No. 665,659. Patented Jan. 8, 1901.

C. J. JOHNSON.

WIRE COILING MACHINE.

(Application filed Apr. 28, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.

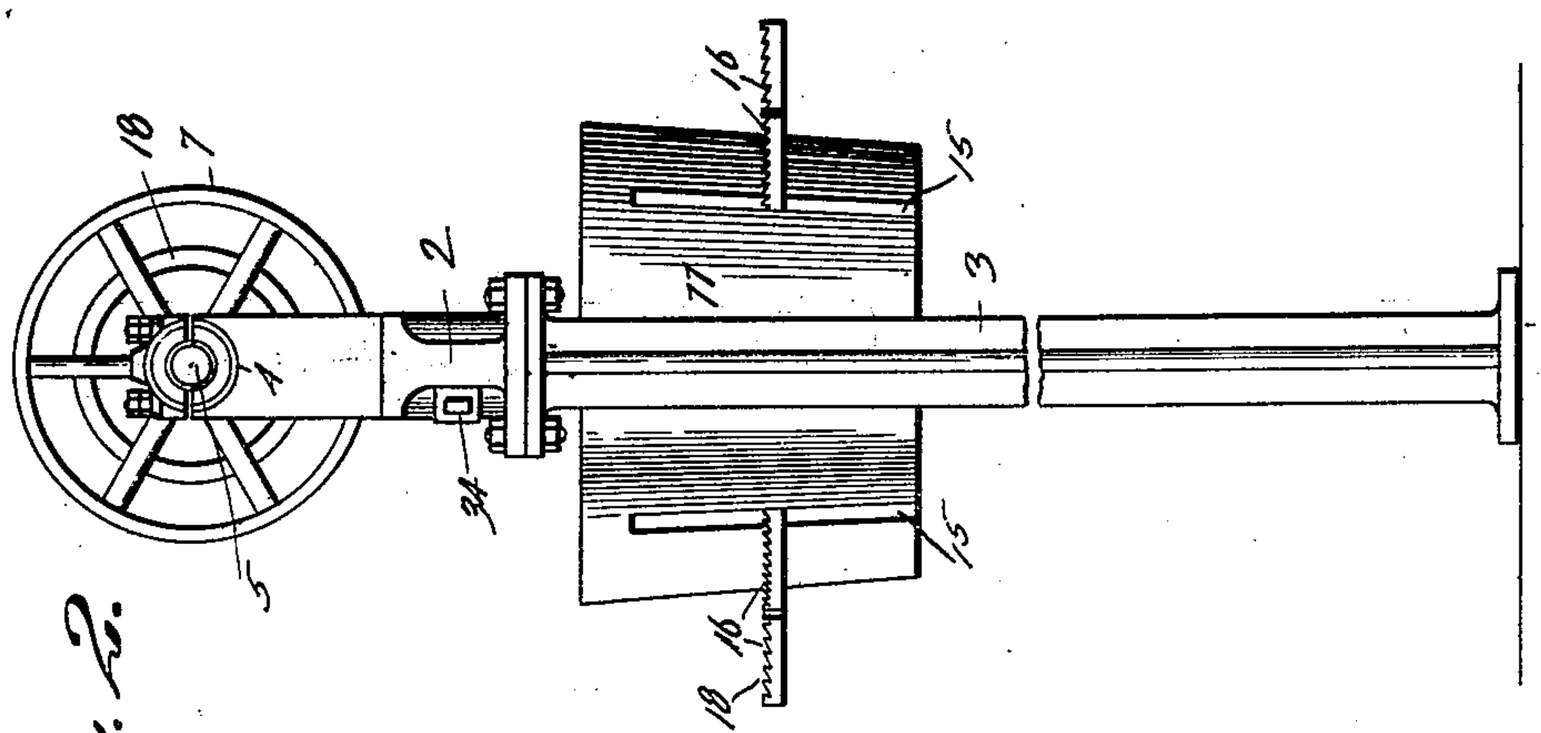

Fig. 1.

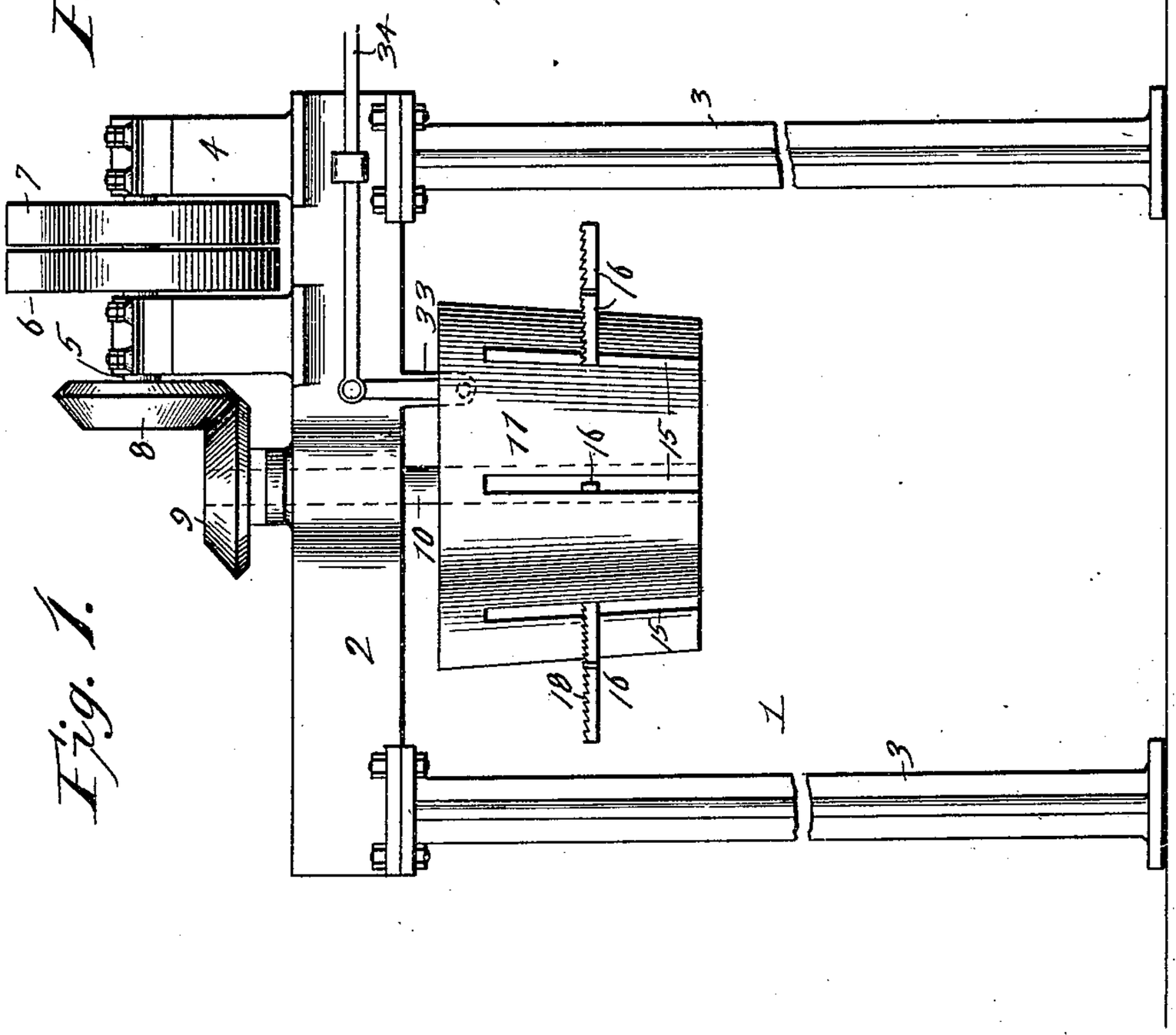

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Fig. 3.

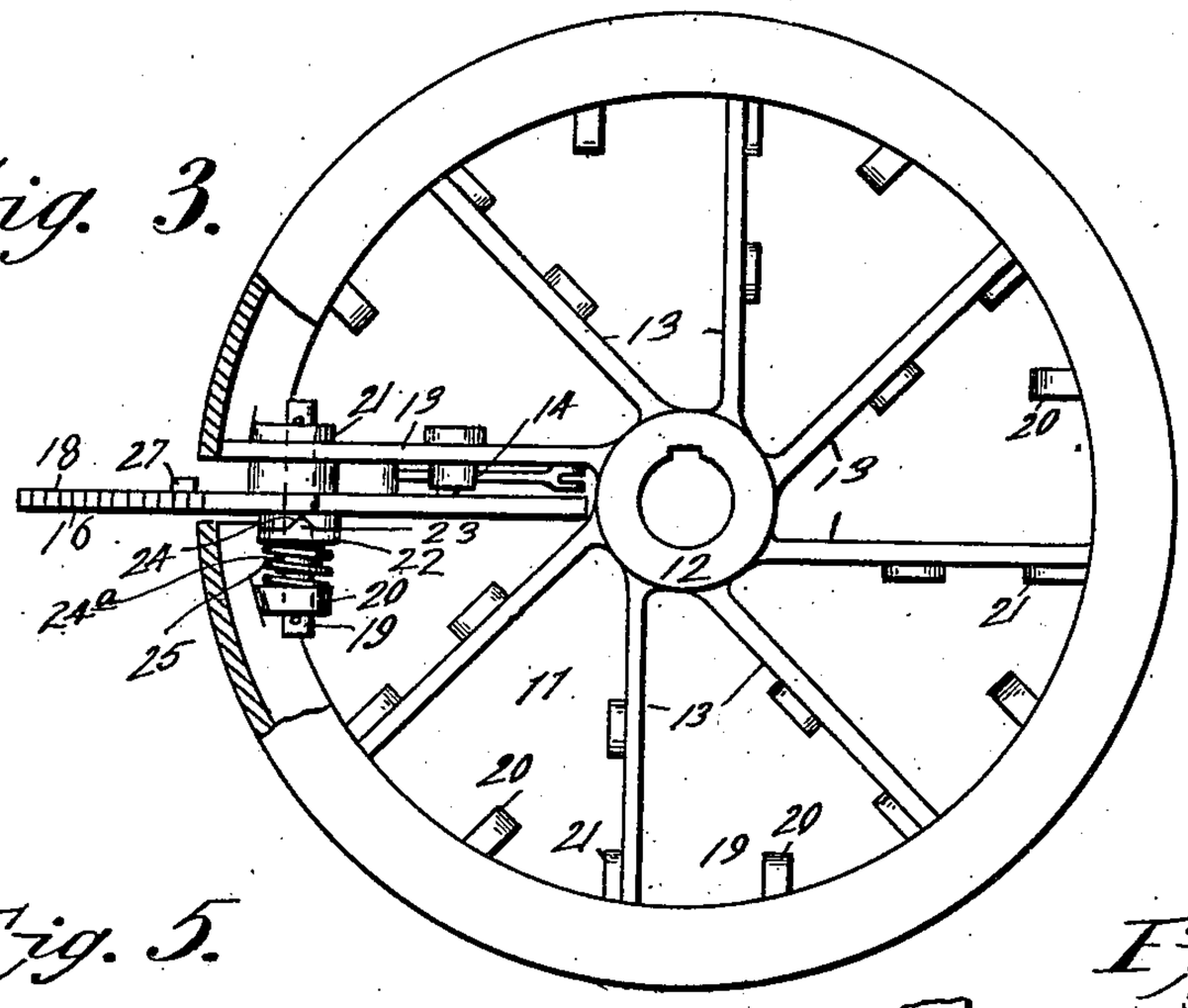


Fig. 5.

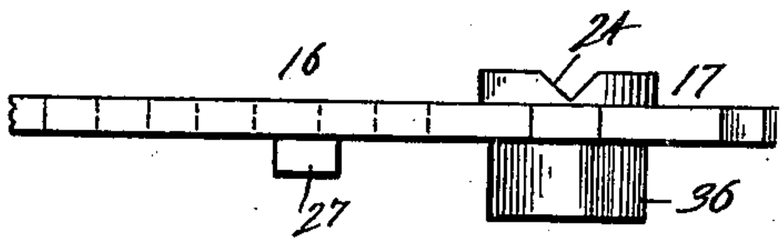


Fig. 6.

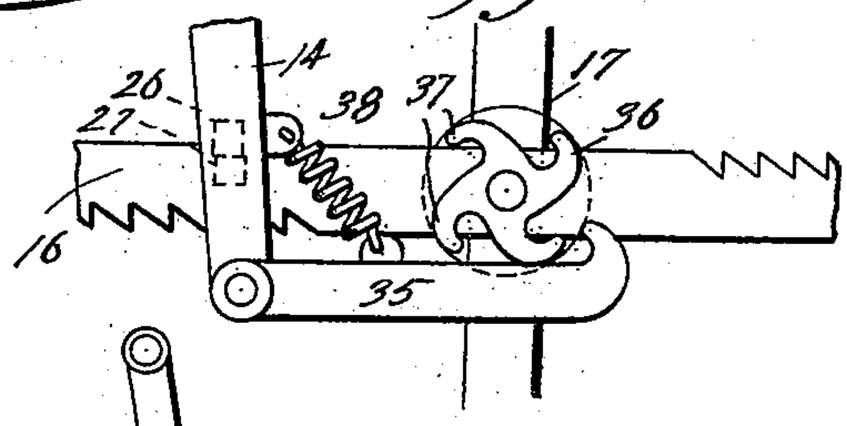
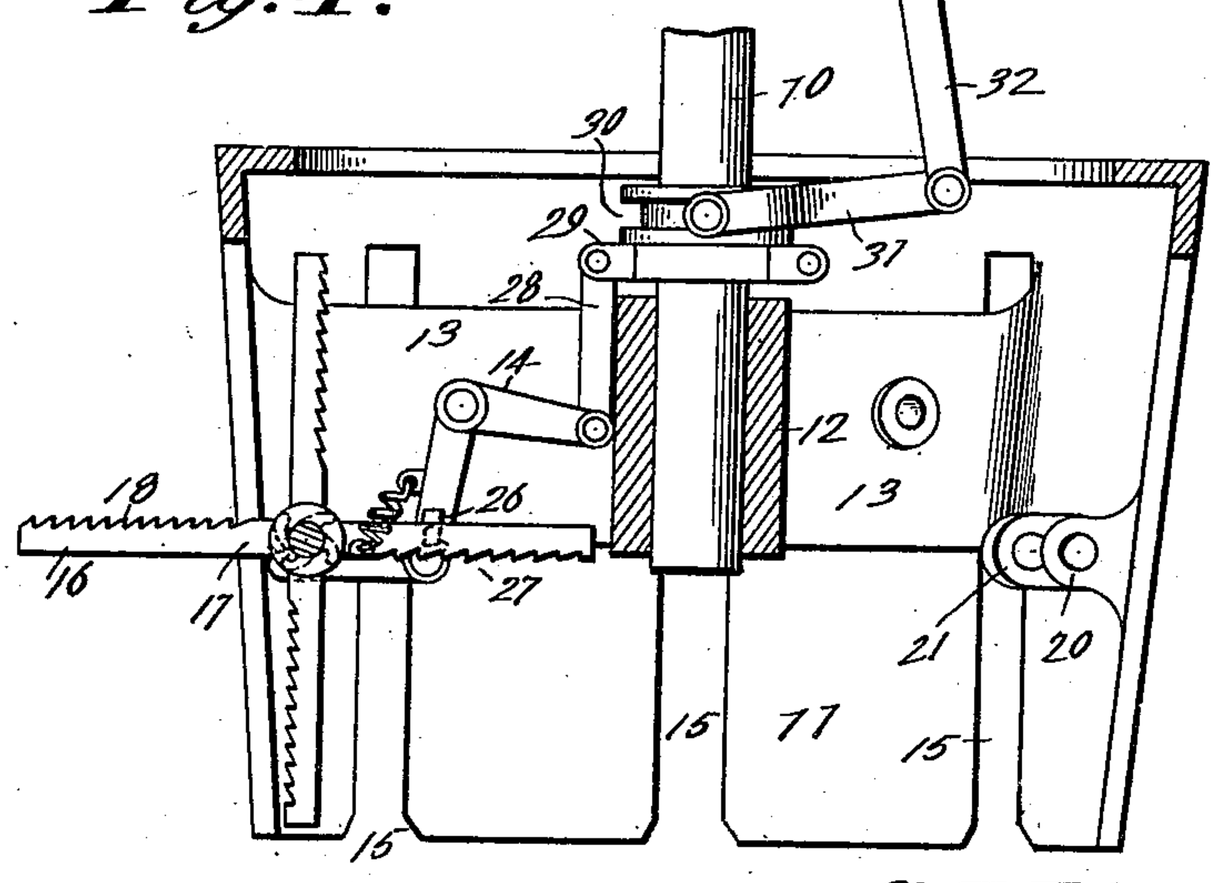


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES J. JOHNSON, OF NEW CASTLE, PENNSYLVANIA.

WIRE-COILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 665,659, dated January 8, 1901.

Application filed April 28, 1900. Serial No. 14,715. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. JOHNSON, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented a new and useful Wire-Coiling Machine, of which the following is a specification.

The invention relates to improvements in wire-coiling machines.

One object of the present invention is to improve the construction of wire-coiling machines and to provide a simple and comparatively inexpensive one adapted after a coil has been formed to be readily operated to deposit the same upon a truck or conveyer.

A further object of the invention is to provide a machine of this character in which the operations of dropping a coil of wire from the drum and resetting the latter for another coil will be simultaneous, so that there will be practically no interruption to the operation of the machine.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a side elevation of a wire-coiling machine constructed in accordance with this invention. Fig. 2 is an end elevation of the same. Fig. 3 is a detail view of the drum and one of the rotary wire-supporting devices. Fig. 4 is a vertical sectional view of the same. Fig. 5 is a detail view of one of the rotary wire-supporting devices. Fig. 6 is a detail view illustrating the construction for operating the wire-supporting devices.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a supporting-frame composed of a horizontal top portion 2 and a pair of vertical standards or columns 3, and as it is designed in practice to operate a series of wire-coiling machines and to connect their frames together a pair of columns or standards 3 is sufficient for each frame; but should the machines be used singly a pair of legs or standards may be arranged at each end of the same. The frame is provided at its top at one end with bearings 4, receiving a horizontal shaft 5, upon which is mounted a pair of fast and loose pulleys 6 and 7, the fast pulley being designed to be operated or rotated at a speed to suit the rotation of the rolls which draw or roll the wire for the wire-coiling machine. The horizontal shaft 5 is connected by bevel or miter wheels 8 and 9, mounted, respectively, on the inner end of the horizontal shaft and on the upper end of a vertical shaft 10, which is journaled in suitable bearings of the top portion 2 of the supporting-frame and which depends therefrom and carries a slightly-tapered drum 11.

The slightly-tapered drum, which gradually decreases in diameter from its top to its bottom to enable a coil of wire to drop freely from it when the same is released by the means hereinafter described, is provided with a central hub 12, which is keyed or otherwise secured to the lower portion of the vertical shaft. The hub is connected with the body portion of the drum by spokes 13, which form supports for bell-crank levers 14 and which are located adjacent to vertical slots or openings 15, through which project arms 16 of an annular series of rotary wire-supporting devices 17. Each rotary wire-supporting device 17 comprises a central hub and radial arms 16, extending outward at right angles to one another and adapted to be successively projected through the adjacent slot or opening to support the wire as it is coiled around the drum by the rotation thereof. Each of the radial arms 16 is provided at the edge 18, which is uppermost when the arm is extended outward through the slot 15 in a horizontal position for supporting the wire, with teeth shouldered at their inner edges or sides to engage and hold the wire to the drum in starting the coil.

The rotary wire-supporting device 17 is mounted on a transverse rod or pin 19, which is supported by perforated ears 20 and 21, extending inward from the body of the drum and located at opposite sides of the slot or opening 15, as clearly illustrated in Fig. 3 of the accompanying drawings. The rod or pin also supports the spring-actuated washer 22, provided with beveled ribs 23 for engaging corresponding grooves 24 of annular bosses or flanges of the rotary wire-supporting devices, and the washer 22, which is provided with a

sleeve 24ª, is engaged by a spring 25, extending over the sleeve and interposed between the washer and the perforated ear 20. The washer is adapted to slide on the rod or pin to permit the wire-supporting device to rotate, and it is designed to prevent the said device from making more than one-fourth of a revolution at each operation.

The rotary wire-supporting device is held in operative position for supporting the wire by means of the said bell-crank lever 14, which is fulcrumed at its angle on the adjacent spoke 13 at a point above the hub of the rotary wire-supporting device, and one of its arms extends downward and the other extends inward, the depending arm being provided with a lug 26, adapted to engage a corresponding lug 27 of each of the arms 16. The inwardly-extending arm of each of the bell-crank levers is connected by a link 28 with a vertical sliding collar 29, mounted on the vertical shaft and located at a point above the hub of the drum, as clearly shown in Fig. 4. The collar is provided with perforated ears to receive the pivots of the links, and it has an annular groove 30, which is engaged by a forked arm 31 of a bell-crank lever 32. The bell-crank lever 32 is fulcrumed at its angle on a depending arm 33 of the top of the frame, and it is connected at its upper end with an operating rod or lever 34. The arm or bracket 33, which depends from the top portion of the supporting-frame, extends downward into the drum to a point below the upper edges thereof, and the operating rod or lever 34 is adapted to oscillate the bell-crank lever 32 and raise the collar, which withdraws the lugs 26 from engagement with the lugs 27 of the rotary wire-supporting devices, and the weight of the coil of wire upon the outwardly-extending horizontal arms will swing the latter downward and inward and will drop upon a truck or conveyer, as desired.

Should the weight of the wire be insufficient to produce a partial rotation of the supporting devices 17, this operation will be effected by means of a hook 35 and a catch 36. The hook 35 is pivoted at the end of its shank to the lower end of the depending arm of the bell-crank lever 14, and the catch 36, which is arranged at the center of the rotary wire-supporting device, is provided with hooks 37, corresponding with the arms 16 and adapted to be engaged by the hook 35, which is reciprocated by the bell-crank lever 14 and which is connected at a point between its ends with the same by a coiled spring 38, as clearly illustrated in Fig. 6 of the accompanying drawings. The bill of the reciprocating hook 35 does not engage the catch 36 until the lug 26 has cleared the lug 27, so that the wire-supporting device will be free to rotate when it is actuated by the reciprocating hook. As soon as the rotary wire-supporting devices have made a quarter of a revolution and dropped the coil of wire their movement will be stopped by the spring-actuated washers, which form brakes and which are automatic in their operation. The lug 26 of the bell-crank lever 14 is returned to its position for engaging the lug 27 of the adjacent arm of the rotary wire-supporting device by the operating rod or lever. By this operation the operation of the machine is rendered practically continuous, and the action of the mechanism to deposit a coil also simultaneously rotates or oscillates the wire-supporting devices to arrange them for the reception of another coil.

It will be seen that the machine is simple and comparatively inexpensive in construction, that it is positive and reliable in operation, and that it is adapted to drop a completed coil and simultaneously set the supporting devices for the reception of another coil.

What is claimed is—

1. In a machine of the class described, the combination with a rotary drum adapted to receive a coil, of a rotary wire-supporting device provided with a series of supporting-arms arranged to be successively brought into a position for supporting the wire, and means for operating the rotary wire-supporting device whereby a coil will be dropped and an arm brought simultaneously into position to receive the wire and hold the same on the drum, substantially as described.

2. In a machine of the class described, the combination of a rotary drum, a series of rotary wire-supporting devices pivotally mounted within and carried by the rotary drum and provided with arms arranged to be successively projected beyond the drum to support the wire on the same, and means for partially rotating the wire-supporting devices, substantially as described.

3. In a machine of the class described, the combination of a rotary drum, a rotary wire-supporting device mounted within and carried by the drum and provided with arms adapted to be successively brought into position for supporting the wire, said supporting device being also adapted to be partially rotated by the weight of a coil to drop the same and bring another arm into position to receive the wire, and means for locking and releasing the supporting device to hold the projecting arms rigid with the rotary drum, substantially as described.

4. In a machine of the class described, the combination of a rotary drum, a rotary wire-supporting device mounted on and carried by the rotary drum and provided with arms to receive the wire and having teeth adapted to catch the wire and hold the same to the drum in starting a coil, and means for operating the wire-supporting device, substantially as described.

5. In a machine of the class described, the combination of a rotary drum, a rotary wire-supporting device mounted within and carried by the drum and provided with arms, a lever arranged to engage the arms and adapt-

ed to be oscillated to release the same, and means for operating the lever, substantially as described.

6. In a machine of the class described, the combination of a drum, a rotary wire-supporting device provided with arms, a lever engaging the arms and adapted to be oscillated to release the same, and a device carried by the lever and arranged to positively engage and actuate the wire-supporting device, substantially as described.

7. In a machine of the class described, the combination of a drum, a rotary wire-supporting device provided with arms and having a central catch, a lever, and a hook carried by the lever and arranged to engage the catch to actuate the wire-supporting device, substantially as described.

8. In a machine of the class described, the combination of a drum, a rotary wire-supporting device provided with arms and having a central catch, a lever for engaging the arms, a hook pivotally connected with the lever and arranged to engage the catch to positively actuate the supporting device, and means for operating the lever, substantially as described.

9. In a machine of the class described, the combination of a drum, a rotary wire-supporting device provided with arms and having a catch, said catch being provided with hooks corresponding with the arms, a lever for engaging the arms, a hook pivotally connected with the lever and arranged to engage the hooks of the catch, and a spring connecting the lever and the pivoted hook, substantially as described.

10. In a machine of the class described, the combination of a drum, a rotary wire-supporting device provided with arms and having lugs extending from the same, a lever having a lug adapted to be engaged by the lugs of said arm, and means for operating the lever, substantially as described.

11. In a machine of the class described, the combination of a drum provided with slots and having spokes, a series of rotary wire-supporting devices provided with arms, bell-crank levers pivoted on the spokes and adapted to engage the arms, a collar connected with the bell-crank levers, and operating mechanism for sliding the collar, substantially as described.

12. In a machine of the class described, the combination of a frame, a vertical shaft, a drum mounted on the shaft and provided with openings, rotary wire-supporting devices mounted on the drum and provided with arms adapted to project beyond the same, the bell-crank levers 14 fulcrumed on the drum and arranged to engage the said arms, a sliding collar mounted on the shaft and connected with the bell-crank levers 14, the bell-crank lever 32 engaging the collar, and operating mechanism connected with the said bell-crank lever 32, substantially as described.

13. In a machine of the class described, the combination of a rotary drum, a rotary wire-supporting device mounted on and carried by the drum, means for operating the wire-supporting device to lock the same rigid with the drum, and a brake carried by the drum and engaging the device and adapted to stop the same, substantially as and for the purpose described.

14. In a machine of the class described, the combination of a drum, a rotary wire-supporting device provided with arms and having a flange or boss provided with grooves, means for operating the rotary device, and a spring-actuated washer provided with a beveled rib engaging the said grooves, substantially as described.

15. In a machine of the class described, the combination of a drum, a rod or pin mounted thereon, a rotary wire-supporting device arranged on the rod and provided with arms, said wire-supporting device being also provided with grooves, a spring-actuated washer mounted on the rod and provided with a rib for engaging the grooves, and means for operating the wire-supporting device, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES J. JOHNSON.

Witnesses:
H. H. GRAHAM,
GEO. W. MILLER.