E. M. PEACOCK.

CAN EMBOSSING MACHINE.

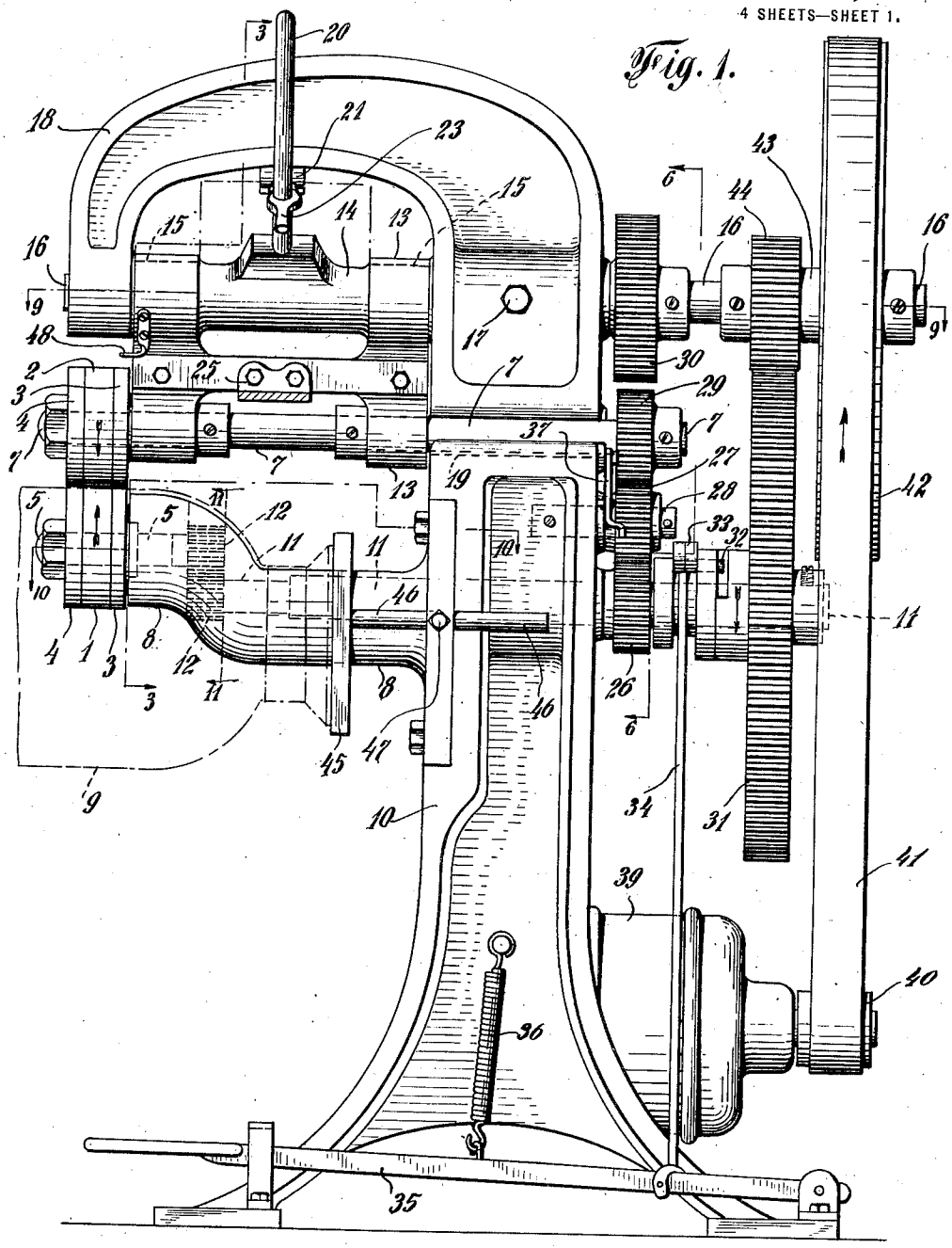
APPLICATION FILED NOV. 25, 1919.

1,374,225.

Patented Apr. 12, 1921.

4 SHEETS—SHEET 1.

Fig. 1.



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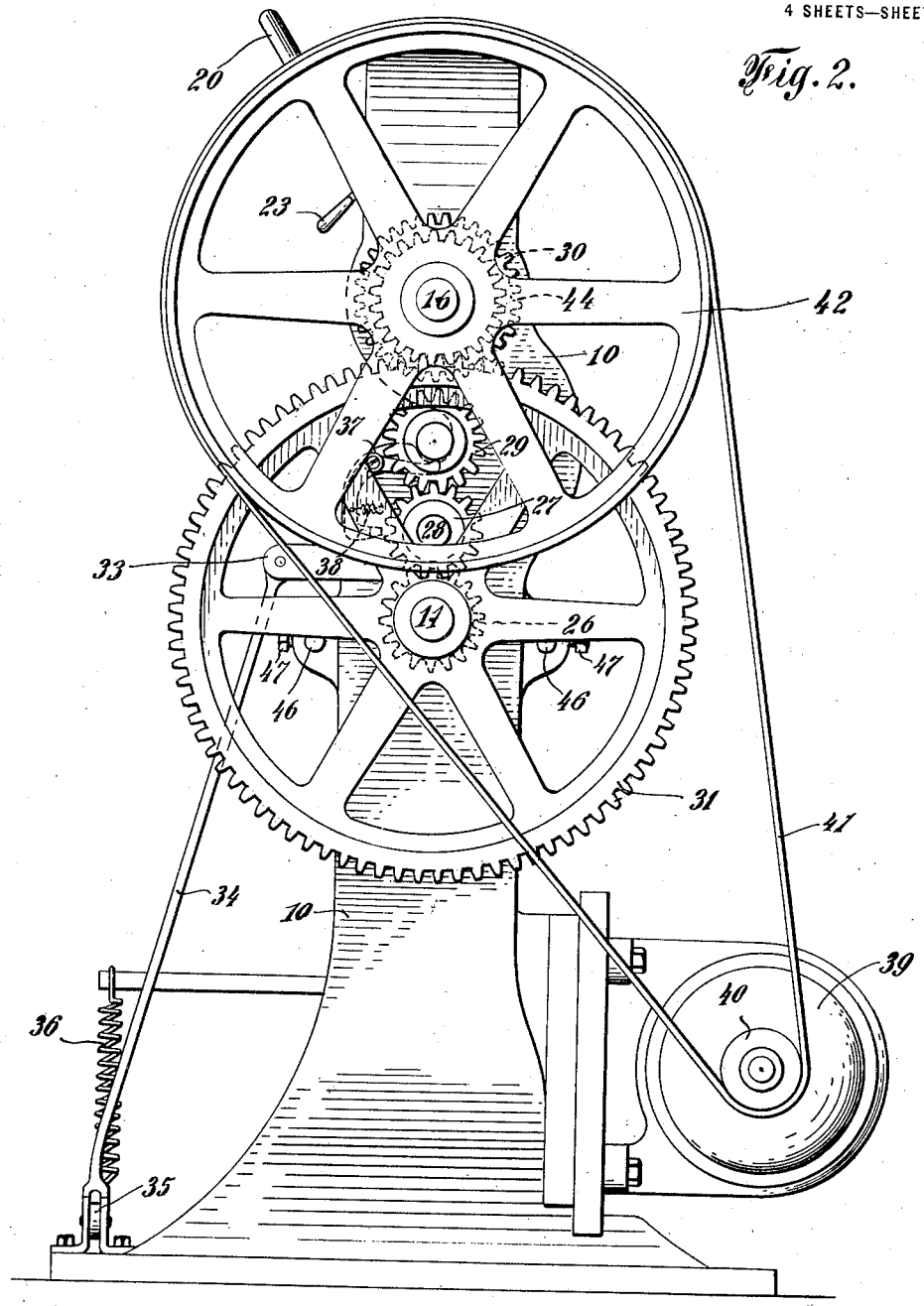
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 5.

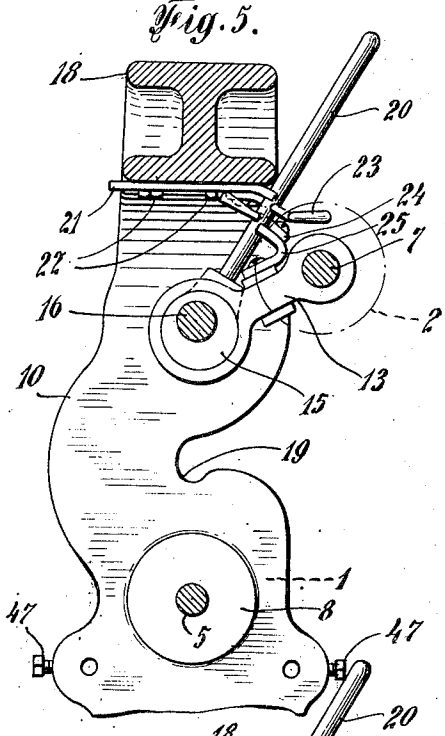


Fig. 4.

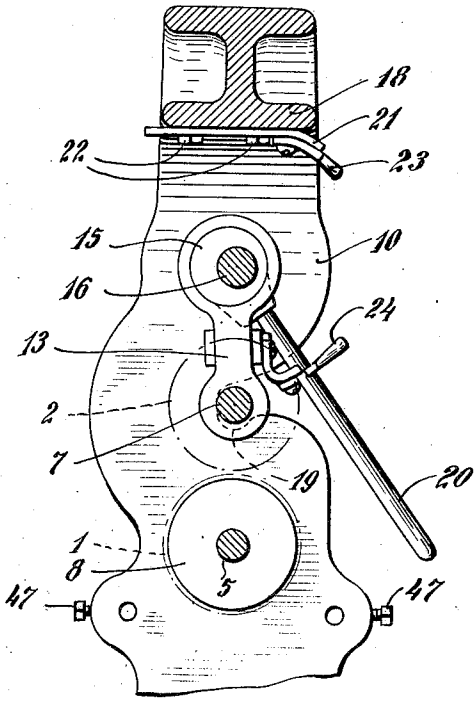


Fig. 3.

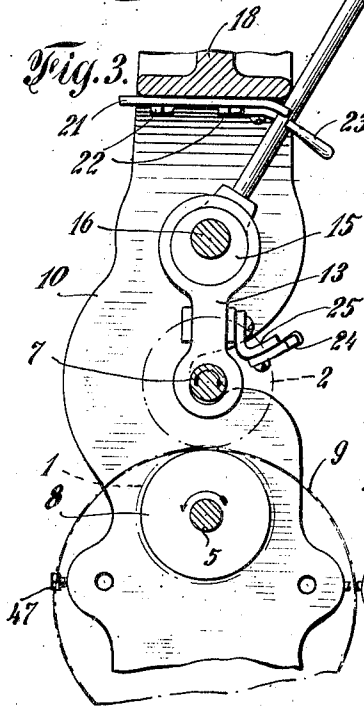


Fig. 7.

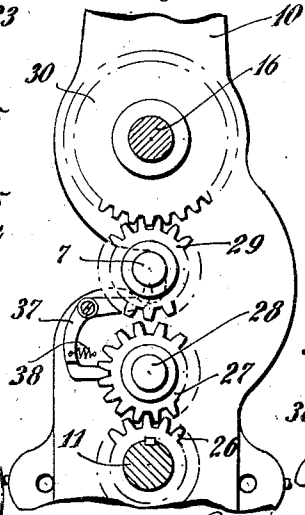
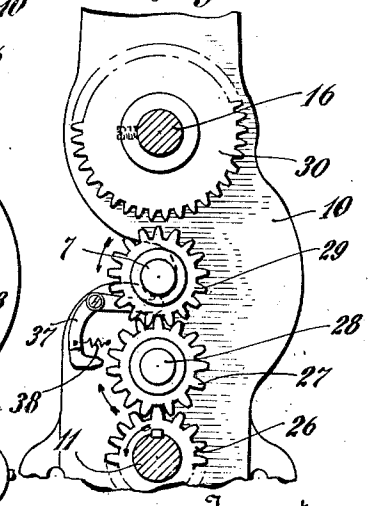


Fig. 6.



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4 SHEETS—SHEET 4.

Fig. 9.

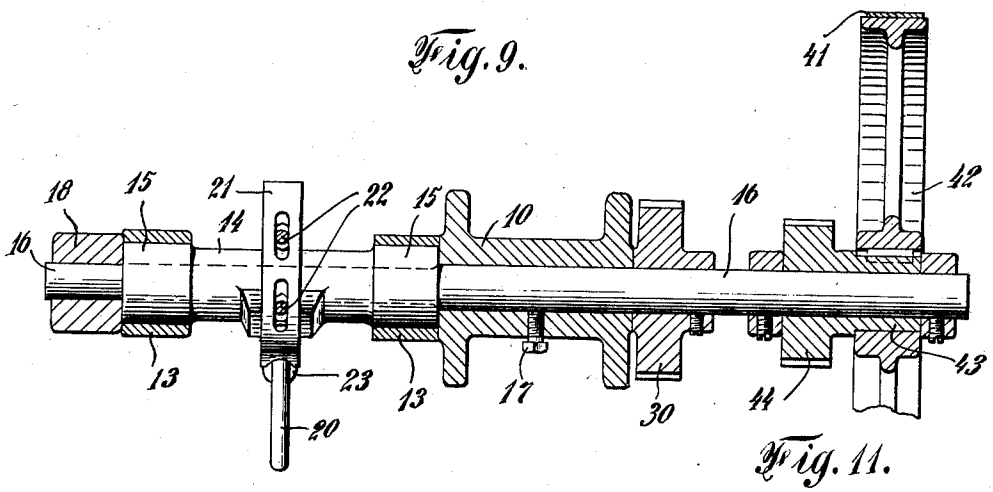


Fig. 11.

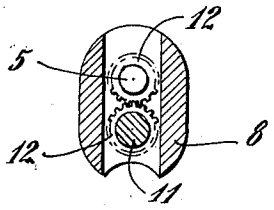


Fig. 10.

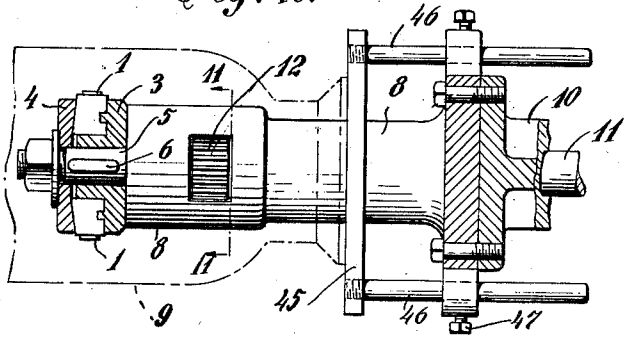


Fig. 8.

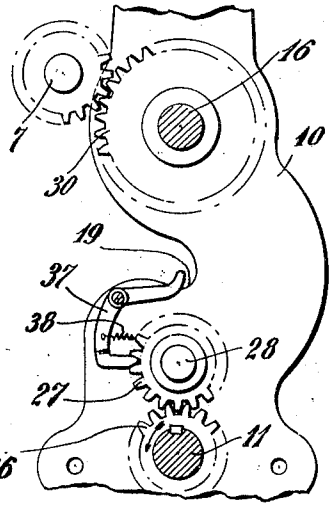
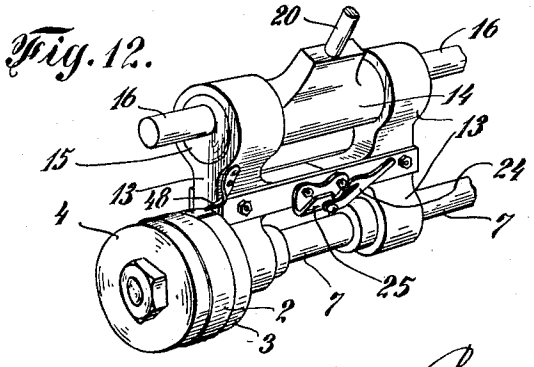


Fig. 12.



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UNITED STATES PATENT OFFICE.

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CAN-EMBOSSING MACHINE.

1,374,225. Specification of Letters Patent. Patented Apr. 12, 1921.

Application filed November 25, 1919. Serial No. 340,604.

To all whom it may concern:

Be it known that I, EDWARD M. PEACOCK, a citizen of the United States, residing in Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Can-Embossing Machines, of which the following is a specification.

My invention is a can embossing machine for embossing or indenting from the inside outwardly identification marks in the cylinders of milk cans.

Objects of my invention are to do this work inexpensively and expeditiously. Other objects and advantages of my invention will hereinafter appear.

My invention includes features of construction and combinations of parts as will appear from the following description.

Figure 1 is a front elevation of the machine.

Fig. 2 is an end elevation of the same as viewed from the right in Fig. 1.

Fig. 3 is a vertical section on planes indicated by the offset line 3—3 of Fig. 1 as viewed from the left, the die wheels being in coöperative relationship.

Fig. 4 is a similar view with the upper or outer die wheel moved to the disengaged position from the lower or inner die wheel.

Fig. 5 is a similar view with the upper die wheel swung upward out of the way, for changing milk cans.

Fig. 6 is a vertical section on planes indicated by the offset line 6—6 of Fig. 1 as viewed from the right, the position of the parts corresponding to that illustrated in Figs. 1, 2 and 3.

Fig. 7 is a similar view with the gears and other parts in the positions they occupy when the die wheels are in the disengaged position shown in Fig. 4.

Fig. 8 is a similar view, corresponding to Fig. 5.

Fig. 9 is a transverse section on horizontal planes indicated by the offset line 9—9 of Fig. 1 as viewed from above.

Fig. 10 is a similar view indicated by the offset line 10—10 of Fig. 1.

Fig. 11 is a transverse section of the can-supporting horn on a vertical plane indicated by the line 11—11 of Figs. 1 and 10 as viewed from the right and as seen in Fig. 1.

Fig. 12 is a perspective view of the upper die wheel, its swinging carriage and the lever-operated eccentrics for moving the upper die wheel to and from coöperative relation with the lower die wheel.

For effecting the embossing operation, two similar circumferentially complete die wheels or type wheels are provided, one of which has or includes cameo or rilievo types or dies 1, while the other complementary die wheel or type wheel has or includes intaglio types or dies 2. In the construction shown in the drawings, the cameo or rilievo type wheel or die wheel is a stationarily mounted can-supporting die wheel, while the intaglio die wheel is movably mounted to coöperate with the can-supporting die wheel. Each of the said die wheels further includes a flanged hub 3 and an outer disk 4 between which the dies or types are clamped in place, as shown in the drawings, particularly in Fig. 10. The can-supporting type wheel or die wheel, having the cameo or rilievo types 1, is removably fixed upon the outer end of a short die wheel shaft 5, to rotate therewith, by means of a key or feather 6 and an outer nut on the shaft 5, and the upper complementary die wheel, having the intaglio types or dies 2, is similarly removably fixed upon the outer end of an upper die wheel shaft 7, having upon its outer end a similar die wheel retaining nut.

The lower die wheel shaft 5 is journaled in the outer end of an upwardly offset horn 8 so that the cameo die wheel carried by this shaft 5 is located at and projects outwardly from the outer end of the outer upwardly offset part of the horn 8 in position for entering and supporting from the inside the cylindrical part 9 of a can body shown in broken lines in Fig. 1. The horn 8 is shown as bolted to the upright part or standard of a main base forming machine frame part 10. A driving shaft 11, extending through the machine frame 10 and into the horn 8, is coupled at its outer end, by means of a pair of similar small spur gears 12, to the adjacent inner end of the die wheel shaft 5. The axes of the die wheel shaft 5 and of the drive shaft 11 are in the same vertical plane, and the coupling gears or connecting gears 12 are shown as located in the upwardly inclined part or bend of the horn 8.

The upper die wheel shaft 7 is journaled in the lower part of a swinging carrier 13, which in its upper part at its opposite ends is pivoted to swing upon a pair of spaced eccentrics 15 formed upon the ends of a sleeve 14 which is pivoted or journaled upon a stationary shaft 16 shown as extending through the upper part of the frame pedestal 10 and fixed therein by means of a set screw 17. The outer end of the stationary shaft 16 is further supported by means of a hanger or bracket 18, shown as formed in one piece with the upper part of the frame pedestal 10. The inner end part of the die wheel shaft 7 in the operative position thereof is also journaled or has a bearing in a slot or notch 19 in the front of the frame pedestal 10, the back wall of this notch forming an abutment for the shaft 7 so as to limit the backward swinging of the shaft carrier or die wheel carrier 13, as will be readily understood. The sleeve 14 is provided with a forwardly projecting handle lever 20 for rotating this sleeve and the extension 15 on the stationary shaft 16. When the swinging carrier 13 is in the lowered position thereof shown in Figs. 1 and 3 and when the handle lever 20 is in the elevated position thereof shown in the same figures, then the intaglio dies 2 of the upper die wheel are clamped down upon the cameo dies 1 of the lower die wheel with the cylindrical can body 9 interposed therebetween. The force of this clamping action, depending upon the thickness of the can cylinder 9, may be regulated by means of an adjustable stop 21, the forward downwardly bent notched end of which forms an abutment for the handle lever 20 in the upper position thereof, and which is adjustably secured to the lower side of the frame bracket 18 by means of tap bolts 22 passing through slotted holes in the abutment-forming strap 21, as shown in the drawings, more particularly in Fig. 9. During the embossing operation the handle lever 21 may be securely held in its upper or clamping position by means of a latch hook 23 pivoted to the outer end of the abutment-forming strap 21.

When the handle lever 20 is swung downward from the upper position thereof shown in Fig. 3 to the lower position thereof shown in Fig. 4, then the eccentrics 15 will be rotated to raise the upper die wheel out of coöperative relation with the lower die wheel and to the position thereof indicated by the broken line circle in Fig. 4. In this position of the parts of the machine the intaglio types 2 of the upper die wheel are raised clear from engagement with the cameo types 1, and above the upwardly embossed letters which have been outwardly impressed or indented in the can body 9, but in this position of the upper die wheel there is not sufficient space between the two die wheels to permit the removal of the can cylinder 9 from off the can-holding horn 8 and lower die wheel by which it is supported. However, the space or clearance now provided between the two die wheels will readily permit the swinging forward and upward of the carrier 13 from the lower or hanging but disengaged position thereof shown in Fig. 4 to the forward and upper position thereof shown in Fig. 5.

For effecting this upwardly swinging movement of the carrier 13, a latch 24 is pivoted on a bracket 25 bolted to the swinging carrier 13, and this latch 24 is adapted to be swung into engagement with the lowered handle lever 20, as shown in Fig. 4. When the carrier 13 swings the disengaged upper die wheel upward from the position thereof shown in Fig. 4 to the elevated position thereof shown in Fig. 5, then the can 9 may be freely removed from off the horn 8 and lower die wheel and may be replaced by another can for the next succeeding embossing operation. If desired, or required, the upper latch 23 may now be made use of to engage the handle lever 20 for securely holding up the carrier 13 and the parts carried thereby, including the upper die wheel; or instead, if desired, the pivoted or jointed parts, including that of the cam sleeve 14 on the stationary shaft 16 and of the swinging carrier 13 on the eccentrics 15, may be made with a sufficiently tight fit to hold the carrier 13 and the parts carried thereby in the elevated position by reason of friction, so that then it will not be necessary to employ the latch 23 to prevent these parts from falling down while the can is being changed.

The upper die shaft 7 in the operative position thereof is adapted to be driven from the transverse driving shaft 11 by means of a train of gearing. A spur driving gear 26 fixed on the drive shaft 11 meshes with an idler gear 27 running loosely on a stud shaft 28 fixed in the frame 10 of the machine. The adjacent end of the upper die wheel shaft 7 has fixed thereon a spur gear 29 which in the lowered or operative position of the shaft 7 meshes with the idler gear 27, as shown more particularly in Figs. 2 and 6. It is to be noted that the three gears 26, 27 and 29 are all of the same size so that in the operative position of the die wheel shaft 7, this shaft will be driven from the driving shaft 11 in the same direction and at the same speed. It is to be further noted that by reason of the reversed rotation of the lower die wheel shaft 5 brought about the two intermeshing spur pinions 12, the lower die wheel having the cameo or rilievo types or dies 1, and the correspondingly diametered upper die wheel having the intaglio types or dies 2, will both be rotated at the same speed or synchronously in opposite directions for thereby embossing the desired

characters upwardly and outwardly in the milk can body such as 9.

When the upper die wheel, carrying the intaglio dies 2, is raised to its disengaging position free from the upper surface of the can 9, as shown in Fig. 4, then the operating gear 29 on the shaft 7 will be lifted and thereby disengaged from the intermediary idler gear 27, as will be readily understood and as is shown in Fig. 7. It is essential of course that the complementary types or dies of the two type wheels or die wheels shall always come into proper angular coöperative relation with each other, so that the cameo types 1 will fit into the corresponding intaglio types 2, and when the gear 29 on the shaft 7 is disengaged from the connecting idler gear 27, there is likelihood, especially during the swinging raising and lowering movements of the upper die wheel and its carrier 13, that this die wheel may accidentally become rotatively displaced, and it has therefore been found necessary to provide, and my invention comprehends the provision of, means assuring that the upper operating gear 29 on the shaft 7 will be brought back into proper mesh in correct angular position with the idler gear 27.

To effect this result, a stationary gear 30 is fixed on the stationary shaft 16, and is of the correct diameter so as to be free from the upper operating gear 29 in the lower or operative position of this gear, as is shown in Figs. 2 and 6 of the drawings, but the stationary gear 30 in this position of the parts is spaced away only sufficiently to permit the rotation of the operating gear 29 without the teeth thereof striking against the adjacent teeth of this stationary gear 30. When the handle lever 20 is lowered from the die-clamping position thereof shown in Figs. 1, 2 and 3 to the die-releasing position thereof shown in Fig. 4, then the operating gear 29 on the die shaft 7 will be raised out of mesh with the intermediary connecting idler gear 27 and will be engaged or brought into mesh with the stationary gear 30, as is shown in Fig. 7. The arrangement is such that the teeth of the operating gear 29 will not become disengaged from the teeth of the idler gear 27 until the teeth of this operating gear 29 have become engaged or brought into mesh with the teeth of the stationary gear 26, as will be clear from an inspection and comparison of Figs. 6 and 7. When the teeth of the operating gear 29 are in mesh with the teeth of the stationary gear 30, then the teeth of this operating gear 29 will be free from the teeth of the idler gear 27, as shown in Fig. 7, thereby providing for the upward swinging of the carrier 13 from the lowered but die-disengaging position thereof shown in Fig. 4 to the raised position thereof shown in Fig. 5.

In this upward swinging movement of the carrier 13, the operating gear 29 will have a planetary movement around the stationary gear 30, and in consequence of this planetary movement the operating gear 29, together with the upper die shaft 7 and upper die wheel carried thereby, will have rotary movement imparted thereto incidentally to the upward swinging movement of the carrier 13, and as will be understood from a comparison of Figs. 7 and 8. However, when the swinging carriage 13 is brought back again from the upper position thereof shown in Fig. 5 to the lowered position thereof shown in Fig. 4, this rotary movement of the operating gear 29, shaft 7, and upper die wheel will be reversed so that when the parts are brought into the position shown in Fig. 4, the teeth of the operating gear 29 will bear the same relation to the teeth of the intermediary connecting idler gear 27 that they bore before, and therefore will be in correct position for the downward movement of the die shaft 7, by reason of which the upper die wheel is clamped in operative position upon the lower die wheel, and also by reason of which the operating gear 29 is again brought into correct mesh with the idler gear 27, at the same time being disengaged from the stationary gear 30, the movement of these gears being from the position shown in Fig. 7 to the position thereof shown in Fig. 6.

For each embossing operation the transverse driving shaft 7 is given a single revolution and is brought to rest again in the original rotative position with the two die wheels in the correct position for beginning the next can embossing operation. The means provided for thus imparting a single revolution to the drive shaft 11 includes a one-revolution clutch for connecting a driving gear 31 with the driving shaft 11, this gear 31 being otherwise loosely mounted upon the projecting end of the shaft 11. This one-revolution clutch is of a standard form of construction, such as is commonly used on various kinds of machines, and therefore need not be particularly described. This one-revolution clutch includes a usual locking pin 32 controlled by a cam lever 33 to which is connected an operating rod 34 connected at its lower end to a treadle lever 35 adapted to be raised by a spring 36 for thereby raising the cam lever to cause the clutch to disengage.

The friction of the driving shaft 11 in its bearing and also of the lower die shaft 5 and other connected parts has been found sufficient ordinarily to prevent any accidental rotative displacement of the lower die wheel during the disengagement of the clutch, and while this shaft 11 and its connected parts are therefore at rest. However, it has been found that occasionally the

shaft 11 and connected parts, including the lower die wheel, may in some way accidentally become rotatively displaced, and of course could be thus displaced by a turning movement inadvertently manually imparted. As an additional precaution or measure of safety, a latching device is provided which acts automatically to prevent accidental rotation of the driving shaft 11 and lower die wheel while freely permitting the operative rotation of these parts in the can embossing operation. For this purpose a bent two armed latch lever 37 is pivoted on the machine frame 10 and at its upper end extends rearward beneath and in the path of the upper die shaft 7 and at its other end extends downwardly and is turned inward to form a pawl at the front of the idler gear 27 and engageable with the teeth thereof, as shown in Figs. 2, 6, 7 and 8. The pawl formed by the latch lever 37 is pressed to the gear-engaging position thereof by means of a retractile spring 38. When the upper die wheel shaft 7 is in its lower or operative position, as shown in Figs. 1, 2 and 6, the engagement of this shaft with the rearwardly extending arm of the latch lever 37 will disengage the pawl from the idler gear 27 so that this pawl will not interfere with the rotation of this idler gear in transmitting rotation from the driving gear 26 on the shaft 11 to the operating gear 29 on the die shaft 7. However, when the eccentric-operating lever 20 is swung downward from the position shown in Figs. 1 and 2 to that shown in Fig. 4, thereby to raise the upper die wheel and its shaft 7, together with the operating gear 29, and also thereby to disengage the operating gear 29 from the idler gear 27, then the spring 38 will press the pawl arm of the latch lever 37 into engagement with the teeth of the idler gear 27, thereby locking this gear against rotation and therefore similarly locking the driving shaft 11 together with the lower die wheel, as will be readily understood. This it will be seen will prevent any accidental rotation of the drive shaft 11 and lower die wheel, operated thereby during the disengagement of the gears.

The large driving gear 31, or any corresponding similar rotative operating wheel or part, may have continuous uniform rotation imparted thereto from any convenient source of power by means of any suitable driving connection. In the particular construction illustrated in the drawings, an electric motor 39 mounted on the base of the machine has its small driving pulley 40 connected by means of a belt 41 to a large driving pulley 42 fixed on a sleeve 43 loosely mounted on the projecting end of the stationary shaft 16, the sleeve 43 being connected to and shown as formed integral with a small driving gear 44 which is in mesh with the large driving gear 31.

For convenience in correctly positioning the milk cans, such as 9, and particularly so as to accommodate cans of different sizes and dimensions, an adjustable stop plate 45 of ring form surrounds the horn 8 and is carried by a pair of rods 46 which extend to the right, as viewed from the front of the machine in Fig. 1, and pass through lugs formed on the attaching base of the horn 8 in which these supporting rods 46 are adjustably secured by means of set screws 47, as shown in Figs. 1 and 2. Preferably an indicating finger 48 is provided on the carrier 13, for convenience in initially correctly positioning the upper die wheel.

It is obvious that various modifications may be made in the construction shown in the drawings and above particularly described within the principle and scope of my invention.

I claim:

1. A can embossing machine having, in combination, a movable die-supporting member, a rotative die-supporting member having dies complementary to and adapted to register with the dies of the said movable die-supporting member, means for moving radially and parallel to itself one of said die-supporting members to move the dies carried thereby out of and back into cooperative relation with the complementary dies of the other die-supporting member to separate the dies, a support for the supporting member on which it can then be swung to carry its die off to enable a can to be easily withdrawn, and means for assuring that the complementary dies shall be brought back into register with each other when the movable die-supporting member is swung and moved to bring the dies back into coöperative relation.

2. A can embossing machine having, in combination, a pair of rotative die-supporting members, the dies of one of said members being complementary to and adapted to register with the dies of the other said member, means for moving radially and parallel to itself one of the die-supporting members to move the dies thereof out of and back into coöperative relation with the dies of the other die-supporting member to separate the dies, a support for the supporting member on which it can then be swung to carry its die off to enable a can to be easily withdrawn, and means for automatically assuring that the complementary dies shall be brought back into register with each other when the movable die-supporting member is swung and moved to bring the dies back into coöperative relation.

3. A can embossing machine having, in combination, a pair of complementary die wheels, and a handle for moving radially

and parallel to itself one of said die wheels out of coöperative relation with the other and adapted to be further operated to swing the die wheel to enable a can on the other to be withdrawn, and for bringing it back again into registering coöperative relation with the said other die wheel.

4. A can embossing machine having, in combination, a pair of complementary die wheels, means for moving one of said die wheels radially and parallel to itself away from and back again toward the other, means for swinging the moved die wheel to separate the wheels to enable a can to be withdrawn from the other, a handle operable in one direction for so moving the die wheel and operable in the other direction for swinging it, and means for assuring that the swinging die wheel shall be brought back into register with the other complementary die wheel.

5. A can embossing machine having, in combination, a pair of complementary die wheels, meshing gears for said die wheels, means for moving radially and parallel to itself one of said die wheels out of and back into coöperative relation with the other, the movement being great enough to unmesh the gear wheels, and means for automatically assuring that the die wheels shall be brought back into register with each other when they are brought back into coöperative relation.

6. A can embossing machine comprising a die wheel for supporting a can cylinder from the inside thereof, a second die wheel complementary to and coöperative with the first die wheel from the outside of the can cylinder, gears for rotating the two die wheels in unison in opposite directions, means for radially separating the wheels by swinging one parallel to its axis, and means for holding the wheels against turning while the gears are out of mesh.

7. A can embossing machine comprising a circumferentially complete die wheel for supporting a can cylinder from the inside thereof, a second circumferentially complete die wheel at the outside of the can cylinder and complementary to and coöperative with the first die wheel, means for relatively moving radially and parallel to their axes the die wheels into and out of coöperative relationship by first moving along a common radius and then swinging transversely to the common radius to effect greater separation to enable a can to be withdrawn, and means for synchronously rotating the two die wheels in opposite directions when they are in coöperative relationship.

8. A can embossing machine comprising a circumferentially complete die wheel for supporting a can cylinder from the inside thereof, a second circumferentially complete die wheel at the outside of the can cylinder and complementary to and coöperative with the first die wheel, means for relatively moving the two die wheels into and out of operative relationship, means for synchronously rotating the two die wheels in opposite directions when these wheels are in cooperative relationship, such means including a train of gears having gear members adapted to be moved out of disengaging relation when the die wheels move out of coöperative relationship, and automatically acting means for assuring that said gear members will be restored into correct mesh or interengaging relation when said die wheels are again brought into coöperative relationship.

9. A can embossing machine comprising a circumferentially continuous can cylinder supporting die wheel adapted to support a can cylinder from the inside thereof, a similar circumferentially continuous die wheel at the outside of the can and complementary to the inner die wheel, mechanical connecting means between said die wheels for rotating the die wheels synchronously in opposite directions when said die wheels are in coöperative relation, such connecting means including gears adapted to be disengaged when the die wheels are moved out of coöperative relation, manually actuatable means for moving said outer die wheel out of engagement with said inner die wheel and whereby said connecting gears will be disengaged, automatically acting means for assuring that said gears will be reëngaged in proper position when said outer die wheel is moved back to its operative position relatively to the inner die wheel, and automatically acting means for locking the inner die wheel against rotation when the die wheels are in their disengaged positions.

10. A can embossing machine having, in combination, a pair of complementary die wheels, axles for said wheels, means for shifting one of said wheels transversely to its axle and parallel thereto away from the other, means for also swinging it transversely, and normally meshing gears for said axles constantly controlled to remesh as the wheels come together.

11. A can embossing machine having, in combination, a pair of complementary die wheels, means for moving one of said wheels out of coöperation with the other, a swinging frame in which said wheel is journaled, journals for said frame so that the frame substantially receives the direct thrust on the wheel through its journals, gears for said wheels, means for swinging the frame so that the gears come out of mesh, and means for controlling the gears so that the gears remesh when the wheel is swung back.

In testimony whereof, I have affixed my signature to this specification.

EDWARD M. PEACOCK,