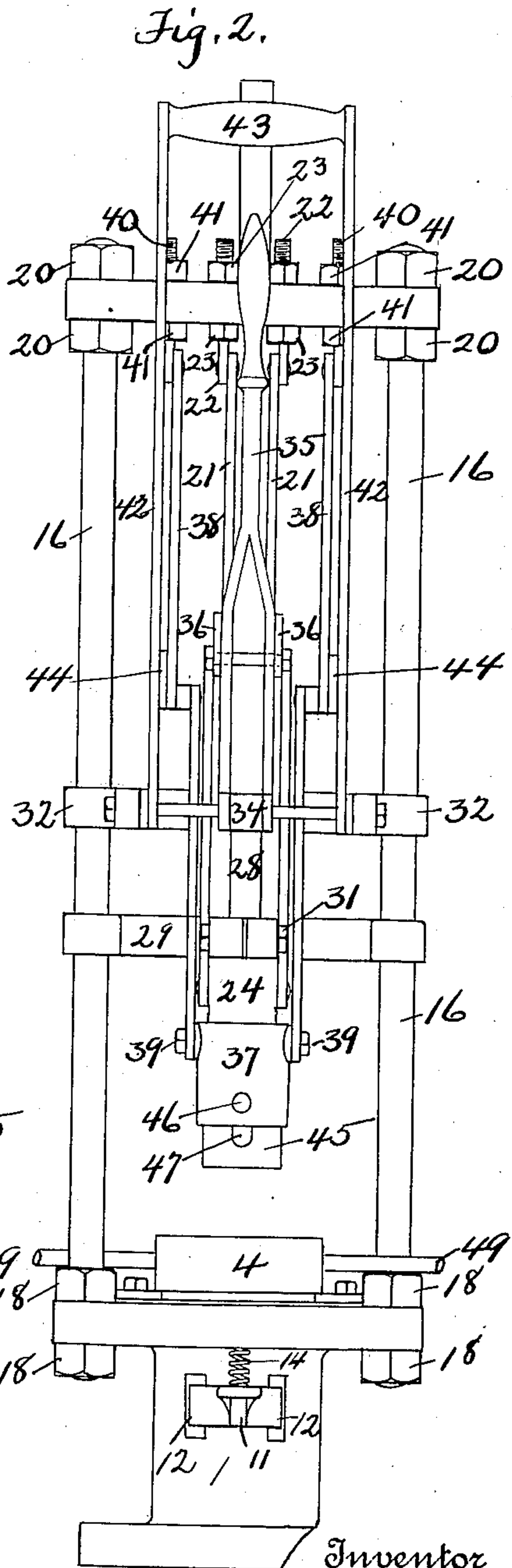
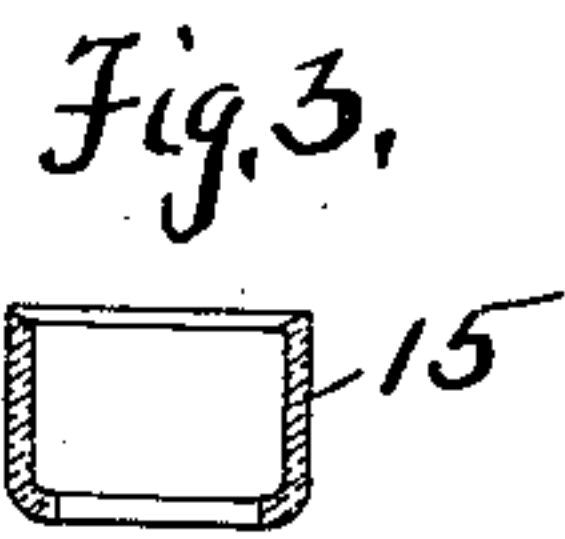
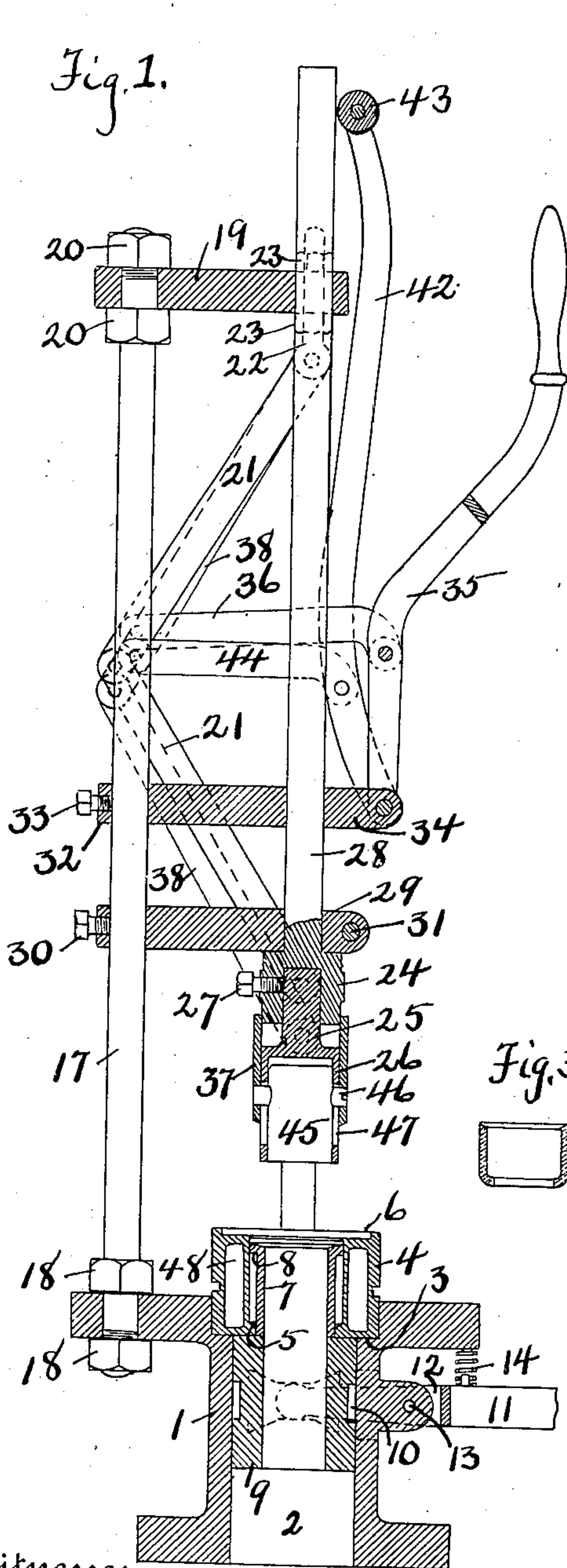


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MACHINE FOR FORMING PACKING CUPS.  
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Patented Sept. 15, 1908.



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES SWAN, OF CORRY, PENNSYLVANIA.

## MACHINE FOR FORMING PACKING-CUPS.

No. 898,526.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed December 3, 1906. Serial No. 346,005.

*To all whom it may concern:*

Be it known that I, CHARLES SWAN, a citizen of the United States, residing at Corry, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Machines for Forming Packing-Cups, of which the following is a specification.

This invention relates to machines for forming packing cups and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The usual method heretofore employed for forming such cups has been to shape the moist leather of which they are usually formed in molds or dies usually formed of wood, and permitting the cup to remain in this position until dry. The edges of the cup were then trimmed and surplus material cut off of the peripheral wall and if desired the hole was then punched in the bottom of the cup.

With my machine, the material from which the cup is formed is initially clamped and the cup formed. The material forming the peripheral wall of the cup is then compressed and an edge is formed on the cup in this operation so as to obviate the necessity of afterwards otherwise finishing the cup. This compression also adds to the durability of the cup by giving it greater solidity.

In the preferred construction of my machine, means are provided for punching the bottom of the cup in the same operation.

The machine is illustrated in the accompanying drawings as follows: Figure 1 shows a section on the line 1—1 in Fig. 2. Fig. 2 shows a front elevation of the machine. Fig. 3, a section of a cup formed by the machine.

1 marks the base of the machine. This is provided with the central opening 2 which is enlarged at the top forming a shoulder 3. The female die 4 is arranged in the opening 2 near the top of the die and rests on the shoulder 3. This is provided with the annular flange 5 near the bottom and with a centering flange 6 around its upper end. A movable base 7 is arranged within the flange 5 and is provided with the shoulder 8, which is adapted to engage the shoulder 5 and limit the downward movement of the movable base 7. This movable base preferably also forms the female punching die having an

opening through which the material punched from the bottom of the cup is passed. A supporting sleeve 9 is arranged below the movable base 7. It is provided with an annular groove 10. A lever 11 having the fork 12 is pivoted at 13 on the base. The ends of the fork extend into the opening 2 and into the groove 10 so as to support the sleeve 9. A spring 14 throws the outer end of said lever downwardly, thus moving the sleeve 9 upwardly to a position below the female die 4, so that normally the top end of the movable base 7 is near the upper end of the female die. The groove 10 is cut out as shown in dotted lines in Fig. 1 to permit of the movement of the fork 12. The leather from which the cup 15 (see Fig. 3) is formed is initially cut into disk shaped pieces and is placed within the flange 6 of the female die.

The upper frame of the machine is supported on three rods, two rods 16 at each side of the machine and a rod 17 at the back. These rods are secured to the base by being passed through it and having the nuts 18—18 arranged above and below the flange on the base, thus securing the rods. A top plate 19 is similarly secured to the rods by means of the nuts 20—20. A toggle lever 21 is pivotally secured to the top plate by means of the eye bolt 22. The eye bolt is adjustably secured to the plate by means of the nuts 23—23 one above and one below the top plate. The toggle lever is pivotally secured to the head 24. The shank 25 of the male die 26 is secured in this head by means of the set screw 27. The rod 28 extends from the head through a guide plate 29 and through the top plate 19. The guide plate 29 is secured in place on the rods forming the frame by means of set screws 30. The outer end of the guide plate is severed and a bolt 31 is passed through the end of the plate so that wear on the guide plate may be taken up. A lever plate 32 is secured to the rods forming the frame by means of the set screws 33. This plate has a forwardly extending arm 34 and the rod 28 extends through this arm also. A lever 35 is pivoted on the front end of this arm and a link 36 connects this lever with the toggle lever 21. This link is of such length that as the toggle lever approaches alignment, the pivotal connections between the link 36 and the toggle lever 21, the link and the lever 35 and be-



tween the lever 35 and arm 34 are approximately in alinement, so that tremendous power may be delivered.

It will be noted that on the downward stroke of the male die, it contacts the disk centered by the flange 6 and clamps the same between the lower end of the die and the movable base 7. The movable base recedes before the male die, its movement being opposed by the spring 14. When it reaches a position with the shoulder 8 on the shoulder 5, the toggle lever is approximately in alinement. The peripheral wall of the cup will then be disposed between the walls of the female and male dies with the bottom of the cup clamped between the base of the die and the male die.

I prefer to compress the peripheral wall of the cup and in so doing, form the edge of the cup. As before stated, this obviates the trimming of the edge of the cup and adds to the material in the wall. To accomplish this I provide the compressing die 37 which is slidingly mounted on the male die 26. Toggle levers 38 are connected with this compressing die by means of the pins 39. These levers are secured to the eye bolts 40 which extends through the top plate of the machine. They are adjustably secured by means of the nuts 41. A forked lever 42 having its arms pivotally secured to the ends of the lever plate 32 is connected by means of the link 44 with the toggle lever 38. After the cup has been brought to the position heretofore described by the male die, the lever 42 is actuated by means of the connecting handle 43. It will be noted that in this instance also, the link 42 is of such length that as the toggle lever 38 approaches alinement, the pivotal connection between the link 44 and the toggle lever, the link 44 and the lever 42, and the lever 42 and the plate 32 are also in a position approximately in alinement so that tremendous power can be delivered. The peripheral walls of the cup, it will be noted, are confined by the walls of the female and male dies and are clamped at the bottom by means of the male die on the movable bottom. While in this position and so confined, the walls of the cup are compressed by the compressing die 37 under the action of the levers just described. This not only compresses the material forming the walls of the cup, but it also completely forms the edges of the cup so that no subsequent operation is required. These cups are ordinarily perforated at the bottom and I prefer to do this in the same operation. To accomplish this, I form the male die in the form of a sleeve and arrange the punch 45 within the sleeve. The punch is connected with the compressing die 37 by means of a pin 46. This pin extends through a slot 47 in the male die. As the compressing die is moved downwardly by the lever here-

tofore described, the punch is also moved with relation to the male die so that with the initial movement of the compressing die 37, a hole is punched in the bottom of the cup. It will be noted that this work is completed before the compressing die is brought into position to require a given amount of pressure for its operation. In other words, these two instrumentalities operate successively, so that the power for each may be readily supplied in a hand operating machine.

With most materials from which cups are formed, it is desirable to heat the forming die during the operation. To accomplish this I form a cavity 48 in the walls of the female die and connect this cavity by means of the pipe 49 with the steam supply or other heated fluid. The depth of the peripheral walls of the cup may be varied by adjusting the "I" bolts 40; this may be accomplished by the nuts 41.

What I claim as new is:

1. In a machine for forming packing cups, the combination with a female forming die and a male die, said dies being arranged to clamp the bottom of the cup and confine the peripheral walls of the cup between them; of a compression and edge forming die arranged to enter between the male and female dies to compress the peripheral wall of the cup and form the edges thereof; and devices actuating said dies to clamp the bottom of the cup and compress the peripheral walls thereof.
2. In a machine for forming packing cups, the combination of a female die having a yielding bottom therein and a male die, said dies being arranged to clamp the bottom of the cup and confine the walls thereof between them; of a compression and edge forming die arranged to enter between the dies to compress the peripheral wall of the cup and form the edges thereof; and devices for actuating said dies.
3. In a machine for forming packing cups, the combination of a female forming die having a centering ring arranged with relation to said die; a male die arranged to enter the female die and carry with it the material centered by the centering ring, said dies being adapted to clamp the bottom of the cup and to confine the peripheral walls of the cup between them; and a compression and edge forming die arranged to enter between the dies and compress the peripheral walls of the clamped and confined cup and form the edges thereof.
4. In a machine for forming packing cups, the combination of a female forming die having a centering ring arranged with relation to said die; a male die arranged to enter the female die and carry with it the material centered by the centering ring, said dies being adapted to confine the peripheral walls of the cup between them; a compression and



edge forming die arranged to enter between the dies and compress the peripheral walls of the cup and form the edges thereof; and devices for returning the yielding bottom after the formation of a cup.

5 5. In a machine for forming packing cups, the combination with a female forming die having a centering device for centering material over said die; a yielding bottom in said  
10 die; a male die operating in connection with said female die and with said yielding bottom to clamp the bottom of the cup between said yielding bottom and said male die and to confine the peripheral walls of the cup be-  
15 tween the walls of the female die and the walls of the male die; a compression and edge forming die arranged to enter between the female and male die to compress the peripheral walls of the cup and form the  
20 edges thereof.

6. In a machine for forming packing cups, the combination with a female forming die and a male die, said dies being arranged to  
25 confine the peripheral walls of the cup between them; of a compression and edge forming cup arranged to enter between the dies to compress the peripheral walls of the cup and form the edges thereof; a punch adapted to perforate the bottom of the cup while so  
30 engaged by the walls of the dies; and devices for actuating said dies and punch.

7. In a machine for forming packing cups, the combination with a female forming die; a sleeve shaped male die, said dies being ar-  
35 ranged to confine the peripheral walls of the cup between them; a punch mounted within the male die; a compressing die slidingly mounted on the outer surface of the male die and adapted to enter between the female  
40 and male dies to compress and form the edges of the cup; a connection between the compressing die and the punch; and means for actuating said dies.

8. In a machine for forming packing cups, the combination with a female die having a  
45 yielding bottom therein, said yielding bottom having a positive stop and forming the female die for a punch; a male die adapted to enter the female die and forming with the  
50 yielding bottom a clamp for holding the material and arranged to confine between its walls and the walls of the female die the peripheral walls of the cup; a punch arranged within the male die; a compressing die arranged with-  
55 out the male die; and devices for actuating the punch and said dies.

9. In a machine for forming packing cups, the combination with a female die having a  
60 yielding bottom therein, said yielding bottom having a positive stop and forming the female die for a punch; a male die adapted to enter the female die and forming with the yielding bottom a clamp for holding the material and arranged to confine between its  
65 walls and the walls of the female die the pe-

ripheral walls of the cup; a punch arranged within the male die; a compressing die arranged without the male die; a connection between the punch and the compressing die whereby the punch is actuated with the com-  
70 pressing die; and devices for actuating said dies.

10. In a machine for forming packing cups, the combination with a female die; a male die adapted to enter said female die carrying  
75 with it the material forming the cup and confining the peripheral walls thereof between the walls of said dies; a mechanism for actuating said male die; a compressing die for entering between the walls of the female  
80 and male dies for compressing edgewise and forming the edges of the cup; and a separate mechanism for actuating said male and compressing dies.

11. In a machine for forming packing cups, the combination of a female die; a male die adapted to enter said female die and to con-  
85 fine the walls of the cup between the walls of said dies; a toggle lever mechanism for actuating one of said dies; a compressing die adapted to enter between the walls of said  
90 dies and compress edgewise and form the edges of the cup; and mechanism for actuating said compressing die.

12. In a machine for forming packing cups, the combination of a female die; a male die adapted to enter said female die and to con-  
95 fine the walls of the cup between the walls of said dies; a toggle lever mechanism for actuating one of said dies; a compressing die adapted to enter between the walls of said  
100 dies and compress and form the edges of the cup; and a toggle lever for actuating said compressing die.

13. In a machine for forming packing cups, the combination with a female die; a male die adapted to enter said female die and con-  
105 fine the material forming the walls of the cup between the walls of said dies; mechanism for actuating said dies; a punch carried within said male die; a compressing die mounted on the outside of said male die; a connection  
110 between said punch and said compressing die; and a toggle lever for actuating said compressing die.

14. In a machine for forming packing cups, the combination with a female die; a male die, said dies being arranged to confine the  
115 peripheral walls of the cup between them; a compression die arranged to enter between the walls of said dies and compress and form the edges of the cup; devices for actuating said compressing die; and means for adjusting said devices whereby the width of the  
120 peripheral walls of the cup may be varied.

15. In a machine for forming packing cups, the combination with a female die and a male die, said dies being arranged to confine the peripheral walls of the cup between them; a compressing die for entering between the  
130



walls of said female and male dies for compressing and forming the edges of said cup; a toggle lever for actuating said compressing die; and means for adjusting said toggle lever  
5 to vary the action of said toggle lever on said die to vary the width of the peripheral walls of the cup.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES SWAN.

Witnesses:

C. D. HIGBY,  
BESSIE F. PARKER.