K. FINCKH & P. ALMSTEDT.

MECHANISM FOR UPSETTING HEADS ON FASTENING PINS FOR ARTIFICIAL TEETH.

APPLICATION FILED OCT. 24, 1914.

1,167,341.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1

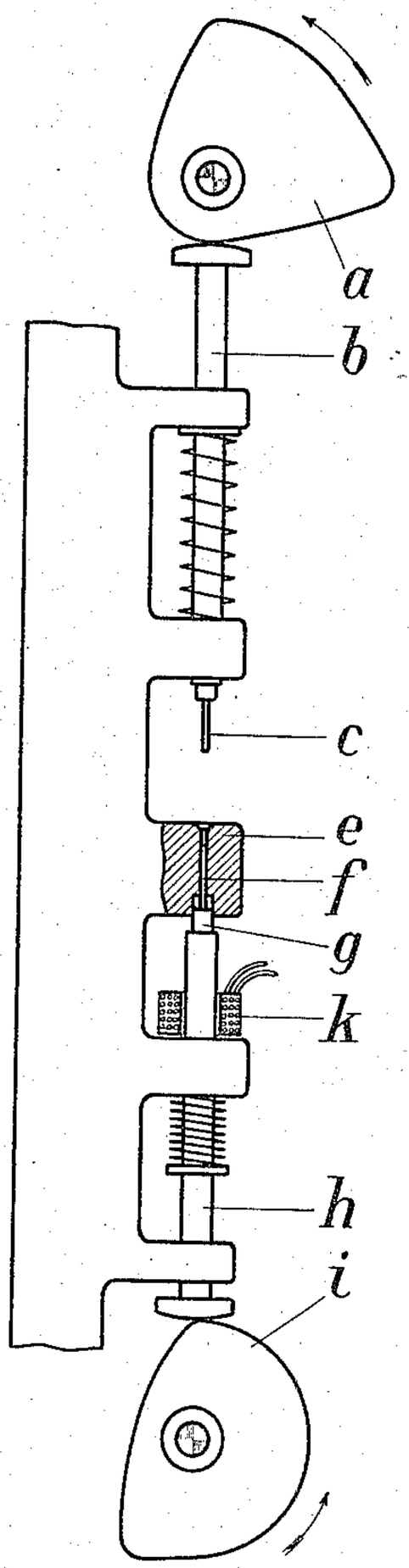

Fig. 2

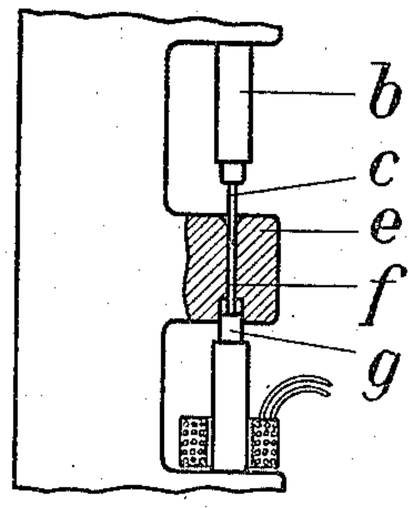

Fig. 3

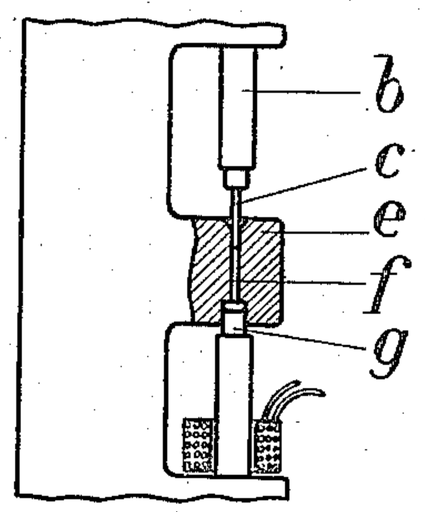

Fig. 4

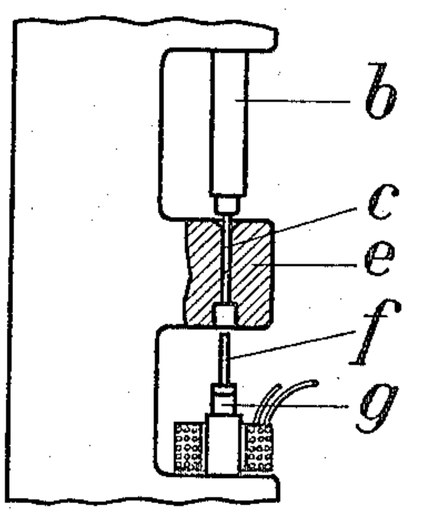

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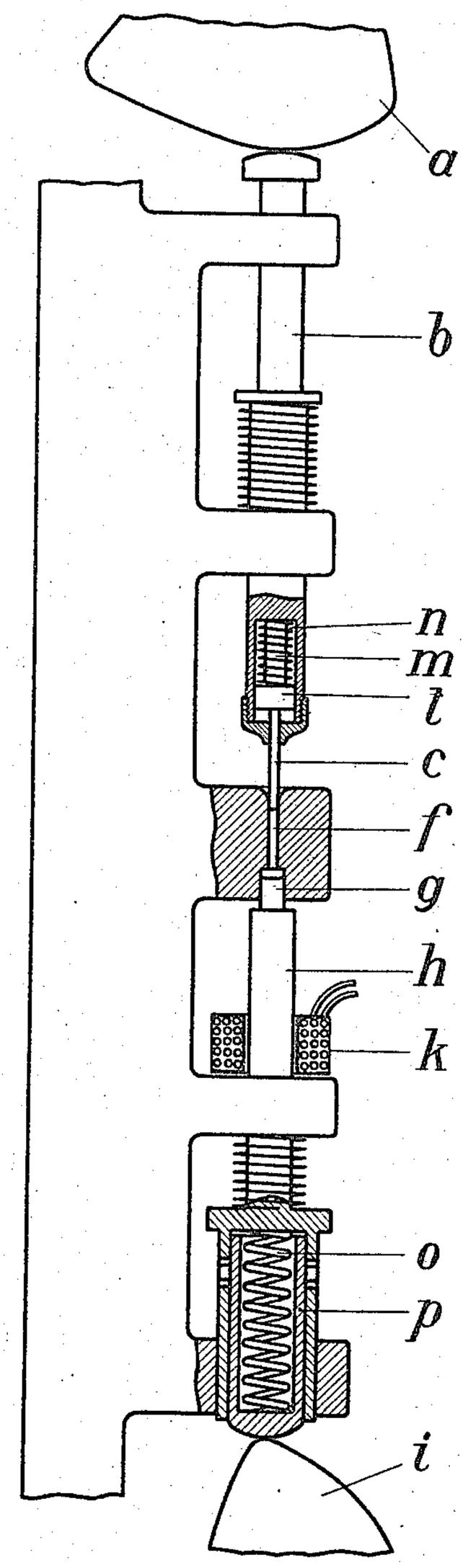
Fig. 5



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KARL FINCKH, OF BERLIN, AND PAUL ALMSTEDT, OF BERLIN-BAUMSCHULENWEG, GERMANY.

MECHANISM FOR UPSETTING HEADS ON FASTENING-PINS FOR ARTIFICIAL TEETH.

1,167,341. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed October 24, 1914. Serial No. 868,541.

To all whom it may concern:

Be it known that we, KARL FINCKH, a German citizen, residing at Berlin, Germany, and PAUL ALMSTEDT, a German citizen, residing at Berlin-Baumschulenweg, Germany, have invented a new and useful Mechanism for Upsetting Heads on Fastening-Pins for Artificial Teeth, of which the following is a specification.

Our invention relates to a press for forming heads on pins by upsetting, particularly on pins of small dimensions, as for instance, on pins for fastening artificial teeth to plates.

The new press is provided with a die for receiving and holding the pins during the pressing operation and with two independently driven punches or stamps, the one serving as the press proper and the other one serving as an abutment stamp. One feature of the invention is that the said two punches or stamps are so actuated that, during the progress of the operation of the press, they move at times separately and at times simultaneously, and then at times in the same and at times in opposite directions.

Another feature is the provision of a spring pressed member to allow for small differences in the lengths of the pins which would otherwise lead to damage of the actuating mechanism of the upsetting punch in the formation of the head.

Still another feature is the magnetization of one of the punches so that the pin will adhere thereto and may be removed with accuracy from the die after the pressing operation is completed.

Finally, another feature is the resilient arrangement of the punch which forms the abutment in the pressing operation so as to obtain a large ejection movement.

Other features or objects of the invention will appear from the following description of the press embodying the invention and of the operation thereof, and will be pointed out in the appended claims.

One embodiment of the invention is illustrated in the drawings, in which—

Figures 1 to 4 illustrate the separate operative positions of the two punches, and Fig. 5 illustrates the arrangement with resiliently arranged punches.

As shown, the cam *a* which rotates in the direction of the arrow in Fig. 1, moves the spring loaded rod *b* carrying the punch *c* which forms the abutment in the pressing operation. The pins *f* are inserted into the die *e* by hand or by means of a special feeding apparatus. The upsetting punch proper *g* is mounted on the rod *h* which is pressed by a spring against the rod actuating cam *i* which rotates in the direction of the arrow in Fig. 1. Around the rod *h* is arranged a solenoid *k* traversed by a continuous current.

The punch *c* which, as previously stated, serves as an abutment, is movable with respect to its support, the rod *b*, being guided within said rod by a cap, screwed on the rod, and by the piston *l* provided thereon. Above the piston *l*, on which the spring *n* rests, is arranged a shoulder *m* for limiting the upward movement of the punch *c* within its support. The rod *h* is provided with an orifice in which slides the spring controlled sleeve *p*.

The cams *a* and *i* are driven, by any suitable means, at the same angular velocity.

The operation of the press is as follows: The punch *c*, serving as the abutment, is raised into its uppermost position by the spring acting on the rod *b*. At the same time the die *e* is closed by the punch *g* (Fig. 1). While the punch *g* remains in this position, the punch *c* is moved by means of cam *a* into the position in which, in the subsequent pressing operation, it forms the abutment for the pin *f*, which in the meantime has been inserted into the die *e*. (Fig. 2). The punch *c* then remains stationary while the punch *g* is moved upward upsetting the head of the pin *f* (Fig. 3). Now both punches move in the same direction, downward, the punch *g* moving more quickly than the punch *c*, and the pin now formed with the head is thus removed from the die *e* (Fig. 4). The pin is finally removed from the punch *g* by hand or by means of any suitable known means and the punches are returned into original position. During the ejection stroke the pin adheres to the press punch, as the latter is magnetized by the solenoid *k*.

Instead of the one piece bored die for holding the pin during the upsetting operation, as shown in the drawings, I may employ any other known type of die whether of one piece or of several pieces.

If the pin *f* which is inserted into the die *e* is a little longer than the normal length of the pins, the spring *o*, which takes up the whole pressure, is compressed and the sleeve

p in the rod h is displaced a little, thus avoiding damage to the punch g.

At the beginning of the pressing operation the comparatively weak spring n is compressed until the projection m limits the backward movement of the punch c. The movable, resilient arrangement of the punch c results in an increase in the ejection movement without necessitating a lengthening of the punch c which might cause damage to the punch in the pressing operation.

We claim:

1. In combination, in head upsetting mechanism for pins, a die having a vertical pin holding bore, an upsetting stamp below and an abutment stamp above the die, and means for first moving the upsetting stamp upwardly so as to close the bore below, then moving the abutment stamp downwardly into the bore and in contact with the pin, then further moving the upsetting stamp upwardly so as to upset the lower end of the pin, and finally moving both stamps downwardly so as to push the headed pin from the die.

2. In combination, in head upsetting mechanism for pins, a die having a vertical pin holding bore, an upsetting stamp below and an abutment stamp above the die, a magnetizing solenoid mounted on said upsetting stamp, and means for first moving the upsetting stamp upwardly so as to close the bore below, then moving the abutment stamp downwardly into the bore and in contact with the pin, then further moving the upsetting stamp upwardly so as to upset the lower end of the pin, and finally moving both stamps downwardly so as to push the headed pin from the die.

3. In combination, in head upsetting mechanism for pins, a die having a vertical pin holding bore, an upsetting stamp below said die, an abutment stamp above said die, a support with which said abutment stamp is slidably engaged said support having a stop, a spring tending to hold stop and abutment stamp apart, and means for first moving the upsetting stamp upwardly while the abutment stamp is in contact both with the pin and the stop of the support so as to upset the lower end of the pin and then simultaneously moving the support and the upsetting stamp downwardly the stamp being moved through a greater distance than the support so as to push the headed pin from the die.

In witness whereof, we have hereunto set our hands.

KARL FINCKH,
PAUL ALMSTEDT.