Nov. 15, 1927.

M. M. EGAN

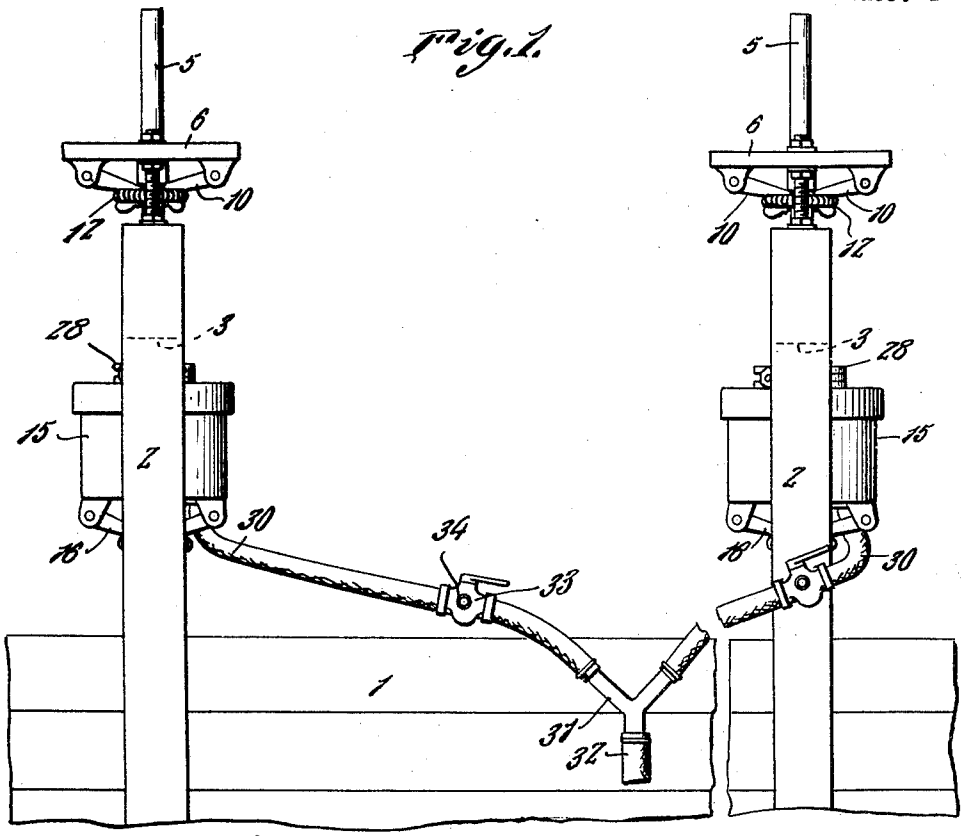
1,649,674

JACK

Filed Feb. 21, 1927

2 Sheets-Sheet 1

Fig. 1.



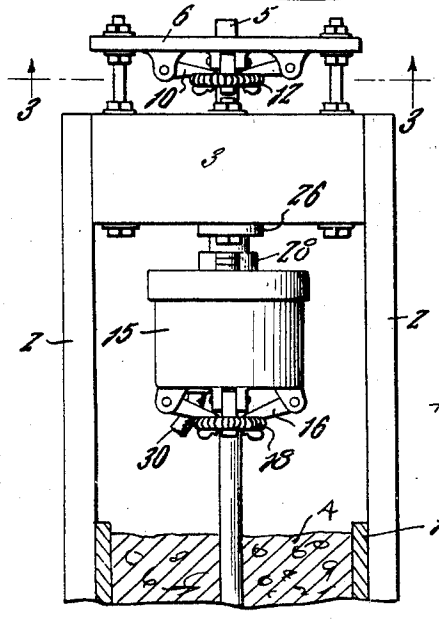


Fig. 2.

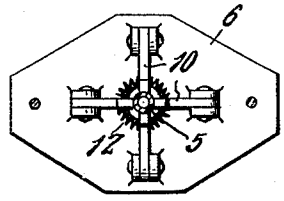


Fig. 3.

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2 Sheets-Sheet 2

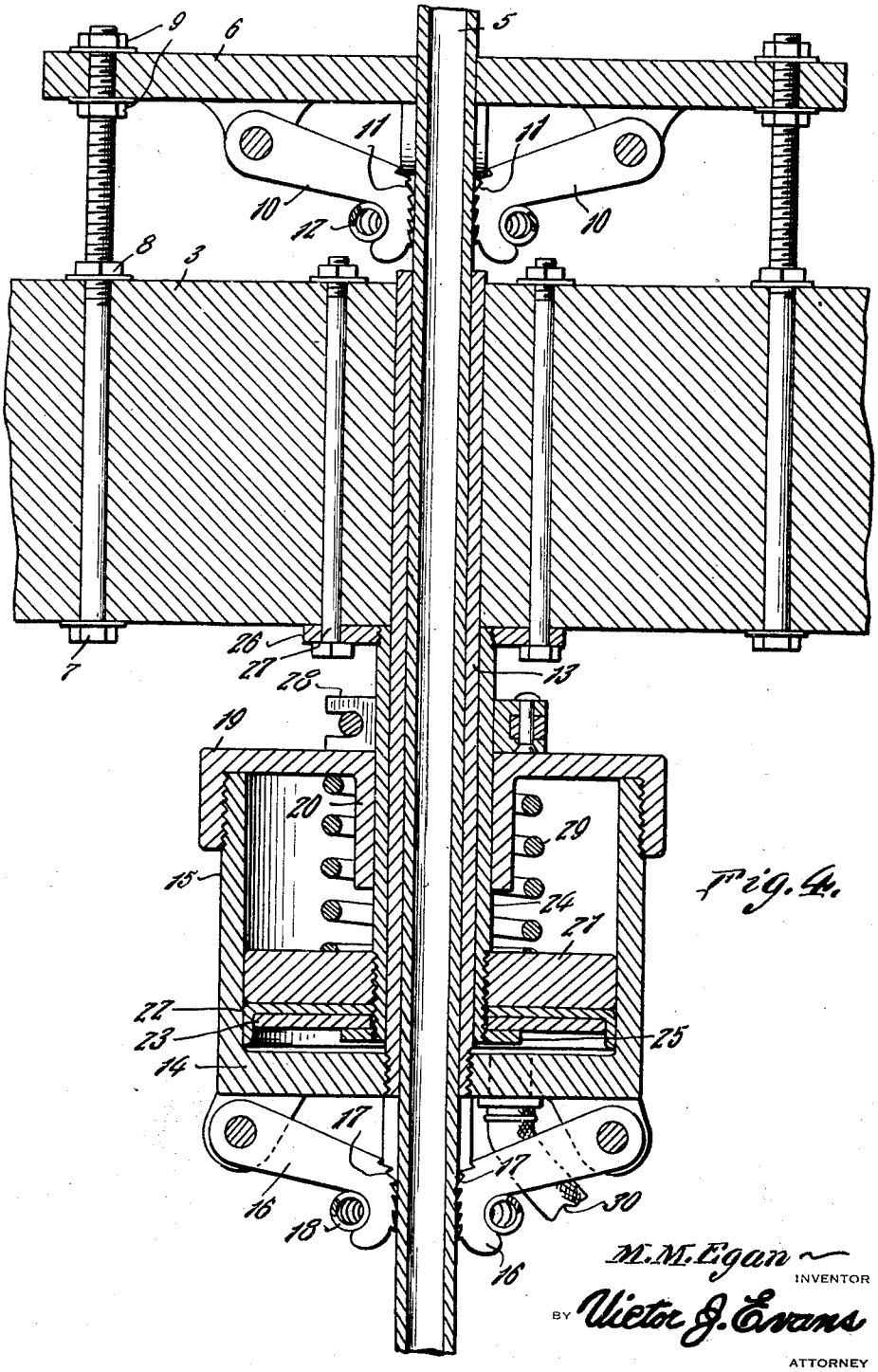

Fig. 4.

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Patented Nov. 15, 1927. 1,649,674

UNITED STATES PATENT OFFICE.

MATHEW M. EGAN, OF FORT WORTH, TEXAS.

JACK.

Application filed February 21, 1927. Serial No. 170,040.

My present invention has reference to climbing jacks, especially designed for use in the erection of concrete buildings, and whereby the form for the concrete may be raised to predetermine elevations so that the same form may be employed for molding the entire wall, regardless of the height of the wall.

A further object is the provision of an automatic jack that is secured to a concrete form in such manner that a piston, associated with the jack when influenced by fluid pressure will raise the form a predetermined distance and the cylinder in which the piston works will, upon the release of fluid pressure, be likewise raised and the whole device effectively sustained thus elevated to allow the pouring of more concrete in the mold for the further erection of the wall.

A still further object is the provision of a means for this purpose in which any desired number of fluid operated jacks are connected to a wall form or mold and in which all of the jacks will be simultaneously operated for rasing the mold to predetermined elevations and effectively and rigidly holding the mold when so raised.

A still further object is the provision of a device of this character which is of a comparatively simple nature, comprising few parts that are not liable to disassociation or breakage and which while primarily devised in connection with concrete wall constructions, may be successfully used upon other devices to be elevated or lowered.

To the attainment of the above broadly stated objects and others which will appear as the nature of the invention is better understood, the improvement further resides in certain other novel features of construction, combination and operative association of parts, a satisfactory embodiment of which is disclosed by the accompanying drawings.

In the drawings:

Figure 1 is a side elevation illustrating the application of my improvement.

Figure 2 is an end view thereof, the same being in section.

Figure 3 is a sectional view on the line 3—3 of Figure 2.

Figure 4 is a greatly enlarged vertical longitudinal sectional view through the improvement.

In Figure 1 of the drawings I have illustrated two jacks associated with the form or mold of a concrete or other plastic wall, but it is to be understood that any desired number of such jacks may be employed. Also in this connection it may be well to emphasize the fact that I do not desire my improvement restricted to its useful employment in connection with wall forms as it will be obvious as the description progresses that the same may be successfully employed in various other connections.

Referring now to the drawings in detail, the numerals 1 designate the side members of the mold. The boards that comprise the mold sides are secured on the inner faces of vertically disposed posts 2. Each pair of oppositely disposed posts 2 are connected together by a head beam 3. Before the wall 4 is started there is embedded centrally in the wall foundation spaced vertically arranged wall reinforcing members that also provide jack posts and which are preferably in the nature of tubes 5. These jack posts are of a greater length than the height of the wall to be erected. Above each of the head beams 3 there is a plate 6. These plates are preferably of metal and have central openings therein through which the jack posts 5 freely pass. Bolt members 7 pass through the head beam 3 and through the corners of the plate 6. Screwed on these bolts there are nuts 8 that contact with the upper face of the head beam 3 and other nuts 9—9 that contact respectively with the inner and outer faces of the plate 6. In this manner it will be noted that the head beam 3 and plate 6 are adjustably but rigidly associated. The under face of the plate 6 is provided with right-angularly disposed pairs of depending ears and between each pair of ears there is pivoted a dog 10. Each dog has its active face rounded and toothed, as at 11, while the inner concaved surfaces of the dogs, opposite the toothed active faces 11 are surrounded by a continuous coiled spring 12. The spring 12 forces the dogs into frictional contact with the jack post 5.

The jack post freely passes through a central opening in the head beam 3 and through this opening there is likewise passed a jack stem sleeve, 13, that loosely surrounds the jack rod. The sleeve 13 has its lower end threaded in an opening in the lower head 14 of a cylinder 15. On the said lower head of the cylinder there are right-angularly disposed pairs of depending ears and between each pair of these ears there is pivoted a dog 16. These dogs are of a construction

similar to the dogs 10, the same having their outer ends rounded and their active faces toothed as at 17, while the inner concaved portions provided by the rounded ends receive therein an endless coil spring 18 that forces the toothed active faces of the dogs into frictional contact with the jack post 5.

The open top of the cylinder 15 is closed by a head 19. The head is in the nature of a disc which has a depending peripheral flange that is threaded for engagement with the threaded outer end of the cylinder 15, and the said head 19 is centrally formed with an opening surrounded by a depending annular flange 20.

In the cylinder there is a piston 21. On the under face of the piston there is a flanged packing gasket 22 held against the piston by a disc 23. Threaded through the piston there is the hollow tubular piston stem 24, the said stem surrounding the jack rod sleeve 13. Threaded on the lower end of the hollow piston 24 there is a nut 25 that contacts with the disc 23. The piston extends a suitable distance through the cylinder and has threaded on its outer end a flat ring 26 that provides a head for the said piston stem. The ring head 26 is bolted, as at 27, to the head beam 3.

Arranged on the piston stem 24 and normally contacted by the head 19 of the cylinder 15 there is an adjustable stop collar 28. Preferably the stop collar comprises two hingedly connected sections having suitable means at the free end thereof for connecting the same and binding the said collar on the stem 24. Surrounding the central depending flange or collar 20 of the head 19 and exerting a tension against the piston 21 there is a coil compressing spring 29.

Connected to a fluid inlet port in the bottom or head 14 of the cylinder 15, there is a fluid conducting hose 30. As disclosed by Figure 1 of the drawings, the hose for the respective cylinders 15 are connected by a wide branch 31 to a main fluid conductor pipe 32, and each of the pipes 30 has its passage controlled by a hand operated valve 33. The casing of each valve has an outlet or bleed port 34, which when the handle of the valve is turned to prevent fluid under pressure from the pipe 32 passing through the valve casing, permits of the bleeding of the fluid from the casings 15.

The operation may be briefly described as follows: A portion of the wall 4 has been formed in the mold 1, and when the same is sufficiently dried fluid under pressure is let into the cylinders 15. The cylinders through the medium of the dogs 16 are locked on the jack post 5 and the fluid will influence the pistons 21 upwardly in the cylinders against the resistance offered by the compression springs 29. The hollow piston stems being connected directly to the head beams 3 will cause the said beams and the mold connected therewith to be raised a predetermined distance. This distance is regulated by the contact of the piston 21 with the inner depending flange or sleeve 20 of the head 19 of the cylinders. The stems for the valves are now turned to cut off the inflow of fluid to the cylinders, permitting the fluid already in the cylinders to be bled through the ports 34, as previously stated. The compression springs 29 are now relieved of the pressure of the fluid and will expand, causing the cylinders to travel upwardly on the pistons 21, it being, of course, understood that the pistons are held locked on the head beam 3 and the said head beam is prevented from further movement by the engagement of the dogs 10 with the jack posts 5. The upward movement of the cylinders under the influence of the springs 29 is limited by their contact with the stop collars 28. The valves are turned on and off until the form has been raised to the desired position to permit of the pouring of more concrete in the mold, and the operation is continued until the wall is entirely erected. Of course, the jack posts 5 remain in the wall but the remainder of the construction may be easily and quickly removed from the projecting ends of the jack posts. These projecting ends may be sawed off to a level with the top of the wall.

The construction and operation and advantages of the improvement will, it is thought, be perfectly apparent to those skilled in the art to which the invention relates when the foregoing description has been read in connection with the accompanying drawings, but obviously I do not wish to be restricted to the precise details of construction herein set forth and, therefore, hold myself entitled to such changes therefrom as fairly fall within the scope of what I claim.

Having described the invention, I claim:—

1. The combination with a vertically arranged jack post, of a clamping jack thereon, including a plate through which the post passes, spring influenced dogs on the under face of the plate grippingly engaging with the jack post, a beam through which the jack post freely passes arranged below but secured to the plate, a cylinder through which the jack post also passes, spring influenced dogs on the lower head of the cylinder frictionally engaging with the jack post, a piston in the cylinder having a hollow stem projecting through the top of the cylinder and connected with the beam, spring means in the cylinder for influencing the piston in a downward direction, an adjustable stop collar above the cylinder, and valve controlled means for permitting a fluid under pressure entering the bottom of the cylinder to act on the piston and for exhausting such fluid.

2. A wall form having uprights at the sides thereof and a head timber connecting the oppositely arranged pairs of uprights, a jack post arranged centrally between each pair of uprights and passing through the head timbers, spring influenced dogs pivotally supported above each head timber and gripping the jack rod, a cylinder arranged between each pair of uprights and through which the jack rod passes, a piston in the cylinder receiving therethrough the jack rod and having a hollow piston rod surrounding the jack rod and passing through the upper head of each cylinder and connected to the under face of each head timber, pivotally supported spring influenced dogs on the lower head of the cylinder engaging with the jack post, spring means in the cylinders influencing the pistons downwardly in the cylinders, means for admitting a fluid under pressure to act on the piston in each cylinder, together with means for exhausting the fluid from the cylinders, as and for the purpose set forth.

3. A wall form having jack rods centrally arising therefrom, and having oppositely directed uprights secured to the outer faces of the form, and a timber secured to the top of each pair of uprights and through which the jack rod passes, a plate supported from but above the head timbers, downwardly inclined dogs having rounded and toothed active ends pivoted to the plate, spring means influencing the dogs to engage with the jack rod, a closed cylinder between each pair of uprights and through which the jack rod passes, downwardly inclined dogs pivotally supported from the lower head of the cylinder and having rounded toothed active faces to engage with the jack rod, spring means influencing the dogs in such engagement, a piston in each cylinder having a hollow piston stem passing through the upper head of the cylinder connected to the head beam and through which piston rod the jack rod passes, a stop element on each piston above each cylinder, spring means for influencing the pistons downwardly in the cylinders, means for directing a fluid under pressure into the bottom of each cylinder to act on the piston therein to move said pistons against the influence of the spring means and means for releasing the fluid from the cylinders.

4. The combination with vertically arranged jack posts, a wall form, and head beams for the same through which the jack posts pass, plates above the head beams through which the jack posts also pass, means adjustably but rigidly securing the plates to the head beams, right-angularly disposed downwardly inclined spring influenced toothed dogs on the under face of the plates grippingly engaging with the jack posts, a cylinder having a lower closed head and an upper removable head through which each jack post centrally passes, depending right-angularly disposed spring influenced toothed dogs on the lower head of the cylinder grippingly engaging the jack post, a jack rod sleeve surrounding each jack post, passing freely through the head beams, entering the cylinders and secured to the lower heads thereof, a piston in each cylinder, a packing gland for each piston, a hollow stem secured to each piston, extending through the top head of the cylinder and secured to the under face of the head beam, an adjustable and removable stop collar on the stem above and normally contacted by the cylinder, a compression spring in each cylinder exerting a tension between the top head thereof and the piston therein and valve controlled means for directing fluid under pressure into the bottom of each cylinder to act on the piston therein and for exhausting such fluid.

In testimony whereof I affix my signature.

MATHEW M. EGAN.