

J. E. HAGSTROM.  
CONSTRUCTION OF PRESSES.  
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1,309,682.

Patented July 15, 1919.

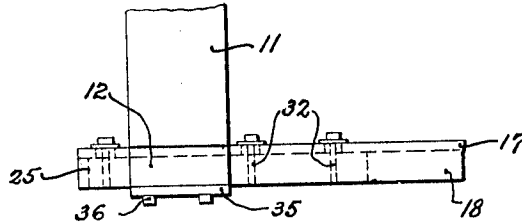


Fig. 1

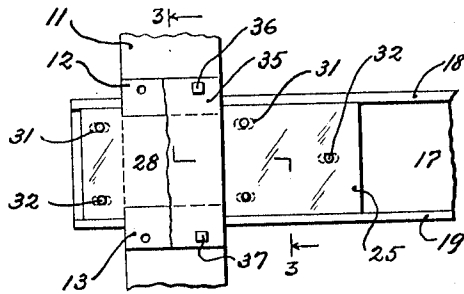


Fig. 2

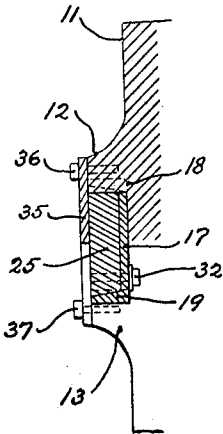


Fig. 3

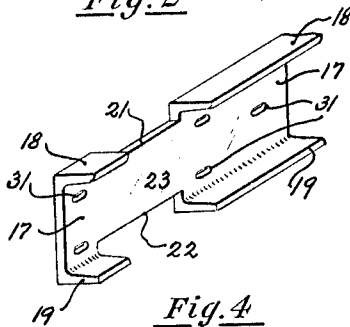


Fig. 4

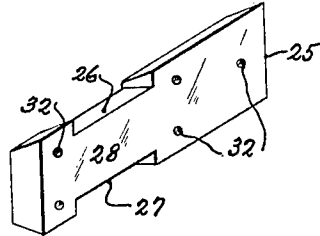


Fig. 5

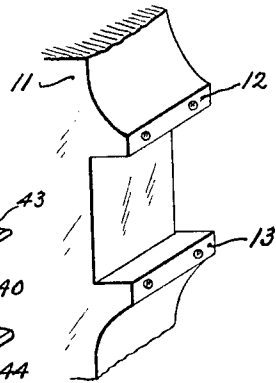


Fig. 6

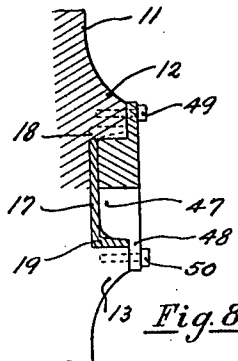


Fig. 7

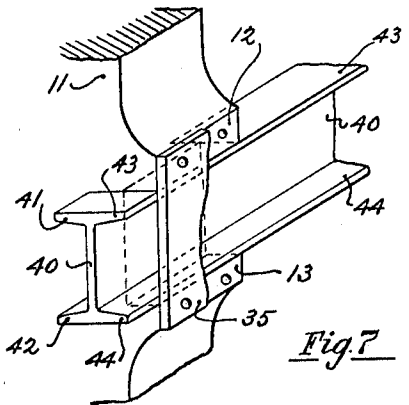


Fig. 8

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# UNITED STATES PATENT OFFICE.

JOEL E. HAGSTROM, OF BROOKLYN, NEW YORK, ASSIGNOR TO INDEPENDENT FILTER PRESS CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## CONSTRUCTION OF PRESSES.

1,309,682.

Specification of Letters Patent.

Patented July 15, 1919.

Application filed July 7, 1917. Serial No. 179,273.

*To all whom it may concern:*

Be it known that I, JOEL E. HAGSTROM, a citizen of the United States, and a resident of the borough of Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in the Construction of Presses, of which the following is a specification.

This invention relates generally to the building of presses such as the hydrostatic or the screw-actuated press, that are provided with an external frame work designed to take up the strain exerted by the movable parts within, and it particularly appertains to the structure and disposition of the elements which constitute the binding means for the members of the said framework.

To mention only the filtering press, it is known that the frame of this press comprises two oppositely located fixed heads united by side bars, upon which a series of apertured containers for the substance to be subjected to pressure is slidably mounted. The several containers are usually arranged to be massed one upon another and finally driven together against one of the fixed heads, by means of a follower operated by a screw or ram from the other head placed opposite. Necessarily, great stress is imposed upon the side bars of the frame, during the pressing operation, and therefore it has been the custom hitherto to make these bars of steel, rolled to heavy plank-like dimensions. It cannot be denied that the ponderous rolled-steel bars, to which reference is here made, do resist ordinary strains, but the excessive quantity of material required to produce them and the costly processes of machining, and milling their uneconomical sections, nevertheless, present decidedly objectionable features.

The primary object of the invention is to produce an improved binding means for the fixed heads aforesaid, which will permit of substitution of structural beams for the side bars, and yet impart as much if not greater solidity to the frame of the press.

A secondary object is the production of a superior mode of construction for the said

binding means, including structural beams and reinforcing elements therefor, which will enable the same to be made of different species of metals, characterized respectively by tensile strength and power to withstand compression.

Other objects and advantages will become apparent as the specification proceeds.

With the aforesaid objects in view the invention consists of the improvements, novel construction, arrangements and combinations of parts hereinafter described, defined in the subjoined claims and illustrated in their preferred embodiments by the annexed drawings, wherein like elements are designated by the same reference characters throughout the several views.

In the said drawings:—

Figure 1 is a top plan view showing part of the frame of a press embodying one form of the invention;

Fig. 2 is a side elevation of the same part of the press frame, with the invention embodied therein;

Fig. 3 is a vertical transverse section on the irregular line 3—3 of Fig. 2;

Fig. 4 is a perspective view of one end of a structural beam forming part of the invention, such as is included in the preceding figures;

Fig. 5 is a similar view of a reinforcing element for the type of structural beam shown in Fig. 4;

Fig. 6 is a fragmentary view showing in perspective one side of a fixed head of the press adapted to receive a structural beam and its reinforcing element;

Fig. 7 is a broken perspective view, representing a fixed head of similar configuration, to which a modified form of the invention is applied; and

Fig. 8 is a fragmentary sectional elevation, illustrating another modified form of the invention.

As above stated, a filtering press of usual type includes two fixed heads, as 11 which are situated opposite each other, either in a horizontal or in a vertical plane, according to the nature of the substances to be operated

upon, the preferred method of handling them, and the adjusting means selected for working the press. Only one head 11 is shown in the annexed drawing, as the invention affects both heads in identically the same manner and does not vary in any respect as regards structure or arrangement of parts, whether the head 11 be located forward or in the rear, or at the base, or at the top of the press frame. For the sake of clearness, however, it will be assumed in the present specification that the framework of the press stands out in a horizontal direction and consequently that the head 11 is held in a vertical plane at either end as the drawing suggests. Thus, it may be considered that the head 11 appearing in several of the figures is situated either at the front end of the right side or at the rear end of the left side of the framework. But no limitation regarding the scope of the invention is intended in that respect.

A pair of fixed jaws, as 12, 13, is provided on each side of the head 11, that is, one pair at each side of the press frame. These jaws are conveniently formed integral with the head at suitable distances apart and constitute thereon retaining elements for the structural beams and their reinforcements, previously mentioned.

Any known form of structural beam may be used advantageously in carrying out the invention, that is, in providing the means for binding the fixed heads of the press together. In other words, the binding means may include a channel-beam, or an I-beam, or a T-beam, or an angle-beam, or such variations thereof as are capable of discharging substantially the same functions. Two forms only, to wit, the channel beam and the I-beam, are shown in the accompanying drawings, that the description of the invention herein may be more concise.

As represented in Figs. 1, 2, 3 and 8 the said binding means for the heads of the panel include a channel-beam consisting of a vertically disposed web 17 and lateral flanges 18, 19 extending outwardly from the upper and lower edges thereof respectively. This beam is of greater depth than the space intervening between the aforementioned jaws 12, 13 and in order that it may be lodged bodily crosswise in the said space, within the pair of jaws, it is cut away on opposite sides to form notches or recesses 21, 22 thereby producing a neck portion, as at 23, Fig. 4, which fits the gap between the paired jaws close to the adjoining edge of the head 11. The flanges 18, 19 it will be noted, are similarly cut into so as to enable the jaws to pass and take over the opposite edges of the neck 23, and they are made to engage both sides of the pair of jaws in such a way as to prevent longitudinal move-

ment of the channel-beam thereacross in either direction, that is, either forward or rearward in the construction of press herein exemplified. This channel-beam is preferably made of wrought steel and is readily notched or recessed for the purposes described, with the aid of a simple shearing-press in a manner that is well known in the art.

To prevent the flanges 18, 19 of the channel-beam from deflecting inward, or becoming distorted, or collapsing under the tremendous strains to which they may be subjected during the operation of the press, a reinforcing element, preferably in the shape of a block 25, is introduced between the said flanges and arranged to strengthen the same, as well as the neck 23 and adjacent portions of the web of the beam, where the latter engages the head 11 of the press-frame. This element is shown detached in Fig. 5, wherein it appears as a body mainly of dovetail-cross-section designed to fit the correspondingly shaped interior of the channel beam depicted in Fig. 4, by the side of it. The block 25, it will be observed, is also notched or recessed at opposite edges, as at 26, 27 having between the edges a neck-portion 28 of same width as the before mentioned neck 23 and insertible with it between the pair of jaws 12 and 13. At both ends of the neck 28, the block remains wide enough to extend over the adjoining sides of the two jaws, though it is covered there by the overlying flange 18 and the underlying flange 19 of the channel-beam at top and bottom respectively. The superimposed portions of the beam and block, it will be seen, abut conjointly against the opposite sides of the jaws and the head 11, thereby forming a union therewith which possesses great strength, firmness and solidity.

Preferably, the said block 25 is made of cast iron, which possesses a relatively great power of resistance to direct crushing. This feature of cast iron is taken advantage of in the present invention to combine it with the inherent capability of the material employed for the beam, viz: wrought steel, to resist shearing and tension. To favor the combination, and incidentally facilitate their intimate association the block is made tapering as appears in Fig. 5, to conform with the outwardly flaring channel of the beam.

It will be observed that the wrought steel beam and cast iron block combined as above described, do not have the same co-efficient of elongation, and therefore are liable to act differently under heavy strains. The difference, such as it may be, is compensated for in the present exemplification of the invention, by providing slots 31 in the web 17 of the channel beam, and by screwing bolts 32 into the block 25, which are arranged to

pass centrally through these slots. The latter, it will be perceived, will prevent any tension strain being thrown upon the block in either direction and at the same time will offer no impediment to the elastic elongation of the channel beam. Meanwhile the full benefit derived from the ability of the block to resist compression is preserved. The parts, of course, resume their normal relative positions after pressure, due to the resiliency of the steel.

A bridge-piece 35 is placed over the outer ends of the pair of jaws 12, 13, so as properly to confine the assembled channel-beam and block within the gap occurring between the said jaws. As shown, the bridge-piece 35 may be secured in position at its opposite ends, by means of bolts 36, 37 screwed into the jaws 12 and 13 respectively.

Fig. 7 illustrates how an I-beam can be used instead of the channel-beam hereinabove described, and be made to perform similar functions. As shown in this view, the I-beam comprises, as usual, a central web 40, and laterally projecting flanges on both sides, and both longitudinal edges thereof, which flanges are respectively numbered 41, 42, 43 and 44. The web and the flanges on one side of the latter are cut away to permit insertion of the I-beam between the jaws 12, 13 of the head 11, in the manner before explained with reference to the channel beam. With the I-beam it is not necessary to employ a strengthening block, as the outer pair of flanges 43, 44 are left intact and provide the requisite reinforcing element. The I-beams may be held in place by the bridging piece 35, or equivalent side retainer.

The modification shown in Fig. 8 involves the same construction of channel beam as that before disclosed herein, but includes a somewhat different reinforced element. In the last-named view, a block 47 is represented as being made integral with a bridge-piece 48, both of which are secured by bolts 49, 50 to the jaws 12, 13, of the head 11, respectively. The block 47, it will be seen, fills the channel of the beam, and affords it the desired reinforcement.

While certain embodiments of this device have been shown and described, it will be understood that changes in the form, arrangements, sizes, proportions and details thereof may be made without departing from the scope of the invention as defined by the appended claims.

Having described my invention what I desire to secure by Letters Patent and claim is:

1. In a device of the character specified, in combination, a head having extended jaws on each side thereof, a structural beam the plane of which is perpendicular to the plane of the head, recesses within the structural

beam capable of receiving the jaws, a reinforcing member abutting upon the structural beam and means for locking the reinforcing member to the head.

2. In a device of the character specified, in combination, a head; a pair of jaws extending from opposite edges of the head, a structural beam, recesses within the structural beam capable of receiving the jaws, a reinforcing member abutting upon the structural beam and means for locking the reinforcing member to the head.

3. In a device of the character specified, in combination, a head member, a pair of jaws extending from opposite edges of the head, a structural beam the plane of which is perpendicular to the plane of the head, recesses within the structural beam capable of receiving the jaws to prevent longitudinal movement thereof, a reinforcing member abutting upon the structural beam and bolts holding the reinforcing member, the head and the structural beam from movement with respect to each other.

4. In a device of the character specified, in combination, a head member, a pair of jaws extending from opposite edges of the head, a flanged structural beam the plane of which is perpendicular to the plane of the head, recesses within the structural beam capable of receiving the jaws to prevent longitudinal movement thereof, a reinforcing member abutting upon the structural beam and bolts passing through the reinforcing member, the head and the structural beam maintaining them in fixed position.

5. In a device of the character specified, a head, a pair of spaced jaws projecting outwardly from opposite sides of the head, a flanged structural beam having its flanges cut away to form abutting portions bearing on opposite sides of the jaws, a similarly recessed reinforcing member extending between the jaws and abutting upon the structural beam and means for locking together the reinforcing member, the structural beam and the head.

6. In a device of the character specified, in combination, a head member, a pair of jaws extending from opposite edges of the head, a structural beam the plane of which is perpendicular to the plane of the head, recesses within the structural beam capable of receiving the jaws to prevent longitudinal movement thereof, an elongated reinforcing member abutting upon the structural beam and bolts holding the reinforcing member, the head and the structural beam from movement with respect to each other.

7. In a device of the character specified, a head, a pair of spaced jaws projecting outwardly from opposite sides of the head, a flanged structural beam having its flanges cut away to form abutting portions bearing

on opposite sides of the jaws, a similarly elongated recessed reinforcing member extending between the jaws and abutting upon the structural beam and means for locking together the reinforcing member, the structural beam and the head.

Signed at the borough of Manhattan, in

the city, county and State of New York this 6th day of July, 1917.

JOEL E. HAGSTROM.

Witnesses:

H. C. KARLSON,

W. H. GEE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."