2 Sheets--Sheet 1.

W. B. BEMENT.

Feeding Devices for Punching-Machines.

No. 137,407. Patented April 1, 1873.

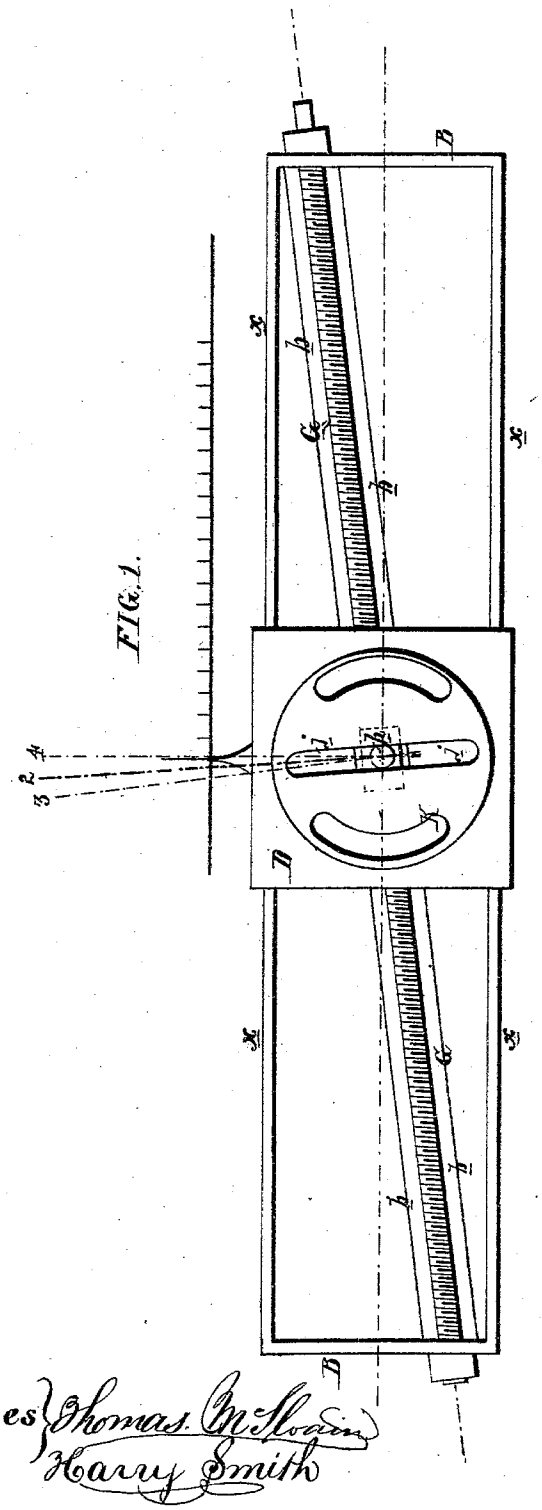

FIG. 1.

Witnesses
Thomas. McSloan
Harry Smith

Wm B. Bement
by his Attys.
Howson & Sons

2 Sheets--Sheet 2.

W. B. BEMENT.

Feeding Devices for Punching-Machines.

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FIG. 2.

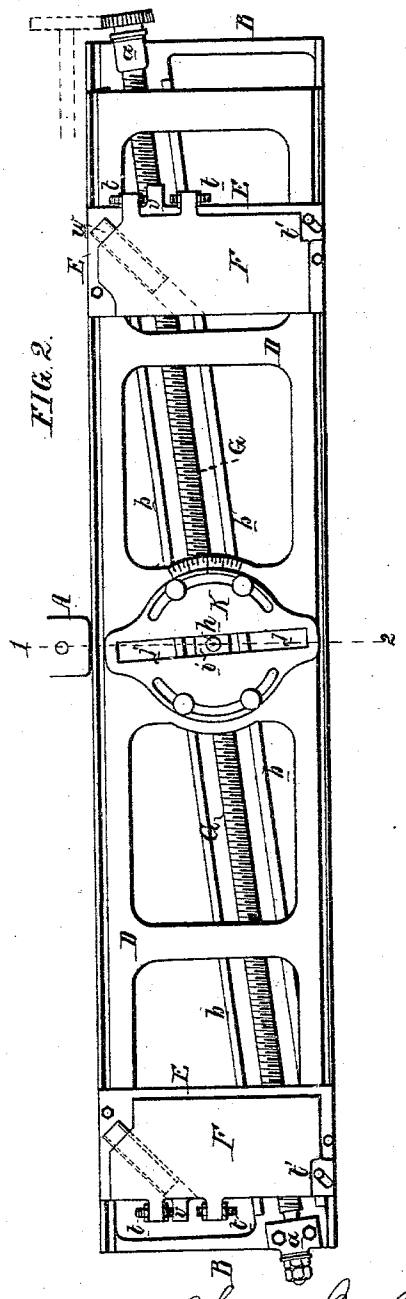


FIG. 4.

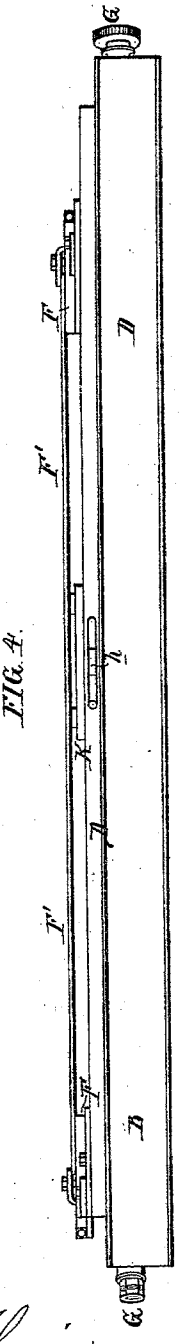


FIG. 5.

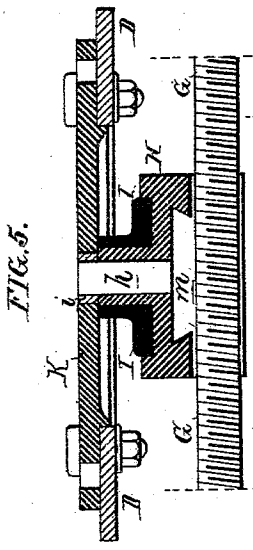
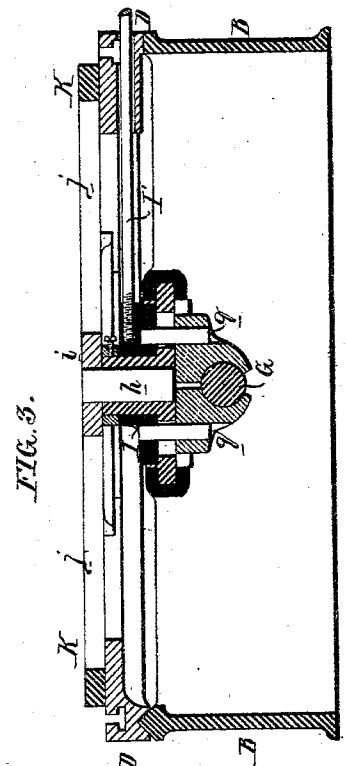


FIG. 6.

FIG. 3.



Witnesses
Thomas W. Clagett
Harry Smith

Wm B. Bement
by his attys.
Howson & Sons.

UNITED STATES PATENT OFFICE.

WILLIAM B. BEMENT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN FEEDING DEVICES FOR PUNCHING-MACHINES.

Specification forming part of Letters Patent No. **137,407**, dated April 1, 1873; application filed January 8, 1873.

To all whom it may concern:

Be it known that I, WILLIAM B. BEMENT, of Philadelphia, Pennsylvania, have invented a Feeding Device for Punching and other Machines, of which the following is a specification:

The object of my invention is to readily alter the feed of slides for punching and other machines, my invention being also applicable to the graduation of scales and to other purposes in which minute subdivisions have to be determined.

A preliminary understanding of my invention may be best imparted by an explanation of the diagram in Sheet 1 of the accompanying drawing, which illustrates the invention in a naked condition.

I will suppose a carriage, D, to be adapted to parallel guides *x x* on the fixed bed B, and that a diagonal screw, G, extends from end to end of this bed, and is arranged to turn in fixed bearings on the same; that the nut of this screw is arranged to slide in permanent guides *b b*, parallel to the said screw; that a pin, *h*, projecting from this nut passes through a slot, *j*, in a plate, K, which is adjustable on the carriage D in an annular direction only, and which can be secured after adjustment. When the plate K has been adjusted to the position shown in the diagram—that is, when the center of the slot *j* coincides with the dotted line 2, which is midway between the dotted line 3 drawn at right angles to the screw, and a dotted line, 4, drawn at right angles to the guides *x x*, the extent of the movement of the carriage D, caused by one complete turn of the screw, will be equal to the pitch of the screw; but the more the plate K is turned to the left of this zero-line 2 the greater will be the movement of the carriage in respect to the pitch of the screw, and the further to the right of the zero-line the plate is adjusted the less will be the movement of the carriage in respect to the pitch of the screw. In other words, presuming the screw to be rotating at a uniform speed, that of the carriage will depend upon the position of the slot *j* of the adjustable plate K in respect to the zero-line 2.

It will thus be seen that the device consists simply of a slide or carriage controlled by a diagonal screw through the intervention of a slotted plate annularly adjustable on the said slide.

The device can be applied to different machines; it may, for instance, be placed within the bed of a slide-lathe for traversing the slide-rest, the feed of which may, by the aid of the device, be varied with a minuteness and delicacy which cannot be accomplished by change-wheels. The device, however, is especially applicable to the feeding of boiler-plates to punching-machines; hence, for a more minute demonstration of my invention, I have illustrated it in this connection in Sheet 2 of the accompanying drawing, in which A represents part of a power-driven punching-machine; and B, a permanent bed in front of the same, a transverse section of this bed (on the line 1 2, Fig. 1) being shown on an enlarged scale in Fig. 3. To guides on the upper edge of this bed is adapted a long carriage, D, and on the latter are short slides E E, which may be adjusted to any desired point on the carriage and secured after adjustment. On each of the short slides is a saddle, F, to which special reference will be made hereafter, and to these saddles is clamped the boiler-plate F′, (see side view, Fig. 4,) through which, near its edge, have to be punched a series of holes by the machine A. A screw, G, extends in a diagonal direction, shown in the plan view, Fig. 1, from end to end of the permanent bed B, and is arranged to turn in suitable bearings *a a* on the same, the screw being automatically operated from the punching-machine by any suitable mechanism. In diagonal guides *b b* attached to or forming part of the bed B and parallel to the screw, slides a cross-head, H, to which is secured a central pin, *h*, the upper end of the latter fitting snugly in a sliding block, *i*, adapted to the slot *j* in a plate, K, which is so fitted to the carriage D that it admits of annular adjustment only thereon, the plate having segmental slots, through which and through the carriage pass bolts for securing the plate after adjustment. The cross-head H is controlled by the screw G, the nut of which is composed of two parts so fitted to a dovetailed recess, *m*, in the cross-head (see longitudinal section, Fig. 5) that they can be moved apart clear of the screw, or be made to embrace and gear into the same, each half of the nut having a

pin, *q*, passing freely through openings in the cross-head and into eccentric slots in the flange of a sleeve, I, which can be turned freely on the hub of the cross-head H by means of a lever, I′, on manipulating which the nut can be moved in or out of gear with the screw at pleasure.

The special applicability of my invention to the feeding of such boiler-plates as are required for a cylindrical boiler to a punching-machine will be understood when it is borne in mind that the holes in the overlapping plate must be slightly further apart from each other than in the plate overlapped, and yet at such a uniform distance apart throughout that the holes of the two plates, when the latter are bent to the desired cylindrical shape, must exactly coincide. A row of holes having been punched in one plate, it is removed from the saddles to make way for another plate, which has to be riveted to that first punched. Before the second plate is clamped to the saddles, however, the plate K must be annularly adjusted to an extent determined by graduations on the carriage D, so that the holes may be punched at the proper distance apart to coincide with the holes in the plate to which it has to be riveted when both plates are bent to the desired shape.

In many cases it is necessary to secure boiler-plates together by a double row of rivets, as shown in Fig. 6. In order that a second row of holes may be punched in the plate without removing it from the saddles, I make in the under side of each of the latter a dovetailed groove for the reception of an inclined dovetailed guiding-rib, *w*, on each of the short slides E, this rib being arranged in the present instance at an angle of forty-five degrees in respect to the guides for the slides. After the first row of holes has been punched the two saddles with the boiler-plate are moved forward in a diagonal direction determined by the guides *w w* to an extent determined by adjustable stops *t t*, which come in contact with projections *v* on the slides E when the boiler-plate has reached its proper position for having its second row of holes punched. Similar adjustable stops *t′ t′* determine the proper position of the saddles when a first row of holes has to be punched in another plate.

In some cases two rows of holes directly opposite to each other have to be punched in a plate near the edge of the same, in which case it will be necessary to arrange the guiding-ribs *w w* for the saddles at right angles to the guides on the bed B, the adjustable stops serving, as before, to determine the proper positions of the saddles and boiler-plate.

In some applications of my invention it may be desirable to obtain a differential feed, and this I accomplish by making the slot *j* on any curve which the desired differential movement may suggest.

I claim as my invention—

1. A feeding device, consisting of a slide controlled by a diagonal screw through the intervention of a slotted plate annularly adjustable on the said slide, all substantially as and for the purpose herein set forth.

2. The combination of the carriage D, controlled by the diagonal screw G through the intervention of the annularly-adjustable slotted plate K, with the short slides E E.

3. The combination of the said short slides E with their adjustable saddles.

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

WILLIAM B. BEMENT.

Witnesses:
E. W. BAILEY,
HARRY SMITH.