No. 836,701. PATENTED NOV. 27, 1906

F. OLIVER.

OIL PRESS.

APPLICATION FILED JAN. 12, 1906.

2 SHEETS—SHEET 1.

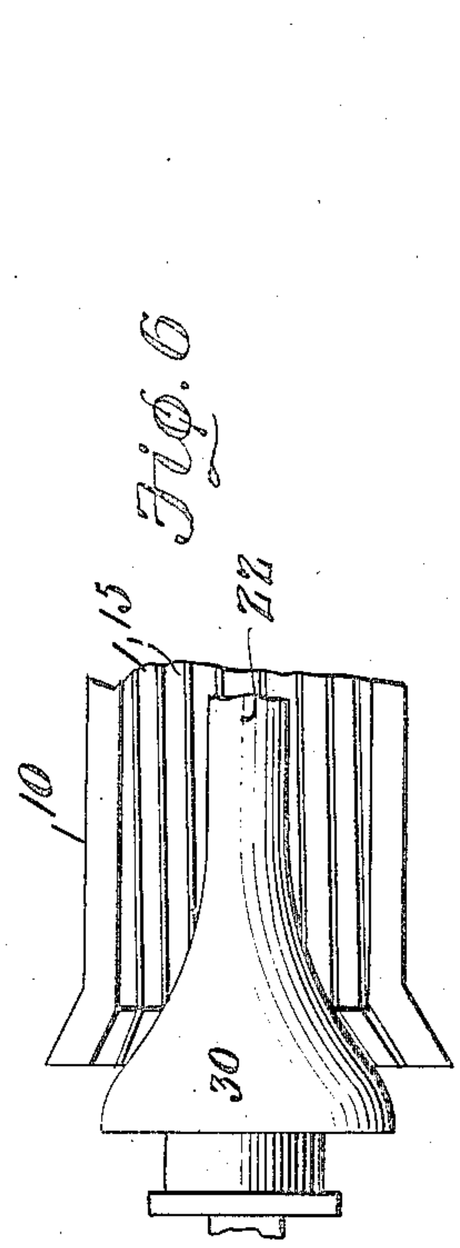

Fig. 6.

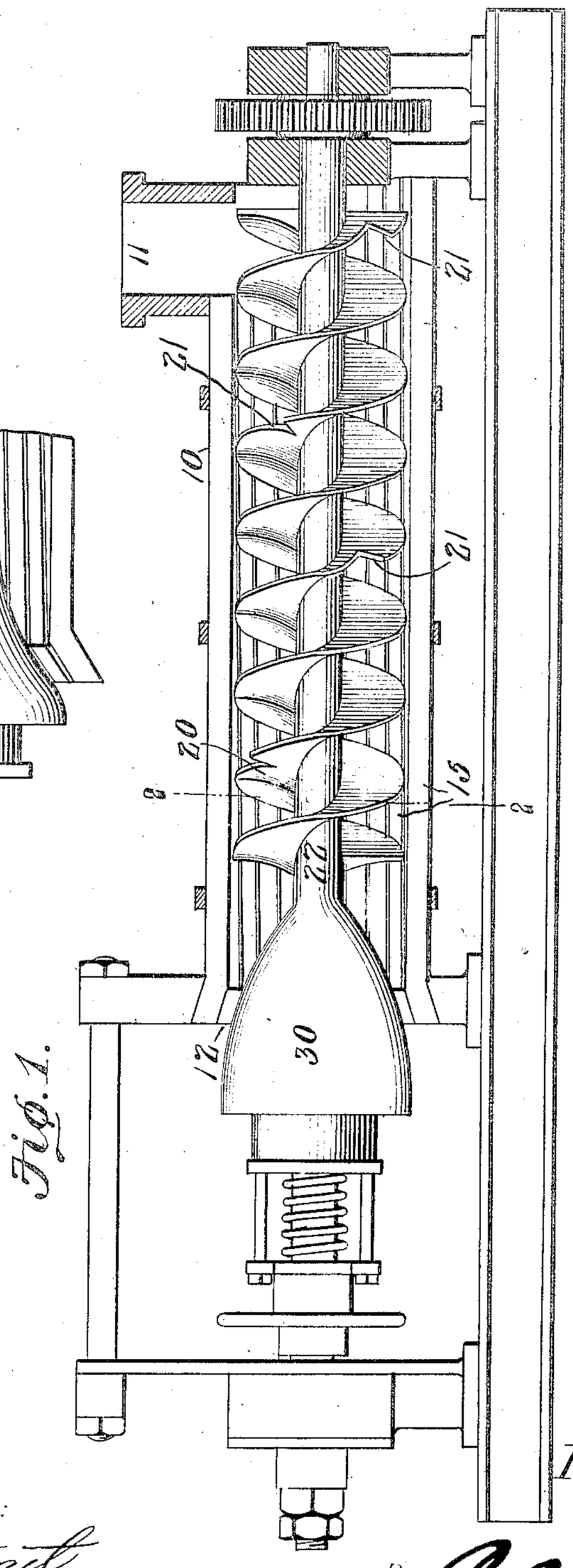

Fig. 1.

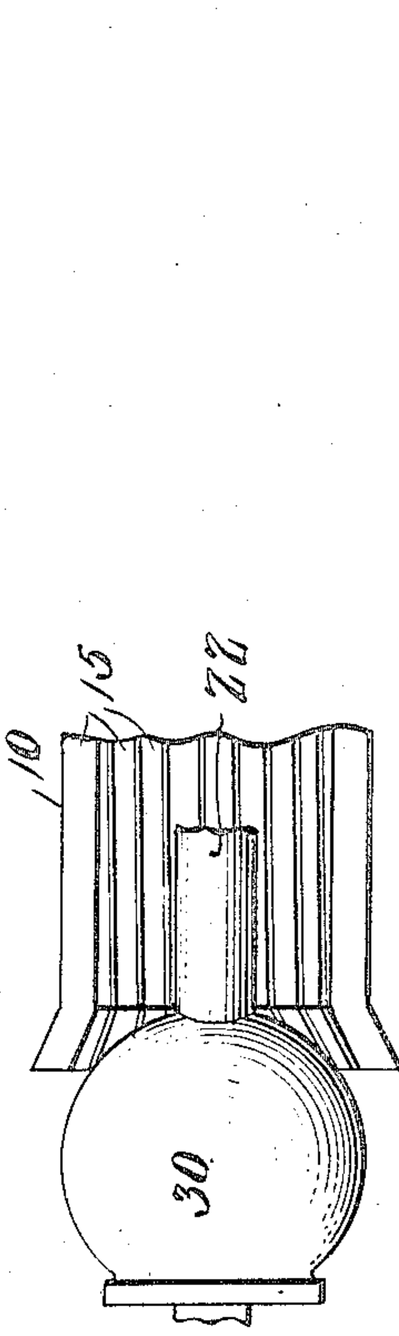

Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 2.

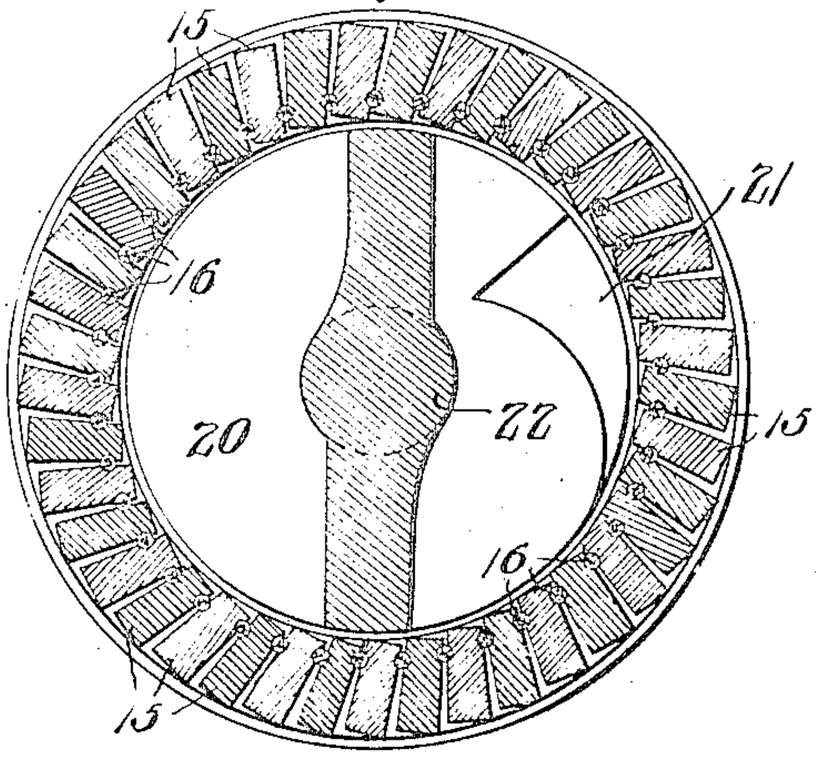


Fig. 3.

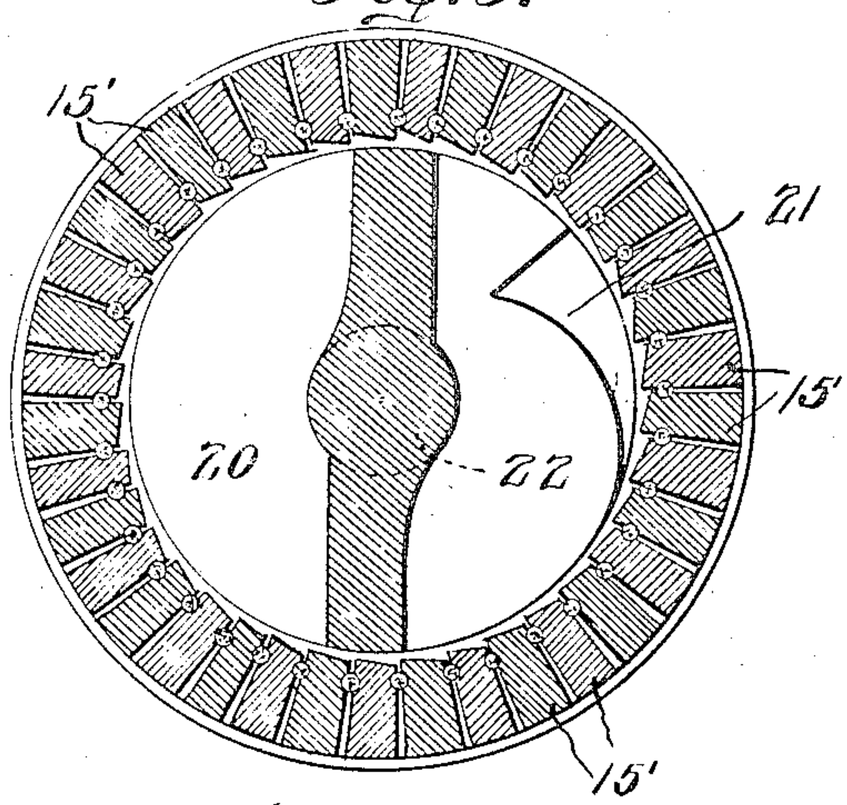


Fig. 4.

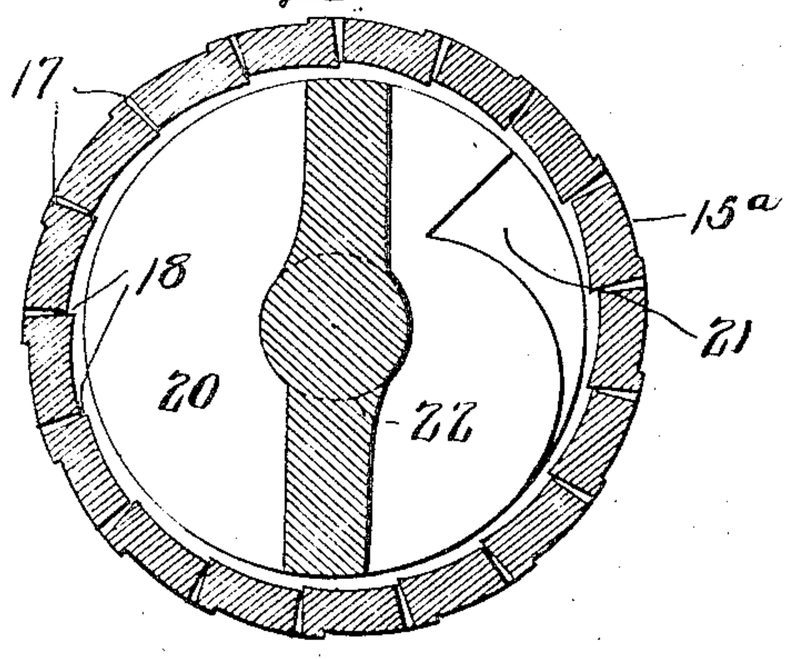
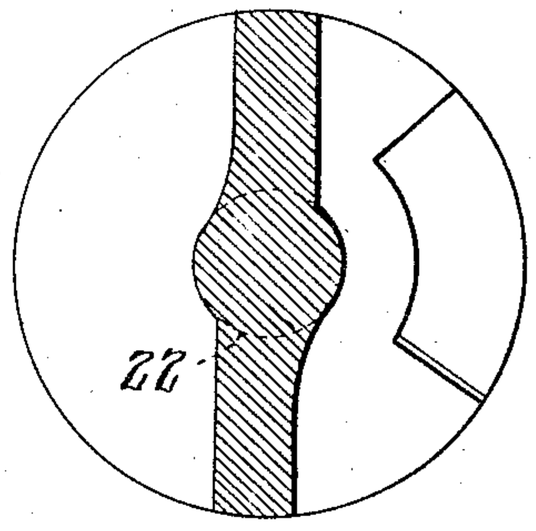


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK OLIVER, OF PORTSMOUTH, VIRGINIA.

OIL-PRESS.

No. 836,701. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed January 12, 1906. Serial No. 295,798.

To all whom it may concern:

Be it known that I, FREDERICK OLIVER, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented a new and useful Oil-Press, of which the following is a specification.

This invention relates to presses of that class employed for extracting oil from cotton-seed, flax-seed, and the like, and has for its principal object to construct a press of the continuous type, wherein a very large percentage of the oil may be expressed.

A further object of the invention is to so arrange and construct the forcing element or screw as to provide for more thorough treatment of the mass of material and to thoroughly agitate, as well as hold, the mass under compression.

A still further object of the invention is to provide a screw in which the flight or flights may be mutilated or broken with a view of allowing portions of the material to pass to a position where they will be again engaged and compressed and, further, to so arrange said mutilated portions that the peripheries or outer edges thereof will serve as cams and tend to force the mass outward in the direction of the casing.

A still further object of the invention is to provide means for holding the mass from rotative movement with the screw, so that it will not travel around with the latter, but will be compelled to move in a practically straight line from the entrance to the discharge end of the casing.

A still further object of the invention is to provide a casing in which the slats or similar members are so arranged as to form retarding-ribs that will prevent rotative movement of the material.

A still further object of the invention is to provide a casing formed of strips slightly spaced to form oil-passages, the strips being arranged on a slightly helical line instead of being parallel with the axis of the screw, so that one edge of each rib will be forced to move inward and act to prevent rotative movement of the material.

A still further object of the invention is to provide a novel form of adjustable plug or pressure-head at the discharge end of the casing, the plug having a curved surface over which the material is guided and said plug being adjustable in order to alter the area of the annular discharge-opening at the end of the casing.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of a press constructed in accordance with the invention. Fig. 2 is a transverse sectional view of the same on the line 2 2 of Fig. 1, the view being on a slightly-enlarged scale. Fig. 3 is a view similar to Fig. 2, illustrating a slightly-modified construction of casing. Fig. 4 is a similar view illustrating a still further modification of the casing. Fig. 5 is a detail sectional view of a modified form of cut flight-screw. Figs. 6 and 7 illustrate modified constructions of the adjustable plug or compression-head.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The press includes a casing 10, into which the seed or other material is fed at 11 and is discharged at the exit 12, the oil or other liquid expressed from such material being discharged through perforations or through the spaces between the slats of which the casing of the press is formed.

The casing in the present instance is formed of slats 15, that are slightly separated from each other in order to form passages for the oil, and between said slats are filtering mediums 16, that serve to prevent the passage of any solid material. In the manufacture of casings of this general type it is usual to place the strips parallel with the axis of the casing and the compression-

screw; but this permits the free rotation of the material with the screw, the press often failing in its work for this reason. In the present instance the slats 15 are disposed on slightly helical lines, so that being twisted to a slight extent one edge of each slat will protrude partly within the casing to an extent greater than the other edge and will thus form a rib or obstruction which by engagement with the material will tend to prevent rotative movement thereof.

The slats 15 instead of being arranged on helical lines may be of the structure shown at 15′ in Fig. 3, wherein the inner face of each slat is arranged at an obtuse angle to the outer face thereof, so that one edge of the slat will act as a rib to prevent rotative movement of the mass. The slats in this case may extend parallel with the axis of the screw.

The casing in some instances may be formed of metal—such, for instance, as the casing 15ª in Fig. 4. In this case the casing is provided with numerous perforations 17 to permit the passage of the liquid, and the inner face of said casing is so shaped as to form a rib 18, which will prevent the rotation of the mass of material. If the casing 15ª is formed of cast metal, the ribs and intervening grooves will appear only on the inner face; but where formed of sheet metal the ribs may be struck up by suitable dies and will therefore appear on both surfaces of the casing.

Arranged within the casing is a double-flight screw 20, which acts to slowly feed the mass of material from end to end of the casing and at the same time exert great pressure thereon. This double-flight screw is preferably cut or mutilated at intervals, the cut-away portions 21 occurring at intervals and preferably being disposed in the manner shown in Fig. 1, wherein one flight is cut away, while the other flight is continuous, so that to the rear of each cut-away portion a forcing effect will be produced in order to urge the mass of material through such cut-away portion. The cut or recessed portions 21 are preferably so arranged that that wall in the direction of the plane of rotation of the screw will be disposed on a curved or inclined line, as shown more clearly in Fig. 3, so that it will act as a cam and tend to force the material passing through the recess outward into engagement with the wall of the casing. In all cases, however, it is preferred that the recessed portion 21 stop short of the carrying-shaft 22 of the screw, as shown, for instance, in Figs. 3 and 5, so that the central portion of the mass of material will be held under continuous pressure and will be constantly moved forward, while the portion of the outer mass represented by the depth of the recess will move independently of the inner mass, and thus permit agitation and the contact of the blades proper with successively fresh portions of the mass, so that a larger percentage of oil may be expressed.

In constructing the screw it is preferred that the forward or active face of each flight be arranged on a curved or inclined line from the root to the crown of the flight, so that there will be a tendency to force the mass outward into engagement with the casing, as well as to feed the mass forward toward the discharge-opening.

At the discharge end of the press is a plug or compression-head 30, that is preferably carried by or forms a bearing for the shaft 22. This plug is provided with a curved surface for engagement with the mass of material, and the plug may be of the ovate form shown in Fig. 1 or may be spherical, as shown in Fig. 7, or its surface may be concaved, as shown in Fig. 6; but in all instances the curved face permits of the passage of the material in such manner that increased force or pressure may be obtained and the material delivered in a practically dry condition.

With a press constructed in accordance with this invention the seeds or other material under treatment will be entirely agitated by the screw, and at the same time the mass will be held from rotative movement with the screw and will be compelled to travel in an approximately straight line from the entrance to the discharge end of the casing. The double-flight screw, while acting more slowly than the single-flight screw heretofore employed, is capable of exerting greater pressure on the material with the same amount of power employed in an ordinary press.

I claim—

1. In an oil-press, a pressure-screw, and a casing, the strainer elements of which are extended inward to form ribs.

2. In an oil-press, a screw, and a straining-casing having inwardly-extended portions forming ribs to prevent rotative movement of the material.

3. In an oil-press, a pressure-screw, and a casing formed of slats, of which one or more are extended inward to form ribs.

4. In an oil-press, a pressure-screw, and a casing formed of slats arranged on slightly helical lines.

5. In an oil-press, a pressure-screw, and slats arranged on slightly helical lines to force one edge of each slat inward, and thus form material-retarding ribs.

6. In an oil-press, a casing, and a screw having a recessed flight, the recess terminating short of the root of the flight.

7. In an oil-press, a casing, and a pressure-

screw, the flight being recessed and one wall of the recess being arranged to form a cam for thrusting the material outward toward the casing.

8. In an oil-press, a casing, and a pressure-screw, the forward or thrust side of the flight being curved to form a cam acting to thrust the material in the direction of the casing.

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

FREDERICK OLIVER.

Witnesses:
J. Ross Colhoun,
Jno. E. Parker.