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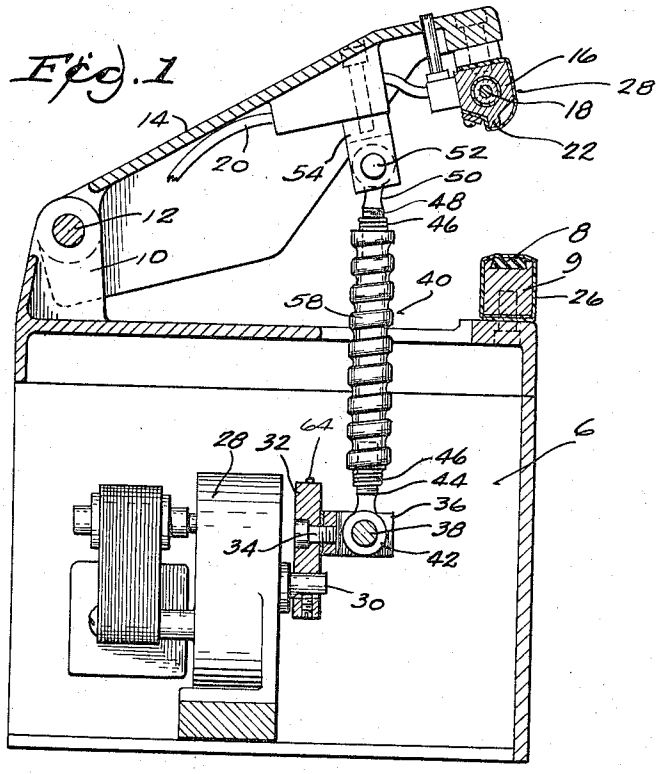
BAR-TYPE SEALER HAVING MOTOR-OPERATED JAW MEANS

Filed June 16, 1965

Fig. 1



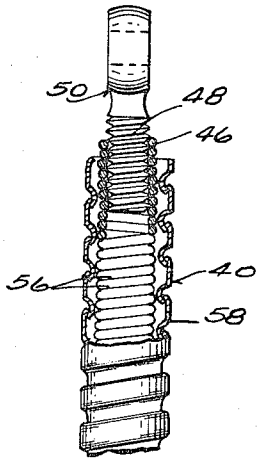


Fig. 3

Fig. 2

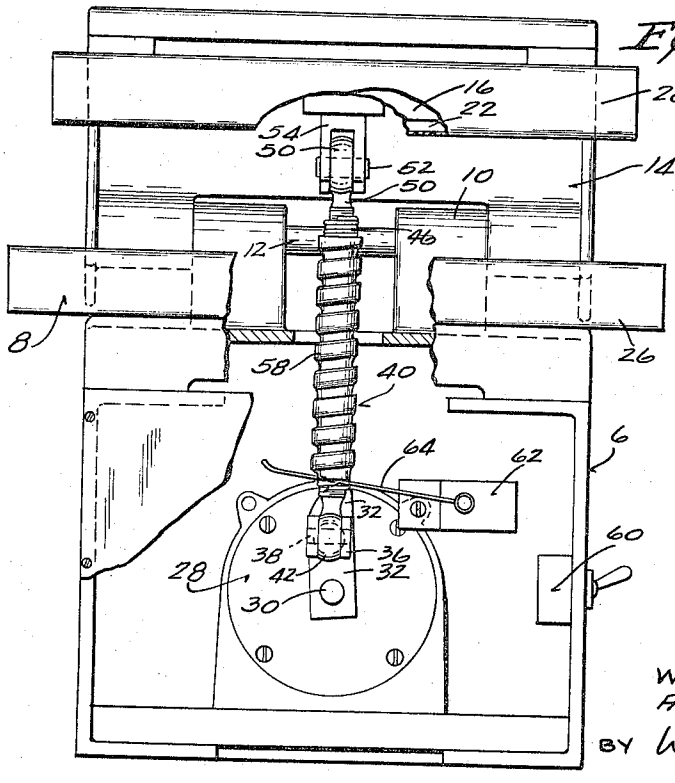
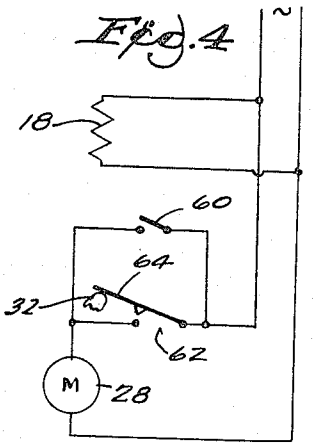


Fig. 4



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BAR-TYPE SEALER HAVING MOTOR-OPERATED JAW MEANS

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ABSTRACT OF THE DISCLOSURE

A jaw-type sealer has a crank for operating the movable jaw, and a connecting rod comprising eye bolts connected with the crank and with the jaw respectively, and further has an intervening tightly wound spring which is under compression when the jaw is being lifted and which is enclosed in a floating tube tightly fitted about the spring to keep it from collapse when under pressure, the spring being tensioned to provide lost motion following the closing of the jaws. The motor which drives the crank has a switch opened when the crank has made one rotation, the jaw being open.

This invention relates to a bar-type sealer having motor-operated jaw means.

A relatively fixed jaw is mounted on an appropriate hollow base in which there is a motor and a crank for oscillating an arm which carries the movable jaw. The link which connects the crank with this arm comprises a spring which is under compression when it raises the arm and is tensioned when the arm closes the jaws upon the work. The spring is desirably enclosed in a tube which is preferably somewhat flexible but in any event is stiff enough to prevent the spring from bowing or collapsing during the arm-lifting movement. There need be no connection between the tube and the enclosed spring. In the preferred embodiment, the tube assembly floats externally upon the spring which provides the actuating linkage. The tensioning of the spring within the tube provides for such lost motion as is necessary to permit continued operation of the motor driven crank after the movable jaw is fully seated on the work.

The motor is preferably controlled by a circuit which includes at least two switches in parallel, one of which is controlled by the operator either manually or with his foot and another of which is a normally closed switch that is opened mechanically in each rotation of the crank as the movable jaw reaches its elevated position, it being desirable that after the operator-controlled switch is opened, the motor will continue in operation until the movable jaw is elevated and will then stop with the jaws open.

In the drawings:

FIG. 1 is a view in front to rear section through a heat sealer embodying the invention.

FIG. 2 is a view in front elevation of the heat sealer shown in FIG. 1 with portions broken away.

FIG. 3 is an enlarged fragmentary detail view of a portion of the spring link which connects the motor crank with the arm which supports the movable jaw, portions being broken away.

FIG. 4 is a motor circuit diagram.

The hollow base **6** supports a relatively fixed heat sealing bar **8** and carrier **9**, and is provided with a pair of upstanding ears **10** for the pintle **12** upon which is oscillatable an arm **14** for the support of the movable heat sealing bar **16**. The latter is preferably provided with an internal resistance coil at **18** supplied with current through appropriate conductors **20** and arranged to deliver heat to the work through the contact flange **22**.

In the instant embodiment the lower bar **8** is not heated but the heating of both bars is optional. It is sufficient to have one bar heated if the materials to be sealed are plastic films such as polyethylene, propylene, Pliofilm, etc. Heating both bars would be desirable if the device were used for cellophane, glassine, overcap labels, and military laminates such as kraft-backed and scrim-backed materials.

For use in sealing plastics, the bar **8** and carrier **9** are preferably both enclosed within a release wrapper **26** so that the work will not adhere to the bar. Similarly, a section of release wrapper **28** extends around pressure flange **22** of the movable bar **16**, all as shown in FIG. 1. The release wrapper is not required for heat sealable materials other than plastics.

Whether or not the release wrapper is used, the apparatus allows for the mounting on the sealing bars of accessories such as hole punches and data embossing dies such as those used for code dating.

Within the hollow base there is a motor and gear case assembly **28** having an output shaft **30** provided with crank **32**. The crank pin **34** pivotally attaches to the crank a fitting **36** which has a transverse pintle **38**. On this pintle is pivoted the lower end of the link generically designated by reference character **40**. The eye **42** pivoted on pintle **38** is part of an eye bolt **44** onto the shank of which the spring **46** is threaded. The upper end of spring **46** is similarly threaded onto the shank **48** of eye bolt **50**. Eye bolt **50** is pivoted on a pintle **52** carried by a bifurcated fitting **54** bolted to arm **14**.

As clearly shown in FIG. 3, the coils **56** of the spring **46** are preferably so tightly wound as to be in contact with each other. Thus, motion can be transmitted through the spring in compression from the eye bolt **44** at its lower end to the eye bolt **50** at its upper end for the purpose of elevating the arm **14** to the position shown in FIG. 1. In case the spring is light, it is preferably encircled by a sleeve **58** which prevents the spring from bowing or collapsing during the upward movement of link **40**. This sleeve may conveniently comprise a spirally wound flexible sheath such as is used for the armor of a conduit for electrical wiring. The sheath **58** as used herein does not require any particular flexibility. Neither is it necessary that it be attached in any manner to any portion of spring **56** or to either of the eye bolts. It simply encircles the spring **56**, preferably with a fairly tight fit as shown in FIG. 3, and moves upwardly and downwardly as a part of the link **40**. On the downward movement of the link **40** and arm **14**, the flange or rib **22** of the upper jaw **16** engages the work supported on the lower jaw **8**. When this happens, any further movement required by the crank pin **34** to complete its circuit is absorbed by the slight stretching within the sheath of the tension spring **46**. The lost motion occurring at this point provides, and permits control of, both pressure and dwell time to complete the seal. Control is effected by varying the length and tension of the spring.

The circuit of motor **28** can be energized by closing either of at least two switches. The switch **60** is actuated by the operator and may comprise either a manually operated switch or a pedal operated switch (or both). The switch **62** has an operating arm **64** which extends over the path of crank **32** so that each time the crank is in the position shown in FIGS. 1, 2 and 4 the switch **62** will be opened.

If the switch **60** is closed, the motor **28** will continue in operation. However, if the switch **60** is opened as shown in FIG. 4, the motor will nevertheless continue in operation as energized through switch **62** until the circuit through switch **62** is broken by engagement of crank **32** with the arm **64**. The purpose of this arrangement is to insure that each time the operation of the

sealer is interrupted, it will always stop with the jaws open. The open-jaw position corresponds to the position in which the crank projects upwardly to engage the operating lever **64** of switch **62**.

We claim:

1. A jaw-type sealer having relatively fixed and movable jaws, means for heating at least one jaw, crank means for the operation of the movable jaw and a motion transmitting link between the crank means and the movable jaw which includes a spring comprising coils normally in tight coil-to-coil contact throughout the spring and upon which coils the link is dependent to transmit motion both under compression and under tension.

2. A sealer according to claim **1** in which a sleeve encircles the spring and constitutes means for precluding lateral deformation of the spring when it is transmitting motion under compression.

3. A sealer according to claim **2** in which the sleeve fits tightly about the spring and is free of physical attachment thereto.

4. A sealer according to claim **3** in which the sleeve comprises a spirally wound flexible sheath.

5. A jaw-type sealer comprising the combination with a base, a relatively fixed jaw mounted thereon, an arm pivoted to the base, a relatively movable jaw connected to the arm to move therewith operatively to and from the fixed jaw, means for heating at least one jaw, a motor provided with a driving crank, and a link connecting the crank with said lever, the link including terminal connections to the crank and lever and an intervening spring constituting the sole means between said connections for transmitting motion from the crank to the lever both under compression and under tension.

6. A sealer according to claim **5** in which the link comprises a pair of eye bolts having shanks to which the ends of the spring are respectively threaded, a fitting pivoted to the crank and having a pintle with which one of said eye bolts is pivotally engaged, the said lever having a pintle with which the other of said eye bolts is pivotally engaged.

7. A sealer according to claim **6** in which the link includes a sleeve in supporting and encircling relation to the spring between said eye bolts.

References Cited

UNITED STATES PATENTS

1,203,184	10/1916	Clark	74—582 X
1,313,764	8/1919	Thurston.	
2,103,945	12/1937	Henley	156—581
2,596,680	5/1952	Halahan et al.	100—93
2,641,304	6/1953	Biddinger et al.	219—243 X
2,713,819	7/1955	Lingle	100—282 X
2,970,417	2/1961	Parks	53—373 X
3,106,630	10/1963	Klamp	100—93
3,248,851	5/1966	Ford	219—243 X

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