

C. H. BRAINARD.

WINCH DRUM.

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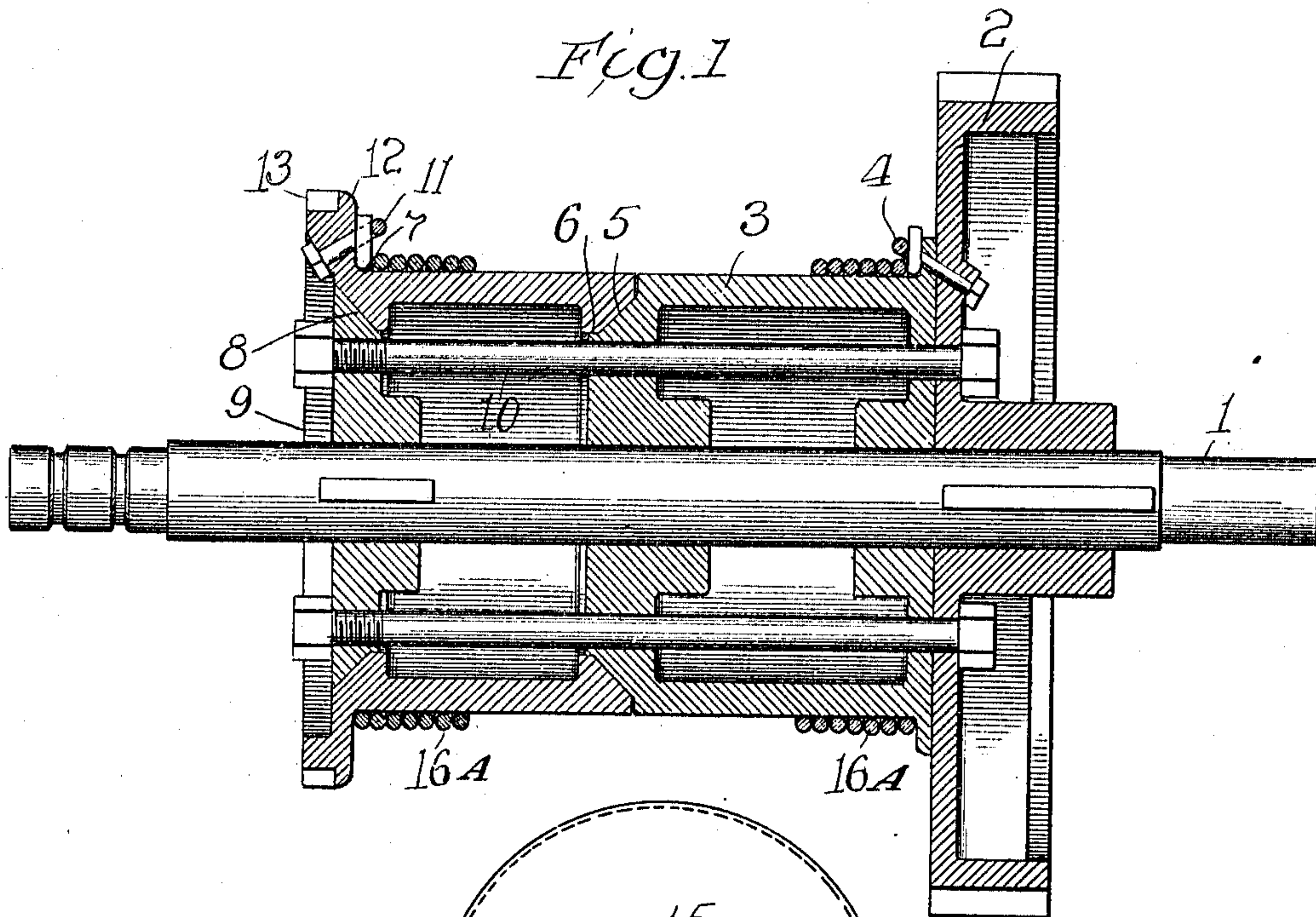
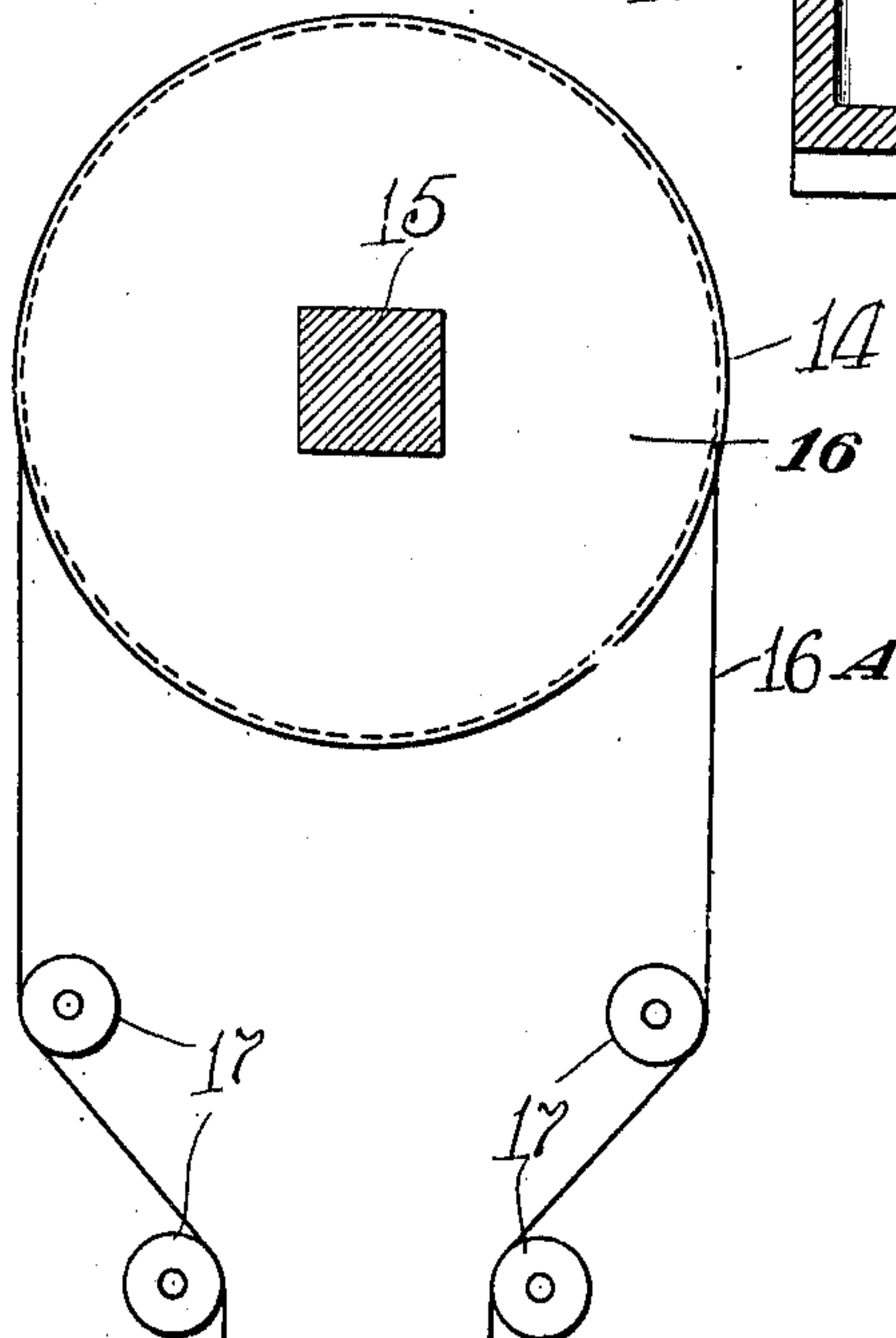


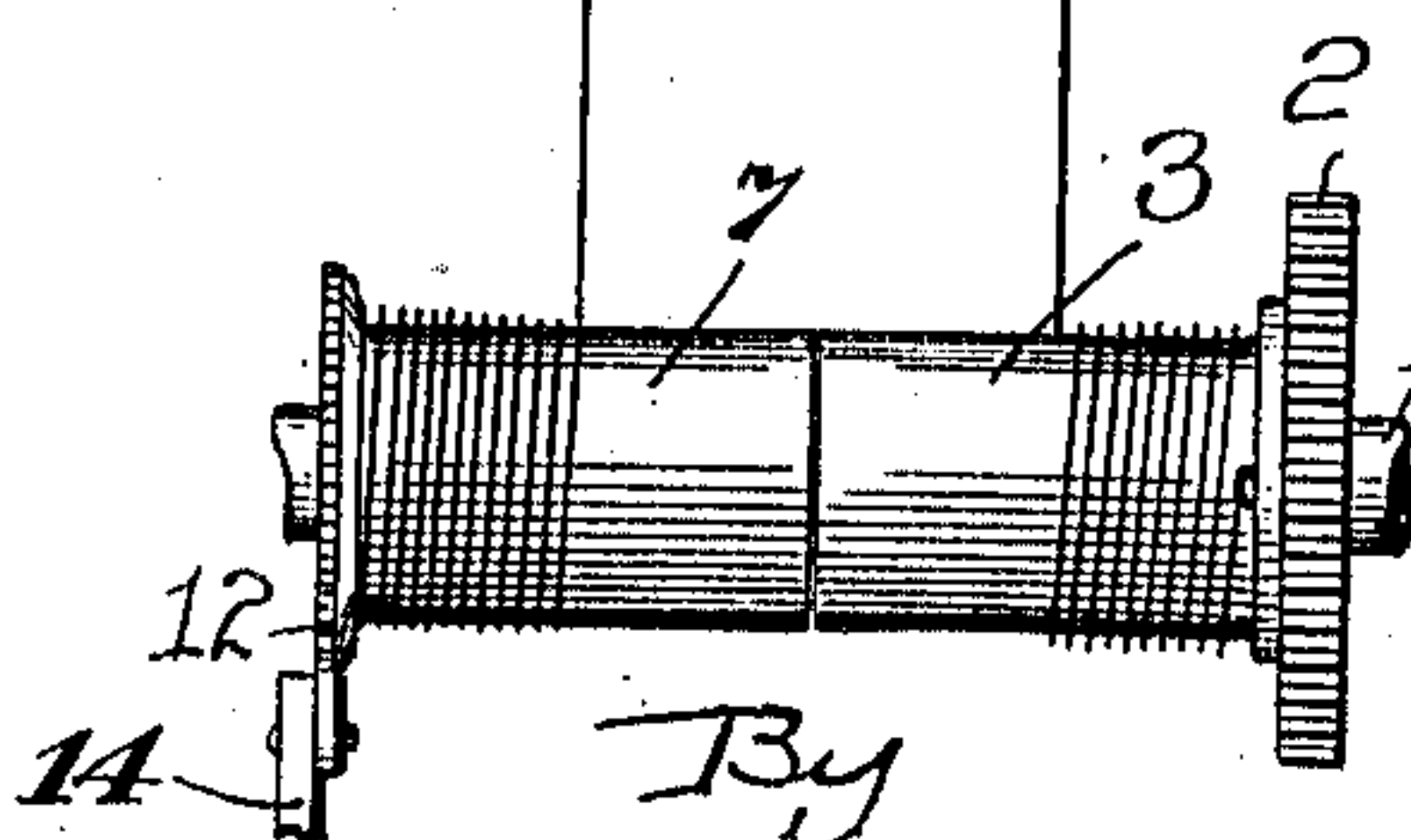
Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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WINCH-DRUM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES HENRY BRAINARD, a citizen of the United States of America, and a resident of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Winch-Drums, of which the following is a specification.

The main objects of this invention are to provide an improved form of winch drum suitable for use in connection with rotary derricks, and especially arranged to permit the operator to take up any slack in the cable carried by the drum, and to provide a drum comprising two sections, each adapted for attachment to one end of the cable, the sections being movable with respect to one another to change the effective length of the cable.

A specific construction embodying this invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a winch drum constructed according to this invention, and Fig. 2 illustrates, somewhat diagrammatically, the method of connecting such a drum to the mast of a derrick.

In the construction shown, the shaft 1 is provided with a driving member such as a gear wheel 2, keyed thereon, whereby the shaft may be driven from a suitable source of power. The drum carried by this shaft comprises a fixed member or driving section 3, rigidly connected to the gear wheel and having its periphery shaped to form a winding surface for a steel cable or the like. The end of the cable may be secured to the outer end of the drum by a U clamp 4. The inner end of this driving drum section has a conical friction surface 5 converging toward the shaft and toward a cylindrical shoulder 6. The shaft also carries a second or loose drum section 7 in the shape of a cylindrical shell having a tapered friction surface engaging with the surface 5 of the driving section and also having a cylindrical surface inclosing and bearing on the surface 6 of the driving section. This drum section 7 has no spider or web, but has at its outer end a tapered frictional surface which engages with a similar surface 8 on a conical friction disk or clamping member splined to shaft 1 and movable longitudinally thereon by means of bolts 10, which extend through the webs

or spider of the driving section 3, and the gear wheel 2. The winding periphery of this second or loose section 7 is flush with that of the first section and forms an unbroken extension of that surface. A cable end may be secured to the loose section by means of a U bolt 11. In the outer flange 12 of the loose section are a plurality of ratchet teeth 13 forming stops for engagement with a dog 14 shown in Fig. 2.

In Fig. 2, there is illustrated a mast 15 of a derrick carrying a bull wheel 16, whereby the mast may be turned to swing the boom of the derrick (not shown) from one side to another. A cable 16^a passes around the bull wheel and over sheaves 17, and has its two ends wound about the drum in opposite directions and connected respectively by the U bolts at the outer ends of the sections.

The operation of the device shown is as follows: With the bolts 10 tight and the loose section of the drum thereby clamped between the converging conical friction surfaces 5 and 8, the drum as a whole may be rotated in one direction or the other, thereby winding up the cable at one end and unwinding it at the other, and thus turning the bull wheel and mast to shift the boom of the derrick from one side to the other. If, however, the cable should stretch or in any way become slack, it is important that the slack should be taken up so that the cable may hold the bull wheel tightly and be free from lost motion in its control of the derrick boom. When it is desired to take up the slack in the cable, the dog 14 is thrown into engagement with one of the stops or ratchet teeth 13, thus locking the section 7 in stationary position, and the bolts 10 are loosened sufficiently to allow the conical friction disk 9 to release somewhat its grip on the loose drum section 7. Then on the application of power to the shaft 1, the drum section 3 can be turned with respect to section 7 sufficiently to take up the slack in the cable to any extent desired. Then with the cable still under strain, bolts 10 may be tightened to draw up the conical disk 9 and again grip drum section 7 between the converging conical friction surfaces 5 and 8. Dog 14 can then be released to put the drum again in condition for normal use in swinging the derrick.

Although but one specific embodiment of

this invention is herein shown, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention.

I claim:

1. The combination of a shaft, a gear wheel mounted thereon, a driving drum section rigidly connected to said wheel, a loose drum section frictionally engaging the end of said driving section, means beyond said loose section for controlling the pressure at the friction surface, means for holding said loose section while said driving section turns, a cable having an end connected to each drum section, and means extending from said controlling means through said loose drum section to said first named drum section for drawing said members together.
2. The combination of a shaft, a drum section mounted thereon and driven thereby, said section having a conical friction surface near its end, a conical friction member mounted on said shaft and movable longitudinally thereon, bolts for moving said friction member, and a second drum section having at one end a friction surface contacting with said friction member, and at the other end a friction surface contacting with said first named section, and means for holding said second section while the other section turns.
3. The combination of a shaft, a drum section carried by said shaft and connected rigidly thereto, said section having at its end a cylindrical shoulder and a conical friction surface, a loose section out of contact with said shaft, said loose section inclosing said shoulder and fitting against said friction surface, means located beyond said loose section for controlling the friction between said sections, and means extending from said last named means through said loose section for producing relative movement of said sections when desired.
4. The combination of a shaft, a drum section mounted thereon and driven thereby, a disk mounted on said shaft, a loose drum section having a friction surface bearing against an end of said first named section and having a friction surface engaging with said disk, bolts for drawing said disk toward said first named section to increase the pressure at said friction surfaces, and stops on the periphery of said loose section for engagement with a holding means.
5. The combination of a shaft, a driving drum keyed to said shaft, a driving gear rigidly connected to said driving section, said driving section having a conical friction surface near its end, a second drum sec-

tion supported at one end by said driving section and having its winding periphery flush with that of said driving section, a disk having a friction surface bearing against said second section, bolts for drawing said disk toward said driving section to increase the pressure at said friction surfaces, and ratchet teeth on the periphery of said second section.

6. In a winch, the combination with a shaft, of a drum section having a cylindrical part of reduced diameter at one end, a second drum section journaled on said cylindrical part, and out of contact with the shaft, a clamping member mounted in axial alinement with said drum sections at the end of said second section which is away from the first, means extending through said second section and connecting said member and first section for clamping said second section between them, and stops in said second drum section for engagement with a holding means.

7. In a winch, the combination of a drum section, having a cylindrical part of reduced diameter at one end, a second drum section journaled on said cylindrical part, a clamping member mounted in axial alinement with said drum sections at the end of said second section which is away from the first, said clamping member being secured against relative rotation with respect to said first drum section, and being relatively movable axially thereof, means extending through said second section and connecting said clamping member and first section for clamping said second section between them, and means for locking said second drum section to prevent rotation of the same with the first drum section.

8. In a winch, the combination of a drum section having a cylindrical part of reduced diameter at one end, a second drum section journaled on said cylindrical part, a clamping member mounted in axial alinement with said drum sections at the end of said second section which is away from the first, means extending through said second section and connecting said member and first section for clamping said second section between them, there being coacting conical friction surfaces at one end of said second section and adapted to be engaged and disengaged through the relative axial movement of said member.

Signed at Chicago this 22nd day of December 1909.

CHAS. HENRY BRAINARD.

Witnesses:

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