

Aug. 2, 1938.

B. O. MATTSON

2,125,353

MOVING TARGET

Filed July 8, 1937

2 Sheets-Sheet 1

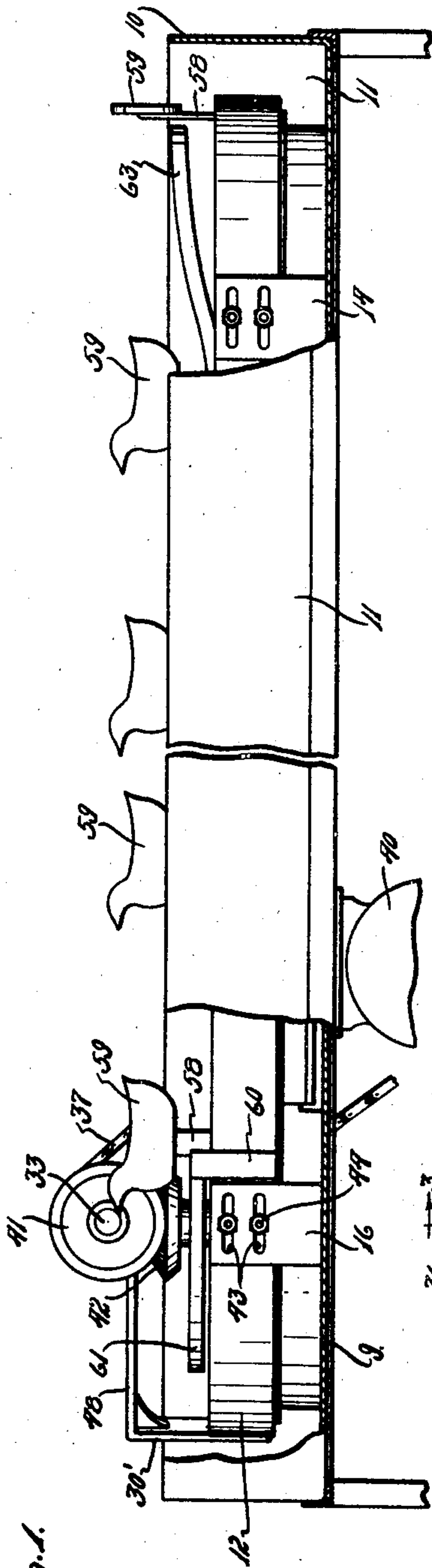


Fig. 1.

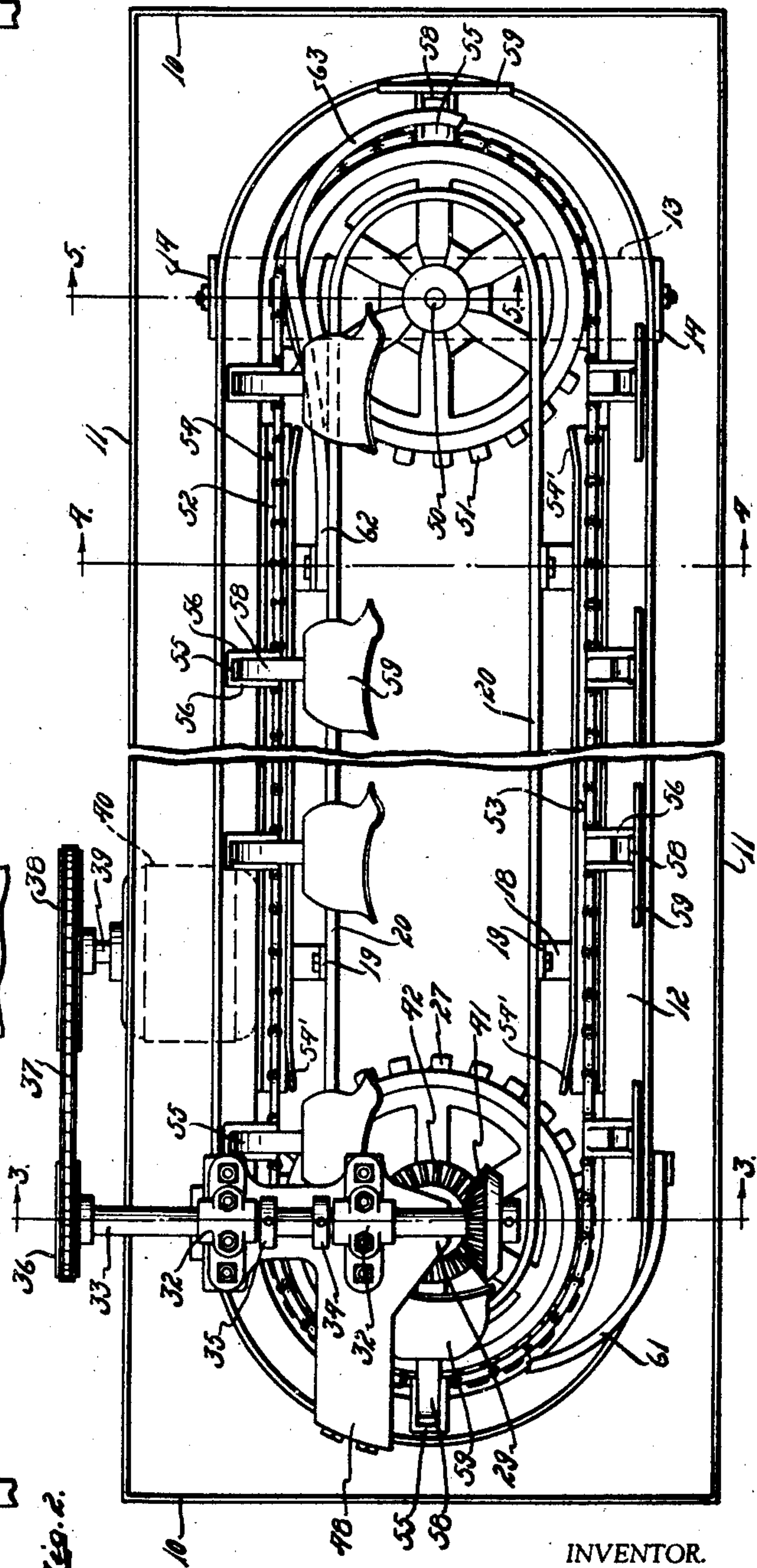


Fig. 2.

INVENTOR.

BERNARD O. MATTSON

BY

BY Thos. Donnelly
ATTORNEY.

ATTORNEY.

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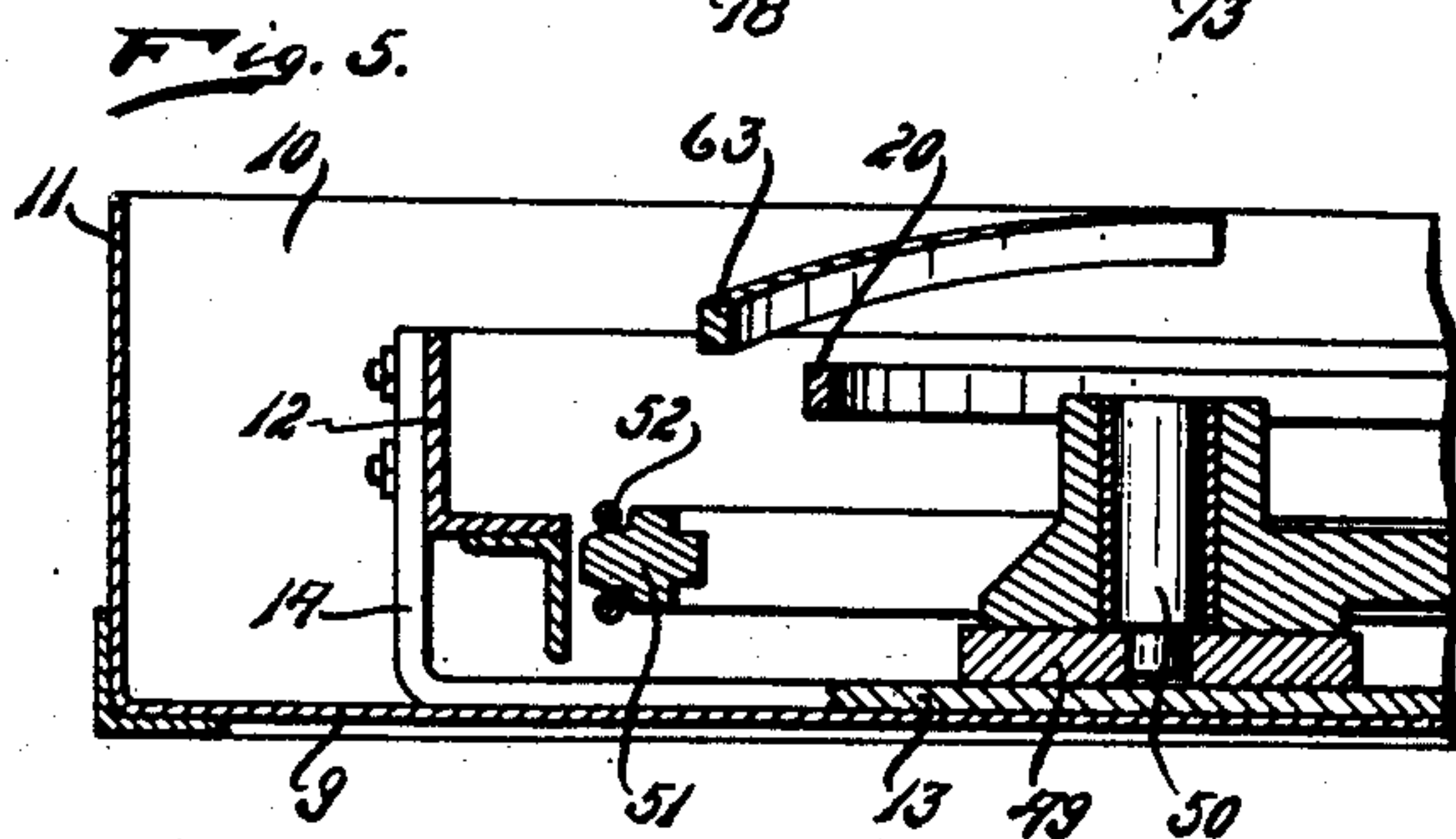
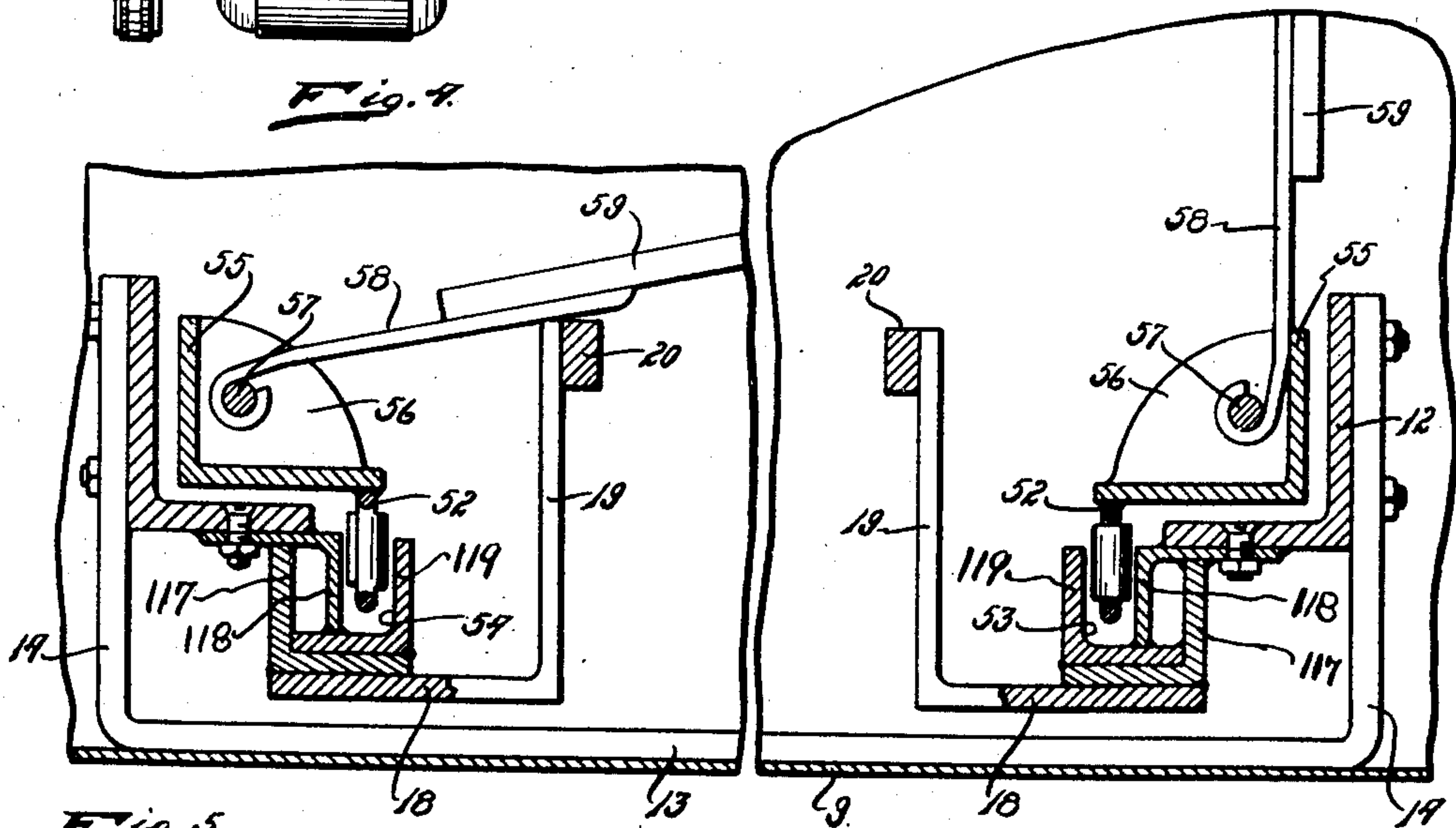
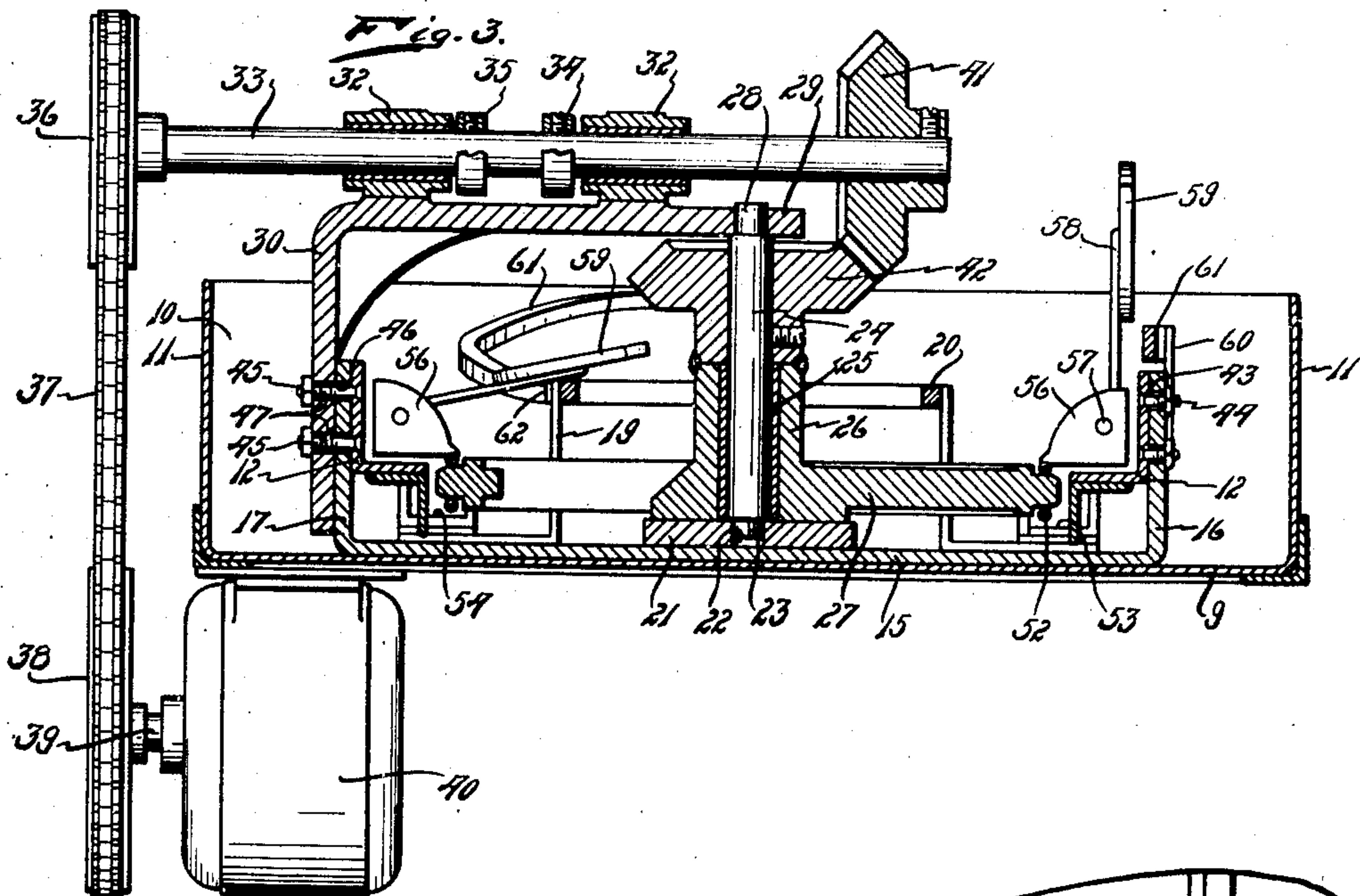
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INVENTOR.
BERNARD O. MATTSON
BY *Thos. Donnelly*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,125,353

MOVING TARGET

Bernard O. Mattson, Detroit, Mich.

Application July 8, 1937, Serial No. 152,601

6 Claims. (Cl. 273—105.2)

My invention relates to a new and useful improvement in a moving target adapted for use in shooting galleries and similar places where target practice is carried on. The use of moving targets for target practice is well known and the moving targets customarily are mounted on an endless conveyor, chain, or belt which travels about horizontal axes. An innovation recently introduced, is the use of a tank of water with the moving mechanism so arranged that the targets which are generally formed to simulate ducks or other water fowls, appear to be swimming over the water and when the target is struck, the plate simulating the fowl will be knocked over into the water. In view of the fact that the endless belt or conveying member travels around horizontal axes, it is necessary that the tank be of considerable depth. The depth of tanks now customarily used is about twenty-four inches and it is an objectional feature of this arrangement to have to use a tank of such depth.

The present invention provides a mechanism whereby, the moving targets travel about vertical axes so that the depth of the tank may be considerably reduced and in practice, this depth has been reduced to six inches. Such a change in structure makes the arrangement more practicable and adaptable for use in places where a deeper tank could not be used.

It is another object of the invention to provide a mechanism whereby, the targets are conveyed by a conveyor normally submerged in the water and traveling about vertical axes.

Another object of the invention is the provision of means for raising the targets into visible position while traveling in one direction and lowering the targets into invisible position while traveling in the other direction.

Another object of the invention is the provision of a mechanism so arranged and constructed that it may be used as a unit and placed in and removed from a tank with which used.

Another object of the invention is the provision of a mechanism of this class which will be simple in structure, economical of manufacture, durable, compact and highly efficient in use.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings which form a part of this specification, and in which,

Fig. 1 is a side elevational view of the in-

vention with parts broken away, parts shown in section, and with parts removed.

Fig. 2 is a top plan view of the invention with parts broken away.

Fig. 3 is a sectional view of the invention taken on line 3—3 of Fig. 2.

Fig. 4 is an enlarged, sectional view of the invention taken on line 4—4 of Fig. 2 with parts broken away.

Fig. 5 is a section through line 5—5 of Fig. 2.

In the drawings I have illustrated the invention used with a tank having a bottom 9, end walls 10 and side walls 11. The target operating mechanism which is adapted for positioning in this tank and which is unattached thereto, comprises the endless frame rail 12, the opposite sides of which are attached to the upwardly projecting flanges or supporting legs 14 projecting upwardly from opposite ends of the plate 13. A similar cross-bar 15 is provided with the upwardly projecting angularly turned portions 16 and 17 which serve as standards or supports and to which the rail frame 12 is attached as shown in Fig. 3. It will also be noted from Fig. 3 that the rail 12 is formed from an angle iron.

Secured to this rail 12 is one end of an L-shaped bracket 18, the upwardly projecting end 19 of which is attached to the target rest rail 20, a plurality of these L-shaped brackets being provided. As shown in Fig. 1, the rail 20 is positioned inwardly from the rail 12.

Extending transversely of the plate 15 centrally thereof is a spacing plate 21 having a hole 22 formed therein into which projects the reduced portion 23 of the vertically directed shaft 24. This shaft projects through the bushing 25 as a press fit so that the bushing 25 rotates in unison with the shaft 24. This bushing 25 is mounted as a press fit in the hub 26 of the sprocket wheel 27 so that the sprocket wheel 27 rotates in unison with the shaft 24. The upper end of the shaft 24 is reduced as at 28 and this reduced portion engages in an opening formed in the horizontal portion 29 of a bracket having the vertically extending portion 30 which is secured to the standard 17. Bearings 31 and 32 are mounted on the horizontal portion 29 in the bracket and rotatably projected through these bearings is a shaft 33 on which are fixedly mounted the thrust collars 34 and 35. Fixedly mounted on the shaft 33 is a pulley 36 which is driven by the belt 37 passing around the pulley 38 fixedly mounted on the shaft 39 of the electrical motor 40. Fixedly mounted on the end of the shaft 33 is a bevel gear 41 meshing with a bevel gear 42 fixedly mounted on the shaft

24. The construction is such that upon the rotation of the shaft 33, the sprocket wheel 27 is rotated. This shaft 24, as shown in Fig. 1 and Fig. 2, is mounted at one end of the frame 12.

5 The bolts 43 which secure the standard 16 to the rail 12, project through elongated slots 44 formed in the standard 16 and the bolts 45 which secure the standard 17 to the rail 12 and the bracket portion 30 to the standard 17, project through slots

10 46 formed in the standard 17 and through slots 47 formed in the bracket portion 30, so that the shaft 24 with its assembled parts may be moved toward the opposite end of the frame or away from it a slight distance in order to compensate for air

15 and take up the slack in the sprocket chain. Projecting outwardly from the horizontal portion 29 of the bracket is a brace arm 48 which engages the outer face of the frame rail 12 and serves to brace the structure.

20 Mounted on the plate 13 is the plate 49 in which is rotatably journaled one end of a shaft 50 upon which is mounted the sprocket wheel 51. This sprocket wheel 51 cooperates with the sprocket wheel 27, a sprocket chain 52 embracing

25 these wheels. This sprocket chain 52 engages in open track ways 53 and 54 at opposite sides of the frame. These track ways 53 and 54 are similarly formed, each track way being formed by an angle iron 117 which is spot welded to an

30 angle iron 118 which is secured to the rail 12. Resting upon a portion of the angle iron 117 and spot welded to the angle iron 118 is an angle iron 119 which has a vertically extending wall-forming portion, the ends of which are flared

35 outwardly as at 54' so as to prevent the sprocket chain unwinding from the sprocket wheel following around and presenting a flared end for easy entry of the chain into the track way.

40 Secured to some of the links in spaced relation to each other, is a plurality of supporting bars 55 having the side walls 56. Engaging between and pivoted to these side walls by means of a pin 57 is a supporting arm 58 which projects down from the target plate 59 which is

45 formed to simulate a fowl such as a duck or the like. In Fig. 1, the front of the mechanism is at the lower part of the drawing and it will be noted that these targets 59, while passing along the front part of the mechanism, are in upright position

50 whereas, in passing along the rear side of the mechanism they are in lowered position and the target plates 59 ride on the rail 20. When one of the targets at the front side is struck by a bullet, it will be knocked down so as to lie on

55 the rail 20. As previously mentioned, this rail is submerged so that when the target is struck it will disappear from view and at the same time effect a splash in the water.

60 Mounted on a standard 60 projecting upwardly from the outer surface of the rail 12 is an arcuate upsetting arm 61 which is curved inwardly so that when the targets which are in upright position are brought into engagement with the targets

65 59, these targets will be rocked on their pivots and moved to upset position so as to lie on the rail 20. Consequently, the targets which have not been struck by bullets are upset when they reach the member 61 and remain in this upset position while traveling along the rear side of

70 the device. Secured to the rail 20 and the bracket 19 at the travel end of the rear side of the device is an erecting arm 62 having the turned portion 63 and this erecting arm, as clearly appears in Fig. 1 is inclined upwardly toward its free or

75 turned end so that the targets 59 which are in

upset position are riding on the rail 20, riding on the upper surface of this upsetting arm 52 and when they reach the elevated curved portion 63, the targets will raise upwardly into vertical position so that as they pass around the end of the device proceeding to the forward side, they will have been raised completely from upset position to erect position. Consequently, the targets while traveling on one side of the device are not in erect position and are raised into this position positively. While traveling on the other side, they are in upset position and are positively moved to this position. With a device constructed in this manner, it becomes possible to utilize a

15 moving target which travels on an endless conveyor around vertical axes and in which the upset targets are submerged in water while at the same time a very shallow tank may be used. The device is one which is compact, durable, economically manufactured and also one which may

20 be easily and quickly mounted in position for use. In view of the fact that the mechanism may be easily and quickly detached from the tank, the mechanism is also of a portable nature.

25 While I have illustrated and described the preferred form of my invention, I do not wish to limit myself to the precise details of structure shown but desire to avail myself of such modifications and variations as may come within the scope of the appended claims.

30 What I claim as new is:

1. In combination, a tank adapted for the reception of a quantity of water; an endless target conveyor normally submerged in the water in said tank and traveling in a horizontal plane; a

35 plurality of targets swingably mounted in spaced relation on said conveyor and swingable into substantially horizontal position below the normal water level in said tank and swingable into vertical position for projecting above the normal

40 water level of said tank; and means for effecting the travel of said conveyor while maintaining the same in a horizontal plane.

2. In a target device of the class described, the combination comprising: a water containing

45 tank; an endless conveyor in said tank and traveling in a horizontal plane, normally submerged beneath the water in said tank; means for effecting the travel of said conveyor; a plurality of targets swingably mounted in spaced

50 relation on said conveyor and swingable into horizontal position below the normal water level in said tank and swingable into vertical position for projecting above the normal water level in said tank; means engageable with said targets

55 upon the travel of the same to a predetermined point on the orbit of said conveyor for moving said targets from vertical position to horizontal position; and means engageable with said targets upon traveling of the same to a predetermined

60 point in the orbit of said conveyor for moving said targets from horizontal position to vertical position.

3. In a target device of the class described, a water containing tank; an elongated, closed

65 frame having a front side and a rear side; a pair of vertically extending shafts, one mounted on said frame adjacent each end thereof; a sprocket gear mounted on each of said shafts and rotatable about the axis thereof; an endless belt

70 traveling around said sprocket gears, said tank being adapted for the reception of said frame, said sprocket gears and said belt being normally below the water level of said tank; a plurality of targets swingably mounted in spaced relation

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on said belt and swingable into horizontal position below the normal water level in said tank and swingable into vertical position for projecting above the normal water level in said tank; means engageable with said targets, upon the travel of the same to a point approaching the front side of said frame, for moving said targets into vertical position from horizontal position; and means engageable with said targets, upon travel of the same to a point approaching the rear side of said frame, for moving said targets into horizontal position.

4. In a target device of the class described, a water containing tank; an elongated, closed frame having a front side and a rear side; a pair of vertically extending shafts, one mounted on said frame adjacent each end thereof; a sprocket gear mounted on each of said shafts and rotatable about the axis thereof; an endless belt traveling around said sprocket gears, said tank being adapted for the reception of said frame, said sprocket gears and said belt being normally below the water level of said tank; a plurality of targets swingably mounted in spaced relation on said belt and swingable into horizontal position below the normal water level in said tank and swingable into vertical position for projecting above the normal water level in said tank; means engageable with said targets, upon the travel of the same to a point approaching the front side of said frame, for moving said targets into vertical position from horizontal position; means engageable with said targets, upon travel of the same to a point approaching the rear side of said frame, for moving said targets into horizontal position; power driven means exterior of said tank; and means overlying said tank for operatively connecting said power driven means with one of said shafts for effecting its rotation, the sprocket on said shaft rotating in unison therewith.

5. In a target device of the class described, a pair of spaced vertically extending shafts; a sprocket gear mounted on each of said shafts and rotatable about the axis thereof, said sprocket gears being in horizontal alignment; an endless belt traveling around said sprocket gears; a plurality of targets swingably mounted in spaced relation on said belt and swingable inwardly thereof into horizontal position and swingable upwardly thereof into vertical position; an endless target rest rail embraced by said belt and embracing both of said shafts and adapted upon swinging of said targets inwardly into horizontal position for forming a rest for said targets and preventing the swinging of the same downwardly out of horizontal position.

6. In a target device of the class described, a pair of spaced vertically extending shafts; a sprocket gear mounted on each of said shafts and rotatable about the axis thereof, said sprocket gears being in horizontal alignment; an endless belt traveling around said sprocket gears; a plurality of targets swingably mounted in spaced relation on said belt and swingable inwardly thereof into horizontal position and swingable upwardly thereof into vertical position; an endless target rest rail embraced by said belt and embracing both of said shafts and adapted upon swinging of said targets inwardly into horizontal position for forming a rest for said targets and preventing the swinging of the same downwardly out of horizontal position; means for swinging said targets from vertical position to horizontal position at one point of their travel around the orbit established by said belt; and means for swinging said targets from horizontal position to vertical position at another point of travel around the orbit of said belt.

BERNARD O. MATTSO.