H. H. JOHNSON.

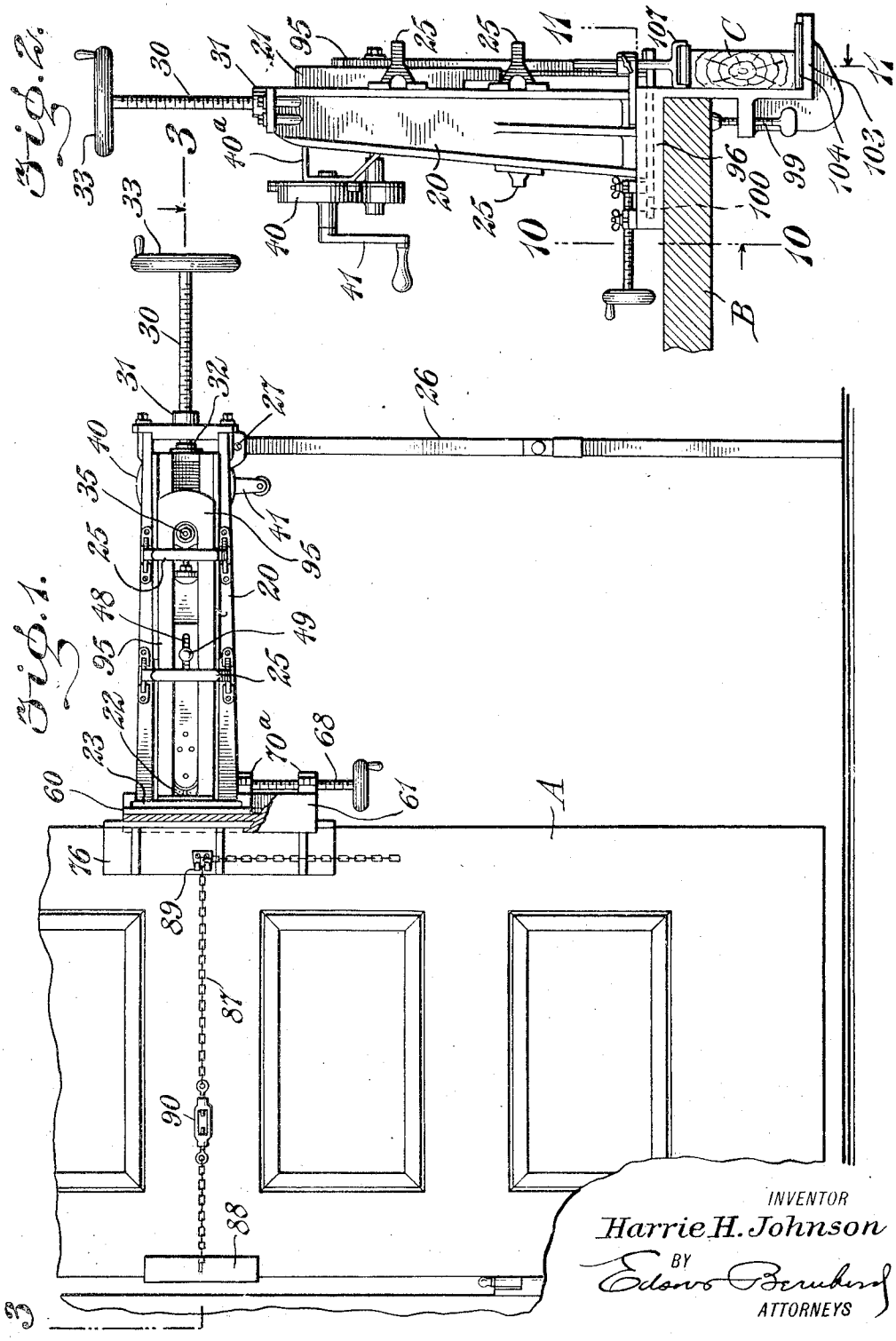
MORTISING MACHINE.

APPLICATION FILED NOV. 30, 1915.

1,356,528.

Patented Oct. 26, 1920.

4 SHEETS—SHEET 1.



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4 SHEETS—SHEET 2.

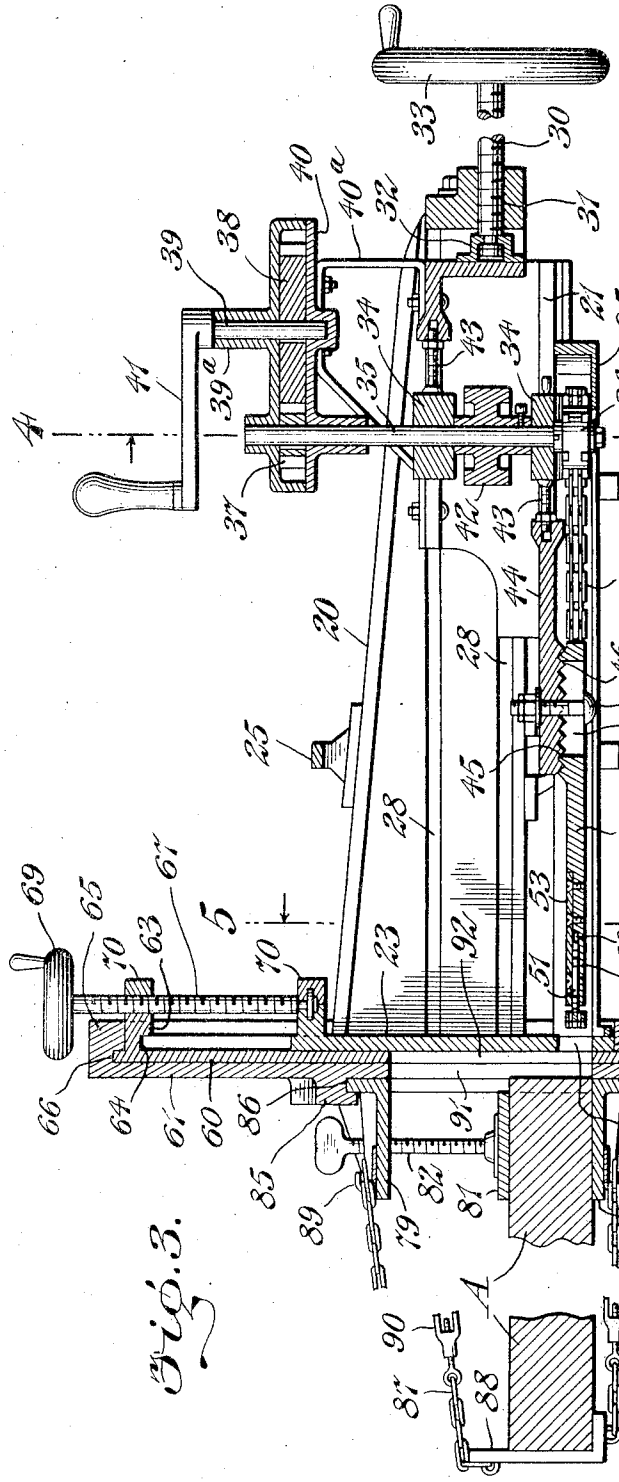


Fig. 3.

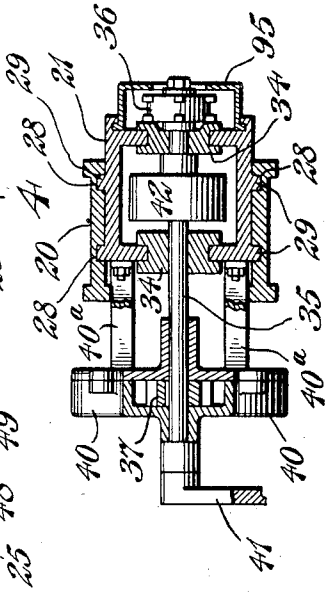


Fig. 4.

INVENTOR

Harrie H. Johnson

BY

Edson Brothers

ATTORNEYS

H. H. JOHNSON.

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4 SHEETS—SHEET 3.

Fig. 6.

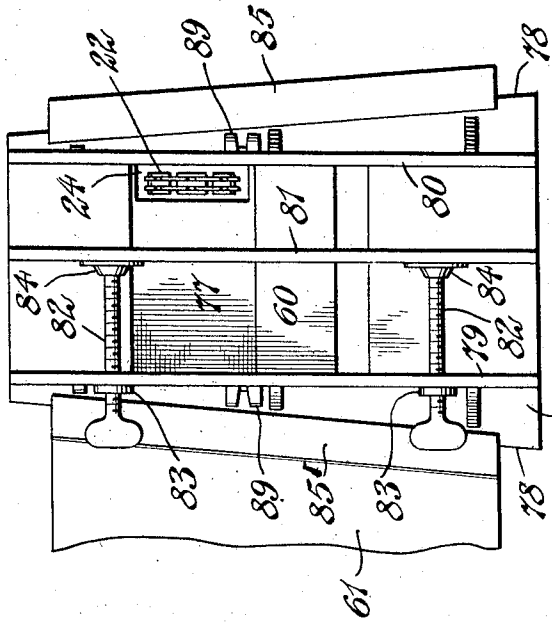


Fig. 7.

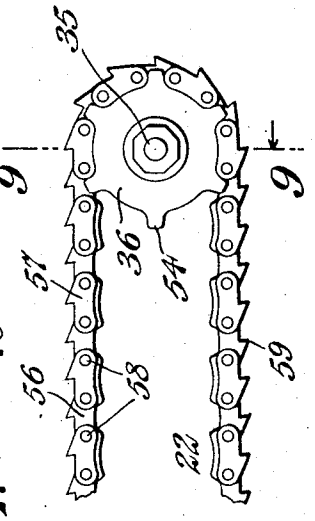
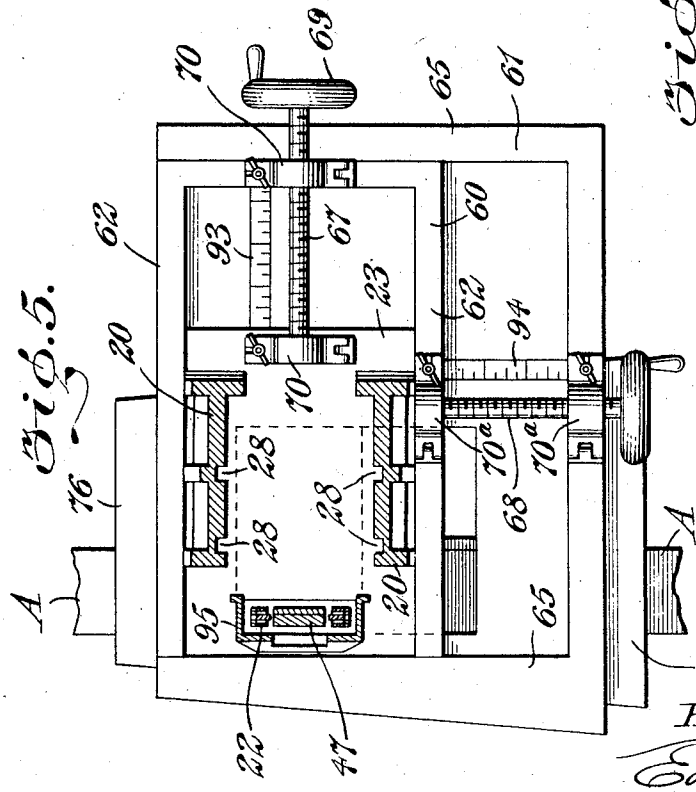
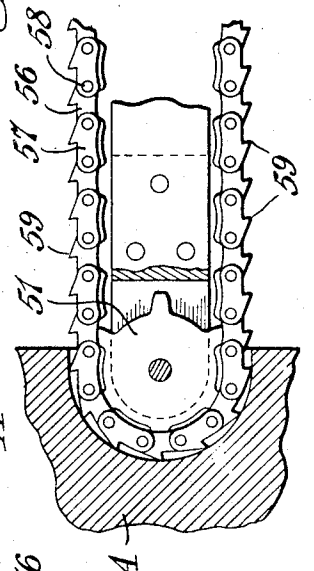


Fig. 5.





INVENTOR

Harrie H. Johnson

BY

Edwards Bemberg

ATTORNEYS

H. H. JOHNSON.

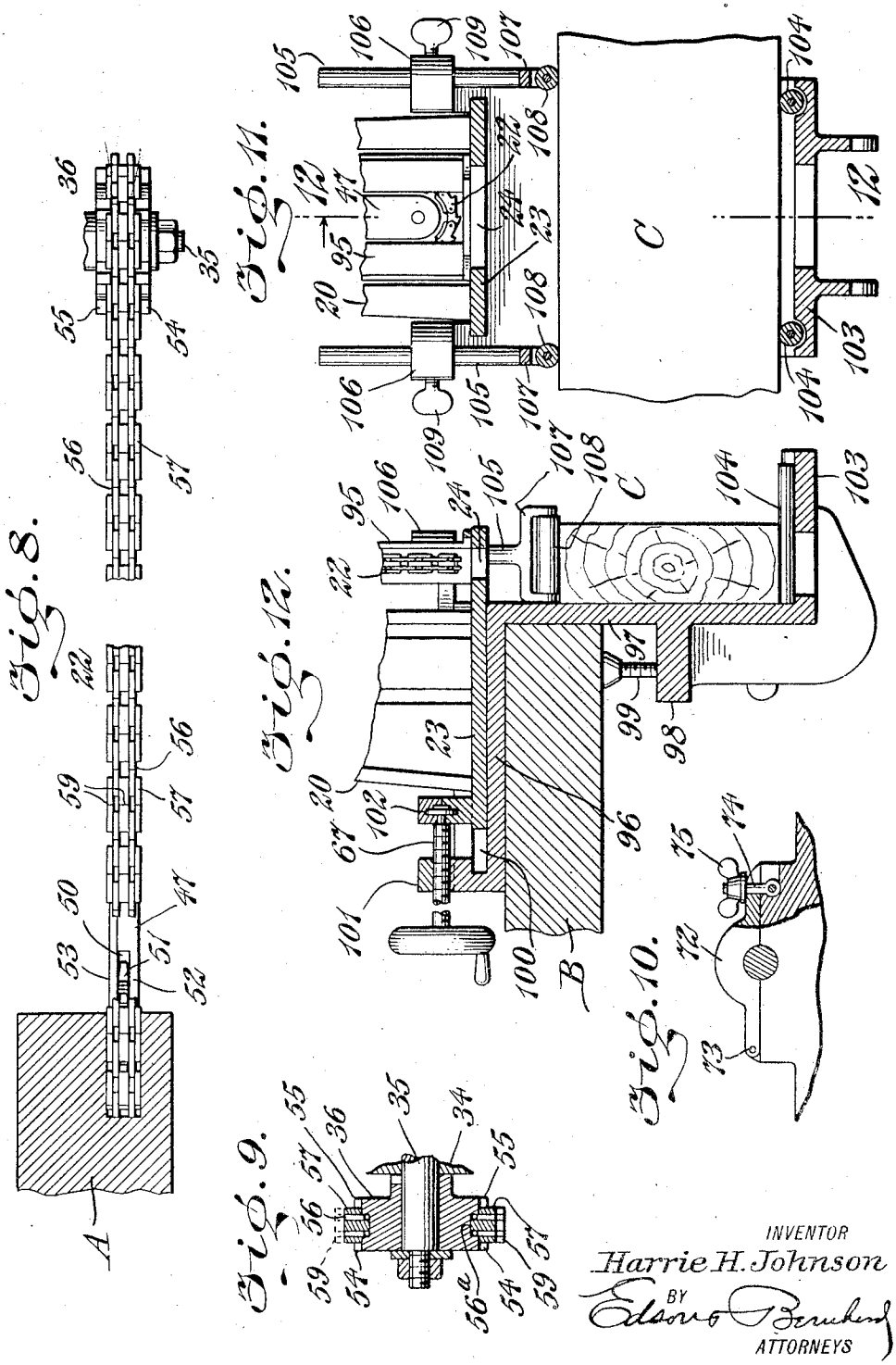
MORTISING MACHINE.

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4 SHEETS—SHEET 4.



INVENTOR

Harrie H. Johnson

BY

Edson & Bernhard

ATTORNEYS

UNITED STATES PATENT OFFICE.

HARRIE H. JOHNSON, OF BROOKLYN, NEW YORK.

MORTISING-MACHINE.

1,356,528. Specification of Letters Patent. Patented Oct. 26, 1920.

Application filed November 30, 1915. Serial No. 64,225.

To all whom it may concern:

Be it known that I, HARRIE H. JOHNSON, a citizen of the United States, residing at the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a certain new and useful Mortising-Machine, of which the following is a specification.

This invention is a mortising machine, the object in view being the production of a compact portable structure capable of use either upon a door, a work bench, or in other places.

The machine embodies a running cutter chain, driven by hand or by power, combined with means for feeding the cutter chain into the mortise as the depth increases, and other means for positioning the chain in an operative relation to the work, said positioning means being effective in shifting the cutter chain to a new position parallel to the line of one or more cuts in the work in order either to increase the length or width of the mortise, or to cut a plurality of separate mortises of a desired length or width, said mortises being cut one alongside the other or one in advance or to the rear of another.

In applying my machine to a vertically positioned door, it is preferred to mount the structure upon a supporting member temporarily applied to an edge of the door and retained in position thereon by suitable clamping means, the machine being held steadily in position by a suitable prop and all the supporting or retaining means for the machine being so organized that the operations of the several parts will not in any way be interfered with by such devices.

When applied to a work bench, the machine is mounted upon a work bed clamped to the bench, said work bed being provided with means whereby the material may be positioned and fed to the cutter chain.

Other features of the invention will appear from the following description taken in connection with the drawings, wherein—

Figure 1 is a side elevation of my mortising machine applied in an operative position to a door for the purpose of cutting a mortise in the edge portion of said door after the latter shall have been hung, a part of the machine being broken away and in section, and the outer end of the machine being supported by a foldable leg or prop.

Fig. 2 is another side elevation illustrating the machine adapted for use upon a work bench, the machine-supporting bracket being shown as adapted to direct the movement of the material with respect to the cutting mechanism.

Fig. 3 is a horizontal section on an enlarged scale of the machine and the means for retaining the same in an operative position upon the edge portion of a door, a part of the door being broken away, and the plane of the section being indicated by the dotted line 3—3 of Fig. 1.

Fig. 4 is a transverse section taken in the plane of the dotted line 4—4 of Fig. 3 illustrating the feed member or slide whereon the cutting chain is mounted, said slide being adapted to carry the driving mechanism.

Fig. 5 is another transverse section taken in the plane of the dotted line 5—5 of Fig. 3, illustrating more particularly the means whereby the frame which carries the cutting and driving mechanisms is adapted for movement in two directions in order to position the cutter chain in operative relation to the work so as to produce mortises which may be of any predetermined width or length.

Fig. 6 is a detail view in elevation of the retaining means whereby the machine is adapted to be held in an operative position upon the edge portion of a door.

Fig. 7 is a detail view on an enlarged scale of the cutter chain and the driving and idler sprockets therefor, the said chain being shown in the act of cutting a mortise in the work.

Fig. 8 is an edge view of the chain shown in Fig. 7.

Fig. 9 is a cross section through the chain and the driving sprocket therefor, the plane of the section being indicated by the dotted line 9—9 of Fig. 7.

Fig. 10 is a detail view in elevation, partly in section, of one of the boxes for supporting an adjusting screw, whereby said screw may be easily and quickly dismounted when required.

Fig. 11 is a vertical sectional elevation looking toward the front of the mortise cutting mechanism and the bench bracket, the plane of the section being indicated by the dotted line 11—11 of Fig. 2.

Fig. 12 is a vertical section on the line 12—12 of Fig. 11.

20 designates a frame for supporting a

feed slide 21, the latter being movable longitudinally with respect to the frame and carrying a cutter chain 22, and means for imparting traveling movement to said cutter chain, said movement-imparting means being in the form of a driving mechanism mounted on the feed slide 21 and adapted for operation manually or by suitable power. The supporting frame 20 may occupy a horizontal position with respect to the work, as when a mortise is to be cut in the edge portion of a door, as in Figs. 1 and 3 of the drawings, or said frame may occupy a vertical position when a mortise is to be cut in the edge of the material adapted to be fed below said cutter chain, as in the construction of Figs. 2, 11 and 12. The frame 20 is provided at one end with a base 23, said base being in the form of a flat plate provided with an opening or slot 24 through which the cutter chain is adapted to operate. The frame consists of suitable side members joined by transverse braces 25, and, preferably, this frame is of skeleton construction in order to reduce the weight of the parts, whereby the entire machine is rendered portable, and it is capable of being mounted in an operative position upon the edge portion of a hung door. When so positioned the frame is adapted to extend outwardly from the door, as in Figs. 1 and 3, and the outer part of the frame is supported by a prop 26, the latter being shown as having a pivotal connection by a bolt 27, and said prop being composed of sections or lengths which are slidable one upon the other, or said sections or lengths may be pivoted and foldable with respect to each other, it being apparent that any suitable form of collapsible prop may be employed in my machine.

The feed slide 21 is in the form of a hollow column mounted for longitudinal movement within the frame 20, for which purpose the side members of the frame are provided with longitudinal grooves 28 adapted to form a guideway for the purpose of receiving the ribs 29 provided exteriorly on the feed slide, whereby said feed slide is retained in operative position within the frame 20 and it is adapted for sliding movement relatively to said frame in order to advance the cutter chain through the slot 24 of the base 23, so that the cutters of said chain will operate upon the material at the edge portion of a door. The feed slide is advanced by the manual operation of a screw 30, the same extending beyond the outer end portion of the frame 20. As shown, said frame is provided with a nut 31 in which the screw is threaded, said screw having a swiveled connection at 32 with the feed slide and being provided at its outer portion with a hand wheel 33 or other suitable operating member. Said feed slide is provided, also, with shaft bearings 34 for the accommodation of a driving shaft 35, said bearings 34 being provided with suitable means, such as oil cups, for lubricating the shaft. The shaft extends transversely with respect to the feed slide 21 and frame 20; at one end said shaft 35 is provided with a sprocket 36 which is in operative engagement with the endless feed chain 22, whereas the other end of the shaft 35 is shown as having a driving gear 37 with which meshes a power gear 38 provided on a power shaft 39, said intermeshing gears 37, 38 being housed within a suitable casing 40 which is provided with a bearing 39^a for the power shaft 39, whereby the gears are housed so as to preclude injury to the workman, said casing 40 being supported by a bracket 40^a, or its equivalent, on the feed slide 21. In the drawings the power shaft 39 is shown as having a crank wheel 41 for the purpose of imparting motion by hand to the shaft 35 for the operation of the cutter chain, but it is not desired to limit the invention to a hand-operated driving mechanism, for the reason that said invention may embody means of any suitable character for operating the cutter chain by the energy of other kinds of power, such as electric energy, or pneumatic and hydraulic power.

The driving shaft 35 is shown as having a balance wheel 42 positioned intermediate the shaft bearings 34, see Fig. 3. Said shaft bearings 34 are slidably mounted in the cutter carrying slide 21, said bearings being adjusted and retained in position by suitable screws 43, the latter contacting with the bearings 34 or having swiveled connection therewith and being mounted in suitable threaded openings provided in the slide 21. The slide 21 is provided with a member 44, one face of which is serrated or toothed, as at 45. With this serrated face of the member 44 engages a similar serrated face 46 of an adjustable part 47, the latter being shown in Fig. 3 as having a slot 48 through which passes a clamping bolt 49, whereby the part 47 may be adjusted relatively to the part 44 so as to lengthen or shorten the member formed by the two parts 44, 47, thus making provision for taking up the slack in the endless cutter chain 22. It will be understood that the member formed by the parts 44, 47 is movable with the feed slide 21 so as to advance the cutter chain into the work as the operation of cutting the mortise or slot progresses, but independently of this feed movement of the slide 21 the part 47 may be adjusted on the part 44 so as to take up slack in the chain.

The free extremity of the part 47 is recessed or cut away at 50 so as to accommodate a thin narrow idler sprocket 51 mounted in a suitable manner to insure the required freedom in the rotation of said

sprocket. The sprocket is retained in position by a cap plate 53 fastened rigidly to the member 47 by suitable screws, the teeth of the idler sprocket projecting beyond the member and the cap plate in order that said teeth may have the required engagement with the links of the endless cutter chain.

It should be stated that the driving shaft 35 works in suitable bearings provided in the boxes 34 so that the friction of the shaft is minimized. Thus, shaft 35 is provided at one end with the cutter driving sprocket 36, the latter being in alinement with the idler sprocket 50, a preferred form of said cutter driving sprocket being shown in Figs. 8 and 9 of the drawings. This sprocket is provided with two series of teeth 54, 55, and with an annular channel or groove 56^a intermediate said two series of teeth.

The cutter 22, shown in detail in Figs. 7, 8 and 9, consists of links 56 and 57 pivotally connected together by crosspins 58, each link having a cutter 59. The links 57 alternate with the links 56, said links 56 being arranged in pairs, whereas the links 57 are arranged in groups of three, whereby the cutter chain is wider at the three groups of links 57 and is narrower at the pairs of links 56. The links 56 in passing around the driving sprocket 36 run in the channel 56^a of said sprocket, whereas the two outside links of each group 57 ride upon the periphery of the sprocket, so that the teeth 54, 55 of said sprocket operate in the spaces between adjacent groups of links 57, said sprocket teeth 54, 55 being adapted for contacting engagement with the sides of pairs of links 56, whereby the friction and wear due to the engagement of the sprocket with the links of the cutter chain is minimized and said cutter chain is guided or directed around the driving sprocket so that there is very little, if any, tendency of the cutter chain to become disengaged from the sprocket, or for the parts to bind, thereby insuring the correct engagement of the cutter chain with the driving sprocket.

The base plate 23 of the frame 20 is slidably mounted on a carrier 60 for movement in one direction, whereas this carrier 60 is slidably mounted for movement in a transverse direction upon a bed 61. The carrier 60 is provided with longitudinal flanges 62 which are provided with grooves 64 constituting a guideway, and in the grooves of said guideway are fitted the longitudinal side edges of the base plate 23 whereby the base plate 23 and the frame 20 are slidable in one direction with respect to the carrier 60. In a similar manner the base 61 is provided with flanges 65 which extend at right angles to the flanges 62 of the carrier 60, and these flanges 65 of said bed are provided with grooves 66 constituting a guideway in which the end edges of the carrier 60 are fitted for sliding movement. It is thus apparent that the foot plate 23 of the frame 20 is slidable in one direction within the guideway of the carrier 60, whereas this carrier is slidable in the guideway of the bed 61, the movement of the carrier 60 on the bed 61 being in a direction at right angles to the movement of the foot plate 23 on the carrier 60, whereby the foot plate 23 and the frame 20 are adapted for sliding adjustment upon the carrier 60 and independently of the movement of said carrier 60, whereas in the movement of the carrier 60 upon the bed 61 the foot plate 23 and the frame 20 are shiftable with said carrier 60.

The adjustment of the foot plate 23 and frame 20 relative to the carrier 60 is performed by a screw 67, whereas the movement of the carrier 60 relative to the bed 61 is effected by a screw 68. The screw 67 is provided with an operating wheel 69 and it is mounted in boxes 70, a preferred form of which is illustrated in Fig. 10. One of the boxes 70 is attached to the carrier 60 and the other to the foot plate 23, and when the screw is rotated in one direction the foot plate 23 is moved in the guideway of said carrier 60. The other screw 68 is employed for imparting sliding movement to the carrier. Said screw 68 works in boxes 70^a, one of which is attached to the carrier 60 and the other to the bed 61, so that the rotation of the screw 68 in one direction or the other will impart movement to the carrier 60 within the guideway provided on the bed 61. The box 70 or 70^a is provided with a movable cover 72 which is hung or pivoted at 73, and the free end of which cover is retained in position by a bolt 74 having a wing thumb nut 75. The box shown in Fig. 10 is preferred, for the reason that the cover can be unfastened and thrown out of position, thus permitting the screw 67 or 68 to be readily dismounted when it is desired to employ the machine in a horizontal position or in a vertical position.

In the drawings, more particularly, in Fig. 5, the adjusting screw 68 for controlling the slidable carrier 60 is shown as depending below said carrier and as being positioned at the under side of the bed 61, but as the screw 68 may be more or less inaccessible when the machine is used in a horizontal position, as in Fig. 1, I desire to have it understood that the particular location of said screw 68 may be changed by arranging the parts for the screw 68 to extend upwardly from the carrier 60, thus placing the screw in a position more accessible to the operator when the machine is used in the horizontal position.

I will now proceed to describe the means whereby the machine is adapted to be positioned and retained upon the edge of a door A. For this purpose I employ a clamp

76 provided with a slot or opening 77. The clamp is in the form of a flat plate, the side edges 78 of which converge upwardly, thereby giving to the flat plate a tapering wedge shape. Said flat wedge-shaped plate is provided with two integral rigid plates 79, 80, said plates being parallel to each other and positioned at the respective sides of the opening 77, the parallel plates 79, 80 being within the marginal inclined edges 78 of the plate 76. Operating between the plates 79, 80, is a clamping plate 81 which extends across the slot 77, said plate 81 being shiftable relative to the plate 80 by the operation of screws 82. These screws are supported in fixed nuts 83 provided on the plate 79, said screws having a swiveled connection at 84 with the clamping plate 81, whereby the plate 81 is adapted to be moved toward the plate 80 so that the two plates 80, 81 will cooperate in maintaining the plate 76 in a fixed position upon a door. Before the machine is mounted the plate 76 should be fitted to an edge portion of a door, substantially as shown in Figs. 1 and 3, so that the plates 80, 81 will engage with the respective side surfaces of the door, after which the screws 82 are operated to move the plates 80, 81 into engagement with said door for the purpose of binding the clamp firmly in operative position.

In order to mount the machine upon the door, the bed 61 is provided with flanges 85, said flanges being inclined with respect to each other and provided in their opposing edges with grooves 86. The inclined-grooved flanges 85 of the bed 61 are adapted to be engaged with the inclined edge portions 78 of the clamping plate 76, and as the flanges 85 of the bed 61 are inclined correspondingly to the edges 78 of the clamping plate 76, it is apparent that the bed 61 will have wedging engagement with the clamping plate 76, thus enabling the machine to be properly and rigidly connected in a detachable manner to the clamping device mounted on the edge portion of a door.

In addition to the screws 82 for clamping the plate 76 upon the door, I find it desirable to employ the chains 87 and the plate 88. Said plate 88 is fitted against the rear edge of the door, as in Figs. 1 and 3, and to this plate are connected the chains 87, the latter having a detachable engagement with hooks 89 provided on the fixed plates 79, 80 of the clamping plate 76. The chains 87 should be attached in a suitable way to the rear edge plate 88, and they are adapted for detachable engagement with the hooks 89 of the clamping plate 76, each of the chains 87 being shown in Fig. 1 as having a turn buckle 90 whereby the chains may be tightened after the plates 76 and 88 shall have been applied to the door for the purpose of securely retaining the clamping plate 76 against movement relative to the door, particularly when the machine is in operation.

The bed 61 is provided with a slot 91 the area of which provides for all ranges of adjustment of the cutting mechanism both horizontally and vertically considered, and the plate of the carrier 60 is provided, also, with a slot 92, the latter being in register with the slot 24 of the base 23 forming a part of the frame 20, whereby the slots 24, 92 and 91 of the frame plate 23, the carrier 60, and the base 61, respectively, are in register for the cutter to project therethrough and to work against the face of the material or into said material, all as indicated more clearly in Fig. 3.

By reference to Fig. 5 it will be seen that the movement of the foot plate 23, the frame 20 and the cutter 22 is indicated on a scale 93 attached to the slidable carrier 60, so that one edge portion of the foot plate 23 will cooperate with the scale and enable the operator to determine with accuracy the extent of movement of the cutter. Furthermore, a scale 94 is provided on the bed 61 for cooperation with an edge of the slidable carrier 60, so that the operator may determine the movement of said carrier with respect to the bed.

The endless chain cutter 22 is supported primarily in an operative position relative to the work by the member composing the parts 47, 44 which are movable with the slide 21, but a certain length of this chain cutter is exposed to convenient access so that in the operation of the machine there may be conditions under which the cutters 59 of the endless chain will injure or mutilate the workman. To minimize this condition I have provided a guard in the form of a casing or housing 95 which is attached in a suitable way so as to occupy a fixed position, in order that the cutter chain may be fed out beyond the guard, whereby said guard is adapted to incase the cutter chain for a substantial part of its length. It is apparent that the guard or casing 95 may be detachably fastened to the feed slide or to the outwardly extending member thereof, thus enabling the operator to obtain access when desired to the cutting mechanism.

The operation of the machine as thus far described is as follows. Assuming that it is desired to cut a mortise in the edge of door A, the door fixture comprising the plate 76 and its attached parts is first positioned upon the door, so that the edge portion of the fixture is received between the plates 81 and 80, whereupon the screws 82 are operated for adjusting the plate 81 toward the door, whereby the plate 76 is clamped upon the door by the coöperating plates 80, 81. The angle plate 88 is now fitted against the rear edge of the door and the chains 87 are

connected with the hooks 89 of the door plate 76, after which the turn buckles 90 are tightened in order to immovably clamp the plate upon the door, the edge of which is exposed through the slot 77 of said plate 76. The bed 61 carrying the machine proper is now positioned for the grooved flanges 85 thereof to engage with the tapering edges 78 of the door fixture, whereby the bed of the machine has wedging engagement with the door fixture, whereupon the prop 26 is opened for supporting the outer or free end of frame 20. The operator determines the place in the edge of the door where the mortise is to be cut, and by manipulating the screws 67, 68 the frame 20 and the chain cutter 22 are positioned opposite to the place where the initial cut is to be made in the edge of the door. The adjusting of the screw 67 moves the foot-piece 23, the frame and the cutter in one direction with respect to the slidable carrier 60, but the other screw 68 may be operated for moving the slidable carrier 60 in a direction at right angles to that in which the cutter is shifted by the screw 67, all as will be apparent by reference to Fig. 5. The position of the chain cutter relative to the door having been determined, the operator rotates the feed screw 30 so as to advance the feed slide and the chain cutter in the direction of the length of the frame 20, thus moving an end portion of the chain cutter through the slots 24, 92, 91, so that the cutters will be brought into contact with the material of the door, whereupon the power mechanism is operated to impart movement to the chain cutter. The depth of cut is controlled by the manipulation of the feed screw 30, but after the initial cut in the door shall have been made, then the screw 68 is operated for the purpose of moving the carrier 60, the frame 20 and the cutter in the direction of the length of the cut, so that the length of the cut may be increased by moving the cutter to different operative positions. Should it be desired to increase the width of the cut, the screw 67 is operated for shifting the foot-piece 23, frame 20 and cutter 22 to a position alongside the initial cut and by repeating the operations, the width and length of the cut can be varied as desired. After cutting a mortise, of a given length and width in the door, the entire cutting mechanism may be shifted in either one or two directions by the manipulation of the screws 67, 68 so as to produce a series of parallel cuts in the door, said cuts being either in line with each other or side by side, as may be desired, or the entire mechanism and the door fixture may be shifted according to the requirements of the work.

The machine has heretofore been described as adapted for use upon the edge portion of a door, but my invention embodies means whereby the machine may be mounted upon a work bench or any other appropriate place, so that said machine is adapted for operation in conjunction with a length of lumber or other material, the latter being adapted for feed movement relative to the chain cutter. One means for carrying into effect this part of the invention is illustrated in Figs. 2, 11 and 12 of the drawings, wherein the foot-piece 23 of the frame 20 is connected with a bench bracket 96. This bracket is shown as consisting of an angle casting having a depending plate 97 provided with a plurality of lugs 98 for supporting clamping screws 99 which engage frictionally with the work bench or other support B. The bench bracket 96 is provided on its upper side with a guideway 100 in which is slidably fitted the slotted foot-piece 23 of the frame 20, the latter occupying a vertical position so as to extend upwardly from the bench B. The bench bracket is provided, also, with a bearing 101 constructed with a movable part, as in Fig. 10, said bearing being in the form of a nut for threaded engagement with the adjusting screw 67 having a swiveled connection at 102 with the foot plate 23 of said frame 20, whereby the frame and the chain cutter may be adjusted upon the bench bracket 96 by the rotation of the screw 67. The depending part 97 of the bench bracket carries a horizontal work table 103, the same being provided, preferably with anti-friction rolls 104 upon which is adapted to rest and slide the material C in the edge of which the mortise is to be cut. The material is confined in position upon the work table by guides 105, the same being shown in the form of stems which are slidable vertically in lugs 106 integral with the bracket 96. Each stem 105 is forked at the lower end at 107 to receive a guide roller 108 positioned for contact with the upper edge of the material C, said stem 105 being held in any desired position in the lug 106 by a binding screw 109.

The machine proper is adapted to be dismounted from the slidable carrier 61 by opening the boxes 70 and sliding the foot-piece 23 out of the guideway 62 on the slidable carrier. The bench bracket 96 having been clamped on a table B by the screws 99, the foot-piece 23 of the frame 20 is fitted into the guide 100 of said bench bracket, the screw 67 being operatively connected with the bearing 101. When it is desired to operate the vertical machine, the material C is positioned upon the table 103 in contact with the rolls 104, whereupon the guides 105 are adjusted in the lugs 106 for the rolls 108 to contact with said material C, said guides 105 being fastened in the adjusted position by the screws 109. The feed screw 30 may now be operated to lower the feed slide and

the chain cutter into operative relation to the material C, the chain cutter passing through the slot 24 in the foot plate of the frame 20. Power is applied to the shaft 35 for driving the chain cutter which operates to cut into the edge portion of the material C. The material may be advanced as desired in order to lengthen the cut. Furthermore, the cutter may be elevated and the frame 20 may be shifted by the screw 67 so as to shift the cutter 22 into a different operative position with respect to the material C.

The mortising machine of my invention is quite simple in construction when it is considered that said machine is capable of universal adjustment and application to meet the requirements of cutting mortises either in hanging doors or in material adapted to be fed to the cutter mechanism. It is apparent that the door fixture may be easily, quickly and firmly applied to a door for supporting the machine in an operative position. The machine is mounted and dismounted at will, and when mounted the cutting mechanism may be operated and fed into the work, and, furthermore, said cutting mechanism can be easily and quickly shifted so as to determine the width or length of a mortise, or to cut a plurality of mortises in different positions on the door. When it is desired to use the machine in a stationary position upon a work bench the frame and the cutter are dismounted from the door fixture and from the carrier and the bed plate, after which the frame with its foot-piece is easily fitted to the bench bracket, provision being made for the required adjustment of the frame and the cutter as well as for driving the cutter and for feeding the same into the material in order to regulate the depth of cut. Furthermore, the machine is comparatively light in weight and it is so constructed that when dismounted the entire machine can be easily carried from one place to another, thus filling a want by carpenters and others in cutting mortises either in hanging doors or on a work bench at the place where construction is in progress.

Although I have shown and described different embodiments of the invention when used in the work on hanging doors and upon work benches, it is apparent that a skilled constructor may modify the minor details and form and proportion of the parts without departing from the spirit of the invention or sacrificing the advantages thereof.

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

1. In a portable mortising machine, the combination with a door fixture, of a base member detachably connected with said door fixture, a slidable bed connected to the base member, means for shifting the slidable bed relatively to said base member, a cutter frame slidably connected to the slidable bed and movable therewith, means for shifting the cutter frame relatively to the slidable bed, and in a direction transversely to the movement of said base member upon the door fixture, cutting mechanism carried by the cutter frame, and means for shifting said cutting mechanism relatively to the cutter frame and in a direction at right angles to the line of shift of the slidable bed and the cutter frame.

2. In a portable mortising machine, the combination of a door fixture, a base member, means for securing a detachable wedging engagement between said door fixture and the base member, cutting mechanism carried by said base member and detachable therewith from said door fixture, means for feeding and operating said cutting mechanism, and means associated with said base member and the cutting mechanism for shifting the operative positions of said cutting mechanism relatively to the door fixture and the base member.

3. In a portable mortising machine, the combination of a wedge-shaped door fixture provided with a cutter-receiving slot, a wedge-shaped base member also provided with a cutter receiving slot, said base member having detachable engagement with said door fixture by wedging contact, an endless cutting mechanism mounted on said base member and detachable therewith from said door fixture, and means for shifting the cutting mechanism in two directions within the limits of said base member.

4. In a portable mortising machine, the combination with a door fixture, of a skeleton base plate detachable at will from said door fixture, said base plate being provided interiorly thereof with a guideway, a skeleton bed plate fitted slidably to the guideway of the base member, said bed plate being provided interiorly thereof with a guideway extending transversely to the direction of the guideway on the base plate, a cutter frame the base of which is fitted slidably to the guideway of said slidable bed, said cutter frame extending outwardly from the base plate and the bed plate, separate means for shifting the bed plate and the cutter frame in different directions relatively to the base plate, cutting mechanism carried by the cutter frame, and means for shifting said cutting mechanism relatively to said cutter frame.

In testimony whereof I have signed my name hereunto.

HARRIE H. JOHNSON.