C. WINKLER.

PRESS FOR IMPRINTING AND DRYING MATRICES.

APPLICATION FILED JULY 21, 1915.

1,356,419.

Patented Oct. 19, 1920.

5 SHEETS—SHEET 1.

Fig. 2.

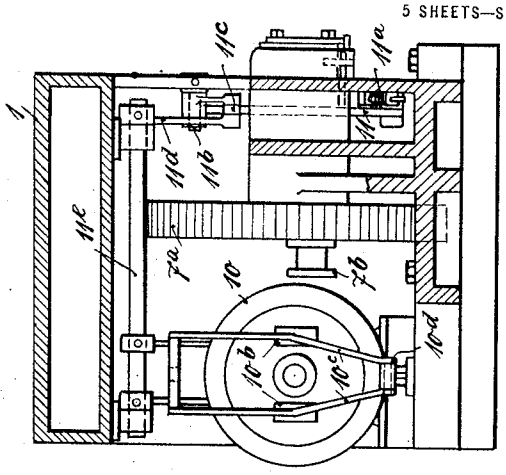
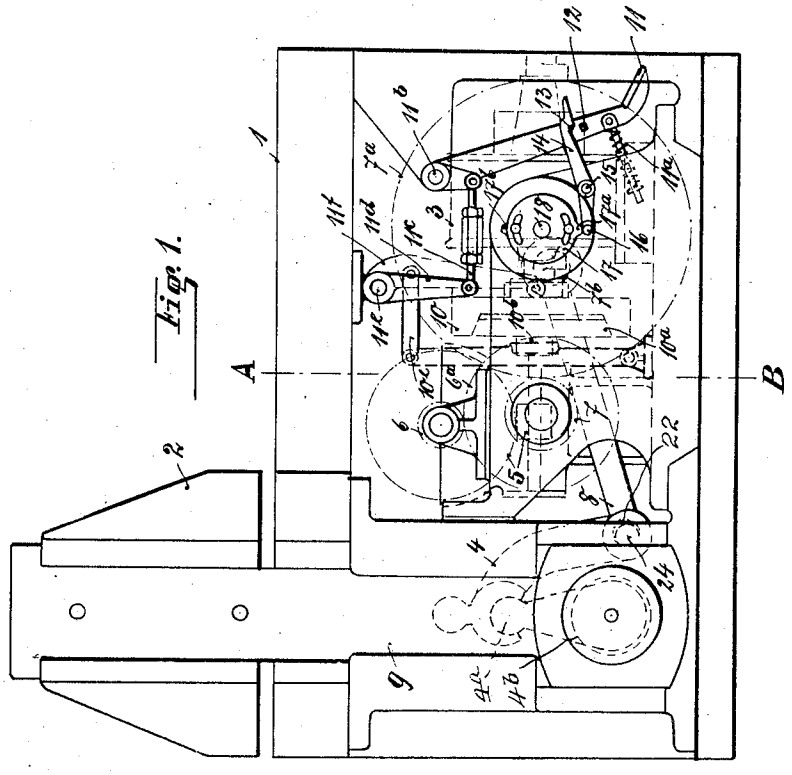


Fig. 1.



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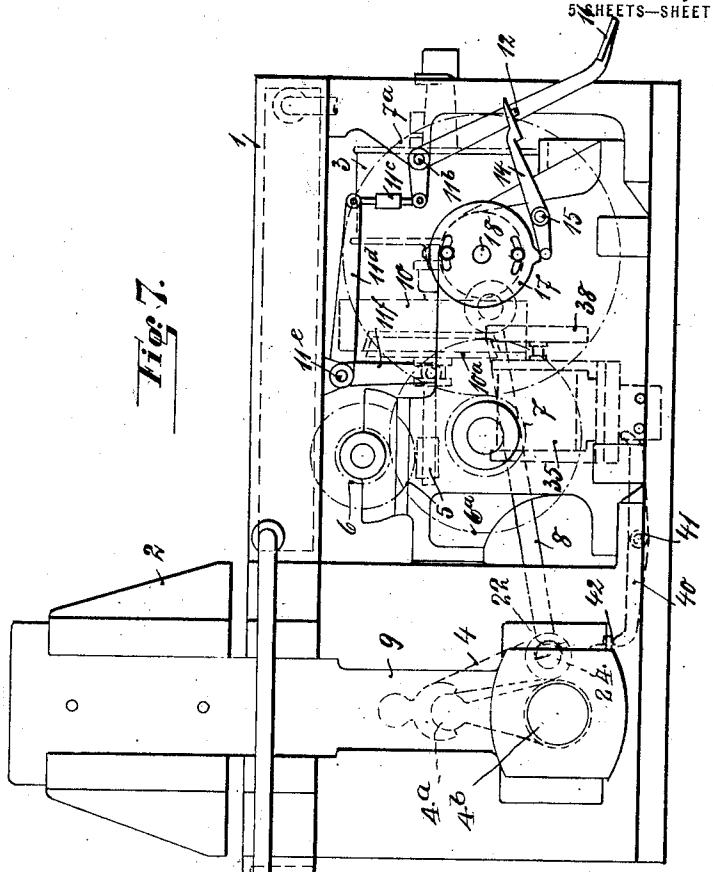
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5 SHEETS—SHEET 2.

Fig. 1.



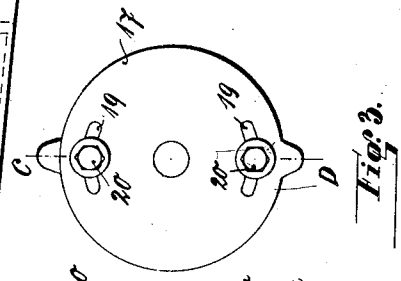


Fig. 3.

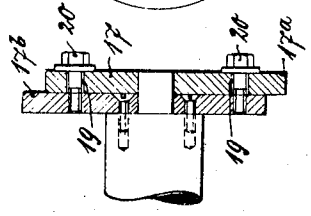


Fig. 4.

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5 SHEETS—SHEET 3.

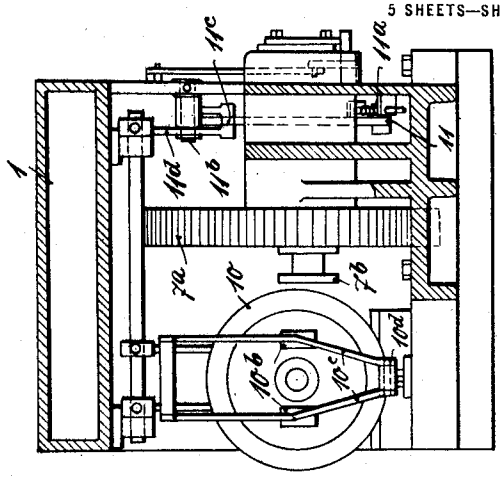


Fig. 6.

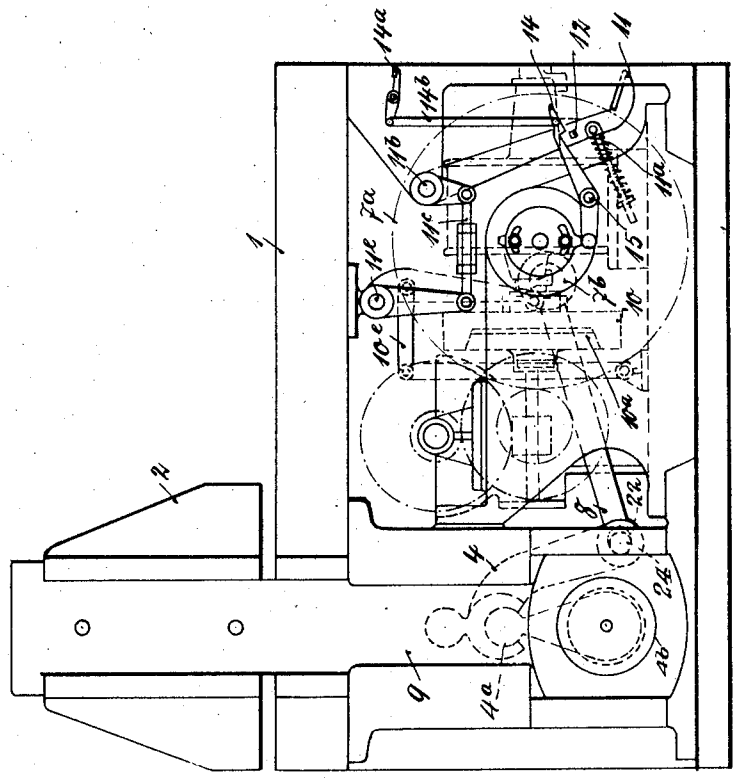


Fig. 5.

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5 SHEETS—SHEET 4.

Fig. 8.

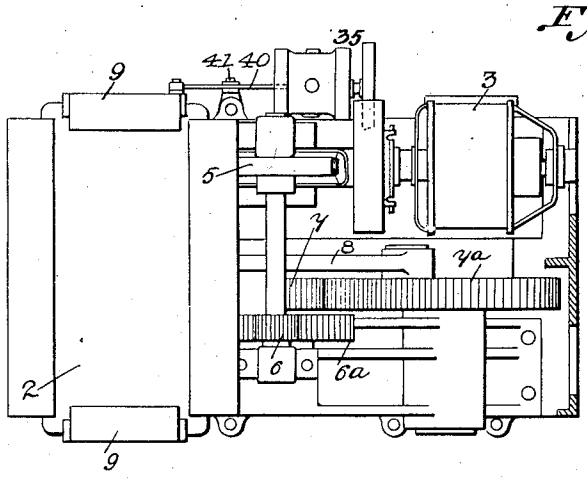


Fig. 9.

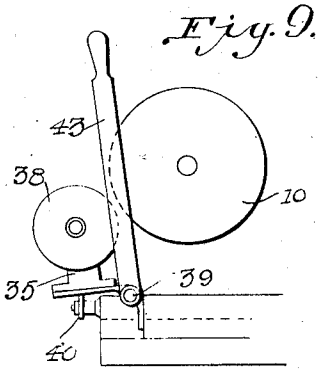
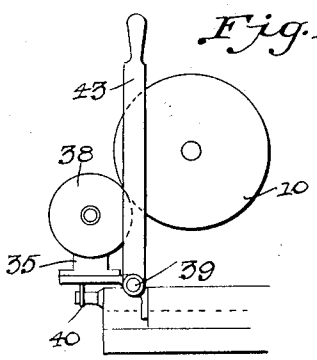


Fig. 10.



WITNESSES

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5 SHEETS—SHEET 5.

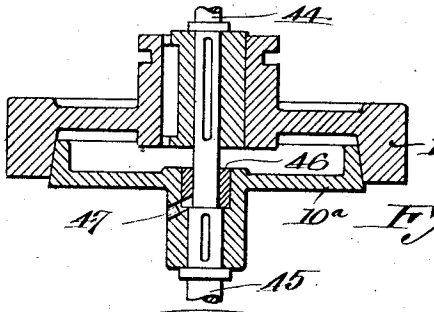


Fig. 11.

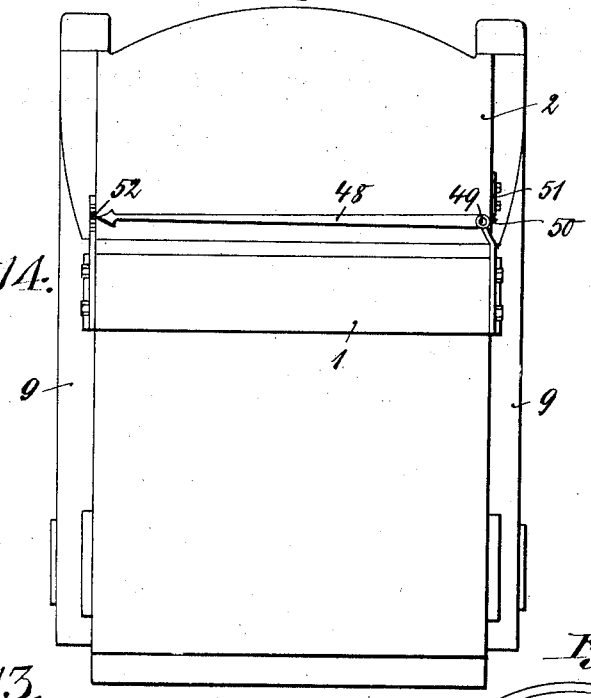


Fig. 14.

Fig. 12.

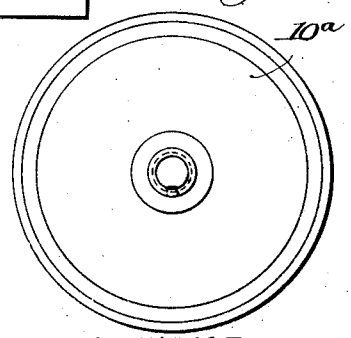
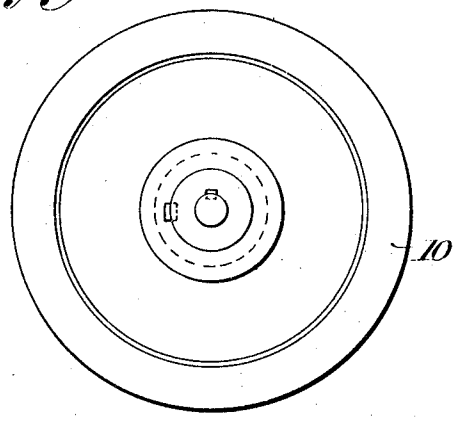


Fig. 13.



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UNITED STATES PATENT OFFICE.

CARL WINKLER, OF BERNE, SWITZERLAND.

PRESS FOR IMPRINTING AND DRYING MATRICES.

1,356,419. Specification of Letters Patent. Patented Oct. 19, 1920.

Application filed July 21, 1915. Serial No. 41,120.

To all whom it may concern:

Be it known that I, CARL WINKLER, a citizen of the Swiss Republic, residing at Berne, in the Swiss Republic, have invented new and useful Improvements in Presses for Imprinting and Drying Matrices, of which the following is a specification.

The invention relates to improvements in presses for imprinting and drying stereotype matrices, the object of the invention being to render the operation of said presses safer, easier and more effective than in existing presses, so that the imprinting and drying of the matrices can be carried out in one operation. Moreover precaution is taken to prevent the form from being injured during the imprinting process.

In order to restrict the dimensions of the press to a minimum and to increase the safety of operation, the mechanism for producing the pressure and the motor itself, are arranged underneath the table.

According to the invention the press is provided with a device which enables it to put the driving motor out of gear when the maximum pressure has ceased to act on the matrix, so that the matrix is imprinted at a high pressure and then dried at a reduced pressure. Arrangement can also be made to prolong the time during which the maximum pressure acts. By these means the imprinting of the matrices is much facilitated because the press operates automatically and does not depend on the skill of the operator.

In the drawing the invention is shown by way of example:

Figure 1 being a side elevation of the entire press,

Fig. 2, a section on A—B in Fig. 1,

Fig. 3 is a side elevation of the cam, by which the driving gear of the press is put out of gear when the head of the press has passed the position of maximum pressure,

Fig. 4, a section on C—D in Fig. 3.

Figs. 5 and 6 are views corresponding to Figs. 1 and 2 showing a construction of the press in which a hand lever is provided to release the driving coupling.

Fig. 7 shows another construction of the press in side elevation,

Fig. 8, a plan of said press after removing the work table.

Figs. 9 and 10 represent the pump in end elevation in the idle and working position respectively,

Figs. 11, 12 and 13 show a construction of the coupling, by which the motion of the motor is transferred to the driving mechanism.

Fig. 14 is an end view of the press, in which an indicator is used in order to show the exact position of the press head.

1 is the work table and 2 the press head. Underneath the table 1 the entire mechanism for moving the press head is arranged. Said mechanism includes the motor 3 which drives the toggle levers 4 by means of the worm gear 5, toothed wheels 6, 6^a, 7, 7^a, and connecting rod 8. The fulcrum 4^a of the toggle levers is journaled in the frame of the press, while the fulcrum 4^b is journaled in the connecting rods 9 by which the press head 2 is moved up and down according as the toggle levers 4 are brought into an angular or stretched (straight line) position in regard to each other.

The motor 3 runs continuously and is connected with the driving organs of the press by the coupling 10 when the foot lever 11 is pressed down. The coupling element 10 is continuously driven by the motor 3 and can be moved axially so as to be brought in and out of engagement with the coupling element 10^a. For the purpose of keeping the coupling element 10 in engagement with the coupling element 10^a the foot lever is provided with a pip 12, which in the depressed position engages behind the shoulder 13 of the lever 14. This lever 14 is pivoted on the pin 15 and carries a roll 16 pressing against the cam 17. Said cam is fastened on the shaft 18 which turns with the crank disk and toothed wheel 7^a, by which the connecting rod 8 is driven. The cam disk 17 is adapted to be rotated and can be secured in different angular positions by slots 19 and screws 20, according to the exact point of time at which the press is to be stopped. The projection 17^a on the cam disk 17 serves to bring the press head 2 to rest when the maximum pressure has just ceased to act, while the projection 17^b puts the press out of operation when the press-head is raised to its higest position.

This construction enables the imprinting of the matrix to be carried out as heretofore at a high pressure and the drying of the matrix to be effected at a reduced pressure. In operating this press the lever 11 is depressed by foot against the pressure of the spring 11^a. By so doing this lever is turned about the pivot 11^b and this move-

ment is transferred by the connecting rod 11^c to the lever 11^d which is fastened on the shaft 11^e carrying the levers 11^f, by which the movable part of the coupling 10 is brought into contact with the part 10^a, so that the worm gear 5 and the toothed wheels 6, 6^a, 7, 7^a will be turned and the movement of the crank will be transferred by the connecting rod 8 to the toggle joint 4, and thus the press-head 2 will be lowered by the connecting rods 9. The foot lever 11 is kept in its depressed position by the pawl 14 engaging the pin 12. As however the disk 17 is turned with the crank disk 7^a the projection 17^a will turn the lever 14 about its pivot 15 and thus release the pin 12, so that the foot lever 11 will be raised by the spring 11^a. By the rising motion of the foot lever the coupling part 10 will be moved away from the part 10^a.

In order to assure that the press-head 2 is brought to rest when the desired pressure is attained the press is provided with a brake. This brake consists of brake blocks 10^b carried by the levers 10^c which turn about the pivot 10^d and are connected at the top by a link 10^e with the lever 11^f. Each time the coupling part 10 is moved away from 10^a the brake blocks 10^b are pressed against the part 10^a. As the worm gearing decreases the speed to a very great extent a very little brake-pressure will suffice to bring the press to rest.

As shown in Figs. 5 and 6 a hand lever 14^a may be connected with the pawl 14 by a connecting rod 14^b, in order, to be able, to raise said pawl 14 out of engagement with the pin 12. The operator is then able to regulate the friction between the parts 10 and 10^a of the coupling by treading with different pressure on the lever 11, and, in this way, the press-head may be caused to rise through the distance of 2, 3, 4 or more thicknesses of paper sheets. In other words the operator, according to the form to be imprinted, can put the press out of action at any point, and cause the press-head to be adjusted to degrees of fineness of the thickness of the thinnest paper. By raising the pawl 14 the parts of the coupling may be caused to slip more or less on each other, so that a slower movement of the machine, or rather of the press-head, is obtained. By means of the hand-lever 14^a the operator is enabled to release the pawl 14 and then to regulate the pressure between the parts 10, 10^a of the coupling, according to feeling.

22 (Figs. 1, 5 and 7) is the prolonged eyelet in the lower end of the connecting rod 8. In this eyelet engages the pin 24, carried by the toggle lever 4. This pin 24 has as usual, a cylindrical section and can therefore remain stationary in the eyelet 22 for a short time when the crank passes the dead points. By reason of this longitudinal movement of the pin 24 in the eyelet 22, the toggle levers are left in the stretched position, and consequently the press-head 2 is kept in the position of maximum pressure for a longer time than would be the case if this play between the pin 24 and eyelet 22 were not provided.

If this elongated eyelet 22 is used the coupling 10, 10^a need not be disconnected in the pressure period, so that the cam 17 is not necessary. This arrangement is specially suitable for the cold imprinting of matrices, where the moist matrices after being imprinted are dried in a special drying apparatus and not in the press. By reason of the slot 22 in the lower end of the connecting rod 8, or, in other words, owing to the press-head remaining in the position of maximum pressure for some little time a very good impression is obtained.

All the described constructions of the press may be provided with an indicator 48 (Fig. 14), which is pivotally attached to the frame at 49 and has a projection 50 against which presses the tappet 51 attached to the press head 2. When the press head 2 is moved the indicator 48 is accordingly moved abont the pin 49 and its movement can be read off the scale 52.

What I claim and desire to secure by Letters Patent of the United States:—

1. A press comprising in combination a stationary work table, a movable press-head over a portion of said work table, a motor, a friction clutch element forming a fly wheel driven by said motor, a second coupling element, means to bring said coupling elements into engagement with each other, a toggle joint connected with said press-head, and a crank and connecting rod driven by said second coupling element and adapted to operate said toggle-joint, all said parts being arranged underneath said work table, substantially as, and for the purpose set forth.

2. In a press, the combination with the press-head, of a motor, a connecting rod adapted to be moved by said motor and having an elongated eye, a pin seated in said eye with longitudinal play, and a toggle lever connection between said pin and said press head, substantially as, and for the purpose set forth.

3. A press comprising in combination a stationary work table, a movable press-head, over a portion of said press table, means to heat said press-head a friction coupling element constructed as a fly wheel and adapted to be continuously rotated, a second friction coupling element, means to bring said friction coupling elements into engagement with each other, a toggle-joint connected with said press-head, a crank and connecting rod driven by said second fric-

tion coupling element and adapted to operate said toggle-joint, means to automatically disengage said friction coupling elements when said toggle-joint has just passed its stretched position, substantially as, and for the purpose set forth.

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

CARL WINKLER.

Witnesses:
ELLA BÖHM DE SAUVANNE,
M. BERTSCHINGER.