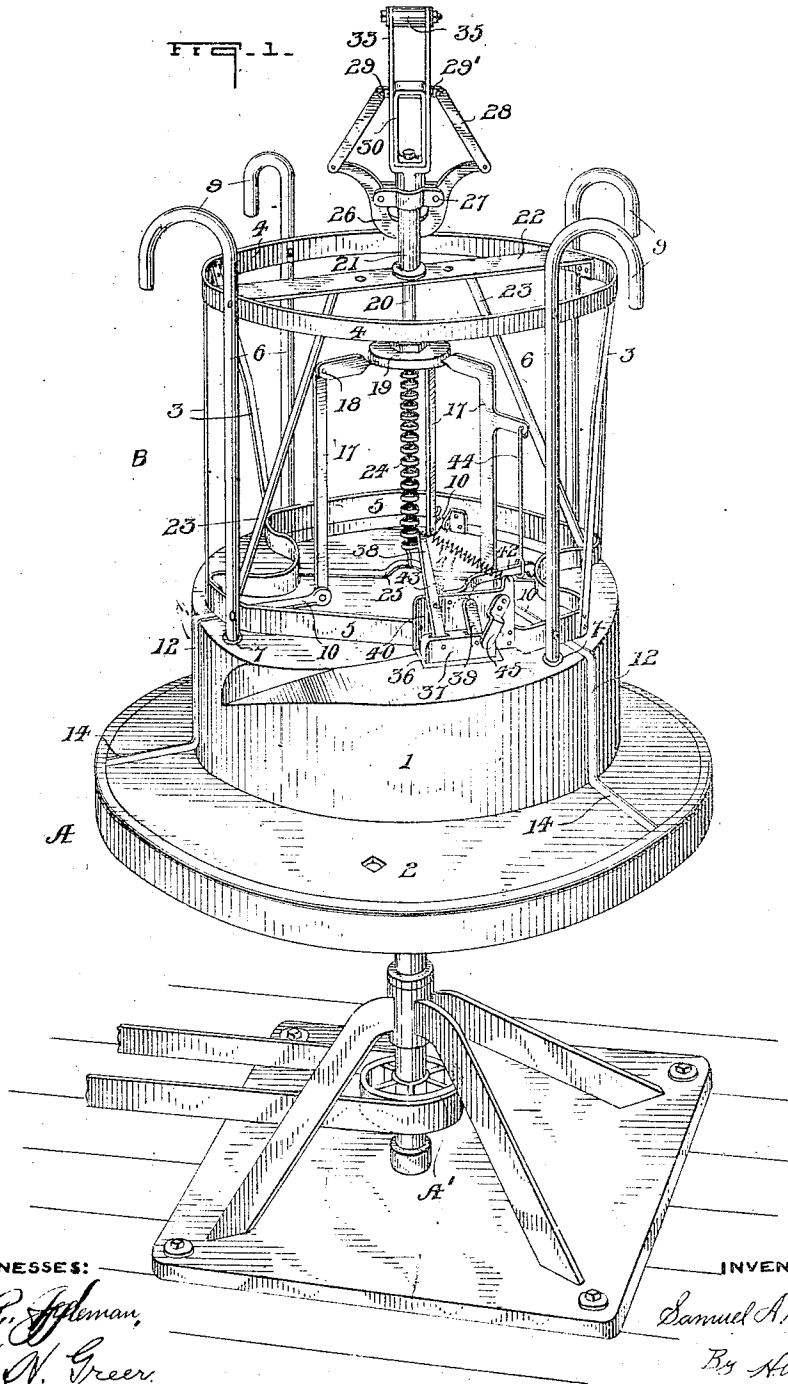


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WIRE REEL AND BUNDLE REMOVER.  
APPLICATION FILED MAR. 16, 1909.

943,701

Patented Dec. 21, 1909.  
4 SHEETS—SHEET 1.



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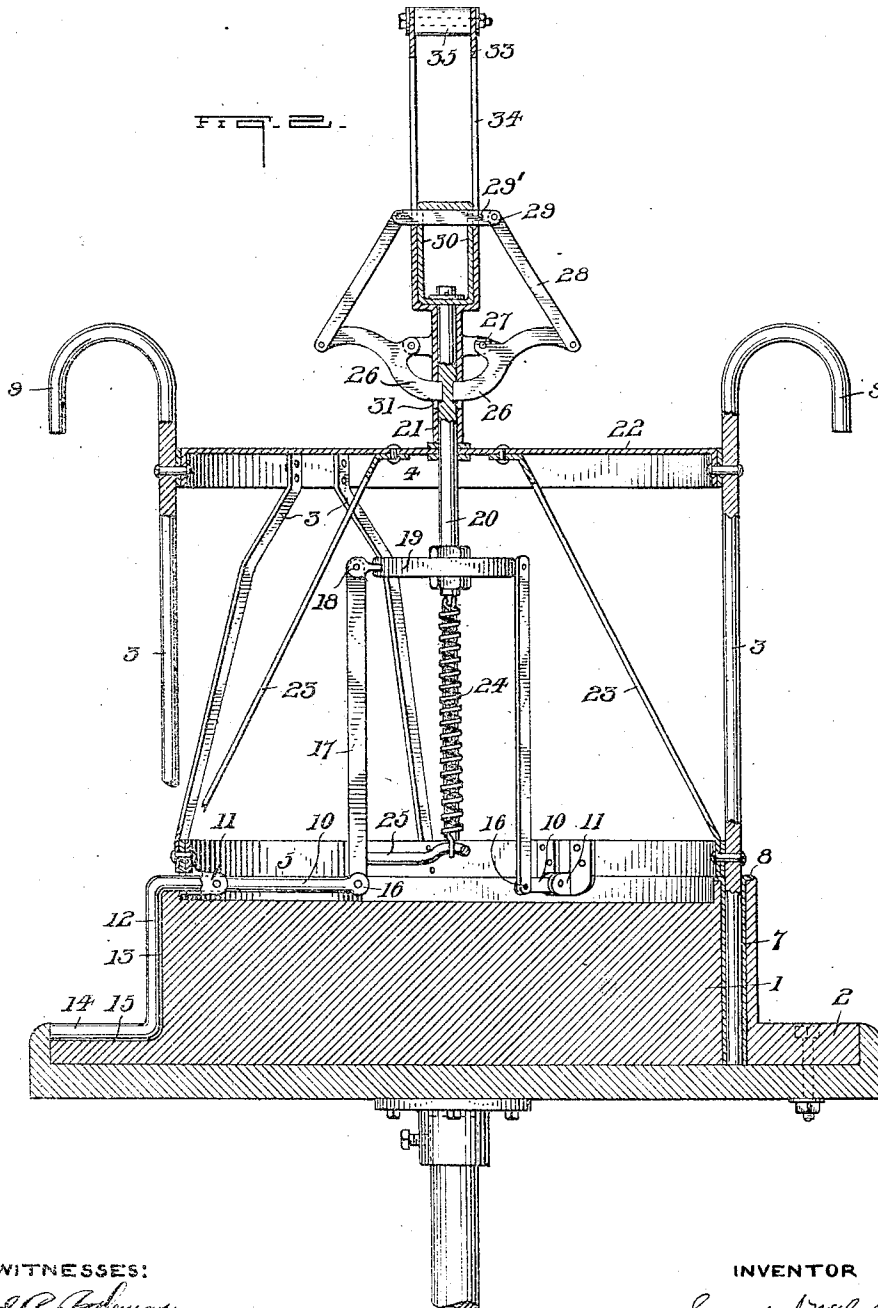
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4 SHEETS—SHEET 2.



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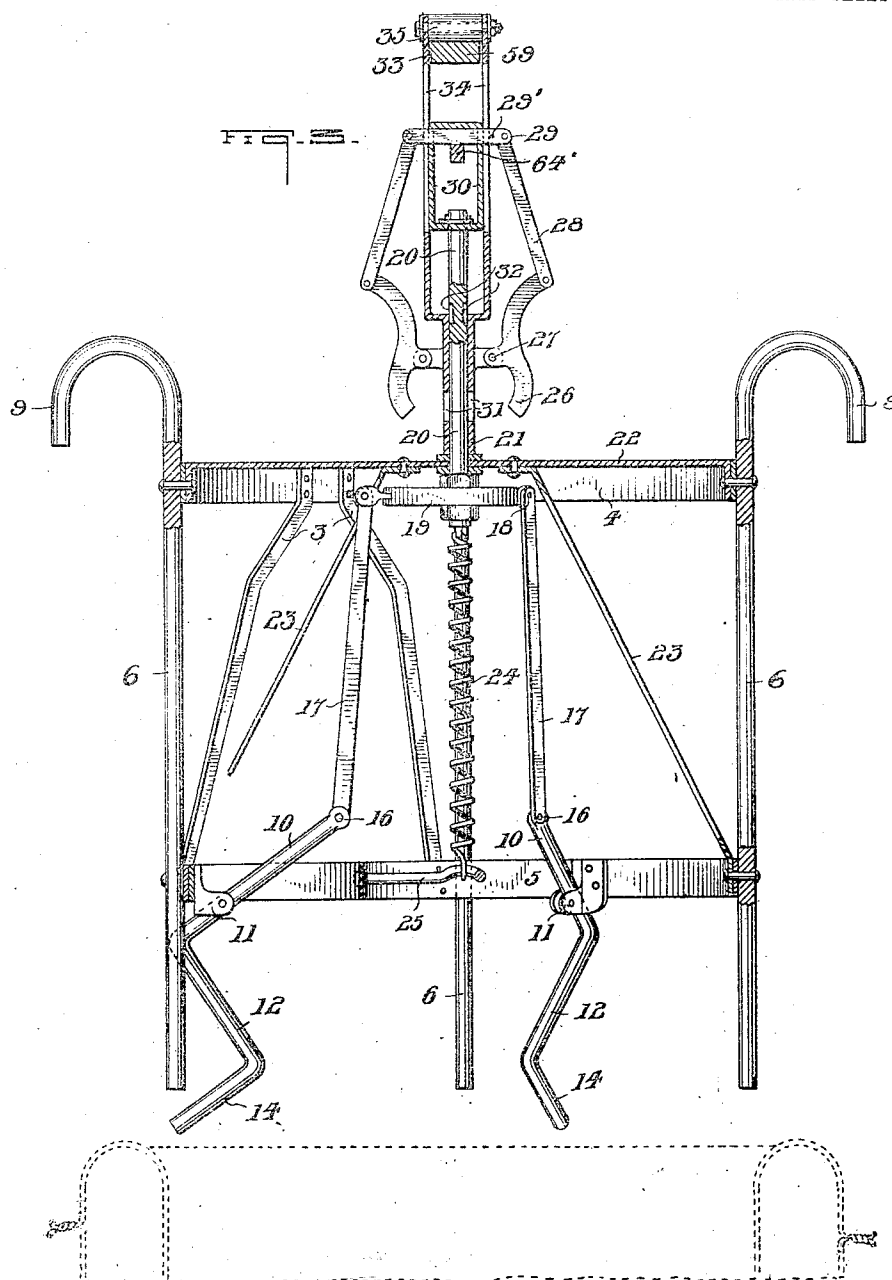
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4 SHEETS—SHEET 3.



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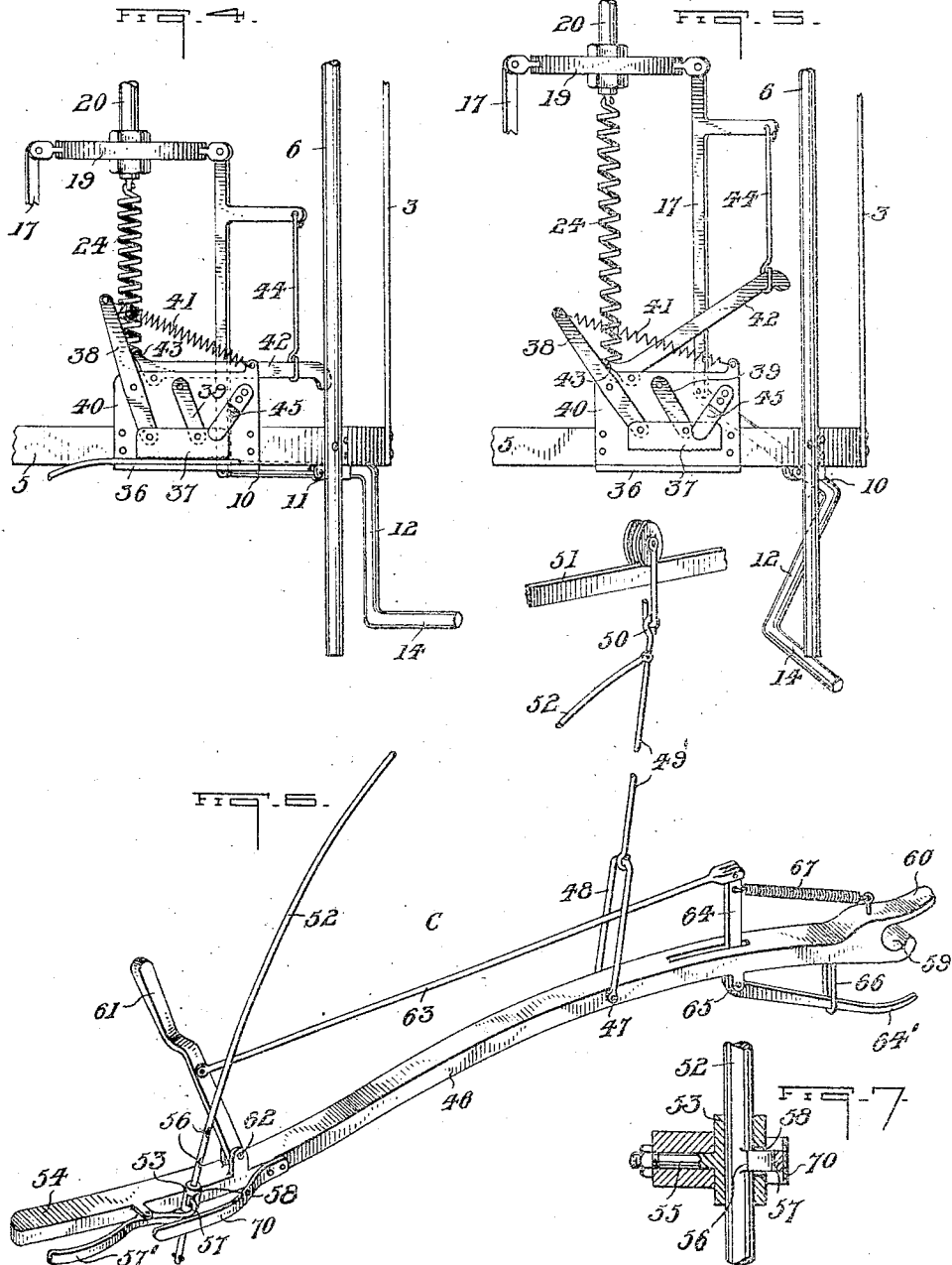
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4 SHEETS-SHEET 4.



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# UNITED STATES PATENT OFFICE.

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## WIRE REEL AND BUNDLE REMOVER.

943,701.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed March 16, 1909. Serial No. 483,672.

*To all whom it may concern:*

Be it known that I, SAMUEL A. McCULLOUGH, a citizen of the United States, residing at Fallston, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Wire Reel and Bundle Removers; of which the following is a specification.

This invention relates to an apparatus for removing bundles of coiled wire from the forms or blocks on which they are wound during the drawing process, whereby said bundles can be quickly and easily transported to any convenient place of deposit.

The invention has for one of its objects to provide an apparatus of this character which is of extremely simple and inexpensive construction, reliable and efficient in use, and readily manipulated.

Another object of the invention is the provision of a bundle remover having a plurality of supporting fingers to engage under the bundle and lift the same from the form or block, and which are adapted to be released when the bundle has been carried on the fingers to the point of deposit so that said bundle can freely drop from the fingers.

Still another object of the invention is the provision of a simple and effective clamping device for holding the end of the wire as the latter is being wound on the form or block, said clamping device being automatically released at the same time the fingers deposit the bundle.

A still further object is the employment of a novel and effective suspending device and carrier whereby the apparatus, with the bundle thereon, is raised from the block or form, and locked in raised position during the time the bundle is being carried to the point of deposit, the said carrier having means whereby the operator can release the bundle supporting fingers of the apparatus.

With the above objects in view, as well as others that will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter, and set forth with particularity in the claims appended hereto.

In the accompanying drawings which illustrate one embodiment of the invention, Figure 1 is a perspective view of the assembled apparatus in position on the form

or block, showing driving means in connection therewith. Fig. 2 is an enlarged sectional view thereof with the parts in locked engagement. Fig. 3 is a similar view showing the parts in released formation when in the act of dropping the bundle of wire, which is here represented in dotted lines. Fig. 4 is a detail view of the wire clamping device in locked position on the wire, together with mechanism for operating the same. Fig. 5 is a similar view with the several parts in their relative positions when the wire is released. Fig. 6 is a perspective view of the carrier with operating mechanism mounted thereon, and Fig. 7 is a sectional view of a locking means employed in connection with said carrier.

Similar reference numerals are employed to designate like parts throughout the different views shown in the drawings, and referring to said drawings A designates the form or block as a whole on which the annular bundle of wire is wound during the drawing process, the block being rotated in any suitable manner, the means shown herewith consisting of a shaft properly geared and connected to a driving means A'. This block has a cylindrical portion or body 1, around which the strands of wire are wound, and also a base flange 2 on which the bundle rests.

The bundle-removing apparatus, designated generally by B, is removably mounted on the form or block, and is adapted to be raised and freed therefrom in removing the bundle of wire. The frame of this apparatus consists of a plurality of uprights 3 that are connected at their upper ends with a ring 4, and at their lower ends with a band 5 that rests on the form.

Secured to the band and ring are upright retaining members 6 that have their lower ends projecting below the band 5 adapted to enter openings 7 in the block 1, said openings preferably being positioned close to the cylindrical face of said block, and are provided with metallic sleeves or linings 8; as shown in Fig. 2.

The upper ends of the members 6 are formed into radially-disposed hooks or arms 9 that act to prevent the turns of wire from working upwardly off the apparatus in the event of the said wire breaking loose prior to the bundle being completed, and affords a

ready means for the replacing of the turns of wire on the block.

Mounted on the frame are a plurality of bell crank levers 10 that are fulcrumed in bearings 11 on the lower ring or band 5, and are formed with vertically extending portions 12 that enter grooves 13 in the cylindrical face of the body 1, and at the lower ends of these portions 12 are horizontal fingers 14 that are adapted to set into grooves 15 formed in the top face of the flange 2, so that said fingers will be disposed under the bundle to be lifted off the form when the apparatus is raised. The levers 10 are radially disposed, and are spaced preferably at one hundred and twenty degrees around the form A, but this is optional, depending on the number of said levers employed, and the inner ends of said levers are hingedly connected at 16 with the lower ends of links 17, the upper ends of which are connected at 18 with suitable projections formed on the cross-head 19. This cross-head is secured to the lower end of a vertically disposed rod 20 which is slidably mounted in a fixed sleeve 21 that is supported on a cross bar 22, the latter member having its ends secured to the ring 4 of the frame. The central portion of this cross bar is stiffened by braces 23 that have their upper ends secured to the cross piece and their lower ends to the frame of the apparatus. An extension spring 24 is disposed below the rod 20 in axial alinement therewith, and the upper end of the spring is connected with said rod, while the lower end is secured to a cross bar 25 fastened on the frame, whereby the levers 10 are restored to normal position after the bundle of wire has been deposited; as will be fully explained hereinafter.

Supported on the tube, or fixed sleeve 21, are locking dogs 26, disposed opposite each other, and fulcrumed at 27 on the said sleeve, the outer ends of said dogs being connected by links 28 with a cross bar 29 that extends transversely through a yoke 30 secured to the upper end of the rod 20. The dogs 26 are adapted to lock the rod 20 against movement as the apparatus is raised with the weight of the bundle of wire sustained on the supporting fingers 14, and for this purpose the dogs enter openings 31 in the sleeve 21, and engage in notches 32 formed in the said rod 20. The upper end of the sleeve is formed into a yoke 33 that houses the yoke 30, and the side members of said yoke 33 are provided with vertical slots 34 in which the cross bar 29 moves, the upper end of said yoke 33 being provided with a roller 35. The said cross bar 29 carries pins 29' positioned at each side of the yoke 33 which prevent any lateral movement of said cross bar, and insures positive alinement with said yoke during its travel up and down.

The above described apparatus is provided with a vise or clamping means shown in Fig. 4 for receiving the end of the wire and holding the same in proper relation to the form or block, thus insuring the formation of the bundle thereon as said block is rotated to take up the wire being drawn through the die. This vise consists of a bed plate 36 that is set into the top surface of the form 1, and cooperating therewith is a gripping member or jaw 37 which is suspended by a pair of parallel links 38 and 39 pivotally mounted on a supporting plate 40, the latter member secured to the band 5 of the frame. The link 38 extends upwardly beyond the said plate, and has connected therewith an extension spring 41 the other end of said spring being secured to said supporting plate 40, the spring acting to hold the jaw 37 in engagement with the wire clamped between the same and the plate 36, and also acts to automatically return the parts to their normal relations after being forced into the position shown in Fig. 5. The said jaw is adapted to be automatically released from contact with the wire at the same time the dogs 26 are disengaged to permit the bundle to drop from the fingers 14, and for this purpose a tripping lever 42 is fulcrumed on the plate 40, the end adjacent to the fulcrumed point being provided with an extension 43 that strikes the lever 38 and moves the latter in a direction to throw the jaw 37 to open position, or away from engagement with the plate 36. This tripping lever is connected at the opposite end by a link 44 with a projection formed on the adjacent link 17, so that when the latter member is raised, during the inward movement of the finger carrying levers 10 to drop the bundle, the said lever 42 will be tilted, thereby bringing the part 43 into engagement with the lever 38, forcing that member downward, and releasing the wire gripping jaw 37. This said jaw moves back and forth under a guide 45 secured to the plate 40, and acts as a stop to limit the upward path of the said jaw.

When the vise is gripping the wire the parts are then in their relative positions shown in Fig. 4, and when the vise is released to free the wire the parts are in the positions shown in Fig. 5. It will be noted that any pull on the wire causes the jaw 37 to grip more tightly so that the danger of the wire working loose or of slipping is prevented.

In combination with the apparatus a special form of lifting device and carrier is employed whereby the apparatus can be removed off the block or form and shifted to the point of deposit, after which the dogs 26 are released by the operator through the medium of suitable mechanism on said lifting device or carrier. This lifting device, designated generally by C, is shown in Fig.

6 and consists of an operating lever 46 that is fulcrumed at 47 on the link 48 suspended on a rod 49, the upper end of which is formed into a hook 50 for attachment with  
 5 an overhead crane or other suitable suspending means 51. Pivoted on the upper end of the rod 49 is a curved locking and guide rod 52 that has its lower end slidably mounted in a sleeve 53 that is swiveled on the lever  
 10 46 adjacent the handle 54 thereof, the said sleeve having a stem or pivot 55, as shown in Fig. 7, that passes through the handle of the lever 46. The locking rod 52 is provided with a plurality of notches 56, into which is  
 15 adapted to engage a latch member 57 that enters through an opening 58 in the sleeve 53, said latch being pivotally mounted on the lever 46 and is retained in its seat by a spring bearing member 70 secured to the  
 20 said part 46. The said lever 46 has a terminal hook 59 at the end opposite the handle, and over the hook is a keeper 60. This hook is adapted to engage under the roller 35 carried by the yoke 33 on the apparatus and the handle end of the said lever 46 is  
 25 depressed so as to raise the apparatus from the bundle forming block. During this depressed movement of the said lever the sleeve 53 slides along the locking rod 52, the operator holding the latch 57 released by pressing the grip portion 57' of said latch while  
 30 holding the handle of the lever 46. After the carrier has been adjusted to the proper position the grip on the said latch is released at which time the spring bearing member 70  
 35 instantly forces the said latch into its seat in the nearest notch 56 in the locking rod 52, thus holding the lifting lever 46 in a fixed position. While the apparatus is thus suspended it can be moved to the point where  
 40 the bundle is to be deposited which may be dropped from the apparatus upon the releasing of the locking dogs 26.

The finger carrying levers 10 are free to  
 45 tilt under the weight of the bundle so that the latter will swing inwardly and permit the bundle to drop off. After the bundle is released the spring 24, which has in the meantime been extended when the releasing  
 50 device was brought into service, will contract and throw the finger carrying levers 10 to normal position, and pull the rod 20 to a position where the dogs 26 will engage in the notches 32 of said rod. The mechanism  
 55 employed to effect the releasing of the said dogs 26 is carried by the member 46, and consists of a fixed operating lever 61 fulcrumed at 62 adjacent the handle portion thereof. Pivottally connected to said lever  
 60 61 is a connecting link member 63 which extends parallel with the supporting member 46, its opposite end being likewise pivotally joined to the upper portion of an angled trigger or lifting member 64, which is fulcrumed at 65. The contacting portion or

finger 64' of the said trigger lies parallel with and below the member 46, and its path upward or downward is confined by a suspended stirrup 66 fixed to the said member 46. Connected to the upper portion of the  
 70 said trigger 64, also to the member 46 adjacent the hooked end thereof, is an extension spring 67 which is drawn at a tension whenever the lever 61 is pulled backward toward the handle, and acts to return the different  
 75 parts to their normal positions as soon as the said lever is released.

When the hooked end 59 of the operating lever is engaged with the roller 35, the releasing finger 64' will also engage under the  
 80 bar 29, so as to be in proper relation thereto to release the dogs 26 at the desired moment. When the bundle has been transported on the apparatus to the point of deposit, the operator pulls forward on the lever 61 which  
 85 causes the finger 64' to be raised, and thereby moves the bar 29 upwardly, disengaging the dogs 26. The bundle is then free to drop away from the apparatus, and at this point the operator releases the lever 61 to permit  
 90 the parts to be restored to normal position as described. The apparatus is then returned to the block or form so that another bundle of wire can be formed thereon, and after each succeeding bundle has been so  
 95 formed the foregoing process is repeated.

From the description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily appar-  
 100 ent to those skilled in the art to which this invention appertains, and while I have described the principle of the operation of the invention, together with the device which I now consider to be the best embodiment  
 105 thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention what I claim is:—

1. The combination with a bundle forming block, of a bundle removing apparatus comprising bundle supporting elements, a  
 115 vise for clamping the end of the wire being wound on the block, and means for simultaneously releasing the elements and vise for depositing the bundle.

2. An apparatus of the class described  
 120 comprising a supporting frame, a plurality of bundle carrying elements mounted thereon, a lock for holding the elements in supporting position, a device comprising a movable supporting member for lifting the ap-  
 125 paratus, and means carried by the member for releasing the lock.

3. An apparatus of the class described comprising a plurality of bundle supporting  
 130 elements adapted to swing inwardly toward

each other to permit the bundle to pass off the same, a supporting structure for the elements, a locking device for holding the elements in supporting position; a shiftable supporting device carrying means for releasing the locking device, and means for returning the elements to normal position.

4. An apparatus of the class described comprising a supporting frame, radially disposed levers fulcrumed thereon having bundle engaging members, a reciprocating element, links connecting the levers with the element, means acting on the element for returning the levers to normal position, a locking device for preventing the levers from tilting while supporting the bundle, and a movable supporting member for engagement with the frame carrying means for releasing the locking device.

5. An apparatus of the class described comprising a supporting frame, and cylindrical bundle forming block, means for removably holding the frame on the bundle forming block, bundle engaging elements mounted on the frame, means acting on the elements for holding the same in normal position, a locking device for holding the elements in position for supporting the bundle after the same is removed from the block, and a movable supporting member for engagement with the frame carrying means for releasing the said locking device.

6. An apparatus of the class described the combination of a bundle forming block having vertically disposed sockets, a supporting frame having vertically disposed members for engaging in the sockets, outwardly extending hooks on the upper ends of the said members, and means on the frame for releasably holding the bundle as the frame is removed from the block.

7. A bundle removing apparatus comprising a supporting structure, a plurality of bundle engaging elements mounted thereon, a locking device for holding the elements in bundle supporting position as the bundle is removed from the forming block, a wire clamping device mounted on the said structure, and means for releasing the device simultaneously with the movement of the elements to deposit the bundle.

8. A bundle removing apparatus comprising a supporting structure, bundle engaging elements mounted thereon, operating means for the elements, a wire clamping device including a shiftable jaw, a spring for holding the jaw in gripping position, and means operating to release the jaw simultaneously with the movement of the elements in depositing the bundle.

9. A bundle removing apparatus comprising a supporting structure, bundle engaging elements mounted thereon, means for controlling the elements with a lifting device for the apparatus comprising a shiftable le-

ver, and a locking device carried by the lever cooperating with a rod member carried by a movable supporting means for holding said lever with the apparatus in raised position.

10. The combination of a bundle removing apparatus, with a lifting device therefor, said device comprising a lever with a movable supporting means for said lever, means for detachably connecting the lever with the apparatus, and locking means cooperating with the supporting means and lever for holding the lever in different positions with the apparatus raised.

11. The combination of a bundle removing apparatus, with a lifting device therefor comprising a lever and movable supporting means for operating the said lever, a member carried by the supporting means over which the lever moves, and a latch on the lever for gripping the member to hold the lever with the apparatus in raised position.

12. The combination of a bundle removing apparatus, with a lifting device therefor comprising a lever, a suspension member for the lever, an element connected with the suspension member, a sleeve on the lever through which the element slides, a spring pressed lock for gripping the element to hold the lever in fixed position, and means for detachably engaging the lever with the apparatus.

13. The combination of a bundle removing apparatus, including bundle engaging elements and controlling means therefor, with a lifting device for the apparatus, and mechanism on the device for operating the controlling means.

14. The combination of a bundle removing apparatus including bundle engaging elements, a locking member therefor, with a lifting device for the apparatus, and means on the device for engaging the locking member to release the latter for depositing the bundle from the apparatus.

15. The combination of a bundle removing apparatus, including a suitable framework, with supporting elements thereon for engaging under the bundle, a locking device therefor, a gripping element for securing the wire during the winding up process, a lifting device and carrier for the apparatus, means carried by the device for holding the same at different angles, and means, also carried by the lifting device, for engagement with the locking device to release the latter and permit the supporting elements to deposit the bundle.

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

SAMUEL A. McCULLOUGH.

Witnesses:

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TILLIE McCULLOUGH.