

967,102.

C. W. BARNES.
UNIVERSAL TRACKER BOX.
APPLICATION FILED JULY 8, 1906.

Patented Aug. 9, 1910.

4 SHEETS—SHEET 1.

Fig. 1.

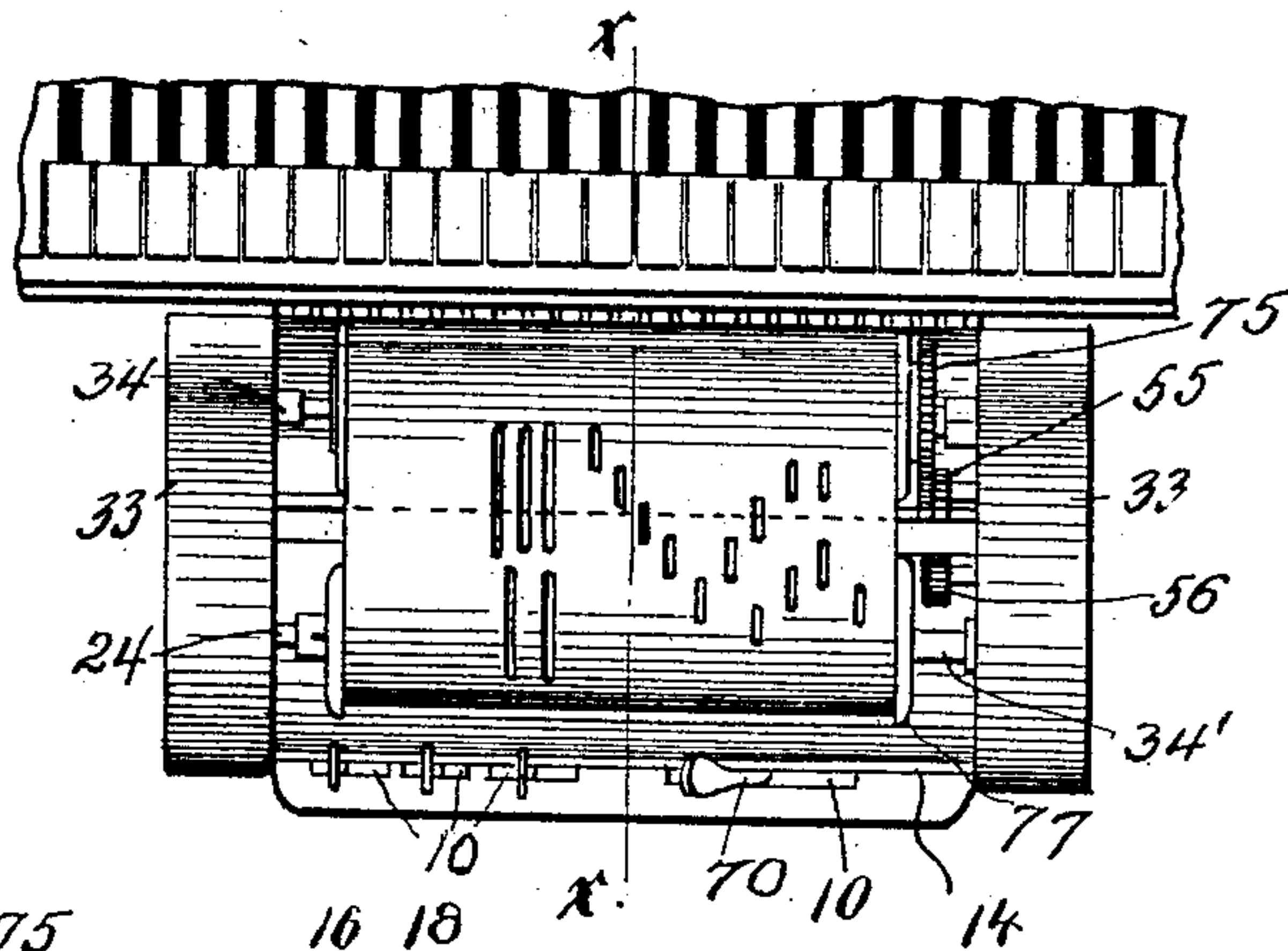


Fig. 2.

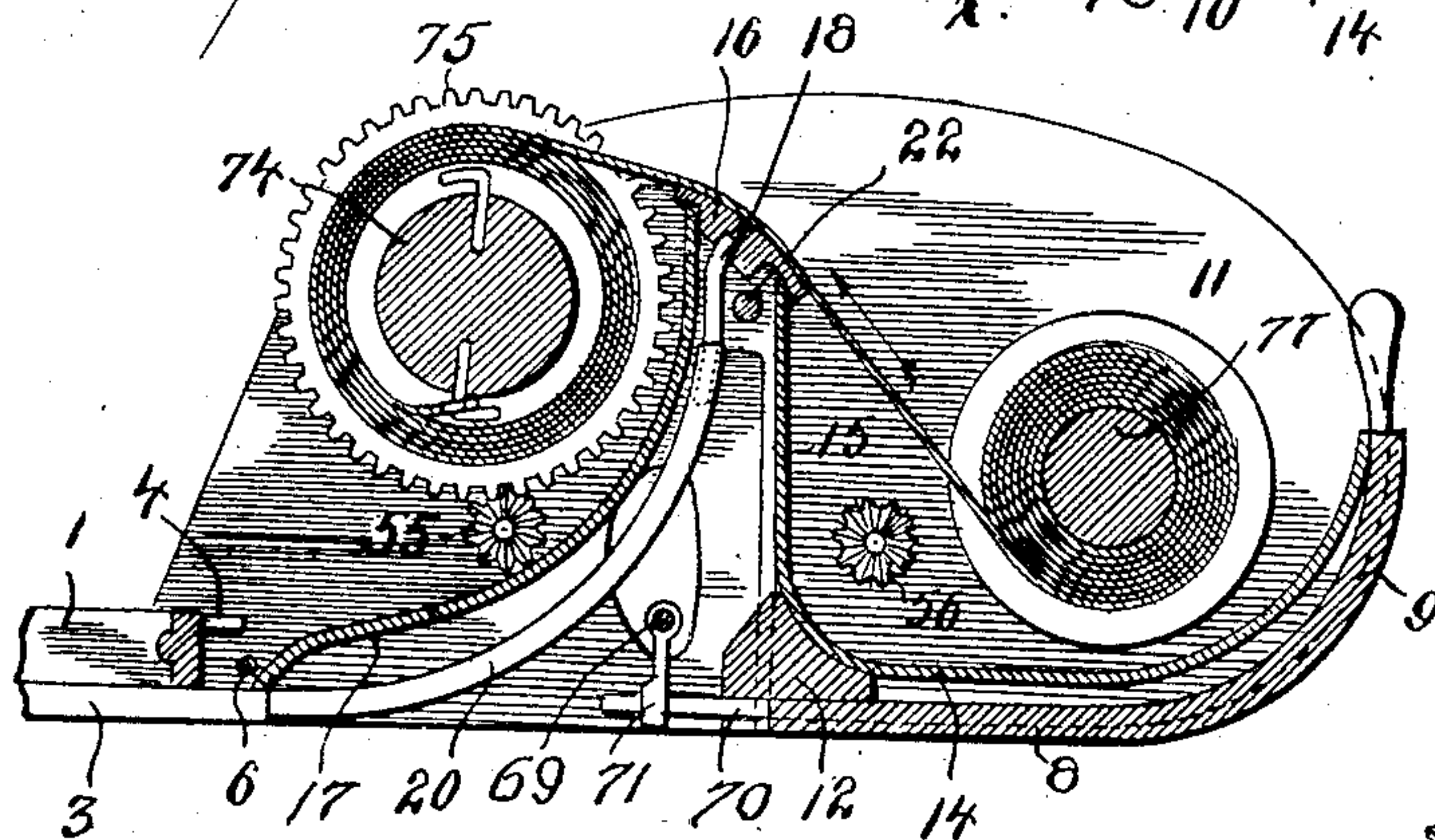


Fig. 3.

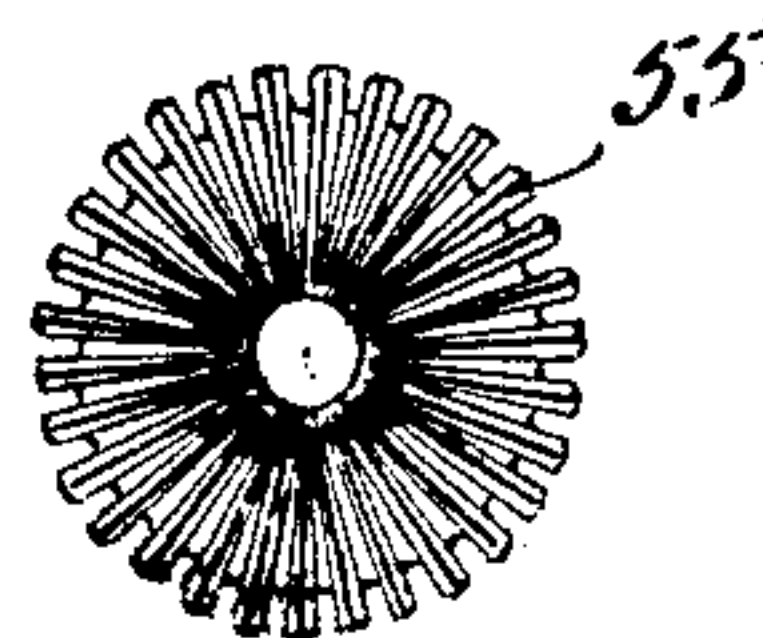


Fig. 4.

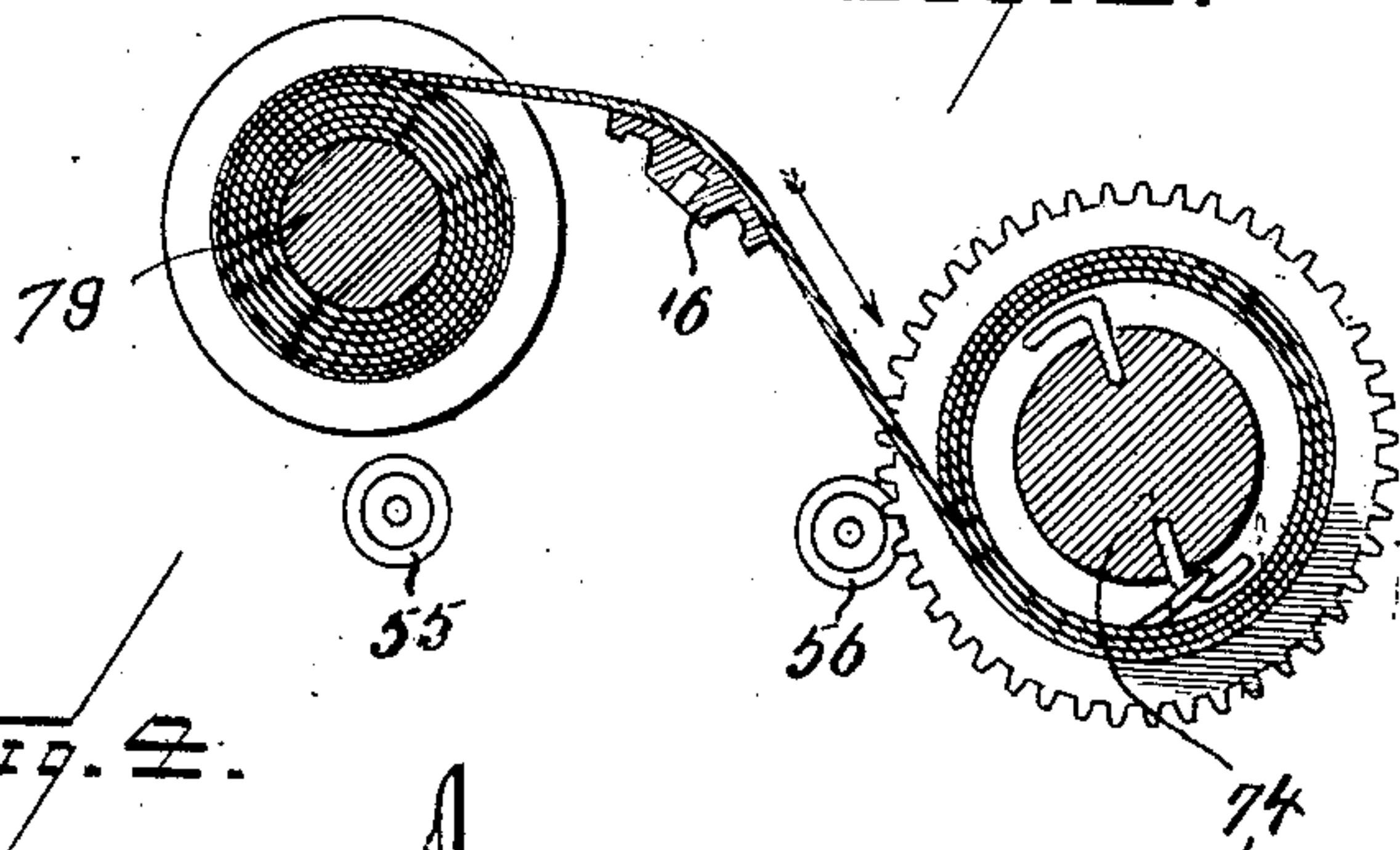


Fig. 5.

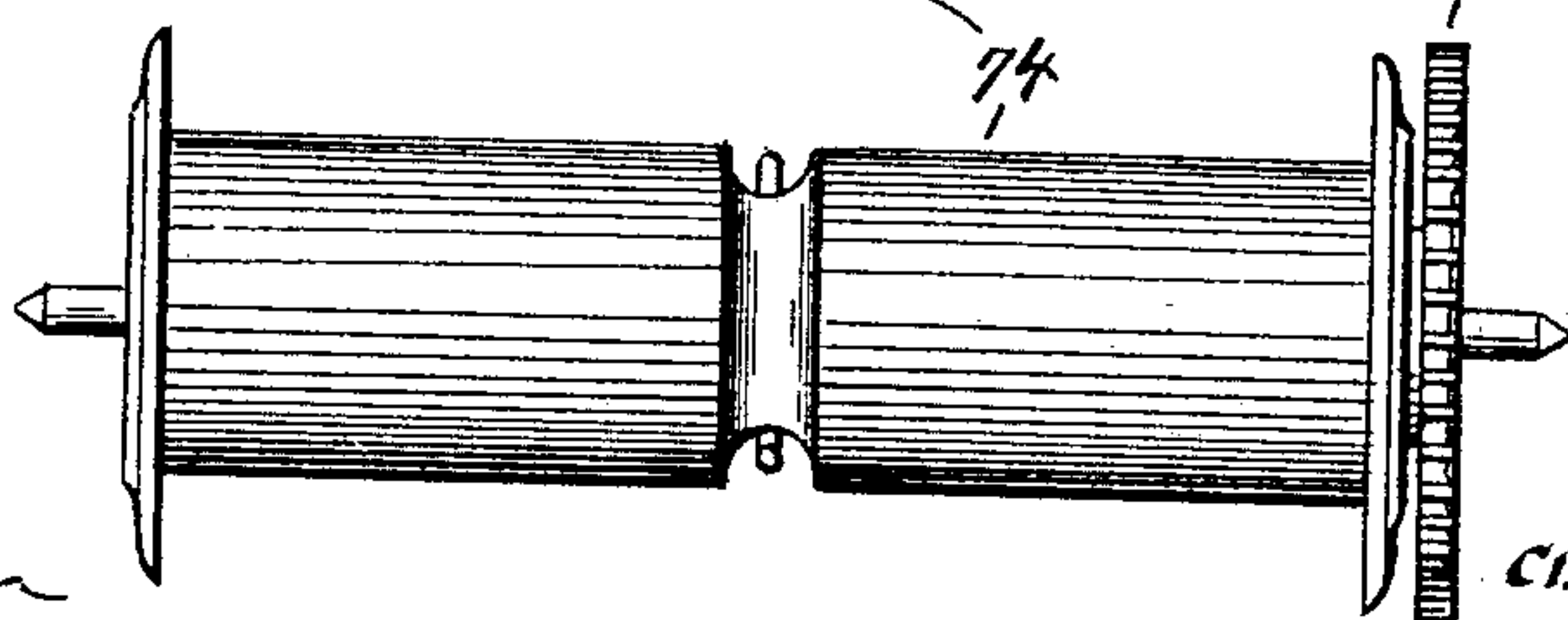
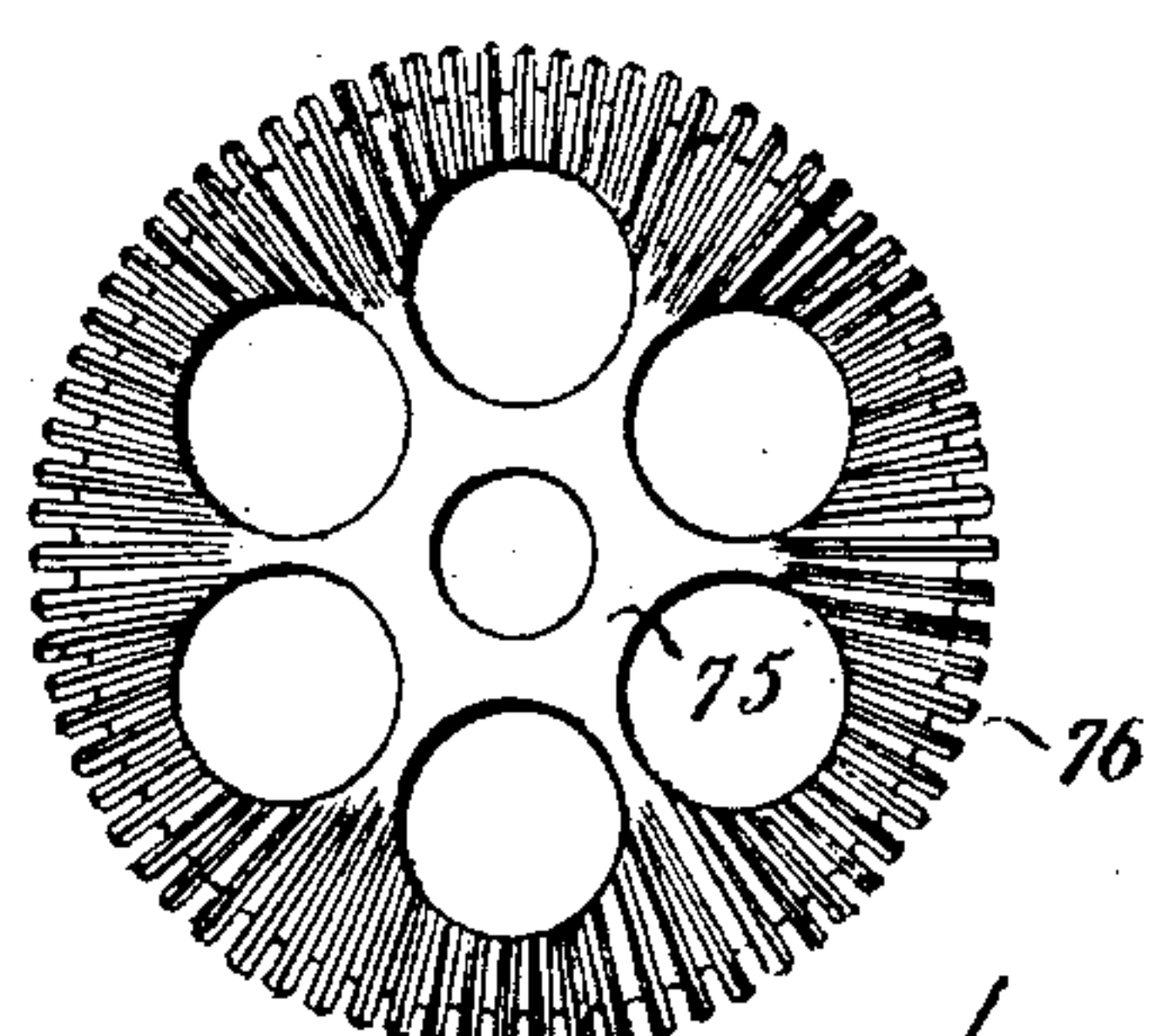


Fig. 6.



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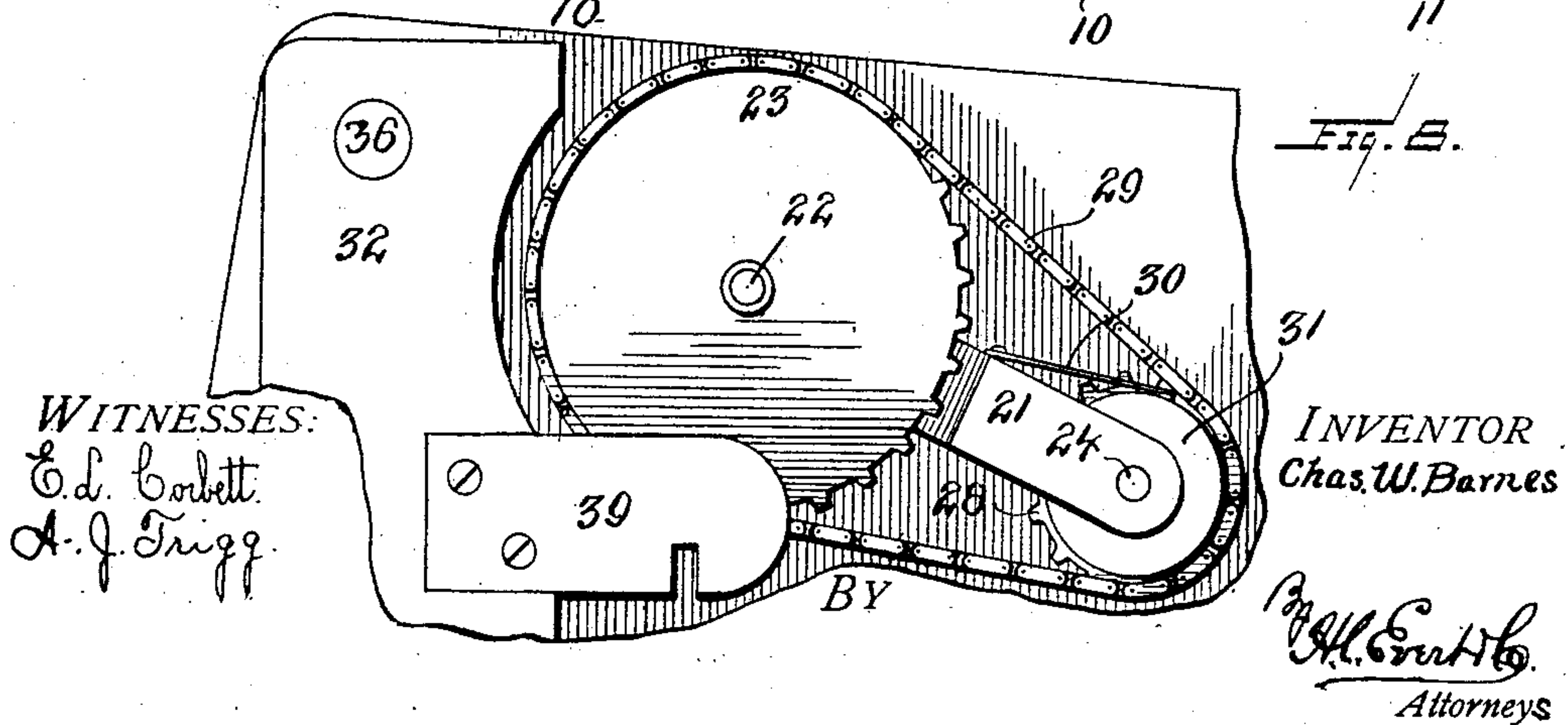
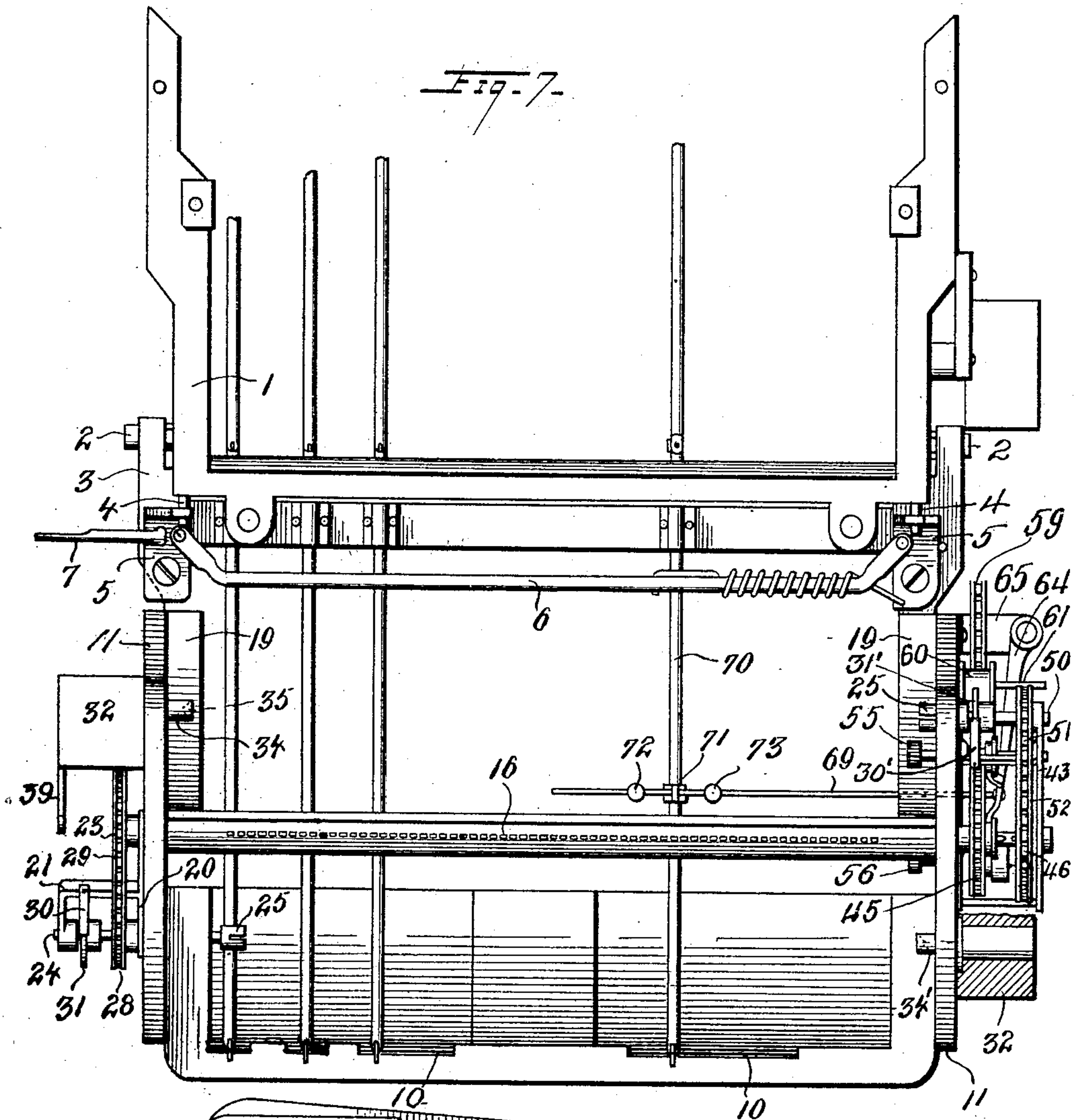
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4 SHEETS—SHEET 2.

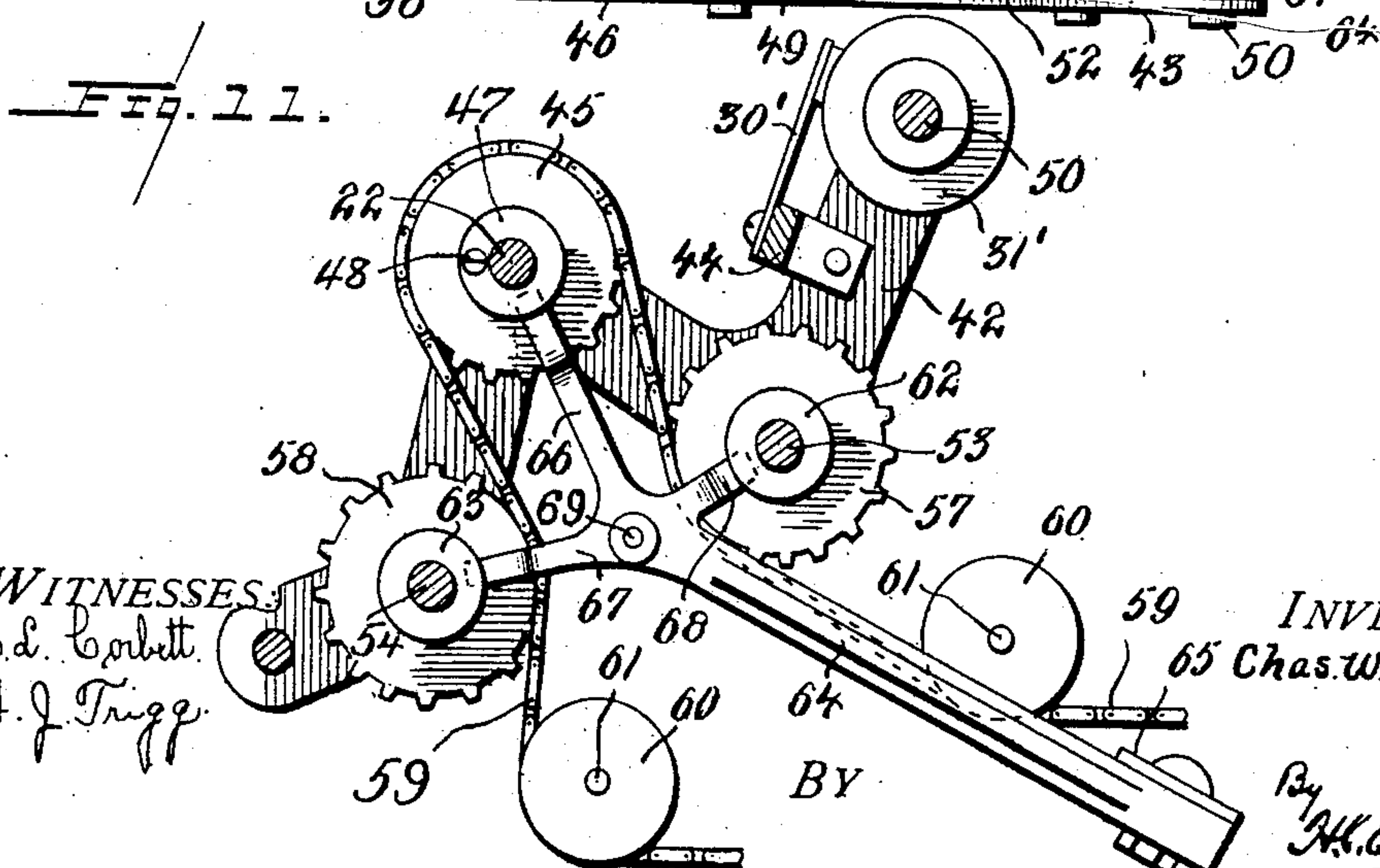
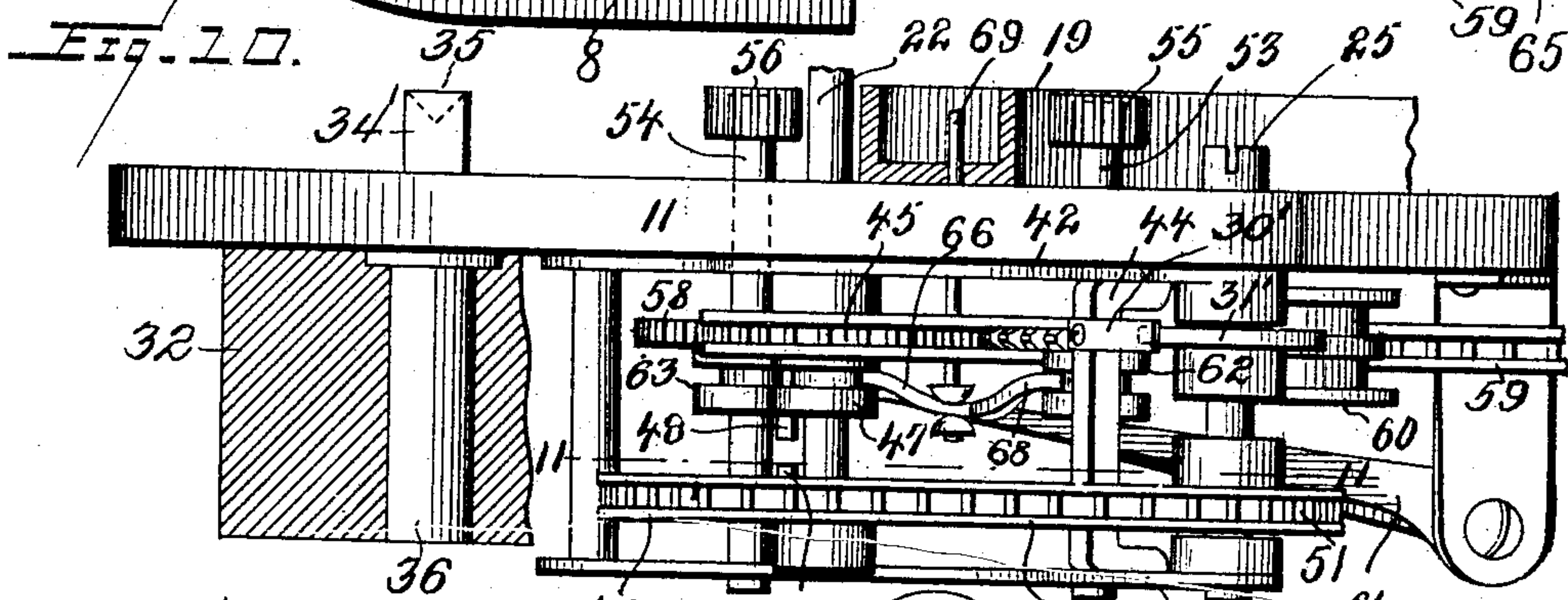
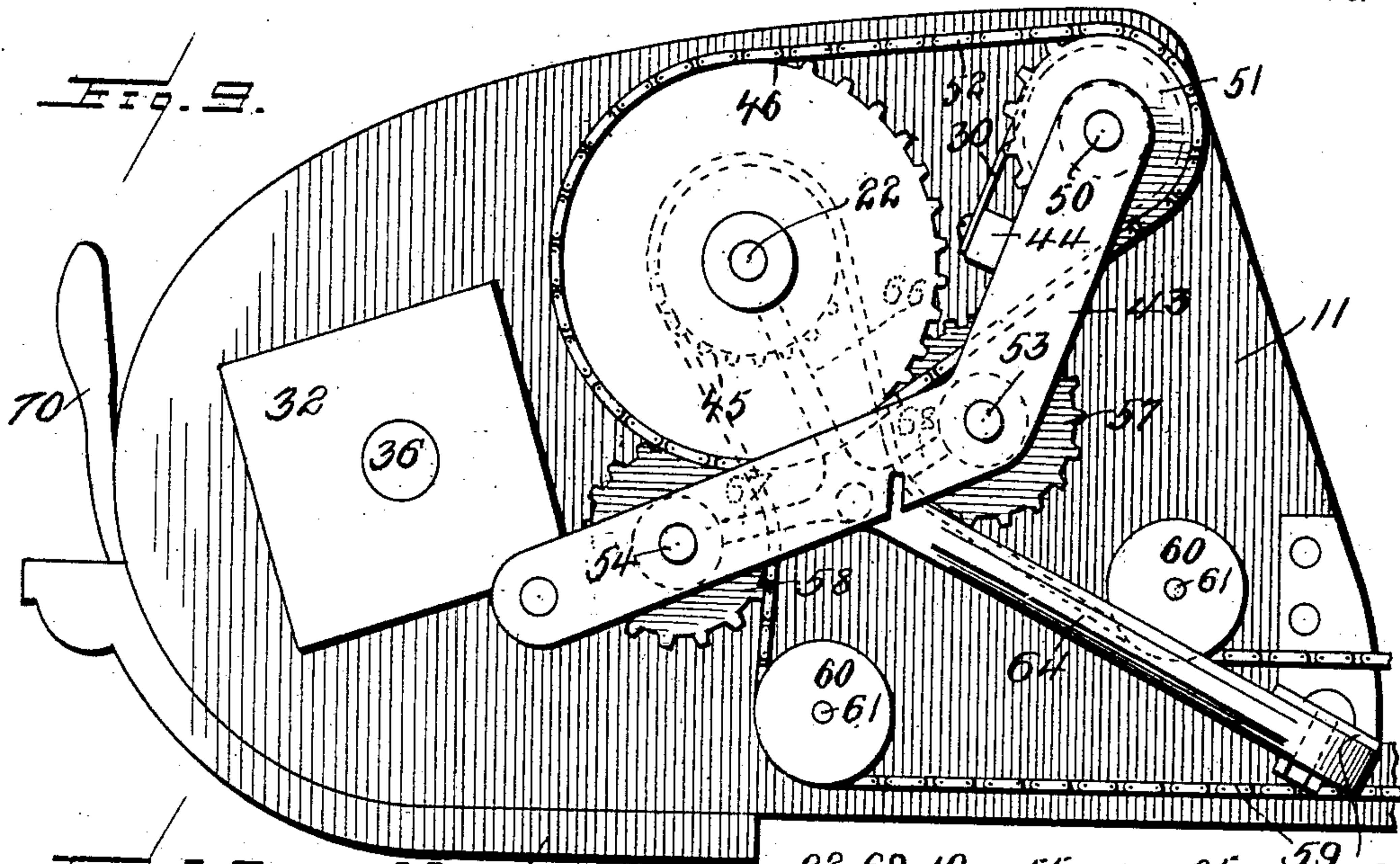


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4 SHEETS—SHEET 3.



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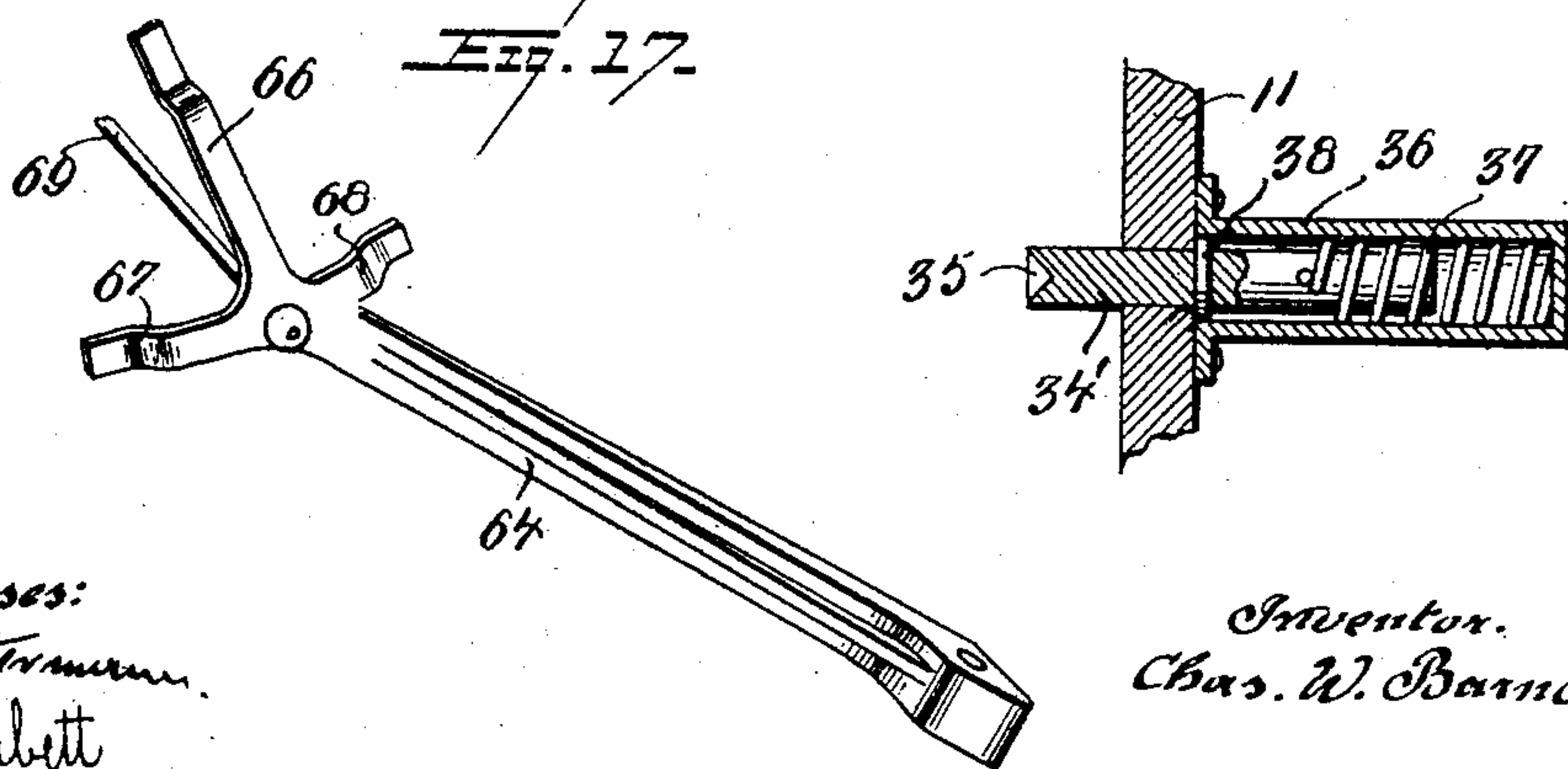
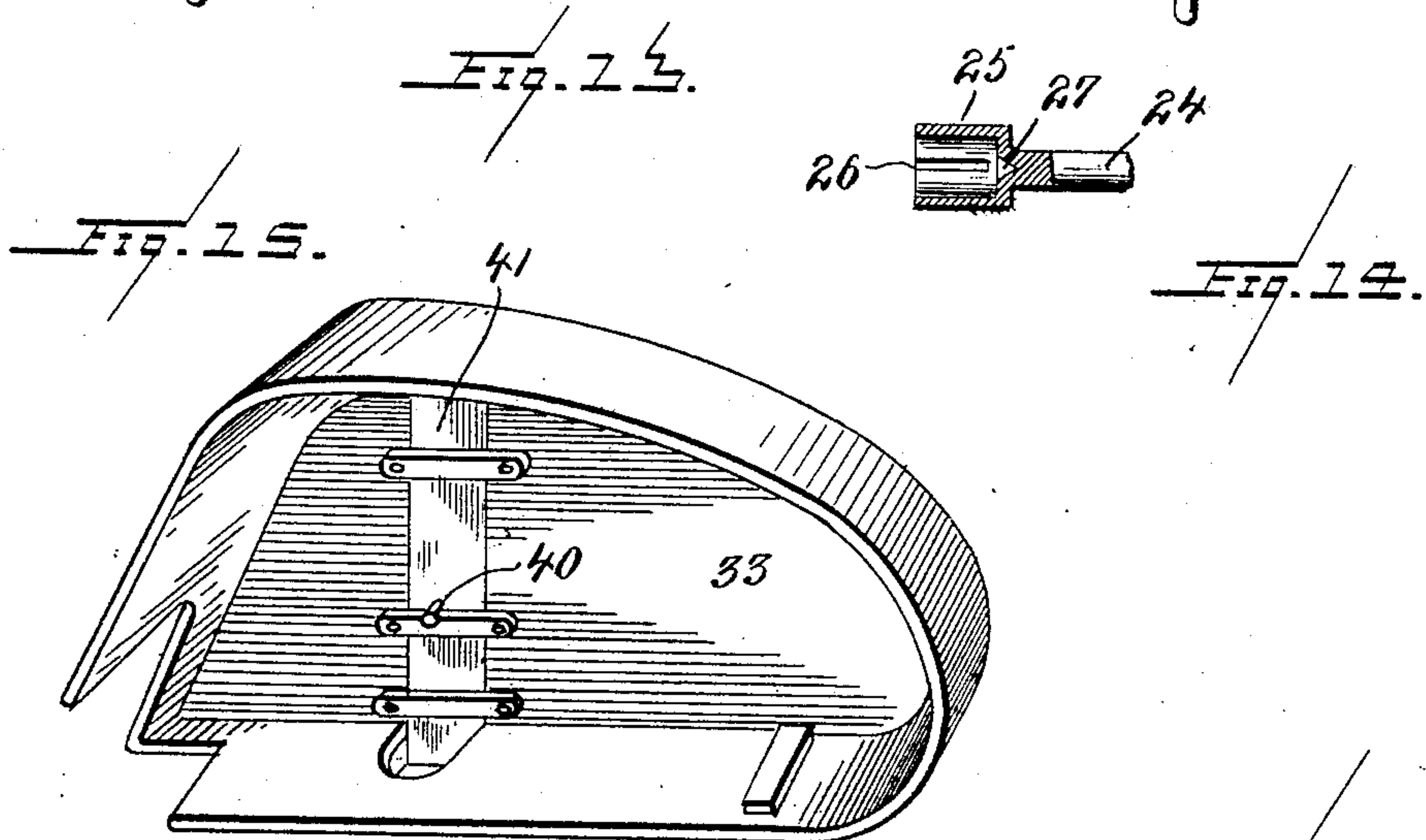
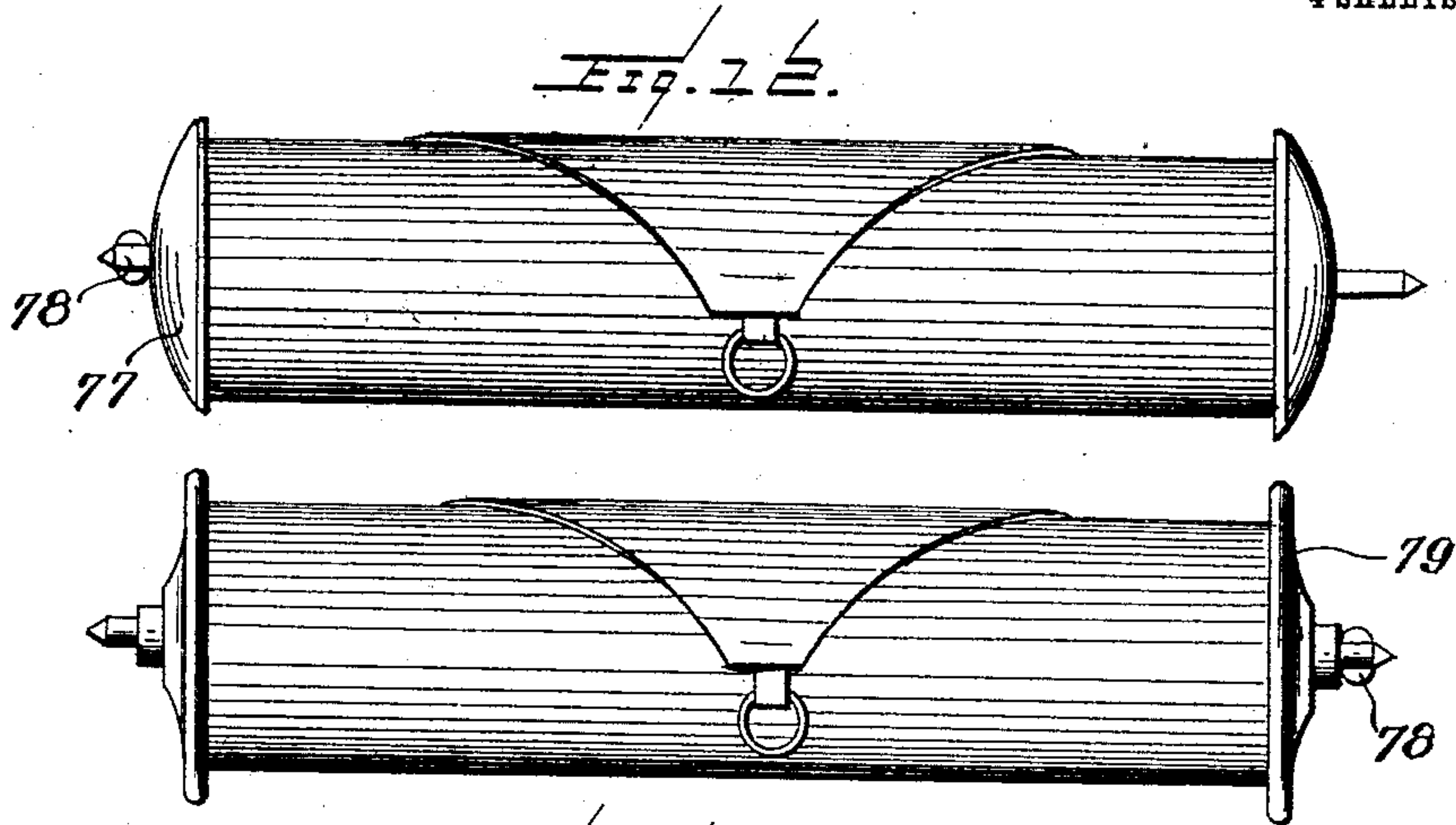
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UNIVERSAL TRACKER BOX.
APPLICATION FILED JULY 6, 1906.

Patented Aug. 9, 1910.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

CHARLES W. BARNES, OF NORWALK, OHIO, ASSIGNOR OF ONE-HALF TO THE A. B. CHASE COMPANY, OF NORWALK, OHIO, A CORPORATION OF OHIO.

UNIVERSAL TRACKER-BOX.

967,102.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed July 6, 1906. Serial No. 324,970.

To all whom it may concern:

Be it known that I, CHARLES W. BARNES, a citizen of the United States of America, residing at Norwalk, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Universal Tracker-Boxes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in universal tracker boxes for mechanical playing instruments, and has for its primary object the provision of means whereby the perforated music sheets of different types of mechanical playing apparatus may be used in the same tracker box, and wherein they may also be properly rewound for use in the particular type of apparatus for which they were designed.

In the art of mechanical playing instruments for key board musical instruments, such instruments for instance as pianos, a number of different types of playing attachments have become generally known, and each particular type of apparatus requires the perforated music sheet used in connection therewith to be wound in a specific manner in order to operate with the particular type of apparatus for which it was designed or intended. As a result of this requirement, it follows that even though the perforated music sheets used in a number of different types of apparatus are of the same form, yet the music sheet wound for use in one type of apparatus cannot be used in a different type, since it would not unwind properly from its spool onto the take-up spool when playing, nor could it be rewound onto the music sheet spool from the take-up spool so as to again be properly wound for use in the apparatus for which it was designed.

Among the types of mechanical playing apparatus now generally known in the art and to the trade, I may mention such as the Pianola, the Angelus, the Cecilian, etc., which employ a perforated music sheet which, during the operation of the apparatus, unwinds from the music sheet spool over the mouth piece of a tracker box and onto a take-up spool.

The perforated music sheet used in different types of apparatus may be identical, and, while the principle of operation in so

far as unwinding from the music sheet spool onto the take-up spool while playing and then rewinding onto the music sheet spool may be the same in two or more types of different apparatus, yet, owing to the fact that one type of apparatus may require, because of its being so designed, that the music sheet or paper run from the underside of the music sheet spool over the mouth piece and down under the take-up spool, and in another type of apparatus the music sheet or paper is designed to run from the top of the music sheet spool over the mouth piece and over the take-up spool, it will readily be observed that the spools of paper,—although the paper designed for different apparatus is the same—are not interchangeable from one type of apparatus to the other. In other words, and to cite a specific instance, a roll of paper wound for use in say the well known Angelus type of playing attachment, may not be used in the well known Pianola type of playing attachment, on account of the different manner in which the paper is wound on the spool in order to operate with the type of apparatus for which it was designed; and also on account of the specific manner in which the paper must be again rewound to permit its further use in the type of apparatus for which it was designed. This inability to interchange the paper rolls of different types of playing apparatus has been a serious defect, and a considerable hindrance to sale of playing attachments, as well as an annoyance alike to dealer and customer, causing a demand for a tracker box universal in its nature to the extent at least that a plurality of paper rolls wound for a specific type or make of apparatus could be used therein.

My invention aims to overcome this difficulty, and it broadly consists in a tracker box in which different forms of paper rolls, each wound for use in a specific type of apparatus may be used in the same tracker box, and after use, may be again rewound for further use either in the type of tracker box for which they were originally designed, or in the universal tracker box set forth herein.

The tracker box forming the subject matter of this application, and which I herein term as "universal" tracker box, is particularly designed for use in connection with that type of playing attachment which is located within the case of the musical in-

strument, below the level of the key board, and back of the front board of such musical instrument, with the tracker box carried by the playing attachment, and the latter mounted in the case of the musical instrument so that by removing the front board of the latter, the entire playing attachment (including the tracker box) may be swung out away from the instrument to thereby give ready access to all parts of the playing attachment. However I wish to be distinctly understood as disclaiming herein any intention to limit myself in the use of the universal tracker box to the specific form of playing attachment above described, as the same may be used in connection with any form or style of playing attachment for which it may be applicable.

To accomplish the objects set forth, with other objects in view, and to obtain advantages in construction, convenience in operation and use, my improvements involve certain new and useful arrangements and combination of parts and peculiar features as will be hereinafter more fully described and then particularly claimed.

In describing the invention in detail, reference will be had to the accompanying drawings showing a practical embodiment of my invention and wherein like numerals of reference will be employed to designate like parts throughout the several views, in which:—

Figure 1 is a top plan view of my improved universal tracker box showing the same in position in front of the key board of a musical instrument, the said key board being partly broken away. Fig. 2 is a transverse vertical sectional view taken on the line $x-x$ of Fig. 1. Fig. 3 is a transverse vertical sectional view through the music sheet roll, the take-up roll and the mouth piece or tracker-board of the tracker box, the said elements being removed from the tracker box. Fig. 4 is a plan view of the take-up roll removed from the tracker box. Fig. 5 is a detached enlarged view in side elevation of one of the winding pinions adapted for engagement with the pinion on the take-up roll. Fig. 6 is a detached enlarged view in side elevation of the pinion carried by the take-up roll. Fig. 7 is an enlarged top plan view of the tracker box with both of the spools and the interior lining or floor of the tracker-box removed, also showing in top plan view the pivoting frame which carries the tracker-box. Fig. 8 is an end view of a tracker-box partly broken away, looking from the left hand side of Fig. 7, the end cap being removed. Fig. 9 is an enlarged end view of the tracker-box (the end cap being removed) looking from the right hand end of the box as seen in Fig. 7. Fig. 10 is a top plan view (on the same

scale as Fig. 9) of the mechanism at the

right hand end of the box. Fig. 11 is a detail sectional view taken on the line 11—11 of Fig. 10. Fig. 12 is a plan view of a music sheet and its roll showing the music sheet wound in the manner in which the same is used on the Angelus type of playing attachment. Fig. 13 is a similar view of a music sheet and its roll, such as is used in connection with the Pianola type of playing attachment. Fig. 14 is a detail sectional view of the clutch member employed for one end of the music sheet spool, and take-up spool. Fig. 15 is a detached detail perspective view of the end cap of the tracker-box. Fig. 16 is a longitudinal sectional view of the spring bearing employed for one end of the take-up spool and the music sheet spool. Fig. 17 is a detached detail perspective view of the re-roll shipper.

The tracker-box forming the subject of this application is of that type which is pivoted or hinged, and when in playing position, or in position for use, lies substantially in front of the key board of the musical instrument, and, when the playing attachment is not in use, or it is desired to play the musical instrument in the ordinary manner, the tracker-box is swung beneath the key bed of the musical instrument, out of the way of the key board, and substantially out of sight. The particular manner of pivotally-mounting the tracker-box is immaterial, my invention residing in the construction of the tracker-box *per se*. It may therefore be pivotally-mounted in any desired manner, and in practice, I have mounted the same in a tracker-box carrying frame, the latter being connected to a pivoting-frame that is attached to supporting-bars (not shown) extending outwardly from the body of the playing attachment.

In Fig. 7 I show the pivoting-frame 1 provided at opposite sides with outwardly extending lugs or pintles 2, on which lugs or pintles the tracker-box carrying-frame 3 is pivotally hung. Any approved locking mechanisms for automatically locking the tracker-box in the playing position when it is brought into said position may be employed, that shown in the drawings comprising pins or studs 4 carried by the front cross bar of the frame 1, and pivot latch plates 5 carried by the frame 3 and adapted to engage with said studs or pins 4, the two plates 5 being connected together by a spring-pressed rod 6, and one of the plates 5 provided with an operating handle 7.

The tracker-box embodies a bed or base 8, curved upwardly at its forward edge to form the front 9, the said base 8 and front 9 being provided with recesses 10 (see Figs. 1 and 7) to accommodate the expression-control levers and the tempo lever respectively. The box is provided with end pieces 11, of a length considerably greater than

the width of the base, as will be observed by reference to Figs. 1, 2, and 7 and at the rear edge of base 8 is a sill piece or rest 12 forming a support for the bottom or interior lining 14, as best seen in Fig. 2 of the drawings. A part of this bottom or interior lining lies over the base and is curved upwardly at its forward end, corresponding in curve to the front 9, this portion covering up the expression-control levers and the tempo lever, all except that portion of said levers which extends upwardly above the front 9 to permit their operation. The rear part of the bottom or lining 14 is extended vertically above the sill piece or rest 12 to form a support for the mouth-piece or tracker-board 16, said support 15 engaging the underneath face of the mouth-piece or tracker-board near the forward longitudinal edge thereof. This mouth-piece or tracker-board is also supported near its rear longitudinal edge by a similar interior lining 17 which rests at its ends on the curved ends of standards 19 attached to the inner faces of the end-boards 11, and which standards at their upper ends have the mouth-piece or tracker-board 16 suitably connected thereto.

The mouth-piece or tracker-board 16 is of the usual type, and carries nipples 18 communicating with the ducts or openings of the mouth-piece or tracker-board, and over the ends of which nipples are slipped the ends of the pneumatic tubes 20, which tubes lead to the pneumatic action (not known) in a well known manner.

The above described parts relate generally to the case of the tracker-box and may be altered or varied at will without in any manner departing from the spirit of the invention. My improvements lie mainly in the novel construction and arrangement which permits of the use and interchanging of different types of music roll, as will now be described.

On the left-hand end-board 11 of the tracker-box case is mounted a bracket embodying a plate 20' and a substantially L-shaped bracket-arm 21. Extending through this end-board 11 and through the plate 20' is one end of a shaft 22 on which is fixed a sprocket wheel 23. Journaled in said end-board 11, in the plate 20' and in the bracket-arm 21 is a re-roll clutch shaft 24 carrying on its inner end a clutch member 25 of a construction clearly shown in Fig. 14 of the drawings, and embodying a clutch socket having oppositely disposed slits 26, to furnish means to re-roll music on the music spool, and provided in its base with a conical seat 27, to furnish a bearing for the take-up spool. The music sheet spool is thus held in alinement by the outer surface or face of said clutch-member, while the conical seat 27 furnishes a bearing for the stub-shaft of the

re-roll spool. The stub-shafts of the re-roll spool are of such length that when brought to bear against the conical seat 27 they produce perfect alinement with the tracker-bar when either Pianola or Angelus types of music are being played. On this clutch-shaft 24 is a sprocket 28, said sprocket 28 and the sprocket 23 being engaged and driven by chain 29.

It is preferable in this class of devices to employ a tension or friction spring which acts in the nature of a brake, and such device may be applied so as to act on the clutch shaft 24 in any desired manner, the illustration herein shown comprising a spring arm 30 attached to the L-shaped bracket-arm 21 and bearing upon a friction wheel 31 keyed on clutch shaft 24. While the wheel 31 is shown as of a considerable diameter, it will be understood that variations in its diameter do not affect the operation, the result being obtainable even if the wheel be of a size but slightly larger than the shaft 24 or be entirely omitted, in which case the device would engage the shaft, or the wheel may be formed integral with the sprocket wheel 28, in which case it would serve the purpose of a head on the sprocket wheel.

Attached to the aforesaid end-board 11 near the rear end thereof is a block 32 which acts to form a support for the end cap 33, and this block has arranged therein a spring bearing shaft 34, provided on its inner end with a conical socket 35. This spring bearing shaft is adapted to receive one end of the music sheet spool in one instance, and one end of the take-up spool in another instance, and a similar spring bearing is arranged in the end-board at the right hand side of the tracker-box, as designated by reference numeral 34'. The particular construction of these two spring bearing shafts is shown in Fig. 16, the shaft 34 or 34' being mounted in a casing 36 which is inserted into the block or boxing attached to the end-board 11, the said shafts 34 or 34' being under tension of a spring 37 within said casing 36, and being limited in their movement under the action of said spring by a stop collar 38.

The block or boxing 32 at the left hand end of the tracker-box carries a notched bracket plate 39 with the notch of which is adapted to engage a headed pin 40 carried by a slide latch 41, arranged to slide in the inner face of the end cap 33, whereby in one position the end cap will be locked on the end of the tracker-box, and in another position of said slide latch, the head of the pin 40 will be disengaged from the notched bracket plate 39, and the end cap 33 may be removed. The end cap at the opposite side of the tracker box is adapted to be similarly locked in position. I do not claim any invention in locking these end caps on to the tracker-box.

At the right hand end of the tracker-box is arranged the driving and re-winding mechanism for the music sheet roll and the take-up roll, and the re-roll shipper mechanism. This mechanism is supported in a bracket attached to the outer face of the end plate 11 at the right hand end of the tracker box and comprises an inner plate 42 and an outer plate 43 connected together by a cross brace or bar 44.

The shaft 22 heretofore referred to extends the entire length of the tracker-box underneath the mouth-piece or tracker-board, as seen in Fig. 2, and on the extending end of this shaft which projects beyond the end-board 11 at the right hand end of the tracker-box is mounted a drive sprocket 45 and a sprocket wheel 46, the latter sprocket wheel corresponding in size to the sprocket wheel 23 at the opposite end of said shaft 22. The sprocket wheel 46 is fixed on the shaft, while the drive sprocket 45 is loosely mounted on said shaft, and has a clutch member adapted to engage with a clutch member on the sprocket wheel 46 whereby to fasten the wheel 45 at certain times to the shaft 22. This clutch member as shown in the present illustration embodies a peripherally grooved collar 47 carried by the wheel 45, said collar on its outer face having a pin 48 adapted when the sprocket wheel 45 and collar 47 are shifted in one direction to engage with a pin 49 forming the clutch member carried by the wheel 46.

Journalled in the bracket at the right hand end of the tracker-box so as to aline with the spring bearing shaft 34 is a clutch shaft 50 on which is keyed a sprocket wheel 51, which receives a sprocket chain 52 passing over said wheel 51 and over sprocket wheel 46. The sprocket wheel 51 on re-roll clutch shaft 50 is of the same size as sprocket wheel 28 on clutch shaft 24, and a friction or brake device comprising spring arm 30' and friction wheel 31', is provided for this clutch shaft 50, in the same manner as heretofore described for clutch shaft 24.

As I have heretofore stated, the universal tracker-box involved in this application is adapted to accommodate different styles of music sheet rolls, that is, music sheet rolls wound in a particular manner for use in a specific type of playing apparatus. For fully illustrating my invention I have arbitrarily selected the Pianola type of music roll and the Angelus type of music roll. Both of said types may be used in the tracker-box forming the subject-matter of this application, and re-wound for use in the playing apparatus for which they were originally designed and wound. In using the different types of rolls, however, the music sheet roll or spool and the take-up spool or re-roll occupy different positions in the tracker-box for the different types of music

sheet roll. It is necessary therefore to provide driving mechanism for the take-up roll in each of its different positions in the tracker-box. This is accomplished by the employment of two pinion shafts 53, 54 journaled in the bracket, and extending beyond the inner face of the end-board 11, and carrying pinions 55, 56 respectively. The shafts 53, 54 are slidably mounted, and carry sprocket wheels 57, 58 respectively, which sprocket wheels are engaged by the drive chain 59 leading to the motor shaft (not shown). The manner in which the drive chain 59 engages wheels 57, 58 and wheel 45 is clearly shown in Figs. 9 and 11 of the drawings, said chain passing back of wheel 58, over wheel 45 and down under wheel 57. The respective strands of said drive chain 59 operate under guide pulleys 60 which are slidably mounted on stub shafts 61, projecting outwardly from the end-board 11. The sprocket wheels 57 and 58 are provided with peripherally grooved collars 62, 63 respectively, to be engaged by a shipper for simultaneously shipping the pinion shafts 53, 54 with the shipping of drive sprocket 45 into or out of clutched engagement with sprocket wheel 46. The shipper which effects this simultaneous shipping of the pinion shafts and the drive sprocket is shown in detail in Fig. 17, and is also clearly seen in side elevation in Fig. 11, and comprises an arm 64 pivotally secured at its outer end to a bracket 65 carried by the end-board 11. The opposite end of this arm is spider-like in form, being provided with branch-arms 66, 67 and 68 respectively. Each of these branch-arms have their ends offset by bending as shown in detail in Fig. 17, so that the ends of the branch-arms will aline with the clutch member 47 and grooved collars 62, 63 respectively. The branch-arm 66 at its outer end engages in the grooved collar 47, branch-arm 67 engages in grooved collar 63, and branch-arm 68 engages in groove collar 62, as seen in Figs. 10 and 11 of the drawings. This shipper is actuated so as to move the same outwardly or inwardly, the same working in its pivot point in the bracket 65, by means of a connecting wire or rod 69 connected at its outer end to the shipper, and projecting inwardly across the tempo lever 70, as seen in Fig. 7. The said tempo lever 70 carries a throw crank 71 adapted, when the tempo lever 70 is moved in one direction to engage with stop 72 on the connecting wire 69 and move the pinion shafts 53, 54 inwardly, and at the same time disengage clutch pins 48, 49. When the tempo lever 70 is thrown in the opposite direction, it engages stop 73 see Fig. 7, the stop being omitted from Fig. 2 for the purpose of clearness on the wire 69, thereby forcing the shipper outwardly so as to move pinion shafts 53, 54 outwardly, and at the

same time engage clutch pins 48, 49 in order to lock sprocket wheel 45 to its shaft.

The take-up spool 74 is of the usual construction, though I preferably provide the pinion 75 at one end of said spool on its outer face with gear teeth 76 as shown in detail in Fig. 6, and I also preferably provide the outer face of pinions 55, 56 with similarly shaped teeth, whereby when the pinion shafts are shifted, the teeth on the face of said pinions 55, 75, or 56, 75, as the case may be, will come into mesh and insure the instant engagement of the peripheral teeth of said pinions. This construction is provided to avoid possibility of the teeth of pinions 55, 56 striking against the side faces of the teeth on pinion 75, and preventing instant engagement.

In Fig. 12 the music spool 77 shown is of that type used in the well known Angelus type of playing attachment, the clutch 78 being at the opposite end of the spool from the clutch 78 shown on spool 79 in Fig. 13 of the drawings, which figure represents a spool of the type used in the well known Pianola type of playing attachment.

In Fig. 2 of the drawings the music roll and the take-up roll are shown in the position occupied by them when the music sheet of the Angelus type of playing attachment is employed.

In Fig. 3 of the drawings the same spools are shown in the position they occupy when the Pianola music sheet spool is being employed.

The music spool of the Angelus type as stated, has the clutch on the left hand end, and said clutch 78 is engaged with clutch member 25 on the end of clutch shaft 24, the stub shaft in the opposite end of said Angelus music spool being engaged with spring-bearing shaft 34'. This placing of the music spool into position is readily effected by first engaging the stub shaft at one end of the spool with spring-bearing 34', and forcing this spring bearing inwardly of its casing so as to aline clutch 78 with clutch member 25, and, when pressure on the spool is relieved the spring bearing forces the clutch members 25, 78 into engagement. The take-up spool 74 is similarly inserted, that is, by first engaging stub shaft at one end thereof with spring-bearing 34 and pressing said bearing sufficiently to allow of the alining of the stub shaft at the opposite end of the take-up roll with the clutch member 25 carried by clutch shaft 50. The stub shafts on the ends of the take-up spool and on the ends of the music roll spools are all provided with tapering ends so as to enter the seats provided therefor in the spring bearing shafts 34, 34' and the clutch members 25, whereby to insure proper alining of the music sheet roll and take-up roll at all times.

The music sheet while playing runs from under the music sheet spool rearwardly over the tracker-board 16 and winds on to the take-up spool from over the top of said spool. During the playing of this Angelus type of music sheet, pinion 55 is in engagement with large pinion 75 on the take-up roll. Now, when the playing of the piece of music has been completed tempo lever is thrown so as to move connecting wire or rod 69 toward the right and actuate the shipper, thus throwing pinion 55 out of engagement with large pinion 75 on the take-up roll, and shifting sprocket wheel 45 so as to clutch up pins 48, 49 of wheels 45, 46. Wheel 45 being now fast on shaft 22 this shaft is positively driven by the drive chain 59, and the music sheet is re-wound from the take-up spool 74 on to the music sheet spool 77, this winding being from over the top of the take-up spool down under the music sheet spool, thus rewinding the music sheet in the same condition as it was originally wound.

In Fig. 3 is shown the manner in which the rolls are placed to play and rewind music rolls of the Pianola type. With this type of music roll the clutch is at the right hand end of the music spool, and is engaged with clutch member 25 on clutch shaft 50, the stud or pin at the opposite end of the roll seating in bearing shaft 34. The take-up roll has its end studs or pins seated in clutch member 25 of clutch shaft 24 and bearing shaft 34', and the tempo-lever being shifted to the left actuates the shipper through the medium of connecting rod 69 to move pinions 55, 56 inwardly, so that pinion 56 will be engaged with large pinion 75 on the take-up roll, and the take-up roll is now positively driven in the same manner as it was positively driven in the position heretofore described and shown in Fig. 2, the music sheet in this instance passing from over the top of the music spool, down over the tracker-board 16, and in under the take-up spool or roll. When the playing has ended, the shipper is actuated by moving tempo lever to the right, thus shipping shafts 53, 54 so as to remove pinions 55, 56 toward the end-board, disengaging pinion 56 from the take-up roll, and engaging clutch pins 48, 49, so that in the continued operation of the driving mechanism, the music spool will be positively driven, and the music will be unwound from the take-up spool onto the music spool, this unwinding being from under the take-up spool up over the tracker-board and over the music spool, thus re-winding the music into the same position as it was originally so that it may be used in the type of machine for which it was designed.

With the Angelus type of playing attachment referred to, the music sheet runs from

the under side of the music sheet spool, back over the tracker-bar or mouth-piece and over the take-up roll. In the Pianola type of playing attachment, the music sheet

5 spool, over the mouthpiece or tracker-bar, and over the take-up roll.

It will be observed that in my universal tracker-box I simply change the path of travel or track of both types, the Angelus

10 type passing from under the music sheet spool, back over the mouth-piece or tracker-bar and over the take-up spool, while the Pianola type passes from over the music

15 sheet spool, forward over the mouth-piece or tracker-bar and under the take-up spool, the path of both being identical, but traveling in opposite directions. This result is possible by reason of the particular mounting of the spool and roll supports and the

20 driving means therefor, so as to operate interchangeably on the opposite sides of the tracker board, and is made clear when considered in connection with the rewinding movement of the music sheet spool. When

25 the music sheet is being used from a spool prepared for the Angelus type of player, the movement of the sheet in rewinding is from the upper side of the take-up roll to the underside of the music sheet spool passing

30 over the tracker board during the movement, the movement of the spool in this case, as indicated in Fig. 2, being counterclockwise with respect to the plane of the section shown in said figure. When the spool used

35 is that employed in the Pianola type of player, the music sheet spool is placed on the opposite side of the tracker board as heretofore pointed out and as shown in Fig. 3. The movement of the music sheet in re-

40 winding is then from the underside of the take-up roll over the tracker board, and onto the upper side of the music sheet spool, the movement of the spool in this case, as indicated in Fig. 3, being also counterclock-

45 wise with respect to the plane of the section shown in said figure. Hence it will be understood that the rewinding movement of a spool in one position relative to a vertical plane taken at right angles to the di-

50 rection of length of the tracker board, and to the axis of the spool in either position (the plane of the sections shown in Figs. 2 and 3, for example) corresponds in direction to that of the rewinding movement of

55 a spool in the other position relative to the same plane, the sheet, however, as before indicated, being led onto the spool when in one position on the opposite side of the

60 spool (the lower side in the case of the Angelus type as shown in Fig. 2) to that on which the sheet is led when wound onto a spool placed in the other position (the upper side of the spool used with the Pianola type, as shown in Fig. 3).

65 The term "music sheet spool" as used

herein refers to the spool or carrier or support on which the music sheet is normally contained; the carrier for the sheet after being unwound from the music sheet spool is termed the "take-up roll", the latter being

70 the carrier used with all of the music sheet spools.

The term "playing movements of the sheet" used herein refers to the movement of the sheet while being unwound from the

75 music sheet spool on to the take-up roll, this movement of the sheet being that in which the note sheet perforations are adapted to affect the playing mechanism in a manner to produce the melody in its proper se-

80 quence; as usual with mechanical players during the movement of the sheet in reverse direction while the sheet is being rewound on the music sheet spool, the perforations do not affect the playing mechanism.

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I claim—

1. The combination with a tracker-box having a tracker-board, of two clutch-shafts and two spring-pressed shafts, said shafts being so disposed as to provide one clutch-

90 shaft and one spring-pressed shaft at each end of the tracker-box on opposite sides of the tracker-board, said shafts being arranged to hold either a music-sheet spool or a take-up roll.

95

2. In a tracker-box for mechanical playing attachments, a tracker-board, an alined clutch-shaft and a spring-pressed shaft constituting a supporting means for receiving and supporting either a music-sheet spool or

100 a take-up roll, a second alined clutch-shaft and spring-pressed shaft also constituting supporting means for receiving and supporting either a music-sheet spool or a take-up

105 roll, said alined supporting means being located on opposite sides of the tracker-board, and a common driving means for the music-sheet spool when mounted in either of said supporting means.

3. A tracker-box for playing attachments

110 comprising a case, a tracker-board therein, means for mounting either a music-sheet spool or a take-up roll on either side of the tracker-board, and means for operating said

115 spool and said roll in their different positions.

4. In a tracker-box for mechanical playing attachments, the combination with means for mounting a music-sheet spool and a take-up roll each in either of two different opera-

120 tive positions, of a common driving means for actuating said spool and roll in both of their positions, and shipper means common to the spool and roll in either of their positions to permit rewinding from the take-up

125 roll onto the music-sheet spool.

5. A tracker-box for mechanical playing attachments, having a tracker-board and also having a clutch-shaft and an opposing

130 spring-pressed shaft for receiving a music-

sheet spool or a take-up roll on one side of the tracker-board, a second clutch-shaft and opposing spring-pressed shaft for receiving either a music-sheet spool or a take-up roll
5 on the opposite side of the tracker-board, and driving means common to both spool and roll in either position.

6. In a tracker-box, the combination with the box or case, and a tracker-board carried
10 thereby, of means for mounting a music-sheet spool within the box or case on either side of the tracker-board and positively driving the same in either of its positions, the means located on the opposite side of the
15 tracker board from that carrying the music-sheet spool forming a mounting for a take-up roll, and means for positively driving the take-up roll in either of its positions.

7. In a tracker-box, a tracker-board, a
20 pair of spaced-apart alined bearings for a music-sheet spool and a pair for a take-up roll, one of the bearing-members of each pair being located on opposite sides of the tracker-board and formed to clutch the spool
25 when located therein, said bearings being adapted to receive and support either the spool or roll, and means for positively driving the take-up roll when winding the music-sheet onto said roll, and for positively
30 driving the music-sheet spool when re-winding the music sheet onto said spool.

8. In a tracker-box, the combination with the box or case, of means for mounting a music-sheet spool in said box or case in a
35 plurality of operative positions and for also mounting a take-up roll in said box or case in a plurality of operative positions, and means common to both spool and roll for positively driving the take-up roll in each
40 of its positions when winding the music from the music-sheet spool onto said take-up roll, and for positively driving the music-sheet spool in each of its positions when unwinding the music from the take-up roll
45 onto the music-sheet spool.

9. In a tracker-box, the combination with a case, and a tracker-board in said case, of means for mounting either a music-sheet spool or a take-up roll in operative position
50 on either side of the tracker-board, and means for positively driving the take-up roll when winding the music-sheet on to said roll, and for positively driving the music-sheet spool when rewinding the music-sheet
55 on to said spool.

10. In a tracker-box for mechanical playing attachments, a tracker-board, supporting means mounted on opposite sides of the tracker-board and acting to receive either a
60 music-sheet spool or a take-up roll, and means for positively driving the music-sheet spool and take-up roll successively according as either of them is mounted in said supporting means.

65 11. A tracker-box for mechanical playing

attachments comprising a case having a tracker-board, means for supporting a music-sheet spool in said case on either side of the tracker-board, and means for operating a spool when in its supported position in the
70 case.

12. In a tracker-box for mechanical playing attachments, the combination with a case having a tracker-board, of means for interchangeably mounting a music-sheet spool
75 and a take-up roll on opposite sides of the tracker-board, a common driving means for actuating said music-sheet spool and said take-up roll in their different positions within the case, and a shifting means common to
80 the spool and take-up roll in each of their positions operating to permit rewinding from the take-up roll onto the music-sheet spool.

13. In a tracker-box, a tracker-board, two
85 pairs of alined bearings, one pair being mounted on each side of the tracker-board, one of the bearings of each pair being spring-pressed, the opposing pair being in the form of a clutch-shaft, the spring-pressed bearings upon the opposite sides of the tracker-board being located relatively to each other
90 and to the tracker-box in such manner that the clutch-shaft used to reroll the music-sheet in one position of the take-up roll offers
95 a free bearing for the take-up roll when in another position.

14. In a tracker-box, a tracker-board, means for removably supporting a take-up roll on either side of the tracker-board, and
100 means for positively operating the take-up roll in either of its positions.

15. In a tracker-box, a tracker-board, means for removably supporting either a music-sheet spool or a take-up roll on either
105 side of the tracker-board, and means for positively operating the take-up roll in either of its positions, the position of the spool and roll relative to the tracker-board determining the direction of rewinding of
110 the music-sheet.

16. In a tracker-box, supporting means for interchangeably receiving a music-sheet spool and a take-up roll, and means for successively operating the roll and spool, the
115 relative positions of the spool and roll determining the direction of rewinding of the music-sheet.

17. In a tracker-box, a tracker-board, means located on each of the opposite sides
120 of the tracker-board for supporting either a music-sheet spool or a take-up roll, and means for positively operating the take-up roll when located on either side of the tracker-board.

18. In a tracker-box, a tracker-board, means located on each of the opposite sides of the tracker-board for supporting either a music-sheet spool or a take-up roll, and means for positively operating said spool
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and roll successively when located on either side of the tracker-board.

19. In a tracker-box, a tracker-board, means for supporting a take-up roll on either side of the tracker-board and for positively driving said roll when in either of its supported positions.

20. In a tracker-box, a tracker-board, and means for supporting a music-sheet spool in sheet-unwinding position on either side of the tracker-board during playing movements of the sheet and for driving the spool when in either position to re-wind the sheet, the direction of the re-winding movement of a spool in one position being counter clockwise, and the direction of the re-winding movement of a spool in the other position being also counter clockwise, the spools being in each instance viewed from the same point outside of the tracker-box, the position of the spool relative to the tracker-board in each instance being unchanged during the unwinding and re-winding movements of the spool.

21. In a tracker-box, a tracker-board, and means for supporting a music-sheet spool on either side of the tracker-board and for driving the spool when in either position to re-wind the sheet, the point of driving connection of a spool and the driving mechanism in one position being located on the end of the tracker-box opposite that of the point of driving connection of a spool with the driving means in the other position.

22. In a tracker-box, a tracker-board, and means for supporting a music-sheet spool on either side of the tracker-board, and for driving the spool to re-wind the sheet when in its supported position, the sheet being led on to a spool in one position on the side of the axis of the spool opposite to that to which it is led when wound on a spool placed in the other position.

23. In a tracker-box, a tracker-board, means for supporting a take-up roll on either side of the tracker-board, and means for driving the roll to wind the music-sheet thereon when located in either position, the direction of winding movement of the roll in either position being counter clockwise, the roll being in each instance viewed from the same point outside of the tracker-box.

24. In a tracker-box, for mechanical playing attachments, a tracker-boards, a clutch-shaft and a spring-pressed shaft on each side of the tracker-board, said clutch-shafts each having a clutch-bearing and a conical-seat bearing arranged to hold either a music-sheet spool or a take-up roll.

25. In a tracker-box, for mechanical playing attachments, a tracker-board, a clutch-shaft alined with a spring-pressed shaft, said shafts constituting a supporting means for receiving and supporting either a music-sheet spool or a take-up roll on one side of

the tracker-board, a second clutch-shaft alined with a spring-pressed shaft, said shafts also constituting supporting means for receiving and supporting either a music-sheet spool or a take-up roll on the opposite side of the tracker-board, and a common driving means for the music-sheet spool when mounted in either of said supporting means, said driving means causing the music-sheet spool to be driven in one direction when on one side of the tracker-board and in the reverse direction when on the opposite side of the tracker-board.

26. In a tracker-box, a shaft having one end formed with a clutch-bearing, and with a conical-seat bearing to receive either end of a take-up roll or a music-sheet spool.

27. In a tracker-box, a shaft having one end formed with a clutch-bearing, and with a conical-seat bearing to receive either end of a take-up roll or a music-sheet spool, the conical-seat bearing being located centrally of the clutch-bearing.

28. A re-roll clutch-shaft having both a clutch-bearing for re-rolling the music-sheet and a conical-seat bearing for holding the free end of the stub shaft of a take-up roll.

29. In a tracker-box, a tracker-board, means for supporting a take-up roll on either of both sides of the tracker-board and a music-sheet spool in playing position relative thereto, and means for driving the roll and its cooperating spool in either position to successively wind and re-wind roll and spool respectively, the direction of winding movement of the roll and re-winding movement of the spool being counter clockwise when viewed from the same point outside of the tracker-box.

30. In a tracker-box, a tracker-board, and means for supporting a music-sheet spool in sheet-unwinding position on either side of the tracker-board during playing movements of the sheet, and for driving a spool when in either position to re-wind the sheet, the direction of re-winding movement of a spool in one position being clockwise and the direction of the re-winding movement of the spool in the other position being also clockwise, the spool being in each instance viewed from the same point outside of the tracker-box, the position of the spool relative to the tracker-board in each instance being unchanged during the unwinding and re-winding movements of the spool, the driving means being positioned to prevent the transfer of a music-sheet spool from playing position on one side of the tracker-board to a playing position on the opposite side of the board.

31. In a tracker-box, a tracker-board, and means for supporting a music-sheet spool on either side of the tracker-board and for driving a spool to re-wind the sheet when in

either position, the position of the point of connection of a spool in either position and the driving means and the direction of rotation of the driving connections causing the sheet being wound on a spool in one position, to be led thereon on the side of the spool opposite to that on which the sheet is led when wound on a spool placed in the other position, the respective points of driving connection being positioned to prevent the transfer of a music-sheet spool from playing position on one side of the tracker-board to a playing position on the opposite side of the board.

32. In combination, a tracker-board, means for operatively-mounting a music-sheet spool on either side of the tracker-board and means for operating the spool when in operative positions.

33. In a note-sheet winding apparatus, a plurality of pairs of sheet-support carrying-spindles, a tracker-board, and means common to said pairs of spindles constructed and arranged to be shifted to provide playing movements of note-sheets in either direction over said tracker-board.

34. In a note-sheet winding apparatus, a plurality of pairs of sheet-support carrying-spindles, a tracker-board, and means common to said pairs of spindles constructed and arranged to be shifted to provide playing movements of note-sheets in either direction over said tracker-board, the position of said means determining the direction of playing movement of the sheet.

35. In a note-sheet winding apparatus, a plurality of pairs of sheet-support carrying-spindles, a tracker-board, and a shiftable take-up roll operable in common with any of the said pairs of spindles.

36. In a note-sheet winding apparatus, a plurality of pairs of sheet-support carrying-spindles, a tracker-board, a take-up roll operable in common with said pairs respectively, to provide playing movements of note-sheets in either direction across said tracker-board, and means for actuating such spindles to rewind the sheet supported thereby.

37. In a note-sheet winding apparatus, a plurality of pairs of sheet-support carrying-spindles, a tracker-board, a take-up roll, and means whereby said roll may be positioned to take up from a support when located upon

either of the opposite sides of the tracker-board.

38. In a note-sheet winding apparatus for rolled note-sheets, a tracker-board, and means for providing playing movements of note-sheets in either direction over said tracker-board from one sheet-support to another, the playing movement of a sheet in one direction exposing a side of such sheet opposite that forming the exposed side of a sheet having its playing movement in the opposite direction.

39. In note-sheet winding apparatus, a tracker-board, and mechanism for providing playing movements of note-sheets of different types across the tracker-board, the movement of a sheet of one type being restricted to a movement opposite that of a different type, the opposite playing movements exposing opposite sides of the sheets.

40. In note-sheet winding apparatus, a tracker-board, and mechanism for providing movements of either one of two different types of note-sheets across the tracker-board, the playing movements of these types being in opposite directions.

41. In note-sheet winding apparatus, a tracker-board, and mechanism for providing movements of either one of two different types of note-sheets across the tracker-board, the re-wind movements of these types being in opposite directions.

42. In a tracker-box, a tracker-board, means for supporting either a music-sheet spool or a take-up roll on either side of the tracker-board, and means for operating the take-up roll in either of its positions.

43. A tracker-board, means for operatively mounting a music-sheet spool on either side of the tracker-board, and means for operating a spool in either of said operative positions.

44. In a note sheet winding apparatus, a plurality of driving spindles, a receiving spool shiftable from one to the other of said spindles, and a driving shaft.

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

CHARLES W. BARNES.

Witnesses:

F. W. CHRISTIAN,
H. E. BARNES.