

E. S. BRADFORD, JR. & M. OLSON.

HACKSAW MACHINE.

APPLICATION FILED OCT. 13, 1908.

Patented Dec. 21, 1909.

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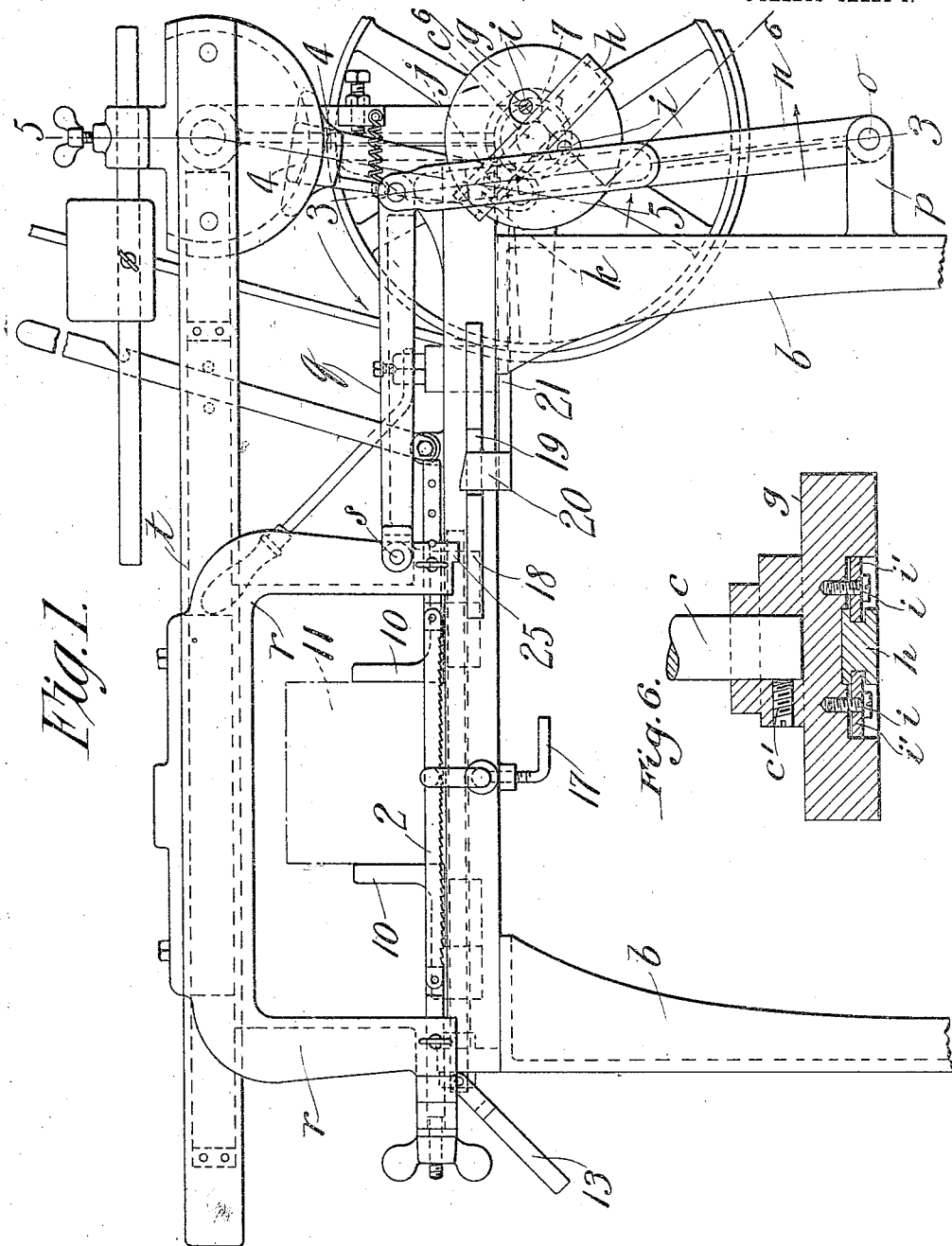


Fig. 1.

Fig. 6.

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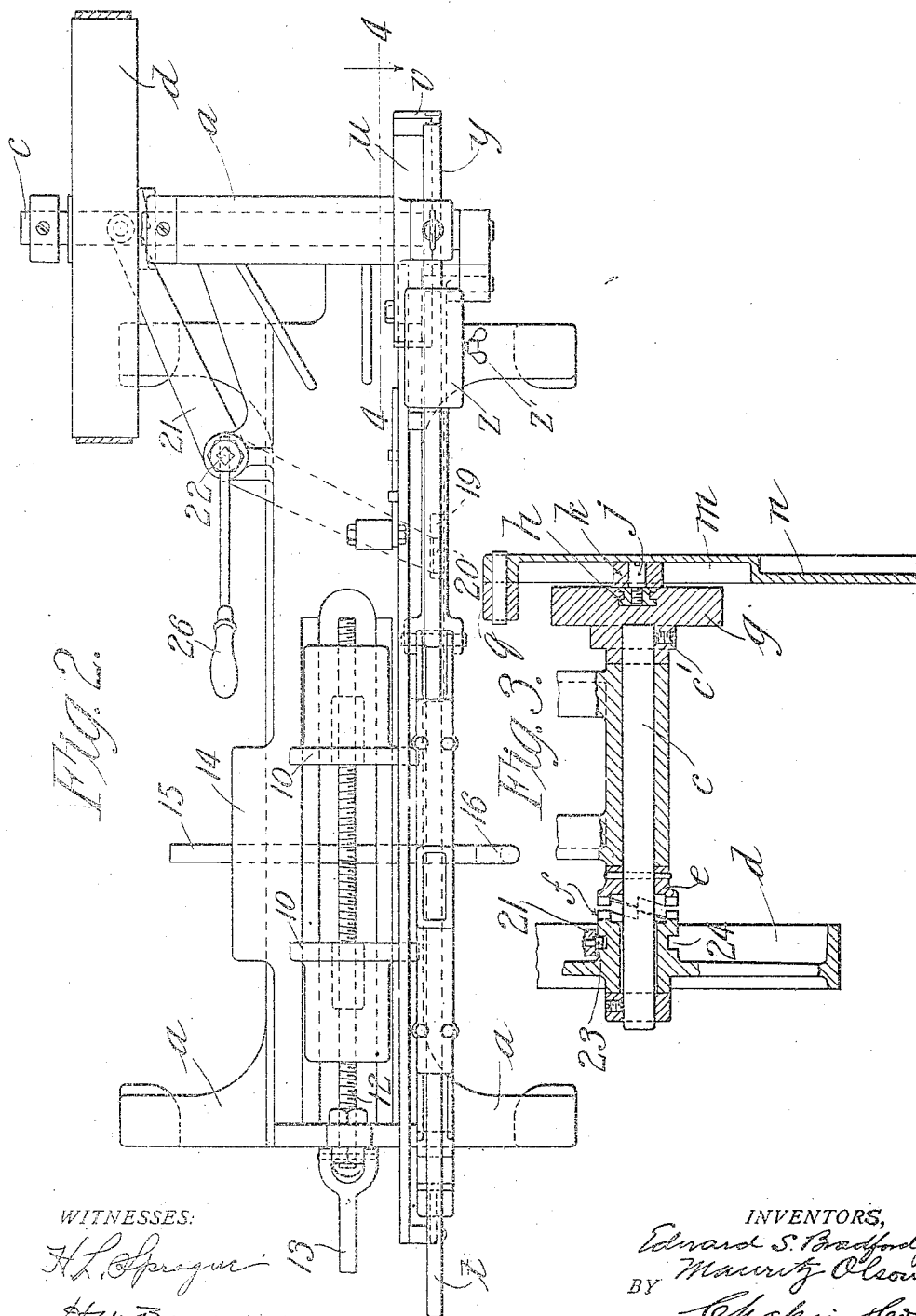
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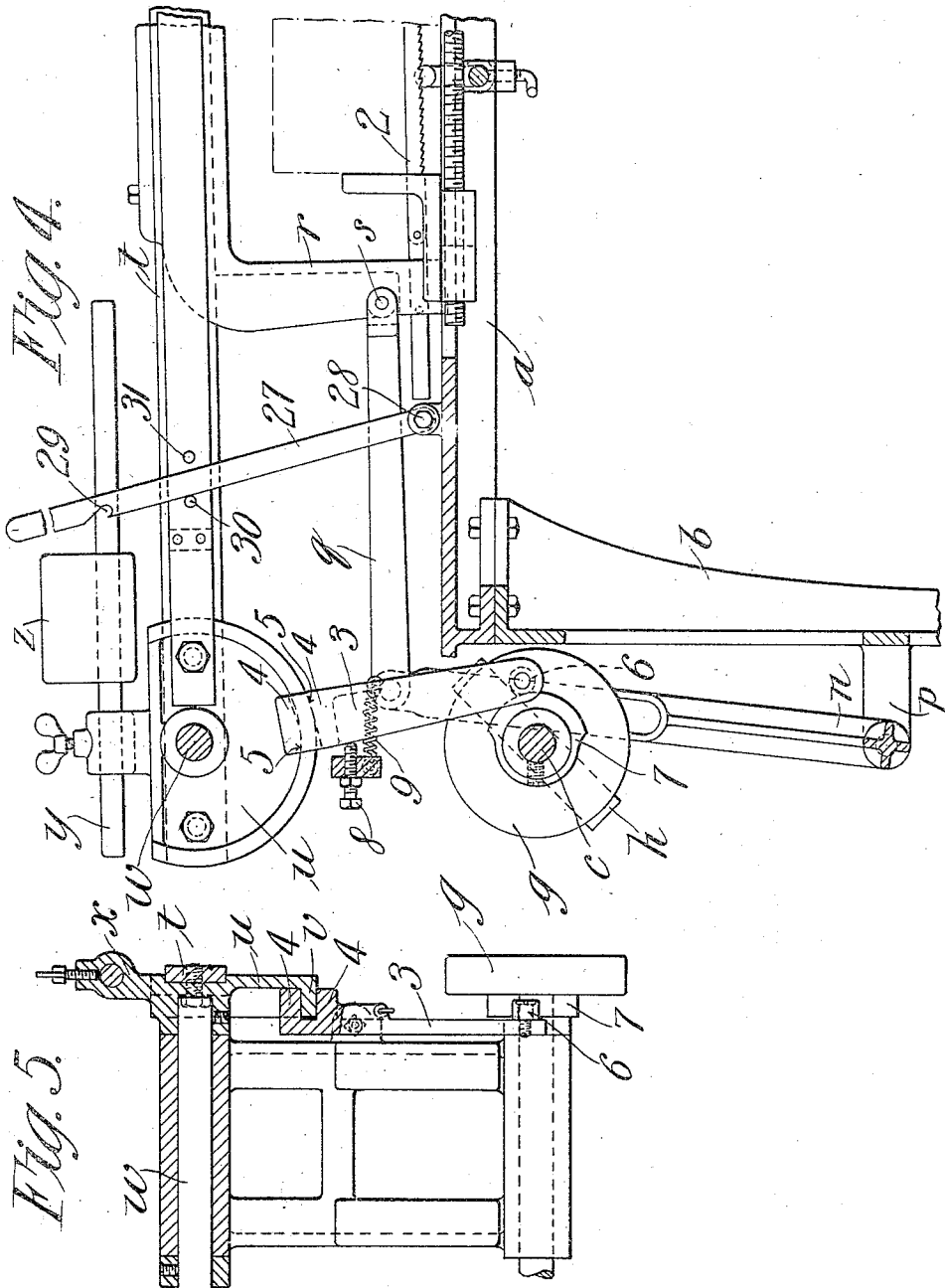


Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD S. BRADFORD, JR., OF SPRINGFIELD, MASSACHUSETTS, AND MAURITZ OLSON, OF BRIDGEPORT, CONNECTICUT, ASSIGNORS TO MASSACHUSETTS SAW WORKS, OF CHICOPEE, MASSACHUSETTS, AN ASSOCIATION OF MASSACHUSETTS.

HACKSAW-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, EDWARD S. BRADFORD, JR., of the city of Springfield, county of Hampden, and State of Massachusetts, and MAURITZ OLSON, of Bridgeport, in the county of Fairfield and State of Connecticut, have jointly invented new and useful improvements in Hacksaw-Machines, of which the following is a specification.

This invention relates to improvements in "hack saw machines," and has for its object, among others, to provide means for elevating the saw and its frame during the return stroke so that the teeth will be out of contact with the work, thus reducing the amount of wear on the same.

A further object of the invention is to provide means for holding the work in a suitable chuck during the sawing operation and so that the work or piece being sawed, is always centered with relation to the stroke.

A further object is to provide means for quickly varying the length of stroke of the saw-blade and its frame, and a further object is to provide clutch means for throwing the machine into and out of operation.

Further objects of the invention will appear and be fully set forth in the body of the specification, and particularly pointed out in the claims.

Referring to the drawings forming a part of this application,—Figure 1 is a side elevation of the assembled machine. Fig. 2 is a plan view of the same. Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 1 looking in the direction of the arrow and clearly showing the means for varying the length of stroke. Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 2 looking in the direction of the arrow, and clearly illustrating the means for elevating the saw frame on the return stroke. Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 1 showing the construction of the gripping means. Fig. 6 is a detail sectional view on line 6—6, Fig. 1, clearly showing the fastening means for varying the length of the stroke of the saw.

Referring to the drawings in detail *a* designates the frame of the machine and *b* the legs for supporting the same. Extending transversely of the frame is a drive-shaft *c* and a drive-pulley *d* that is loosely mounted

on said shaft the hub of which is provided with interlocking teeth for engaging the teeth on a sleeve *e* on the shaft *c* as shown at *f* in Fig. 3.

g designates a disk-shaped member that is carried by the shaft *c* and is secured to the same by means of a set-screw *c'*.

h designates a bar that is adjustably secured to the disk-shaped member *g* by means of the screws *i*, and washers *i'*, so that by tightening and loosening these screws the bar *h* may be moved transversely of the shaft *c*, thus varying its operative end from the axis of the shaft. The outer end of this bar carries a pin *j* on which is mounted a rectangular block *k* clearly shown in Fig. 3. This block is mounted and is adapted for reciprocation in the groove *m* of the link *n*, which link is pivotally connected at its lower end at the point *o*, to the bracket *p* on one leg of the machine as clearly shown in Fig. 1.

To the upper end of the link *n* is attached a link *q* which is pivotally connected to the saw holding frame *r* at the point *s*. This frame reciprocates on the arm *t* that is bolted to a sector-shaped member *u* which is provided with a curved or arc-shaped rim *v* at right angles to the face portion thereof. The member *u* is mounted on a shaft *w* as shown in Fig. 5. The upper portion of the sector-shaped member is provided with a lug or upward extension *x*, and mounted in this extension is a rod *y* that carries a weight *Z* so that the saw holding frame *r* may have imparted thereto different pressures. A wing nut *z* is employed for adjustably securing the same to the rod *y*.

The saw-blade is designated at 2 and the usual clamping means for retaining the same in the frame are employed.

From this construction it will be seen that when the shaft *c* is rotated the bar *h*, pin *j*, and the block *k*; which is mounted in grooved or recessed link *n*, will impart a reciprocating movement to the saw holding frame *r*.

Coming now to the mechanism for elevating the arm *t*, and consequently the frame *r*, during the return stroke of the frame. A gripping member 3 is provided with jaws 4 which engage the opposite sides of the arc-shaped rim *v*, these jaws, as indicated in Figs. 1 and 4, are provided with gripping corners 5 so that when the roller 6 of the

gripping member 3 is engaged by the cam 7 which is carried by the shaft *c* the frame *r* and arm *t* will be elevated as shown in Fig. 4. It will be noticed that the elevated portion of the cam 6 extends practically 180° and is so adjusted on the shaft *c*, that, on the return stroke of the frame *r* this cam will serve to actuate the gripping member 3 and rotate the sector-shaped member *u* on the shaft *w*. The member 3 is, in effect, suspended from the rim *v* of the member *u*.

In order to limit the amount of movement of the member 3 a stop pin 8 is provided, and a spring 9 for normally retaining the roller 6 of the member 3 in contact with the cam 6.

Referring now to the construction of the improved vise for holding the work during the sawing operation, the jaws of which are designated by the numeral 10; the work is designated by the numeral 11, and is shown in dotted lines.

12 designates a longitudinally arranged screw that is provided with right and left hand threads for moving the jaws 10 in opposite directions toward and away from the work. The threads of the screw 12 of course engaging corresponding threads in the jaw-member 10, which jaw-members are arranged to slide on the bed portion or frame of the machine.

13 designates a handle pivoted to the screw 12 for rotating the same, whereby the jaws 10 of the vise will grip the work in the well-known manner.

14 designates an extension of the bed portion for receiving the work.

15 is a gage device for enabling the operator to quickly determine the length of a piece to be cut and is simply a rod that extends through the bed portion of the machine and is provided with an upturned end as shown at 16, and a set-screw 17, for holding the same in different adjusted positions.

18 designates a shelf or ledge piece integral with the bed or frame portion of the machine and is provided with an opening 19.

20 designates a block or stop member located in the opening 19 and is attached to the bent lever 21 which is pivoted to the frame at 22. The opposite end of the lever 21 engages the hub and ratchet portion of the pulley *d* (see Fig. 3), by means of a pin and groove connection 23 and 24. The purpose of this construction is to cause disen-

gagement of the drive-pulley from ratchet *e* when the piece is completely sawed off, and in order to operate the bent lever 21 a projection 25 is carried by the saw-frame *r* (see Fig. 1) moves so as to strike the stop 20 after the saw passes through the work, and rotates the lever 21 about its pivot 22 whereby the pulley *d* is disengaged from the ratchet hub *e*, thus stopping the machine.

In order to start the machine, a handle 26 is provided which is attached to the lever 21 thus permitting the operator to swing the lever about its pivot and move the pulley *d* into engagement with the ratchet *e*.

In order to retain the saw frame *r* in an elevated position a bar 27, is provided which is pivoted to the frame at 28, and has a notch 29 in the upper end thereof for receiving the pin 30 on the arm *t*, and a pin 31 is employed for retaining the bar 27 in place during the operation of the machine.

What we claim, is:—

1. In combination with the saw-supporting frame, a shaft, a sector-shaped member rotatably supported thereon and provided with an arc-shaped rim, an arm attached to said member for supporting said frame, a drive-shaft, a cam carried thereby, a member operable from the cam and provided with jaws for gripping said rim when operated in one direction, said member being suspended from the rim, substantially as described.

2. In a hack-saw machine, the combination with the main frame thereof, a main shaft supported in said frame, a second shaft, a saw frame proper, adjustable connecting means between the saw-frame and the main shaft for varying the length of stroke, a sector-shaped member rotatably supported on the second shaft and provided with an arc-shaped rim, an arm for supporting the saw-frame and attached to said sector-shaped member, a member with spaced-jaw elements for gripping said rim and operable from the main shaft, whereby the frame may be elevated on the return stroke.

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