May 23, 1933. J. K. BROWNING 1,910,278

EMBOSSING DIE HOLDER

Filed Nov. 30, 1931

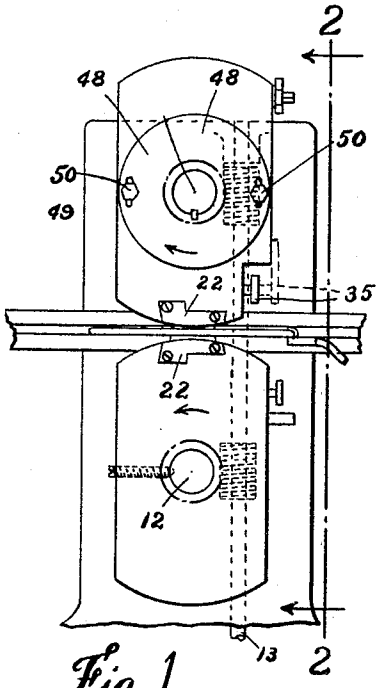


Fig. 1.

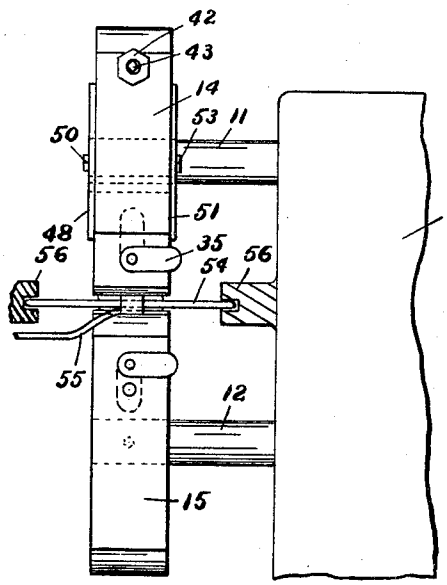


Fig. 2.

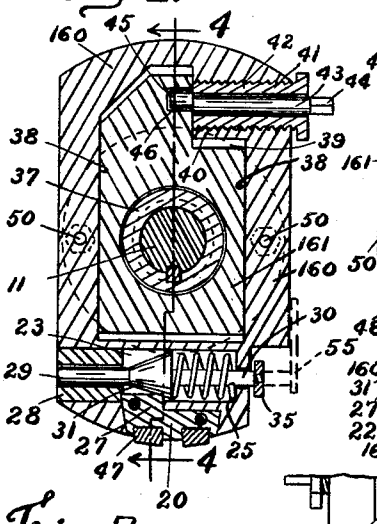


Fig. 3.

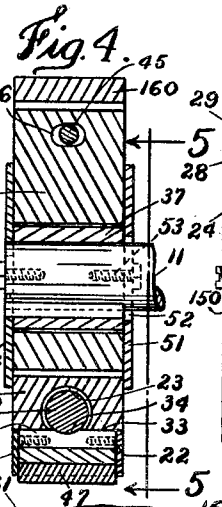


Fig. 4.

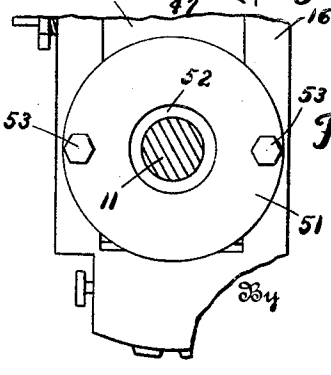


Fig. 5.

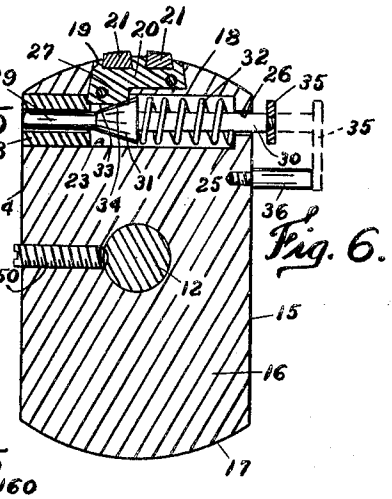


Fig. 6.

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UNITED STATES PATENT OFFICE

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EMBOSSING DIE HOLDER

Application filed November 30, 1931. Serial No. 577,964.

This invention relates to means for metal embossing and has for its object the provision of a simple mechanism including removable and interchangeable die holders and means whereby the cooperating dies are readily adjusted one to the other for proper cooperation on sheet metals of various thicknesses.

Another object is to provide an embossing mechanism such as may be included in can making machinery wherein the degree between the male and female dies is effected by a very simple mechanism without the removal of the die holder and without disturbing the relation of the driving shafts in a machine.

These and other objects are attained by the means described herein and disclosed in the accompanying drawing, in which:

Fig. 1 is a side elevational view showing a pair of cooperating die holders mounted on rotary carriers with a piece of work interposed.

Fig. 2 is a view taken on line 2—2 of Fig. 1.

Fig. 3 is a transverse section through the upper carrier of Figs. 1 and 2 and showing the simple mechanism for removably supporting the die holder and also for adjustment of the carrier relative to its shaft.

Fig. 4 is a view taken on line 4—4 of Fig. 3.

Fig. 5 is a view taken on line 5—5 of Fig. 4.

Fig. 6 is a transverse section of the lower carrier of Figs. 1 and 2.

The mechanism shown herein is particularly adapted to the embossing of marks and other indicia in sheet metal members entering into the make-up of metal cans, said marks and indicia being subject under such conditions to frequent changes according to work lots operated upon. It will be understood that the mechanism shown may not of necessity be coupled with can making machinery although it is especially well adapted to such machines.

Extending from a suitable portion of a can forming machine 10 are a pair of parallel shafts 11 and 12 synchronously driven in any suitable manner as by worm shaft 13. Shaft 11 may be provided with an adjustable die carrier 14 and shaft 12 may support the cooperating non-adjustable die carrier 15. A set screw 150 may fix this member to shaft 12. It is to be understood that the carriers may be reversed with relation to the shafts with equal efficiency. A non-adjustable carrier 15 comprises a suitable metal body 16 with arcuate ends 17 and 18. At the end 18 there is provided a dove-tailed transverse way 19 in which the removable die holder 20 having a complementary dove-tailed taper may be seated. The holder 20 may carry the female dies 21. These dies are in turn removably and interchangeably mounted through the agency of plates 22. A bore 23 extends from the side 24 of carrier body 16 to provide a shoulder 25. A smaller counter-bore 26 extends through the remaining distance of the body 16. It should be noted that the dove-tailed way 19 is deeper at one end and this deeper portion intersects the bore 23 and that the holder 20 has a lug 27 which moves into the bore 23 when the holder is in operative position. A bearing sleeve 28 is mounted in the end of bore 23 and provides a reciprocating bearing for the end 29 of a stem which extends outwardly and has its opposite end 30 similarly mounted in the counter-bore 26. An integral tapered cone 31 adjacent the end 29 of the stem has its smaller end adjacent the sleeve 28 and its larger end which is of substantially the same diameter as the sleeve serving as an abutment for spring 32. The spring 32 abuts shoulder 25 at the end of the bore 23. The bottom face 33 of the extension or lug 27 on die holder 20 has an inclined groove 34 complementary to the taper on the cone 31 so that by withdrawing the stem 30 against the resistance of the spring 32 the cone 31 is displaced longitudinally in its bore and the carrier 20 may be freely moved into or out of its dove-tailed seat 19. When the stem 30 is released the spring 32 urges the cone 31 into groove 34 in lug 27 and thus fixes the carrier 20 against reciprocation and thus very definitely positions it in its dove-tailed groove. An arm 35 on the end of stem 20 serves as a convenient means to withdraw the cone from its latching position and may be rotated through 90 degrees as shown in dotted lines in Fig. 6 to rest against a pin 36 for conveniently holding the cone out of opera-

tive position when removing and inserting the die holder.

It will be noted that a practically identical mounting for the die holder is mounted in the upper carrier, the upper or adjustable carrier being provided with a two-part body, the outer part 160 having the bore 23 therein which carries the die holder retaining mechanism. The inner body member 161 is mounted on a suitable sleeve 37 which is keyed to shaft 11. The complementary body members 16 and 161 have snug sliding bearings one on the other at the sides 38. Member 161 is notched out at 39 while the member 160 carries a complementary projection 40 so that the abutting faces of these may slide one upon another. The projection 40 has a threaded bore 41 to receive the threaded sleeve 42 in which a crank pin 43 is journalled. This has an angular tip 44 for receiving a wrench or the like for rotating the crank pin. An offset cylindrical lug 45 on the end of the crank pin seats in a bore 46 in the member 161 and the end of the sleeve 42 when screwed tightly into the threaded bore 41 binds this cylindrical lug to the member 161 and precludes rotation thereof. In Fig. 4 it will be noted that the bore 46 is elongated horizontally so that upon loosening of sleeve 42 the lug 46 may exert a lowering and lifting of member 161 relative to member 160, this action being used for the purpose of adjusting the male die 47 in the holder 20 relative to shaft 11 and likewise relative to the female die 21. A disc 48 has vertical elongated slots 49 through which tightening screws 50 pass and engage in the opposite sides of member 160 for holding the members 160 and 161 against relative movement after adjustment has been made. At the opposite face of these members a second disc 51 with an enlarged clearance space 52 surrounds shaft 11 and is secured to the member 160 by screws 53. In this way it is unnecessary to remove or loosen screws 53 and, in order to make adjustments of the carrier it is necessary merely to loosen bolts 50 and sleeve 42 and to then rotate crank pin 43 by a wrench or key to produce upward or downward shifting of the member 160 for obtaining the proper meshing of the complementary dies, whereupon this particular seating is fixed by again tightening sleeve 42 and screws 50.

In practice a plurality of the die holders 20, which may be identical if desired, are fitted up in sets or pairs, one having the male dies 47 and the other having the female dies 21, these dies being insertable after removing one of the plates 22 on the die holder. When one set of dies is to be used, the operator pulls out stem 30 of one of the receivers and retains it in the withdrawn condition by turning the arm 35 so that it rests against the pin 36 as shown in Fig. 6 or against the body of the receiver as shown in Fig. 3. The operator may then slide the die holder 20, into the dove-tailed groove. The groove and the corresponding part on the die holder being irregular, it is impossible for the operator to improperly insert the holder in the receiver. When the holder is inserted the operator merely turns the arm 35 to allow the spring 32 to push the cone 31 into place whereupon cone and notch 34 will automatically adjust themselves to a proper centering of the die relative to the receiver. This same operation is repeated with the remaining die holder or the remaining receiver, whereupon the operator is ready to regulate the imprint made by the dies on the particular sheet material at hand. If the trial impression proves too shallow or too faint, screws 50 and sleeve 42 would be loosened and crank pin 43 rotated within the sleeve to push the member 160 downwardly or radially outwardly. When the proper setting is attained, sleeve 43 is tightened, screws 50 drawn up snugly, whereupon the machine is ready for operation.

The work 54 is fed by means of a suitable pusher 55 along guides 56 and the carriers 14 and 15 rotating in the direction of the arrows in Fig. 1 bringing the complementary dies into operation on opposite sides of said work.

As has been previously mentioned either or both of the carriers may be made adjustable.

What is claimed is:

1. In combination a die carrier having a bore therein and a transverse dove-tailed slot communicating in part with said bore of a spring urged conical member reciprocable in said bore and normally urged to seat over the communicating portion of the groove and bore, a dovetailed die holder seating in the slot, and an offset portion on said holder having a tapered notch for seating said conical member.

2. In combination a die carrier having a bore therein and a transverse dove-tailed slot communicating in part with said bore of a spring urged conical member reciprocable in said bore and normally urged to seat over the communicating portion of the groove and bore, means comprising an arm for holding the conical member away from said communicating portion against the resistance of the spring, and a holder adapted for interchangeably receiving dies, said holder being removably mounted in the transverse dovetailed slot, and an offset portion in said holder having a tapered notch therein for seating the spring-urged conical member.

3. In combination a receiver member having a bore therein and a dove-tailed groove extending transversely thereof and having communication at its one side with the bore,

a dove-tailed die holder reciprocable in the dove-tailed groove, a lug on the die holder projecting into said communicating space in the bore and having a tapered notch therein and a spring urged conical member in the bore for seating in the notch in the die holder.

4. In an embossing mechanism the combination of a receiver comprising a centrally apertured outer member and an inner member longitudinally reciprocable therein, the inner member being cut away at one side and end, the outer member having a projection entering in said notch, said outer member having a threaded bore extending from the exterior thereof and entirely through said notch, a threaded tubular sleeve in said threaded bore, the inner member having a laterally elongated seat opposite the bore in the sleeve with a crank pin comprising a portion rotatably mounted in the sleeve and an offset lug seating in the elongated slot and adapted, upon rotation of the crank pin to shift the outer member relative to the inner member and means for clamping said outer and inner members against relative movement.

5. In an adjustable die receiver the combination with an outer receiver member, an inner receiver member, means whereby said inner receiver member may be mounted upon a shaft for rotation therewith, the inner member and outer member being adapted for relative longitudinal adjustment, the inner member having a horizontally elongated slot in one face, and means comprising a tubular externally threaded sleeve threadedly mounted in the outer member and having the end thereof movable toward and away from the inner member and a crank pin comprising a portion journalled in the sleeve and having an offset portion seated in said elongated notch and adapted to be bound therein by the end of the sleeve, and means comprising a pair of discs for clamping said outer and inner members in their adjusted positions.

6. In combination a die carrier having a bore therein and a transverse dove-tailed slot communicating with said bore, a die holder slidable in the dove-tailed slot and having a tapered notch and a tapered member movable in the bore and adapted to seat in the notch in the die holder.

In testimony whereof, I have hereunto subscribed my name this 23 day of Nov., 1931.

JOHN K. BROWNING.