This invention relates, generally, to machines for closing containers, and it has particular relation to machines for the heat sealing of moisture proof bags for food stuff and the like.

It is customary to package food stuff, such as puffed corn product, pop corn, and the like, in moisture proof bags and to heat seal the ends of the bags so as to preserve the contents and prevent the entrance of moisture. Usually the bags are sealed at one end and then are filled with the food stuff. Thereafter they are sealed at the other end. For display purposes an opening is punched in one end in the sealed area so that the bag can be placed on a pin or the like where it is in the view of the buying public. It is also desirable to provide a code indication on each bag as to the date of packaging. This facilitates control of the stock and makes it possible to avoid extra long shelf life.

Since food stuff of this nature and the packaging thereof are handled on a mass production basis, it is desirable to reduce to a minimum the cost of sealing, perforating, and marking the bags with the code indication of date of packaging.

Accordingly, among the objects of this invention are: To heat seal a moisture proof bag or the like and at the same time to perforate the sealed area and stamp the same with a code indicating the date of packaging; to employ a single operating mechanism for accomplishing these functions simultaneously; to provide a construction that is rugged, has long life, and is unlikely to get out of order; and to arrange the parts so that they can be assembled, changed, and adjusted readily.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawing and it comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention, reference can be had to the following detailed description, taken together with the accompanying drawing, in which:

Figure 1 is a view, partly in front elevation and partly in section, showing the relatively movable jaw members and metallic sealing jaws assembled in an automatic machine constructed in accordance with this invention, the operating mechanism being omitted since it forms no part of this invention;

Figure 2 is a view, similar to Figure 1, but showing the jaw members and sealing jaws in the closed position in engagement with a bag which is to be sealed, perforated and stamped; and

Figure 3 is a perspective view of an unfilled bag showing how the sealing, perforating and stamping operations are performed thereon.

Referring now particularly to Figure 1 of the drawing it will be noted that the reference character 10 designates, generally, a combination sealing, perforating and stamping machine in which the present invention is embodied. The machine 10 includes a lower stationary jaw member 11 and an upper movable jaw member 12. It will be understood that any suitable means can be employed for moving the jaw members 11 and 12 toward and away from each other. For example, they may be moved with a translatory movement or with a slight rotary movement as may be desired. Since the particular mechanism for moving the jaw members 11 and 12 toward and away from each other forms no part of the present invention, a showing thereof has been omitted.

The jaw members 11 and 12 carry lower and upper metallic sealing jaws 13 and 14 respectively. The lower sealing jaw 13 may be fastened to the lower jaw member 11 by bolts 15. The upper sealing jaw 14 is mounted so as to have slight relative movement with respect to the upper jaw member 12. It is guided with respect to the upper jaw member 12 by means of pins 16 which project therethrough as shown. Coll compression springs 18 are interposed between the upper movable jaw member 12 and the upper sealing jaw 14 so as to bias them apart while permitting movement toward each other when the sealing operation is performed.

It will be noted that a hollow die 19 extends upwardly through the lower stationary jaw member 11 and that it is held fast thereto by means of a nut 20. The die 19 extends through an opening 21 in the lower sealing jaw 13 and it has a longitudinally extending opening 22 the upper end of which is adapted to receive the lower end of a punch 24 which is threaded into the upper movable jaw member 12 and extends downwardly therethrough and through an opening 25 in the upper sealing jaw 14. A lock nut 26 serves to hold the punch 24 in position on the jaw member 12.

The sealing jaws 13 and 14 are formed of metal so as to have good heat conductivity. Their
opposing faces are grooved so as to provide intimate engagement with the surface of the bag which is to be sealed thereby. In order to heat the sealing jaws 13 and 14 heating elements 27 and 28, respectively, are provided therein and are connected to a suitable source of electrical energy the supply of which may be automatically controlled so as to maintain the jaws 13 and 14 at a predetermined operating temperature.

With a view to applying the code marking on the food stuff container, stamps 30 are provided in the upper sealing jaw 14. It will be noted that two stamps 30 are provided and that they are located on opposite sides of the punch 24 at equal distances therefrom. The stamps 30 are generally cylindrical and are located in suitable openings in the upper sealing jaw 14. The positions of the stamps 30 in the sealing jaw 14 may be adjusted by adjusting screws 31 so that the lower faces of the stamps 30 project slightly below the lower surface of the sealing jaw 14. Locking screws 32 are provided for holding the stamps 30 in the positions to which they have been adjusted by the screws 31.

Cooperating with the stamps 30 are anvils 33 which are slidably mounted in the lower sealing jaw 13 in register with the stamps 30. The anvils 33 are slidably mounted in openings 34 in the sealing jaw and they have stems 35 which project therethrough and are held in position by cotter keys 36. Coil compression springs 37 positioned around the stems 35 in the openings 34 serve to urge the anvils 33 upwardly so that their upper faces project slightly above the upper surface of the lower sealing jaw 13.

Both the stamps 30 and the anvils 33 are formed of metal so as to provide good heat conductivity and thus provide substantially uniform heat sealing conditions over the entire operating surfaces of the sealing jaws 13 and 14.

In operation the upper jaw member 12 is moved downwardly as indicated by the arrow 38 so that the juxtaposed faces of the sealing jaws 13 and 14 engage the opposite sides of a bag 39 therebetween. At the same time the punch 24 which projects beyond the lower surface of the upper sealing jaw 14 enters the upper end of the longitudinal opening 22 in the die 19 and punches out a section of the bag 39 so as to form the perforation or opening 40 shown in Figure 3. Simultaneously with these operations the stamps 30 cause the marks 41 to be made on the portion of the bag 39 between the sealing jaws 13 and 14. The heat from the sealing jaws 13 and 14 is sufficient to seal the portion of the bag 39 therebetween so as to form the sealed area 42. Thus in a single operation the bag 39 may be sealed, perforated and stamped in a satisfactory and efficient manner.

Since certain changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matter shown in the accompanying drawing and described heretofore shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:
1. In a machine for perforating, stamping and heat sealing moisture proof bags for food stuff and the like, in combination, a pair of relatively movable jaw members adapted to be moved toward and away from each other, a metallic sealing jaw carried by each jaw member for engaging opposite bag surfaces therebetween under pressure, heating elements in said sealing jaws for maintaining the same at sealing temperature, a punch carried by one jaw member and extending through the sealing jaw carried thereby, a metallic stamp carried by each jaw member and extending through the sealing jaw carried thereby and cooperating with said punch when said jaw members are closed to perforate a bag therebetween, and a metallic anvil slidably mounted in said lower sealing jaw with its face adapted to project beyond the surface thereof to register with said stamp member and cooperating therewith when said jaw members are closed to stamp a bag therebetween, and spring means urging said anvil toward said stamp member.
2. In a machine for perforating, stamping and heat sealing moisture proof bags for food stuff and the like, in combination, a pair of relatively movable jaw members adapted to be moved toward and away from each other, a metallic sealing jaw carried by each jaw member for engaging opposite bag surfaces therebetween under pressure, heating elements in said sealing jaws for maintaining the same at sealing temperature, a punch carried by one jaw member and extending through the sealing jaw carried thereby, a metallic stamp carried by each jaw member and extending through the sealing jaw carried thereby and cooperating with said punch when said jaw members are closed to perforate a bag therebetween, and spring means urging said anvil toward said stamp member.
to be moved toward and away from each other, upper and lower metallic sealing jaws carried by said upper and lower jaw members respectively for engaging the corresponding bag surfaces therebetween under pressure, heating elements in said sealing jaws for maintaining the same at sealing temperature, a punch carried by said upper jaw member and extending downwardly through the upper sealing jaw carried thereby, a die carried by said lower jaw member and extending upwardly through the lower sealing jaw carried thereby and cooperating with said punch when said jaw members are closed to perforate a bag therebetween, a metallic stamp member carried by said upper sealing jaw on each side of said punch with its lower face projecting below the under surface of said upper sealing jaw, a metallic anvil slidably mounted in said lower sealing jaw on each side of said die with its upper face adapted to project above the upper surface of said lower sealing jaw in register with the corresponding stamp member and cooperating therewith when said jaw members are closed to stamp a bag therebetween, and spring means urging each anvil upwardly.

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