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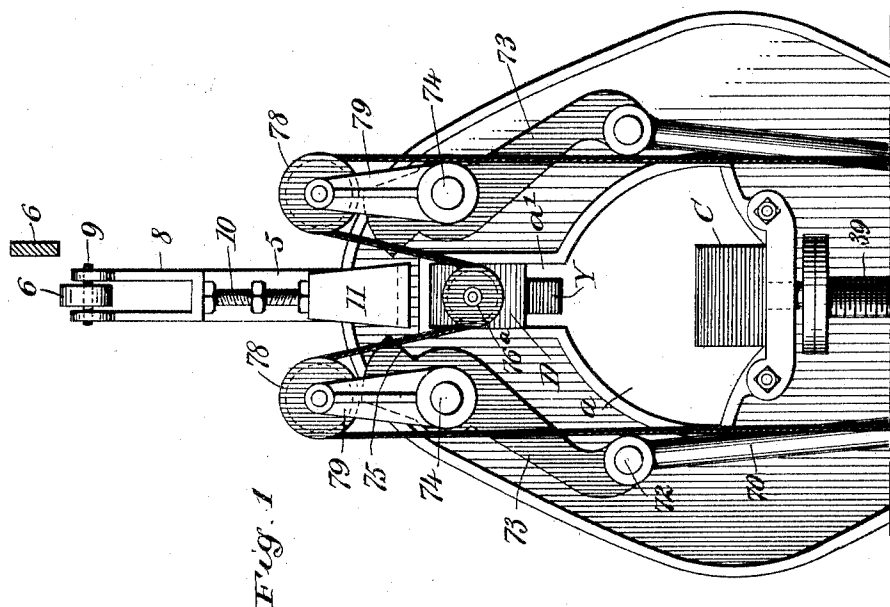
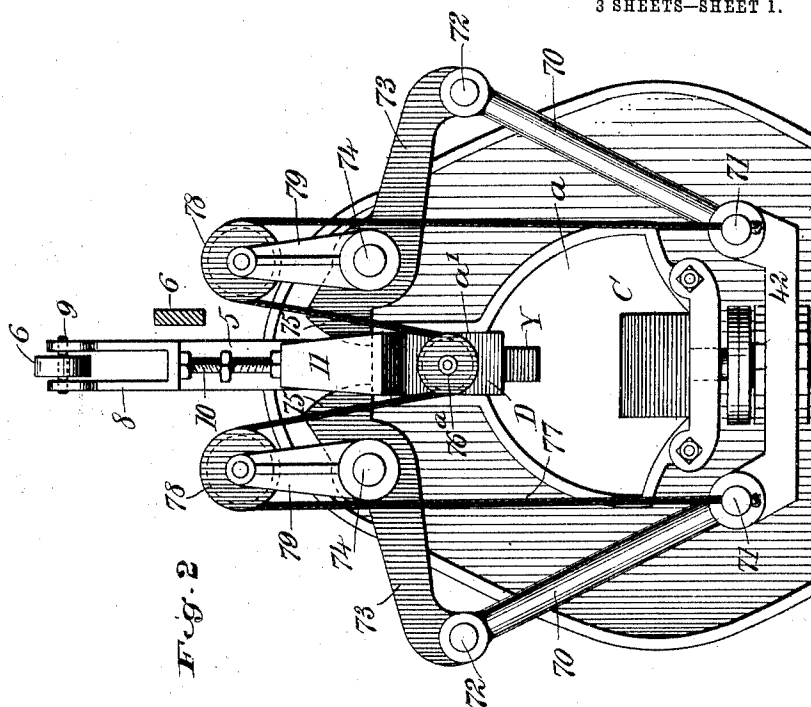
PATENTED MAY 10, 1904.

E. T. WOLF.
PRESSURE MECHANISM.

APPLICATION FILED MAY 20, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



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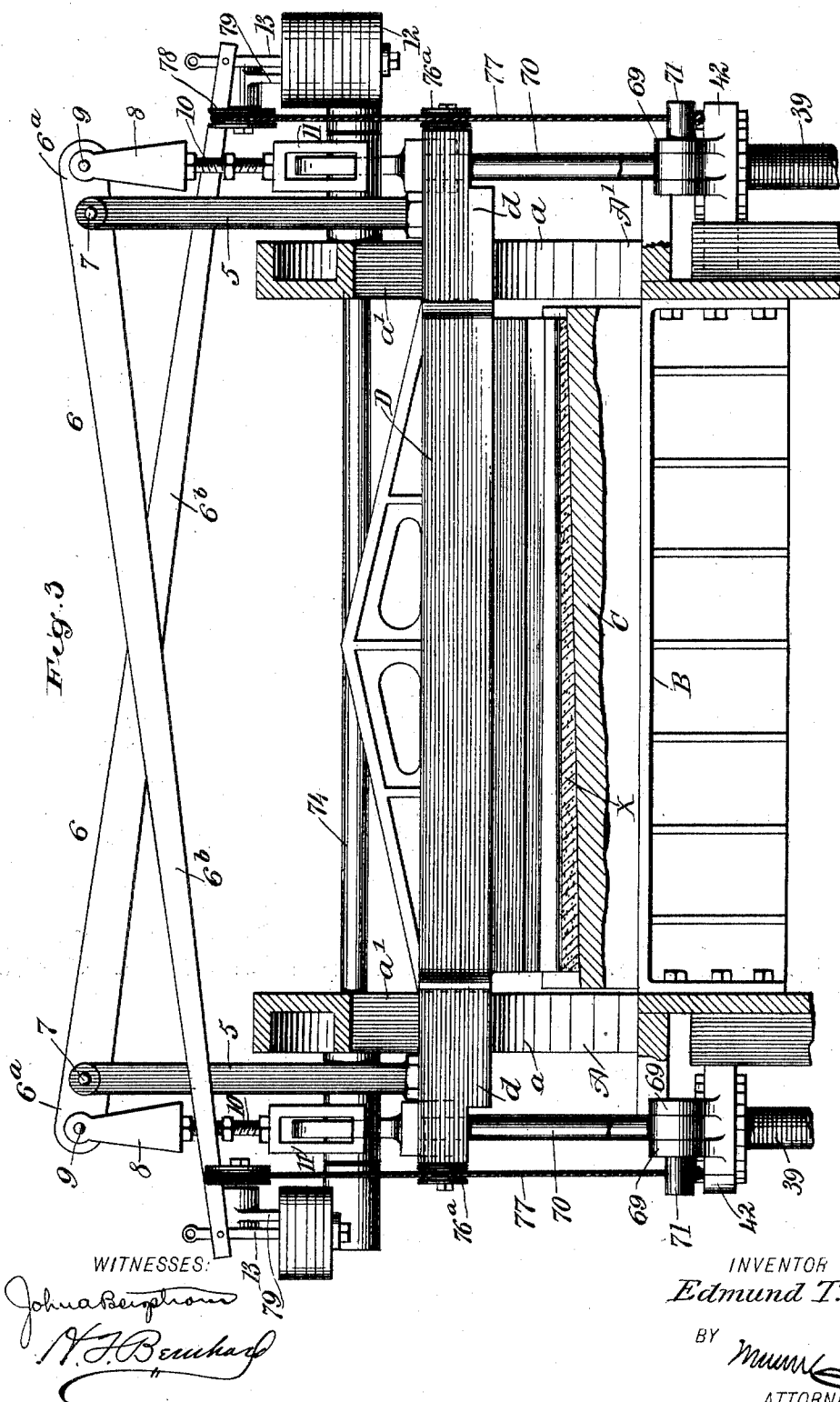
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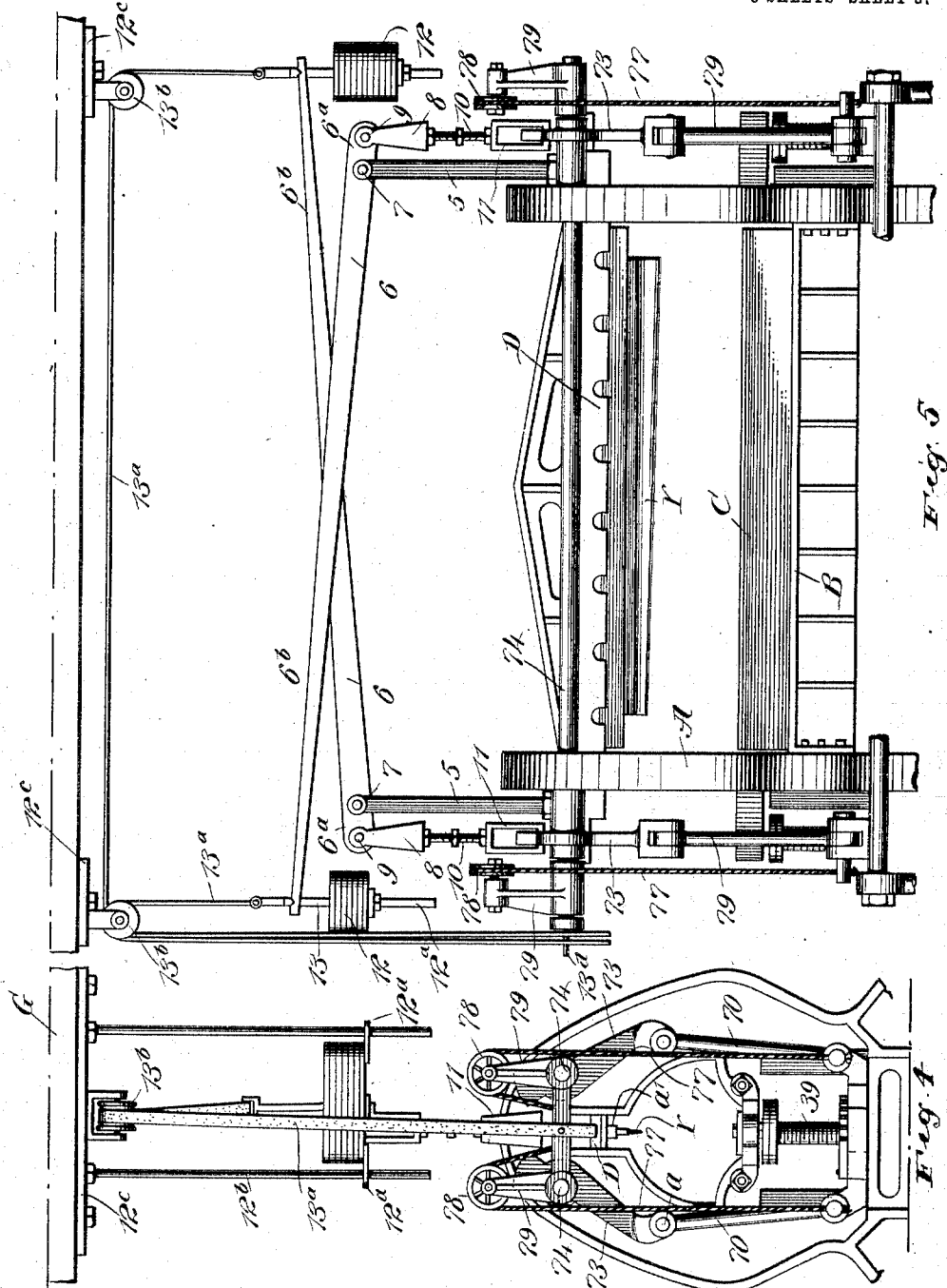
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

EDMUND T. WOLF, OF NEW YORK, N. Y., ASSIGNOR TO STANDARD PIANO HAMMER AND FELT COMPANY, A CORPORATION OF NEW JERSEY.

PRESSURE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 759,793, dated May 10, 1904.

Application filed May 20, 1903. Serial No. 157,954. (No model.)

To all whom it may concern:

Be it known that I, EDMUND T. WOLF, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Pressure Mechanism, of which the following is a full, clear, and exact description.

My invention relates to a pressure mechanism by which I am able to apply pressure uniformly to all parts of tapering material or work.

The pressure mechanism of this invention may be used in a variety of arts and in machines of any character for subjecting irregular or tapering stock to pressure. One way in which this pressure mechanism can be advantageously used resides in a machine for making piano-hammers disclosed in an application filed by me of even date herewith, Serial No. 157,953. In that application it is set forth that the felt covering for a series of hammer moldings or cores is a tapering strip or length which increases gradually in thickness from one end to the other and that the hammer moldings or cores vary in size. This variation in the materials or stock makes it difficult to apply pressure uniformly to the materials at all points; but this practical objection is wholly overcome by the employment of mechanism embodying the present invention.

Other objects that I have in view are, first, to make provision for the easy and quick adjustment of the pressure mechanism toward and from the work; second, to anchor certain shiftable parts of the pressure mechanism in their active positions; third, to effect an increase in the force or power of the pressure mechanism on the work when said mechanism becomes active by the locking of the recited parts, and, finally, to allow the use of a variable number of weights in said pressure mechanism.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying

drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figures 1 and 2 are side elevations of parts of my pressure mechanism, illustrating the same in its released and locked conditions, respectively; and Fig. 3 is a longitudinal sectional elevation through a part of a machine in which the pressure mechanism is employed. Figs. 4 and 5 are end and side elevations, respectively, showing one embodiment of means for adjusting the weights associated with the levers of my improved pressure mechanism.

In order that others skilled in the art may understand my invention, I have illustrated the same in connection with a part of a piano-hammer-making machine which forms the subject-matter of another application; but it must be distinctly understood that I do not restrict my invention to this particular kind of machine, because I am aware that the pressure mechanism may be used to good advantage in many different kinds of machines, particularly where the work is of an irregular or tapering form.

A A' indicate the end frames of a machine, each having an opening *a* and a vertical slot *a'*. These end frames are united by a transverse bridge or beam B, adapted to support a two-part hinged mold C, said mold being insertible or withdrawable by an endwise movement through an opening *a* in one end frame.

D designates a pressure-head having its end portions *d* fitted to slide freely in a vertical direction in the slots *a'* of the end frames, and this pressure-head is arranged to carry a part of the work—as, for example, the moldings or cores of a set of piano-hammers, (indicated at Y.) On the bed C rests another part of the work X, the same being shown as a strip of tapering felt which increases in thickness from one end to the other. (See Fig. 3.) The pressure-head D extends longitudinally of the frame, in which it is slidable in a vertical direction, so as to be movable toward and from the mold C.

I will now proceed to describe the parts comprising the improved pressure mechanism.

On the guide extensions *d* of the pressure-

head are rigidly secured the vertical posts 5, which extend a suitable distance above the end frames A A', said posts 5 being thus movable with the pressure-head D. On each post 5 is fulcrumed a lever 6, the fulcrum being afforded by a bolt or pin 7, which is supported by the post 5 and passes through the lever 6 at a point near one end thereof, thus producing a very short arm 6^a and a long arm 6^b. The two levers which are individually fulcrumed on the posts 5 are disposed in crossing relation, as shown by Fig. 3, and to the short arms of said levers are pivoted the yokes 8, each pivotal connection being afforded by a pin or bolt 9. From the yokes 8 depend the threaded adjusting-rods 10, each of which is secured in the lower part of one yoke 8. Each rod 10 is fastened at its lower end to an anchor-stirrup 11, which is suspended from the pivoted yoke 8 by the rod 10. The anchor-stirrup is shown in the form of a box or loop adapted to accommodate a suitable locking mechanism which serves to fasten said anchor-stirrup in a fixed position on the frame when the pressure mechanism is lowered, as will presently appear. The long arm 6^b of each lever is equipped with a pressure-weight 12, the same consisting of a number of superposed members which are threaded on a suspension rod or bail 13, adapted to engage with the extremity of the long lever-arm. The weights 12 may be equal in number and heaviness, although in Figs. 3 and 5 I have shown the left-hand weight consisting of a less number of parts than the right-hand weight; but it is evident that the members of the left-hand weight may be increased in number in order to equalize the heaviness of the two weights.

In the machine for making piano-hammers, heretofore mentioned as being disclosed in a separate application, I have shown mechanism for automatically raising and lowering the pressure-head D in an opposite direction to the movement of certain traveling cross-heads 42, the latter being actuated positively by screw-shafts 39 and a suitable type of reversible driving mechanism, whereby the cross-heads may be raised, allowed to remain in such raised position for a suitable length of time, and then lowered by the operation of said driving mechanism. The cross-heads 42 are provided with lugs 69, having pins 71, adapted to connect links 70 pivotally with said cross-heads, and these links have their upper ends pivoted by bolts or pins 72 to pairs of locking-levers 73. These locking-levers are fulcrumed at points intermediate of their length by spindles or arbors 74, which extend longitudinally of the machine through the end frames A A'. The locking-levers are provided at their upper inner ends with the shoulders 75, which are adapted to be fitted into the box-like anchor-stirrups 11 of the pressure mechanism, when the pressure-head D and said

pressure mechanism are lowered to their active positions.

The guide extensions *d* of the pressure-head are equipped with guide-sheaves 76^a, beneath which pass the connecting-cables 77, said cables being extended upwardly over guide-sheaves 78 and thence carried downwardly to the pins 71, which are mounted on the slidable cross-heads 42. The guide-sheaves 78 are loosely journaled on upstanding brackets 79; which are supported by the arbors 74. It will be observed that the cables 77 serve to connect the end portions of the pressure-head D with the slidable cross-heads 42, and the pressure-head is thus moved in an opposite direction to the cross-heads simultaneously therewith.

By reference to Figs. 1, 2, and 4 of the drawings it will be seen that the locking-levers 73 have their shouldered inner ends disposed close to the path of the anchor-stirrup 11; but when the pressure-head and the pressure mechanism occupy the raised positions shown by Fig. 1 these shouldered ends of the locking-levers are withdrawn or free from engagement with the anchor-stirrup. On the upward slidable movement of the cross-heads 42 the cables 77 are slackened and the pressure-head D is free to move in a downward direction by its weight or gravity. During this downward movement of the pressure-head D the work Y confined therein is presented to the work X on the mold C, and at the same time that the pressure-head moves in a downward direction the posts 5 and the levers 6 of the pressure mechanism move in a similar direction, thus lowering the stirrups 11 into positions for engagement by the locking-levers 73. The upward movement of the cross-heads 42 operates the links 70 to make them assume the positions shown by Fig. 2, and these links in turn move the levers 73 on their fulcras, and thereby make the shouldered ends 75 of said levers engaged with the stirrups 11. These operations lock the stirrups to the end frames and effectively anchor the pressure mechanism in position for service. The weights 12 are imposed on the long arms of the levers 6 when the pressure mechanism and the head D are moved in the manner described, and the weights 12 thus act on the levers in a way to force the head D with great pressure upon the work.

In Figs. 4 and 5 of the drawings I have shown an arrangement of devices by which the pressure-weights 12 may be rendered inactive when the pressure mechanism is raised above the bed and the mold or die in certain positions of the machine. The lower member of each pressure-weight is equipped with guide-plates 12^a, which are fitted slidably on stationary rods 12^b, the latter being secured to a stationary cross-bar 12^c, and this cross-bar is in turn secured at an overhead point,

as to a ceiling G. A cord or strap 13^a is secured to the stem or rod 13 of each weight, and said cords or straps of the two weights are guided over suitable suspended sheaves 13^b, the hangers of said sheaves being attached to the stationary bars 12^c, as clearly shown by Figs. 4 and 5 of the drawings. The two cords or straps 13^a are carried in a downward direction at one end of the machine, and said cords or straps may be attached to an anchor pin or stud 13^d, the latter being fixed to a part of the machine-frame. It is evident that the operator may release the cords or straps from the anchor-pin and allow said cords to run over the sheaves for the purpose of lowering the weights 12 when it is desired to bring the levers and other parts of the pressure mechanism into positions for service; but when the pressure mechanism is raised to its inactive position the operator should pull on the cords or straps in order to raise the weights, after which the cords or straps may be hitched to the anchor-pin 13^d.

It will be observed that the levers 6 are practically free from the influence of the weights during a part of the downward movement of the pressure-head, because these weights are adapted to be suspended in their inactive positions by the devices just described; but when the pressure-head and the part Y of the work assume the positions shown by Figs. 2 and 3 the weights are brought into service by imposing them on the long arms of said levers. The pressure mechanism operates with increased power, owing to the fact that the inertia of the weights is augmented by the leverage due to the employment of the long arms 6^b and to the imposition of the weights upon said long arms. The weights remain practically inactive during the rising-and-falling motion of the pressure-head, except at the period when the pressure-head acts on the work, and during this rising-and-falling movement the levers and the stirrups suspended thereon are free to travel with the head D, because the weights are practically free from the levers, thus contributing to the ease of operation; but when the pressure-head is lowered and the weights are imposed on the levers the pins 9 serve as the fulcrum of the levers, the posts 5 being connected pivotally with said levers by the pins 7 and said posts serving to transmit the energy due to the leverage of the levers and the inertia of the weight directly upon the pressure-head D.

The stirrups 11, the yokes 8, and the pins or bolts 9, in connection with the means for anchoring the stirrups when lowered, constitute devices which form temporary fulcrum for the levers 6 when the pressure-head D is lowered to its operative position, and on these levers are adapted to be imposed the weights 12, which are associated with means for temporarily restraining the weights from operation.

The improved pressure mechanism is especially useful in connection with machines or presses wherein the work is of a tapering or irregular character, although it is to be understood that the pressure mechanism may be used on work of uniform thickness.

One meritorious feature connected with my improved pressure mechanism resides in the fact that the pressure is distributed uniformly throughout the length of the pressure-head, thus making the machine operate to good advantage on work of different sizes.

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

1. The combination with a pressure-head, of a pressure mechanism shiftable with the pressure-head and including levers operatively related to said head, weights imposable on said levers, and means for temporarily withholding the operation of said weights.

2. The combination with a pressure-head, of pressure mechanism including anchoring devices, means for locking said anchoring devices in their active positions, weights imposable on said pressure devices at the final period of the movement of the pressure-head, and means for temporarily withholding the operation of said weights.

3. The combination with a pressure-head, of levers pivoted to said head, devices constituting temporary fulcrum for said levers, weights imposable on said levers, and means for temporarily withholding the operation of said weights.

4. The combination with a pressure-head, of levers connected with said head, devices constituting temporary fulcrum for said head, pressure devices imposable on said levers, and means for temporarily withholding the operation of said pressure devices.

5. The combination with a pressure-head, of levers connected to said head, devices constituting temporary fulcrum for said levers and brought into service by the travel of the pressure-head toward its active position, pressure devices imposable on said levers, and means for temporarily withholding the operation of said pressure devices.

6. The combination with a pressure-head, of levers connected therewith, anchoring devices associated with said levers, locking means for said anchoring devices, weights adapted to be imposed on said levers, and means for temporarily withholding the operation of said weights.

7. The combination with a pressure-head, of levers connected therewith, stirrups suspended from short arms of said levers, means for locking said stirrups in fixed positions on the lowering of the pressure-head, weights adapted to be imposed on the long arms of the levers, and means for temporarily withholding the operation of said weights.

8. The combination with a pressure-head, of posts attached thereto, levers fulcrumed

individually on said posts, anchor devices for holding said levers in position when the pressure-head is moved to an active position, weights adapted to be imposed on long arms
5 of said levers when said anchoring devices are locked, and means for temporarily withholding the operation of said weights.

9. The combination with a pressure-head, of levers fulcrumed thereon, anchor-stirrups
10 suspended from short arms of said levers, weights adapted to be imposed on long arms

of said levers, and locking-levers movable into engagement with said anchor-stirrups when the pressure-head is lowered to an active position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDMUND T. WOLF.

Witnesses:

CHARLES W. BALCH,

FRANK A. BROBERG.