No. 762,396.

PATENTED JUNE 14, 1904.

G. ENGEL.

PRESS.

APPLICATION FILED OCT. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

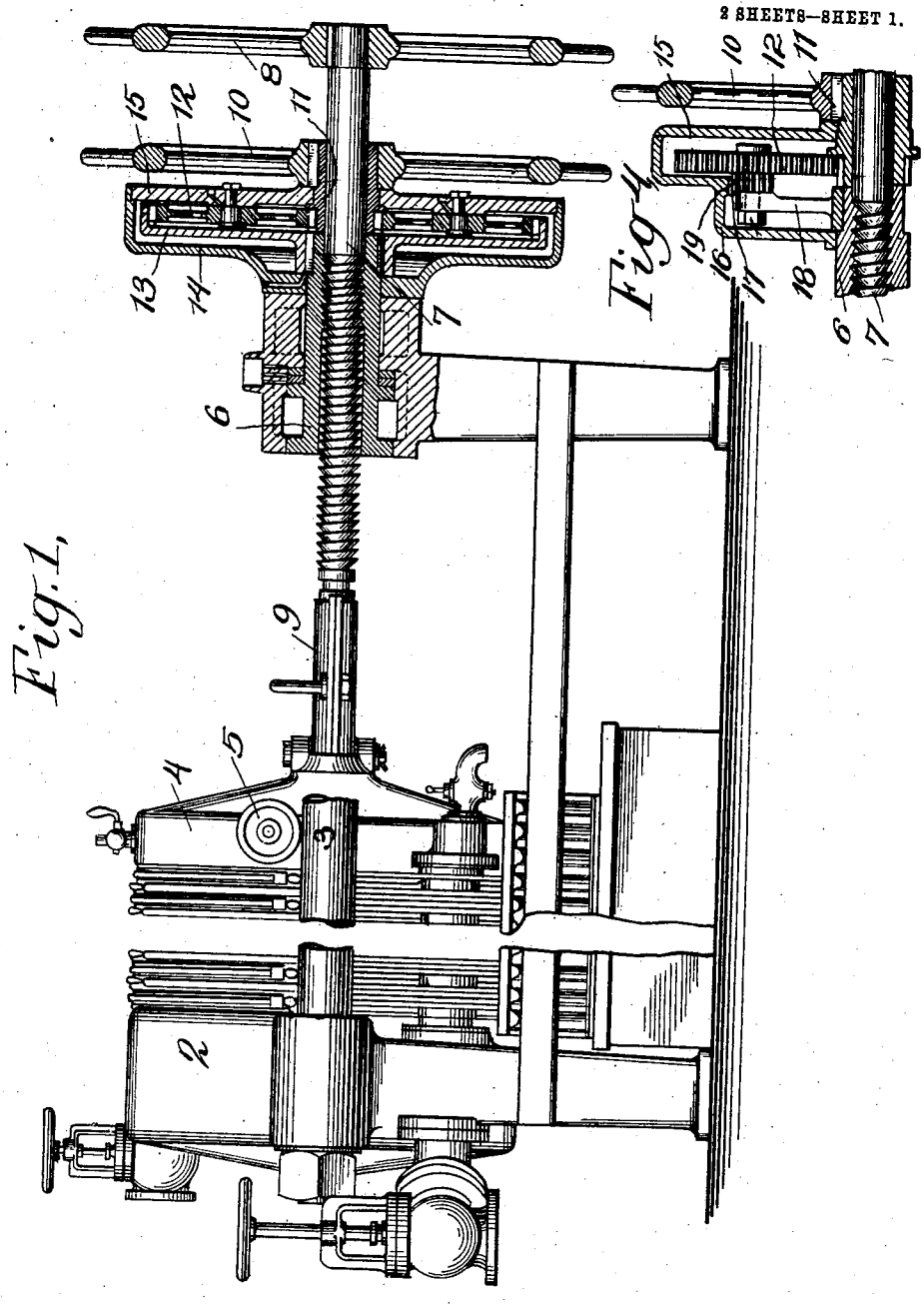


Fig. 1.

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 3.

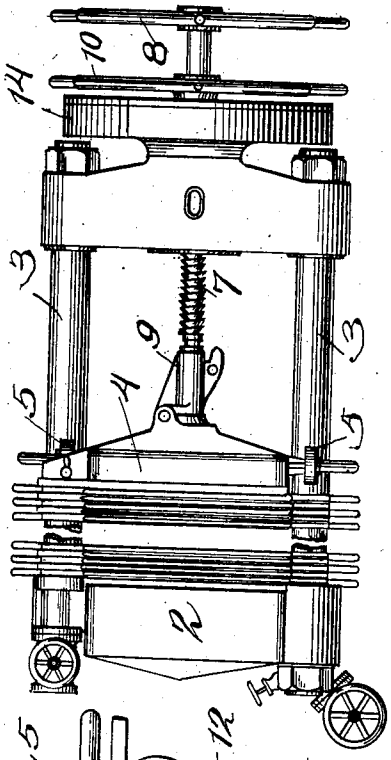
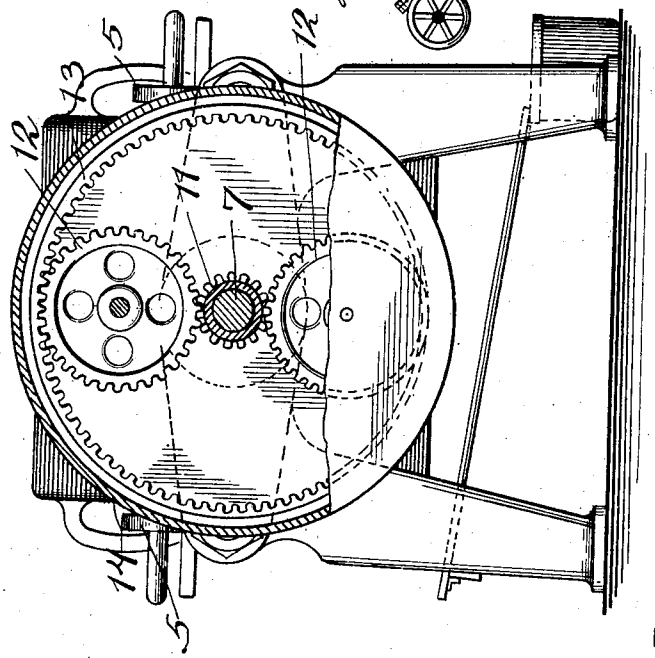


Fig. 2.



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No. 762,396. Patented June 14, 1904.

UNITED STATES PATENT OFFICE.

GODFREY ENGEL, OF BALTIMORE, MARYLAND.

PRESS.

SPECIFICATION forming part of Letters Patent No. 762,396, dated June 14, 1904.

Application filed October 3, 1902. Serial No. 125,759. (No model.)

To all whom it may concern:

Be it known that I, GODFREY ENGEL, a citizen of the United States, residing in Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in presses, and more especially to the pressure-applying mechanism of presses, and is particularly intended for use in filter-presses such as are employed in the purification of sugar.

My invention consists in the use, in connection with a pressure-screw by the rotation of which pressure may be applied in the press, of a rotatable nut for said screw and gearing mounted about the axis of that screw and connected to the nut, whereby the nut may be rotated about the screw.

My invention also consists in certain details of construction, as hereinafter pointed out in the claims.

The object of my invention is to facilitate the operation of presses and to make it possible to obtain the desired pressure quickly and without undue exertion.

I will now proceed to describe my invention with reference to the accompanying drawings, in which a filter-press provided with one embodiment of my invention is illustrated, and will then point out the novel features in claims.

In the said drawings, Figure 1 shows a side elevation and partial section of a filter-press. Fig. 2 shows a cross-section through the gearing. Fig. 3 is a top view of the press on a smaller scale than the preceding figures. Fig. 4 is a detail view illustrating an alternative arrangement of gearing.

The particular press shown is in general of ordinary construction and has the ordinary frame 1, provided with an end head 2 and side guides or ways 3 for the movable head 4, which latter is provided with rollers 5, resting upon the guides 3. Filter-frames with cloths stretched over them are placed between heads 2 and 4, said heads being caused to press the filter-frames together so tightly that the liquid cannot escape between the frames.

A nut 6 is revolubly mounted in one end of the frame 1, and within this nut is mounted a pressure-screw 7, the threads of which are preferably of the wedge shape shown, since they are required to resist pressure in but one direction. Upon one end of the screw 7 is a hand-wheel 8. The other end of said screw is adapted to press against a swinging thrust-piece 9, carried by the movable head 4, but which may be swung aside quickly when the screw 7 is backed away a short distance, so as to permit quick retraction of the movable head 4. The pressure required to be transmitted through the screw 7 is very great, and therefore it is necessary to use a screw-thread of considerable pitch. Also it is desirable to be able to move the screw 7 forward and backward rapidly, and obviously this cannot be done by the same means employed for producing the desired pressure. Accordingly I have mounted upon the screw 7 a second hand-wheel 10, keyed to a pinion 11, mounted upon the unthreaded portion of the screw and intermeshing with intermediate gears 12, engaging an internal gear 13, keyed to the nut 6 of screw 7. Pinion 11 and gears 12 and 13 constitute a speed-reducing gearing of very high speed ratio. This gearing is inclosed by a casing consisting of two parts 14 and 15, the former mounted upon the nut 6 and the latter mounted upon the pinion 11. The pivots of the gears 12 are carried by the section 15 of this casing.

In the operation of this press when it is desired to press the frames between the heads 2 and 4 together the thrust-piece 9 is swung into line with the screw 7, and the latter is rotated by means of the hand-wheel 8 until as much pressure has been applied in this way as can be done conveniently. This motion is relatively rapid and permits a quick movement of the parts up to the point where application of considerable pressure begins. The operator then rotates the hand-wheel 10, thereby rotating the nut 6 about the screw 7, (which then does not rotate,) by a slow but

powerful movement. Since the nut 6 is held against longitudinal motion, the effect is to advance the screw by a slow powerful movement and to permit the application of great pressure with relatively little exertion upon the part of the operator. With the parts proportioned as shown in the drawings it is possible by means of a hand-wheel 10 of about forty-eight inches in diameter to apply a pressure of two hundred thousand pounds with a turning effort of only about one hundred and fifty pounds at the periphery of wheel 10.

Fig. 4 illustrates an alternative arrangement of gearing by which the pressure applied may be still further increased. In this form the casing 16 of the gearing is provided with internal gear-teeth 17, and the intermediate gears 12, which intermesh with the pinion 11, are carried by a spider 18. To these gears 12 are connected pinions 19 engaging the internal gear-teeth 17.

One important advantage of my invention is that since both hand-wheels may be close together and rotate about the same axis it is not necessary for the operator to change his position while he is operating said hand-wheels. To relieve the pressure, the hand-wheel 12 may be turned backward a few turns to relieve the screw, after which the screw may be retracted by means of the hand-wheel 8.

It is obvious that my invention is susceptible of variations and modifications in construction and arrangement of the parts, and I do not limit myself to the particular construction shown in the claims.

What I claim is—

1. In a press, the combination with a frame, a screw, and a nut for the screw revolubly mounted in a bearing within said frame but held against longitudinal motion, of a wheel for rotating said screw, mounted thereon and secured thereto, and gearing for rotating said nut comprising an internal gear surrounding the screw, a pinion mounted to revolve about the screw, a wheel for rotating said pinion, and gear-wheels intermeshing with said pinion and internal gear.

2. In a press, the combination with a frame, a screw, and a nut for the screw revolubly mounted in a bearing within said frame but held against longitudinal motion, of a wheel for rotating said screw, mounted thereon and secured thereto, a casing, and gearing for rotating said nut comprising a pinion mounted to revolve about said screw, means for rotating the same, and gearing for transmitting motion from said pinion to said nut comprising intermediate gears, one of which is an internal gear, one of said intermediate gears being held by the casing against rotation about the screw.

3. In a press, the combination with a frame, a screw, and a nut for the screw revolubly mounted in a bearing within said frame but held against longitudinal motion, of a hand-wheel, mounted upon and secured to said screw, for rotating the same, and gearing for rotating said nut, comprising a pinion mounted to revolve about the screw, a hand-wheel mounted thereon and secured thereto for rotating the same, said second hand-wheel in proximity to the first, and intermediate gearing transmitting motion from the pinion to said nut.

4. In a press, the combination with a frame, a screw, and a nut for said screw revolubly mounted in a bearing within said frame but held against longitudinal motion, of gearing for rotating said nut with respect to said screw comprising a pinion mounted upon the screw, a gear mounted upon the nut, a casing for the gearing comprising two parts, one mounted upon the nut and the other upon the said pinion, and intermediate gears mounted upon pivots carried by said casing.

In testimony whereof I affix my signature in the presence of two witnesses.

GODFREY ENGEL.

Witnesses:

R. MARSDEN SMITH,

E. L. WILLIAMSON.