No. 645,560. Patented Mar. 20, 1900.

J. C. FOX.

VALVE.

(Application filed May 20, 1896.)

(No Model.)

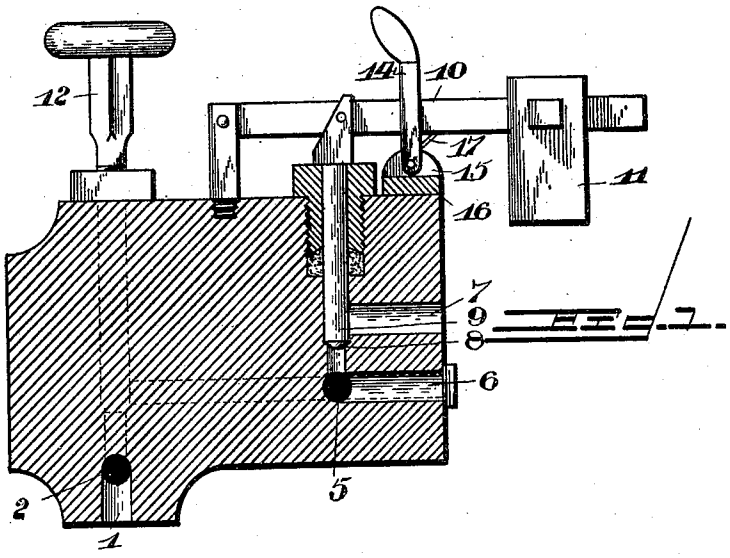


FIG. 1.

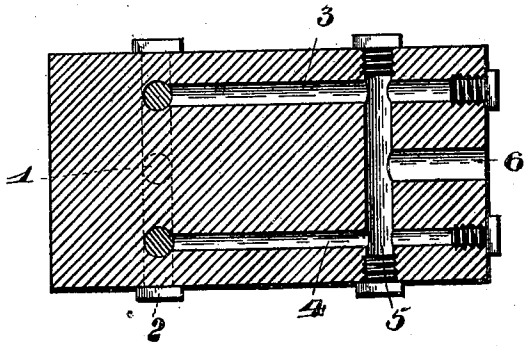


FIG. 2.

FIG. 4.

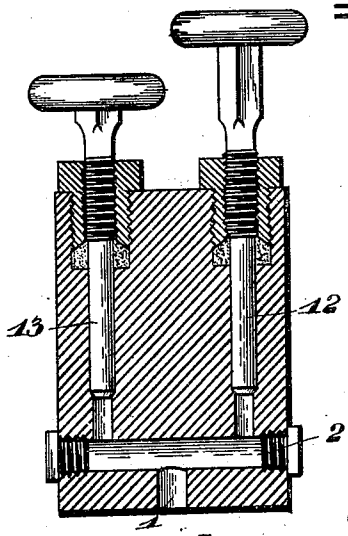
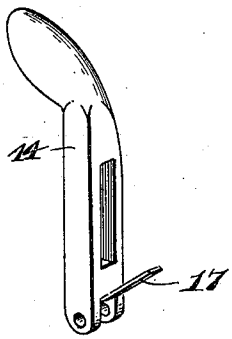


FIG. 3.



Witnesses
T. T. Boyle.
E. C. Boyle

Inventor,
John C. Fox,
By his Attorneys,
C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN C. FOX, OF DUBLIN, TEXAS, ASSIGNOR OF ONE-HALF TO G. H. CONNELL, OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 645,560, dated March 20, 1900.

Application filed May 20, 1896. Serial No. 592,341. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. FOX, a citizen of the United States, residing at Dublin, in the county of Erath and State of Texas, have invented a new and useful Valve, of which the following is a specification.

My invention relates to valves particularly adapted for use in connection with oil-presses and similar machinery employed in cotton-oil mills and the like; and the object in view is to provide a valve which may be used in connection with a single high-pressure pump for admitting pressure either rapidly or slowly to suit the operation of the press, and, furthermore, to provide means whereby the pressure is regulated to prevent excessive and unnecessary strains.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings, Figure 1 is a longitudinal section of a valve constructed in accordance with my invention. Fig. 2 is a horizontal section of the same, taken in the plane of the feed-channels. Fig. 3 is a vertical transverse section taken in the plane of the operating valve-stems. Fig. 4 is a detail view of the hand-lever detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates an inlet-port which communicates with the transverse cored passage 2, which in turn is in communication with feed-channels 3 and 4, of different cross-sectional areas, the former or major channel being, for instance, of three-eighths-inch diameter and the latter or minor channel being, for instance, of one-fourth-inch diameter. These feed-channels communicate with a common cored passage 5, by which they are connected with the outlet or discharge port 6, through which pressure is supplied to a cylinder (not shown) or its equivalent. Preferably contiguous to this discharge-port is a relief-port 7, which communicates with the discharge-port at a point adjacent to the transverse passage 5, said relief-port being provided with a seat 8 for a relief-valve 9. Any suitable means may be employed for varying the resistance offered by this relief or safety valve, that illustrated in the drawings consisting of a lever 10, bearing in a fork in the upper end of the relief-valve stem and fitted with an adjustable tension device consisting of a weight 11. The feed-channels are fitted, respectively, with valves 12 and 13 of different sizes, preferably provided with exterior means for manipulation, such as the disks or hand-wheels illustrated in the drawings.

From the above description it will be seen that the common inlet-port and common outlet or discharge port are connected by independent major and minor channels, which may be cored or otherwise formed in the body of the valve-casing, said channels being of different cross-sectional areas to supply pressure fluid at the outlet-port in different volumes, and hence with greater or less rapidity, as required in the operation of a press. It is desirable in the art to which the valve forming my invention appertains to operate the press-plunger at a high velocity at the commencement of its stroke to save time and to reduce some velocity near the end of its stroke, so as to lengthen the time of actual compression and insure complete expression of the oils. In other words, it is desired to feed the pressure fluid at the full capacity of the pump during the first portion of the operation of compressing the cotton-seed in order to avoid loss of time, and subsequently reduce the speed of operation in order to avoid straining the press-cloths, and thus do away with an important item of expense in this industry. By means of the plural-passage valve embodying my invention this reduction of speed in the press may be accomplished by simply closing one channel and opening the other, and in case of excessive resistance the safety or relief valve operates to prevent undue straining of the apparatus.

In order to provide for raising the safety or relief valve manually when desired, I employ a hand-lever 14, pivotally mounted upon an ear 15, carried by a plate 16, secured to the casting forming the body portion or casing of the valve, said lever being slotted to receive the lever 10 and having a yielding connection consisting of a spring-arm 17 to bear against

the under side of the weighted lever, whereby the lever is cushioned when it descends after the elevation by pressure in the safety-channel.

It will be understood that the valve embodying my invention is designed especially for use in connection with a single pump and without the interposition of accumulators of high and low pressure. The pressure is communicated directly from the pump to the presses, and that this may be accomplished with safety to the presses is due to the fact that the channels through the valve-casing are separate, are provided with independent controlling-valves, and are terminally connected, respectively, with common inlet and outlet ports, of which the latter is fitted with a relief or safety valve designed to prevent the application of excessive pressure to a press, and having its outlet in communication with a suitable conveyer through which the motive liquid may pass when the safety-valve is held open by the resistance in the press.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

From the foregoing description, taken in connection with the drawings, it will be observed that I have embodied the relief-valve as an integral part of the structure of the controlling-valve, and that said relief-valve is arranged for service both automatically and manually according as it may be desired to regulate the pressure or in the event of excessive pressure of the fluid supplied by the valve to the press.

My improved valve viewed from the standpoint of a mechanical structure is a simple and durable construction in which the various parts are reduced in number to the fewest possible parts consistent with the functions to be attained by the valve. In the practical construction of the valve I employ a single casting or block in which the fluid-passages are cored or bored to provide for the desired connection of the several passages in an operative manner, and the cored or bored passages are closed where they open through the block or casting except at the points where the ingress and egress of the fluid take place. The feed channels or passages between the inlet and outlet passages are of different diameters to provide for the desired flow of varying volumes of fluid under pressure necessary to attain the fast and slow movements of the press-plungers, and each feed-channel is a single continuous passage between the inlet and outlet passages, thus obviating the employment of throttling-blocks and other devices to retard the flow of the pressure-fluid and materially simplifying the structure.

My controlling-valve is constructed to accommodate the relief-valve, so as to have all the valves in one structure and readily accessible for the control of the press, and in the practical embodiment of the invention I have arranged this relief-valve in such relation to and on the controlling-valve as to adapt it for service in connection with the variable-diameter feed-passages, so that it is adapted automatically for service no matter through which feed-channel the pressure fluid passes to the valve-egress. By reference to the drawings it will be noted that this relief-valve passage opens into the transverse by-pass passage at a point between the points of communication of the feed-channels with such transverse by-pass passage, and that the relief-valve is seated in its passage to close the latter normally against the egress of the fluid through such relief-valve passage. Such relief-valve is operatively connected with the balanced lever to be normally held to its seat, but the valve may be opened by manipulating the hand-lever to lift the balanced lever, such hand-lever being situated on the block or casting of the valve to be readily accessible.

Having described my invention, what I claim is—

In a valve for cotton-presses, the casting provided with a single inlet 1, a relief-port 7, and a discharge-port 6, the passage 2 connecting with the inlet-passage 1, and which passage 2 has its ends closed by means of plugs, the two valves 12 and 13, the two passages 3 and 4 connecting with the passage 2, and controlled by said valves 12, 13, the cross-passage 5, connecting with the passages 3, 4, and the valve 9, combined with the weighted lever 10 to which the valve 9 is connected, and the operating-lever 14 provided with a yielding arm 17 for catching under the lever 10, substantially as shown and described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN C. FOX.

Witnesses:
MARSHALL SMITH,
W. H. NEEL.