(No Model.)

3 Sheets—Sheet 1.

O. R. NELSON.

HYDRAULIC PRESS ATTACHMENT.

No. 321,745. Patented July 7, 1885.

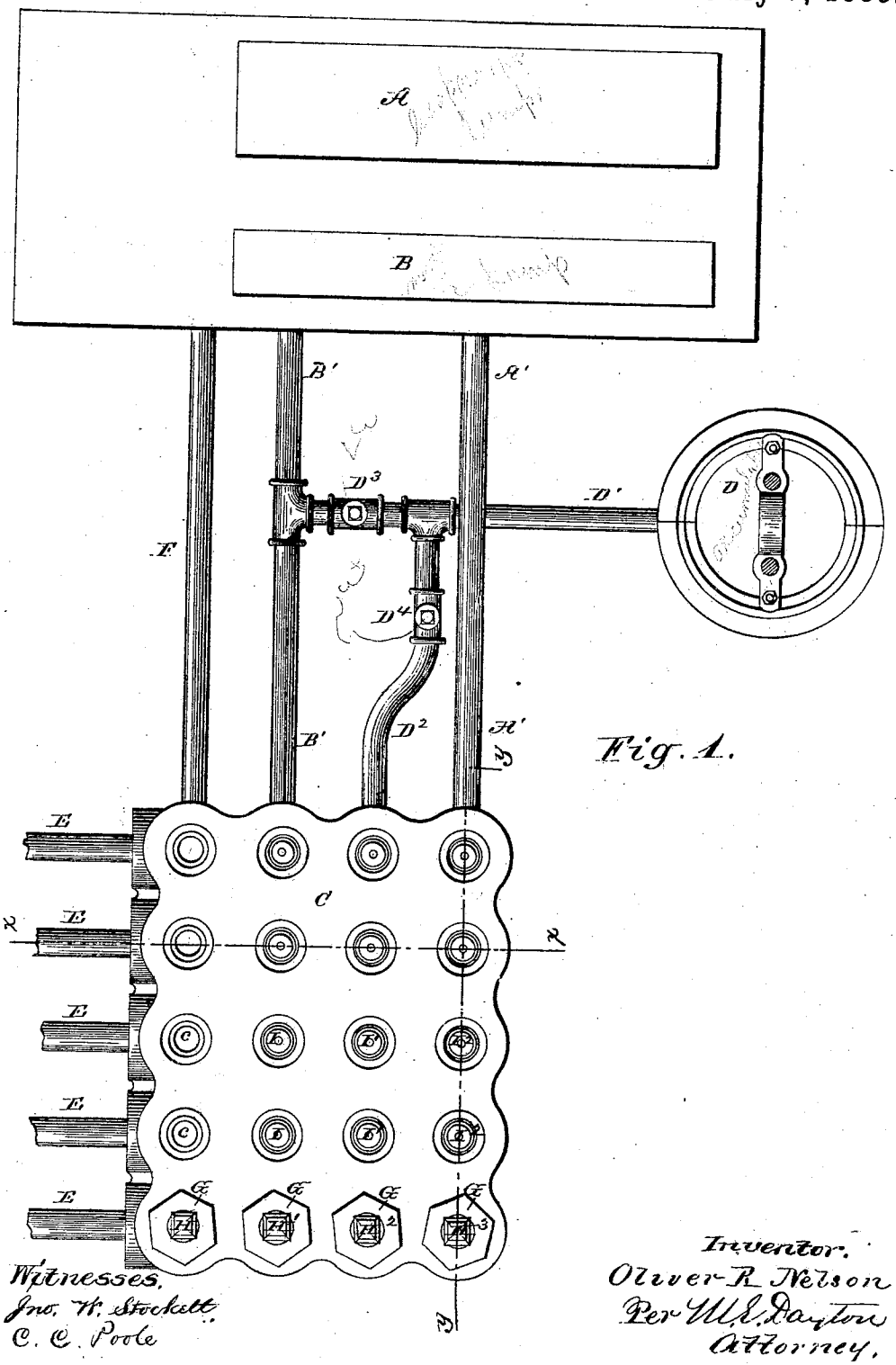


Fig. 1.

Witnesses.
Jno. W. Stockett
C. C. Poole

Inventor.
Oliver R. Nelson
Per W. L. Dayton
Attorney.

BELL BROS., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

O. R. NELSON.

HYDRAULIC PRESS ATTACHMENT.

No. 321,745. Patented July 7, 1885.

Fig. 2.

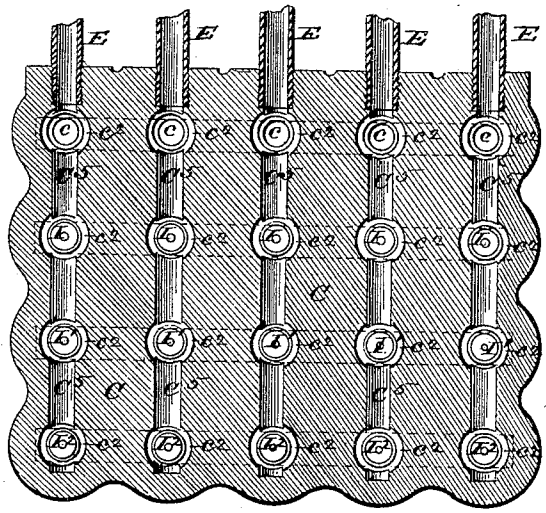


Fig. 3.

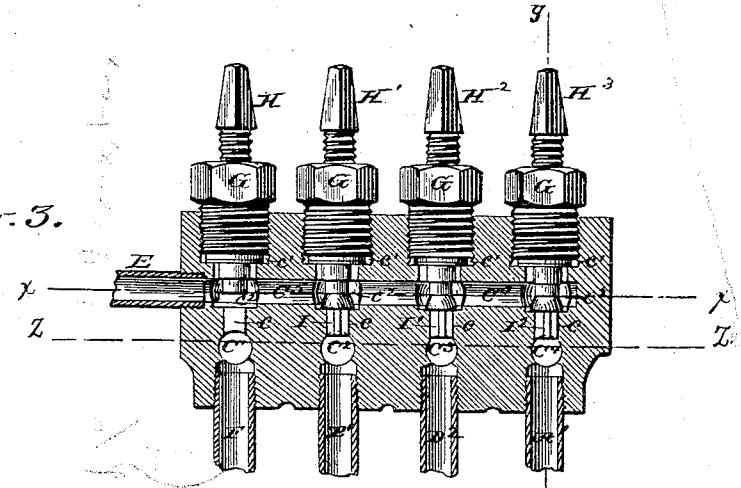
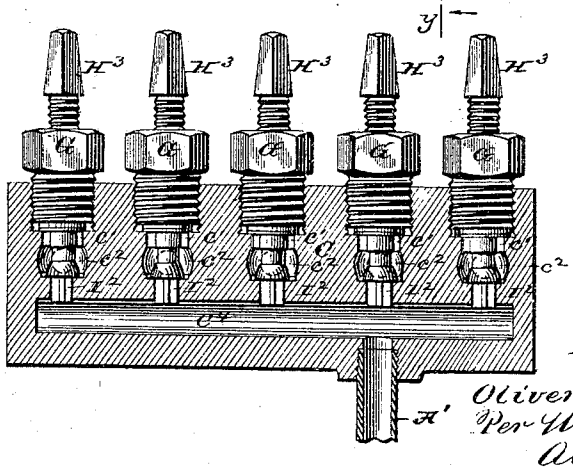


Fig. 4.



Witnesses.
Jno. W. Stockett,
C. C. Poole

Inventor.
Oliver R. Nelson
Per M. E. Dayton.
Attorney.

BELL BROS., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

(No Model.)

3 Sheets—Sheet 3.

O. R. NELSON.

HYDRAULIC PRESS ATTACHMENT.

No. 321,745. Patented July 7, 1885.

Fig. 5.

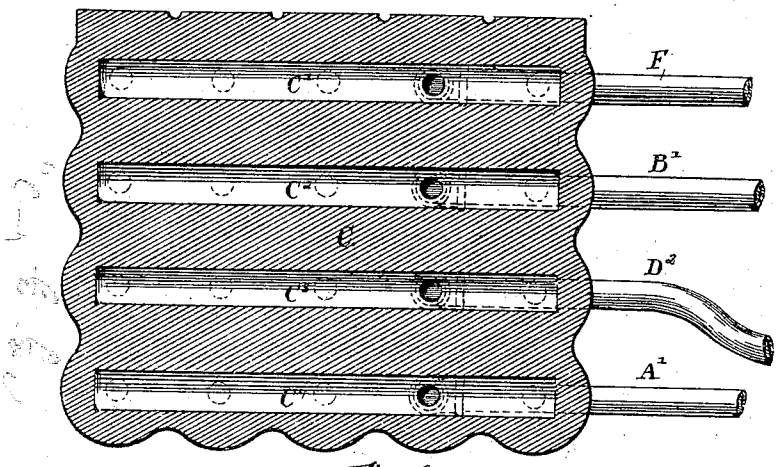


Fig. 6.

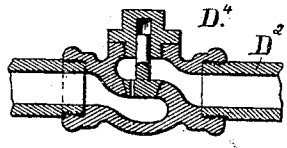
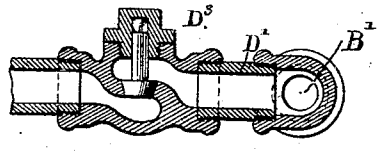


Fig. 7.



Witnesses:-

Louis Th. Tchitchead.

C. C. Poole

Inventor:-

Oliver R. Nelson,

by:-

M. E. Dayton

Attorney

BELL BROS., PHOTO-LITHOGRAPHERS, WASHINGTON, D.C.

UNITED STATES PATENT OFFICE.

OLIVER R. NELSON, OF CHICAGO, ILLINOIS.

HYDRAULIC PRESS ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 321,745, dated July 7, 1885.

Application filed July 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, OLIVER R. NELSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydraulic Press Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in "change-blocks" and connections, including the accumulator heretofore used, interposed between the pumps and the presses of apparatus for expressing oil from seed and similar purposes; and it has for its object to provide a simple and effective construction, by which to maintain the pressure on the presses that are not being changed, called "standing-presses," while that upon the press being changed or pumped up is below the maximum pressure represented by the accumulator.

To this end the invention consists in a connection leading from the accumulator to the presses that are under pressure, independent of the passages through which another press is being pumped up.

More specifically, it consists in a change-block constructed with a chamber and valves directly connected with the accumulator, in addition to those heretofore employed, and connected with the pumps and reservoir or tank, and in connections leading from the pump to the accumulator and from the accumulator to the said chamber of the change-block, the said pipes being provided with suitable check-valves, as will be further described.

In the drawings, Figure 1 is a plan view of the essential parts of the apparatus, showing the pumps, accumulator, change-block, and intermediate connections, constructed in accordance with my improvement. Fig. 2 is a horizontal section of the change-block, taken through *x x* of Fig. 3. Fig. 3 is a vertical section of the change-block, taken through *x x* of Fig. 1. Fig. 4 is a vertical section of the change-block, taken through *y y* of Figs. 1 and 3. Fig. 5 is a horizontal section of the change-block through the chambers thereof, which are connected with the pumps and accumulator, taken upon line *z z* of Fig. 3. Fig. 6 is a detail sectional view of the leaking valve in the pipe leading from the accumulator to the change-block. Fig. 7 is a detail sectional view of the check-valve in the pipe leading from the pump to the accumulator.

A represents the less powerful and B the more powerful of two pumps usually successively employed to give hydraulic pressure to the presses, the larger or less powerful pump being employed in first running up the press to a proximate pressure, and then being stopped, while the smaller and more powerful of the two pumps is thereafter employed to obtain the full pressure desired.

C is the change-block, consisting of a strong casting provided with a series of four lower chambers, C', C^2, C^3, and C^4, a series of upper chambers, C^5, transverse to the lower chambers, a series of passages, *c*, giving communication between the upper and lower chambers at the intersections of their vertical planes, and enlarged extensions *c'* of the passages *c*, leading to the upper surface of the block, for the reception of the valve-stems or "plugs" and their bushes.

A' is a pipe leading from the pump A to the lower chamber, C^4, of the change-block.

B' is a pipe leading from the pump B to the lower chamber, C^2, of the change-block.

D' is a pipe leading from the pipe B' to the accumulator D.

D^2 is a pipe leading from the pipe D' to the chamber C^3 of the change-block.

E E are the pipes leading from the several chambers C^5 of the change-block to the several presses. (Not shown.)

F is the discharge-pipe leading from the chamber C' of the change-block to a tank or other point of delivery.

I I' I^2 are a series of downwardly-closing check-valves operating in the passages *c*, which communicate between the lower chambers, C^2 C^3 C^4, and each adjacent chamber C^5 of the change-block.

G G are bushings threaded into openings *c' c'*.

H, H', H^2, and H^3 are stems threaded through the bushings G, the stems H being

constructed to directly close and open the several passages *c* leading from the chambers C^5 into the discharge-chamber C′, and the remaining stems H′, H^2, and H^3 being intended to bear upon the check-valves I, I′, and I^2, respectively, to close and hold them closed. The chambers C^5 as constructed are provided with enlargements c^2 surrounding the heads of the check-valves and the lower ends of the plugs, in order to give room for the free passage of liquid about said plugs and valve-heads.

D^3 is a tightly-closing check-valve located in the pipe D′ between the pipe B′ and the branch D^2, and opening toward the accumulator, and D^4 is a check-valve constructed in a familiar manner to leak slightly, located in the pipe D^2, and also opening toward the accumulator. The object of this leaking check-valve is to contract at some convenient point the passage between the accumulator and the change-block, so that while communication is established between the two a sudden descent of the accumulator-weights in case of a sudden rupture of a pipe, E, or a similar accident to a standing-press or its contents, shall be prevented. The application of a leaking check-valve in the pipe D^2 is preferably for the reason that it may be readily removed to permit a clearing out of the pipe; but for the purposes of this application it will be understood that a removable plug adapted to provide a contraction of the passage or any other means suitable for effecting such contraction may be regarded as an equivalent to the leaking check-valve.

In the operation of the five presses (more or less) connected with a change-block it is customary to change the material in one press at a time, the intention being that the remaining (four) presses shall continue under pressure until reached and changed in due order, at which time the oil is supposed to be as completely as possible expressed from the seed. To attain this last-mentioned object, it is of course desirable that the pressure on each press shall be uniformly maintained at the maximum power of the apparatus, which is represented by the weights applied to the accumulator.

In the construction herein described it is intended, as above stated, to maintain the pressure at a uniform degree upon all the standing-presses during the entire period between changes of their contents and to make them entirely independent of the press being pumped up. To accomplish this result, the valve I′ will be closed on the press that is being pumped, and the remaining valves I′ connecting with the standing-presses will be opened. The accumulator is thereby permitted to act through the leaking valve D^4 exclusively upon the standing-presses. Such action being continuous or uninterrupted, the leakage on the connections of said standing-presses and the reduction in bulk of the matter within the presses by reason of the escape of oil therefrom is compensated, and the maximum pressure of the apparatus is fully maintained on the standing-presses from the moment they are pumped up until they are ready to be let down for the purpose of changing their contents.

Preparatory to letting down a press for such change of material, the valve I′, connecting therewith, is closed, and the remaining valves are manipulated in the usual manner, or as in the former construction and use of the change-block.

It is understood, of course, that in a complete apparatus the accumulator operates to shut off the high-pressure pump when the accumulator-weight has been raised to its full or desired height; but this is not an essential part of my invention.

It is also understood that oil is ordinarily employed as the most desirable liquid through which to obtain hydraulic pressure, and that the pipe F leads in that case to a tank from which the pump or pumps derive supply. This, however, is old and familiar, and is not a part of my invention.

Manifestly the pipe D^2 may be entirely independent of the pipe D′, and may connect directly with the accumulator, instead of forming a branch of the pipe D′, as here shown.

The improvements herein described may, of course, be applied to a similar apparatus for other purposes than expressing oil.

I claim as my invention—

1. The combination, with the pump, change-block, and accumulator, of a pipe leading from the pump to the accumulator and having a check-valve, a pipe, also provided with a check-valve leading from the accumulator to the change-block, and valved passages in the change-block communicating with pipes adapted to connect with several presses, whereby the accumulator may act upon a standing-press while another press is being pressed up, substantially as described.

2. The combination, with a pump, change-block, and accumulator, of a valved pipe leading from the pump to the accumulator, and a pipe leading from the pump to the change-block, a pipe leading from the accumulator to the change-block and provided with a leaking valve, and valved passages in the change-block communicating with pipes adapted to connect with several presses, substantially as and for the purpose described.

3. In combination with the pump and accumulator of a hydraulic pressing apparatus. the change-block provided with a pump chamber or chambers, a discharge-chamber, press-chambers transverse to the pump and discharge chambers, and connecting-passages and valves, and also provided with a chamber, C^3, communicating with the accumulator and with the press-chamber C^5, the

valve I′ in the passages *c*, means for holding said valve closed, a check-valve in the pipe leading from the pump to the accumulator, and a leaking check-valve, D^4, in the pipe leading from the accumulator to the chamber C^3 of the change-block, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

OLIVER R. NELSON.

Witnesses:

M. E. DAYTON,

PETER J. ELLIOT.