(No Model.)

F. W. SCHULTZ.

MACHINE FOR WINDING WIRE SOLDER.

No. 547,231. Patented Oct. 1, 1895.

Fig. 1.

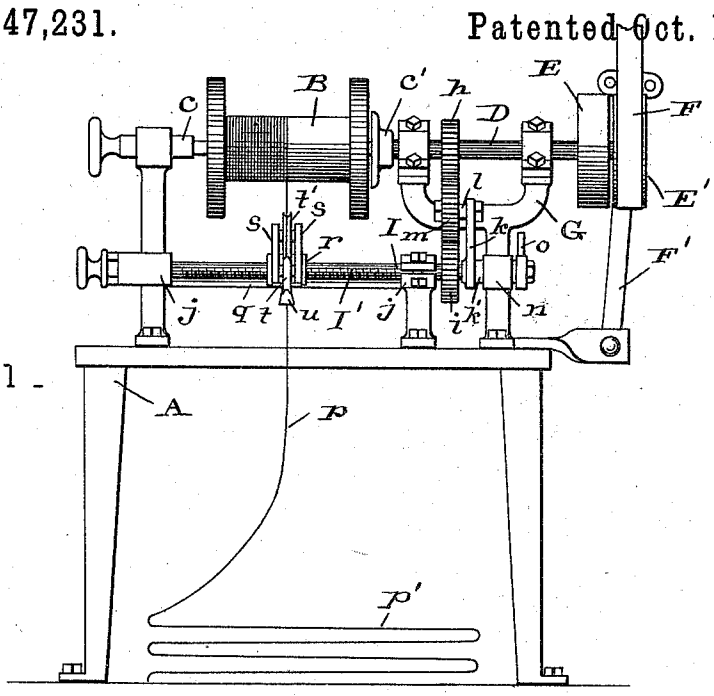


Fig. 5.

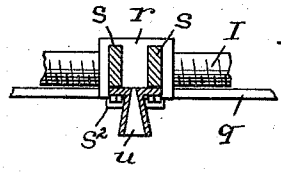


Fig. 2

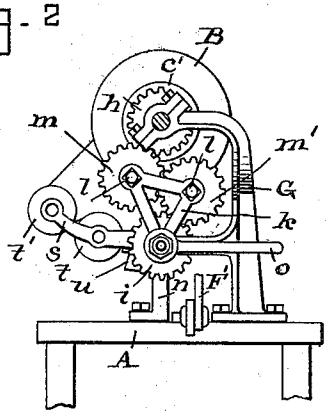


Fig. 4.

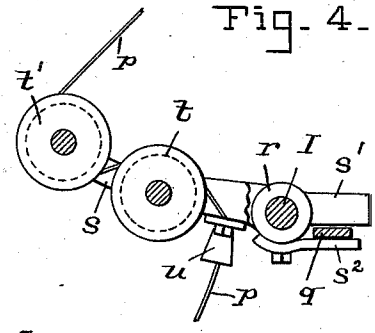
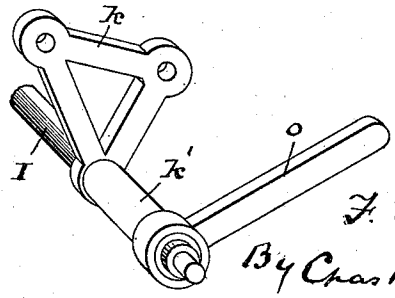


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK W. SCHULTZ, OF BALTIMORE, MARYLAND.

MACHINE FOR WINDING WIRE-SOLDER.

SPECIFICATION forming part of Letters Patent No. 547,231, dated October 1, 1895.

Application filed May 2, 1895. Serial No. 547,851. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. SCHULTZ, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Winding Wire-Solder, of which the following is a specification.

This invention relates to a machine for winding wire-solder on spools.

The construction of the machine will first be described, and the invention then pointed out in the claim.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation looking from the right side of Fig. 1 toward the left with the drive-pulleys, however, removed. Fig. 3 is a view of the oscillatory frame which carries the two gears. Fig. 4 is a sectional view of the wire-solder guide and the tension device. Fig. 5 is a detail sectional view of the guide.

The machine is mounted on a suitable stand A. The spool B, on which the wire-solder is to be wound, is supported in a suitable chuck *c c'*, which admits of readily removing a filled spool and inserting an empty one. The chuck part *c'* is fixed on the end of a revoluble shaft D, which carries the fast and loose pulleys E E', while the other part *c* of the chuck is adjustable in the well-known way. A belt F to communicate power from a suitable source is shifted by means of a lever F' to either one of the pulleys E E', so as to start or stop the revolution of the shaft. The shaft D is supported by a yoke-shaped standard G and carries a pinion *h*. A shaft I has its ends in bearings *j* and revolves therein. Between these bearings the shaft is screw-threaded, as at I'. This screw-shaft carries a pinion *i*. An oscillatory frame *k* is triangular in shape and at one angle has an attached sleeve *k'*. Each of the other two angles carries a stud-pin *l*, and on each pin are mounted pinions *m m'*, which engage each other. The pinion *h* on the main shaft D may engage either of the two pinions *m* or *m'*, according as the oscillatory frame is tilted one way or the other. The pinion *m'* remains in constant engagement with the pinion *i* on the screw-shaft. The sleeve *k'* fits loosely on the end of the screw-shaft I, which arrangement serves as a pivot, and thereby the frame *k* may tilt or oscillate, so as to engage either the pinion *m* or the pinion *m'* with the pinion *h* on the main shaft. It will then be seen that the screw-shaft I may be revolved in either direction, according as to which pinion *m* or *m'* is engaged with the main pinion *h*.

The sleeve *k'* fits in a bearing *n*, and a hand-lever *o* is attached to the said sleeve. This lever when moved tilts the oscillatory frame *k* and causes the screw-shaft I to reverse its direction of revolution.

The wire-solder *p* to be wound on the spool B ordinarily lies loosely coiled, as at *p'*, on the floor as it comes from the machine which produces it. I provide a guide and tension device through which the wire-solder from this loose coil passes on its way to the spool. A horizontal bar *q* extends parallel with the screw-shaft I, in which position it is retained. A hub or nut *r*, which is internally screw-threaded, fits on the screw-shaft I. This hub has a double arm or two parallel arms *s* projecting forward, and in the space between the arms are two grooved tension-rollers *t t'*. Between the first roller *t* and the screw-threaded hub *r* is a funnel-shaped guide *u*. The wire-solder *p* passes upward through the funnel-guide *u*, then over the first roller *t*, then downward and under the second roller *t'*, then up to the spool B. It will be understood that the revolution of the screw-shaft I will impart a horizontal movement to the hub or nut *r* and the guide and tension device both forward and backward, according to the direction in which the screw may be revolving. The extent of this horizontal movement relative to each revolution of the screw-shaft depends, of course, on the number of threads to the inch on the said screw-shaft. It will be observed that the several gears *h m m' i* connecting the main shaft (which carries the spool B) and the screw-shaft I (which carries the guide and tension devices) are exactly the same size, and that consequently with each revolution of the spool B there is exactly one revolution of the screw-shaft. Therefore, if the solder-wire to be wound on the spool is one-tenth wire-gage a shaft I should be employed which has ten screw-threads to the inch, and thereby at each revolution of the wire-spool the guide and tension devices will move a distance ex-

actly equal to the thickness or size of the wire. For different sizes of wire different screw-shafts must be employed.

In order to afford support to the arms *s* and guide and tension devices and to give them steadiness as they move backward and forward, a rear-projecting arm s' extends over the bar *q*, and another arm s^2 extends below said bar. These two short arms s' s^2 slide along the bar *q* as the revolution of the screw-shaft moves said arms.

The operation will be understood from the above description. The spool continues to revolve and the solder-wire is wound thereon in layers. When in winding in one direction that layer is complete, the operator tilts the oscillatory frame *k*, which reverses the screw-shaft I and causes the guide and tension devices to move in the opposite direction and thereby winds another layer, and so on until the spool is full.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of a stand; a driving shaft mounted thereon; a winding spool; a chuck revoluble with said shaft and carrying the winding spool; stationary bearings on said stand; a screw-shaft, I, parallel with the said driving shaft and revoluble in said stationary bearings; a stationary bar, *q*, extending parallel with the screw shaft; a hub or nut internally screw-threaded and fitted on the said screw-shaft and provided with a projecting arm; tension rollers carried by said arm; a funnel guide also carried on the arm and between said rollers and the screw-threaded hub; and two arms, s', s^2, on the said hub or nut one of which takes above and the other below said stationary bar and which slide along the same, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

FREDERICK W. SCHULTZ.

Witnesses:
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A. T. BENZINGER.