March 20, 1928. 1,663,330

F. S. BAKER ET AL

EMBOSSING MACHINE

Filed June 20, 1927

Fig.1.

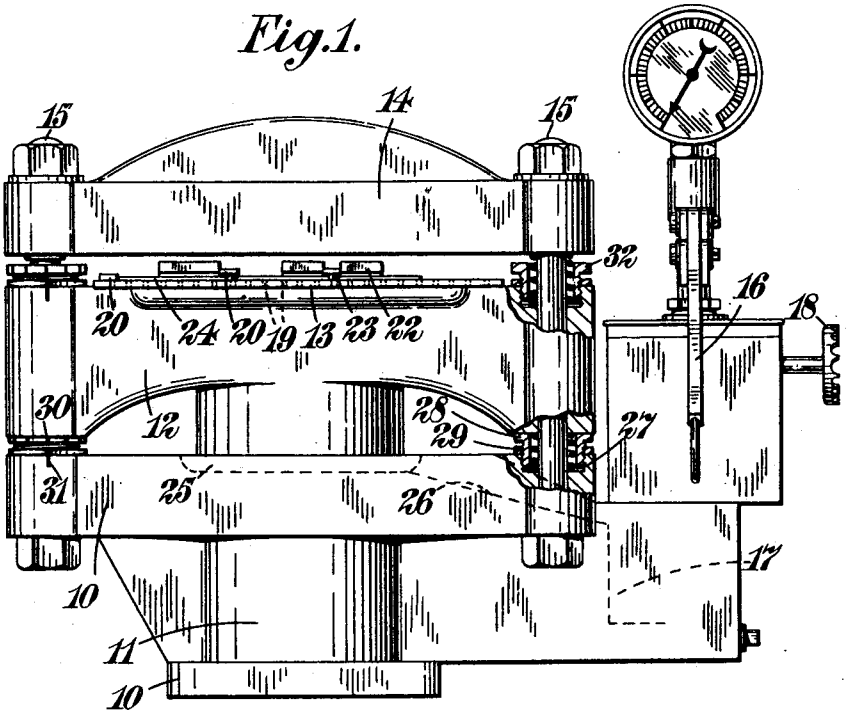


Fig.2.

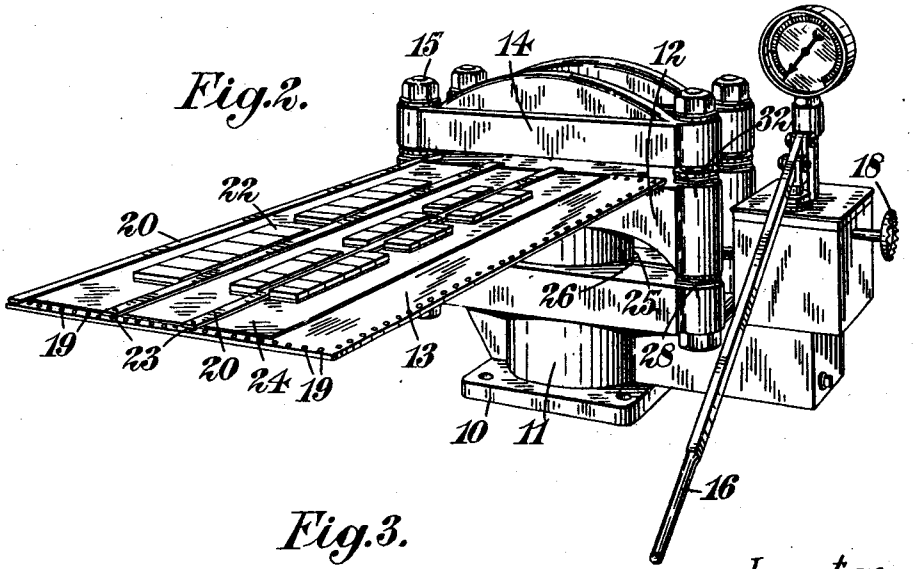
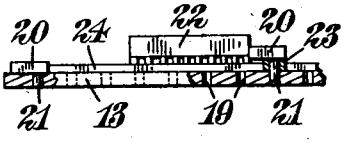


Fig.3.



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UNITED STATES PATENT OFFICE.

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EMBOSSING MACHINE.

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This invention is for improvements in or relating to embossing machines of the type which are used for the kind of embossing known as "cutter-crush". These machines comprise a base-plate fitted with a hydraulic cylinder whereof the ram carries a platen which is movable upwards towards a stout bridge-piece suitably supported from the base-plate by a number of bolts. An oil-pump is mounted on the base-plate and has direct communication with the hydraulic cylinder, a suitable hand-lever being provided for operating the pump.

In this form of embossing, the card or other material which is to be treated is laid on a platen, then the type or blocks are laid face-downwards upon it, and pressure is applied to them from above, and the object of the invention is to provide improved means whereby the blocks or types may be assembled in a simple and easy but accurate manner.

According to one feature of this invention there is provided in an embossing machine of the type described, the combination with the platen, of an alignment bar or bars which are adapted to interlock with the platen in any of a series of spaced positions. Usually the various positions will be parallel with or at right-angles to one another, but other arrangements may be used if so desired in any particular circumstances.

In a preferred construction according to this invention, the platen is provided along its opposite marginal edges with similar sets of spaced holes, and the alignment bar or bars are provided at each end with a projection to engage corresponding holes in the opposite margins of the platen and thereby locate the bar definitely with respect to the platen.

According to another feature of this invention the alignment bars, which are preferably of a simple rectangular section, have the projections on them displaced from the longitudinal centre-line of the bar, so that by reversing the bar, end-for-end, two different settings of the edge of the bar with respect to the holes which it engages are provided.

According to yet another feature of this invention, spacing-pieces are provided which are adapted to be inserted between the ends of an alignment bar and the platen whereon it rests, whereby the bar is raised above the platen by an amount sufficient to receive the card or the like which is being embossed, and to permit adjustment of the card relatively to the bar without displacing the bar from its desired setting. These spacing-pieces conveniently take the form of collars adapted to fit on the projections on the bar.

Other features of the invention relating to details of construction will be hereinafter described with reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the complete machine;

Figure 2 is a perspective view of the complete machine; and

Figure 3 is a partial view partly in section showing the construction of platen and spacing bars.

Like reference characters indicate like parts throughout the drawings.

Referring first to Figures 1 and 2, the machine comprises a base-plate or member 10 carrying a hydraulic cylinder 11 in which a ram is vertically movable. This ram carries a suitably stout frame 12 whereon is mounted a platen 13, and the movement of the ram carries the platen towards and away from a suitably stout bridge-piece 14 which is supported from the base-member and cylinder 11 by bolts 15. Conveniently, the frame 12 is arranged to be guided in its movement by these bolts 15. An oil pump, whereof the operating handle is indicated at 16, is mounted on the base-plate in a suitable reservoir 17, and supplies the oil under pressure to the cylinder 11; this oil pressure is released from the cylinder when it is desired to lower the platen by means of a manually-controlled valve 18.

In order to facilitate the alignment of the type or blocks on the platen 13, the platen is provided with a series of spaced holes 19 along its opposite edges. Preferably the holes are uniformly spaced, and those at opposite edges of the platen are so spaced as to define parallel lines in one direction and parallel lines at right-angles to the first set of lines in the other direction.

The alignment bars 20 are flat bars of rectangular section, of bright drawn steel or other suitable material, and each bar is provided on its under side with a projecting pin 21 near each end, in such a position that the two pins on a bar can be engaged with corresponding holes in the two sets of

holes at opposite sides of the platen. The similar spacing of the holes of the two sets ensures that the bar will always be parallel to its original position in whatever holes it is adjusted, or if a series of bars are used, that they are all parallel with one another. Preferably the bars are graduated on one or more edges in inches and fractions or other units, to facilitate the spacing and setting of the type, and for convenience it is preferable that the graduations should extend in opposite directions from a central zero.

As show most clearly in Figure 3, the pins 21 are preferably offset from the longitudinal centre line of the bar, so that the vertical edges of the bars are at different distances from the centre line of the pin. This construction provides the equivalent of a closer spacing of the holes 19, for if the bar be reversed end-for-end, the two edges occupy different positions. Thus, for example, in Figure 3, if the right-hand bar 20 against which a type-block 22 is aligned, be reversed, end-for-end, another location for the type pressed against the left-hand edge of the bar is defined, at a position intermediate between that which is shown in the drawing and that which would be obtained by moving the spacing-bar to the next hole 19 towards the right.

In order to facilitate the adjustment of the card or material on which the embossing is being effected, it is desirable to maintain some of the alignment bars spaced upwards away from the surface of the platen 13, and this may be effected by providing collars 23 adapted to slip on to the pins 21 as shown in Figure 3, and support the bar 20 away from the platen. The card, which is indicated at 24, is then freely movable underneath the right-hand bar 20.

In using the bars hereinbefore described, one of them may be laid directly on the platen as shown at the left-hand side of Figure 3 so as to be in contact therewith, and serve as a stop or registration device for the card 24. One or more other bars are mounted on the platen with the collars 23 according to the spacing which is required in the design, and these bars may be left in place whilst inserting the card 24, for it can slide freely under them. The type or blocks 22 are then aligned as desired against the bar or bars which overlie the card 24, and the embossing is effected in the usual manner. With this construction and arrangement of parts, the type and blocks are of simple rectangular formation and the cost and inconvenience of using type or blocks having "beards" or other special shaping are avoided.

It is preferable that the bars should be of less thickness than the type, in order that there should be no possibility during the embossing operation of the bars coming into contact with the bridge-piece and thereby being pressed into contact with the card.

The hydraulic cylinder is preferably operated by oil and there is a risk of leakage of the working fluid around the upper end of the cylinder. It is difficult entirely to prevent such leakage, and at the same time it is undesirable that the operator should be required to attend to it for the purpose of keeping the machine clean. These difficulties are obviated by providing a recess or groove 25 to receive such leakage, and a drain or gutter 26 which will convey the fluid back to the reservoir from which the pump is supplied. The general cleanliness of the machine is thereby ensured.

Machines of the type hereinbefore described are used for embossing cardboard or other material of different thicknesses, and the movement of the platen must be made sufficient to accommodate the greatest thickness which may be met in practice. When working with smaller thicknesses, however, a considerable proportion of the platen movement is not required, since it involves waste of time in the raising and lowering of the platen. This difficulty is overcome according to the present invention by providing an adjustable stop or stops interposed between the base-member 10 and the platen-carrying frame 12 in order to limit the downward movement of the platen.

A convenient construction of these stops is illustrated in Figure 1; a recess 27 is provided around the hole in the base-member 10 which receives the bolt 15, and this recess is internally-screw-threaded to receive a hollow nut-like member 28 screwed into it. A lock-nut 29 engaging the upper face of the base-member 10 serves to lock the part 28 in any position to which it is adjusted. The upper surface of the member 28 engages the lower surface of the frame 12 and limits its downward movement, that is to say, it limits the downward movement of the platen 13 away from the bridge-piece 14. Preferably one of these adjustable stops is provided on each of the bolts 15, and they are all adjusted in order to support the member 12 uniformly. These stops are not subjected to any great stresses, since they merely have to take the weight of the platen and they can therefore be made of comparatively light construction. The nut-like members 28 may be provided with graduations around their peripheries, as shown on the left-hand side of Figure 1, at 30, to co-operate with an index point 31 so that they can all readily be given the same setting.

Similar stops may be provided on the upper surface of the member 12 between it and the bridge-piece 14, the function of these latter stops, indicated generally by the reference 32, being to limit the approaching

movement of the platen towards the bridge-piece. These stops provide an effective means for protecting the type against undue pressure and damage which might result therefrom, a further advantage which results from the use of a plurality of them, situated one at each corner of the bridge-piece, is that any inequalities or irregularities in the movement of the platen which would result in its surface not being exactly parallel with that of the bridge-piece are removed. If the platen is not exactly parallel when it is forced upwards, one corner of it will engage one of the stops and be retained, and further movement of the platen will result in the other parts being moved up to their co-operating stops, so that at the end of the pressing operation the two surfaces are necessarily in exact parallelism, thus ensuring a more regular embossing operation. These stops also may be graduated to facilitate their adjustment.

It will be appreciated that the invention is not limited to the particular construction of stops described and illustrated, for various other adjustable devices, such for example as a wedge, may be used for the same purpose.

We claim:—

1. In an embossing machine of the kind described, a platen provided along its marginal edges with rows of spaced holes, and an alignment bar having two-projecting members, one at each end, directed transversely to the direction of length of the bar and adapted to enter corresponding holes in opposite margins of the platen, said projecting members being displaced laterally from the longitudinal center line of the bar toward the same side thereof.

2. In an embossing machine of the kind described, a platen having along its marginal edges similar sets of spaced holes, an alignment bar having two projecting pins, one at each end, directed transversely to the direction of length of the bar and adapted to enter corresponding holes in the opposite margins of the platen, and spacing means adapted to fit removably about the pins and a rest upon the platen for spacing the alignment bar above said platen.

In testimony whereof we have signed our names to this specification.

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