(No Model.)

O. P. BRIGGS.

MACHINE FOR UNCOILING WIRE.

No. 315,707. Patented Apr. 14, 1885.

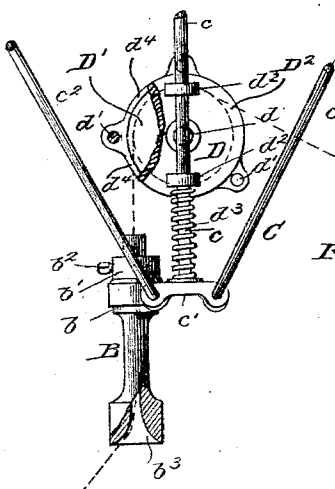


Fig. 1.

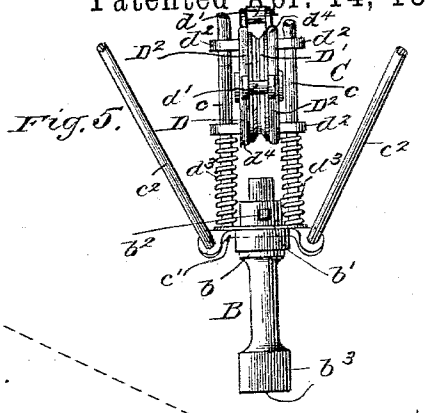


Fig. 5.

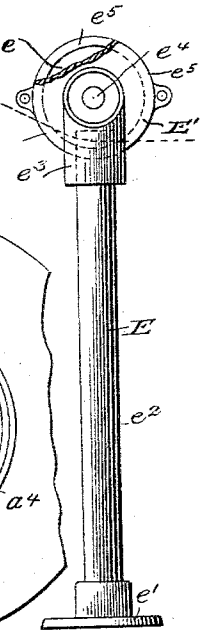


Fig 3

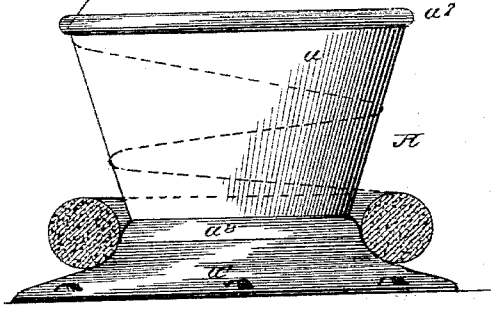
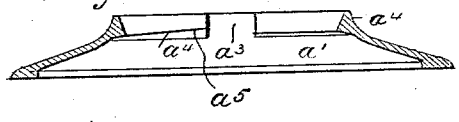
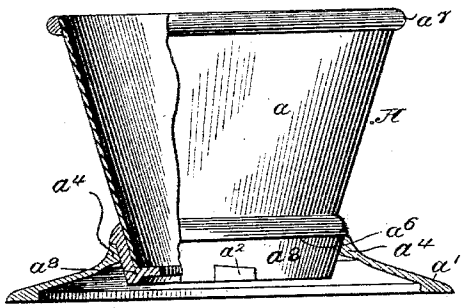


Fig. 2.

Fig. 4.





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UNITED STATES PATENT OFFICE.

ORLANDO P. BRIGGS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE THORN WIRE HEDGE COMPANY, OF SAME PLACE.

MACHINE FOR UNCOILING WIRE.

SPECIFICATION forming part of Letters Patent No. 315,707, dated April 14, 1885.

Application filed October 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO P. BRIGGS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wire-Uncoiling Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an apparatus for uncoiling wire from the compact annular bundles in which it is coiled by manufacturers for shipment; and its object is to facilitate the separation of the wire from the body of the bundle in the operation of rapidly and forcibly uncoiling the same, so as to avoid the danger of breaking either the wire or the apparatus by the kinking of the wire or by the interlocking of two or more turns thereof in the coil.

The devices heretofore generally used for the purpose of supporting the coils in the process of unwinding are similar in form and construction to the rotating swifts or reels used for unwinding yarn and thread from hanks thereof, the coils in such devices being revolved as the wire is drawn therefrom by the spooling or other machines to which the wire passes. In the process of unwinding from coils rotatably supported as above mentioned, the turns will not at all times pay off or become unwound with regularity, and are liable to become kinked or interlocked with each other, so as to stop the unwinding of the wire from the coil.

Some of the machines in connection with which the coil-supporting devices above mentioned are used—such, for instance, as the spooling-machines used in the manufacture of cables for barbed fences—are very powerful and draw the wire from the coils with great force and rapidity, and in case the wires become kinked or interlocked, as above mentioned, either the wire is liable to part or the apparatus supporting it injured or broken. In the case of heavy and strong wire—such as is used in the manufacture of barbed fence-wire—also, the great weight of the wire and of any rotating device of sufficient strength to sustain it produces so great a momentum in the operation of the device as to be alone sufficient to break the wire or apparatus in case the wire becomes kinked or interlocked upon the coil.

It is the object of the present invention to obviate the difficulties mentioned as existing in the use of the devices above referred to, and to furnish an apparatus that is simple, little liable to get out of order, and certain and uniform in its action.

To these ends the invention consists in the matters hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, which illustrate the invention, Figure 1 is a side elevation of the apparatus. Fig. 2 is a side elevation, partly in section, of that part of the apparatus on which the coil or annular bundle of wire to be uncoiled is held. Fig. 3 is a top view in detail of the base of the bundle-holder. Fig. 4 is a central vertical section of the said base shown in Fig. 3. Fig. 5 is a front elevation of the suspended frame shown at the top in Fig. 1.

A is the coil holder or support, which consists of a metal shell, a, and a base, a'. The shell a is made in the form of a frustum of a cone, and is arranged with its axis vertical and with its smaller end downward. The base a' is usually of cast-iron, flaring, as shown, and provided with a central aperture adapted to receive the lower end of the shell a. The said shell a is secured to the base, preferably by means of what is known as a "bayonet-joint," whereby the shell may be readily removed from and firmly reattached to the base when desired.

As herein shown, the shell a is of sheet metal, and is provided with an annular cast-iron rim, a^8, permanently secured to its lower margin, which rim is fitted to the central aperture of the base a', and is provided with a shoulder, a^6, which rests upon the said base. This rim a^8 is provided with two opposite lugs, a^7, which drop through the notches a^3 in the flange a^4 upon the inner margin of the base. By turning the shell after the lugs have been so inserted said shell is obviously secured re-

movably in place. The lower surface of the flange a^4 is preferably inclined at a^5 to cause the lugs to lock or bind thereon. The base, if in the form shown, is fastened to the flange by suitable bolts or other means.

The shell *a*, when of sheet-iron, is desirably provided at its upper edge with a strengthening-ring, a^7, of wrought-iron, as shown.

Centrally over the holder A is located a guide-tube, B, which is sustained by and rigidly held in a frame, C, which is usually suspended from the roof or ceiling of the room in which the apparatus is located. This frame consists, as shown, of two vertical rods, *c c*, screwed into or otherwise secured immovably at their lower ends to the plate c', and which are attached at their upper ends to the ceiling of the room or other suitable overhead support. Stay-rods c^2 c^2 are attached to this plate c' and to a suitable overhead support, to hold the plate c' from lateral movement. The guide-tube B is held in an aperture in the plate c', directly over the center of the conical shell and in line with its vertical axis, whereby the wire is caused to always occupy the same angular position with relation to the said axis. The said guide-tube is secured to the plate c' by means of a shoulder, *b*, formed on the tube below the plate, and a collar, b', secured to said tube above the plate by means of a set-screw, b^2. The opening in the tube B is enlarged at its lower end, and is made bell-mouthed in form, as seen at b^3, in order to admit the wire over a rounded surface, and thus prevent making a sharp bend in the wire.

Above the guide-tube B is preferably located a vertically-movable yielding guide, D, over which the wire is trained after passing through the said tube B, and from which the said wire passes to the stationary guide E, (shown in the drawing,) or elsewhere.

In the particular construction of the said wire-guide herein shown it is provided with an anti-friction wheel, D′, having a suitable circumferential groove to receive the wire, and supported upon a suitable arbor, *d*, held at its ends in two parallel plates, D^2, which are connected at their edges outside of the pulley by studs or bolts d'. The guide D is held and adapted to slide freely upon the rods *c c* by means of apertured lugs d^2 d^2 upon the plates D^2 D^2, which engage the said rods. The said guide is upheld above the plate c' by means of spiral springs d^3 d^3, surrounding the rods *c*, which springs are sufficiently strong to support, without yielding materially, the weight of said guide added to the ordinary or usual pull of the wire when freely unwinding. The plates D^2 are preferably provided with inwardly-projecting rims or flanges d^4, arranged to overhang the edges of the pulley, so as to confine the wire to the groove therein and to prevent said wire from accidentally slipping between the sides of the pulley and the plates.

The guide E, before mentioned, is preferably provided with a pulley, *e*, and is supported from the floor by a standard consisting of a flanged socket or base, e', which is secured to the floor, a suitable vertical standard, e^2, and a casting, e^3, formed with a socket to receive the upper end of the standard e^2, a slot for the pulley *e*, and a hole for the pivot-pin e^4 for said pulley. The guide E is located considerably below the guide D, so that the wire will pass in a downward inclination from the said guide D and will tend to pull downwardly thereon, whereby the said guide will yield when an unusual strain is brought thereon. The casting e^3 is, as shown, provided with side plates, E′, having flanges or rims e^5 overlapping the edges of the pulley, in the same manner and for the same purpose as the flanges upon the plates D^2, before described.

In placing the wire upon the apparatus preparatory to operating it, the conical shell *a* is first removed from the base a', and the bundle or coil is then placed upon the base a' and the part *a* is replaced and fastened down, after which the free end of the wire is passed through the tube B, over the guide D, and under the guide E, and thence to the spooling or other apparatus.

In the operation of drawing the wire from the coil by the use of the apparatus described, the loops or turns of the wire are, on account of the flaring or conical shape of the shell *a*, caused to open out and become separated, so as to pass off in the proper order or succession without liability of becoming interlocked, tangled, or jammed. This result arises from the fact that, as the turns are lifted, the loop or turn that should properly uncoil first will, as it has one free end, be most free to open out, and will therefore be of larger diameter and will rise higher upon the conical surface of the shell than the turn next to it. The second turn or loop will for the same reason tend to rise higher than the third, and so on, while the main body of the coil, having a smaller internal diameter than the loose turns, will be held down below the latter by the conical surface of the shell. A number of loose turns or loops will usually remain about the shell at one time, and by being gradually lifted and expanded upon the conical surface thereof any interlocked loops lifted from the coil will be shaken into their proper relative positions, and will then freely unwind from the shell.

In case one turn of the coil temporarily catches upon another, which may sometimes occur, the machinery will be relieved from the jar and strain that would result from the sudden arrest of the movement of the wire by the yielding of the spring-guide D, and the elastic pull and shaking of the wire thereby produced will usually aid materially in disentangling the interlocked turns.

The essential or principal feature of the apparatus herein shown as illustrating my invention consists in the conical wire holder, shell, or guide *a*, which may be used in connection with any suitable wire-guides, and with or without a spring or yielding wire-guide, although

the use of the latter is preferred, for reasons above stated.

The particular construction shown in the conical part or guide *a* of the wire-holder may be modified in many ways without departing from my invention. The said part *a* may, for instance, be solid or made hollow with a closed top, instead of as herein shown. The part *a* may be made wholly of cast-iron or of other material, and the base *a'* may be dispensed with and the conical part removably secured to the floor or other horizontal surface, which latter would then perform the functions of the base *a'*. In case the base *a'* is used the said base and the conical part of the wire-holder may also be detachably united by means other than the bayonet-joint described. Any suitable wire-guide may be located centrally over the wire-holder, and the tube B, when used, may obviously be held and kept in position by any suitable means, either in or attached to the frame C or to any other suitable overhead support; or a roller may be secured in the upper end of the tube, and the tube mounted in a spring-carriage, or otherwise held upon the slides by a spring or springs, or by counterweights, and the separate spring-guide D thereby dispensed with.

It will be observed that in the use of the device above described the wire is twisted slightly as it unwinds. This slight twisting is not, however, usually of any consequence. In most cases—as in the manufacture of barbed fence-wire—the wire is subjected to the operation of straightening, or is otherwise manipulated after it passes from the uncoiling apparatus, so as to give it a permanent set and to prevent any tendency to untwist therein.

I claim as my invention—

1. The combination, with a stationary conical wire-holder arranged with its axis vertical, of a wire-guide supported centrally over the said holder, substantially as and for the purpose set forth.

2. The combination, with a conical wire-holder detachably secured to a suitable base or support, of a wire-guide supported centrally over the said holder, substantially as and for the purpose set forth.

3. The combination, with a conical wire-holder detachably secured to a suitable base or support, of a wire-guide supported centrally over the said wire-holder, and a yielding guide over which the wire is trained after leaving said central guide, substantially as and for the purpose set forth.

4. The combination, with a wire-holder comprising a base, *a'*, and a conical shell, *a*, detachably secured to said base, of a wire-guide supported centrally over said wire-holder, substantially as and for the purpose specified.

5. The combination, with a wire-holder and the wire-guide B, supported centrally over the holder, of a spring-guide, D, and stationary guide E, substantially as and for the purpose set forth.

6. The combination, with the conical shell *a*, provided with lugs a^2 and a shoulder, a^6, of a base, *a'*, provided with notches a^3 and inclined faces a^4, substantially as and for the purpose set forth.

7. The combination, with the conical wire-holder A and the wire-guide B, of vertical supporting-rods *c c* for said guide, a wire-guide, D, constructed to slide upon said rods, and a spring or springs, *d'*, adapted to sustain the said guide at the upper limit of its movement, substantially as and for the purpose set forth.

8. The combination, with the conical wire-holder A and the wire-guide B, of vertical supporting-rods *c c* for said guide, a guide, D, comprising two parallel connected plates, D^2, provided with rims or flanges d^4 and lugs *d*, engaged with the rods *c*, and a pulley, d^3, and a spring or springs, *d'*, sustaining said guide at the upper limit of its movement, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

ORLANDO P. BRIGGS.

Witnesses:
C. CLARENCE POOLE,
OLIVER E. PAGIN.