

983,429.

W. EDGE.
HINGING MACHINE.
APPLICATION FILED JULY 20, 1909.

Patented Feb. 7, 1911.
3 SHEETS—SHEET 1.

Fig. 1.

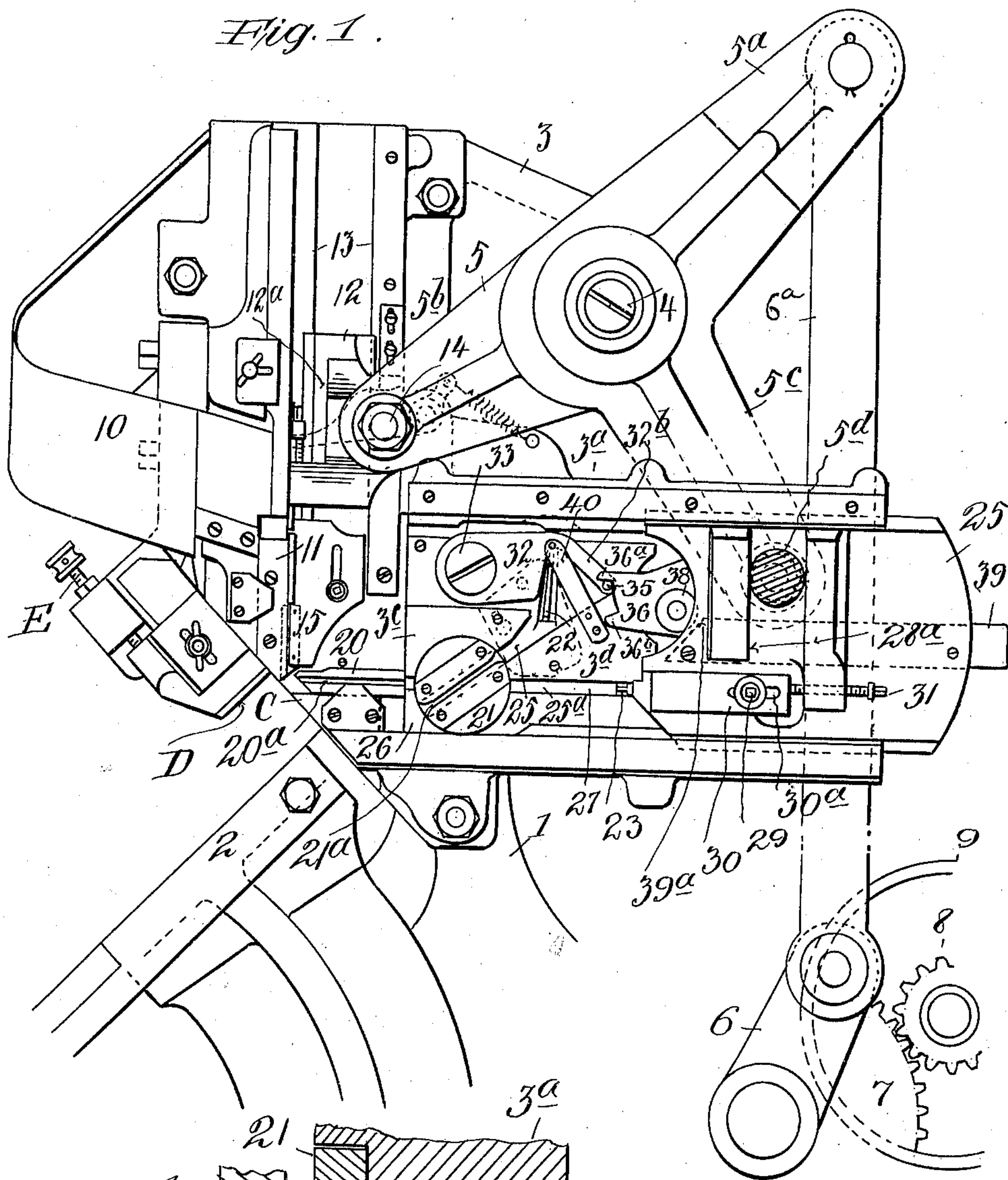
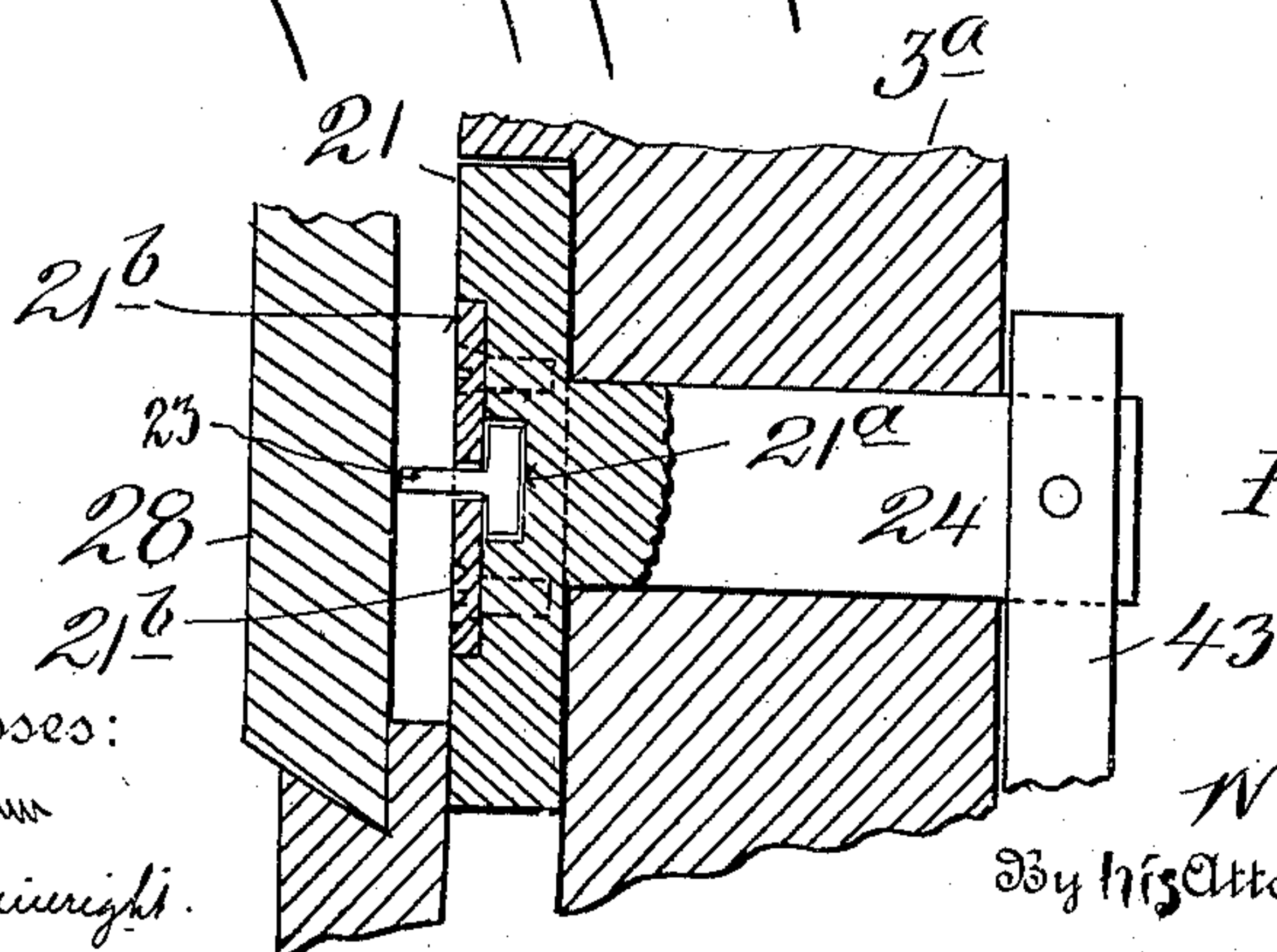


Fig. 7.



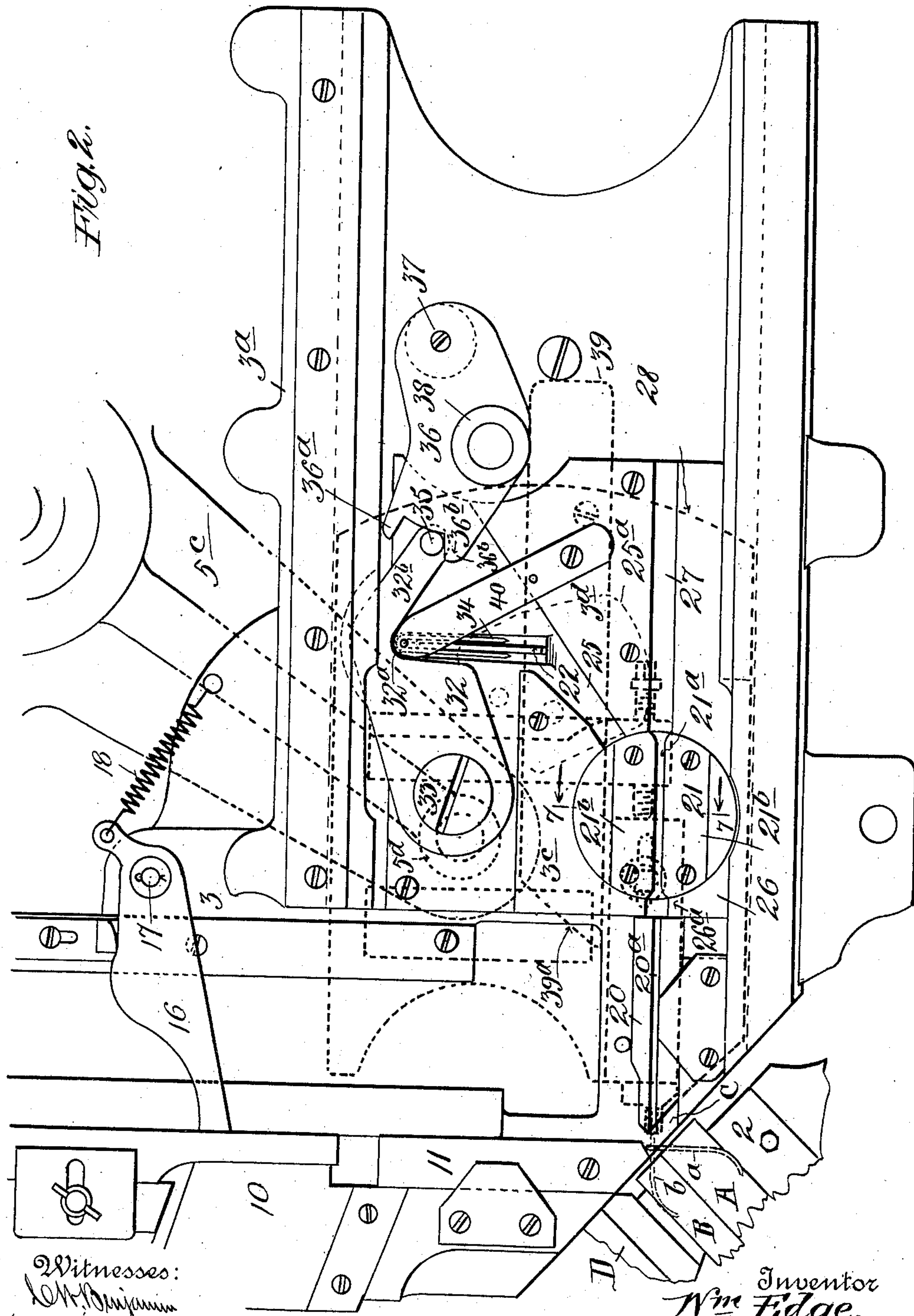
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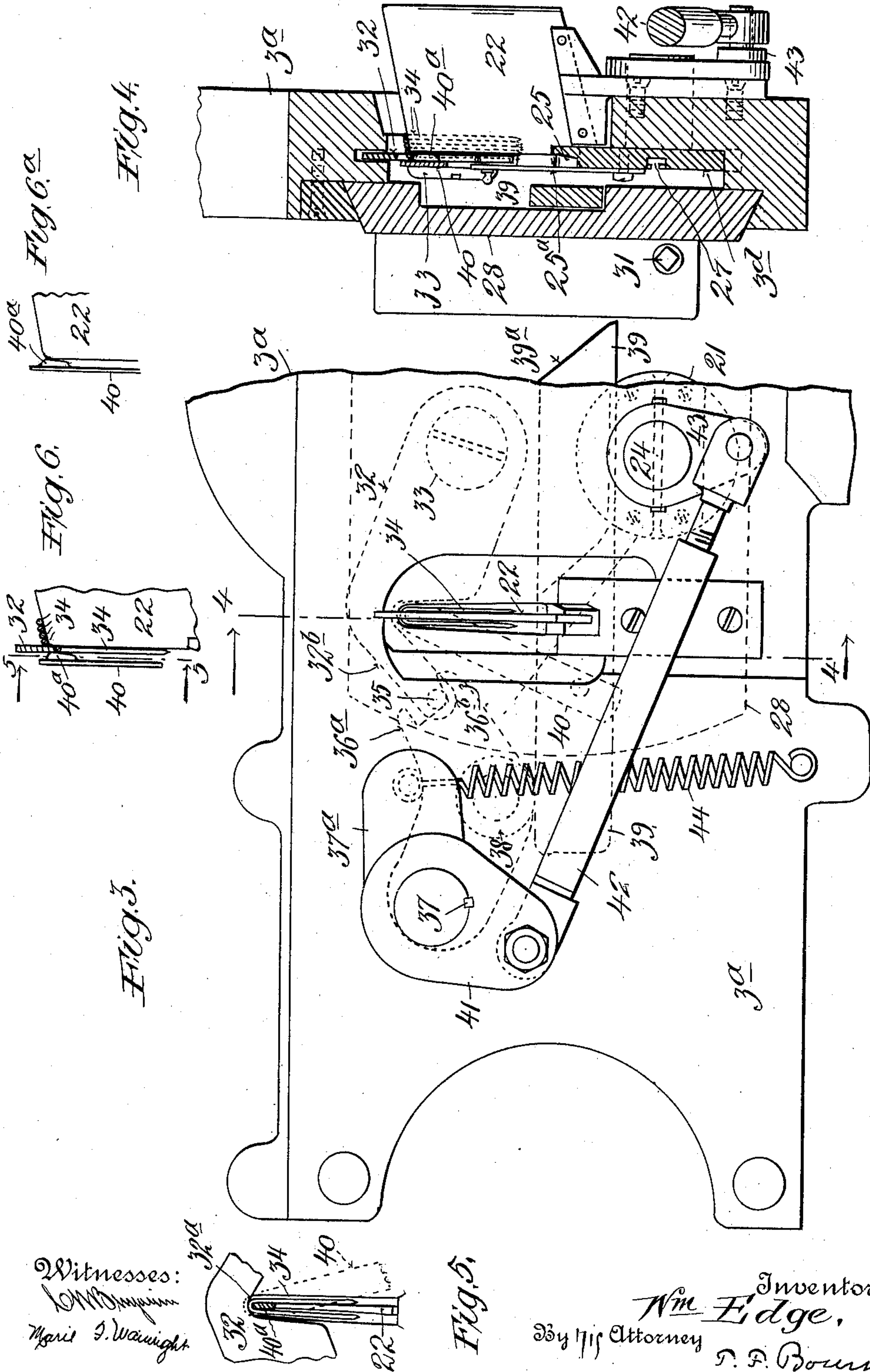
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

WILLIAM EDGE, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE GENERAL PACKAGE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

HINGING-MACHINE.

983,429.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed July 20, 1909. Serial No. 503,663.

To all whom it may concern:

Be it known that I, WILLIAM EDGE, a citizen of the United States, and resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hinging-Machines, of which the following is a specification.

My invention relates to improvements in machines for hinging boards together for use in boxes and other purposes, and my invention has reference to improvements in a portion of the machine of the class set forth in United States Letters Patent of William McMurray, No. 820,243, and No. 820,244, granted May 8, 1906.

The object of my invention is to simplify and improve the devices adapted for delivering the previously made staples for driving such staples in a horizontal position.

The nature of my invention and the details of improvement embraced therein will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein,

Figure 1 is a front elevation of a portion of a hinging machine embodying my improvements, the plate 25^a being shown in dotted lines; Fig. 2 is an enlarged detail view of part of Fig. 1, parts being removed and shown in dotted lines; Fig. 3 is a detail view looking from the opposite side of Fig. 2; Fig. 4 is a section on the irregular line 4, 4, in Fig. 3; Fig. 5 is a detail view, partly in section on the line 5, 5, in Fig. 6, of the device for delivering the staples from the track; Fig. 6 is a detail view at right angles to Fig. 5; Fig. 6^a is a view similar to Fig. 6, parts being removed, and Fig. 7 is a section, enlarged, on the line 7, 7, in Fig. 2.

Similar numerals of reference indicate corresponding parts in the several views.

The frame 1 of the machine may be of a suitable construction and such as shown in the aforesaid patents, and at 2 is indicated a portion of a table upon which boards may be laid to be hinged together.

At 3 is a head of suitable construction carried by frame 1, and at 4 is a rocking shaft journaled in suitable bearings upon

said head and carrying a three-armed crank 5. Suitable means, such as a crank 6 connected by link 6^a with arm 5^a of crank 5 and operated by gearing 7, 8 driven by pulley 9 in any well known manner, may be provided for rocking crank 5. The staples to be driven vertically are delivered from a track 10 to a guideway in a receiver 11.

At 12 is a reciprocative block carried in guides 13 on head 3, said block being movably connected with crank arm 5^b, as by projection or roller 14 working in a transverse groove 12^a on block 12. Said block 12 carries a vertically operating staple driver 15 for driving staples from the end of track 10 through receiver 11 into the boards upon table 2, the driver 15 being adapted to reciprocate in receiver 11.

At 16 is an arm pivotally supported on head 3, as at 17, and normally held by spring 18 so that the outer end of said arm aligns with the edge of track 10, whereby staples will hang at the junction between said track and arm and will be driven therefrom by driver 15.

The boards A, B to be hinged together are clamped or held by table 2 against the abutments C, D, the latter of which serves as a clench block for turning the points of the horizontally driven staples. The abutment C may be formed directly on the frame or head 3 of the machine, while the abutment D may be made adjustable substantially in the plane of the edge of abutment C by means of screw E.

The above described parts may be constructed and operated in manner set forth in the above named patents, and are illustrated to show convenient means for driving vertically disposed staples in connection with my improvements.

The branch or arm 3^a of head 3 carries a staple receiver 20 provided with a staple guideway 20^a located at right angles to receiver 11, through which horizontally disposed staples *b* may be driven into the boards interlocked with staples *a* driven by the vertically disposed driver 15.

At 21 is a rocking or oscillatory staple block or head having a passageway 21^a to receive staples delivered from a track 22, the guideway 21^a being adapted to be aligned

with the staple guideway in receiver 20 to permit staples to be pushed into and through the latter. Staple block or head 21 is shown provided with parallel plates 21^b spaced 5 apart and opposed to guideway 21^a providing a T-shaped guideway through which staple driver 23 is adapted to slide when guideway 21^a is alined with receiver 20. Staple block or head 21 is carried by a shaft 10 24 journaled in arm 3^a (see Fig. 7) and rocked as hereinafter explained.

At 25 is a passageway for staples formed in or on arm 3^a, as by plates 3^d, 3^d secured thereto or formed thereon, the lower end of 15 which guideway 25 alines with staple guideway 21^a when the latter is in the normal position (see Fig. 1), so that staples dropped from track 22 will slide through guideway 25 into guideway 21^a. A plate 25^a is secured 20 over the outer side of guideway 25 to guide staples in the latter. The lower end of guideway 21^a in the normal position (Fig. 1) alines with a curved ledge or abutment 26 formed on or secured to arm 3^a, against 25 which the ends of the staples may rest when they are delivered into guideway 21^a, to limit their movement in said guideway, the upper edge 26^a being below or substantially alined with the lower edge of guideway 21^a when 30 the latter is horizontal as in Fig. 2, to permit the passage of staples from guideway 21^a into receiver 20. At 27 is a channel alined with receiver 20 and with staple driver 23 through which the latter travels into and 35 from guideway 21^a (see Fig. 2). Driver 23 is carried by a reciprocative block 28 guided in suitable ways on arm 3^a, which driver may be adjusted lengthwise by means of screw 29 passing through slot 30^a in 40 driver-block 30 and into block 28, and a screw 31 on block 28 may be provided to act with block 30 and resist the driving thrust. Block 28 is reciprocated by crank arm 5^c that is suitably connected with said 45 block, as by a projection or roller 5^d carried by said arm and received between parallel projections 28^a on block 28.

At 32 is a rocking finger pivotally supported upon arm 3^a, as by stud 33, and 50 shown provided with a curved or hook-like portion 32^a normally above but adapted to travel across the inner end of track 22 to dislodge the endmost staple 34 hanging at the end of said track to enable said staple 55 to pass down into guideway 25, the finger 32 then lying in front of the end of track 22 and retaining the other staples upon said track. The end part 32^b of finger 32 is provided with a projection or pin 35 adapted 60 to be engaged by spaced projections or stops 36^a, 36^b of a rocker 36 that is pivotally supported upon arm 3^a by shaft 37. Rocker 36 is provided with a projection or roller 38 adapted to be engaged by a ledge or bar 39

secured to or formed on block 28, the ver- 65 tical edge 39^a of which ledge or bar is beveled or inclined upwardly to engage projection or roller 38.

In the position of the parts shown in Fig. 1, the inclined edge 39^a is at one side of pro- 70 jection or roller 38, rocker 36 is depressed, and its finger 36^a has forced down finger 32 to deliver a staple from the end of track 22, but when block 28 slides to the left in Fig. 1 the inclined edge 39^a riding under pro- 75 jection or roller 38 raises the latter and rocker 36, whereupon finger 36^b of the latter will engage projection 35 to raise finger 32 above the end of track 22 to permit the staples to slide forwardly thereon. 80

At 40 is a spring-acting finger secured upon arm 3^a, as against part 3^d, and provided with a projection 40^a, the upper edge of which is shown rounded adjacent the 85 rounded upper corner of track 22, whereby the lowermost staple hangs normally between the edge of track 22 and projection 40^a, the corresponding part 32^a of finger 32 normally being above such lowermost staple. When block 28 moves to the right in Fig. 1 90 and edge 39^a passes from roller 38 rocker 36 will descend from the position shown in Fig. 2 and its finger 36^a will force finger 32 downwardly, thereby causing finger 32 to push the lowermost staple 34 downwardly 95 into guideway 25. Shaft or pivot 37 on the end opposite rocker 36 carries a crank arm 41 (see Fig. 3) which is connected by an adjustable link 42 with a crank arm 43 secured to shaft 24 of staple head 21. A 100 spring 44 connected with arm 3^a and with shaft 37, as by a projection 37^a thereon, (Fig. 3) serves normally to draw down rocker 36 and hold staple head 21 in the position shown in Fig. 1 to receive a staple, 105 but when block 28 slides forwardly to drive a horizontally disposed staple and roller 38 rides upon ledge 39 and thus raises rocker 36, the shaft 24 and staple head 21, through parts 41, 42 and 43, will be rocked from the 110 position shown in Fig. 1 to the position shown in Fig. 2 to bring staple guideway 21^a in line with the guideway 20^a in receiver 20.

The operation may be described as fol- 115 lows: The previously formed staples are fed upon tracks 10 and 22 in any well known manner and slide down the same to the ends of said tracks. Assume that the table is adjusted to clamp boards at the abutments 120 C D, as indicated in Fig. 2, with the joint between the boards substantially in line with the point at which the vertically and horizontally driven staples are to be caused to interlock, block 28 being in the position 125 shown in dotted lines in Fig. 2, and the vertical staple driver 15 being above track 10. Arm 5 now being rocked its arm 5^b will de-

scend and its arm 5^c will move to the right in Fig. 1, whereupon driver 15 will descend and push a staple *a* from between the ends of track 10 and arm 16 through receiver 11 into board A, the staple driving parts then assuming the positions shown in Fig. 1, but a portion of the looped end of staple *a* will be left projecting to receive a horizontally driven staple. At the end of the stroke of block 28 from the left indicated in dotted lines in Fig. 2 to the right indicated by full lines in Fig. 1, roller 38 descends along inclined face 39^a and thereupon rocker 36 descends and simultaneously turns staple head 21 from the position shown in Fig. 2 to that shown in Fig. 1, and when the projection 36^a engages projection 35 and causes finger 32 to descend said finger will push the lowermost staple from track 22, which staple will slide down guideway 25 into staple guideway 21^a of block 21 and rest against abutment 26; crank arm 5 now moves reversely and its arm 5^b raises driver 15 while its arm 5^c pushes block 28 to the left in Fig. 1, whereupon rocker 36 is raised as inclined face 39^a slides under roller 38 and rocker 36 is held in such position by ledge 39, and as said rocker rises staple block or head 21 will be turned to the position shown in Fig. 2 in line with guideway 20^a and driver 23, and projection 36^b acting upon projection 35 will raise finger 32 which, by rising above projection 40^a and track 22, permits the staples to descend along the track so that the lowermost staple may hang at the end of track 22 to be dislodged therefrom upon the next return stroke of block 28. During the forward movement of block 28, and after staple head 21 has been turned to the position shown in Fig. 2, driver 23 forces staple *b* out of guideway 21^a through guideway 20^a of receiver 20 and through the looped part of staple *a* into board B, thereby interlocking said staples, whereby a hinge is formed for the boards A B. The parts will now rest in this position until said boards are adjusted or other boards placed in position to receive a new pair of interlocked staples, and the operation will be repeated. It will thus be seen that by means of the mechanism described the staple that hangs vertically from track 22 is caused to travel down and be turned into a horizontal position in line with driver 23, and that the rocking movements of staple head 21 occur to place a staple in guideway 21^a in a horizontal position before driver 23 reaches guideway 21^a, and staple head 21 is reversed in position after driver 23 passes back and out of guideway 21^a.

My invention is not limited to the details of construction shown and described, as the same may be varied, within the scope

of the appended claims, without departing from the spirit thereof.

Having now described my invention what I claim is:—

1. The combination of a rotative head provided with a staple receiving guideway extending across the same from one side to the other, a staple driver to pass through said guideway, a track for staples, means to discharge staples from the track into said guideway, means adjacent the delivery end of said guideway to retain staples therein while said head is in the normal position, a staple carrier adjacent said head, and means to oscillate said head from the staple receiving position to the staple delivering position in line with said driver. *

2. The combination of a staple carrier, a staple driver alined therewith, a rotative head provided with a staple guideway, said head being journaled to rotate in the line of movement of the driver and adjacent one end of said carrier, means to discharge staples into the guideway in said head, means adjacent the delivery side of said guideway to retain staples therein while said head is in the normal position, and means to rotate said head from the staple receiving position to the staple delivering position.

3. The combination of a rotative staple head provided with a guideway, a reciprocative staple carrier at one side of said head, a driver mounted to travel through said guideway and carrier, a staple delivery track, a staple guideway between the track and said head to guide staples to the guideway in said head, means to feed staples from said track, means to limit the passage of staples through said guideway while said head is in the normal position, and means to rotate said head.

4. The combination of an oscillatory head provided with a staple receiving guideway, means adjacent the staple delivering side of said guideway to limit the passage of staples through said guideway while the head is in one position, a driver adapted to push staples from said guideway, means to feed staples to said guideway, and means to oscillate said head from the staple receiving to the staple delivering position and vice versa.

5. The combination of an oscillatory head provided with a diametrically disposed staple guideway having one side open, a driver adapted to pass through said guideway, the axis of said head being in the line of travel of said driver, means to feed staples to said guideway, and means to oscillate said head and reciprocate said driver.

6. The combination of a staple delivering track, means to retain staples at the end of the track, a finger to dislodge staples from the end of the track, a driver, a head pro-

vided with a guideway to receive staples delivered from said track, means adjacent the delivery side of said guideway to retain staples therein while said head is in the normal position, a staple carrier adjacent said head and alined with the driver, and means to move the guideway of said head into and out of alinement with said driver and carrier.

7. The combination of a staple delivering track, a finger to dislodge staples from said track, means to operate said finger, a staple driver, a rotative head provided with a staple receiving guideway, means adjacent the delivery side of said guideway to retain staples therein while said head is in the normal position, a staple carrier adjacent said head and alined with the driver, and means to rotate said head from the staple receiving position to a position in line with said driver and carrier.

8. The combination of a staple delivering track, a finger adapted to dislodge staples from the track, a rotative head below said track and provided with a staple receiving guideway extending across the same from side side to side, a guideway below said track leading to said head, a driver located exterior to said head and adapted to pass through said guideway, means to reciprocate said driver, and means operated coincidently with the reciprocations of said driver for operating said finger and head.

9. The combination of a staple delivering track, a finger adapted to pass across the end of said track to dislodge staples therefrom, means to normally retain staples upon the track, a staple guide below the track, a rotative head having a staple receiving guideway, located adjacent the lower end of said guide, a driver adapted to pass through said guideway, means to reciprocate said driver, a rocker for operating said finger, and means for operating said rocker and head.

10. The combination of a staple delivering track, a finger to dislodge staples from the track, a rocker provided with means to operate said finger, a rotative head provided with a staple receiving guideway, a staple driver adapted to pass through said guideway, a reciprocative block carrying said driver, said block having means to operate said rocker during reciprocations of the block, and means to rotate said head coincidently with the reciprocations of said block.

11. The combination of a staple delivering track, a finger to dislodge staples from the track, a rocker provided with means to operate said finger, a reciprocative block having a ledge to operate said rocker during reciprocations of said block, a staple driver, and means to present staples de-

livered from said track into alinement with said driver.

12. The combination of a staple delivering track, a finger to dislodge staples from the track, a rocker provided with means to operate said finger, a reciprocative block having a ledge provided with an inclined portion at one end, said rocker having a projection to be operated by said ledge, a staple driver operated with said block, and means for presenting staples delivered from said track in line with said driver.

13. The combination of a staple delivering track, a finger to dislodge staples therefrom, a rocker provided with projections spaced apart to engage a projection on the finger, a reciprocative block provided with a ledge to operate said rocker, a driver connected with said block, a rotative head provided with a guideway to receive staples from said track, and means for operating said head in accordance with the operation of said finger.

14. The combination of a staple delivering track, a finger to dislodge staples therefrom, a rocker to operate said finger, a rotative head provided with a guideway, means connecting the rocker with said head for operating them conjointly, a driver adapted to pass through the guideway in said head, and means to operate the driver and rocker.

15. The combination of a staple delivering track, a finger to dislodge staples therefrom, a rocker, a rotative head provided with a staple receiving guideway, cranks connected respectively with said rocker and head, a link connecting said cranks, a driver, and means to reciprocate said driver and operate said rocker and head.

16. The combination of a staple delivering track, a spring finger at the end of the track to retain staples thereon, a finger adapted to travel between the end of the track and the spring finger to dislodge staples therefrom, means to reciprocate the second named finger, a driver, independent of and reciprocative at an angle to said last named finger, means to reciprocate the driver, and a rotative head below said track provided with a diametrically disposed guideway to receive and present staples dislodged from the track in line with said driver.

17. The combination of a staple delivering track, a spring finger at the end of the track provided with a projection to retain staples thereon, a finger adapted to travel between the end of the track and the projection of the spring finger to dislodge staples therefrom, means to reciprocate the second named finger, a driver independent of and reciprocative at an angle to said last named finger, means to reciprocate the driver, and a rotative head below said track

provided with a diametrically disposed guideway to receive and present staples dislodged from the track in line with said driver.

5 18. The combination of a staple delivering track, a guideway beneath and extending at an angle to the plane of the track, a finger to dislodge staples from the track, means to operate said finger, a rotative head
10 at the lower end of the guideway and provided with a staple receiving guideway, means to prevent the escape of staples through the delivery end of said guideway

of said head as delivered thereto from the first named guideway, a driver, means to 15 operate the driver, and means to oscillate said head from the staple receiving position to a position in line with the driver and vice versa.

Signed at New York city, in the county of 20 New York, and State of New York, this 16th day of July, A. D. 1909.

WILLIAM EDGE.

Witnesses:

RALPH E. ROBERTS,
T. F. BOURNE.