

No. 631,202.

Patented Aug. 15, 1899.

J. E. DEARBORN.
LOCK MORTISING MACHINE.

(Application filed Aug. 30, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

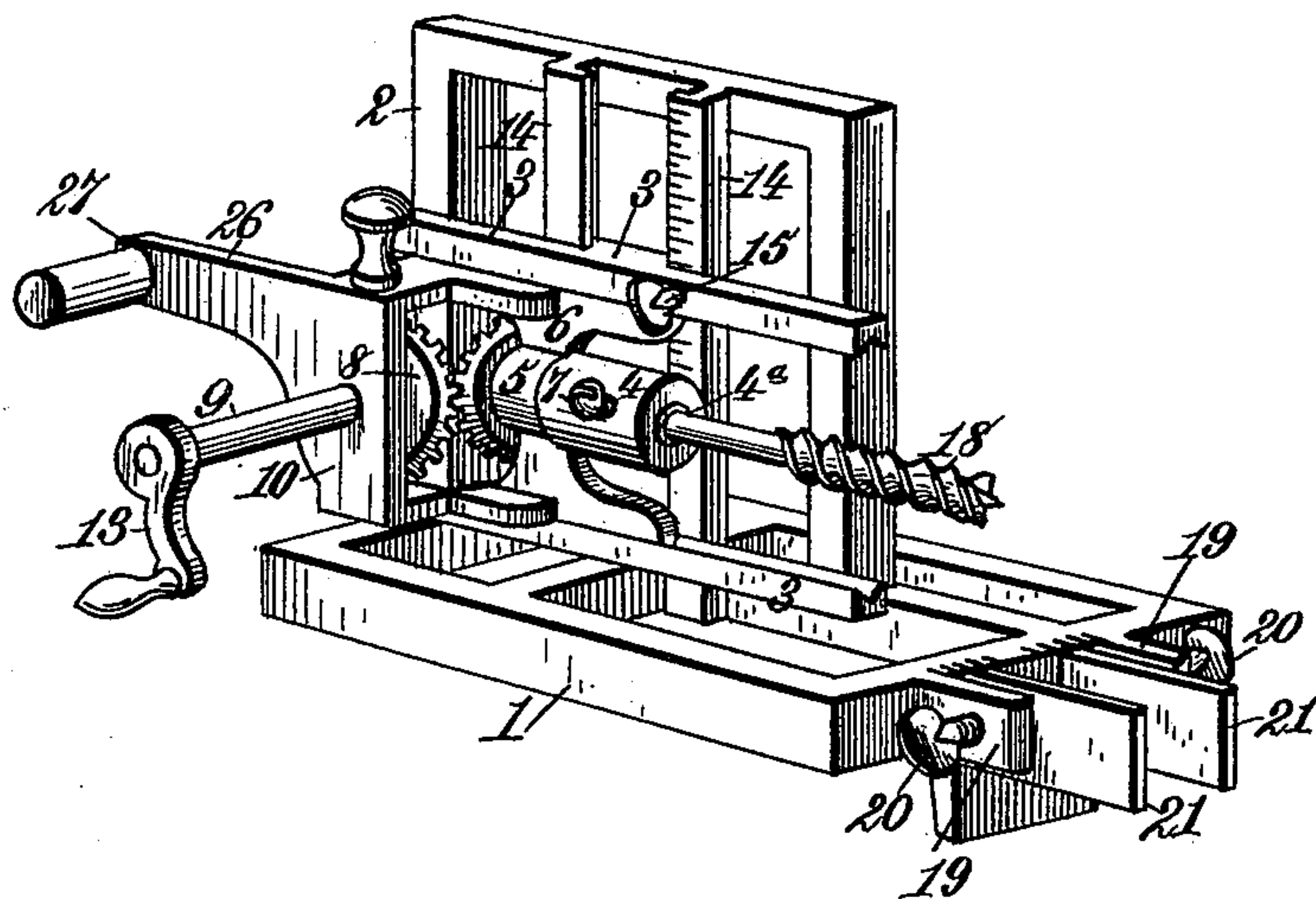
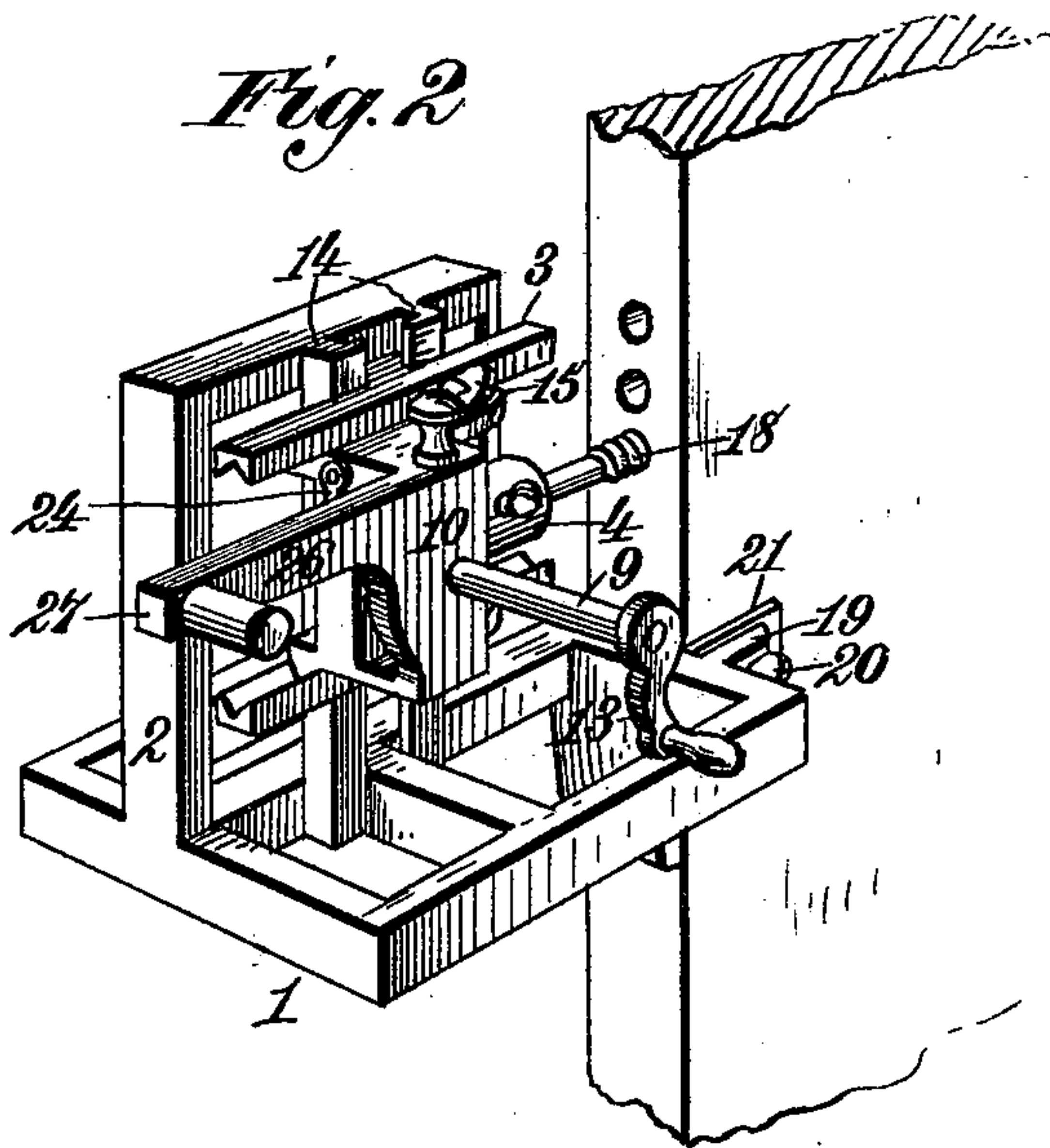


Fig. 2



Witnesses,
Robert Everett
J. B. Keeler

Inventor,
John E. Dearborn
By *James L. Norris*
Atty.

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Fig. 3.

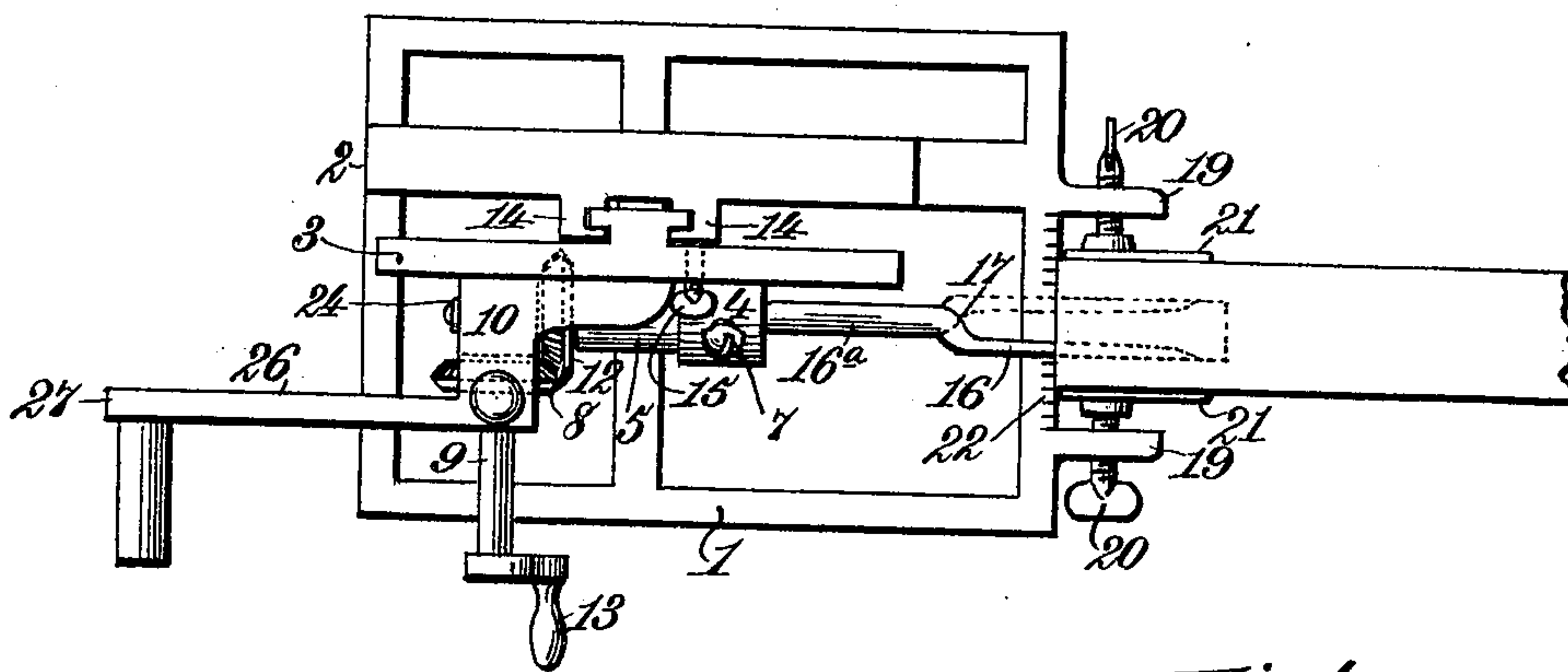


Fig. 4.

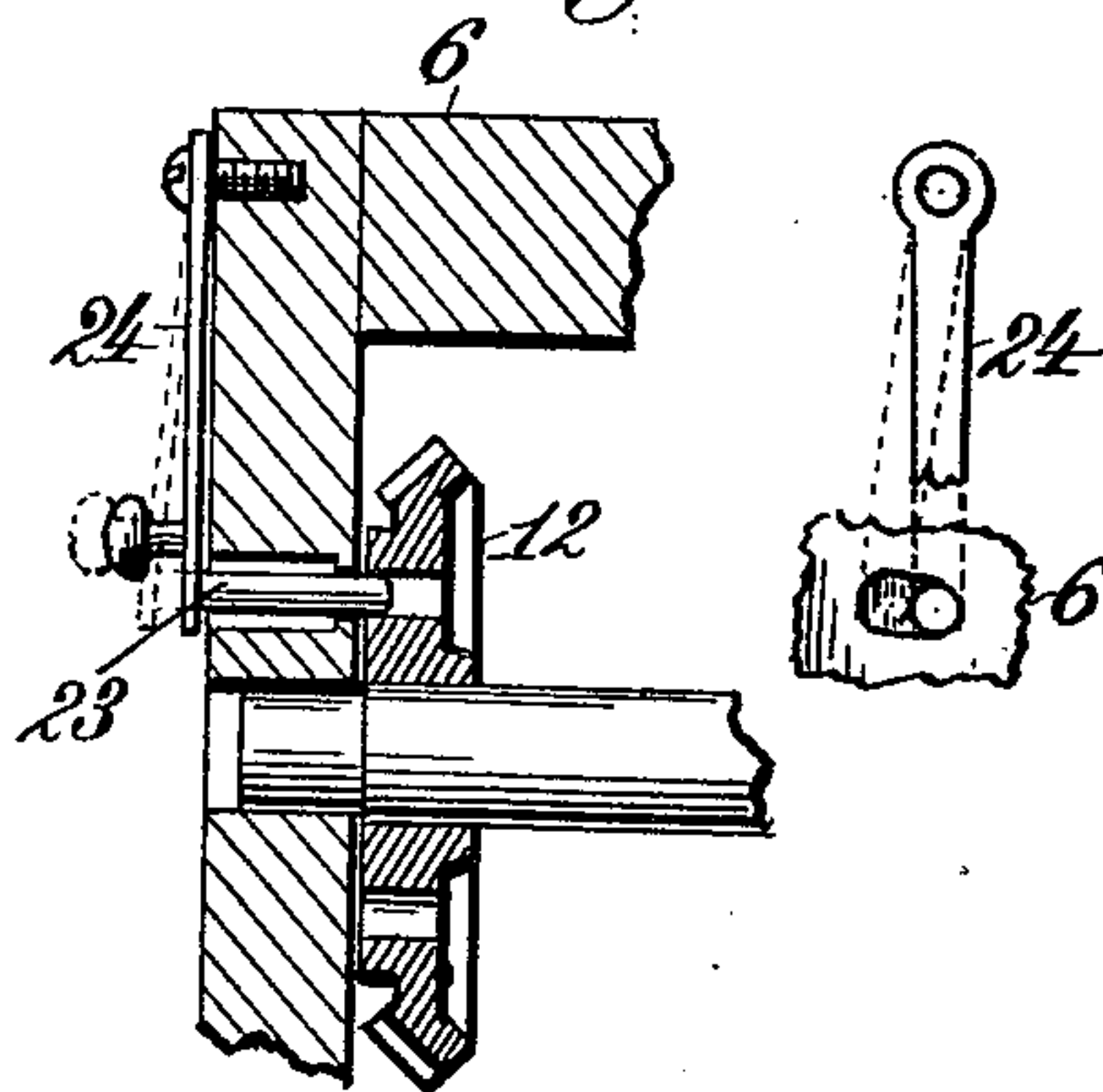
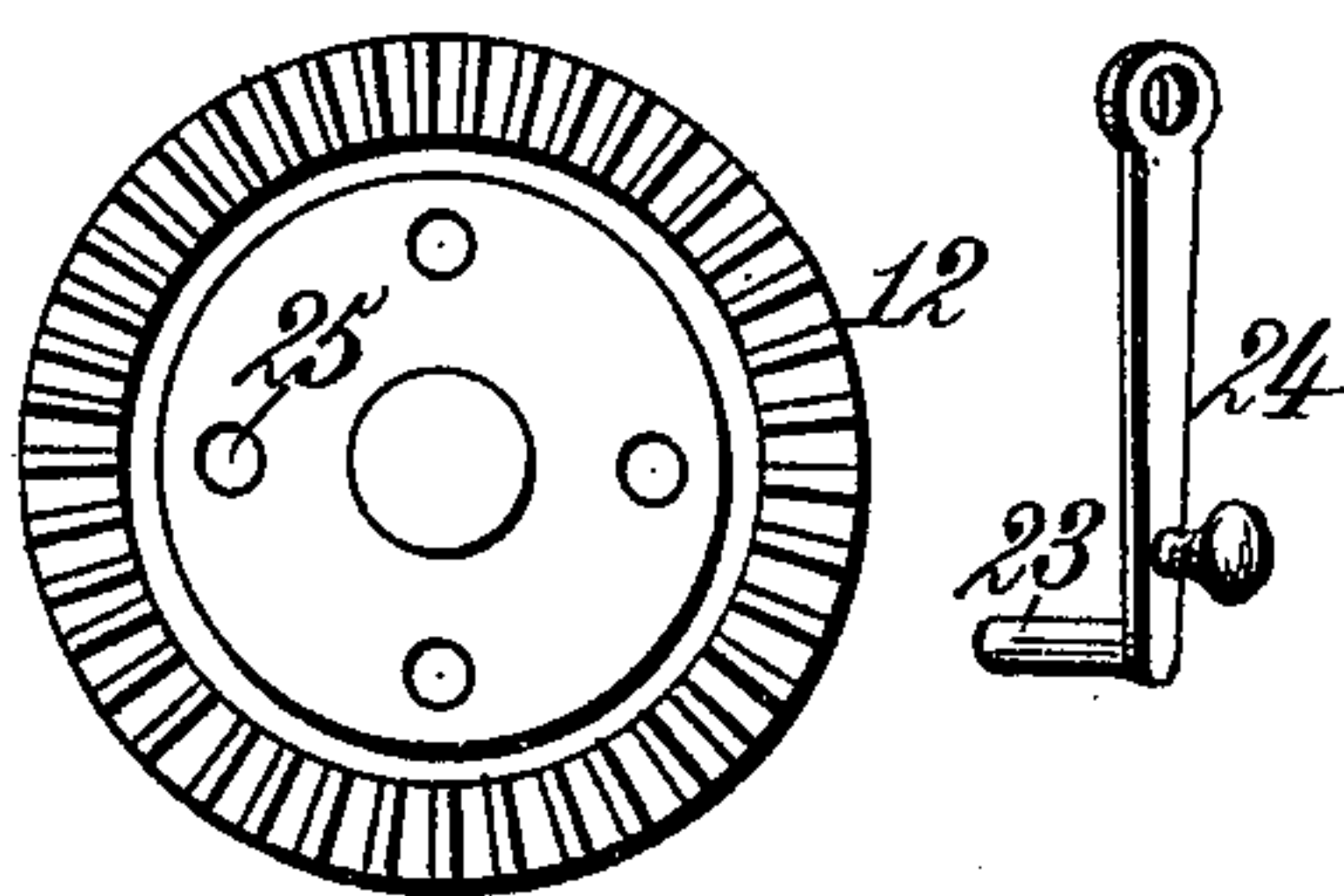


Fig. 5.



Witnesses:
Robert G. Smith
J. B. Ketchum

Inventor:
John E. Dearborn
By
James L. Norris
Atty.

UNITED STATES PATENT OFFICE.

JOHN E. DEARBORN, OF NASHUA, NEW HAMPSHIRE.

LOCK-MORTISING MACHINE.

SPECIFICATION forming part of Letters Patent No. 631,202, dated August 15, 1899.

Application filed August 30, 1898. Serial No. 689,863. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. DEARBORN, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented new and useful Improvements in Lock-Mortising Machines, of which the following is a specification.

My invention relates to that type of mechanism shown and described in the United States Letters Patent granted to Hiland A. Holt upon the 29th day of July, 1879, No. 218,028, for mortising doors for locks.

It is the purpose of my invention to provide certain improvements upon said mechanism by means of which its construction shall be simplified and cheapened and its utility materially increased. It is my aim, more particularly, to dispense with certain elements constituting essential parts of the lock-mortising machine referred to, to modify and improve the form and proportions of other parts thereof, and to reconstruct other portions and combine the same in a novel and simple manner, whereby the range of adaptation shall be enlarged and the utility of the machine for boring and mortising with interchangeable augers or bits of different sizes and with corresponding mortising-chisels, capable of a quick and simple adjustment, shall be increased to a marked degree.

It is my purpose also to so improve and simplify the machine that when clamped upon a door the mortising bit and chisel shall be both capable of operation in such manner as to completely form the mortise to receive the lock without requiring any lateral adjustment of the frame by which the bit and chisel are carried, whereby the operation is materially simplified, expedited, and rendered more accurate, while the mechanism itself is largely reduced in cost of construction and its size and weight are considerably reduced.

The invention consists to these ends in the several novel and improved features of construction and in the mechanical parts and combinations of parts hereinafter fully described and then particularly pointed out and defined in the claim which concludes this specification.

For the purpose of the following descrip-

tion reference will be had to the drawings accompanying the same, in which—

Figure 1 is a perspective view illustrating the machine with my improvements incorporated therein. Fig. 2 is a perspective view showing the boring mechanism in position for operation at right angles to the position illustrated in Fig. 1, the bit that forms the knob-hole and the angular arm for driving the carriage being omitted from this figure. Fig. 3 is a plan view showing the mortising-chisel in position for operation and illustrating the simplified construction by which I am enabled to avoid lateral adjustment of the frame in order to bring the chisel into operative position, the bit for boring the opening for the key being omitted from this figure. Fig. 4 is a detail view. Fig. 5 is a detail view showing the stop-pin and bevel-gear with depressions for the engagement of said pin to arrest the mandrel when the chisel is in position for operation.

In the said drawings the reference-numeral 1 indicates the machine frame or base, upon which the operative parts of the mechanism are supported. This frame consists in practice of the base 1, upon which is a superstructure 2 integral with the base 1 or rigidly connected thereto and of such dimensions as to afford a proper support for the active elements of the machine. In the lock-mortising apparatus upon which my present invention is based the part 2 of the frame was made to be laterally adjustable upon the base 1, thereby requiring a considerable degree of labor, skill, and time in properly fitting and combining the parts, and providing means for clamping the adjustable portion at any required point by which the expense of manufacture was correspondingly increased without producing any advantage to compensate therefor. Moreover, this necessity for a lateral adjustment in order to completely form each mortise not only required time, but called for the exercise of close attention and practically exact accuracy upon the part of the workman who used the machine, so that a trifling degree of carelessness might easily result in completely spoiling a whole door. The proper mechanical union of the two parts of the frame required also that both be finished in a metal-planing ma-

chine and fitted together with great care, since any play due to a loose or inaccurate joint would render the operation of the mortising-tools imperfect. It is not improbable
 5 also that such a defect might be produced by the ordinary wear of the parts after a more or less extended period of use. By forming the two parts of the frame in a single rigid structure I am able to cast it of any suitable metal
 10 at a small expense, and with ordinary care in the execution of this work the castings will be in condition for use as they come from the molds, save only in so far as they may require preparation for other attachments,
 15 hereinafter to be explained. It will easily be seen that by this improvement the first cost will be greatly reduced and that other advantages will result, as will more fully appear in other parts of this specification.

20 Upon the superstructure 2 are formed or mounted parallel slotted guides 3, which support and direct the mortising-tools in their operation. These tools consist, as usual, of an auger or bit and a chisel, which operate in
 25 succession and in the order in which they are named. Each tool is carried by a mandrel 4, which has bearings 5, the latter forming part of a carriage-frame 6, which is arranged to slide freely in the guides 3. The mandrel 4
 30 is provided with a socketed head 4^a to receive the shank of the tool, which is securely fastened therein by a set-screw 7. Rotary motion is given to the mandrel by means of a bevel-gear 8, mounted on a counter-shaft 9,
 35 which has bearing in a suitable bracket 10 on the carriage-frame 6. The gear 8 has mesh with a bevel-gear 12 of suitable diameter keyed on the mandrel 4. The counter-shaft 9 may be driven by a suitable crank-arm 13.
 40 The carriage-frame 6 and guides 3 are arranged to have a suitable vertical adjustment in any preferred manner—as, for example, in guideways 14 on the part 2 of the frame. This adjustment enables the bit to bore holes
 45 for the mortise at any suitable interval of separation. A clamping-screw 15 locks the carriage-frame at any point of adjustment.

The mortising-chisel 16 has a shank 16^a, which can be inserted and clamped in the
 50 socketed head of the mandrel. Its blade is preferably of such a width as to trim the entire side of the mortise by a single cut. The shank is provided with a double bend 17, so that by a half-revolution of the mandrel the
 55 blade of the chisel can be turned into position to trim the opposite side of the mortise, as shown in dotted lines in Fig. 3. Ordinarily in the work of mortising doors to receive their locks two different sizes of chisels will
 60 be sufficient to accommodate the two different sizes of locks employed in house-doors. The double bend 17 of each size of chisel will evidently be so proportioned as to bring the cutting edge to one side of the axis of the
 65 shank a distance equal to one-half the width of the mortise.

It will be understood that in changing the

mortising-tools from one size to another the center or axis of the tool will be in a different line relatively to the middle line of the door
 70 in which the mortise is to be formed; and I will now describe the means by which the adjustment of the machine is made in order to restore the parts to their proper operative position.
 75

Upon the lower frame 1, upon each side of the end of the superstructure 2 which is adjacent to the cutting-point of the bit 18, is formed a projecting lug or bracket 19 of suitable strength, through which is tapped a
 80 clamping-screw 20. Upon the end of each of these clamping-screws is swiveled a clamping-plate 21, the face of which is adapted to bear against one face of the door which is to be mortised. The end of each clamping-plate
 85 21 is supported against the face of the end of the frame, so as to maintain the proper position of the clamping-plate and at the same time permit it to move easily by the adjustment of the screw. The lugs 19 are located at
 90 such a distance apart as to permit the clamping-plates to be separated widely enough to engage with doors of all ordinary thicknesses.

Upon the upper edge of the end bar of the frame 1 is a graduated scale 22, having an indication of any suitable kind which marks
 95 a central point coinciding with the vertical plane passing through the axis of the mandrel 4. By adjusting either one of the clamping-screws 20 by the assistance of the scale to a
 100 suitable distance from the point of central indication referred to the machine will be at once capable of operating upon a door of any width or thickness by simply forcing the other clamping-plate 21 against its face with the necessary degree of force. The cutting-point of
 105 the bit will then be accurately centered as to the edge of the door, so that the mortise will be formed with walls of equal thickness on both sides. It should be noted that this
 110 clamping adjustment permits the machine to be adjusted with great ease, so that the mortise may be cut upon one side or the other of the central longitudinal line of the door, as
 115 there are cases in which this construction may be desirable. The machine is also made capable by these means of cutting a mortise in a door or other structure in which a lock may
 120 be set in a recess exposing one face of the lock, which will be flush with the corresponding face of the door.

It will be understood that after the operation of the bit is completed it will be removed from the head of the mandrel and the mortising-chisel 16 will be inserted in its
 125 place. In order that this chisel may be held in position to make its cut in accurate alignment with the face of the door, I provide a small spring-pin 23, mounted upon the carriage-frame 6 at such a point that it may project
 130 through an opening in said frame and enter shallow depressions in the face of the bevel-gear 12. This pin may conveniently be mounted on a simple leaf-spring 24, hav-

ing its end attached to the carriage-frame. While the bit is in operation, the spring-pin 23 will be withdrawn from the opening in the carriage-frame to permit free revolution of the bevel-gear; but when the chisel is inserted in place of the bit a simple movement of the finger will throw the pin back to its place, causing its end to engage the recesses in the bevel-gear 12. These recesses are formed at such distances as to arrest the revolution of the gear at each half-revolution of the chisel, whereby it is brought into position to trim both faces of the mortise in accurate parallelism. The arrangement of these parts is shown in detail in Fig. 4, in which the pin 23 is shown lying in one of the recesses 25 in the bevel-gear 12, which is thus held from rotation. The shank of the chisel being square like that of the bit, it will be arrested by the action of the pin 23 when the blade is in a plane parallel with that of the carriage-frame 6 or at a right angle to said plane. To avoid the necessity of moving the chisel and replacing it should it assume the position last mentioned, the recesses 25 in the face of the bevel-gear 12 may be formed at four equal intervals, so that by simply withdrawing the spring-pin 23 and turning the gear 12 one-fourth of a revolution the blade of the chisel will be brought into position for operation. This construction is advantageous also in enabling the chisel to be so turned that it will trim all four sides of the mortise. While this is not considered necessary in forming a lock-mortise the ends of which are entirely concealed by the face-plate of the lock, there are other kinds of work in which it is essential to trim all four sides accurately, and by my improved construction the machine is rendered capable of this work and its utility is thus extended. To drive the mortising-tools into the wood,

I provide a carriage-frame with an arm 26 of angular form, and at the angle a base 27 may be provided to receive the blow of a mallet or hammer to assist in operating the chisel. As the mandrel 4 has a firm and solid bed in the end bar of the carriage-frame, it will easily bear the endwise thrust caused by the resistance of the wood to the edge of the chisel.

It is unnecessary to describe the remaining parts of the lock-mortising mechanism, as these are well known and form no part of my present invention. I propose also in the machines as now improved by me to dispense with some of these parts.

What I claim is—

A machine for mortising doors for locks, consisting of a base provided at one end with independent clamping-screws, a frame integral with and standing upon the base at a right angle therewith, rigidly-connected guide-bars adjustable vertically upon said frame, a bit-carriage movable in said guide-bars and having a mandrel to carry the mortising-tools and provided with a rearward extension for the hand of the operator, a driving-shaft mounted on a bracket extending laterally from the bit-carriage and provided with a bevel-gear meshing with a similar gear on the mandrel, and a spring-operated stop-pin mounted on the bit-carriage and extending through it to engage recesses in the gear on the mandrel, to arrest the latter at such points as to enable the trimming-chisel to operate, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN E. DEARBORN.

Witnesses:

CHAS. L. EATON,
J. B. TILLOTSON.