

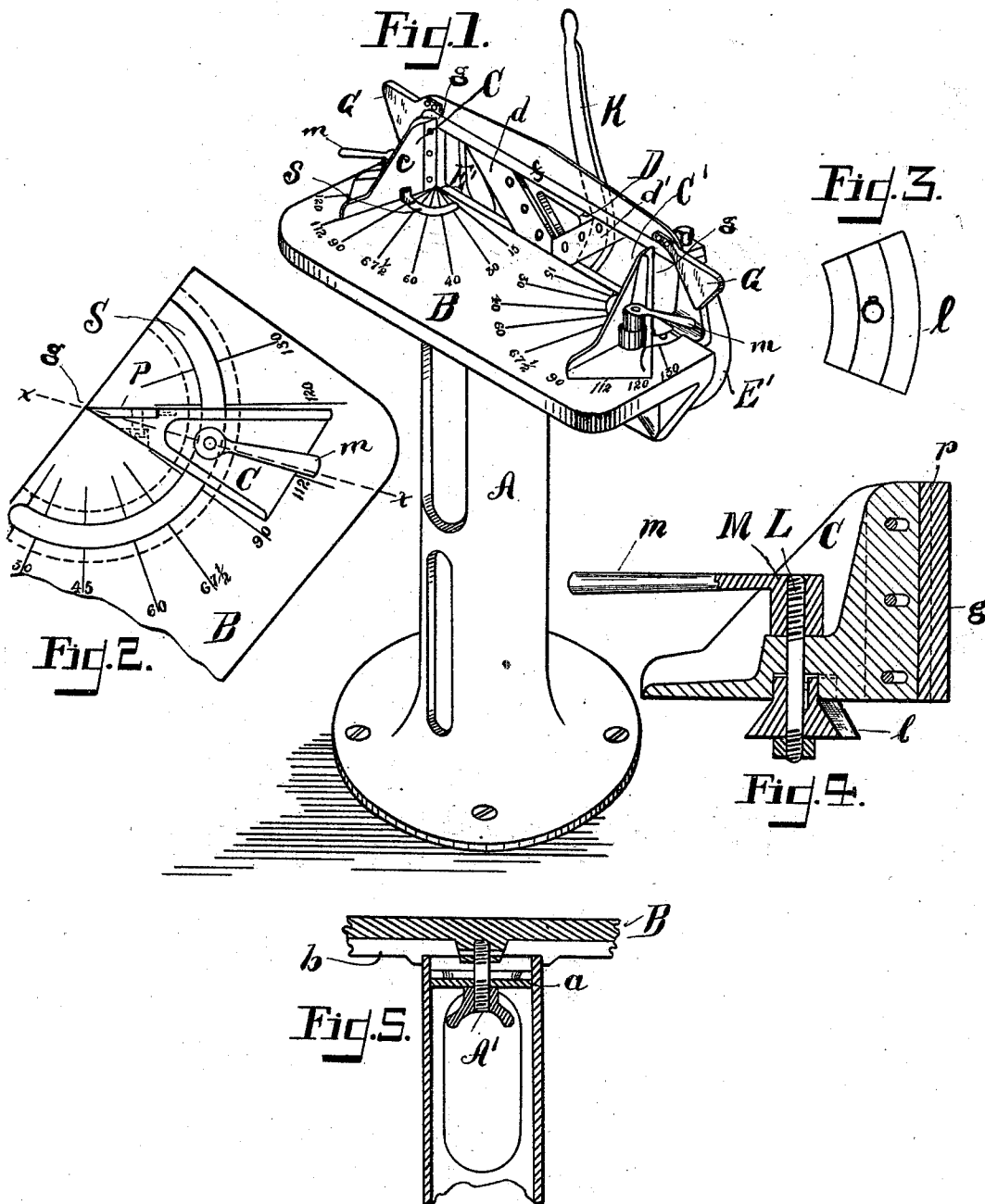
(No Model.)

2 Sheets—Sheet 1.

J. W. OLIVER.
TRIMMING MACHINE.

No. 519,199.

Patented May 1, 1894.



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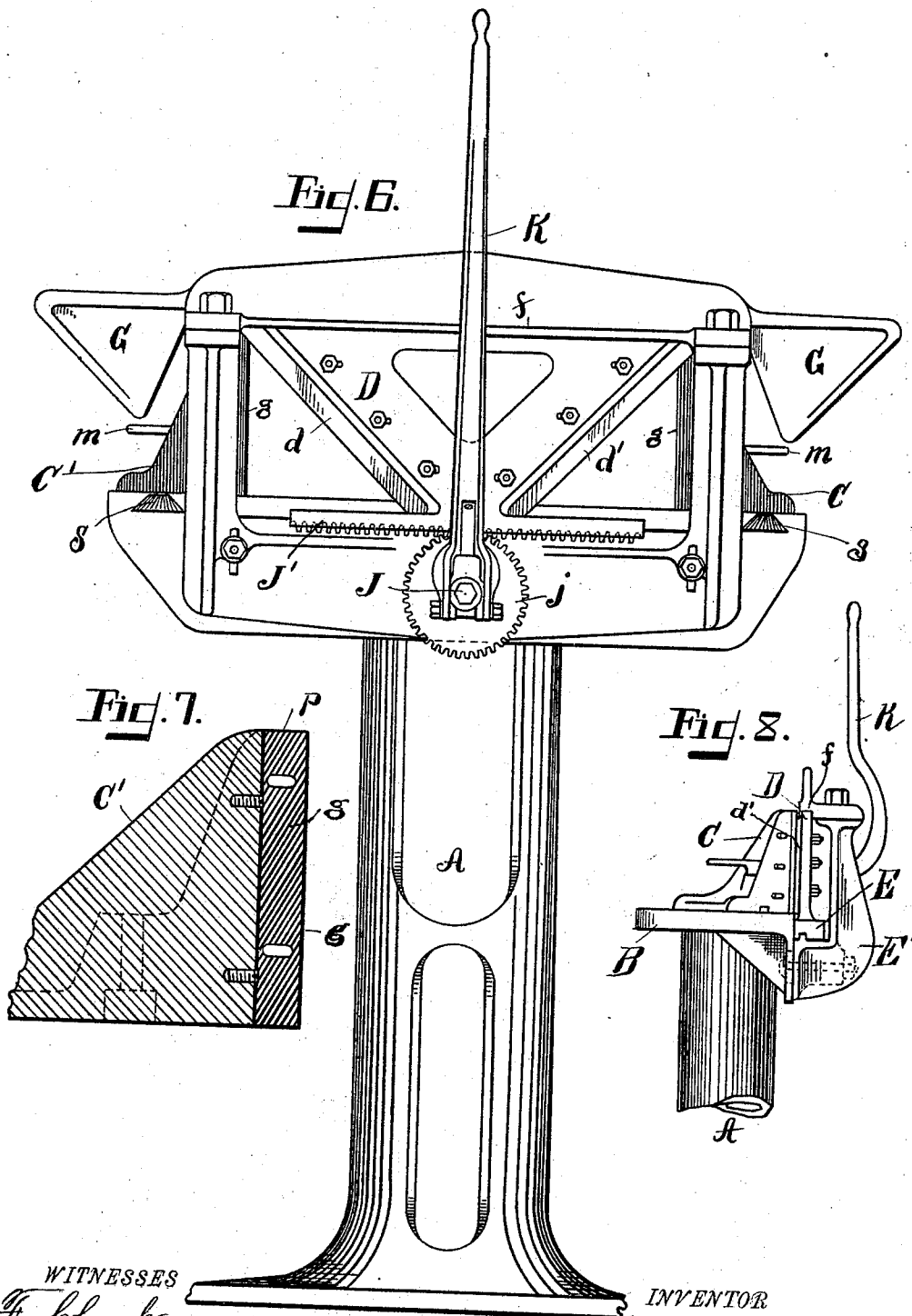
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UNITED STATES PATENT OFFICE.

JOSEPH W. OLIVER, OF GRAND RAPIDS, MICHIGAN.

TRIMMING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 519,199, dated May 1, 1894.

Application filed November 23, 1891. Serial No. 412,787. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. OLIVER, a citizen of the United States, residing at Grand Rapids, county of Kent, State of Michigan, have invented a certain new and useful Improvement in Trimming-Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of this invention is to produce a trimming machine in which the parts to form a joint of any angle may be accurately cut. In order to produce this result it is necessary to have the parts which operate as holding parts arranged to be set and accurately held at a desired angle, and to have the knife or cutting part accurately moved to cut or shave off the article under operation.

Another object of my invention is to produce a trimming machine in which the upper surface of the main bed-plate or table on which the work is to rest is entirely unobstructed on all sides of the gages, thus enabling the gages to be set through the widest possible range. And still another object is to so support the upper side of the frame of the trimming knife by supports that pass in front of the frame without interfering with it, that the knife can pass endwise through a greater range than is usual in this class of machines. By my invention, I am enabled to secure these results and other results which will be more fully pointed out in describing its operation.

In the drawings, Figure 1 shows a perspective of a machine embodying my invention. Figs. 2, 3, 4 and 5 are details respectively, of which Fig. 2 is a plan view of the movable gage. Fig. 3 is a plan view of the bottom clamp. Fig. 4 is a section of the movable gage and clamp, the section being through xx of Fig. 2. Fig. 5 shows in section the means of turning the bed-plate on the supporting post. Fig. 6 is a front elevation. Fig. 7 shows a side view of the gage and the means of attaching the adjustable supporting face-piece thereto. Fig. 8 shows an end view showing the table gage, sliding knife and means of supporting the upper way, in which the knife frame slides.

A represents a standard, on the top of which rests a table B, the two being connected by means of a swivel or turning pin, in any well-known way, such that the table may turn in a horizontal plane on the top of the standard. One easy way of effecting this is to make the standard A cylindrical, with a cross-bar or plate a near the top of and within the cylinder. The bed-plate B, rests on the top of the cylinder and is provided with a downwardly extending rib b , that fits upon and is adapted to turn on the cylinder A. The threaded screw A' , provided with a hand-wheel, passes through an opening in the plate a , and is screwed into the bed-plate B. This permits the bed-plate B to be moved in a horizontal plane through a complete circle, and to be clamped at any part of its motion, by means of the screw and hand-wheel A' .

The bed-plate B carries two angle-gages C and C' , and supports also a frame within which slides a knife holding frame D, provided with means for holding two knives d and d' , one of said knives being oblique to the right and the other to the left; there is also supported by the bed-plate B a journal J, upon which turns a pinion j adapted to mesh in the rack J' that is attached to the knife-frame D. Upon the hub of the pinion j is placed an arm K, by means of which the pinion j may be turned on its arbor, and the rack J' moved to one side or the other of the bed-plate. In moving across the bed-plate, the rack J' carries with it the knife-frame D and the knives d and d' . The rack J' is located below the lower end of the cutting knives, and its teeth project downward and are partially covered in or walled in, so as to present no upturned opening within which dirt or chips can collect and prevent the easy working of the movable parts. The location of the rack below the cutting knives allows the ends of the knives to be placed much nearer together, and thereby shortens the machine.

The knife frame D, is reciprocated across the cutter in front of the bed plate B, in ways, one of which, shown at E in Fig. 8, is on the under side of the knife frame, and the other shown at f , in the same figure is above the knife frame. The lower way E, is formed on a ledge or step that is bolted or otherwise se-

cured to the bed plate B, in front of it and below its upper surface. The upper way *f*, is supported on arms or brackets *E'*, that are attached to the bed plate B, and extend forward and upward entirely out of the way of the knife frame D. These brackets or arms *E'*, may be made in one piece with or separate from the lower way E. The carriage part of the knife frame that rides on the way *E*, is made integral with the rack *J'*, and reciprocates in front of the bed plate B, in close contact with the forward vertical side thereof. This method of supporting the knife frame at its top and bottom edges only, while forming a firm unyielding support to the knife, presents no obstruction of any kind to its reciprocating movement, and the close contact between the carriage part of the knife frame prevents chips or dirt from gathering and remaining on the carriageway as any chips or other matter, that happen to fall on the carriageway are pushed in front of the riding part of the carriage out of the way. The arms *E'* also support two guard-plates *G*, one located at each end of the upper track *f*; and, while these in no-wise interfere with the motion of the knife-frame D, they serve to prevent any one from accidentally striking the sharp edge of the cutting knives *d d'* at times when these cutting knives have been moved so that one of them extends out beyond the arm *E'*, and would be otherwise unprotected.

On the upper side of the bed-plate B are two angle-gages, duplicates of one another, except that one is a right-hand and the other is a left-hand gage. Each gage consists of a wedge-shaped piece having a flat under surface adapted to rest on the upper surface of the bed-plate; a smooth inner surface *c* at right angles to the first mentioned surface. The under-side of the gage C has in it an annular groove having a radius equal to its distance from the edge of the wedge; within the annular groove is received the upper part of an annular clamp *l*; this clamp *l* is formed as a part of a ring made with two coned surfaces; a cross section showing, as appears in Fig. 4, in the form of an inverted V, not coming to a point, however, but finished with a rectangular extension of the same shape as the cross section of the slot in the under side of the gage C.

The bed-plate B is provided with a groove, nearly a semi-circle in extent, having the same radius of curvature as the clamped piece *l*, and having the same shape in cross section as that shown in the V part of the cross section of the clamp *l*. The clamp piece *l* is provided with an upward extending stem piece *L* threaded at its upper end and fastened to it at its lower end in appropriate way. The stem-piece *L*, when the parts are assembled, extends upward through a hole in the body of the gage C, and receives at its upper end a nut *M* provided with a handle *m*. The combined conical and curved form of the

clamping piece *l* and the slot S compels the gage to always assume exactly the same position when clamped at a given spot, and as both the slot and the clamp are tooled accurately in the arc of a circle struck from the edge *g* as a center, the wedge is always compelled to assume a position with its forward or wedge edge exactly at the center of the circular slot S. An adjustable face-plate *P* permits of adjusting the forward edge *g* accurately in the first instance, and of re-adjusting should the thin edge be worn in use.

In using this trimming machine, the article to be trimmed is placed on the bed-plate B, with one side against the gage C, and with the portion to be trimmed off extending beyond the knife and under the upper way *f*. The knife is then pushed over through the material by means of the lever *K* operating the pinion *J* and the rack *J'*; it is desirable that the forward edge of the gage come exactly to the path of the knife, but that the knife clear it, and it is desirable that the gage be held very firmly in this position; it is also desirable that the upper part of the edge *g* where it comes immediately in front of the cross-bar or way *f*, retains the same sharp angle that it has lower down, to furnish a firm support all the way up behind the material to be treated, and prevent the material from breaking or splitting or fraying under the pushing motion of the knife. The face of the knife should project slightly beyond the cross-bar *f*, as it is sometimes desired to trim material some part of which extends above the cross-bar *f*, and any enlargement of the edge at its upper part would interfere with such work.

In setting the gage for operation, the clamp *l* is loosened, the gage moved to the desired angle, and the clamp is then tightened; and although there may be a considerable play when the clamp is loose, between the clamp and the gage, it will be found that on tightening the clamp the parts are always firmly secured in the desired position. Should it be desired to trim material that, by reason of its length and the confined quarters in which the gage is mounted, cannot be handled to advantage, the entire table of the trimmer can be turned at once and readily to a position such that the material can be trimmed.

Having thus described my invention, what I claim as novel, and desire to secure by Letters Patent, is—

1. In a trimming machine, the combination of a bed plate, an angular gage adjustably secured thereto, a lever actuated, reciprocating trimming knife, supporting guide ways above and below said knife frame, an adjustable shearing edge plate secured to said gage, extending from said bed plate to a point higher than the knife frame and presenting an unobstructed surface from top to bottom of said gage, substantially as and for the purpose specified.

2. In a trimming machine, the combination

of a bed-plate, an arched slot having a V-shaped cross section with its wider opening downward, a clamp having two parts, one of which is adapted to fit in said V-shaped slot, and the other of which is adapted to project upward through said slot and to fit into an arched slot on the under side of the gage; a wedge-shaped gage, and a binding bolt and nut adapted to clamp the parts together, substantially as and for the purpose described.

3. In a trimming machine, the combination of the bed, the gage adapted to move around the fixed center, an adjustable shearing edge to said gage at the center, and a holding clamp composed of the described segment of a double coned ring, adapted to fit in a slot having a cross section similar to that of the segment, a bolt passing through said segment of ring and said gage, and a nut adapted to hold the parts together, substantially as and for the purpose described.

4. In a trimming machine the combination of a knife frame movable horizontally, a gage having a shearing edge adjustable thereon, an actuating lever and a rack and pinion adapted to move said knife frame, said rack being located below the knives, and closed in on its upper sides, substantially as and for the purpose specified.

5. In a trimming machine, the combination of the bed B, the rack cover J' and way E, the said rack cover J' being adapted to move in close contact with the forward edge of the bed and protect the way E from dirt and chips, substantially as and for the purposes described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOSEPH W. OLIVER.

Witnesses:

C. H. NORTON,
EFFIE I. CROFT.