C. A. COMP.

EMBOSSING MACHINE.

APPLICATION FILED JUNE 27, 1919.

1,360,723.

Patented Nov. 30, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

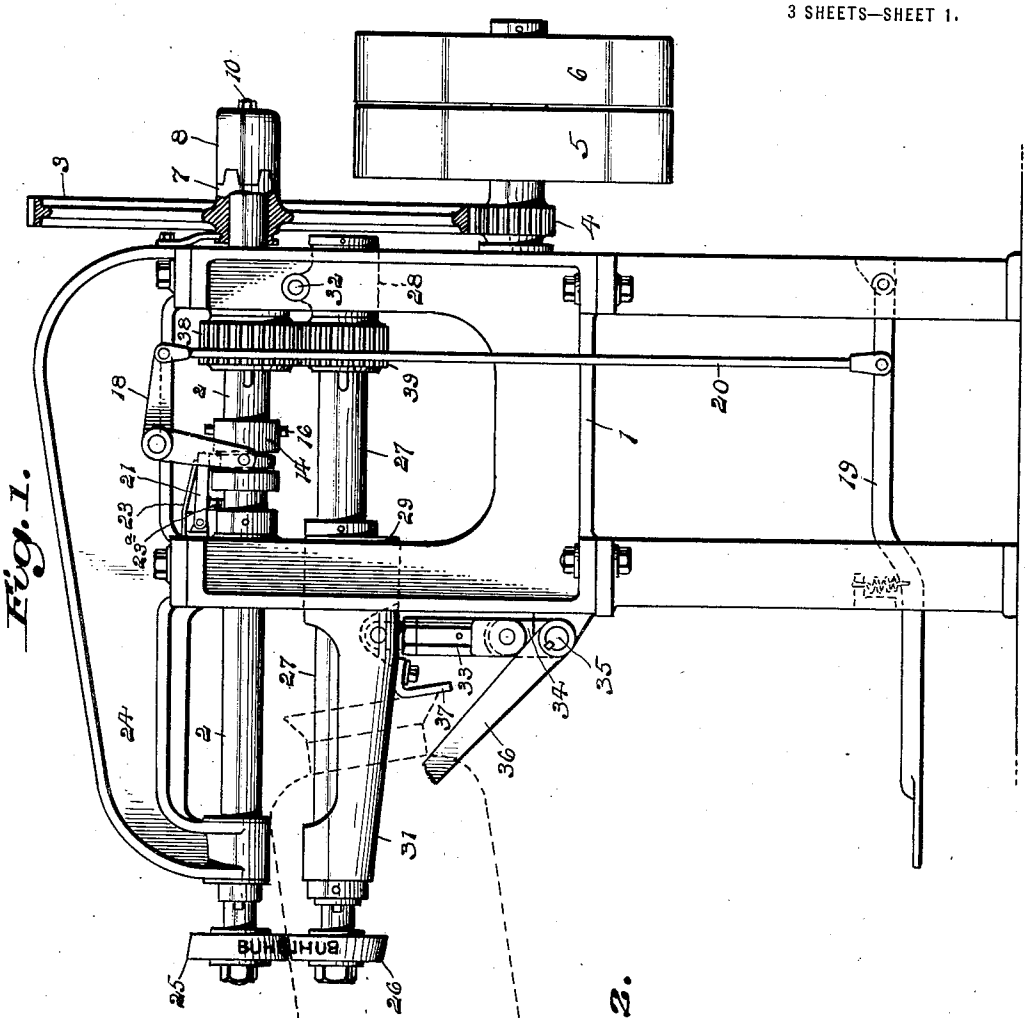
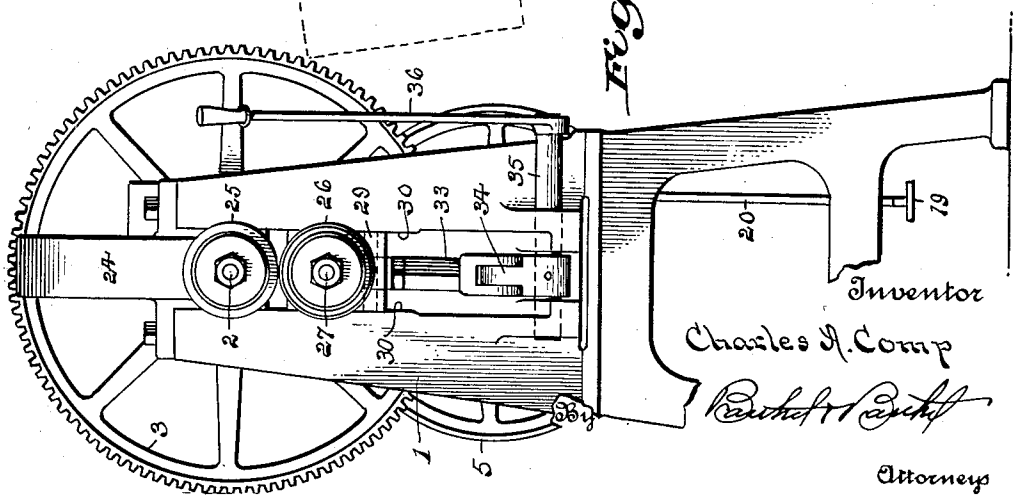


Fig. 2.



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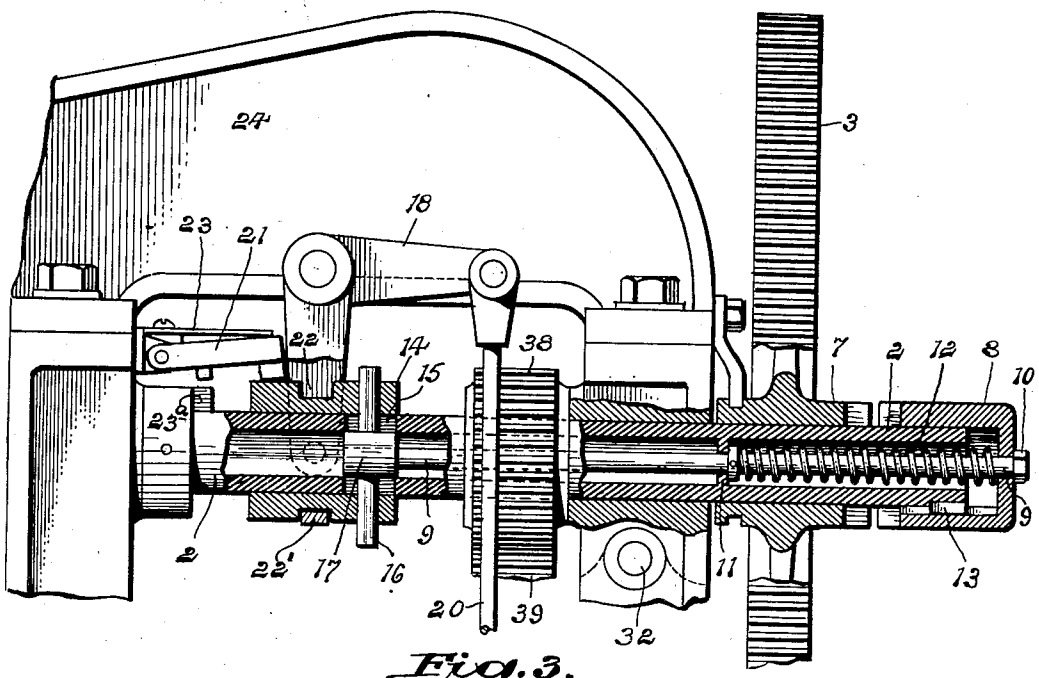


Fig. 3.

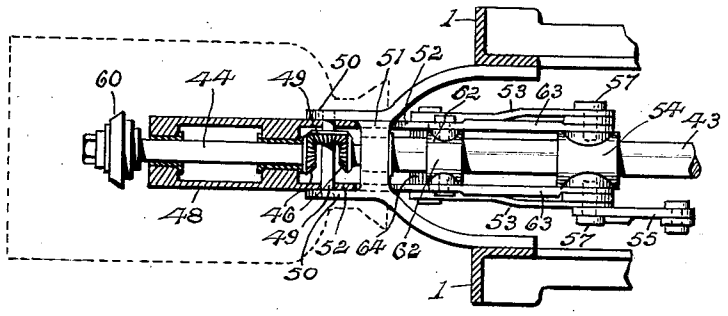


Fig. 5.

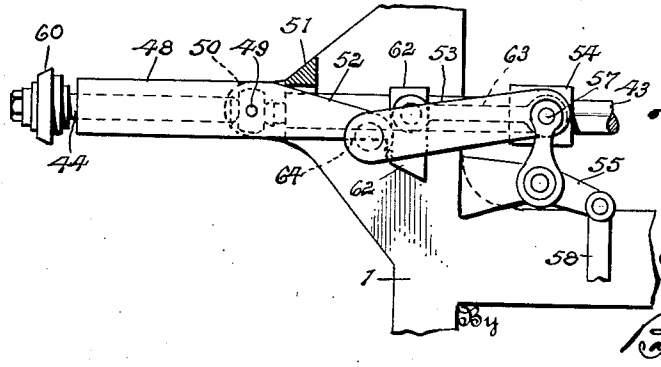


Fig. 6.

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3 SHEETS—SHEET 3.

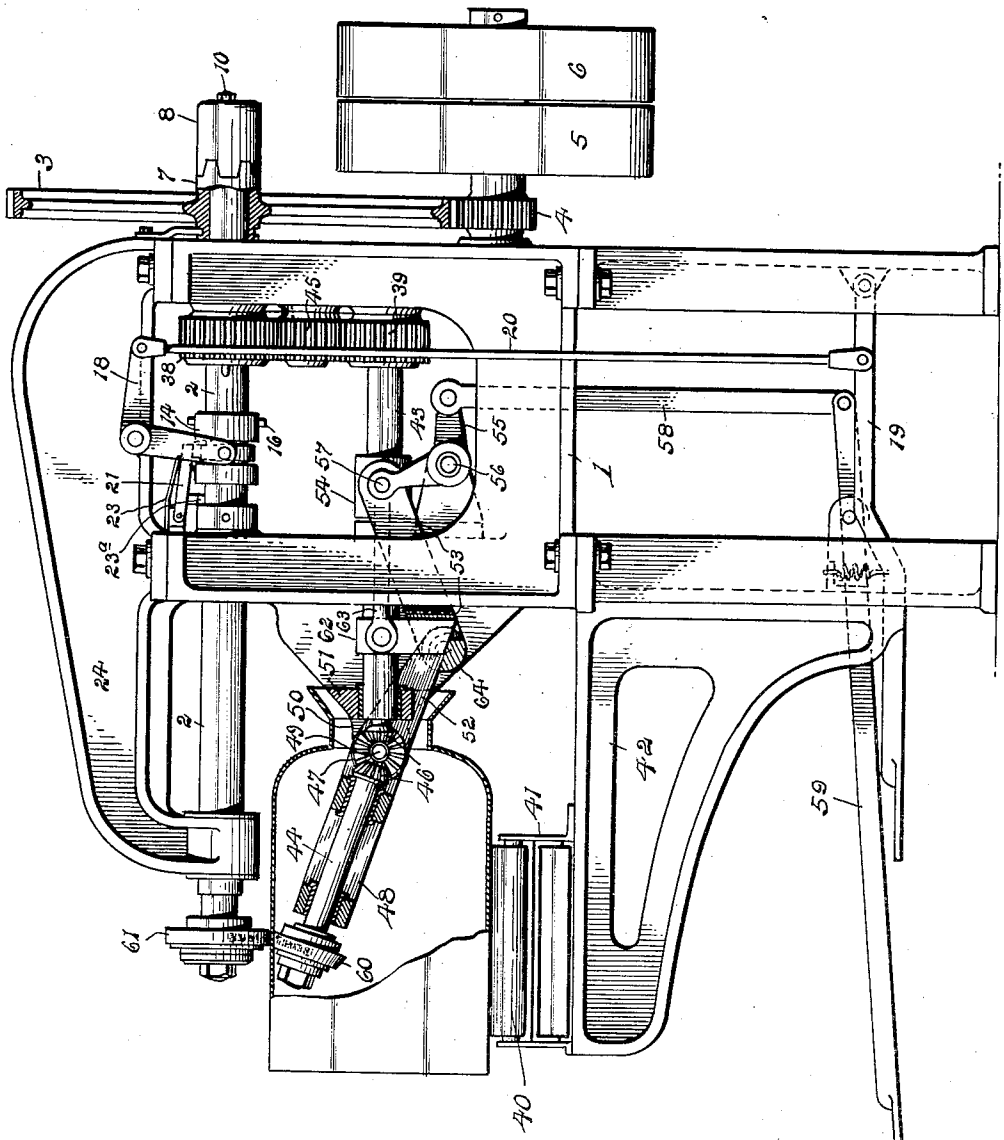


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES A. COMP, OF DETROIT, MICHIGAN, ASSIGNOR TO BUHL STAMPING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

EMBOSSING-MACHINE.

1,360,723. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed June 27, 1919. Serial No. 307,155.

To all whom it may concern:

Be it known that I, CHARLES A. COMP, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Embossing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

It is desirable and in some instances made compulsory, that containers, such as milk cans, be given permanent identifying marks, and it has been the common practice to emboss such marks upon the containers so that these marks can not be removed, disfigured or accidentally detached and lost. In order to do such embossing, particularly upon milk cans or other containers having a narrow mouth, it has been necessary to do this work prior to the making up of the container and while the metal for the cylinder is in the flat. This is disadvantageous to the manufacturer in that the containers can not be made up and kept in stock but must be made to order.

The object of this invention is to provide simple and convenient means whereby embossing may be done upon milk cans and other containers having an opening of restricted area as compared with the cross-sectional area of the container, after such containers are made up and ready for use, thus enabling the manufacturer to make up a stock during the slack season, and when an order is received, he may fill the same from stock on hand by simply embossing the required markings upon the desired number. It is also an object of the invention to so construct such an embossing device that a straight line of embossing will be impressed upon the side of the receptacle when said receptacle is so positioned that the plane of said side is in angular relation to the plane of the axis of rotation of the embossing member which engages the inner surface of said side, and further, to provide a simple and efficient machine having certain other new and useful features, the invention consisting in the matters hereinafter more fully set forth and particularly pointed out in the appended claims, reference being had to the accompanying drawings in which,

Figure 1 is a side elevation of a machine illustrative of the invention;

Fig. 2 is a front end elevation of the same;

Fig. 3 is an enlarged sectional detail of the driving and automatic throw-out mechanism;

Fig. 4 is a side elevation with parts in section, of a machine showing a modified construction;

Fig. 5 is a sectional detail of the inner die supporting and driving mechanism shown in Fig. 4 with said die in operative position; and

Fig. 6 is a detail of the parts shown in Fig. 5, the same being shown in elevation with the die in inoperative position.

As shown in Figs. 1 to 3, inclusive, the machine comprises a suitable frame provided with suitable bearings near its upper end for a horizontally disposed shaft 2 which is driven by means of a large gear wheel 3 loosely mounted thereon and engaged by a pinion 4 which is driven in any suitable manner, as by a tight pulley 5 with a loose pulley 6 adjacent thereto so that a driving belt may be conveniently shifted from one to the other, for connecting the machine with or disconnecting it from its source of power. The hub of said gear 3 is provided with a clutch member 7 adapted to be engaged by a mating member 8 which is sleeved upon the end of the shaft 2, said shaft being hollow to provide for the inclosing therein of a rod 9 extending longitudinally thereof with its outer end made fast to the end wall of the clutch sleeve 8 by means of a nut 10 on the outer end of the rod. Within the hollow shaft 2 is an abutment 11 and sleeved upon the rod between this abutment and the clutch member 8 is a coiled spring 12 which is under compression so that it tends to normally hold said clutch member out of engagement with its mating member 7. A key or spline 13 connects the clutch member 8 with the shaft 2 to turn therewith and permits of longitudinal movement of the clutch member therein. A shifting sleeve 14 on the shaft 2 rotates with the shaft and is free to slide longitudinally thereon, said shaft being formed with longitudinal slots 15 for a pin 16 passing therethrough and through openings in the sleeve. This pin also passes through a head 17 on the rod 9, and thus when the shifting sleeve is moved longitudinally upon the shaft by means of a bell crank 18 pivoted upon the frame and turned by a foot pedal 19 connected thereto by a rod 20, the rod 9 will be moved longi-

tudinally in the hollow shaft against the action of the spring 12 and bring the clutch member 8 into interlocked engagement with the member 7 on the gear 3, so that motion will be imparted to the shaft from said gear. Studs on the bell crank 18 support a yoke 22′ (Fig. 3) in the groove 22 to shift the sleeve 14. To hold the shifting sleeve in the position to which it is moved in shifting the clutch member, a dog 21 is pivoted to the frame adjacent the sleeve in such a position that its hooked end will drop into a circumferential groove 22 in the sleeve, said dog being urged toward the sleeve by a suitable spring 23 so that it will ride upon the sleeve adjacent the slot when the sleeve is in one position and will immediately drop into the groove when the sleeve is moved to the position to hold the clutch members engaged. To automatically throw out this dog and thus release the sleeve so that the clutch members will be disengaged to stop the rotation of the shaft when said shaft has rotated the desired distance, a cam or projection 23^a is provided on the shaft to engage a similar projection on the dog, and lift said dog against the action of its spring out of engagement with the groove 22.

A forwardly projecting arm 24 on the frame provides a bearing for the projecting end of the shaft 2, to which end is detachably secured in any suitable maner, a rotatable die 25 having suitable raised or depressed characters thereon to mate with like raised or depressed characters on a like rotatable die member 26, so that when a can body, as indicated in dotted lines, is placed between the dies or embossing members and the dies rotated, the desired identifying characters will be embossed thereon.

As usually constructed, a milk can has a cylindrical body formed with a contracted neck portion at one end, said neck providing the entrance opening into the receptacle, being of considerably less diameter than the body and difficulty has therefore been encountered in arranging dies so that the inner die may be inserted in the receptacle and then brought into proper relation with the outer die to clamp the body of the receptacle between them and in then rotating the dies to effectively emboss the desired markings upon the body; and this has been found to be particularly difficult when it is desired to emboss a line of lettering, such as a customer's name, due to the fact that in order to insert the inner die into the receptacle and then bring the dies toward each other into contact with the wall of the can body, it is necessary to bring the plane of the axis of rotation of the inner die and the plane of the can body into relatively angular relation, because of the necessarily limited size of the inner die so that it will pass readily through the opening in the receptacle and the distance at which the opening is located from the longitudinal plane of the body wall upon which the embossing is to be done.

When the can body is placed in an angular position relative to the inner die axis as shown in Fig. 1, the working faces of the dies 25 and 26 are formed at an angle to their axes of rotation, corresponding to the angular position of the can body, in other words, these dies are of truncated conical form and arranged in reversed relation, the large end of one being opposite the small end of the other, so that the planes of the working faces will be parallel when the dies are in contact with the wall of the body and will evenly grip said wall between them and will describe a straight line or path of travel around the cylindrical body as the body is rotated about its longitudinal axis by the engagement therewith of the rotating dies.

The lower or inner die 26 is mounted upon the forward projecting end of a shaft 27 which is mounted at its rear end in a bearing box 28 and at its forward end in a movable bearing 29 adapted to slide vertically between guides 30 on the frame and has a forward extension 31 providing a bearing for the forward end of the shaft. The bearing box 28 is pivotally supported at 32 between parallel members of the frame so that said shaft may be swung toward and from the shaft 2 at its forward end to bring the dies into operative relation and to permit of their separation so that a milk can may be slipped over the projecting end of the shaft 27 as shown in dotted lines in Fig. 1. This swinging movement of the shaft is effected by means of a toggle comprising a link 33 pivotally attached to the lower side of the bearing 29 at one end and at its opposite end to an arm 34 rigidly secured to a shaft 35 mounted in suitable bearings on the frame 1 and provided with an operating hand lever 36. The link 33 is preferably made adjustable in length so that the throw of the toggle may be varied to vary the distance between the dies when the shaft is in raised or operative position. A suitable stop member 37 is provided on the extension 31 to engage the end of the can when it is slipped into place thereon and position the can relative to the dies so that the line of embossing will be made at the desired distance from the bottom of the can. The shaft 27 is rotated at the same speed as and in an opposite direction to the shaft 2 by means of like spur gears 38 and 39 on said shafts, said gear 39 being located adjacent the bearing 28 so that the separation of the shafts will not throw said gear out of mesh with the gear 38.

In the modified construction shown in Figs. 4, 5 and 6, the driving shafts for the dies are located farther apart than in the

construction shown in Figs. 1 to 3 so that the receptacle may be sleeved over the inner die shaft in a horizontal position and the dies then brought into contact with the inner and outer faces of the side wall of said receptacle which is supported in such position upon a suitable support such as rollers 40 mounted in a frame 41 upon a supporting bracket 42 secured to the forward side of the machine frame 1 so that the receptacle will roll freely upon its support while being embossed by the dies. The driving shaft for the inner die is made in two parts 43 and 44, the part 43 being driven by means of the gears 38 and 39 and an intermediate gear 45 so that it turns in the same direction as shaft 2, and the shaft part 44 is connected to the outer end of shaft 43 to be driven thereby in a reverse direction, through the medium of bevel pinions 46 on the opposed ends of said shaft parts which pinions are in mesh with an intermediate bevel pinion 47. The shaft 43 is mounted in rigid or fixed bearings on the frame 1 and the shaft 44 is carried by a frame 48 which is supported by a pivot shaft 49 having bearings in parallel ears 50 projecting forwardly from a bearing bracket 51 on the frame. Parallel side arms 52 integral with the frame 48 project rearwardly of the pivoted support 49 and to the rear ends of said arms are pivotally attached links 53 which in turn are pivotally attached at their rear ends to the sides of a sleeve 54 slidable upon the shaft 43. A bell crank lever 55 is pivotally attached at 56 to a bracket on the frame and one arm of the bell crank is connected to the pivot 57 which connects the links 53 to the sleeve 54, and to the free end of the other arm of the bell crank is pivotally attached a rod 58 connecting said arm with a suitable foot lever 59.

By operating the foot lever 59 the sleeve 54 is slid forwardly upon the shaft 43 forming a support and guide therefor, and this movement of the sleeve turns the frame 48 upon its pivot to an angular position relative to the shaft 43, bringing the inner die 60 into contact with the inner surface of the can body and firmly clamping said body between it and the outer die 61. The bevel pinion driving connection between the shafts 43 and 44 permits of such angular swinging movement as the axis of the pinion 47 is coincident with the pivotal axis of the frame 48.

When the dies are brought into operative position by the turning of the frame 48 as described, said frame is locked with the wall of the can body firmly clamped between the dies, by providing a wedge or locking member 62 which is slidable longitudinally upon the forward end of the shaft 43 between the links 53 and arms 52, which arms are connected at their rear ends by a cross member 64 into engagement and over which the member 62 is moved by links 63 which are connected at their forward ends to said member and at their rear ends to the sleeve 54. The lower end of said locking member is beveled so that as the pivotal connection of the links 53 to the arms 52 of the frame 48 breaks downward, lowering the bridge or connection 64 between said arms, the locking member will be moved forward, bringing its lower beveled end into contact with the upper side of said bridge with a wedging action and firmly locking the frame 48 against turning. As soon as the embossing operation is completed and the machine is automatically stopped by the throwing out of the dog 21 as previously described, then by operating the foot pedal, the sleeve 54 may be moved rearwardly which movement will at once and automatically unlock the frame 48 by withdrawing the member 62 from engagement with bridge 64, the inclined or beveled shape of the lower end of said locking member giving a quick release. In this construction, the surface of the cam body is parallel with the axis of rotation of the outer die, but the axis of rotation of the inner die extends at an angle to said surface and therefore the working surface of the outer die is made parallel to its axis of rotation and the working surface of the inner die extends in a plane at an angle to its axis of rotation, the outer die having a cylindrical form and the inner die being of truncated conical form.

In either of the described constructions, it is necessary that the axis of rotation of the inner die and the plane of the side of the can body extend in relatively angular relation in order that the inner die after insertion through the can mouth may be brought into contact with the wall of the body thereof, and as the axis of rotation of said die extends at an angle to the plane of said body, said die must be of conical form so that its contact surface will engage the wall of the body evenly and clamp the metal evenly between it and the opposed die.

Obviously, other changes may be made in the construction and arrangement of parts within the scope of the appended claims, without departing from the spirit of the invention, and I do not therefore limit myself to the construction shown.

Having thus fully described my invention what I claim is:—

1. In a machine of the character described, the combination of an outer die member, a rotatable inner die member, and a shaft for rotating the inner die member, said shaft being pivotally supported for lateral swinging movement in a swinging frame, and means for swinging the frame to and from operative position comprising a link pivoted to the swinging frame, and means for moving the link.

2. In a machine of the character described, the combination of a pair of rotatable dies having opposed faces, shafts upon which said dies are secured, means for turning said shafts, and means for moving one of said shafts laterally to clamp a receptacle wall between the dies, said means comprising a swinging frame in which the movable shaft is mounted for rotation, a sliding sleeve having a link pivoted thereto, the other end of the link being pivoted to the swinging frame, and means for sliding the sleeve to cause the swinging frame to bring the movable shaft into operative position.

3. In a machine of the character described, the combination of a pair of rotatable dies, a fixed shaft upon which one of said dies is secured for rotating the same, a shaft having a projecting end upon which the other die is mounted and over which a receptacle is adapted to be sleeved, said shaft being pivotally supported adjacent its opposite end for swinging movement toward and from the other shaft, means for transmitting motion to said shaft to turn the same, and means for turning said pivoted shaft upon its pivot to clamp the walls of the receptacle between said dies, said means comprising a link pivoted at one end to the swinging frame and at its other end to a movable member, and a lever for moving the member to cause the frame to swing on its pivot into operative position.

4. In a machine of the character described, the combination of a pair of rotatable dies, a fixed shaft upon which one of said dies is secured for rotating the same, a shaft having a projecting end upon which the other die is mounted and over which a receptacle is adapted to be sleeved, said shaft being pivotally supported adjacent its opposite end for swinging movement toward and from the other shaft, means for turning said pivotally supported shaft upon its pivot comprising a link pivoted to the pivoted support of the shaft, means for operating the link, and means for transmitting motion to said shafts to turn the same including a clutch over the fixed shaft and means for automatically releasing said clutch to stop the transmission of motion to said shafts.

5. In a machine, of the character described, the combination of a pair of rotatable dies, shafts upon which the dies are mounted for rotating the same, one of said shafts being pivotally supported adjacent its end opposite that to which its die is secured and projecting from its support to receive a receptacle thereover with said shaft extending into a restricted end of the receptacle and the said die on said pivotally supported shaft being formed with a working face at an angle to its axis of rotation, means for turning the pivotally supported shaft on its pivot to clamp the wall of the receptacle body between the dies comprising a link pivoted at one end to the pivoted support of the shaft and at its other end to a movable member, means for moving the movable member, and means for transmitting motion to said shafts to turn the same in opposite directions.

6. An embossing machine comprising a shaft mounted to rotate in fixed bearings, a die on the shaft, a second shaft having a die thereon to coöperate with the first mentioned die, the second shaft being journaled in a swinging frame, a bevel gear mounted on the pivotal axis of the swinging frame, means for driving the gear, a bevel gear on the second shaft in mesh with the first mentioned gear, and means for swinging the pivoted frame to bring the movable die into operative position.

7. An embossing machine comprising a shaft mounted in fixed bearings, a die on the shaft, a second shaft having a die thereon to coöperate with the first mentioned die, the second shaft being journaled in a swinging frame, a bevel gear mounted on the pivotal axis of the swinging frame, means for driving the gear, a bevel gear on the second shaft in mesh with the first mentioned gear, links pivoted to the swinging frame, and a lever pivoted to the links whereby the swinging frame may be swung to operative position, so that the die on the swinging shaft mates with the die on the shaft in fixed bearings.

8. An embossing machine comprising a driven shaft mounted in fixed bearings, a second shaft parallel to the first shaft also mounted in fixed bearings, a sleeve slidably mounted on the second shaft, a link pivoted at its rear end to the sleeve and at its forward end to a pivoted frame, the pivots of the frame on its support being out of line with the pivots at the ends of the link, whereby a sliding movement of the sleeve will cause a swinging movement of the frame, a shaft on the swinging frame connected with the second shaft for rotation thereby, a die on the first mentioned shaft and a die on the swinging shaft coöperating therewith, and means for causing the sleeve to slide on the shaft.

9. A structure as defined in claim 8, having a locking device slidably mounted on the second shaft, a link connecting the sleeve and the locking device, and means on the swinging frame engaged by the locking device when the sleeve is slid forward to hold the swinging frame in operative position.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES A. COMP.

Witnesses:
H. P. SMITH,
DUNCAN J. FAHLMAN.