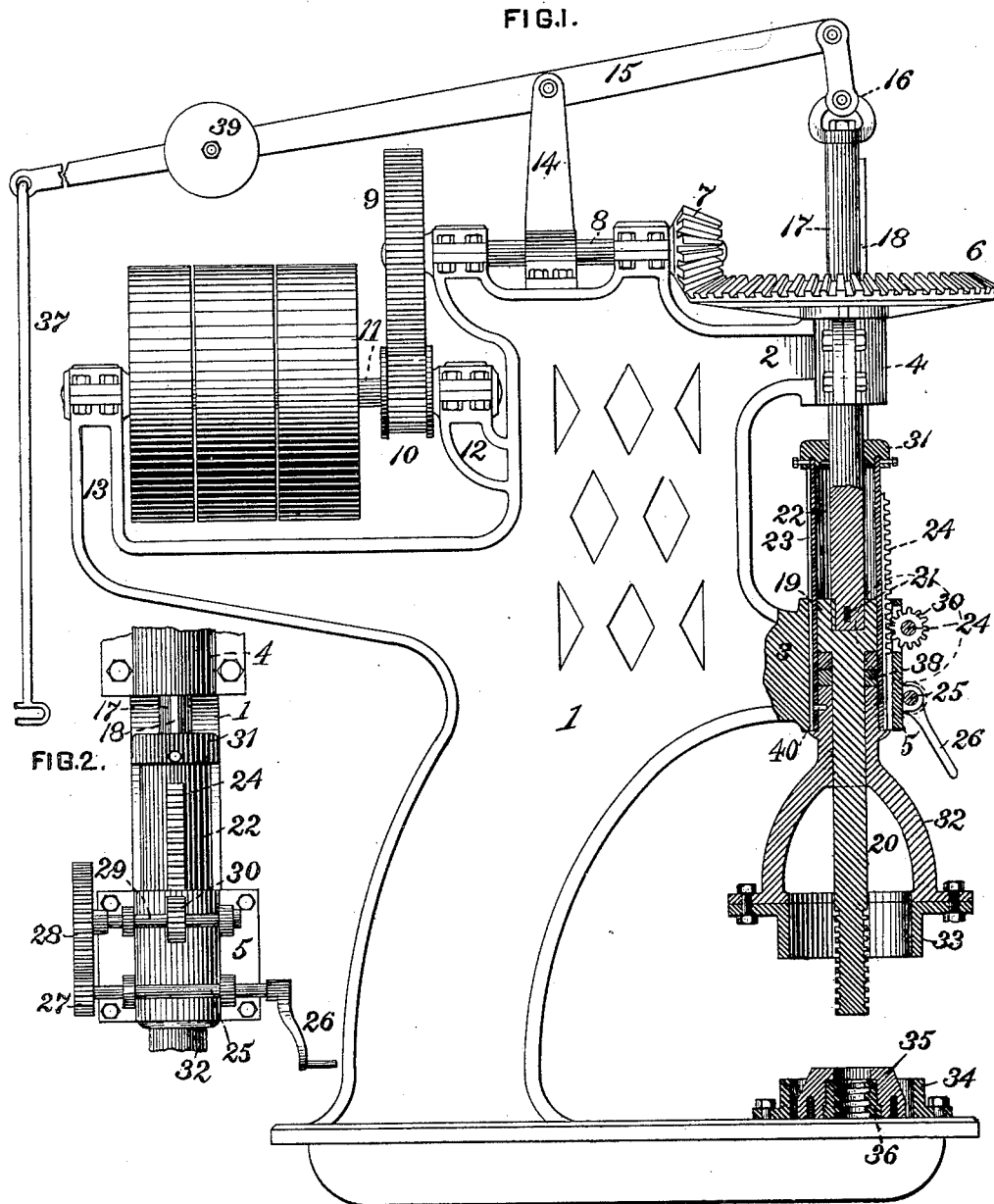
(No Model.)

R. MUNROE & W. M. HAMILTON.
FLANGING MACHINE.

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No. 418,983.

Patented Jan. 7, 1890.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT MUNROE AND WILLIAM M. HAMILTON, OF ALLEGHENY,
PENNSYLVANIA.

FLANGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,983, dated January 7, 1890.

Application filed August 30, 1889. Serial No. 322,407. (No model.)

To all whom it may concern:

Be it known that we, ROBERT MUNROE and WILLIAM M. HAMILTON, citizens of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Flanging-Machines, of which improvement the following is a specification.

The invention described herein relates to certain improvements in machines for forming a flange around man-holes, flue-holes, &c., on boiler-heads, plates, &c.; and the invention has for its object a construction of machine whereby the flanging operation may be quickly and easily effected.

In general terms the invention consists in the construction and combination of mechanical devices or elements, all as more fully hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view of our improved machine, partly in elevation and partly in section. Fig. 2 is a detail view of part of the operating mechanism, and Fig. 3 is a sectional detail showing a modification in the manner of connecting the cage and the sleeve.

The standard 1, supported by the bed-piece, is provided with arms 2 and 3, having bearings 4 and 5 at their outer ends. In the upper bearing 4 is mounted the hub of the beveled gear-wheel 6, which is driven by a correspondingly-shaped pinion 7, keyed to one end of the shaft 8. On the opposite end of the shaft 8, mounted, as shown, in suitable bearings on top of the standard 1, is keyed the gear-wheel 9, which intermeshes with a pinion 10 on the power-shaft 11, said shaft being mounted in bearings on the brackets 12 and 13, projecting from the side of the standard and having fast and loose pulleys thereon. On top of the standard is bolted the post 14, on which is pivoted the lever 15, having one end connected by a swivel-joint 16 to the upper end of the shaft 17. The shaft 17 extends down through the hub of the gear-wheel 6 and is caused to rotate therewith by a spline 18, while free to move longitudinally through the hub. The lower end of the shaft 17 is suitably shaped to engage a socket 19, formed

on the upper end of the lifting-bar 20, the bar and shaft being held together by a pin 21. The lifting-bar and shaft 17 are inclosed for a portion of their lengths by a cylindrical case or shell 22, so mounted in the lower bearing 5 on the arm 3 as to move freely up and down therein, but held from rotation by a spline 23 and rack-bar 24, secured, as shown in Figs. 1 and 2, to the front side of the case. On the bearing 5 is mounted in suitable bearings the shaft 25, having a handle 26 secured to one end and a pinion 27 to the opposite end. This pinion intermeshes with a gear-wheel 28, keyed to one end of a counter-shaft 29, also mounted in suitable bearings on the cap of the bearing 5, and on the counter-shaft is also keyed the pinion 30, which, projecting through a slot in the cap of the bearing 5, engages the rack-bar 24. On the upper end of the shell or case 22 is fastened the cap 31, having an opening for the passage of the shaft 17, said cap serving to steady the upper end of the case or shell. On the lower end of the case is attached the cage 32 by means of bolts or pins 40, passing through the case and entering the neck of the cage, which projects a short distance into the case. On the cage is bolted the annular presser-foot 33, adapted in the operation of the machine to hold the plate operated on down against the annular anvil 34, which is bolted to the bed-piece of the machine. Within the annular anvil is placed the former 35, having a conically-shaped upper portion, the wall of the lower portion being straight or vertical, as shown. The former is provided with a central opening, in which is placed a nut 36; or the walls of the opening may be threaded to engage the threads on the lower end of the lifting-bar 20.

In operating this machine the plate or head to be flanged has an opening formed in it at the place the man-hole or other opening is to be formed. The plate is then heated and placed over the annular anvil, the former 35 being in position within the anvil. The cage is then lowered by means of the rack-and-pinion mechanism, hereinbefore described, until the presser-foot 35 bears upon the plate and holds the same firmly against the anvil. The shaft and lifting-bar are then lowered by

raising the rear end of the lever 15, which is provided with a depending handle 37, until the lower end of the lifting-bar engages the threads in the former. The gear-wheel 6 is then rotated, thereby rotating the lifting-bar, which, engaging the threads in the former, is drawn down until the shoulder of the socket 19 bears upon the end of the neck portion of the cage, thus arresting any further downward movement of the lifting-bar and its connections, the cage resting on the plate or head, as hereinbefore stated. As the lifting-bar continues to rotate, the former 35 is slowly drawn up through the plate, thereby forming the man-hole or flue-hole and the flange around the same. Rings 38, formed of anti-friction metal, are preferably interposed between the shoulder of the socket 19 and the neck of the cage, said rings not only serving as anti-frictional bearings, but, being removable, rings of different thicknesses can be interposed between the shoulder and end of the neck of the cage, so as to insure a proper bearing for said shoulder and the neck, when different sizes of cage or former are used. In lieu of the construction shown in Fig. 1, where it is necessary to remove the pins 40 and rings 38, when any change in the cage is required, the sleeve 41 may be placed within the case or shell 22, said sleeve being formed with a flange at its lower end and the neck of the cage bolted thereto, as shown in Fig. 3. This construction will avoid the removal of the pins 40 and a change in the rings 38. As soon as the former has been drawn through the plate the cage and lifting-bar are raised and the latter reversely rotated to remove the former therefrom. The lifting-bar and shaft 17 are counterbalanced by a weight 39 on the lever 15.

While it is preferred to form the shaft 17 and lifting-bar independent of each other, as shown and described, they may be formed in one piece and provided with a shoulder for engaging the end of the neck of the cage. As shown in Fig. 1, the former is held from rota-

tion by pins 42; or, in lieu thereof, a squared stem fitting a corresponding opening in the former may be substituted for the pins, or guide-strips may be formed on the inner wall of the anvil.

It will be understood that the shape of the anvil and former may be changed to form a flanged opening of any desired contour.

We claim herein as our invention—

1. In a flanging-machine, the combination of a rotating and vertically-movable lifting-bar threaded at its lower end, a non-rotating former having a threaded opening there-through, and a cage having a suitably-shaped presser-foot and surrounding the lifting-bar, the latter being provided with a shoulder engaging the cage, substantially as set forth.

2. In a flanging-machine, the combination of a rotating and vertically-movable lifting-bar threaded at its lower end, a vertically-movable shell or case surrounding the lifting-bar, a cage having a suitably-shaped presser-foot and connected to the case or shell, and a non-rotating former having a threaded opening therethrough, the lifting-bar being provided with a shoulder for engagement with the cage, substantially as set forth.

3. In a flanging-machine, the combination of a vertically-movable and rotating shaft, a lifting-bar having a shouldered socket 19, adapted to fit the lower end of the shaft and threaded at its lower end, a case or shell surrounding the shaft and lifting-bar, a rack-and-pinion mechanism for raising and lowering the case, a cage carried by the case or shell and provided with a presser-foot, and a former having a threaded opening there-through, substantially as set forth.

In testimony whereof we have hereunto set our hands.

ROBERT MUNROE.
WILLIAM M. HAMILTON.

Witnesses:

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