

Fig. 1

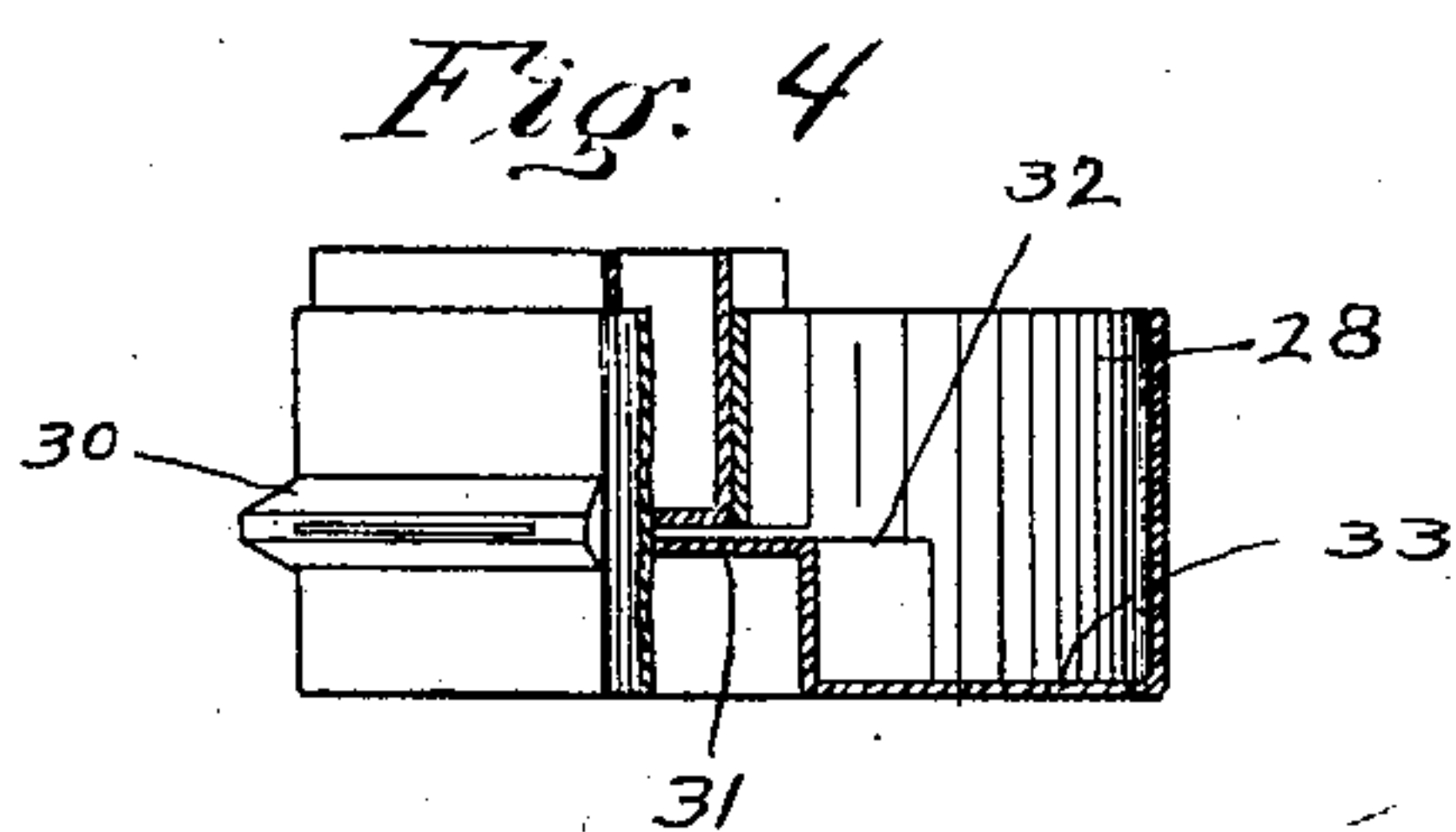
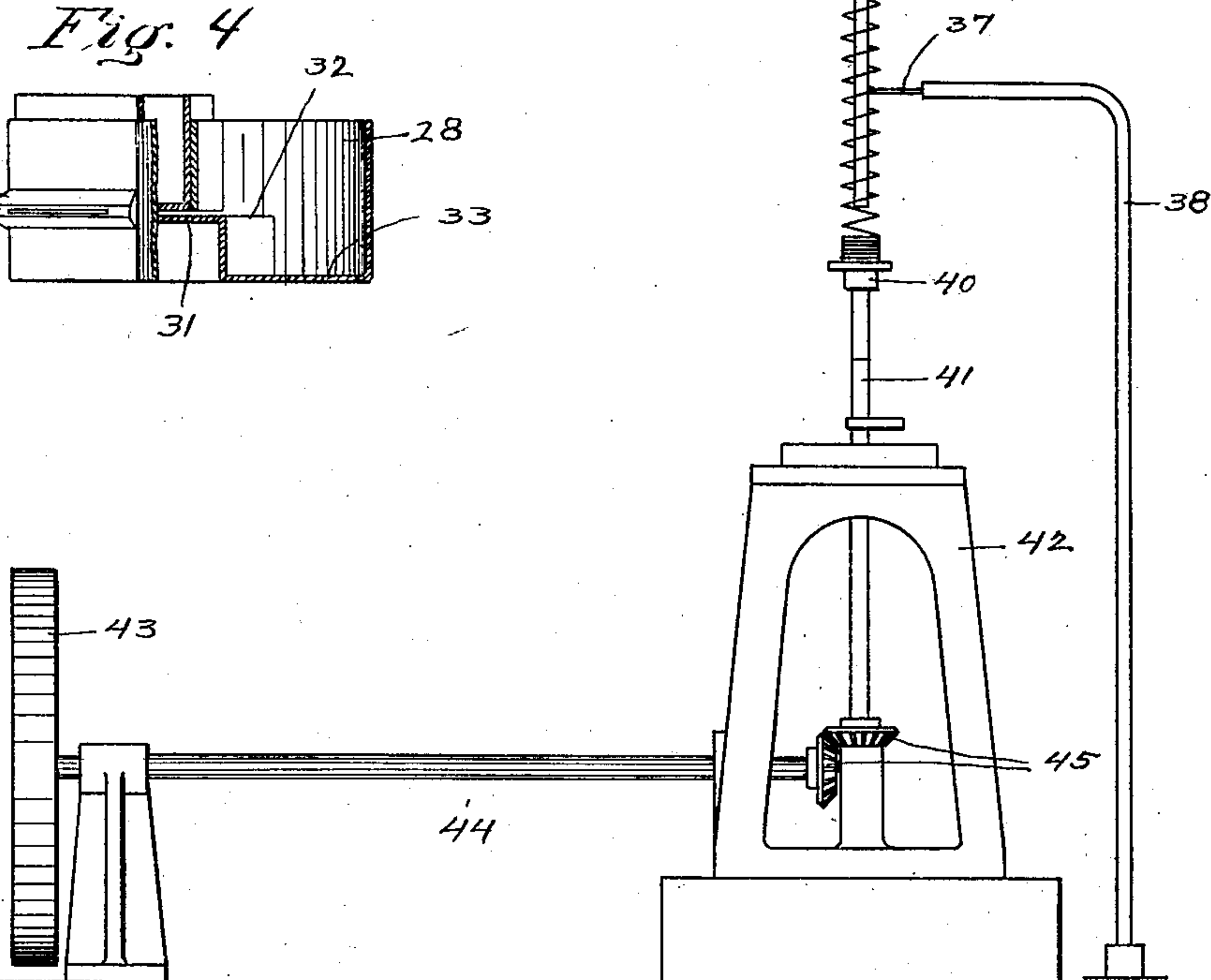


Fig. 4



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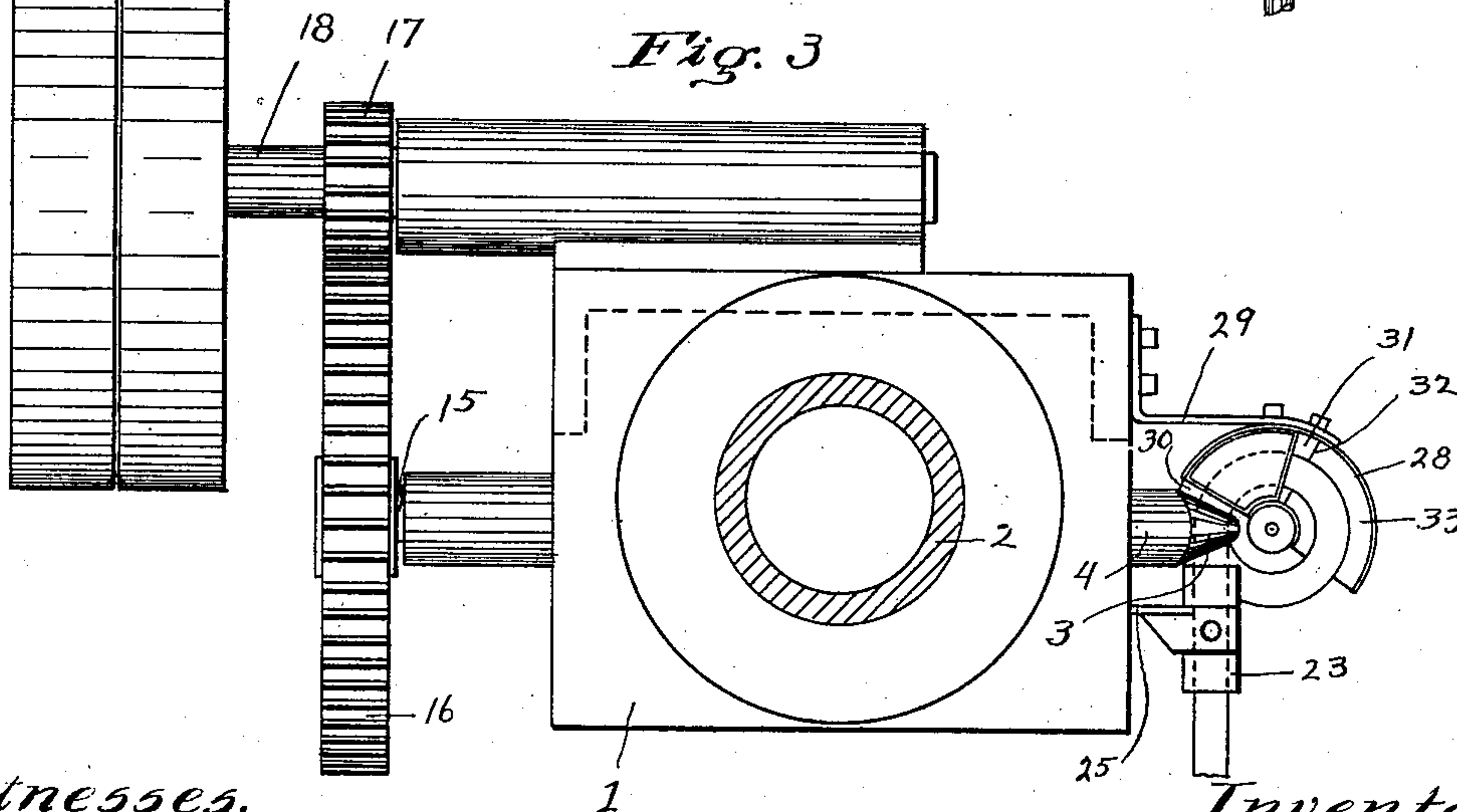
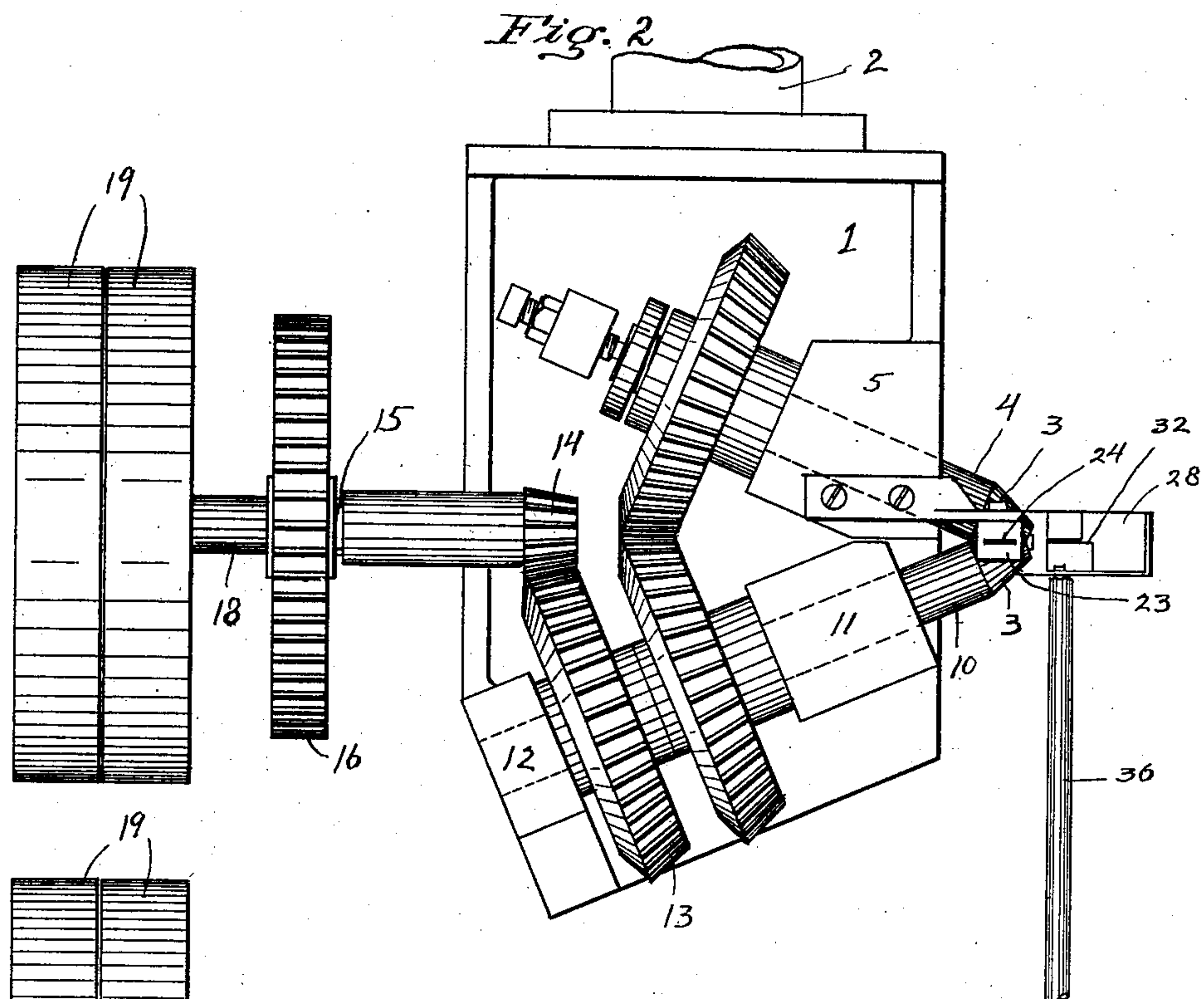
A. SCHWEITZER & A. HAUSOLD.

COILING MACHINE.

APPLICATION FILED SEPT. 11, 1902.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses.

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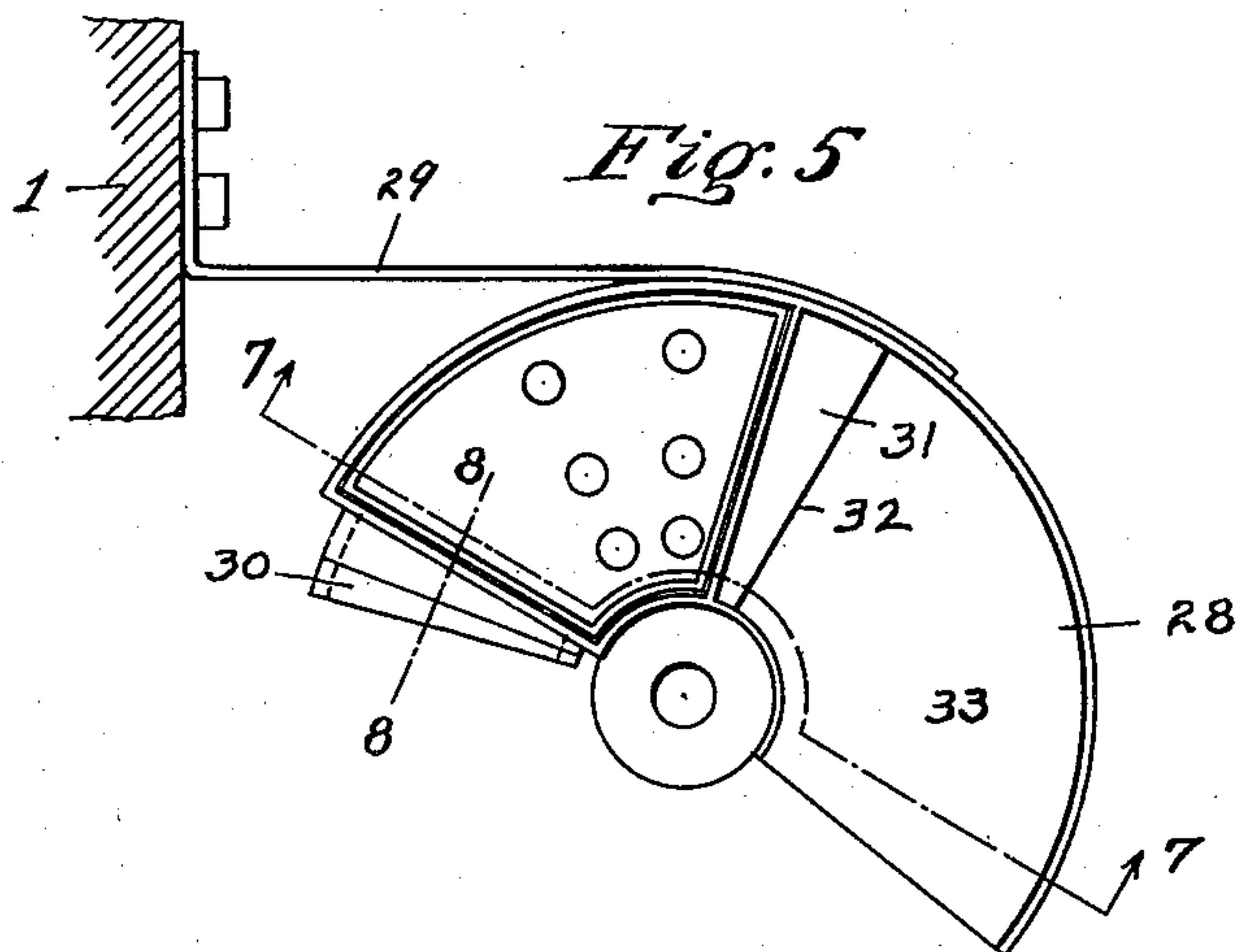


Fig 6

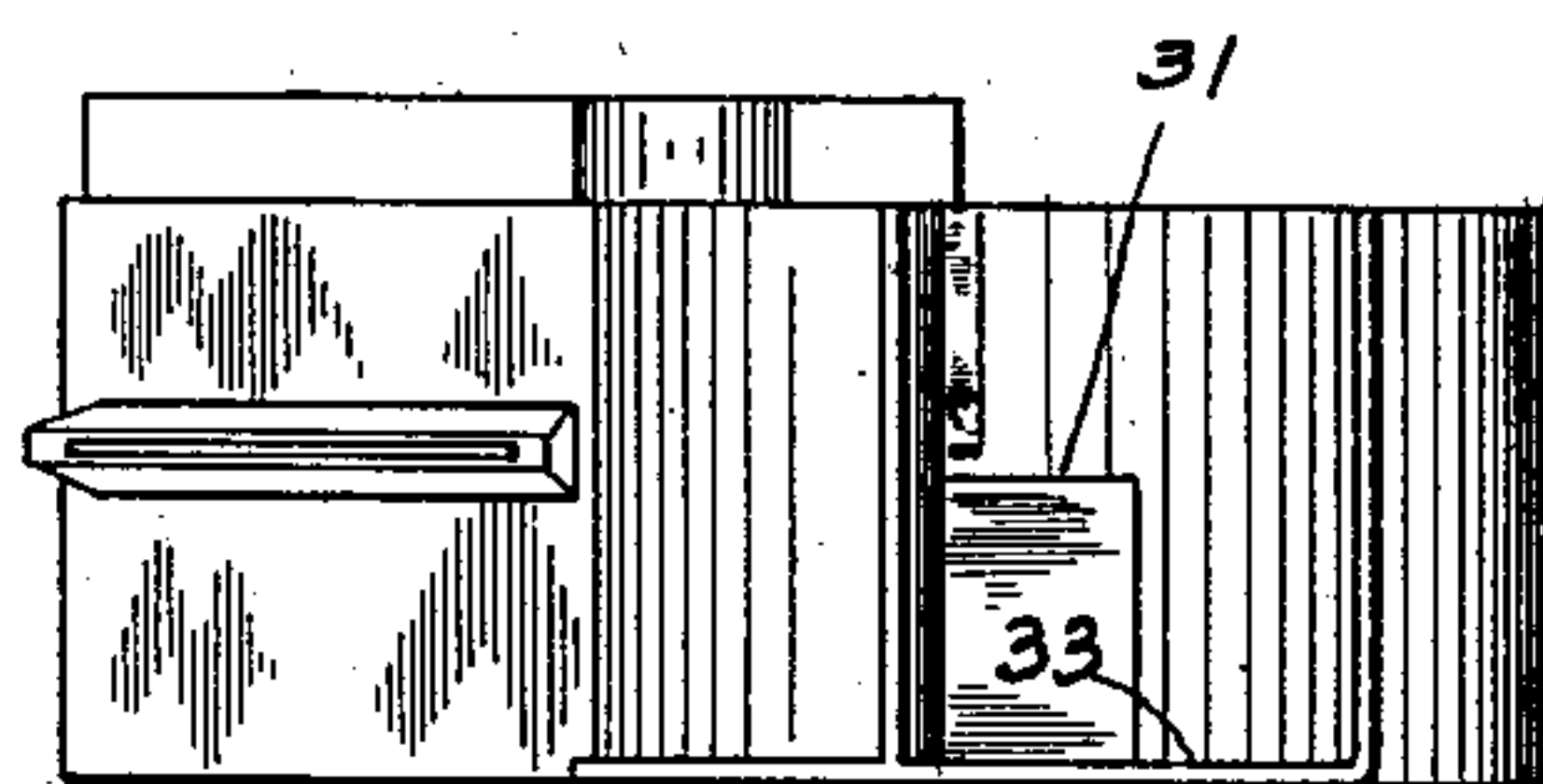


Fig. 7

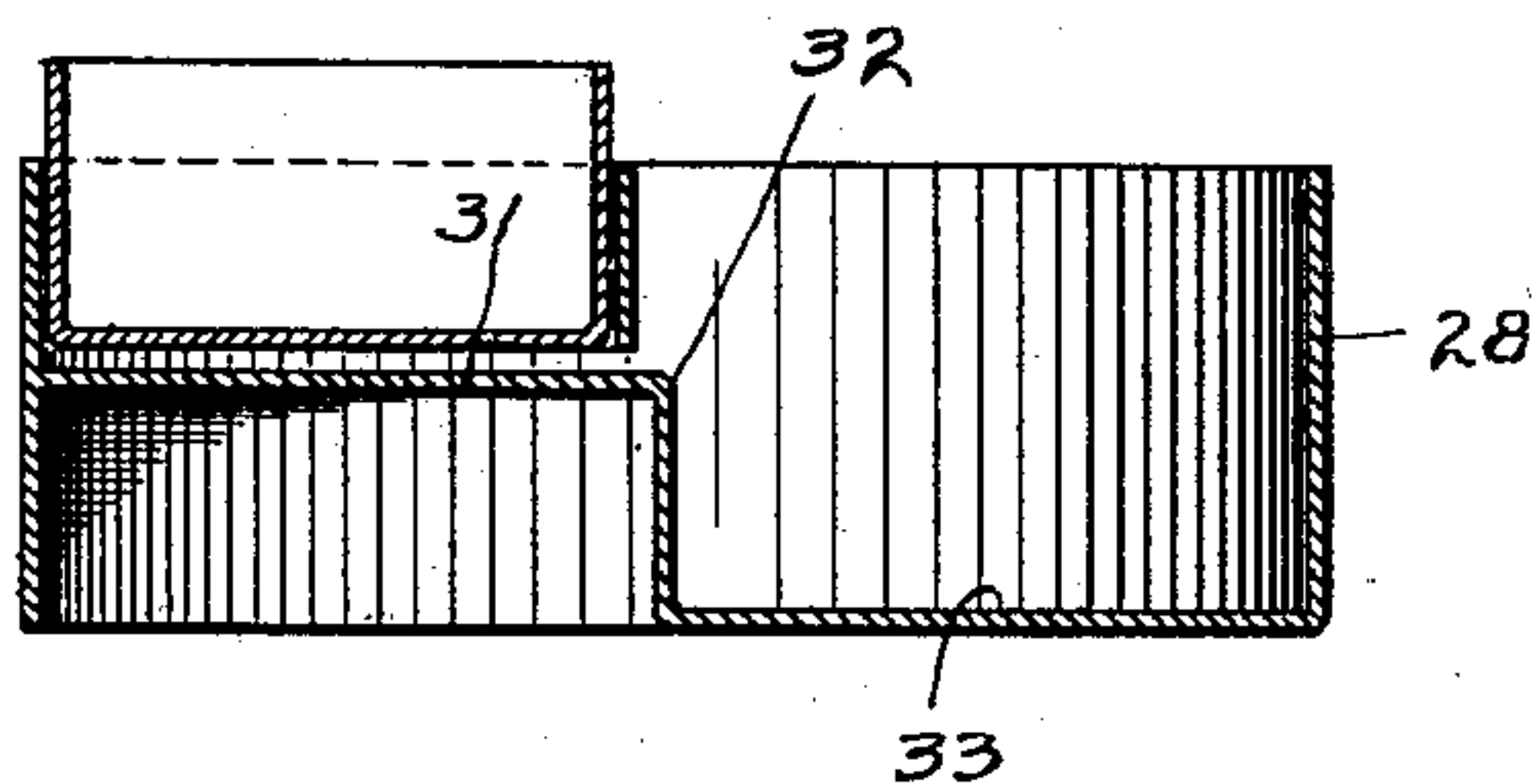
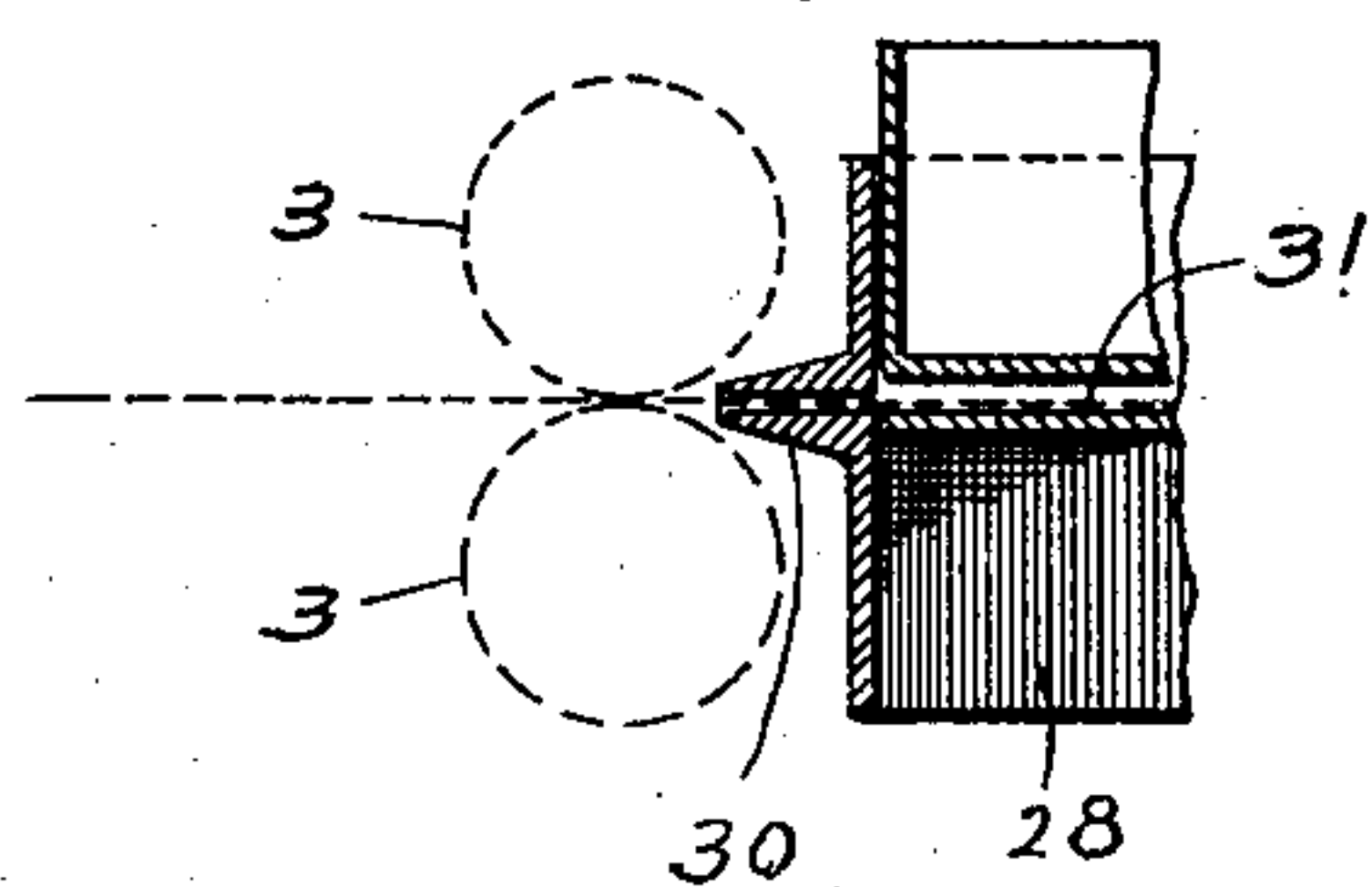


Fig. 8



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UNITED STATES PATENT OFFICE.

ALBERT SCHWEITZER, OF PITTSBURG, AND ALVIN HAUSOLD, OF ALLEGHENY, PENNSYLVANIA, ASSIGNORS TO KEYSTONE ELECTRIC & MANUFACTURING CO., OF ALLEGHENY, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

COILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,360, dated October 27, 1903.

Application filed September 11, 1902. Serial No. 122,980. (No model.)

To all whom it may concern:

Be it known that we, ALBERT SCHWEITZER, a resident of Pittsburg, and ALVIN HAUSOLD, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coiling-Machines; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to apparatus for coiling metal, and more especially to machines for coiling a flat strip of metal edgewise.

The object of our invention is to provide a machine of this kind whereby a flat strip of metal while cold is coiled edgewise and whereby after the same is coiled it is guided to a suitable support in order to have the coils laid one upon the other to form a compact coil.

In the accompanying drawings, Figure 1 is a front elevation of our machine. Fig. 2 is a front view of the coiling portion on an enlarged scale. Fig. 3 is a plan view of the same. Fig. 4 is a detail vertical section of the guide for the coils. Fig. 5 is a plan view of the same. Fig. 6 is an elevation thereof. Fig. 7 is a section on the line 7 7, Fig. 5; and Fig. 8 is a section on the line 8 8, Fig. 5.

The bending part of the machine is mounted upon a suitable frame or base 1, which preferably will be suspended from overhead—as, for instance, by means of the support 2. The bending device comprises two conical rolls 3, placed with their small ends in the same direction and with their axes converging toward a point, so that the pass between said conical rolls has its sides arranged slightly out of parallel. The shaft 4 of the upper roll 3 is mounted in a suitable bearing 5 on the support 1 and will be provided with means for adjusting the angular relation of its face to that of the other roll, such means being shown as a screw 6, passing through a lug 7 and bearing against the upper end of the shaft 4. The shaft 10 of the lower roll 3 is mounted in bearings 11 and 12, secured to the base 1, and is provided with a beveled gear 13, with which meshes a pinion 14 on the counter-shaft 15, said counter-shaft being

suitably mounted on the base and being provided with a gear 16, meshing with a pinion 17 on the power-shaft 18. This power-shaft 18 may be driven in any suitable way—such, for instance, as by means of the belt-pulleys 19. Motion is communicated from the shaft 10 to the shaft 4 by means of a bevel-gear 20 on the former meshing with a similar gear 21 on the latter.

On the entrance side of the pass of the rolls 3 we place a suitable guide, which provides a straight path for the strip of metal to be coiled. This guide is shown as a block 23, provided with a straight rectangular guide-opening 24 and supported in position by means of a bracket-arm 25, secured to the base 1. It will be readily understood that by passing a flat strip of metal through the guide 23 and between the conical rolls 3 the latter because of the greater circumference at their bases than at their apices will stretch the strip at one edge, thus giving to the strip a spiral bend edgewise and form the same into a helix having open coils.

On the exit side of the pass of the rolls we place a supporting-guide, which provides practically a spiral path for the coiled strip. This support is shown as a substantially semicircular body 28, supported by an arm or bracket 29 from the base 1 and provided with a guide 30, projecting into the pass of the rolls 3 at their exit side. This guide leads to the practically flat floor or ledge 31 of the support 28. The coiled strip slides over this floor or ledge and is supported thereby in a practically spiral form. For this purpose the floor or ledge 31 might be given a gradual and continuous drop in spiral form. We prefer, however, to form it substantially horizontal up to the point 32, thence give it quite a sudden drop and have another practically horizontal portion 33. The metal strip will sag down in the depressed portion above the portion 33 and as it passes around it will pass underneath the floor or ledge 32, and so on continuously, so that it will be given a true helical form.

The machine is shown placed in a vertical position, so that the coiled helix may hang

down from the guide 28, as shown in Fig. 1. To guide the helix in this position, we provide a suitable rod or tube 36, supported at its upper end at the axial center of the spiral supporting-guide 28 and supported near its lower end by means of an arm 37, projecting from a suitable support 38.

Below the lower end of the guide 36 we provide a suitable rotary support 40, secured to the upper end of a shaft 41, which is mounted in a suitable frame 42 and driven in any suitable manner—as, for instance, from the belt-pulley 43, by means of the shaft 44 and bevel-gears 45—at such a speed that the rotation of the support 40 will correspond to the rate of rotation of the helical coil being delivered from the rolls 3. This support 40 receives the lower end of the helical coil, and as said helix descends the coils thereof will close up, as shown in Fig. 1, thus forming a compact coil. When a sufficient number of turns have been assembled, the strip is cut, the cut-off portion removed, and the operation continued.

By means of our machine a flat strip of metal can be coiled edgewise while cold and guided and supported in such a manner as to have the coils laid one upon the other in order to form a compact coil such as is adapted for use in electromagnets and elsewhere. The operation of the machine is practically automatic, as the strip can be taken from a large roll and be of indefinite length. An attendant will be necessary to cut off the strip when the desired number of coils has been laid together and remove the cut-off portion from the support 40. By means of the machine and one or two attendants a very large number of coils can be wound in a day.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a machine for coiling metal strips edgewise, the combination of two conical rolls placed with their smaller ends in the same direction and their axes converging, means for driving said rolls, a guide at the entrance side of said rolls providing a straight path for the metal strip, and a supporting-guide at the exit side of said rolls providing a substantially spiral path for the coiled strip.

2. In a machine for coiling metal strips edgewise, the combination with mechanism for continuously and progressively bending a strip of metal edgewise, a supporting-guide providing a spiral path for said coiled strip, and a guide-rod extending away from the support in line with the axis thereof.

3. In a machine for coiling metal strips

edgewise, the combination of two conical rolls placed with their smaller ends in the same direction and their axes converging, means for driving said rolls, a guide at the entrance side of said rolls providing a straight path for the metal strip, a supporting-guide at the exit side of said rolls providing a spiral path for the coiled strip, and a guide-rod extending away from the support in line with the axis thereof.

4. In a machine for coiling metal strips edgewise, the combination of mechanism for continuously and progressively bending the strip of metal edgewise, and a support at the exit side of said coiling mechanism, said support being provided with a floor having different portions thereof at different elevations, whereby a spiral path for the coiled strip is provided.

5. In a machine for coiling metal strips edgewise, the combination of mechanism for continuously and progressively bending a strip of metal edgewise, and a rotating support arranged to have the end of the coil rest thereupon and support the same.

6. In a machine for coiling metal strips edgewise, the combination with mechanism for continuously and progressively bending a strip of metal edgewise, a support providing a spiral path for said coiled strip, and a rotating support for receiving and supporting the end of said coil.

7. In a machine for coiling metal strips edgewise, the combination with mechanism for continuously and progressively bending a strip of metal edgewise, a support providing a spiral path for said coiled strip, a guide-rod extending away from the support in line with the axis thereof, and a rotating support for receiving the end of said coil.

8. In a machine for coiling metal strips edgewise, the combination of two conical rolls placed with their smaller ends in the same direction and their axes converging, means for driving said rolls, a support at the exit side of said rolls providing a spiral path for the coiled strip, a guide-rod extending away from the support in line with the axis thereof, and a rotating support adjacent to the end of said rod for receiving and supporting the coil.

In testimony whereof we, the said ALBERT SCHWEITZER and ALVIN HAUSOLD, have hereunto set our hands.

ALBERT SCHWEITZER.
ALVIN HAUSOLD.

Witnesses:

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ROBERT C. TOTTEN.