No. 731,737. PATENTED JUNE 23, 1903.

V. D. ANDERSON.

PRESS.

APPLICATION FILED MAY 22, 1902.

NO MODEL. 5 SHEETS—SHEET 1.

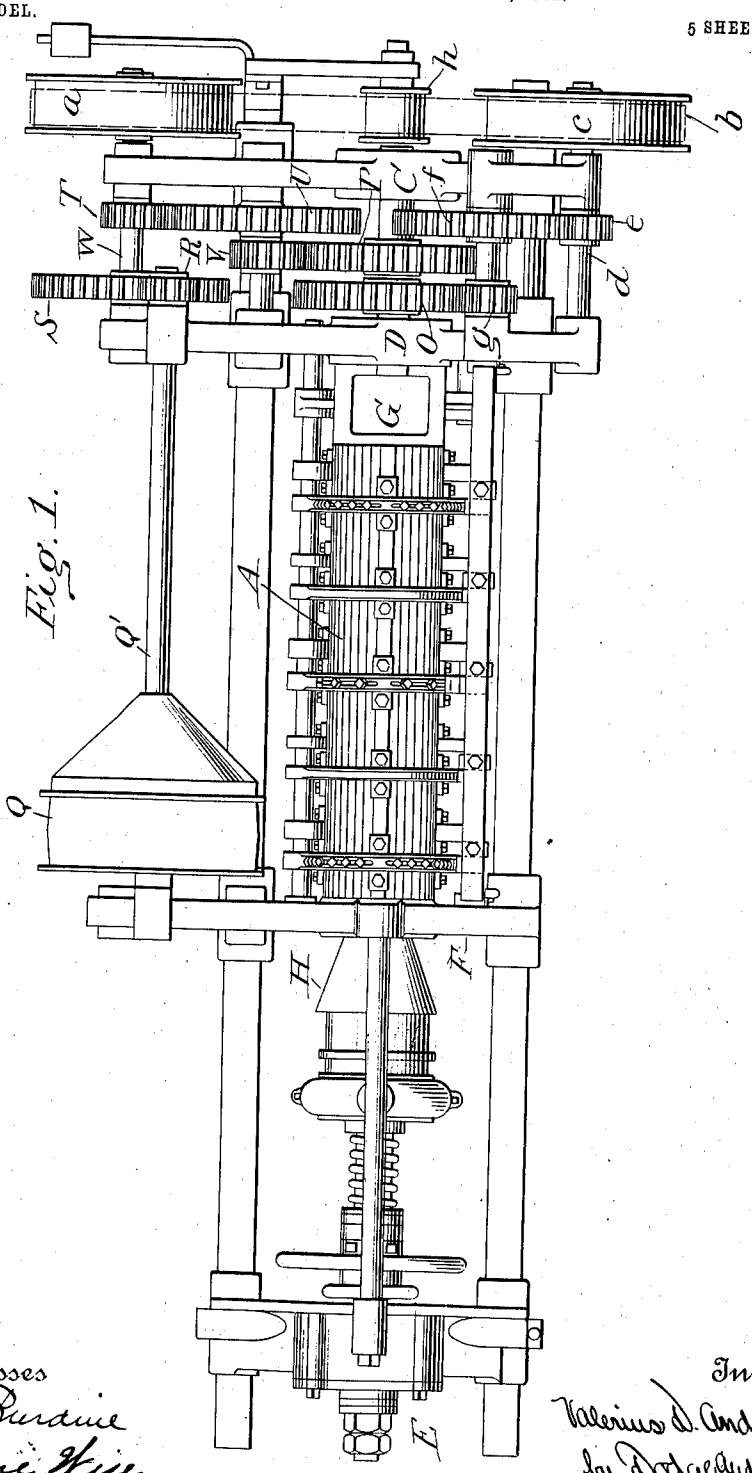


Fig. 1.

Witnesses
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NO MODEL. 5 SHEETS—SHEET 2.

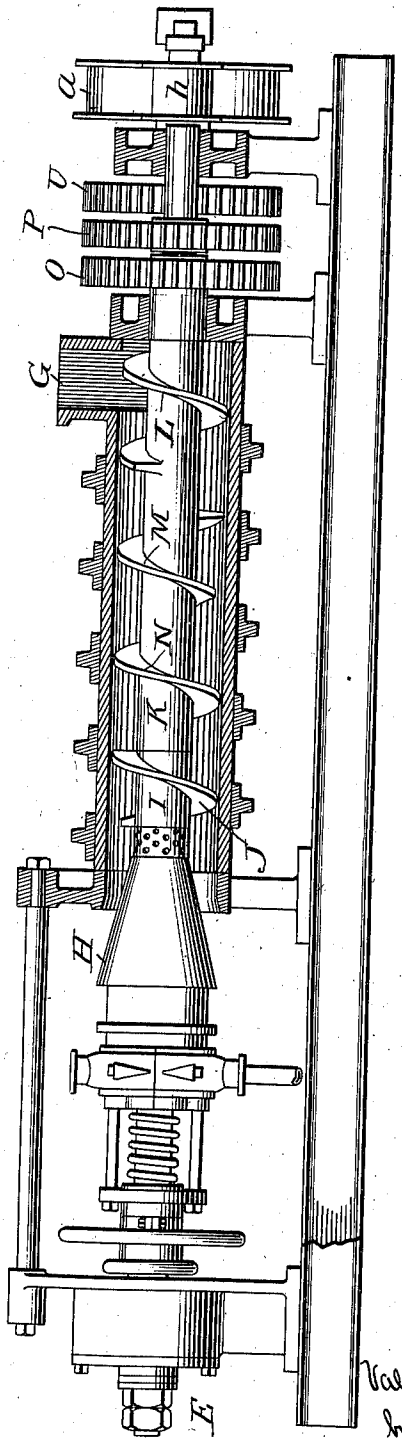


Fig. 2.

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NO MODEL. 5 SHEETS—SHEET 3.

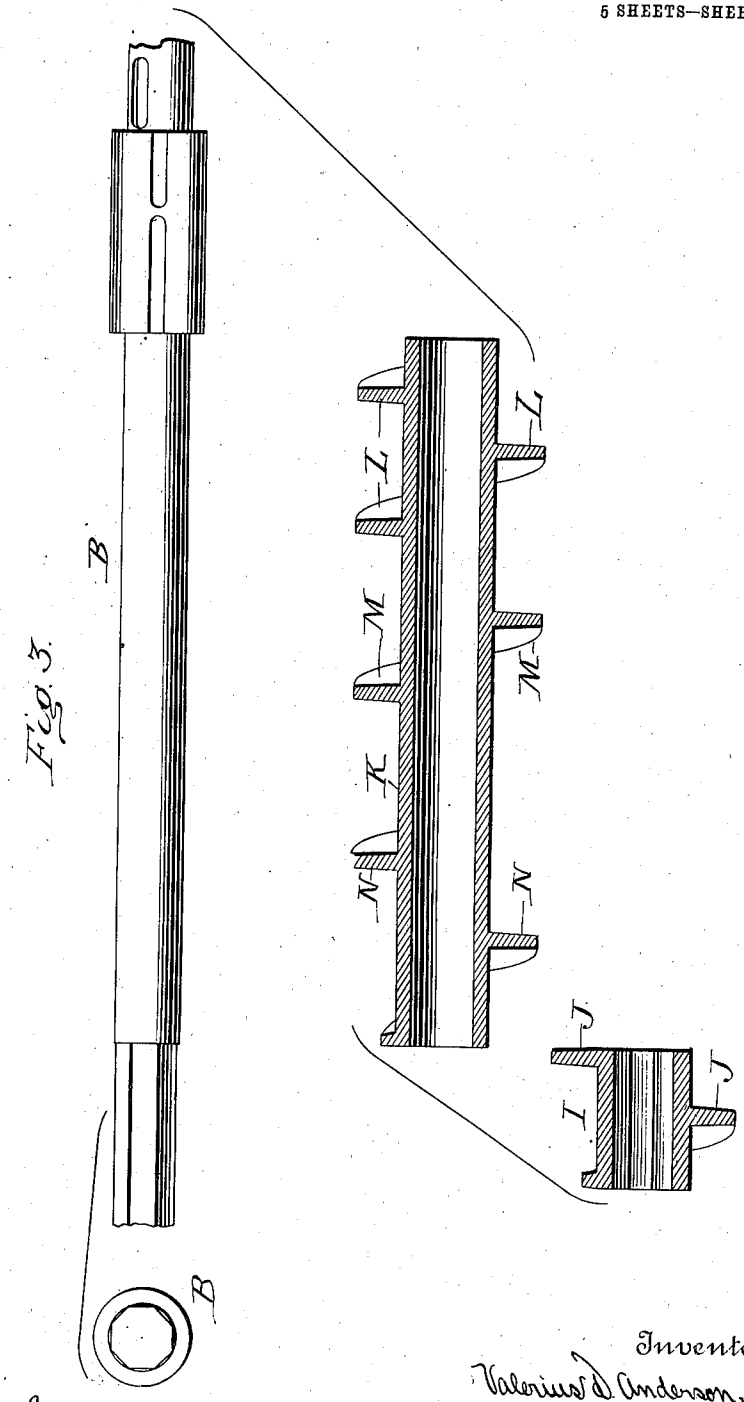


Fig. 3.

Witnesses
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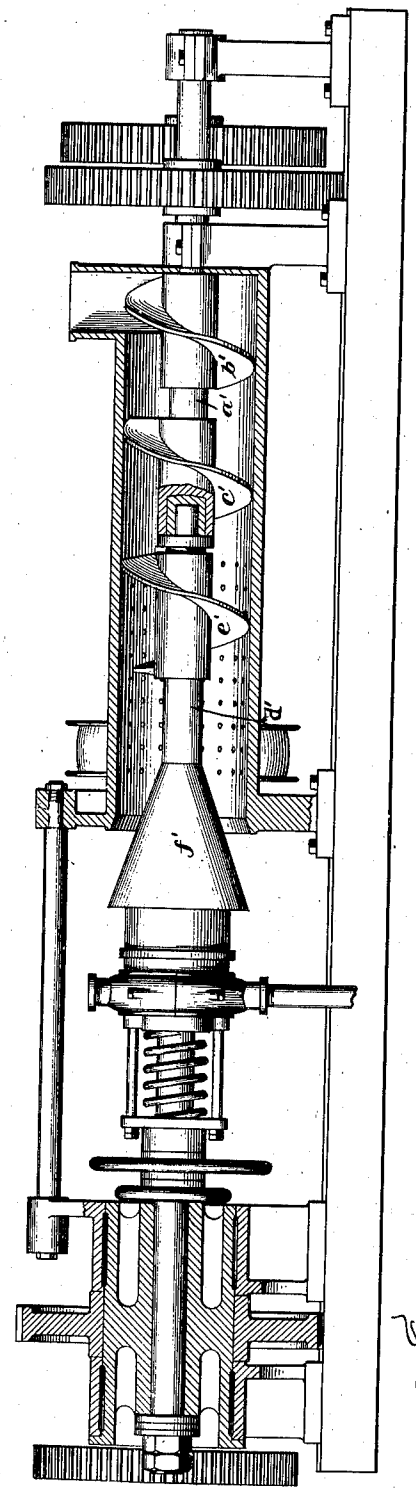
V. D. ANDERSON.

PRESS.

APPLICATION FILED MAY 22, 1902.

NO MODEL. 5 SHEETS—SHEET 4.

Fig. 4.



Witnesses
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D. E. Burdine

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No. 731,737. PATENTED JUNE 23, 1903.

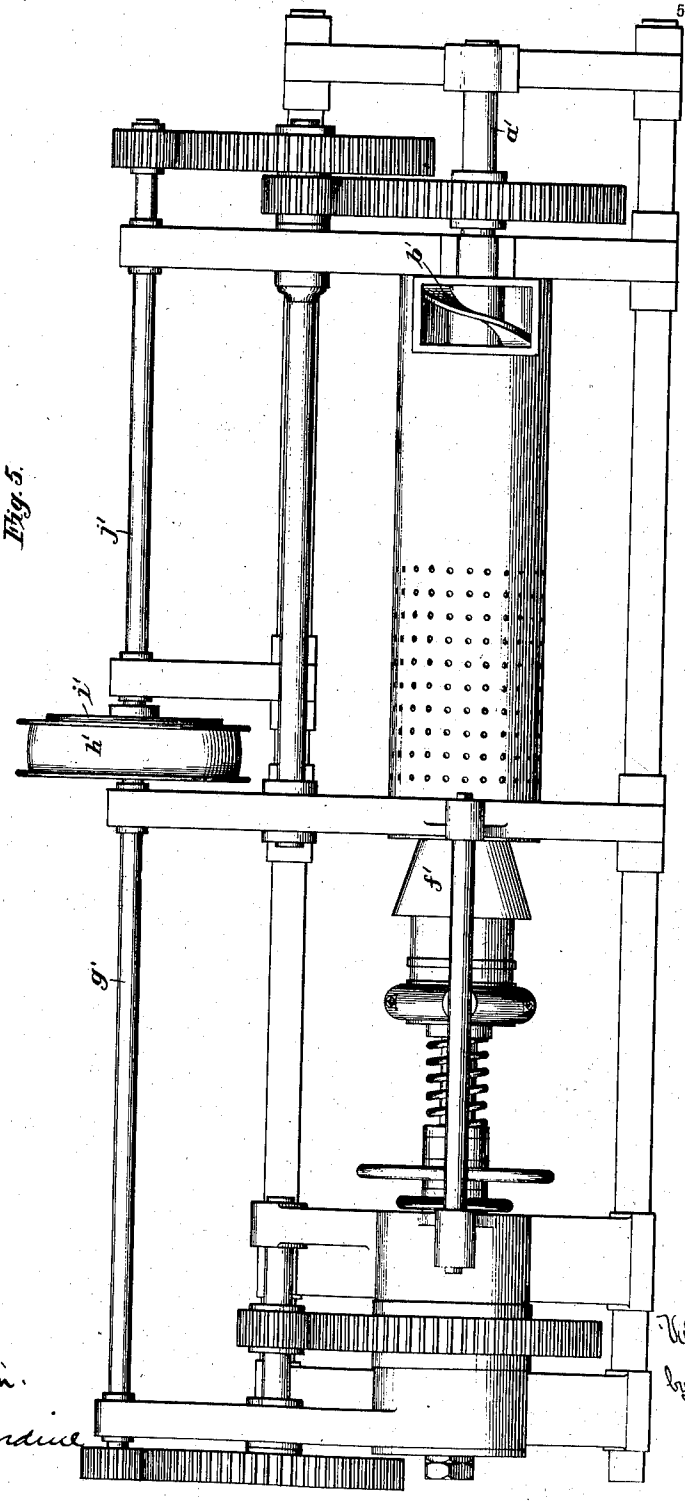
V. D. ANDERSON.

PRESS.

APPLICATION FILED MAY 22, 1902.

NO MODEL. 5 SHEETS—SHEET 5.

Fig. 5.



Witnesses
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D. C. Burdine

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No. 731,737. Patented June 23, 1903.

UNITED STATES PATENT OFFICE.

VALERIUS D. ANDERSON, OF CLEVELAND, OHIO.

PRESS.

SPECIFICATION forming part of Letters Patent No. 731,737, dated June 23, 1903.

Application filed May 22, 1902. Serial No. 108,586. (No model.)

To all whom it may concern:

Be it known that I, VALERIUS D. ANDERSON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Presses, of which the following is a specification.

My present invention pertains to improvements in presses designed more particularly for the treatment of seeds and the like for expressing the oil therefrom.

In the accompanying drawings, Figure 1 is a top plan view of the press; Fig. 2, a longitudinal sectional view thereof; Fig. 3, a detail; Fig. 4, a longitudinal sectional view of a modified form of construction, and Fig. 5 a top plan view of the same.

The object of the present invention is to provide a press which will effectually treat or handle seeds and like substances—such, for instance, as cocoanut—and thoroughly disintegrate and press the same, so that all or practically all of the oil is expelled or forced out therefrom.

While the press is designed more particularly for the treatment of the substances just referred to, still I do not wish to confine my invention to these particular substances, as the press seems to include a wide operative field.

Referring first to Figs. 1 to 3, A denotes a shell or casing, perforated throughout its length or a portion thereof, as may be found necessary in the treatment of any particular seed or substance. Mounted within said shell or casing is a shaft B, which has its bearings in the head-frames C and D and in a foot-frame E. Shell A occupies a position between and is supported by the frame D and an intermediate frame or casting F.

In practice shell or casing A will be made up in a manner similar to that set forth in my pending application, Serial No. 95,404, filed on or about February 24, 1902, and reference is hereby made to said application for the details of construction of this portion of the press, no claim being herein made to said structural features. The forward or head end of the shell or casing is provided with a feed-hopper G, and the material which is fed into said hopper is discharged at the opposite end against a head H, mounted on the shaft. Said head in the form shown is conical in shape, though this shape is not essential to the complete operation of the machine. The shaft at this point is polygonal in cross-section, so that although the head rotates therewith, yet it may be moved toward or from the shell, as occasion may require, suitable means being provided to effect the desired adjustment. The polygonal portion of the shaft also carries a sleeve or collar I, having a worm J formed thereon, said member occupying a position within the discharge end of the shell or casing and rotating with the shaft. The remaining portion of the shaft is cylindrical in form and has mounted upon it a quill or sleeve K, which has a series of separated screws L, M, and N formed thereon, the number of the screws, however, being optional, so long as two or more are employed. A gear O is secured to an extension of the sleeve which projects out between the head-frames C and D, and a similar gear P is keyed or otherwise secured to the shaft.

Q denotes a clutch-pulley or other source of power, motion being imparted therefrom through a shaft Q′ to a gear R, and thence to gear P through gears S, T, U, and V.

Shaft W, which carries the gears S and T, also carries a pulley *a*, and a straight belt *b* extends therefrom to a similar pulley *c*, mounted upon a shaft *d* at the opposite side of the frame. Shaft *d* has secured to it a gear *e*, which in turn imparts motion to gear O through intermediate gears *f* and *g*. A weighted tightener-pulley *h* bears on the belt.

When the press is running empty, the gears O and P will with the arrangement of gearing shown rotate in unison, so that the same rate of rotation will be imparted to the quill and to the shaft. When, however, a certain degree of pressure is exerted or reached in the feed end of the shell or in that portion within which the quill works, the belt will slip in a greater or less degree, depending upon the pressure exerted upon the belt by the tightener. Thus while the end screw J rotates continuously and positively the quill and its screw rotate intermittently or rotate at varying rates of speed.

The action of the press is as follows, assuming that whole cotton-seed or whole linseed is being run through it: The whole seed is

fed into the hopper and is caught by the first screw L. The material is carried around and forced forward by the screw into the space between it and the next screw M. The seed is partially disintegrated and is compacted into the space between the screw L and the adjacent screw until a certain degree of compression is effected, when screw M takes hold and acts on the mass. The farther along the mass goes in its travel through the press the greater the degree of compression, which compression is maintained at all times. The seed is effectually broken up, the oil-cells ruptured, and the oil forced out. Screw M acts in the same manner as screw L, forcing the material on toward screw N, which in turn forces it toward screw J, which then takes it up, effects the final compression, and forces it out against the head H. Said head forms an abutment against which the screw will force the material, and it also serves to break up or disintegrate the material or mat as it leaves the press. The mass may be said to be subjected to a torsional strain or pressure as it passes through the press.

In the treatment of seeds having fibrous hulls and similar substances the screws carried by the quill will so effectually compress the mass and form such a hard cake or body that the discharge and final-compression screw cannot take hold of it unless means be provided whereby the further compression is stopped until the discharge-screw can relieve the press to a certain extent. In other words, the compression in the major portion of the press is momentarily arrested; but that degree of pressure attained is still held to prevent reabsorption of the oil by the fibrous portion of the shell of the seed and the meat or kernel thereof until such time as the discharge-screw shall have sufficiently cleared or relieved the press to enable the whole press to operate again.

The action above described is that which is thought to actually take place, and whether it be absolutely correct or not the fact remains that the oil is completely expressed (commercially speaking) from the whole seed, and the remaining mass contains simply the hulls and dry meat or kernels. This material may be broken up, separated into its constituent elements, and used in a manner similar to the products resulting from the old method of treating seeds.

It is to be understood, of course, that the press may be used on substances other than seeds.

The mat which is formed will, as noted, be held under constant pressure, which pressure increases toward the discharge end of the press. As before stated, this pressure prevents the absorption of the oil by the mat or fibrous portions of the seeds, permitting it to pass therethrough in a clear condition. In other words, the fibrous portions of the seeds act as a strainer or filtering medium for the oil, all fine or floating particles being held back thereby.

No claim is made herein to the method of treating seeds and like substances for the expression of oil therefrom, which method is incident to the use of the present press.

It is immaterial whether the screws be right or left hand in their arrangement throughout. This applies to the series of screws mounted on the quill, as well as to the screw carried by the shaft. Screw J must, however, rotate in such a direction that its inner end will cut into the material forced into the space between it and the adjacent screw.

In Figs. 4 and 5 a modified form of the press is shown. In this construction a two-part shaft is employed, one member or section a' thereof passing through the head of the press into the shell or cylinder and upon which is mounted a series of screws, two, b' and c', being shown. These screws, as in the former case, are separated from each other. The second shaft member or section d' extends into the opposite or discharge end of the shell or cylinder, the abutting ends of the sections being preferably socketed one in the other for the purpose of mutually supporting and bracing each other. The shaft-sections are, however, free to rotate independently one of the other. The section d' carries a screw e' and a frusto-conical member f', the smaller end of which extends into the open discharge end of the shell or cylinder. A shaft g', driven by a pulley or belt-wheel h', imparts through suitable gearing, as shown, a continuous rotary motion to the shaft-section d' and the screw e'. A friction-clutch i' works in conjunction with pulley h' and imparts motion to a shaft j', which through suitable gearing in turn imparts motion to shaft-section a' and the screws carried thereby. The arrangement of the clutch is such that only a certain degree of compression can be reached within the press, and when this point is attained the shaft j', and consequently the shaft-section a', cease to rotate. The action of the press as thus constructed is the same as that above described, though this form is found to be preferable for use upon certain classes of materials.

Having thus described my invention, what I claim is—

1. In a press, the combination of a suitable shell or casing having perforations therein; a shaft mounted within said shell or casing; a screw carried by said shaft adjacent to the discharge end of the shell or casing, said screw being rotatable with said shaft; a quill or sleeve mounted on the shaft in the forward portion of the shell or casing; a series of separated screws carried by said quill or sleeve; and means for driving said shaft and quill independently of each other.

2. In a press, the combination of a suitable shell or casing having perforations therein; a shaft extending through the shell; a screw

carried by said shaft, said screw being located upon the shaft adjacent to the discharge end of the shell or casing and rotatable with the shaft; a quill or sleeve mounted upon the shaft within the shell or casing; a series of separated screws carried by said quill or sleeve; means for positively rotating the shaft and the screw carried thereby; and means for rotating the quill or sleeve, said means permitting the arresting of said quill or sleeve when a determinate pressure is exerted by the screws carried by said quill or sleeve upon the material within the press.

3. In a press, the combination of a suitable shell or casing having perforations therein; a shaft extending through said shell or casing; a screw carried by said shaft adjacent to the discharge end of the shell and rotatable with the shaft; a quill or sleeve mounted upon the shaft and extending throughout the remainder of the shell or casing toward the feed end thereof; a series of separated screws carried by said quill or sleeve; means for positively driving the shaft; means for rotating the quill or sleeve; and connections intermediate the driving mechanism for the shaft and the means for rotating the sleeve, whereby when a determinate pressure is exerted by the screws carried by the quill or sleeve the motion or rotation thereof may be arrested.

4. In a press, the combination of a suitable shell or casing having openings formed therein; a shaft extending through the shell; a screw carried by said shaft adjacent to the discharge end of the shell or casing and rotatable with the shaft; a quill or sleeve mounted upon the shaft within the shell or casing and extending toward the feed end thereof; a series of separated screws carried by said sleeve or quill; gearing for positively rotating the shaft; means for rotating the sleeve or quill, said means deriving its power from the means for driving the shaft; and yielding connections between the means for driving the quill and the means for driving the shaft, whereby the motion of the quill may be arrested when a determinate pressure is exerted upon the material within the press by the screws carried by the quill.

5. In a press, the combination of a suitable shell or casing having perforations therein; a shaft extending through said shell or casing; a screw mounted upon the shaft within the shell adjacent to the discharge end thereof, said screw being rotatable with the shaft; a head also mounted upon the shaft adjacent to the discharge end of the shell and adjustable toward and from the same; a quill or sleeve mounted upon the shaft within the shell or casing and extending toward the feed end thereof; a series of separated screws carried by said quill or sleeve; means for positively driving the shaft; and means for driving the quill or sleeve.

6. In a press, the combination of a suitable shell or casing having perforations therein; a shaft extending through the shell; a screw carried by said shaft, said screw being located adjacent to the discharge end of the shell and rotatable with the shaft; a head mounted upon the shaft adjacent to the discharge end of the shell; a quill or sleeve mounted upon the shaft within the shell or casing; a series of separated screws carried by said quill or sleeve; a gear connected to the shaft; a gear connected to an extension of the quill or sleeve which projects beyond the shell or casing; a system of gears for positively driving the gear carried by the shaft; a system of gears for driving the gear carried by the sleeve; and a yielding connection between the systems of gears, substantially as described.

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

VALERIUS D. ANDERSON.

Witnesses:
WILBUR S. BAILEY,
HENRY SCHAEFER.