Nov. 17, 1953 H. L. REITZES 2,659,520

SEALING MACHINE WITH AUTOMATIC LABELING

Filed Nov. 3, 1950 4 Sheets-Sheet 1

Fig. 1

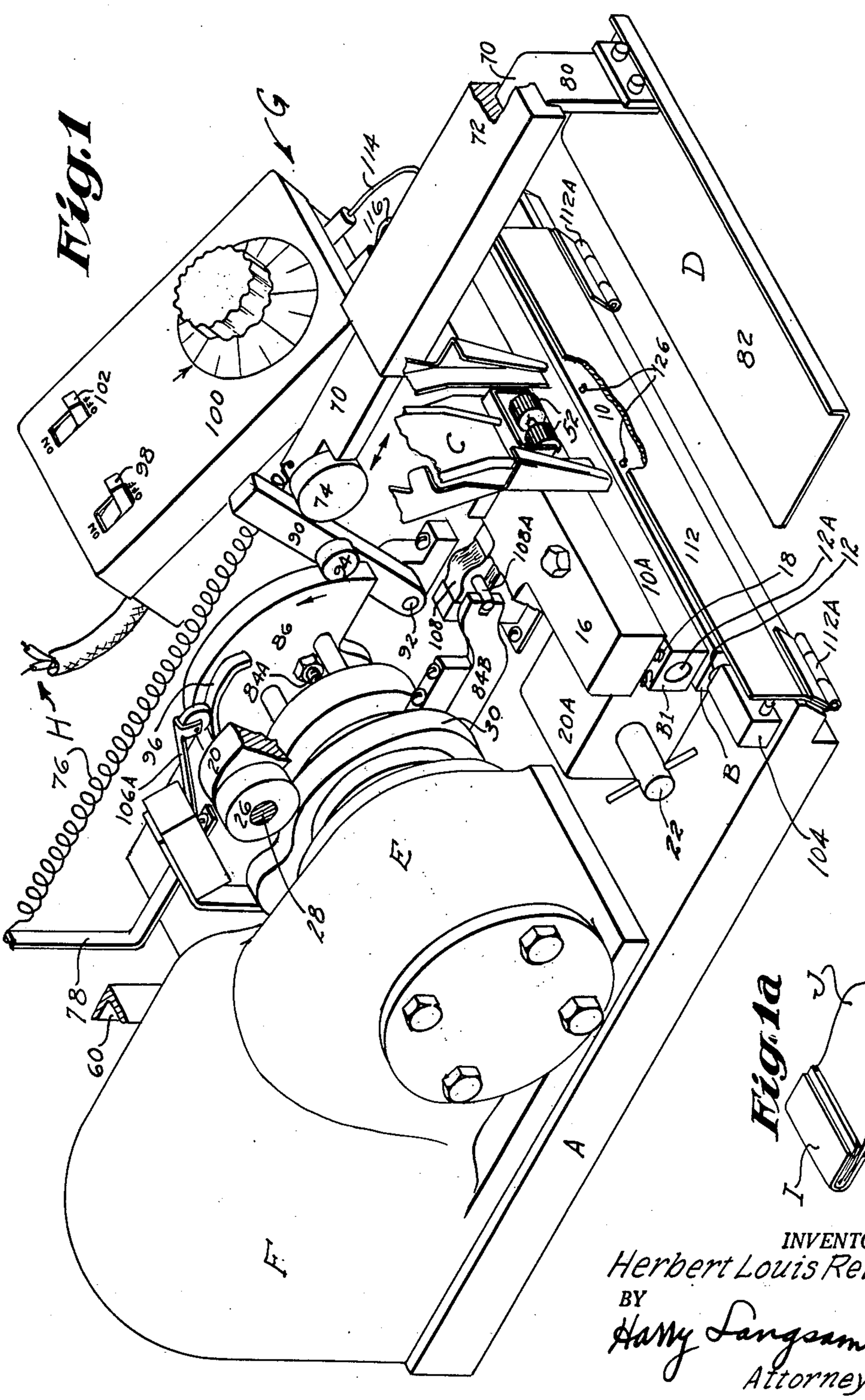

Fig. 1a

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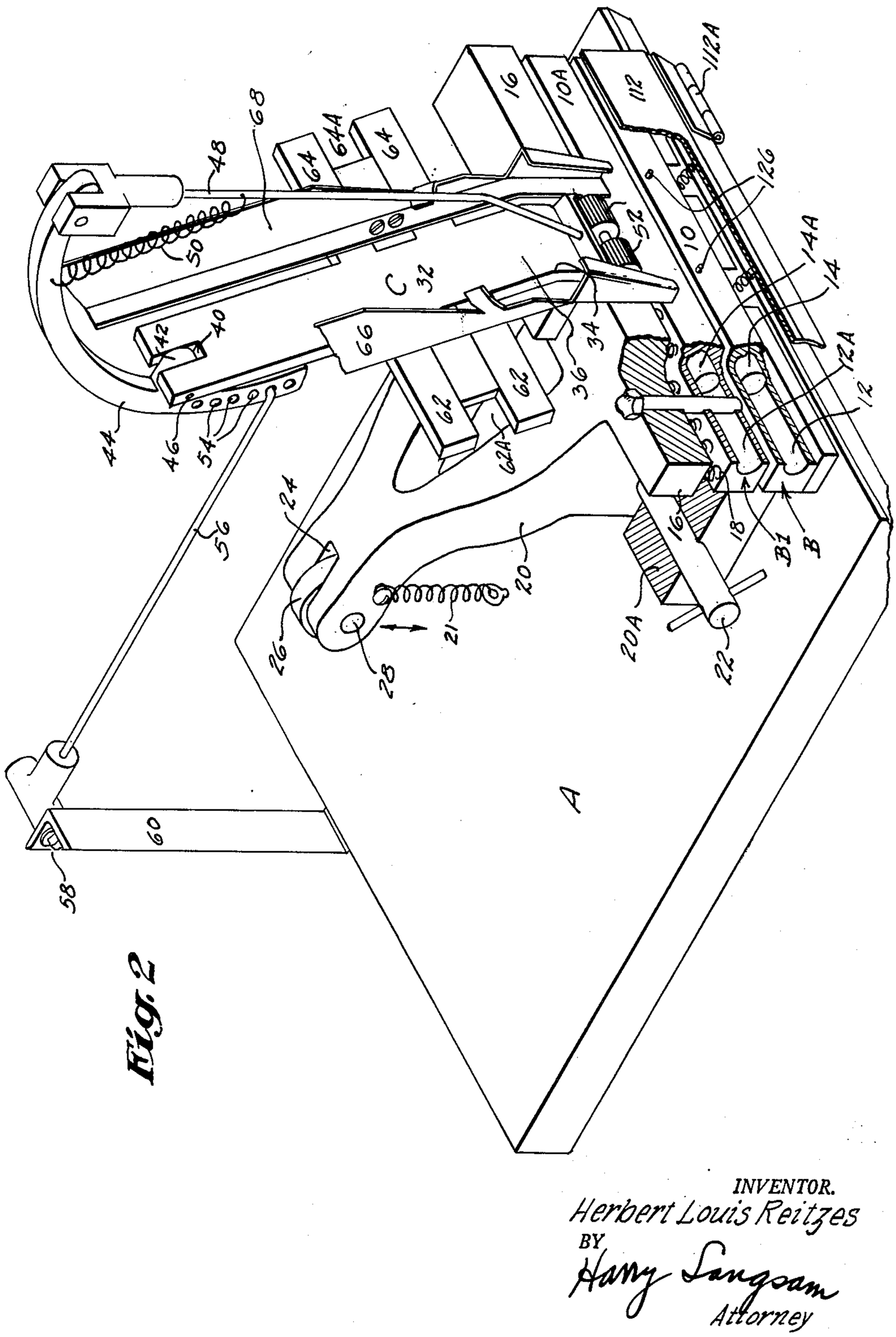

Fig. 2

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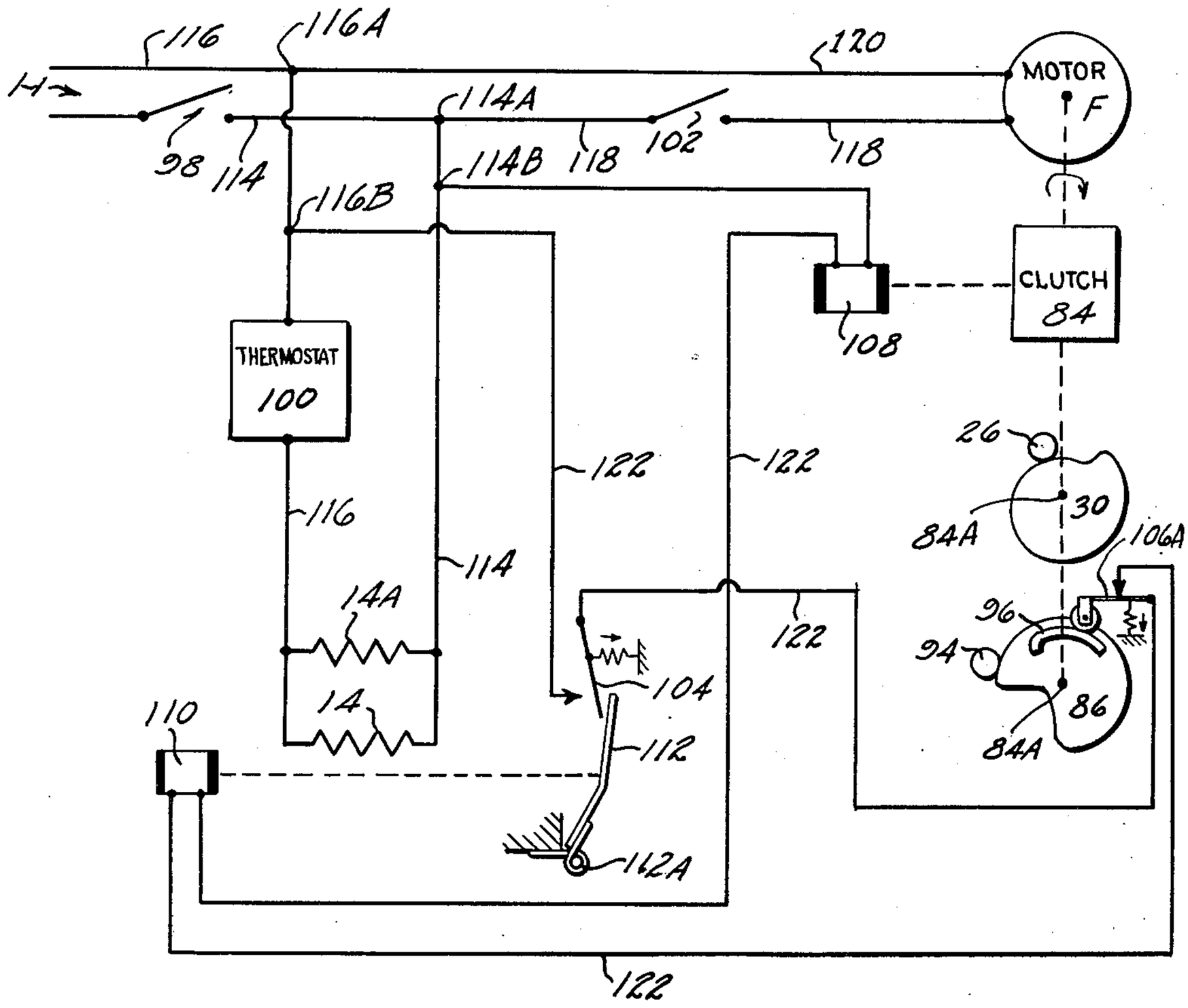

Fig. 3

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Fig. 4

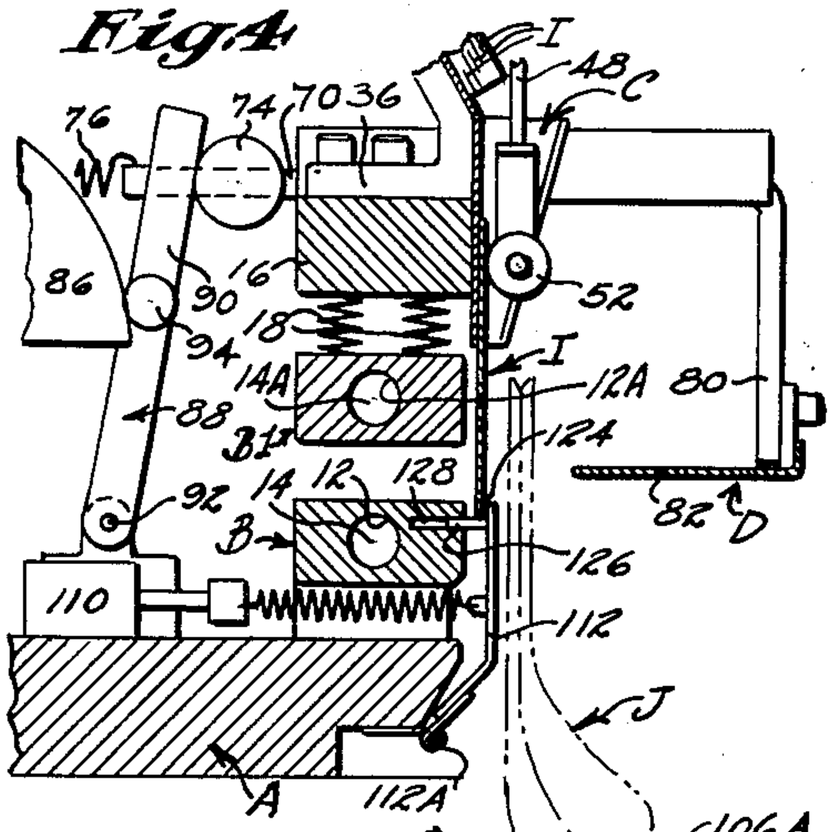


Fig. 5

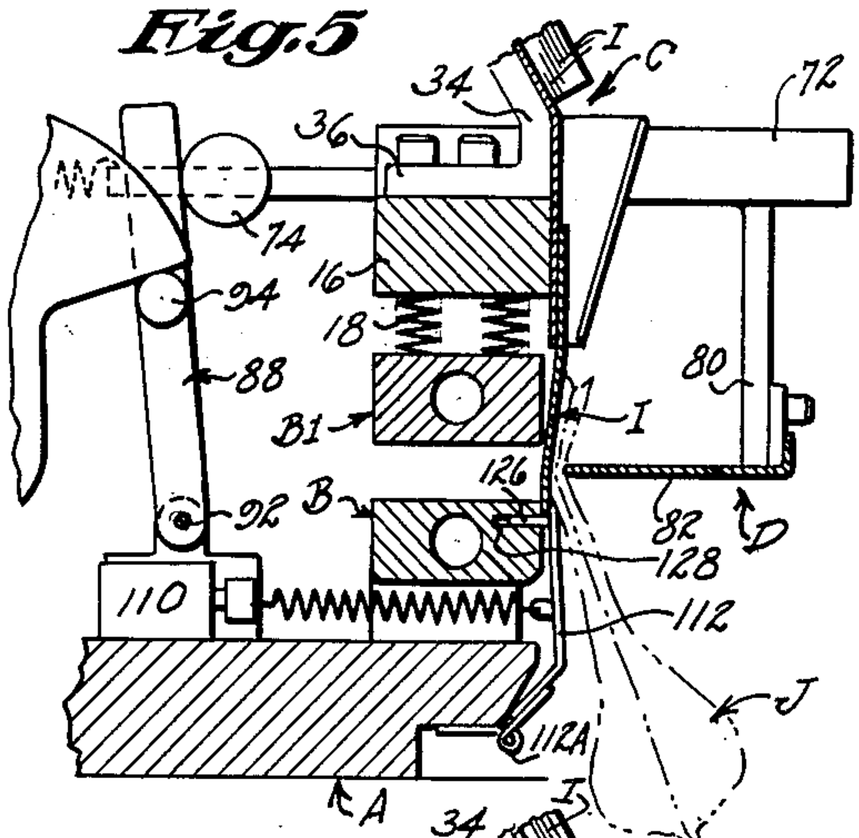


Fig. 6

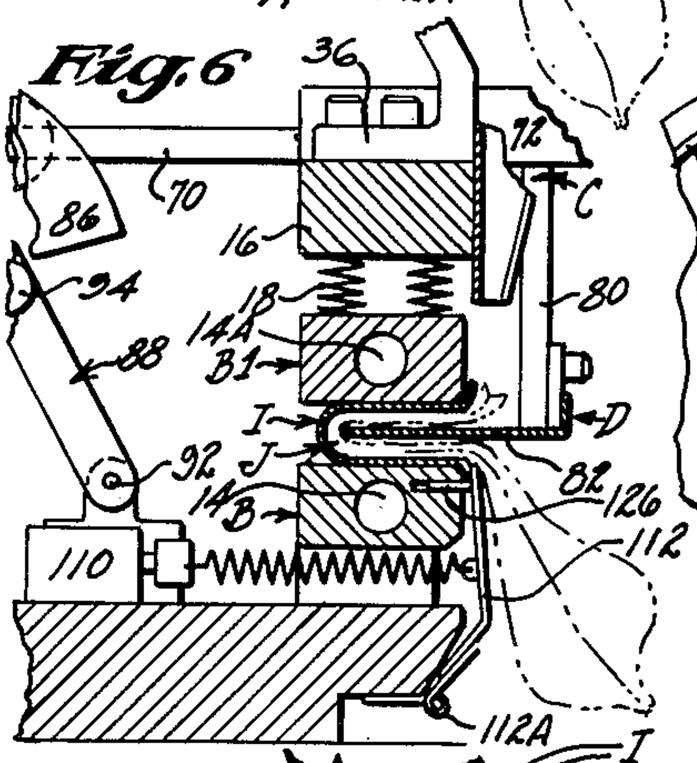


Fig. 7

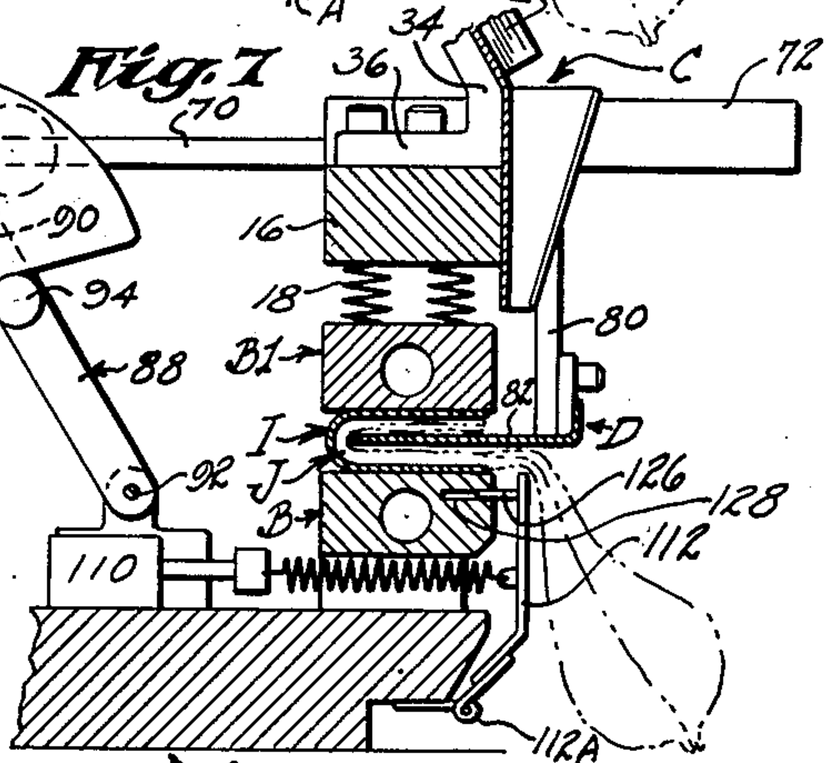


Fig. 8

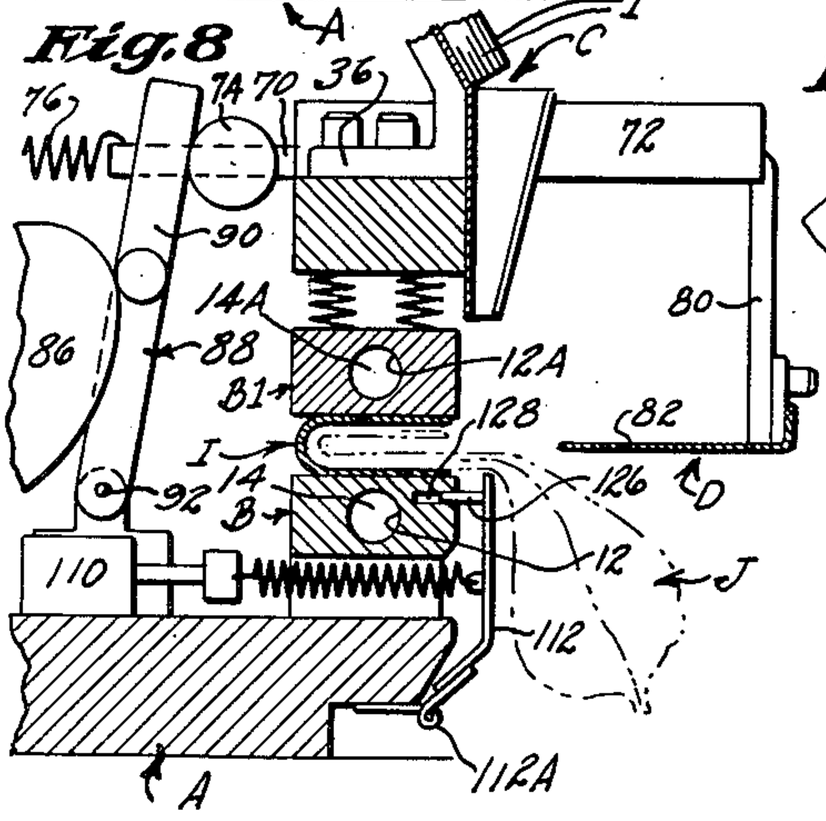
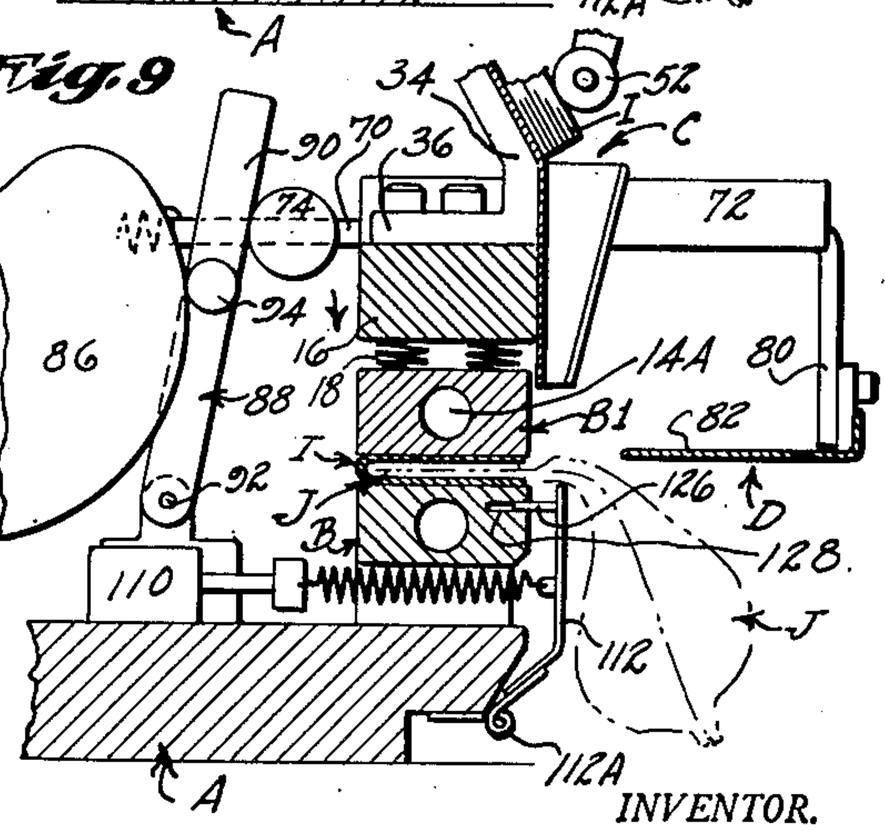


Fig. 9



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UNITED STATES PATENT OFFICE

2,659,520

SEALING MACHINE WITH AUTOMATIC LABELING

Herbert Louis Reitzes, Los Angeles, Calif., assignor to Globe Products Heat Seal Corporation, Los Angeles, Calif., a corporation of California

Application November 3, 1950, Serial No. 193,865

4 Claims. (Cl. 226—56)

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My invention relates to a sealing machine, and relates particularly to a sealing machine which automatically applies a label to a bag at the same time that the bag is sealed.

In the past, cellulose derivate bags have been sealed and labels applied to the sealed bag, but to perform this operation two machines were utilized, one to seal the bag, and one to apply the label to the sealed bag, requiring additional space for the machines, as well as additional labor costs for operators to operate the different machines. Of course, it is apparent that more time is involved in performing two operations than a single operation, also.

It, therefore, is an object of my invention to provide a machine which affixes a label automatically to a bag at the same time the sealing of the bag is carried out, thereby saving space, time and labor.

Another object of my invention is to provide a simple sealing mechanism which softens the open end of a cellulose bag upon the application of heat so that the ends adhere to each other when pressure is applied.

Another object of my invention is to apply a label and heat seal a container by heating the label and ends of the container simultaneously.

Another object of my invention is to provide a machine which may be utilized to seal bags without applying a label thereto.

Other objects of my invention are to provide an improved sealing and labelling machine which is simple and sturdy in construction, economical to produce, and highly efficient in operation.

With the above and related objects in view, my invention consists in the details of construction and combination of parts as will be more fully understood from the following description when read in conjunction with the accompanying drawing, in which:

Fig. 1 is a perspective view of a sealing and labelling machine embodying my invention.

Fig. 1*a* is a perspective view of a bag, sealed and a label affixed thereto, by the sealing and labelling machine shown in Fig. 1.

Fig. 2 is a perspective view of the label carrying and feeding magazine of the sealing and labelling machine shown in Fig. 1.

Fig. 3 is an electro-mechanical schematic diagram of the control means for the sealing and labelling machine embodying my invention.

Figs. 4 to 9, inclusive, are fragmentary schematic plan views of the sequence of motions of my sealing and labelling machine in sealing a

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bag and applying a label simultaneously thereto; more specifically,

Fig. 4 shows the bag and label in position for applying the label to the bag.

Fig. 5 shows the bottom edge of the label held securely so that a label and the bag folder and inserter may push both the label and the bag simultaneously between the heating elements of the sealing and labelling machine.

Fig. 6 shows the second step of the progressive pushing of both the label and bag between the heating elements.

Fig. 7 shows the bottom of the label released so that the label edges (top and bottom) are in alignment as they are pushed between the heating elements.

Fig. 8 shows the label and bag pushed entirely between the heating elements and the label and bag folder and inserter withdrawn from between the heating elements.

Fig. 9 shows the complete closure of the heating elements to seal the bag and affix the label thereto.

Referring now in greater detail to the drawings wherein similar reference characters refer to similar parts, I show a heat sealing and labelling machine having a base, generally designated as A, upon which is mounted a heating element, generally designated as B, which interacts with a second heating element, generally designated as B1, to seal a bag formed of cellulose derivatives, generally designated as J, or to seal a bag J and affix a label, generally designated as I, simultaneously, by pushing the bag and label between the heating elements B and B1 by means of a bag and label folding and inserting device, generally designated as D. The label I being carried and fed by a label and feeding mechanism, generally designated as C, to a label receiving station to be acted upon by the label folding and inserting device D. The drive mechanism, generally designated as E, is driven by a suitable continuously running electric motor, generally designated as F, which is supplied, along with the control circuits, generally designated as G, with electrical power from a suitable source of electrical power, generally designated as H.

The base A comprises a substantially rectangular piece of suitable metal to which the various components of my heat sealing and labelling machine are secured. However, it is important to keep in mind that the base A may be of any shape so long as the components

mounted thereon perform in the manner hereinafter described.

The heating element B comprises an oblong piece of suitable metal 10 (better seen in Fig. 2) having a bore 12 therein in which is carried a resistance coil 14 (shown in Fig. 2) through which an electrical current is passed to heat the oblong piece of metal 10. The heating element B may be mounted directly on the base A, or it may be mounted with a suitable spacer between it and the base A, if so desired.

The heating element B1 is of similar construction and is complementary to the heater element B. The heating element B1 comprises an oblong piece of metal 10A having a bore 12A therein to receive a resistance coil 14A through which an electrical current is passed to heat the oblong piece of metal 10A. The heating elements B and B1 interact to seal a bag J, or a bag J and label I, together by the application of pressure and heat. The heating element B1 is secured to a block of metal 16 through compressible springs 18. The block of metal 16 is attached permanently to, or may be formed integrally with, the arms of a Y-shaped yoke 20. The yoke 20 is pivotally attached to the pivot blocks 20A, which are permanently attached to substantially each side of the base A, by means of the removable pivot pins 22 through the blocks 20A and the arms of the yoke 20. The free end of the Y-shaped yoke 20 is provided with a slot 24 having a roller 26 secured therein by means of the pin 28. The roller 26 rides on an eccentric drop cam 30 which as it rotates brings the heating element B1 into complementary relationship with the heating element B. This action will be described in greater detail hereinafter. A tension spring element 21 is secured between the base A and the free end of the yoke 20 to insure positive contact of the roller 26 with the cam surface of the cam 30.

The label feeding and carrying magazine C comprises a cross-shaped base 32 which is attached to the block 16 by means of the bent portion 34 of the arm 36 so that the arm 36 is sloped away from the face of the block 16. The opposite arm 36 of the base 32 is provided with a slot 40 to accommodate an extended pivot 42 of a J-shaped lever 44. The pin 46 through the bores in the arm 38 and pivot 42 secures the J-shaped lever 44 to the arm 38 and acts as a fulcrum for the J-shaped lever 44. The J-shaped lever 44 has pivotally attached to its curved end a label ejector 48 which is held against the labels by a spring 50 which has one end attached to substantially the center of the label ejector 48 and its other end attached to the J-shaped lever 44. The free end of the ejector 48 is provided with suitable rollers 52 for gripping the uppermost label in the label and feeding magazine C. The straight portion of the J-shaped lever is provided with a plurality of bores 54 therethrough to accommodate the bent end of a rod 56 which is pivotally attached at 58 to an angle iron 60 which is attached to the base A. The cross-arms 62 and 64 of the cross-shaped base 32 are each provided with a slot 62A and 64A, respectively, in which a pair of movable side members 66 and 68, respectively, are seated. The side members 66 and 68 may be moved in their respective slots to any position along the arms 62 and 64 and secured by thumb nuts (not shown) to accommodate different size labels. The label feeding and carrying magazine C is stationary with respect to the block 16, but when the block 16 moves up and down, the rod 56 pulls the straight end of the J-shaped lever 44 to actuate the label ejector 48.

The label and bag folding and inserting mechanism D comprises an arm 70 which slides in a suitable guide 72 attached to the block 16. The arm 70 is provided with a roller 74 at its end toward the drive mechanism E which will be described in greater detail hereinafter. A tension spring 76 is attached to the arm 70 near the roller 74, the other end of the spring 76 being attached to a bracket 78 which is securely fastened to the base A. The other end of the sliding arm 70 is provided with a right-angled extension 80 (may be part of the arm 70, or may be a separate piece of metal) which carries a bag or label folding and inserting blade 82 in alignment with the opening between the heating elements B and B1. The tension spring 76 continually urges the blade 82 through the arm 70 and extension 80 toward the opening between the heating elements B and B1, but this action can only take place at a definite time as the drive mechanism E opposes the action of the spring 76 except at a definite time as hereinbefore stated.

The drive mechanism E consists of a one revolution clutch 84 (see in Fig. 3), which when engaged will only make one revolution and disengage automatically, attached to one end of a suitable continuously running electric motor F. The other end of the clutch 84 drives a shaft 84A upon which is mounted the drop cam 30 and the drop cam 86. The cam 30 is so designed that it gradually raises the roller 26 on the yoke 20 until the pivoted heating element B1 is in complementary engagement with the heating element B. Further rotation of the cam 30 compresses the spring 18 to exert pressure and heat on the label I. A complete revolution of the cam brings the roller to a drop portion of the cam 30 and the yoke 20 carries the heating elements B and B1 apart to release the bag and label.

The drop cam 86 is designed to have an abrupt drop and an abrupt rise in its cam surface. The cam 86 drives a cam follower 88 consisting of an arm 90 pivotally attached to the base A at 92. The arm 90 is provided with a roller 94 at substantially its center to ride upon the surface of the cam 86, while the roller 74 on the arm 70 rides up and down on one side of the arm 90, thus, when the cam 86 rotates to a point where the roller 94 falls from the cam surface of the cam 86, the spring action of the spring 76 pulls the sliding arm 70 against the arm 90 and the bag and label folding and inserting blade 82 is pulled into the opening between the heater elements B and B1. As the cam 86 continues to rotate the abrupt rise of the cam surface engages the roller 94 on the arm 90 thereby urging the arm 90 toward the heating elements B and B1. The forward motion of the arm 90 slides the arm 70 in its guide 72 forward against the action of the spring 76 to remove the blade 82 from between the heating elements B and B1.

The electrical circuits for the heating elements B and B1, the motor F, and the control circuit for the drive mechanism E, are shown at G and are connected to a suitable source of electrical power H. By referring to Fig. 3 the various connections to the source of power H can be more readily discerned and understood. The heating elements B and B1 have their resistance coils 14 and 14A, respectively, connected in parallel through a pair of parallel conductors 114, 116 to the source of power H. The conductor 114 is provided with a switch 98 to disconnect the

resistance coils from the source of power H. The conductor 116 is provided with a thermostat 100 in series with the conductor 116 to control the temperature of the resistance coils.

The motor F is connected to the source of power H through a pair of parallel conductors 118 and 120, respectively, joined to the conductors 114 and 116 at the junction points 114A and 116A, respectively. The conductor 118 is provided with a switch 102 to disconnect the motor F from the source of power H independently of the resistance coils 14 and 14A. The solenoids 108 and 110 as well as the normally open micro-switch 104 and the normally closed micro-switch 106 are in series with the conductor 122 which has one end connected to the conductor 114 at the junction point 114B and its other end connected to the conductor 116 at the junction point 116B.

The normally open mirco-switch 104 is manually closed by the plate 112 which is hingedly attached to the front of the base A at 112A. The plate 112 is also connected to the movable contact of the solenoid 110 so that when the switch 104 is closed by pushing the plate 112 against the heating element B, the circuit in the conductor 122 is completed and solenoid 110 is energized to hold the plate 112 against the heating element B until the circuit of conductor 122 is broken. The completion of the circuit of conductor 122 energizes the solenoid 108 whose movable element trips lever 84B to initiate one revolution of the clutch 84 thereby moving the cams 30 and 86 one full cycle. The micro-switch 106 is normally closed because of the action of the cam extension 96 against the switch arm 106A. However, when the cam 86 rotates a predetermined distance, the switch arm 106A drops off the cam extension 96 and opens the switch 106 thereby breaking the circuit in conductor 122, and the plate 112 through the action of the movable contact of solenoid 110 is moved away from the heating element B, thus opening the switch 104.

Now, the sequence of operations of my heat sealing machine is as follows:

Assuming that the label feeding and carrying magazine C is filled with a supply of pre-cut and pre-printed labels whose printed face is toward the base 32, the switch 98 is turned on and the thermostat 100 is set to the temperature desired thus connecting the resistance coils 14 and 14A to the source of power H. A sufficient time is allowed to elapse to bring the heating elements B and B1 up to the desired temperature. Thereafter the thermostat 100 will maintain the heating elements at the proper temperature. The switch 102 is then turned to the on position to connect the motor F to the source of power H. A bag J formed of cellulose derivative is placed with the end to be sealed between the blade 82 and the heating elements B and B1. The plate 112 is pushed toward the heater B to close the switch 104. The closing of the switch 104 completes the control circuit of conductor 122 with the following results:

The solenoids 108 and 110 are energized. The movable element of solenoid 108 actuates a shaft 84A which initiates one revolution of the clutch 84. The movable contact of the solenoid 110 holds the plate 112 against the heater B, thereby holding the bottom of a label I resting on label receiving station 124 comprised of pins 126 attached to the plate 112 and entering and resting within the bores 128 in the block 10. The revolution of the clutch 84 turns the drop cams 30 and 86 as well as cam extension 96 until a complete

revolution of the clutch is completed whereafter the clutch 84 automatically disengages until another revolution is initiated.

The cam 86 is so placed on the shaft 84A that the roller 94 will almost immediately drop into the cut-away portion of the cam 86 upon the beginning of the cam revolution. When the roller 94 drops into the cut-away portion of the cam 86, the spring 76 abruptly pulls the arm 70 in its guide 72 whereby the blade 82 is carried between the heating elements B and B1, folding and inserting the top of the bag J and the held label I between the heating elements. The cam 86 continues to revolve carrying with it the cam extension 96 upon which rides the switch arm 106A of micro-switch 106. As the cam extension 96 ends the switch arm 106A faces therefrom to open the micro-switch 106 breaking the circuit of conductor 122 whereby the solenoids 108 and 110 are de-energized and the plate 112 is allowed to move away from the heating element B releasing the held bottom edge of the label I. Immediately after the release of the label I, the roller 94 reaches the lowermost point of cam 86 and the blade 82 is fully inserted between the heating elements B and B1 pushing the held portion of the label between the heating elements B and B1.

The cam 30 has also been rotating thereby bringing the heating element B1 in closer relationship to the heating element B, but only close enough together to hold the bag and label without binding the blade 82.

Further rotation of the cams 86 and 30 rides the rollers 94 and 26, respectively, to the uppermost portions of the cam surfaces of the cams 86 and 30 thereby moving the blade 82 from between the heating elements B and B1 and bringing the heating elements B and B1 into complementary relationship upon the folded label I and bag J. Further rotation of the cam 86 has no effect, except that the leading edge of the cam extension 96 contacts and raises the switch arm 106A to close the switch 106. Further rotation of the cam 30 rides the roller 26 still higher compressing the springs 18 between heating element B1 and block 16 thereby applying pressure and heat to the folded label I and bag J to seal them together. The final few degrees of rotation of the cam 30 rides the roller 26 from the highest point of the cam 30 to the lowest point of the cam 30 whereby the heating elements B and B1 are permitted to open to release the sealed bag with affixed label.

While the sealing operation above described is taking place, the label feeding and carrying magazine C is moving downwardly with the block 16 causing the label ejector 48 to move upwardly through the action of the rod 56 on the straight end of the J-shaped lever 55 until when the heating elements B and B1 are fully closed, the rollers 52 contact the upper label I in the magazine C. When the heating elements B and B1 separate due to the abrupt drop from the highest point to the lowest point on the cam 30, the label ejector 48 moves downwardly and the rollers carry and deposit the uppermost label I from the stack in the magazine C on the label receiving station 124.

After the revolution of the clutch 84 is completed, the clutch 84 automatically disengages itself from the motor F and the machine is inoperative, as the micro-switch 104 is open. To initiate another bag sealing operation, it is necessary to again place a bag between the blade 82 and the heating elements B and B1 and man-

ually close the switch 104 by means of the plate 112 to initiate another complete revolution of the clutch 84.

It is readily apparent that the use of my heat sealing machine will enable the user to seal and label bags simultaneously, or just seal bags without applying a label by the simple expedient of not placing any labels in the label magazine. It is also readily apparent that the use of my heat sealing and labelling machine will effect a great saving in time, labor and space, as it is only necessary to use a single machine where, in the past, two machines and two operators were required.

Although my invention has been described in considerable detail, such description is intended to be merely descriptive rather than limiting, as my invention may be variously embodied, and the scope of the invention is to be determined as claimed.

I claim as my invention:

1. In a machine for sealing a bag and affixing a label thereto, a base, a first heated platen, a second heated platen, an electric motor adapted to run continuously, a pivoted lever, a first cam, a second cam, a one revolution clutch operatively connected between said motor and said cams for driving said cams, means to crease a bag and label simultaneously, said means being adapted to insert said bag and label between said first and second platens, said first platen being mounted on said base, said second platen being resiliently mounted on one end of said pivoted lever, the other end of said pivoted lever being adapted to be actuated by said first cam to move said second platen into complementary relationship with said first heated platen to seal a bag and label together by the action of the heat of said platens, and said second cam being adapted to actuate said means to crease a bag and label simultaneously, and an electrical control circuit to initiate the start of the revolution of said clutch.

2. In a machine, the combination of a base, a first heated platen mounted upon said base, a second heated platen resiliently mounted on a pivoted lever to enable said second platen to be moved into complementary relationship with said first

platen, a first cam to actuate said pivoted lever, means to crease and insert a bag and label simultaneously between said first and second platens at a predetermined time, a second cam adapted to actuate said last named means, a one revolution clutch adapted to drive said cams, and an electric motor adapted to drive said clutch.

3. The invention of claim 2 including means to place a label in position for the next creasing and inserting operation when the said second platen is moved out of complementary engagement with said first platen.

4. A heat sealing and labelling machine comprising a base, a first heated platen, a second heated platen resiliently mounted upon a pivoted lever, a continuously operating motor, a one-revolution clutch attached to the shaft of said motor, a first cam driven by said clutch engaging the free end of said lever to bring said second platen into complementary engagement with said first platen at a predetermined time, a second cam driven by said clutch adapted to actuate means to crease and insert a label and a bag between said first and second platens at a time immediately before said first and second platens are brought into complementary engagement, said platens when in complementary engagement sealing said label and said bag together by the action of heat and pressure, means to place a label in position for the next creasing and inserting operation when said second platen is moved out of complementary engagement from said first platen, and means to control the start of the revolution of said clutch.

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