

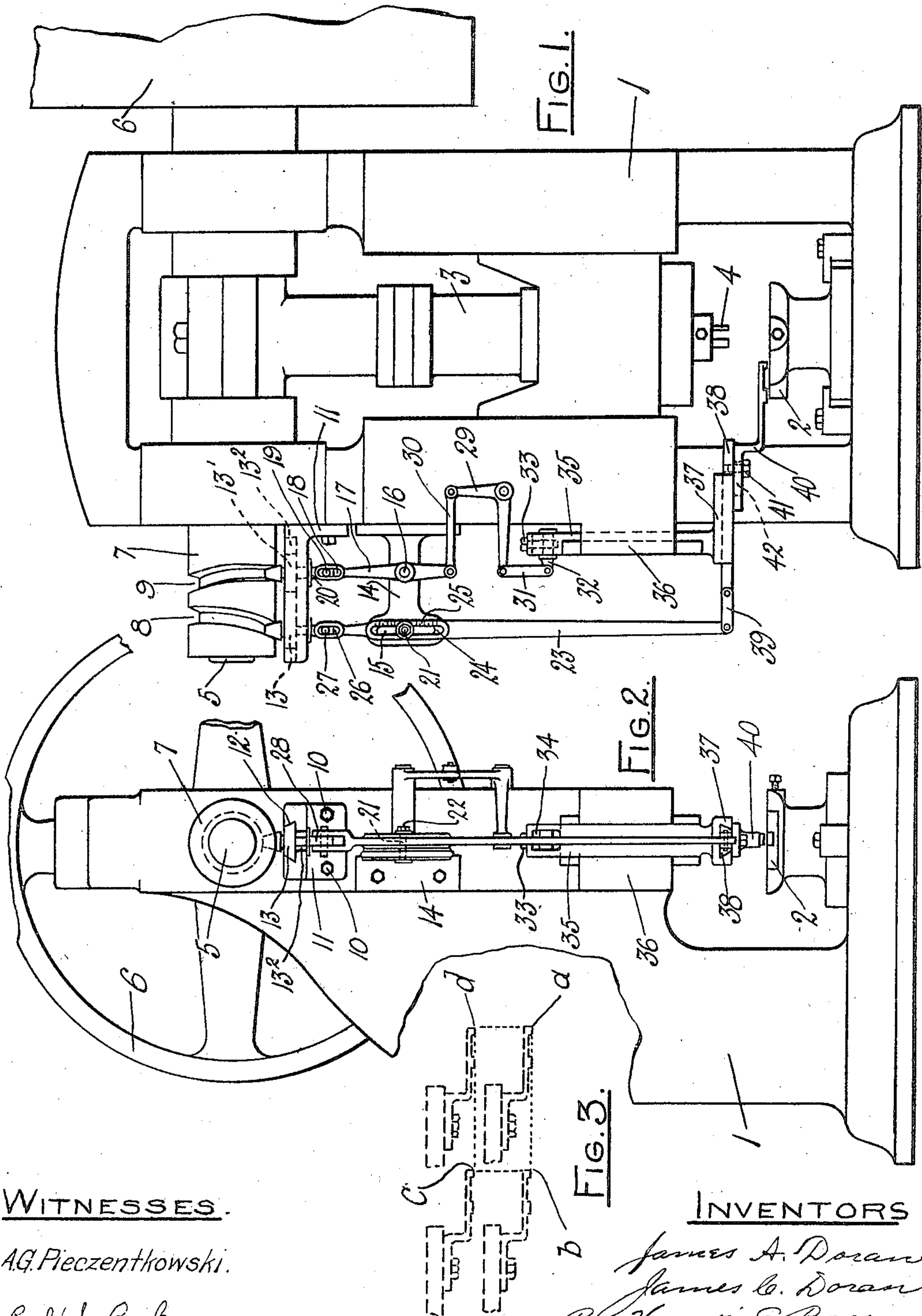
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J. A. & J. C. DORAN.

FEED ATTACHMENT.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JAMES A. DORAN and JAMES C. DORAN, citizens of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Feed Attachments, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to feeds for presses and other machines requiring a positive feed which shall operate upon various strips or plates.

The common feeding means are rolls. The liability of the rolls to slip and the inadaptability of such a feed to work which requires close or micrometric advances renders such a method inadequate.

It is our purpose to supply a feeding device which shall have positive action and advance the stock accurately and to fine measurements.

To the above ends primarily our invention consists in providing an engaging tool or finger whose lines of travel shall substantially resemble a parallelogram.

In detail our invention is hereinafter set forth in connection with the accompanying drawings, wherein—

Figure 1 is a front view of a press equipped with our novel mechanism; Fig. 2, a side elevation of the same; and Fig. 3 a diagrammatic view of the travel of the finger, showing in dotted lines its successive positions and in broken lines its course of travel.

Like reference characters indicate like parts throughout the views.

The invention is illustrated in this case with a press comprising the usual frame 1, die 2, plunger 3, punch 4, driving-shaft 5, and driving-wheel 6. Upon the end of shaft 5 is fixed a cam or hub 7, provided with two irregular peripheral channels 8 and 9. In axial alinement with the shaft and below the hub is fixed by bolts 10 a bracket 11, provided with a longitudinal channel 12, in which slide two blocks 13 13', and a longitudinal slot 13². Below the bracket 11 is an arm 14, bolted to the frame 1 and provided with a vertical slot 15. Pivoted upon a pin 16 to the arm 14 is a forked lever 17, provided with vertical slots 18, in which slide a pivot-pin 19 upon the lower extremity of a rod 20. This rod is fixed in the block 13', and its upper ex-

tr extremity registers in the channel 9 of cam 7, while its lower portion traverses the slot 13² in the bracket 11.

In the slot 15 of the bracket is a bolt 21 and its nut 22, which engages a lever 23 through a vertical slot 24 intermediate its length. Upon the lever 23 along the margin of slot 24 is a graduated scale 25 to direct the vertical adjustment of the fulcrum pin or bolt 21. The upper extremity of the lever 23 is forked and provided with vertical slots 26, in which work a pivot-pin 27 in the lower extremity of a rod 28, fixed in the sliding block 13, and whose upper extremity registers in the channel 8 of cam 7.

A bell-crank lever 29, pivoted to the frame 1, has one arm joined by a link 30 to the lower end of lever 17 and its other arm connected by a link 31 to a stud 32, vertically adjustable by a screw 33 in a slot 34 in the top of a slide-bar 35, mounted in an extension 36 of the machine-frame. The lower extremity of the slide carries a horizontal block 37, in which is dovetailed a slide 38, connected at its end by a link 39 with the lower end of lever 23. A feed-finger 40 is adjustably fixed by a screw 41 to the inner face of the slide 38 and is longitudinally adjustable thereon through the slot 42 in the finger.

The operation of our feed attachment is as follows: The rotation of the shaft 5, which reciprocates the plunger 3 and its punch 4, also rotates the cam 7, by which means the bars 20 and 28, guided by the sliding blocks 13 and 13', reciprocate in the bracket 11. The bar 28, through the lever 23 and link 39, horizontally reciprocates the slide 38 and its finger 40. The bar 20, through lever 17, link 30, bell-crank lever 29, link 31, and slide 35, raises and lowers the block 37 at the end of each horizontal reciprocation of the finger 40, by which means the latter describes a substantially rectangular path, as shown in Fig. 3, wherein *a* shows the finger in the position assumed at the instant of its engagement with a strip of stock; *b*, its position at the end of its advance; *c*, its position after being released from engagement with the stock-strip by the vertical action of the block 37; *d*, its position at the end of the return throw of the lever 23 immediately prior to the descent of the block 37 by the action of lever 17 and its connections. The extremity of the finger 40 is crooked to facilitate its en-

gagement with the openings or projections upon the feed-strip, as the case may be. The extent of horizontal travel of the finger may be accurately and minutely regulated 5 by the micrometric adjustment of the fulcrum-pin 21. The throw is further regulated by the adjusting-screw 41 upon the finger. The degree of elevation of the finger required by varied thicknesses of stock or the 10 elevation of the surface of the die is regulated by screw 32 in slide 35.

It will be observed that the use of the finger avoids the waste of stock involved by the use of feed-rolls.

15 Having described our invention, what we claim is—

1. In a device of the character described, the combination with a horizontally-movable slide, of a feed-finger fixed to the slide, a ver- 20 tically-reciprocating guide-block in which the slide is supported, means for reciprocating the slide, and means for actuating the guide-block.

2. In combination with the frame, die, and 25 driving-shaft of a press, of a cam upon the driving-shaft, two bars engaging the cam, a slide upon the frame, a block upon the slide, a slide in the block, a feed-finger on the second slide, pivotal connections between one cam- 30 bar, and the second slide, and pivotal con-

nections between the other cam-bar and the first slide.

3. In combination with the frame, die, and driving-shaft of a press, of a cam provided with two irregular channels mounted upon 35 the driving-shaft, a bracket upon the frame, two slidable blocks in the bracket, a bar in each slide registering in each cam-channel, an arm upon the frame provided with a slot, an adjustable fulcrum-pin in the slot, a lever 40 pivotally connected with one cam-bar and provided with a slot for receiving the fulcrum-pin, a link pivoted to the lever, a slide pivoted to the link, a feed-finger upon the 45 slide, a second lever pivoted to the arm and pivotally connected with the second cam-bar, a bell-crank lever, a link connecting the second lever with the bell-crank lever, a second 50 slide mounted in the frame, a link connecting the bell-crank lever with the second slide, and a block upon the second slide which supports the first slide.

In testimony whereof we have affixed our signatures in presence of two witnesses.

JAMES A. DORAN.
JAMES C. DORAN.

Witnesses:

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