

# Burnap & Melick, Sawing Shingles,

No. 50,900,

Patented Nov. 14, 1865.

Fig 1

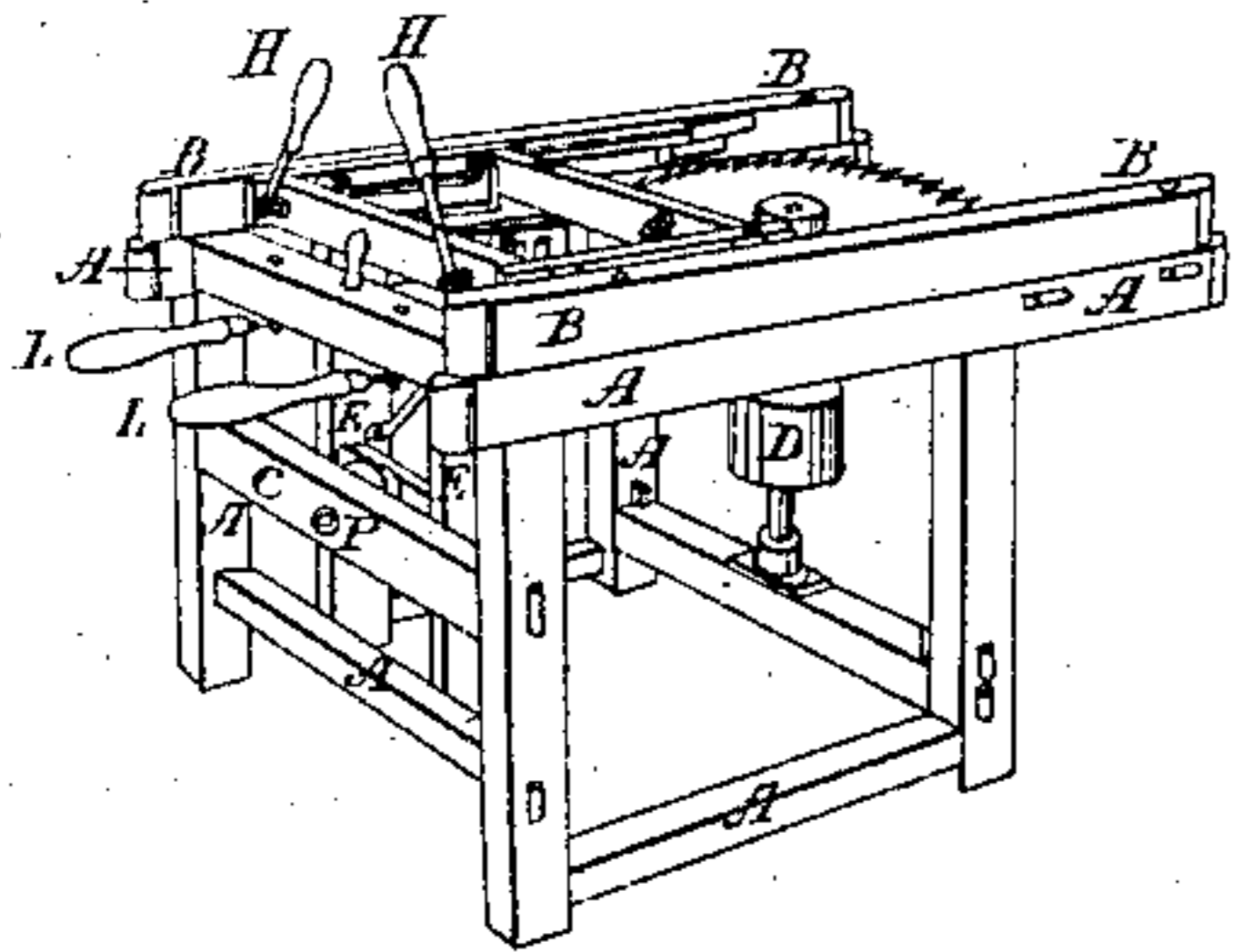


Fig 2

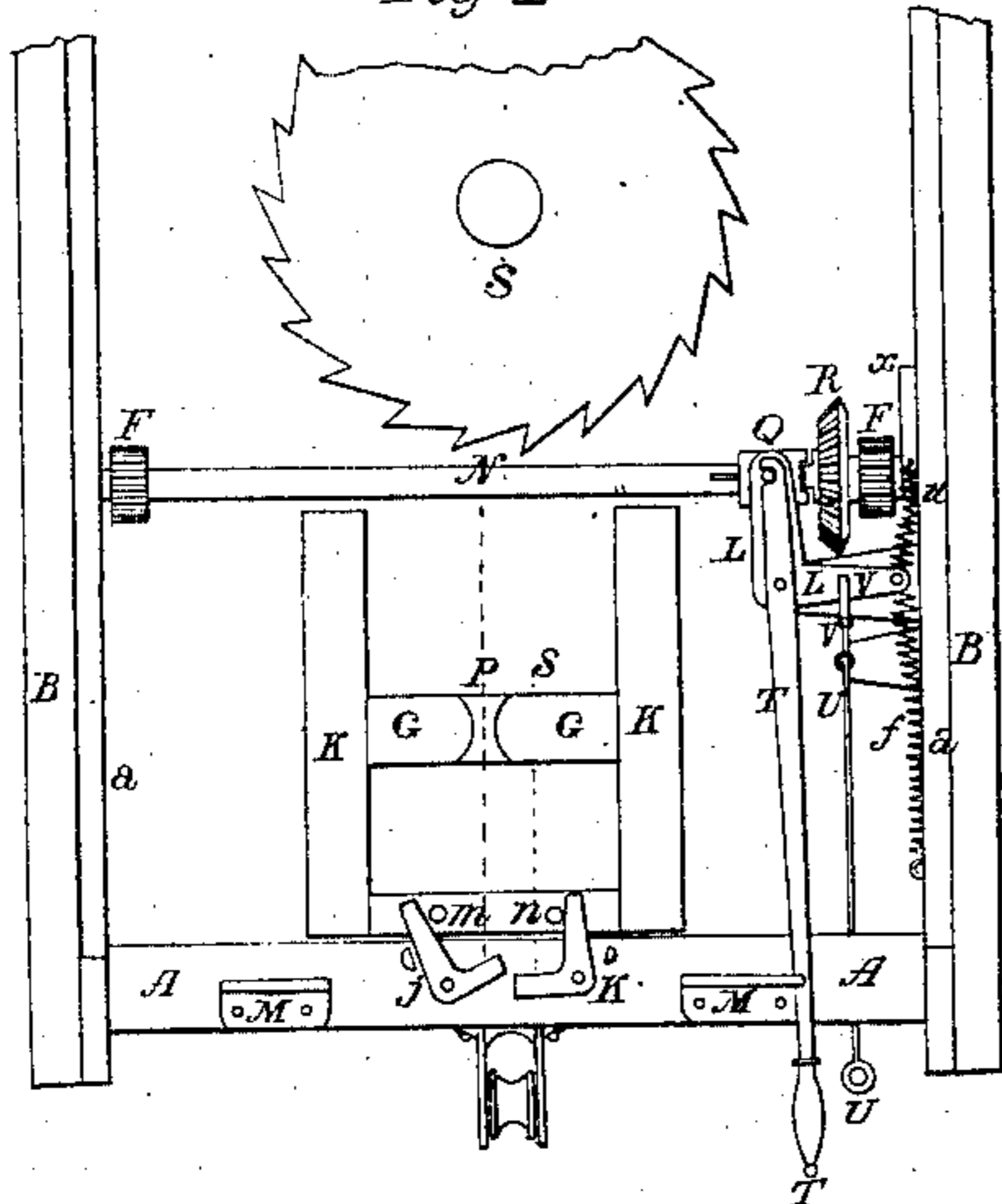


Fig 3

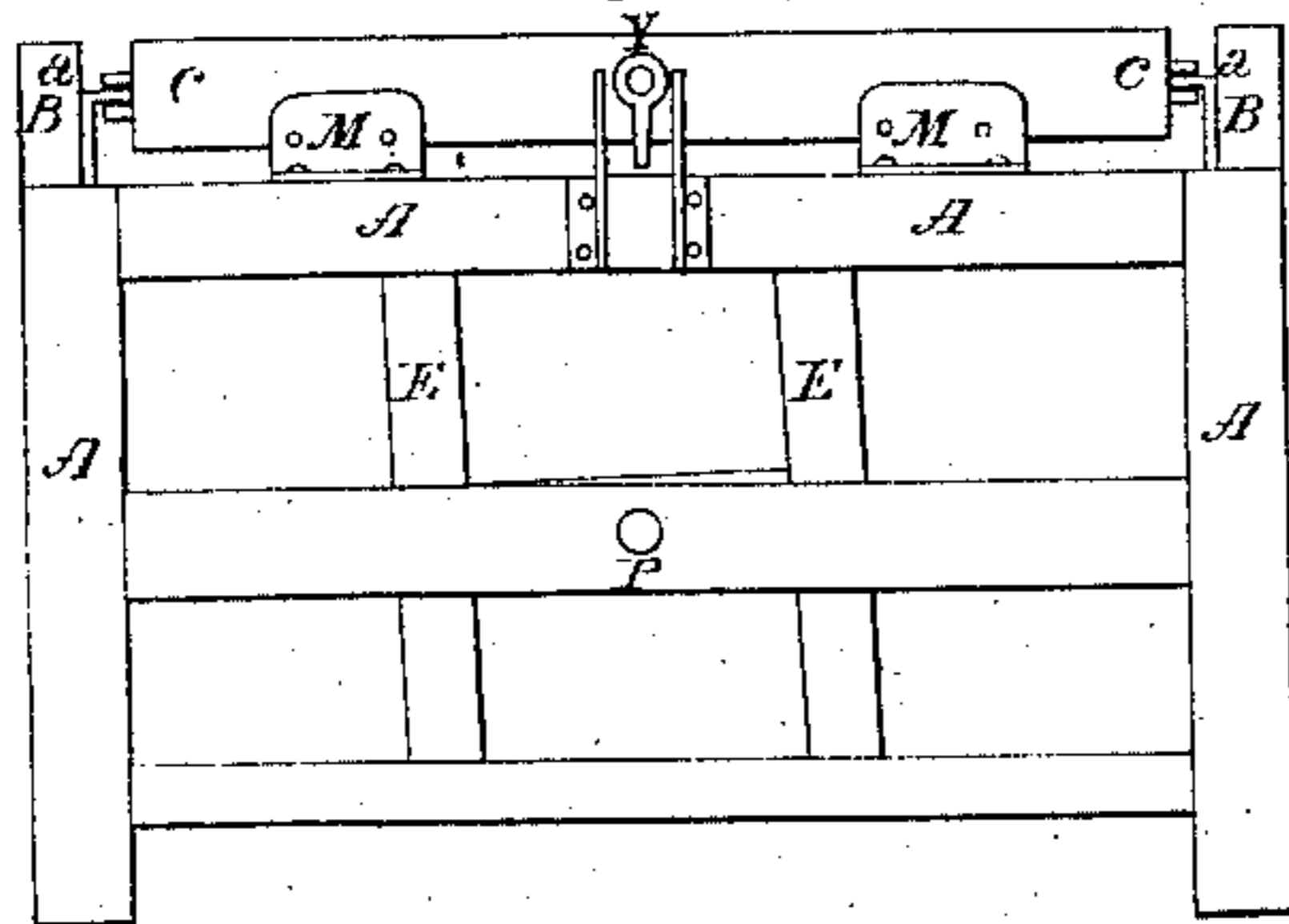
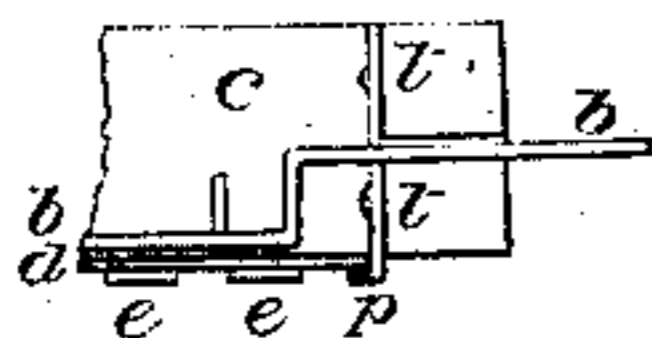


Fig 7



Witnesses:

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Fig 5

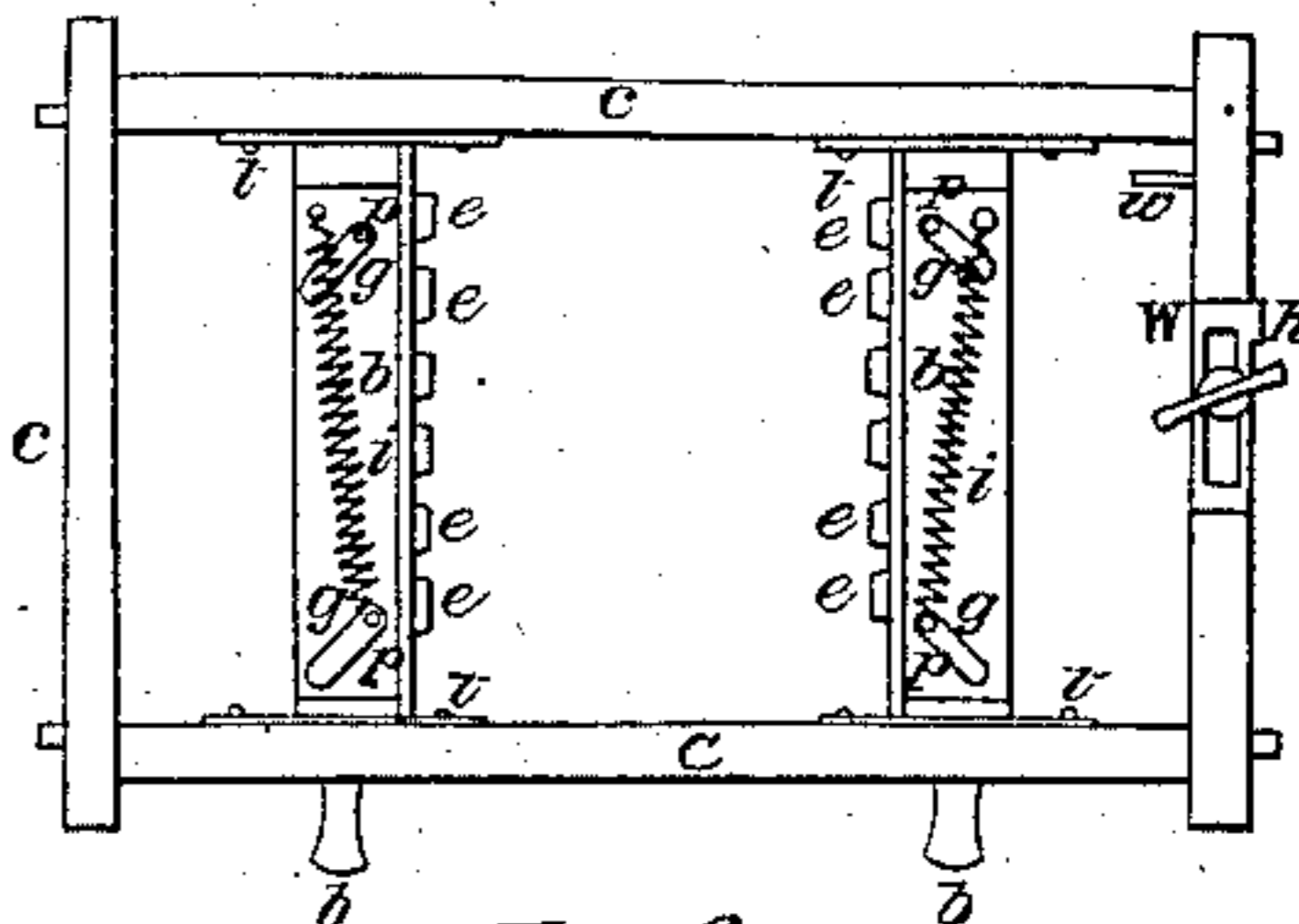


Fig 6

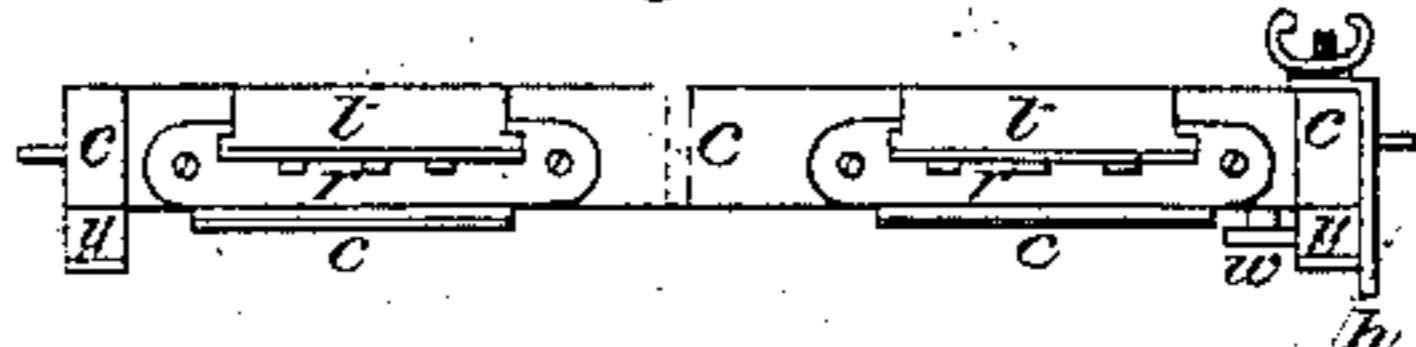


Fig 8

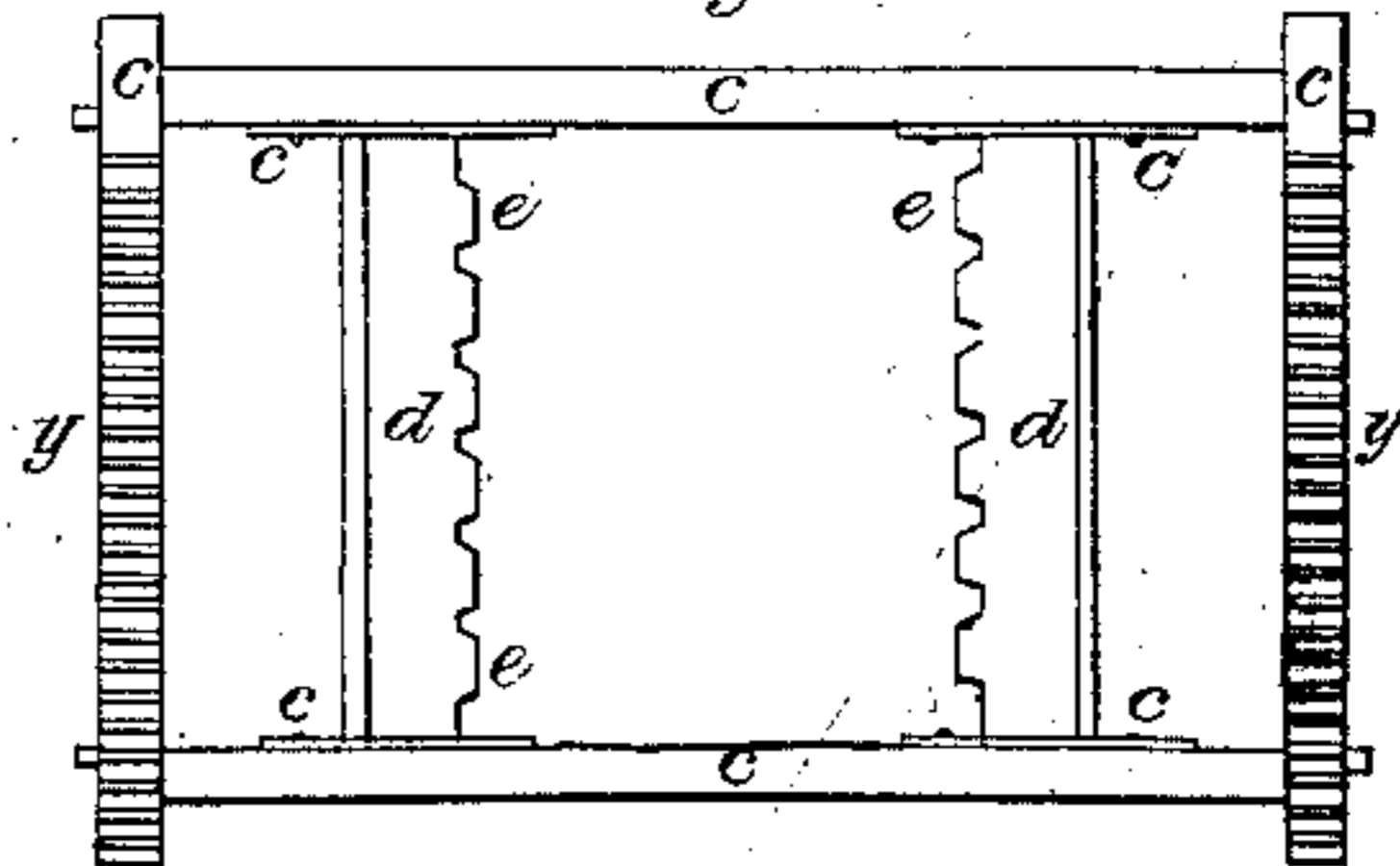


Fig 9

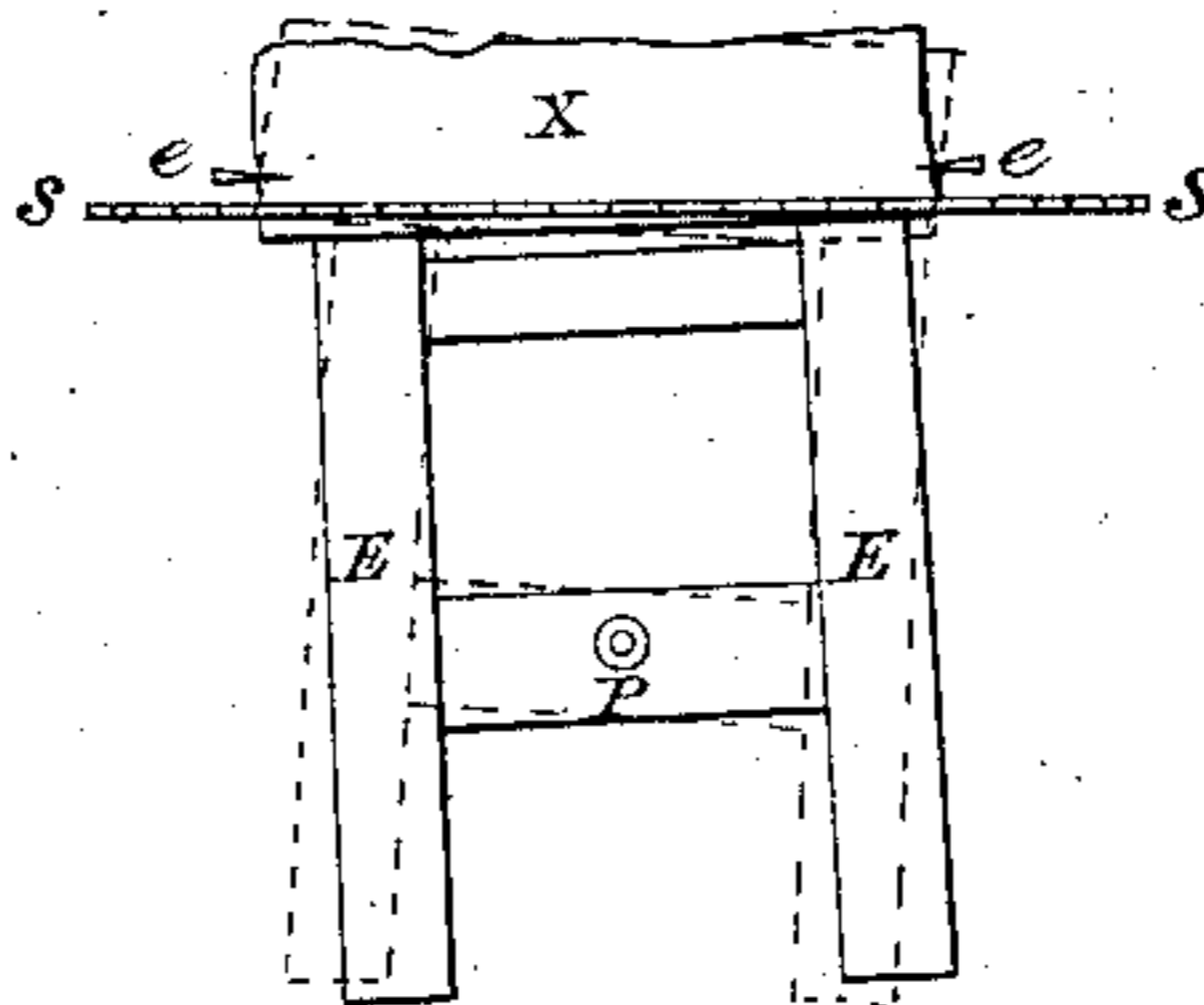


Fig 10

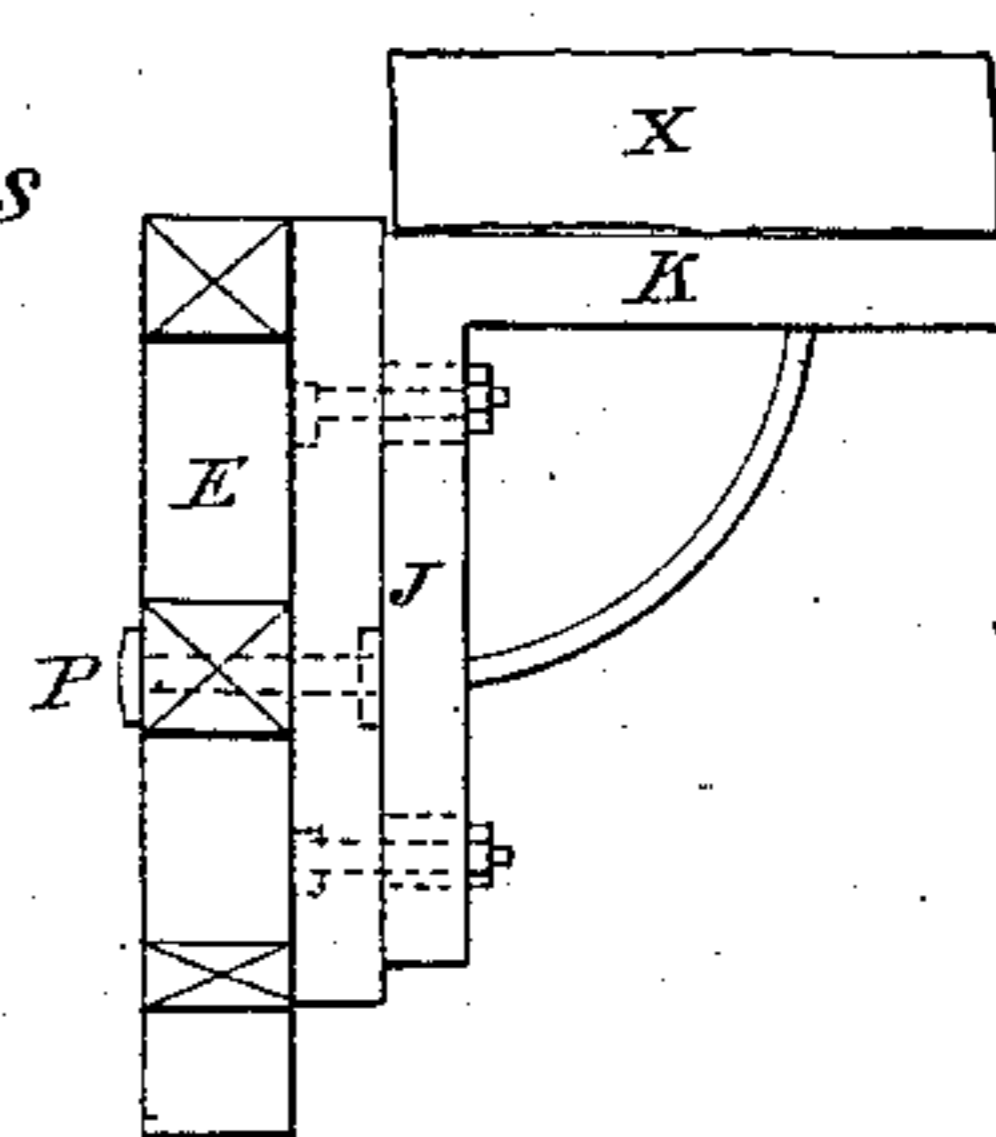
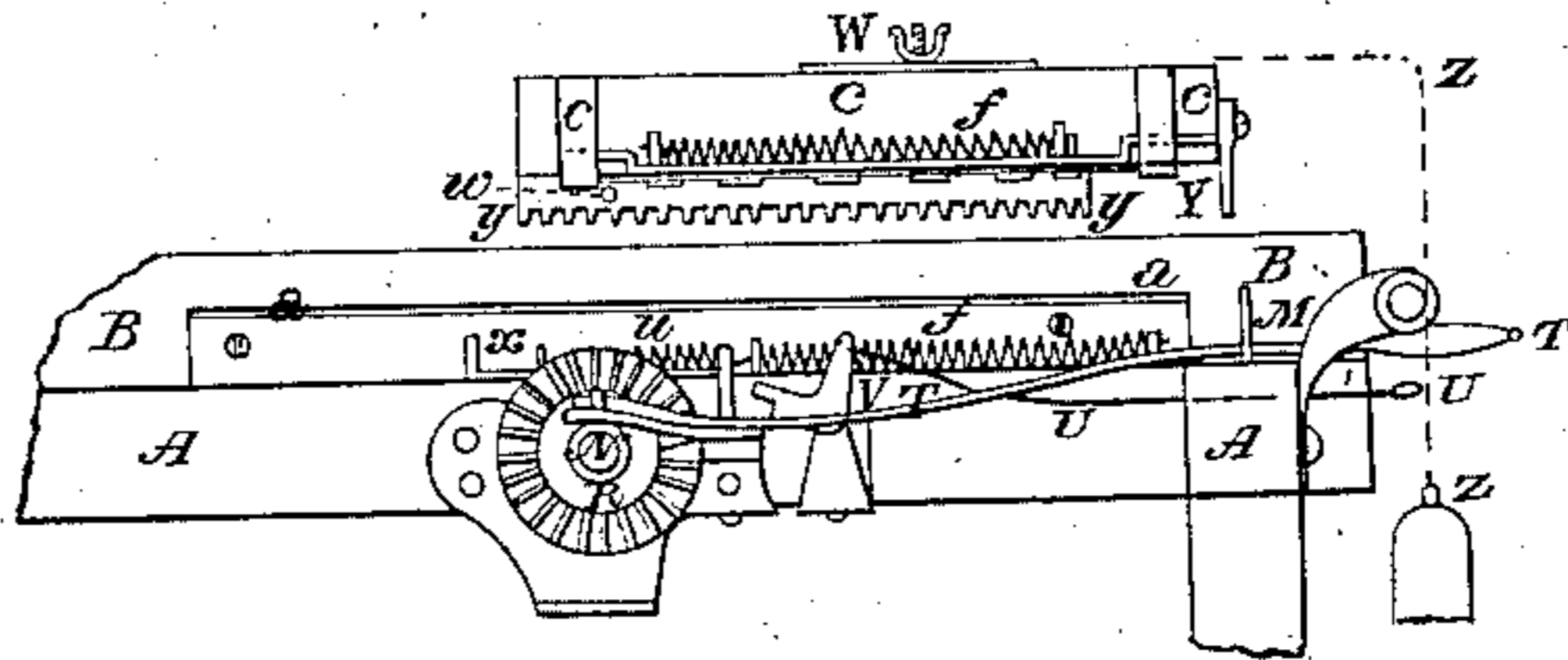


Fig 4



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# UNITED STATES PATENT OFFICE.

JOHN A. BURNAP AND JAMES H. MELICK, OF ALBANY, NEW YORK.

## IMPROVEMENT IN SHINGLE-MACHINES.

Specification forming part of Letters Patent No. 50,900, dated November 14, 1865; antedated November 5, 1865.

*To all whom it may concern:*

Be it known that we, JOHN A. BURNAP and JAMES H. MELICK, of the city of Albany, State of New York, have invented certain Improvements upon the Shingle-Machine now in general use and exhibited in Figure 1 of the drawings forming part of the accompanying description; and we declare the following specification, with the drawings forming part thereof, to be a full and complete description of our invention.

Fig. 1 represents, in perspective, the machine now in use, and which we propose to improve. The other figures exhibit, in detail, our improvements, similar letters in the different figures denoting the same parts of the apparatus.

To saw shingles with the machine, Fig. 1, three distinct operations are employed: first, for the purpose of securing the block or "bolt," as it is called, from which the shingles are to be cut firmly during the sawing; secondly, to move the frame or bed upon which the bolt lies; and, thirdly, to cant the bolt-bed to the right or left hand alternately to give the proper shape to the shingle. These several movements are done by hand, and require the attendance of two persons to operate the machine efficiently.

The object of our invention is to cause these operations to be done automatically by the machinery, securing, by the superintendence of one person, a much greater amount of work during a given period.

The apparatus for maneuvering the dogs consists of the following parts: Within the frame C (see Fig. 5, which shows it in plan, Fig. 8 reversed, and Figs. 6 and 7 in section) are four flat metal bars, *b b d d*, *b b* lying over and nearly touching *d d*. The ends of *b b* pass through slots in the front and back rails of the frame, and are secured from moving sidewise by resting upon metal plates *r r*, in the upper edges of which are notches to receive corresponding projections in the lower face of the bar. These slots are longer than the bars are wide, the object of the notches and projections being to permit the shifting of the bars to and from each other to accommodate a long or short bolt (as long or short shingles are being made) between them. When the bars are

placed they are held down by upper plates, *t t*, properly secured. These bars *b b* have a limited forward and backward movement. The lower bars, *d d*, have a small movement from side to side, lying upon slide *c c*, under the rail. Through the upper bars are oblique slots *g g*, shaped and placed as shown in Fig. 5, and through them project from the lower plates, *d d*, pins *p p*, which guide the movements of the bars over each other.

It will be perceived that by this construction whenever the upper bars are moved back and forth the lower bars must move at right angles thereto, or to and from each other.

The inner edges of bars *d d* are furnished with teeth *e e*, and form the dogs which hold the bolt during the sawing process. The bars *b b* are moved forward, by which the dogs are withdrawn from the bolt by their outer ends, which project beyond the front rail of the frame C, coming in contact with stops *M M*, fixed upon the front girt of the table, whenever the frame C is drawn to the front.

In order to press the dogs into the bolt as soon as the frame moves backward, there are strong spiral springs *i* (shown in Fig. 5) extending from one of the pins in the lower or dog bars, *d d*, to a pin at the other ends of the upper bars, *b b*, by which the upper bars are drawn back, and consequently the dog-bars pressed inward toward each other.

The apparatus for moving the frame or carriage C backward and forward is this: Upon the bottom of the sides of the frame (see Figs. 4 and 8) toothed racks *y y* are fixed. These mesh into cog-wheels *F F*, fixed upon a shaft, *N*, extending across the machine. These wheels are intended to move the carriage backward, and when they have performed this duty the carriage is drawn forward by a weight with chain or cord *Z*, passing over a pulley fixed upon the front upper girt of frame A. Upon the shaft *N* there is a bevel-wheel, *R*, by which the shaft is connected with the driving power, the wheel running loose upon the shaft. It is made to revolve the shaft by means of a coupling-clutch, *Q*, which slides upon a feather on the shaft. This clutch is thrown in and out of gear with wheel *R* by a horizontal bell-crank lever, *L*, and is held in gear by a spring, *f*. A vertical bell-crank, *V*, handled by a lever, *U*,

is fitted to drop against the front arm of L and hold it firmly in place whenever the shaft and wheel are uncoupled. A hand stop-lever, T, is added to permit the disconnection of the shaft and wheel at any point of the progress of the carriage C.

In sawing bolts of various widths the distance the carriage must travel over the saw is regulated by an adjustable trip. This is a slotted plate of metal, W, (see Figs. 5 and 6,) lying upon the right-hand bar of the frame, having a screw and nut by which it can be adjusted forward and backward along the bar, from which plate an arm, *h*, drops down along the outside of the bar. The arm *h*, by the movement of carriage C, is brought against the rear-projecting end, *x*, of the sliding carriage of a spring, *u*, which is attached by one end to its carriage and by the other to the end of bell-crank L. When the arm *h* strikes the piece *z* it moves the carriage a short space, drawing upon the spring *u* until it moves the crank L, which disengages the clutch Q, when the action of the spring throws the clutch entirely clear from the wheel R the moment it is disengaged therefrom.

The apparatus for canting the bolt consists of two bell-cranks, *j* and *k*, Fig. 2, pivoted upon the upper girt of frame A, in the position shown. Their inner ends operate against pins *m* *n* on the upper bar of frame E. On the center of cross-piece G a guide-groove, *p*, narrow in its center and widening to the front and rear, is made, as shown in the drawings. Against the center of the front bar of carriage C there is pivoted a trip-pin, Y, hanging down, so that its bottom shall strike against the bell-cranks *j* and *k*. It is fitted to move with sufficient friction upon its pivot so as to retain any position in which it may be placed. The operation of this apparatus is thus: The frame, with the bolt, having been canted for the first cutting, as shown in the drawings, when C passes forward the trip Y, entering into the groove *p*, will be carried in the direction *p* *m*, and strikes against the inner end of crank *j*, causing its outer arm, by pressing against pin *m*, to cant the frame E to the right hand, changing the position of crank *k*, and placing groove *p* in the range of *s* *n*. Consequently when carriage C again traverses the trip Y will be shifted to the right, striking against crank *k* and canting frame E to the left, thus at every traverse of C canting the bolt alternately to the right or left hand.

The saw S and the wheel R are to be driven by any suitable power, and such arrangements of gearing as shall give proper harmony to the different parts of the machine as they operate in combination with each other.

The operation of the machine is as follows: The bed K being adjusted by the raising or lowering of the same for the thickness of the shingle, the bolt X is placed upon it and canted for the first cutting. Then the dogs *e* are entered into the bolt, and the stop W *h* adjusted for the width of the bolt. The operating power is then to be applied. The carriage C moves toward the saw S, carrying the bolt suspended by the dogs against and along the saw. As soon as it has cut a shingle the trip *h*, operating bell-crank L, uncouples wheel R from shaft S, when the weight Z draws the carriage C forward. As it reaches the front the projecting arms of the bars *b* *b* strike the stops M M and retract the dogs *e*, dropping the bolt upon the bed K, which has, by the operation of pin Y, been canted in a direction opposite to its previous position. The bell-crank R, with the coupling-box Q, has been held by bell-crank Y during the forward movement of carriage C; but at this moment a pin, *u*, projecting from the frame of the carriage inwardly, (see Figs. 4, 6, 7,) strikes the upright arm of Y from behind, trips its hold of L, which is, by spring *f*, made to couple the clutch Q and wheel R and cause the wheels F F to move the carriage and bolt toward the saw. This operation is repeated until the bolt is cut up into shingles.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The apparatus for working the dogs, to wit, the bars *b* *b* *d* *d*, the slots *g*, pins *p*, springs *i*, and the stops M, constructed and operating together as described.

2. The apparatus for moving the carriage C to and from the saw S, to wit, the shaft N, with the cog-wheels F, rack-teeth *g* of the carriage, the weight and cord or chain Z, the coupling-clutch Q, wheel R, bell-cranks L and V, tripping-arm *h*, with its adjustable plate W, springs *f* and *u*, and tripping-pin *x*, constructed and operating together as described.

3. The apparatus for canting the bolt-bed, to wit, the bell-cranks *j* and *k*, with the pins *m* and *n*, guide-groove *p*, and tripping-pin Y, constructed and operating together as described.

4. The combination of the apparatus for working the dogs, that for moving the carriage to and from the saw, and that for canting the bolt-bed, substantially as the same is described and set forth in the within specification.

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Witnesses:

RICHD. VARICK DE WITT,  
JAMES B. SANDERS.