

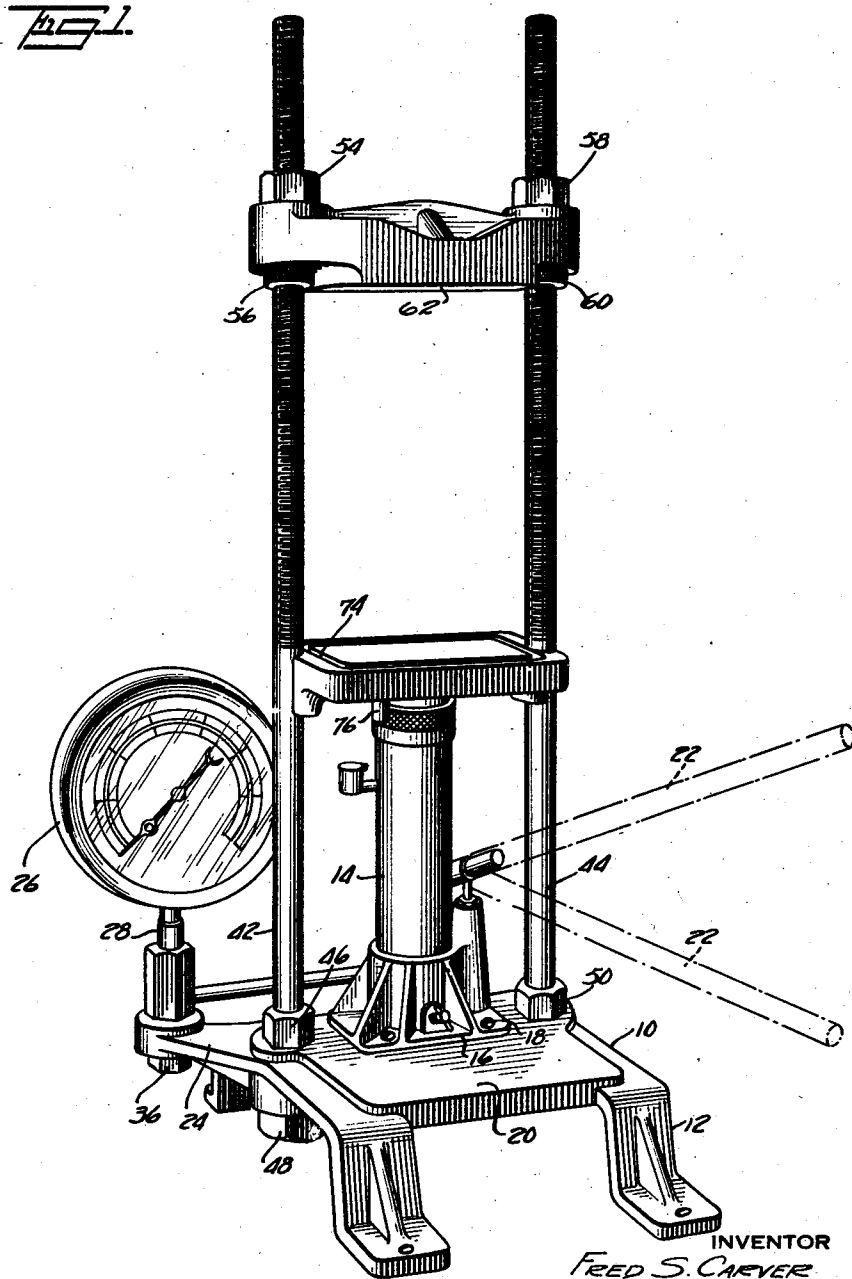
Dec. 25, 1934.

F. S. CARVER
LABORATORY PRESS

1,985,598

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2 Sheets—Sheet 1



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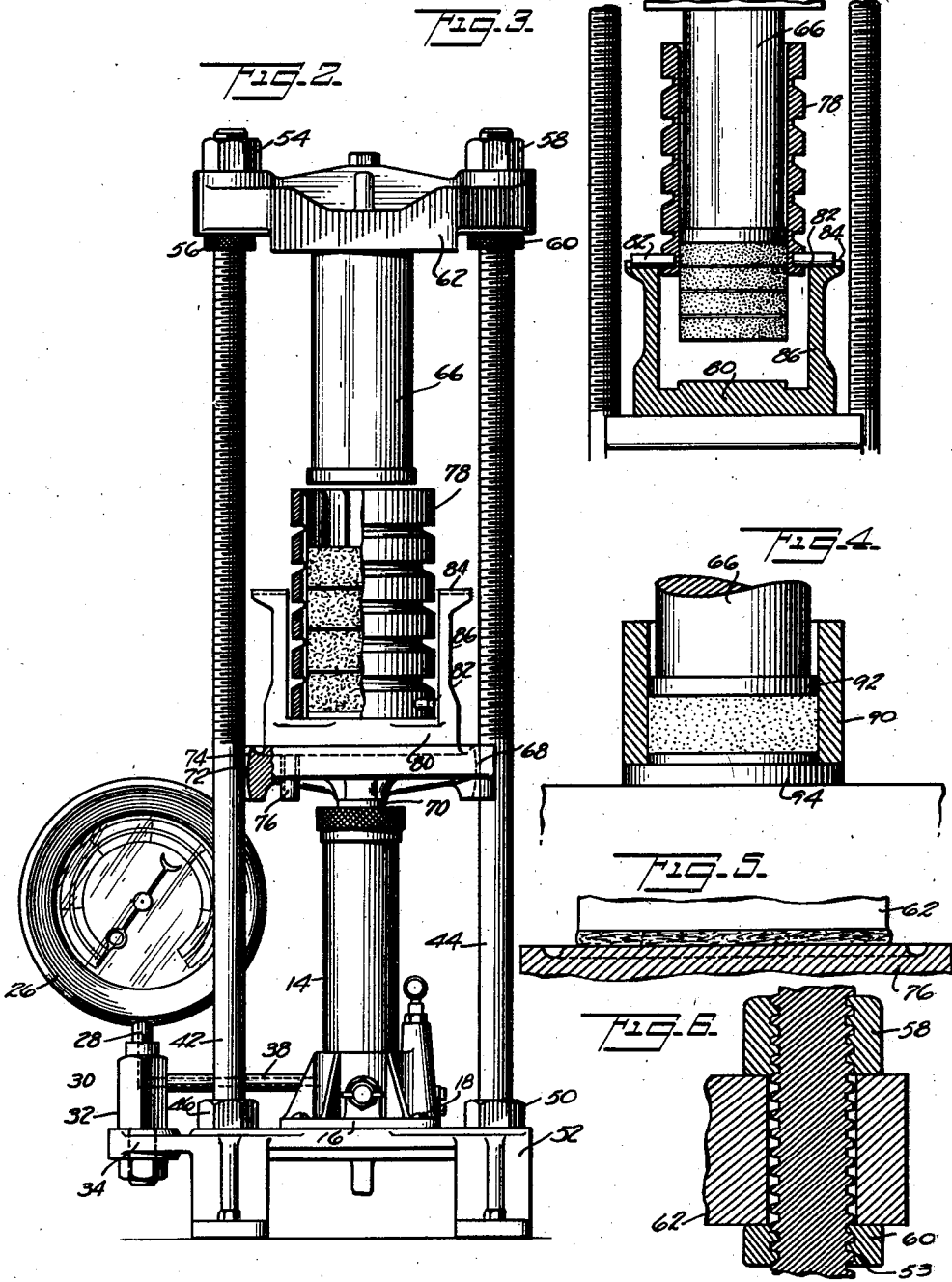
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UNITED STATES PATENT OFFICE

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Fred S. Carver, East Orange, N. J.

Application July 31, 1928, Serial No. 296,531

3 Claims. (Cl. 100—50)

My invention is of a laboratory press capable of being utilized for a great variety of purposes.

My invention relates to apparatus of the type in which a hydraulic jack or cylinder is mounted on a base provided with upright posts or columns connected at their upper ends by a cross head.

Upon operating the jack, objects placed between it and the cross head are subjected to compression. Thus a miniature hydraulic press is obtained useful for many purposes and particularly for laboratory testing work and the like.

The invention will be best understood from the following description of an apparatus embodying a preferred form thereof.

Fig. 1 of the accompanying drawings is a perspective;

Fig. 2 is a side elevation, partly in section and showing an oil pressing operation.

Fig. 3 is a view similar to a part of Fig. 2 showing the equipment of Fig. 2 in use for press cake ejection.

Fig. 4 is a similar view showing use for briquetting;

Fig. 5 is a further similar view showing use for pressing of flat objects; and

Fig. 6 is a detail sectional view through the cross head and column.

Reference character 10 indicates a preferably cast base with legs 12, and upon which base 10 the hydraulic jack 14 stands upright, the base or underbody 16 of the jack being secured to base 10, as by screws 18.

Base 10 extends forwardly beyond the jack underbody 16 to provide a smooth, flat table portion 20 which serves the double purpose of affording a suitable table for mixing or preparing test materials and of enabling the front legs 12 to be projected forwardly for holding the apparatus erect and steady and avoiding tipping thereof when downward pressure is applied to the usual detachable hydraulic jack handle 22, which is arranged to project forwardly over the table 20.

Base 10 is also provided with a rearward and lateral extension 24 for supporting a pressure gauge 26 for indicating the hydraulic pressure within the jack cylinder. Gauge stem 28 is screwed into a passage 30 in a block 32, which has a downwardly extending screw threaded stem 34 passing through a hole in the bracket projection 24 of base 10 and bolted in place by a nut. The pipe 38 from the jack cylinder is screwed into a horizontal passage in block 32 communicating with the vertical passage 30. Jack 14, pipe 38 and block 32 can be preassembled as a unit, then

set in place on base 10 having the proper holes formed therein and fastened in place, after which the pressure gauge can be screwed into block 32.

Base 10 carries two posts or columns 42, 44, one on each side of jack 14, and securely bolted to base 10 by the nuts 46, 48, 50, 52. Posts 42, 44 are provided from the jack 14 upward with preferably square base or acme screw threads 53 on which the similarly threaded nuts 54, 56, 58, 60 can be rapidly turned by hand to clamp the interposed cross head 62 in any desired position and at the same time have the necessary strength to withstand the application of heavy pressure. The lower nuts 56, 60 may be knurled and the upper nuts 54, 58 hexagonal, as there never is occasion for applying a wrench to more than one nut of a pair.

The under surface of cross head 62 is preferably flat but a central bolt hole may be provided for connection of attachments, such, for example, as the piston 66. The lower face extends downwardly below the guide lugs of cross head 62 so that the face 62 can make direct contact with the platen 68, and pressure be applied to any object, however thin, as for example sheets of paper or the like.

A platen 68 rests freely on the ram 70 of jack 14 and its guide grooves 72 by which it is guided on columns 42, 44, are rounded out at top and bottom as indicated in dotted lines at 74 in Fig. 2, so that, while a close guidance is obtained at the convex or rounded central portion of grooves or notches 72 without damage to the thread on the columns, nevertheless by tipping one end of platen 68 up and the other down, it can be inserted or removed at will, for cleaning and the like, with no disturbance of other parts. A groove 74 extending around platen 68 and having an outlet at 76 is provided to collect oil or other fluids when the press is used for expression of fluids.

Various parts can be provided for coaction with piston 66. For example, a cylindrical hollow press cage 78 constructed with longitudinally extending internal grooves intersecting and communicating with annular exterior grooves may be provided and also a base 80 therefor and which may be used with spaced filter plates for expression of oil or other fluids as indicated in Fig. 2. The cage 78 may be equipped with lugs or pins 82 adapted to be received and supported in slots 84 of arms 86 extending upwardly from base 80, and when the fluid has been expressed the press cake can be removed from the cage 68 when so supported, as indicated in Fig. 3.

The piston 66 may be used in other combination as for example as indicated in Fig. 4, for making briquets 88 by compression within a ring 90 between a cover plate 92 and a shouldered base 94.

Extra parts may be dispensed with if desired and flat objects compressed directly between the platen 68 and cross head 62 as in the case of the flat board or other object 96 in Fig. 5.

It will be plain that a laboratory press in accordance with my invention is adapted with the attachments described and other obviously available appurtenances to give an extremely wide range of service, not only in the laboratory, but in small scale practical work.

The apparatus is simple, can be readily constructed and assembled and materially extends the scope of the work of the ordinary testing laboratory at little expense.

It is to be understood that changes and modifications may be made within the scope of my claims by which I intend to cover all that is new herein.

I claim:

1. A hydraulic press comprising a generally flat base, foot portions extending forwardly, a ledge extending to the rear and side, guide rods made fast to the base and extending vertically, an upper platen secured on said guide rods, a unit detachable as a whole consisting of a hydraulic jack, a pipe line leading therefrom, a block at the end of the pipe line, and a pressure gauge on said block and communicating with said pipe line, a pump and handle on said jack, said unit being arranged for attachment with the jack fastened on the base between the guide rods, the pipe line running past one of the guide rods on the rear thereof, the block bearing the gauge fastened on the rearwardly and laterally extending ledge on the base, and the jack pump

handle extending forwardly out over the feet on the base.

2. A hydraulic press comprising a generally flat base, guide rods made fast to the base and extending vertically, an upper platen secured on said guide rods, a unit detachable as a whole consisting of a hydraulic jack, a pipe line leading therefrom, a pressure gauge mounted on said pipe line, fastening means near the extremity of the pipe line and gauge structure, a pump and handle on said jack, said unit being arranged for attachment with the jack fastened on the base between the guide rods, and the pipe line extending to the side behind a guide rod, and the pipe line and gauge structure secured to the base at such point that the pressure gauge is in full view to the outer side of the nearby guide rod, both the pump handle and some portion of the base extending out forwardly from the foot of the guide rods.

3. A hydraulic press comprising a raised base supported on downward extensions at its front and back and being open below at its sides, a pair of vertical guide rods extending through the base, one at each side, and being fastened thereto by nuts brought up against the under side of the base, a rear corner of the base extending out to the side at a level raised from the floor, an upper platen secured to the guide rods, a hydraulic jack mounted on the base between the guide rods and a platen resting thereon and engaging the guide rods, a pipe line connected to said hydraulic jack and extending from the rear thereof behind a guide rod to the extending corner of the base, a pressure gauge connected to said pipe line, both gauge and pipe line being made fast to said extending corner by attaching means extending thereunder.

FRED S. CARVER.