

S. G. GILLELAND.

BALING PRESS.

APPLICATION FILED SEPT. 9, 1907.

898,868.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.

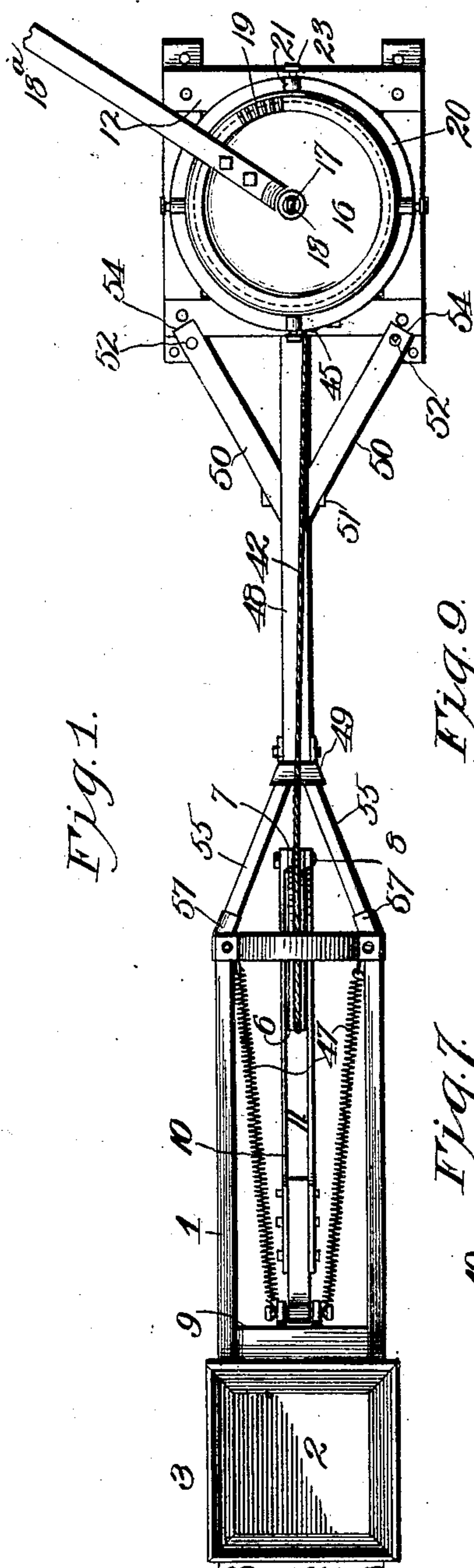


Fig. 1.

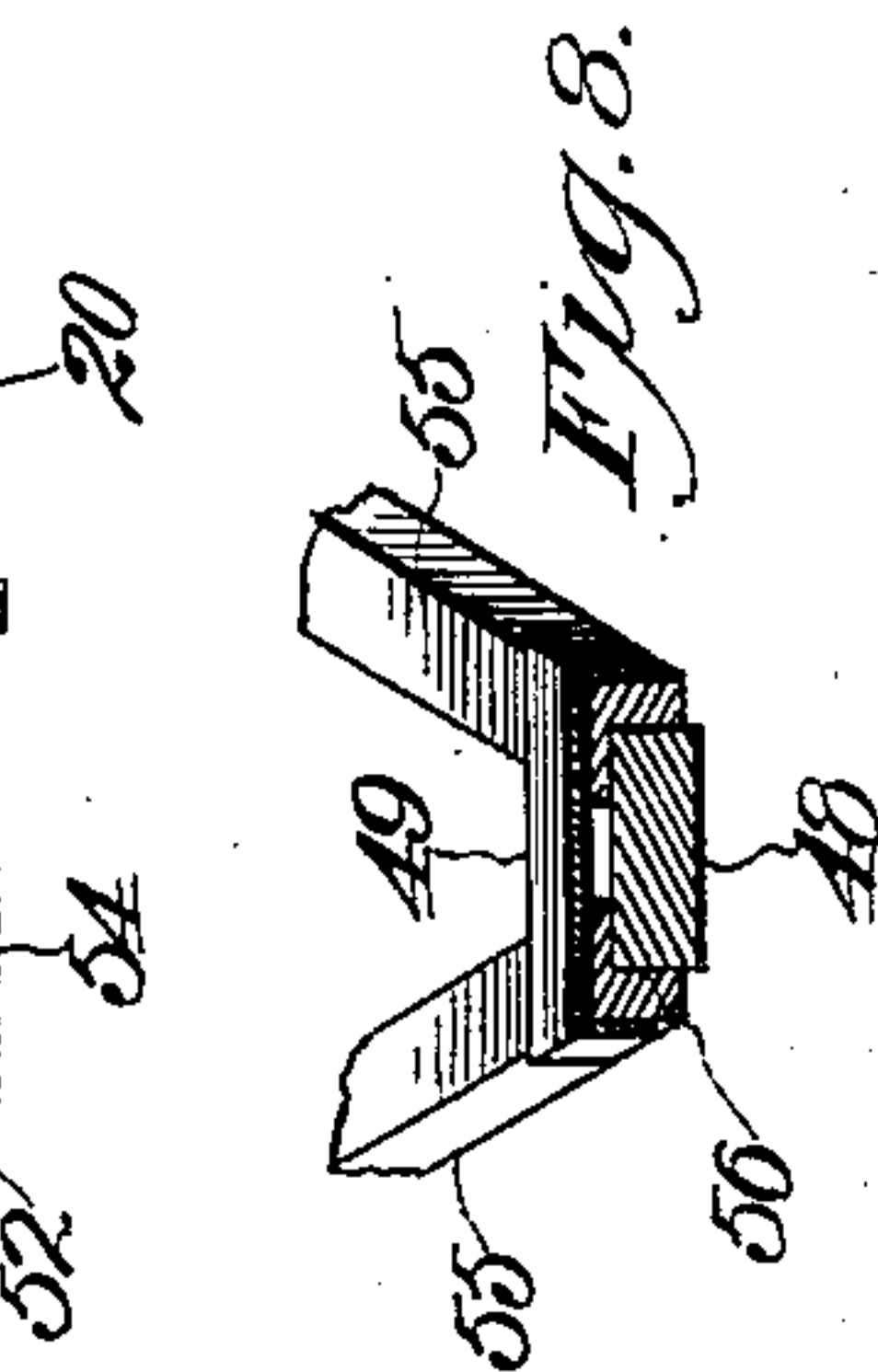


Fig. 8.

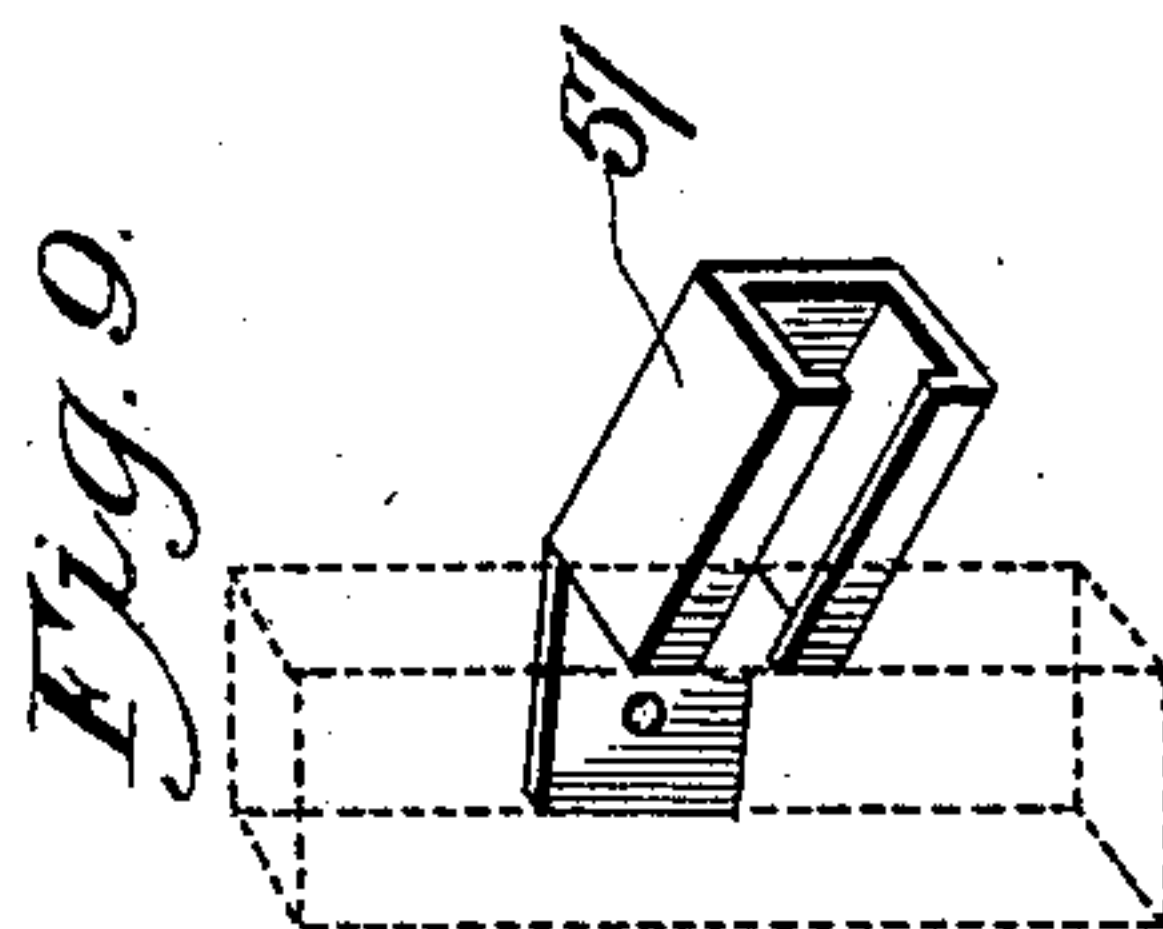


Fig. 9.

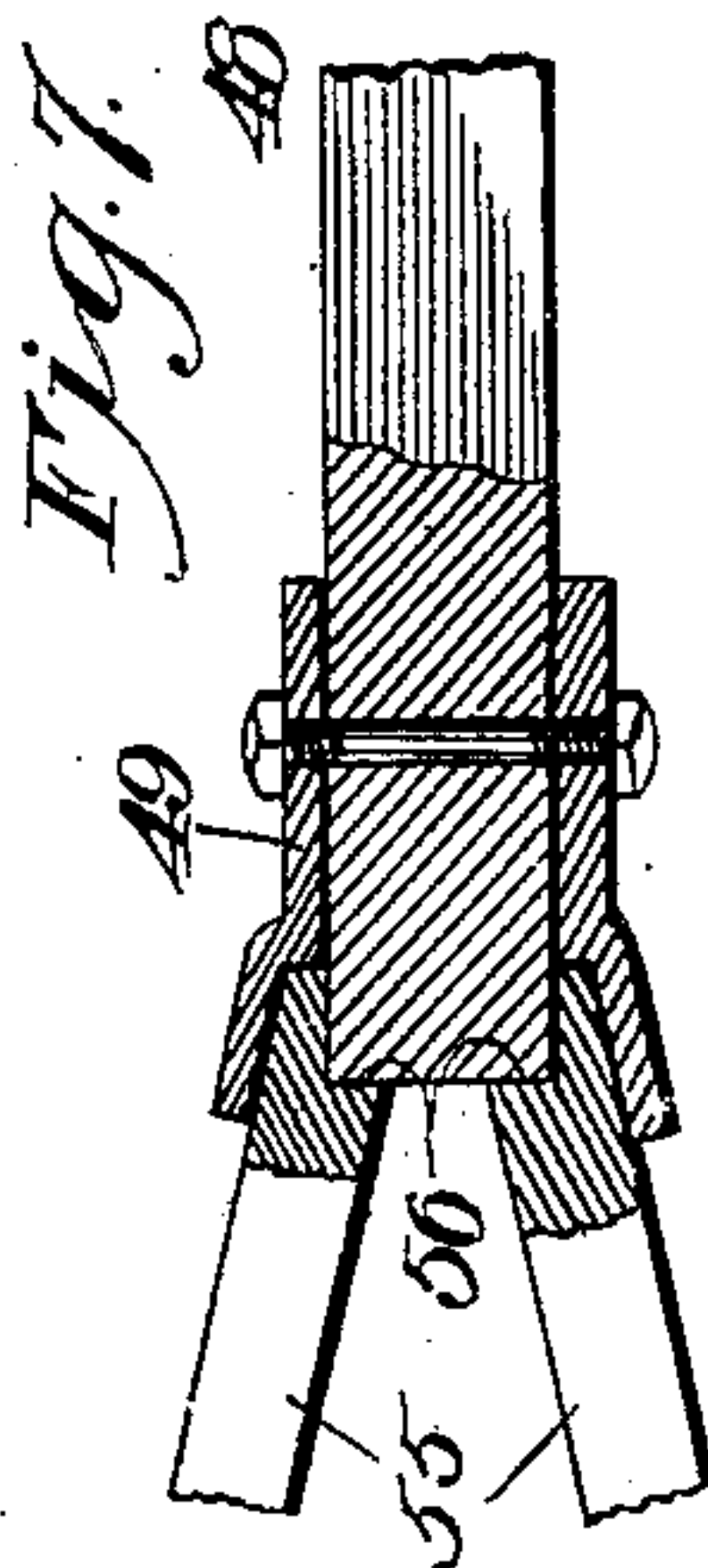


Fig. 7.

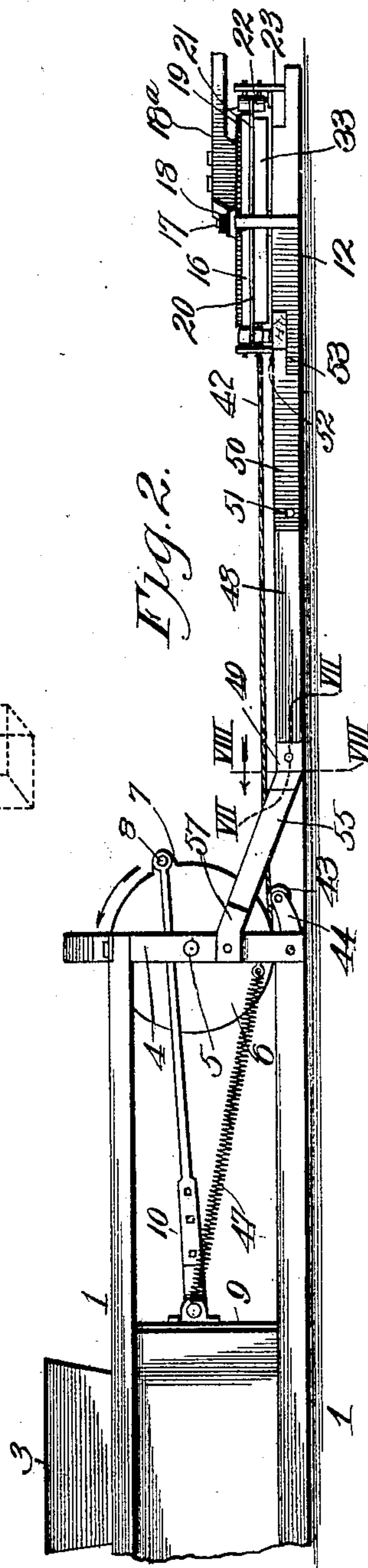


Fig. 2.

Witnesses

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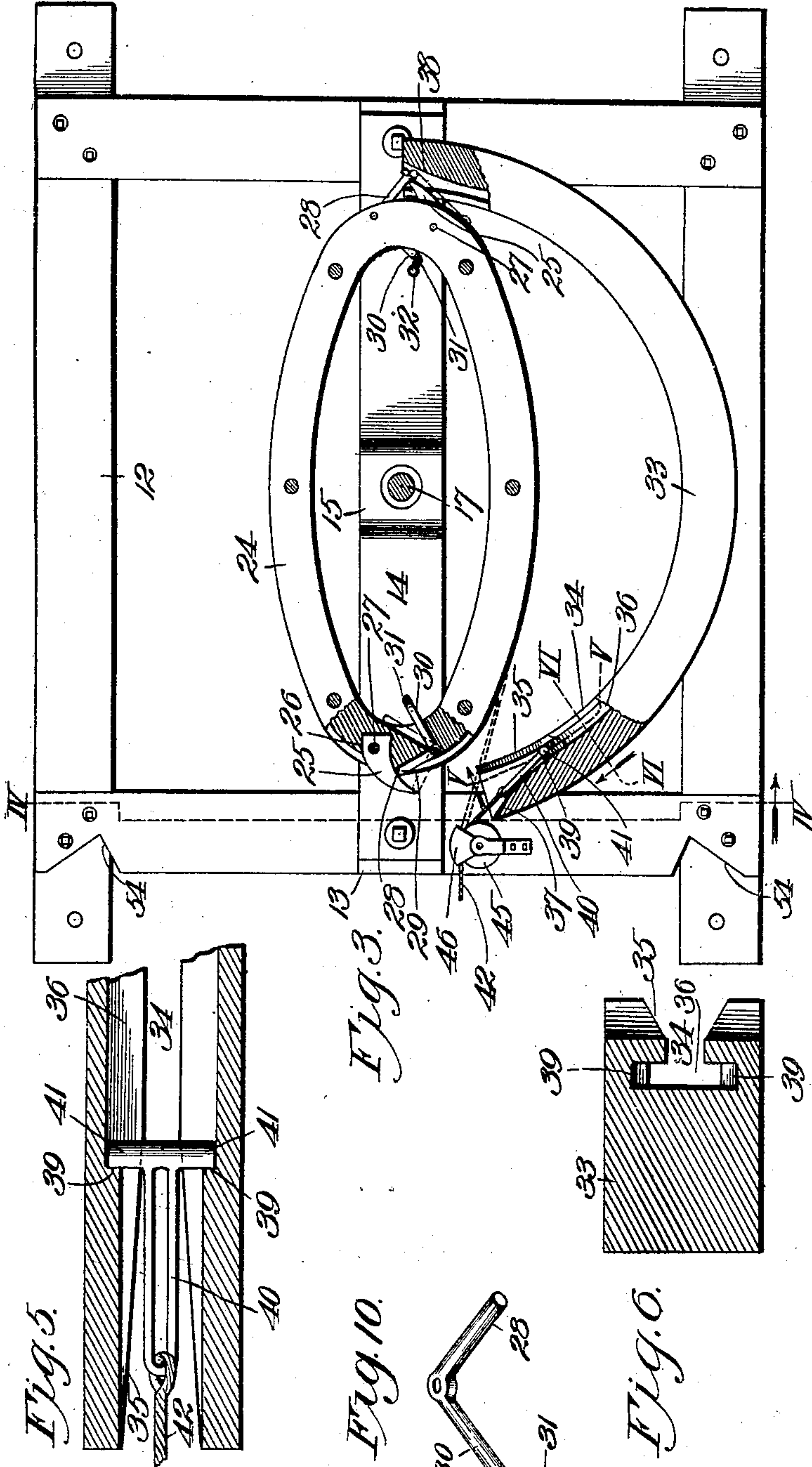


Fig. 5.

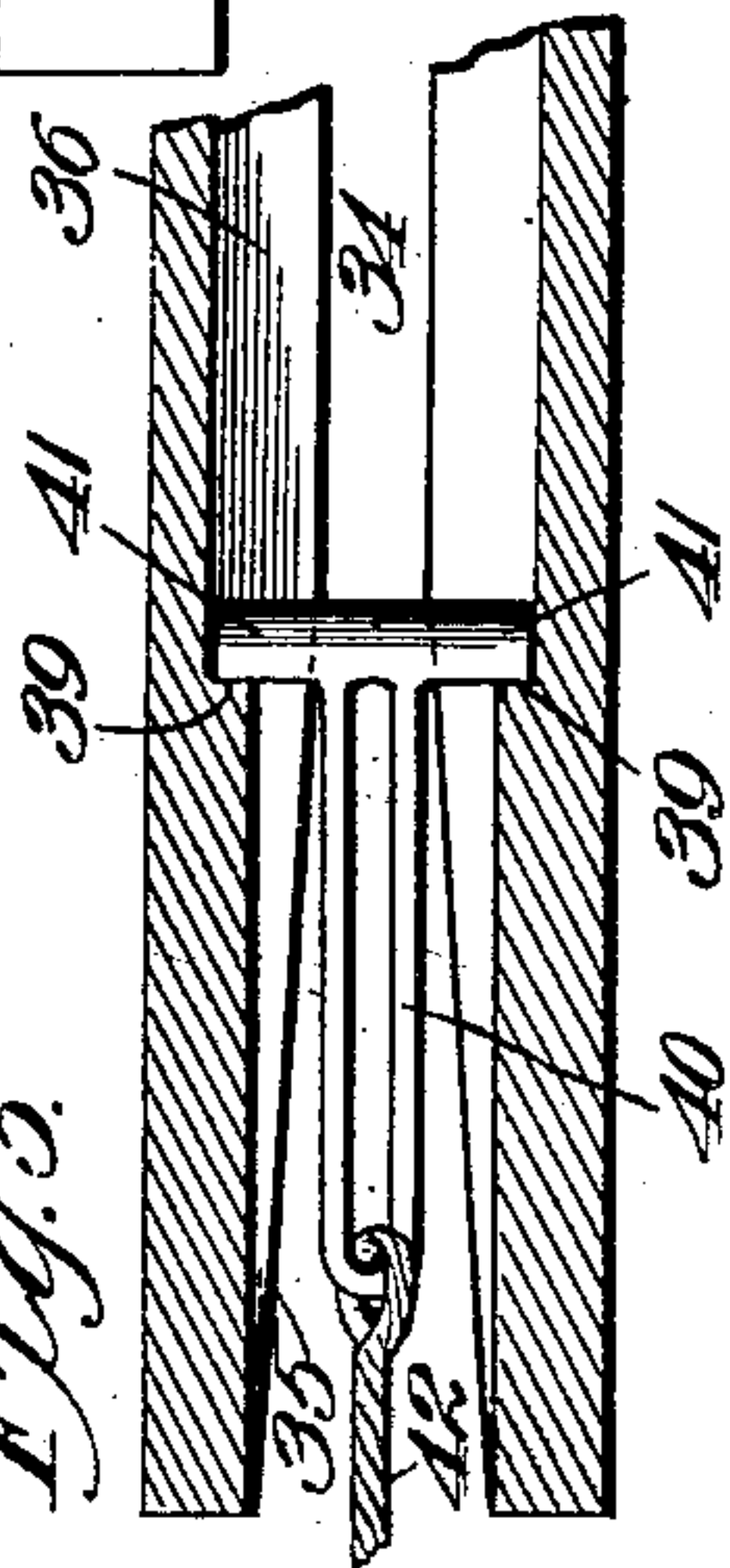


Fig. 10.

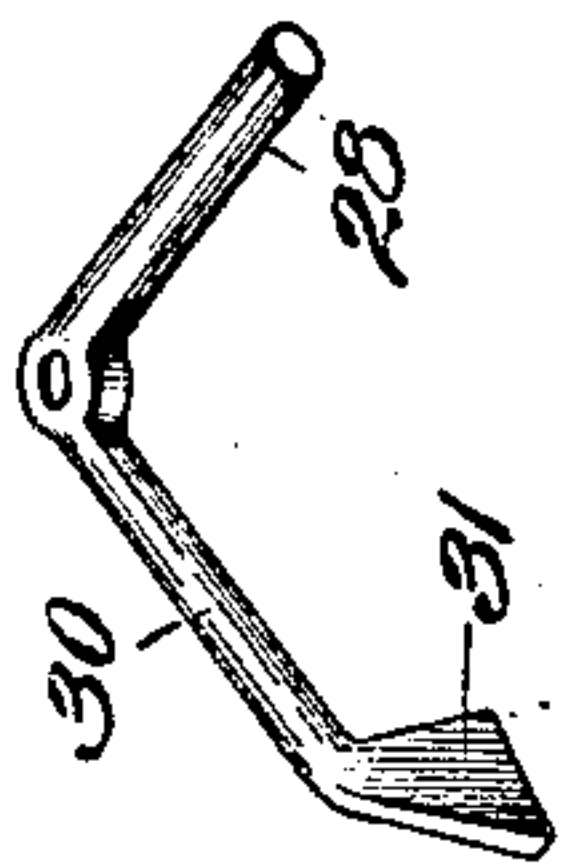


Fig. 6.

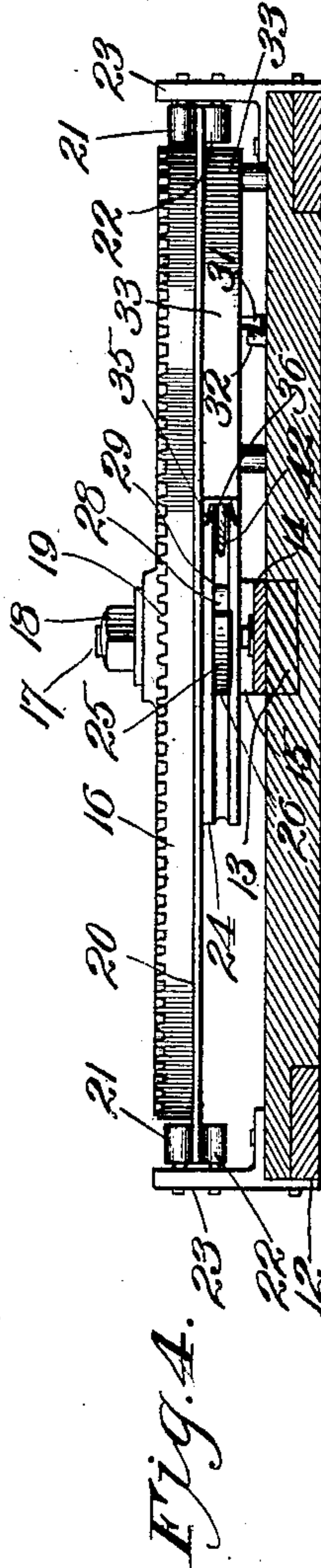
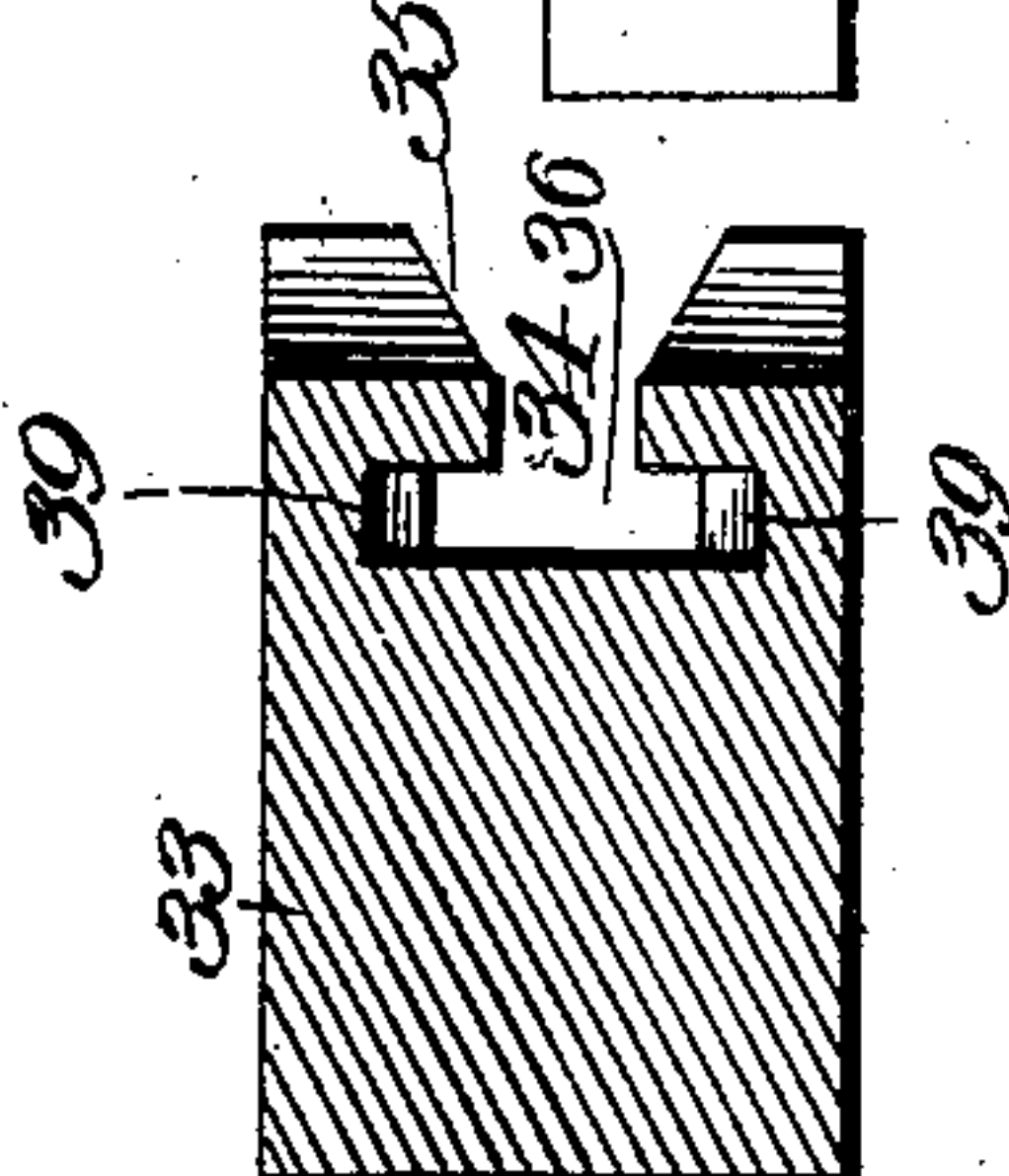


Fig. 4.

Witnesses

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# UNITED STATES PATENT OFFICE.

SAMUEL G. GILLELAND, OF SPRING GARDEN, MISSOURI.

BALING-PRESS.

No. 898,868.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed September 9, 1907. Serial No. 391,861.

*To all whom it may concern:*

Be it known that I, SAMUEL G. GILLELAND, a citizen of the United States, residing at Spring Garden, in the county of Miller and State of Missouri, have invented certain new and useful Improvements in Baling-Presses, of which the following is a specification.

This invention relates to baling presses, and my object is to produce a machine of this character which will perform its function efficiently and reliably and can be operated by engine or horse power.

A further object is to produce a baling press of simple, strong, durable and cheap construction.

With these objects in view and others as hereinafter appear the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1, is a top plan view of a baling press embodying my invention. Fig. 2, is a side view of the same. Fig. 3, is a plan view of the power end of the press with the sweep and turn-table omitted and with the press below the turn-table partly in section. Fig. 4, is a section taken on the line IV—IV of Fig. 3. Fig. 5, is an enlarged section taken on the line V—V of Fig. 3. Fig. 6, is a section taken on the line VI—VI of Fig. 3 on the same scale as Fig. 5. Fig. 7, is a horizontal section taken on the line VII—VII of Fig. 2 but on a larger scale. Fig. 8, is a section taken on the line VIII—VIII of Fig. 2 and on the same scale as Fig. 7. Fig. 9, is a detail perspective view of one of a pair of brackets hereinafter described and also shows in dotted lines one of the posts of the press frame. Fig. 10, is a detail perspective view of one of a pair of similar levers forming part of the invention.

In the said drawings, 1 indicates the baling case provided with the usual feed opening 2, and hopper 3, communicating therewith. At the front end of the baling case is a pair of uprights 4 in which are journaled a horizontal transverse shaft 5 equipped centrally with a large peripherally grooved wheel 6, having lugs 7 projecting outward from its periphery at opposite sides of the groove and connected by a bolt 8.

9 indicates a plunger for reciprocating past the opening 2 in the baling case, and pivoted to said plunger at its rear end is a pitman 10,

provided with a longitudinal slot 11 receiving wheel 6 and pivoted at its front end on bolt 8, the arrangement being such that the pitman will operate in the plane above shaft 5 and never come in contact therewith, as will hereinafter appear.

The power end of the press is constructed as follows: 12 indicates a skeleton rectangular frame to rest on the ground and 13 is a longitudinal bar connecting the opposite sides of the skeleton frame. 14 is a longitudinal bar bolted upon bar 13 and provided centrally with an arched portion 15 as a central support for a turn-table 16, journaled upon a stationary vertical shaft 17 extending upward from bar 13, through the arch 15 of bar 14, a nut 18 securing the turn-table in place. This turn-table may form the head of a sweep 18<sup>a</sup> of any suitable type (see Fig. 2) or it may be in the form of a gear wheel as indicated in Figs. 1 and 4, 19 indicating the teeth of said wheel adapted for engagement with a gear pinion, not shown, driven by any suitable power. The turn table is provided with an outwardly projecting annular flange engaged at its upper and lower sides by anti-friction rollers 21 and 22 respectively carried by brackets 23 secured to the rectangular frame, these rollers tending to maintain the turn-table in a horizontal position and eliminate friction.

Secured to and depending from the turn-table is a peripherally grooved elliptic cam 24, which cam stands in the position shown in Fig 3 when the pitman occupies substantially the position shown in Fig. 2, and projecting outward from said cam at diametrically opposite points are hooks 25; said hooks being preferably secured in sockets 26 in the cam by means of bolts 27 and in this connection it should be stated that when the machine is operated by an engine, one of the hooks will be removed, whereas when it is operated by horse power both hooks will be employed.

A pair of bell crank levers are pivoted in the cam concentrically of the front or concave faces of the hooks with their outer arms 28 occupying and adapted to play in the outer arms of the V-shaped recesses 29, and with their inner arms 30 occupying and adapted to play in the inner arms of said V-shaped recesses, it being noted in this connection that said inner arms project beyond the inner side of the cam and are equipped with downturned ends 31 for engagement



once in each revolution of the turn-table with a stud 32 projecting upwardly from plate 14, the upper end of said stud being below the elliptic cam so that the latter may  
5 revolve above it.

33 indicates a substantially semicircular guide arranged concentrically of shaft 17 at one side of the longitudinal center of the machine of such size that the ends of the elliptic  
10 cam shall almost come in contact with its inner side in their turning movement. The guide is provided in its inner side with a horizontal slot 34 in the horizontal plane of hooks 25 and levers 30 and said slot is provided at  
15 its rear end with a flaring mouth 35 in order to properly receive and guide the hooks into the slots 34 in the revolution of the former, it being understood that at no time is more than one hook in engagement with the guide.  
20 The slot 34 opens into a vertical channel 36 which widens at the rear end of the guide as at 37 and at the front end of the guide as at 38, and from widened portion 37 of such channel to the other end it is deepened so as  
25 to provide the forwardly disposed shoulders 39 as an abutment for the upward projecting arms 41 of a link 40 fitting in the channel and connected at its rear end to a cable 42 which extends rearwardly and engages the periph-  
30 erally-grooved wheel 6 and is attached at its rear end to the bolt 8 of said wheel. To prevent the cable from sagging and thus becoming disengaged from the groove of said wheel, I provide the underlying grooved sheave 43  
35 carried by a bracket 44 secured to the baling case and to hold the cable in proper relation to the guide 33 I employ a horizontally-arranged guide sheave 45 suitably journaled on frame 12, said sheave being equipped with a  
40 guard 46, through which the cable extends, it being noticed that when the plunger is withdrawn the cable and link extend in a straight line from sheave 45 with the arms 41 of the link 40 in engagement with shoulders  
45 39 see Fig. 5, so that when a hook of the elliptic cam enters the slot 34 it will enter the link and come into engagement with its front end and thus draw the link around in the channel 36, this action resulting, through the  
50 cable connection, in revolving wheel 6 in the direction indicated by the arrow, Fig. 2 and causing the plunger to make its compression stroke, it being noted in this connection that this movement of said wheel is resisted by  
55 spring 47 secured at one end to plunger and at the other to the baling case, the chief function of said spring being to effect the recoil of the plunger at the proper time.

When the full stroke of the plunger has  
60 been made, the link has attained the position shown in dotted lines Fig. 3, that is, has entered the widened portion 38 of the channel 36 and as soon as it attains this position the arm 30 of the contiguous lever carried by  
65 the cam comes into engagement with the pin

32 and is swung outwardly thereby, this outward movement causing arm 28 of said lever to force the front end of the link outward until it is disengaged from the hook when the recoil of the plunger takes place and  
70 through the medium of the cable returns the link to its original position as shown in full lines Fig. 3.

In practice the baling case will be charged with the material to be baled as soon as the  
75 recoil of the plunger takes place and in order to give time for such action the turn-table is adapted to revolve some distance before the second hook enters the guide and comes into engagement with the link to repeat the  
80 operation above described. When the press is operated by means of an engine one of the hooks 25 will be removed because the turn-table would be revolved at such a rate of  
85 speed that the attendant would not have time to charge the baling case properly between the strokes of the plunger.

It will be understood of course that the baling case and power portions of the machine must be securely anchored preliminary  
90 to the baling operation described. My preferred method of bracing them apart is through the medium of a knockdown framework constructed as follows:—48 is a bar fitted at its front end against the frame 12  
95 and provided at its rear end with a socket plate 49. 50 indicates a pair of forwardly diverging braces bolted as at 51 to bar 48 and as at 52 to frame 12, the front ends of said braces and the rear ends of the side bars  
100 of the frame being preferably step-jointed together as at 53, and to relieve the bolts 52 of bending strain the rear cross bar of frame 12 is provided with notches 54 to receive the  
105 front ends of the braces 50. 55 are braces provided with recesses 56 in their front ends to engage the rear corners of bar 48, the socket plate 49 holding said bars in the relations described. The bars 55 preferably  
110 slope upward and outward to abut against the posts 5 of the baling case and are held in such position by fitting in the brackets 57 secured to and projecting forwardly from said posts. When the machine is in operation the press and power mechanisms are  
115 prevented from moving toward each other by the brace frame described. When the baling operation is over, the bracing frame can be easily and quickly removed from position so that the power mechanism and the  
120 baling case can be separately transported. It will be understood of course that the team which operates the press will travel around the power mechanism in the usual manner and once in each revolution step over the  
125 bracing framework and the cable, which being very close to the ground will be easily avoided.

In each operation of the elliptic cam, it will be noticed that the hook picking up the  
130



link draws the same forward in the guide as explained so that the preliminary part of the compression stroke of the plunger shall be rapid for the purpose of bunching the loose hay in the baling case. By the time such hay begins to offer material resistance the cable is engaging the groove of the cam and moves inwardly toward the axis of the latter until the plunger has about completed its stroke, it being apparent by reference to Fig. 3 that because the cable thus gradually moves inward its speed of movement gradually diminishes and its power is proportionately increased, it being of course obvious that the link because traveling in guide 33 and in engagement with the hook 2, moves at uniform speed from the rear to the front end of the guide.

From the above description it will be apparent that I have produced a baling press possessing the features of advantage enumerated as desirable and I wish it to be understood that I do not desire to be restricted to the exact details of construction shown and described as obvious modifications will suggest themselves to one skilled in the art.

Having thus described the invention what I claim as new and desire to secure by Letters-Patent is:—

1. In a baling press, a suitable frame, a power shaft, journaled therein, an elliptic cam rotatable with said shaft, and provided at one end with an outwardly projecting hook, a guide arranged concentrically of the axis of the shaft with its internal diameter barely exceeding the external diameter of the cam at its point of greatest diameter and provided with a channel and in its inner side with a slot opening into said channel and adapted to receive said hook as the cam rotates, a link arranged slidingly in said channel with its front end bridging the communicating slot and adapted to be engaged by the hook of the cam, and a cable attached to the rear end of the link and adapted as the latter is advanced in said channel by the hook to swing inwardly through the slot and bear against the periphery of the cam.

2. In a baling press, a suitable frame, a power shaft journaled therein, an elliptic cam rotatable with said shaft and provided at one end with an outwardly projecting hook, a guide arranged concentrically of the axis of the shaft with its internal diameter barely exceeding the external diameter of the cam at its point of greatest diameter and provided with a channel and in its inner side with a slot opening into said channel and adapted to receive said hook as the cam rotates, a link arranged slidingly in said channel with its front end bridging the communicating slot and adapted to be engaged by the hook of the cam, a cable attached to the rear end of the link and adapted as the latter is advanced in said channel by the hook to

swing inwardly through the slot and bear against the periphery of the cam, and means to trip the link from engagement with said hook.

3. In a baling press, a suitable frame, a power shaft journaled therein, an elliptic cam rotatable with said shaft and provided at one end with an outwardly projecting hook, a guide arranged concentrically of the axis of the shaft with its internal diameter barely exceeding the external diameter of the cam at its point of greatest diameter and provided with a channel and in its inner side with a slot opening into said channel and adapted to receive said hook as the cam rotates, a link arranged slidingly in said channel with its front end bridging the communicating slot and adapted to be engaged by the hook of the cam, a cable attached to the rear end of the link and adapted as the latter is advanced in said channel by the hook to swing inwardly through the slot and bear against the periphery of the cam, a lever carried by the cam contiguous to the hook and means to operate said lever at a predetermined point and cause it to force the link off the hook.

4. In a baling press, a suitable frame, a power shaft journaled therein, an elliptic cam rotatable with said shaft and provided at one end with an outwardly projecting hook, a guide arranged concentrically of the axis of the shaft with its internal diameter barely exceeding the external diameter of the cam at its point of greatest diameter and provided with a channel and in its inner side with a slot opening into said channel and adapted to receive said hook as the cam rotates, a link arranged slidingly in said channel with its front end bridging the communicating slot and adapted to be engaged by the hook of the cam, a cable attached to the rear end of the link and adapted as the latter is advanced in said channel by the hook to swing inwardly through the slot and bear against the periphery of the cam, a lever carried by the cam contiguous to the hook, and a pin projecting from the frame in the path of said lever to operate the same and cause it to trip the link from engagement with the hook.

5. In a baling press, a suitable frame, a power shaft journaled therein, an elliptic cam rotatable with said shaft and provided at one end with an outwardly projecting hook, a guide arranged concentrically of the axis of the shaft with its internal diameter barely exceeding the external diameter of the cam at its point of greatest diameter and provided with a channel and in its inner side with a slot opening into said channel and adapted to receive said hook as the cam rotates; said channel being widened at its ends and deepened between said widened portions to provide a pair of forwardly disposed shoulders contiguous to the rear widened



portions, a link fitting slidingly in the channel and normally converging forward in the widened rear end of said channel with respect to the slot and having its front end in the path of the hook of the cam and provided at such end with lugs occupying the deepened portion of the channel and normally bearing against said shoulders, a cable attached at its front end to said link, a guide sheave for the cable at the rear end of the guide, and means for swinging the link outward at its front end until disengaged from the hook, when the former has been moved by the latter into the widened portion of the channel at the front end of the guide.

6. In a baling press, a suitable frame, a power shaft journaled therein a turn-table journaled on the power shaft and provided with a depending elliptic cam peripherally grooved, having an outwardly projecting hook, and a lever contiguous to the hook, and a pin projecting from the frame in the path of said lever to operate the same.

7. In a baling press, a suitable frame, a power shaft journaled therein, a turn-table journaled on the power shaft and provided with a depending elliptic cam peripherally grooved having an outwardly projecting hook and a lever contiguous to the hook, a segmental guide having a channel and a slot opening into the channel and in the same horizontal plane as said hook, a cable, a link attached to the front end of the cable and occupying said channel and adapted to be engaged and drawn forwardly through the channel by said hook, and a pin projecting from the frame to operate said lever and cause the same to trip the link from engagement with the hook.

8. In a baling press, a baling case, a frame forward of said case and a brace frame between the baling case and the first-named frame, consisting of a longitudinal bar, braces secured to the longitudinal bar and diverging forwardly therefrom and secured to the first-named frame, a second pair of braces diverging rearwardly and upwardly from and secured to said longitudinal bar, and brackets secured to the baling case and receiving the rear ends of the said rearwardly and upwardly diverging braces.

9. A baling press, comprising a baling case having a feed opening, a reciprocatory plunger in the baling case, a wheel journaled at the front end of the baling case, a beam pivotally connecting the wheel and plunger, and means to yieldingly effect the recoil, of the plunger after each power stroke, in combination with a segmental guide having a channel, and a slot opening through its inner side into said channel, a link fitting in said channel, a cable suitably guided and engaging the grooved wheel and secured thereto at one end and to said link at the other end, a rotatable elliptic cam provided with a hook to pass into the slot and channel of the guide and engage the link therein and draw it forwardly in said channel to effect the power stroke of the plunger, and means to trip the link from engagement with the hook to terminate such power stroke.

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

SAMUEL G. GILLELAND.

Witnesses:

H. C. RODGERS,  
G. Y. THORPE.