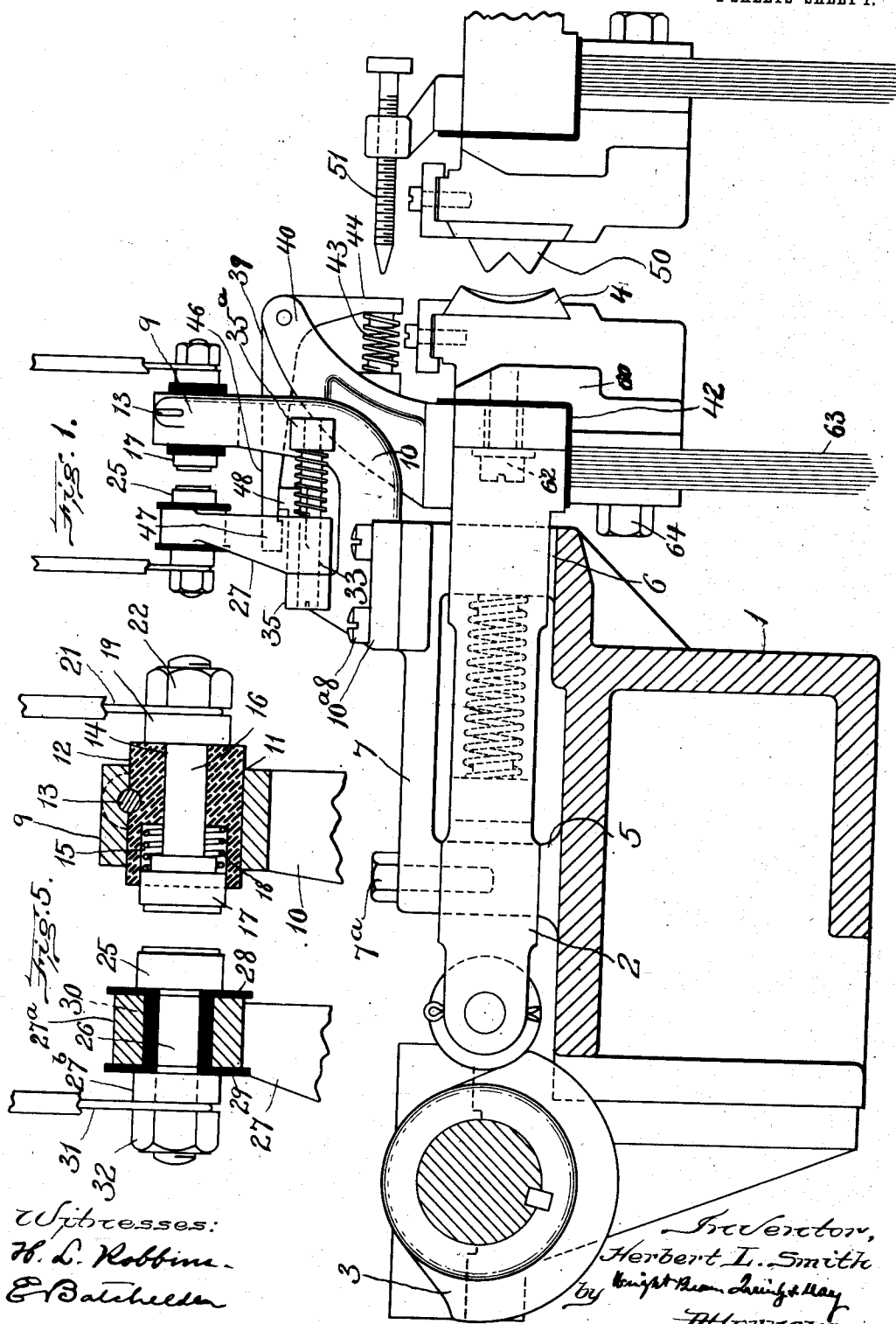


1,043,637.

2 SHEETS—SHEET 1.



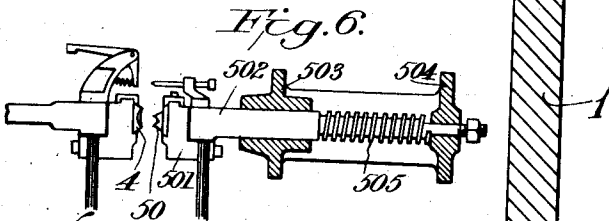
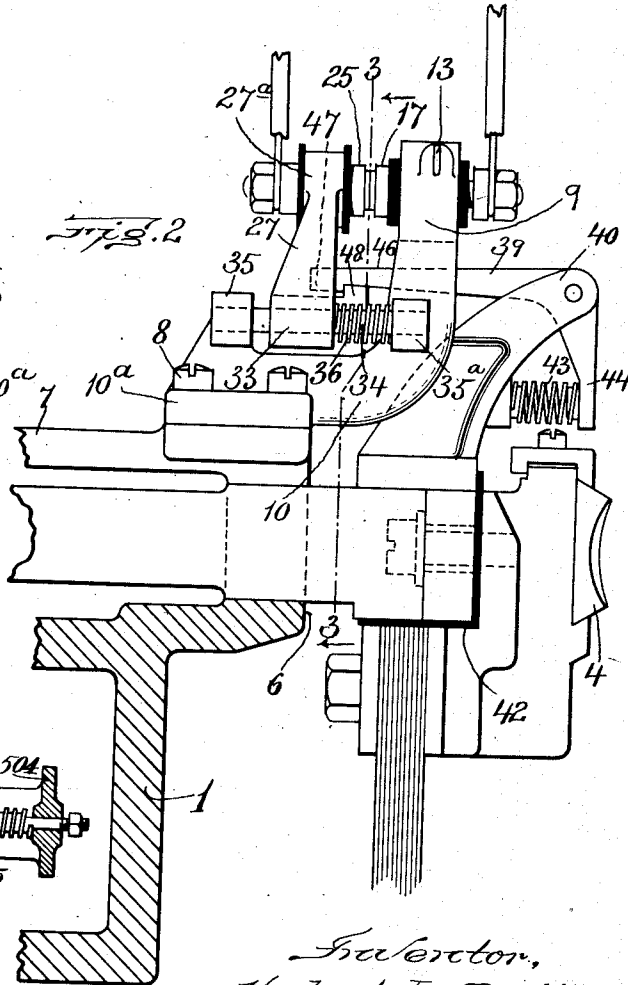
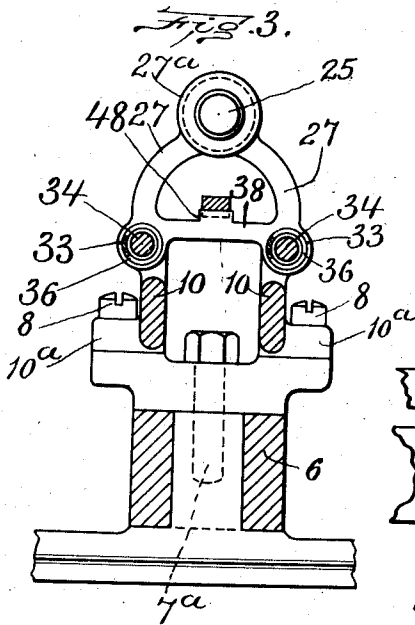
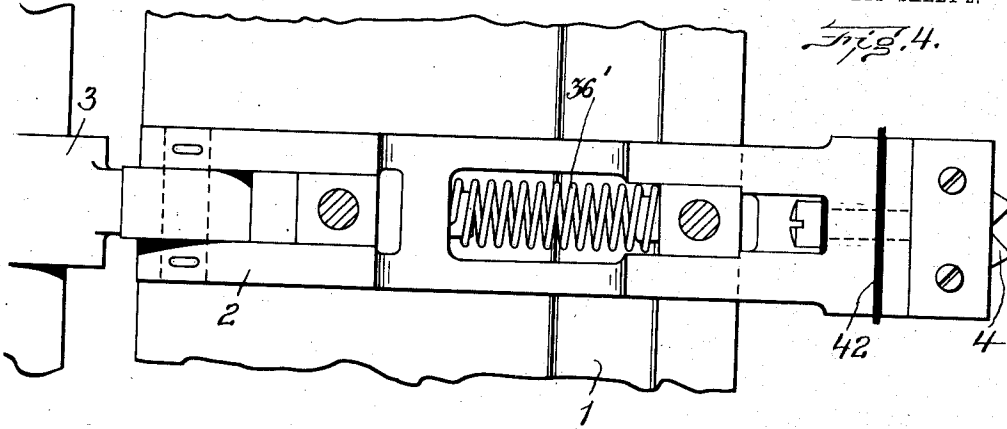
Wives:
H. L. Robbins
E. Batchelder

In Witness whereof,
Herbert L. Smith
by Knight & Co. Solicitors
Attorneys.

1,043,637.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 2.



Witnesses:

H. L. Robbins.

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Attorneys.

UNITED STATES PATENT OFFICE.

HERBERT L. SMITH, OF CLINTON, MASSACHUSETTS, ASSIGNOR TO CLINTON WIRE CLOTH COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CIRCUIT-BREAKER.

1,043,637.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed September 9, 1907. Serial No. 391,888.

To all whom it may concern:

Be it known that I, HERBERT L. SMITH, of Clinton, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Circuit-Breakers, of which the following is a specification.

This invention relates to a new and improved circuit-breaker for machines for electrically welding wire fabric.

Figure 1, in side elevation, shows a portion of a wire fabric welding machine equipped with my improved circuit-breaker, the contact members being shown as separated. Fig. 2 is a view similar to Fig. 1, the contact members being shown in contact and the circuit closed. Fig. 3 is a cross-sectional view on line 3—3 of Fig. 2, looking in the direction of the arrow, showing the construction of the bracket supporting the movable contact member. Fig. 4 is a top plan view of the plunger that carries a movable welding-jaw, over which the breaker-mechanism is located, the latter being removed in this figure. Fig. 5 is a detail view, showing the construction of the contact members of the circuit-breaker and the parts supporting the same. Fig. 6 is a detail view showing the relative arrangement of the two welding-jaws with each other and the spring which actuates the right-hand jaw, the spring actuating the left-hand jaw appearing in Fig. 1.

The same letters of reference indicate the same parts in all of the figures.

My invention relates to machines for electrically welding wire fabric, as shown in a patent granted to me, dated September 4, 1906, No. 830,018, to which reference may be had for a description of the general machine.

1 represents a portion of the framework of such a machine, in which is mounted a reciprocating plunger 2, adapted to be driven by a cam 3. Said plunger is yieldingly held against said cam by a spring 36'. To the end of the plunger is secured a copper casting 60, by a bolt 62. Flexible plates 63 are connected to the casting 60, by a bolt 64. The castings 60, and plates 63, and bolt 62, are insulated from the plunger 2 by insulating material 42. To the face of the casting 60 is secured a contact-plate 4. As shown, the plunger reciprocates in bearings formed in

guides 5, 6, and is held in place by a cap 7 and screw 7^a. To the top of the cap 7, by means of screws 8, are secured ears 10^a, 10^b of arms 10, 10, that carry a hub 9, formed with a socket 11 arranged to receive a circular plug 12 of insulating material.

13 represents a pin extending through the wall of the hub and into the periphery of the plug 12, thus preventing the plug from moving, and retaining the latter in position. The plug 12, as shown, is formed with a central aperture 14 (see Fig. 5), which, at its left or inner end, terminates in an enlarged recess 15.

16 represents a rod of copper, or other conducting material, arranged in the aperture 14. This rod 16 at its inner end is formed with an enlargement 17 arranged in the recess 15. 18 represents a coiled spring arranged about the rod 16 in the recess 15, and tending to throw the end 17, which constitutes the contact, to the left in Fig. 5.

19 represents a washer upon the opposite end of the rod 16, and adapted by contact with the outer end of the plug 12 to limit the movement of the head 17 to the left in Fig. 5.

21 represents a wire arranged on the rod 16 outside of the collar 19 and held in place by a nut 22, in the usual way.

By the described construction, a yielding motion is given to the contact 17 when it is engaged with its complementary contact member 25, which, as shown, is formed on the inner end of a copper rod 26, arranged in a suitable aperture in a hub 27^a, carried by the upper end of arms 27, 27. The outer end of the rod 26 is formed with a collar 27^b. An insulating plate 28 is arranged on the rod 26, between the contact 25 and the head of the hub 27^a. A like insulating plate 29 is arranged on the rod 26, between the collar 27^b and the hub 27^a.

30 represents a cylinder of insulating material, arranged on the rod 26 between the disks 28 and 29. The cylinder 30 with the disks 28, 29, effectively insulate the rod 26 from the hub 27^a.

31 represents a wire arranged on the rod 26 outside the collar 27^b, and held in place by a nut 32, in the ordinary way. The lower end of each arm 27 carries an aper-

tured hub 33, in each of which is arranged a rod 34. The rear end of each rod 34 is arranged in a hub 35 on an arm 10, while the forward end of each rod is carried by a lug 35^a (see Fig. 2). Upon each rod 34 is arranged a coiled spring 36 between the hub 33 and the hub 35^a, said spring tending to throw the hubs 33 to the left in Fig. 1, or, in other words, to separate the contact heads 17 and 25.

38 represents a bar connecting the hubs 33. 39 represents a lever pivoted midway its ends to an arm 40 carried by the forward end of the plunger bar 2, back of the insulating material 42 (see Fig. 1). A coiled spring 43 is arranged between the end 44 of the lever 39 and the arm 40, and normally tends to throw the end 44 to the right in Fig. 1, and the end 46 of said lever downward, in Fig. 1. The end 46 of said lever is shown as formed at its forward end with a catch member 47, adapted to engage a complementary catch member 48 on the bar 38, when the plunger rod 2 is moved forward from the position shown in Fig. 1, where the contact plates 4 and 50 are separated.

Assuming the parts to be in the position shown in Fig. 1, or in the open or inoperative position of the welding-jaws, and assuming the wire to have been fed in the proper position, by the operation of the mechanism shown in my Patent No. 830,018, the contact-plate 50 is advanced and the contact-plate 4 is advanced by means of the plunger 2 and the cam 3 to effect the proper engagement of the wire. Such advance of the bar 2 causes the catch 47 to engage the catch 48, the bar 38 thus drawing the hub 27^a to the right in Fig. 1, until the contacts 17 and 25 are in engagement, as shown in Fig. 2, said movement putting the spring 36 under compression and separating the hubs 33 from the lugs 35. As the metal softens, as explained in patent to Perry, No. 619,692, or in my prior Patent No. 830,018, the welding-jaws are advanced still farther by means of the forward motion of the contact plate 50, due to the action of the springs 505, Fig. 6. Such forward motion of the contact plate 50 brings the adjustable contact-breaker screw 51 into engagement with the arm 44 of the lever 39, thus raising the arm 46 of said lever and lifting the catch 47 up out of engagement with the catch 48. Thereupon, the springs 36 throw the lugs 33 to the left in Fig. 1, separating the contact members 25 and 17 and breaking the circuit at this point. It will be noted that by means of the springs 18 and 36, I provide for a yielding contact between the contact members 25 and 17, thus insuring their engagement by a positive action of the machine.

The righthand welding-jaw 50 is carried by the copper block 501, secured to and insu-

lated from a reciprocating bar 502, arranged in suitable bearings 503, 504 in the framework, as in the Perry patent to which reference has been made. 505 represents a coiled spring arranged about the reduced portion of the reciprocating bar 502, one end of said spring resting against the bearings 504, while the inner end of said spring engages the shoulder of the reciprocating bar 502, said spring acting to force the jaw 50 toward the jaw 4, upon the softening of the metal.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be used, or all of the modes of its use, what I claim, and desire to secure by Letters Patent is:—

1. In a machine of the class described, a pair of welding-jaws, one of which is movable during the upsetting operation, a relatively stationary terminal of an electric circuit, a complementary movable terminal provided with perforated lugs, a catch member carried thereby, rods carried by said stationary terminal and arranged in said lugs on the movable terminal, coiled springs upon said rods between said terminals and tending to normally move the movable terminal away from the stationary terminal, a lever, a catch member carried by said lever and arranged to engage the catch member carried by the movable terminal, and means connected to one of the welding-jaws for operating said lever to disengage said catch members as the welding-jaws approach each other to effect the "upset."

2. In a machine of the class described, a pair of welding-jaws, one of which is movable during the upsetting operation, a relatively stationary terminal of an electric circuit, a complementary movable terminal provided with perforated lugs, a catch member carried thereby, rods carried by said stationary terminal and arranged in said lugs on the movable terminal, coiled springs upon said rods between said terminals and tending to normally move the movable terminal away from the stationary terminal, a lever, a catch member carried by said lever and arranged to engage the catch member carried by the movable terminal and means timed to act with relation to the upsetting movement of the welding-jaws for operating said lever to disengage said catch members.

3. In a machine of the class described, a pair of welding-jaws, means for operating the same combined with a terminal mechanism consisting of a terminal contact member, an insulated block arranged in said member, means for retaining said block in position, an aperture formed in said block terminating at one end in a chamber, a bar of conducting material arranged in said aperture, formed upon one end with a col-

lar, said bar upon its opposite end being
formed with a contact head arranged in said
recess, a spring arranged in said chamber
between said head and the wall, forming the
5 end of said recess, a complemental movable
contact member, means for holding said
members in contact, and means carried by
one of said welding-jaws for releasing said

last-mentioned means to break the circuit
upon the completion of the "upset." 10

In testimony whereof I have affixed my
signature, in presence of two witnesses.

HERBERT L. SMITH.

Witnesses:

H. L. ROBBINS,
ARTHUR H. BROWN.