July 2, 1940. W. BÖRKEY 2,206,627

APPARATUS FOR COILING WIRE

Filed May 16, 1939 3 Sheets-Sheet 1

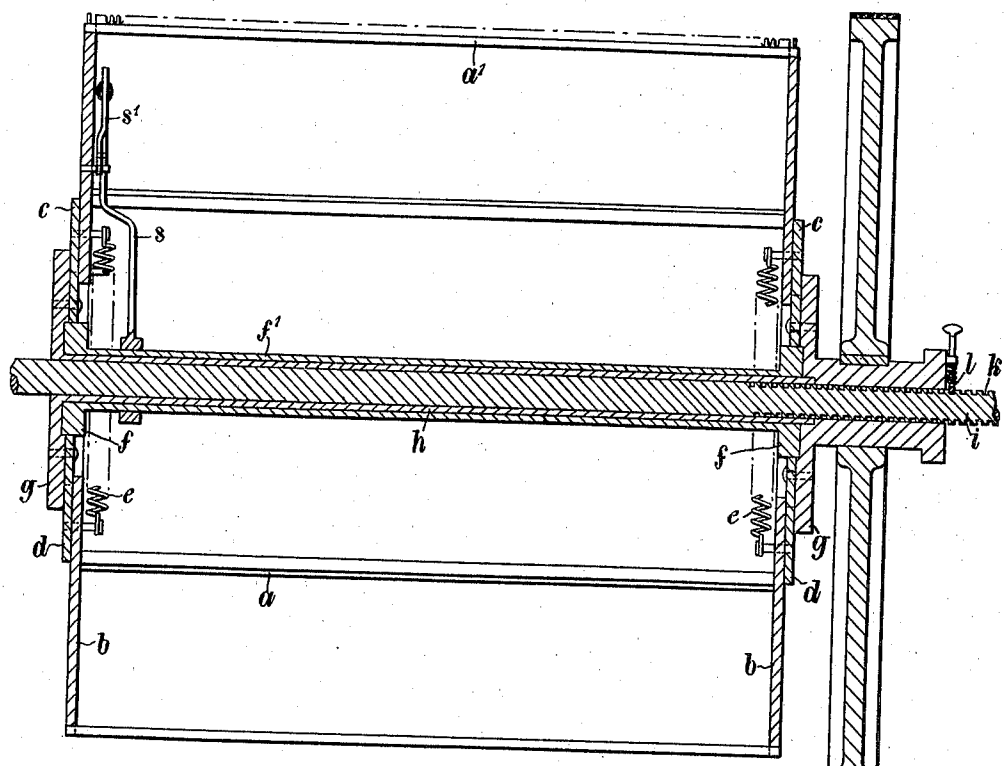
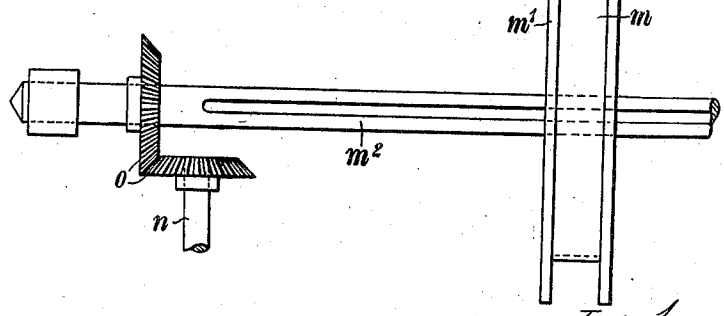


Fig. 1.



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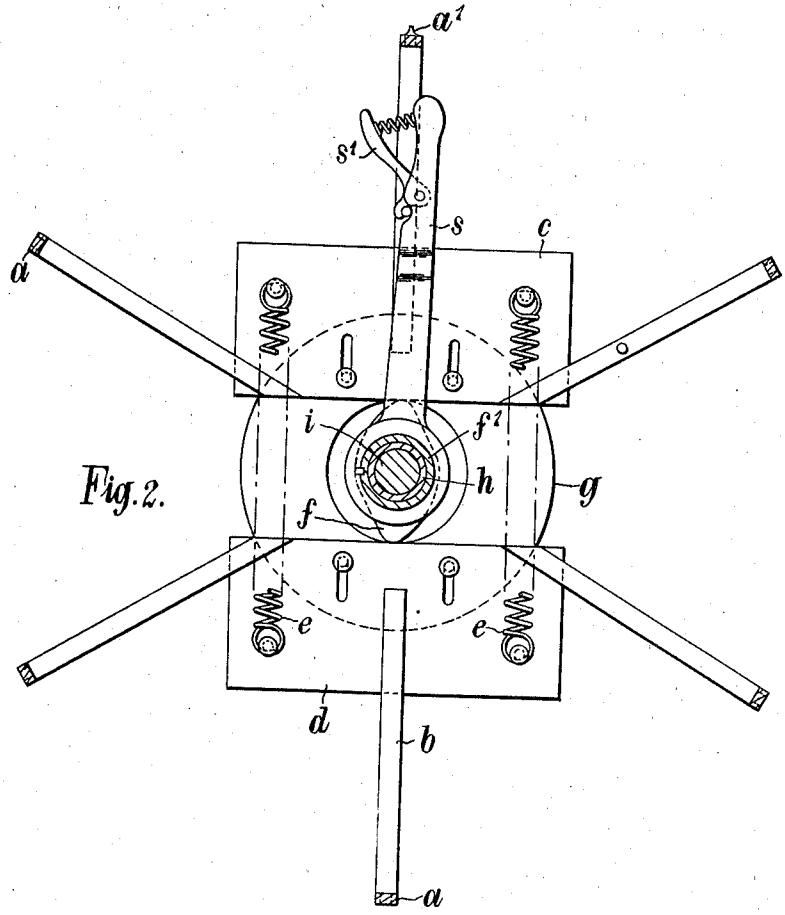


Fig. 2.

Fig. 5.

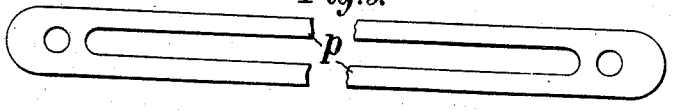
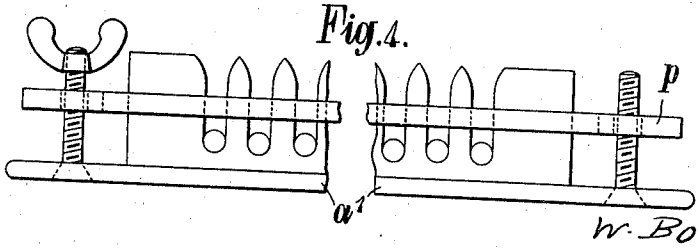


Fig. 4.



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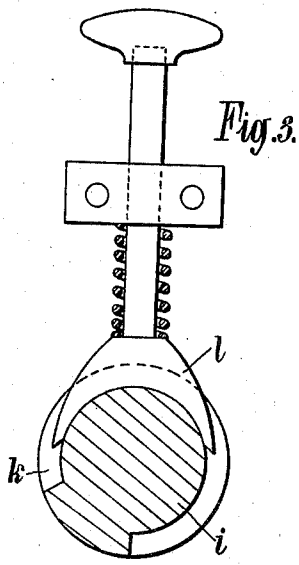


Fig. 3.

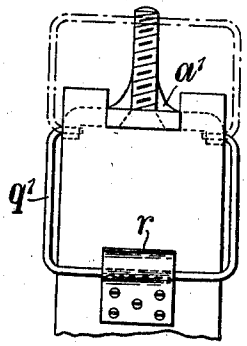


Fig. 7.

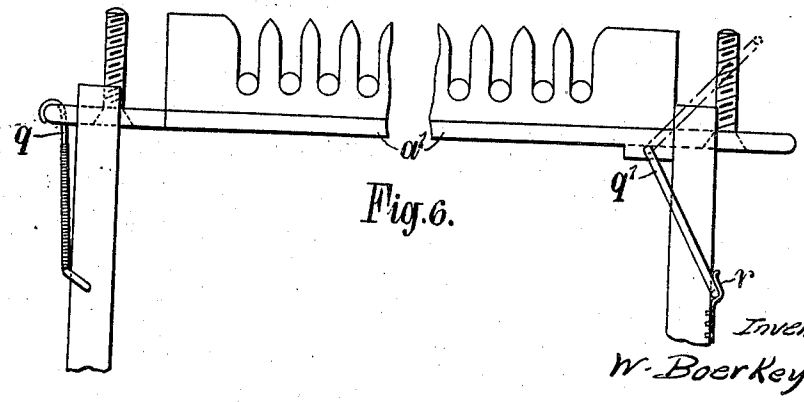


Fig. 6.

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Patented July 2, 1940 2,206,627

UNITED STATES PATENT OFFICE

2,206,627

APPARATUS FOR COILING WIRE

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Application May 16, 1939, Serial No. 274,002
In Great Britain January 18, 1939

6 Claims. (Cl. 140—92.2)

This invention relates to apparatus for coiling wire and while it is particularly for use in the manufacture of barbed wire barricades, obstructions, or entanglements for military or like purposes, it will be understood that the invention is capable of application to the coiling of wire generally. In the specification of my co-pending application No. 250,819 I have described and claimed a barbed wire barricade of the above character comprising a wire coil of which each turn is connected alternately to the preceding and following turns by suitable clamping means.

In the manufacture of such barricades it is found essential to maintain the adjacent turns of the coils in their correct relative position in order to permit of the clamping operation as such would be rendered impossible were there any displacement or tangling of the individual turns.

The object of the present invention is to provide simple and efficient apparatus for so coiling the wire and maintaining the same in such properly coiled condition prior to the clamping operation, and the invention consists in a machine for coiling wire comprising a former and means for spacing the turns thereon, said means being removable from the former to maintain the turns in correct relationship after removal of the coil from the machine.

Further features of the invention will be apparent from the description given hereafter.

The accompanying drawings illustrate one convenient form of apparatus in accordance with the invention.

Figure 1 is a longitudinal sectional elevation.

Figure 2 is an end elevation, and

Figures 3, 4, 5, 6 and 7 are enlarged views showing various details.

In carrying my invention into effect in one convenient manner I form my improved apparatus with a former of suitable form upon which the wire is coiled, said former being adapted to be rotated by suitable power means and to be moved axially during the rotation for the purpose of spacing the turns of the coil evenly upon the former.

In the particular construction illustrated the former consists of a number of angle iron or other members *a* carried upon end arms *b* secured to upper and lower plates *cd* normally spaced apart against the action of springs *e* by cam members *f* for a reason hereafter described.

The plates *c* and *d* are connected to end discs *g* which are carried by a driving sleeve *h* adapted to be driven by suitable gearing for the purpose of rotating the former during the coiling operation.

One of the transverse members such as the member a^1 is formed as a comb and is more clearly shown in Figure 6, the teeth of the comb having a pitch of, say, 15 millimetres or other pitch depending upon the spacing of the individual turns in the coil. In order to permit of this regular spacing I arrange that the former shall be moved axially during its rotation and this may conveniently be accomplished by arranging the former upon a central stationary spindle *i* having a worm or circular rack *k* thereon adapted to be engaged by a spring pawl *l* and the pitch of the worm or rack being such that for one complete revolution of the former the same will be moved axially through a distance of 15 millimetres or other distance corresponding to the pitch of the teeth of the comb a^1.

The driving gear for the former will of course have to be arranged to permit of its axial movement and one particular construction is shown in the drawings where the former is driven by belt *m* from a pulley m^1 slidable upon a shaft m^2 driven from the power shaft *n* by bevel or other gearing *o*.

Conveniently the pawl *l* is spring controlled so that it may be withdrawn from engagement with the worm and rack *k* in order to enable the former to be rapidly moved to its initial position after the completion of a coiling operation. The arrangement is such that the barbed or other wire is evenly coiled upon the former and the turns maintained in spaced relation thereon by the comb a^1 and in order that the correct relation may be preserved after the coiling operation the wire may be clamped in position on the comb by means of a slotted bar *p* (Figures 4 and 5) and the comb with the wire clamped therein is arranged to be removable from the machine. It may, for example, be held in place by a spring hook *q* at one end and a bail q^1 at the other end retained in position by a spring *r* so that it may be readily disengaged for removal by disengagement of the members *q* q^1.

In order to permit of removal of the comb with the complete coil thereon it is clear that the former will have to be collapsible and it is for this reason that the spring controlled plates *cd* are provided at each end so that when the cams *f* which are carried upon the sleeve f^1 are rotated by means of the lever *s* (after disengagement from the frame of the former by manipulation of the spring-controlled lever s^1), the springs *e* are allowed to pull the plates towards one another

in order to collapse the former and permit of the wire coil being withdrawn therefrom with the comb, it being understood that the plates *cd* are in sliding relationship with the end discs *g* in order to permit of this collapsing movement.

It will be understood, however, that the foregoing details of construction are given by way of example only since the invention extends broadly to a coiling device having removable means thereon for evenly spacing the turns of the coil and maintaining such spacing after removal from the coiling machine, and I may vary the construction of coiling former and the means adopted for collapsing the same or otherwise permitting of the removal of the coil from the former and the arrangements provided for driving the former depending upon any practical requirements that may have to be fulfilled.

I claim:

1. Machine for coiling wire comprising a former consisting of end supports and a plurality of members carried thereby to form a cage-like device round which the wire is coiled, one of said members being formed as a comb for spacing the wire turns and a clamp for removably clamping the turns in said comb, the former being collapsible to permit of the removal of the comb with the coil clamped therein.

2. Machine for coiling wire according to claim 1 having means for automatically moving the former axially through a distance corresponding to the pitch of the teeth of the comb for each revolution of the former.

3. Machine for coiling wire according to claim 1 comprising movable cam members for holding the cage in its extended position and springs allowed to operate on movement of the cam members for collapsing the cage for removal of the coil.

4. Machine for coiling wire according to claim 1 comprising a central stationary shaft about which the cage rotates, a circular rack upon said shaft the pitch of which corresponds to the pitch of the teeth of the comb, and a pawl carried by the cage and co-operating with said rack for moving the cage axially during rotation.

5. Machine for coiling wire according to claim 1 comprising a central stationary shaft about which the cage rotates, a circular rack on said shaft having a pitch corresponding to the pitch of the teeth of the comb and a spring held pawl carried upon the cage and co-operating with the rack for moving the cage axially during rotation, said pawl being disengageable from the rack for rapid return of the cage to its initial position.

6. Machine for coiling wire according to claim 1 having means for moving the cage axially through a distance corresponding to the pitch of the teeth of the comb for each revolution of the cage and gearing for rotating the cage arranged to permit of such axial movement during the coiling operation.

WALTER BÖRKEY.