

(No Model.)

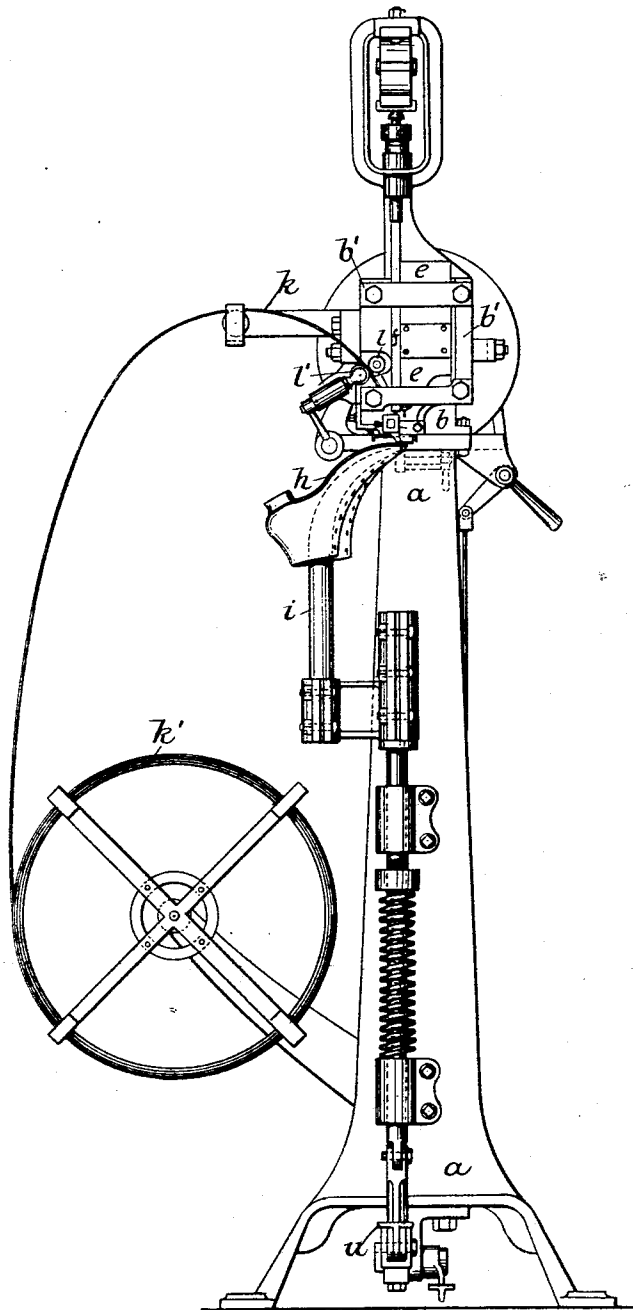
7 Sheets—Sheet 1.

T. GARE.
SPRIGGING OR NAILING MACHINE.

No. 541,201.

Patented June 18, 1895.

Fig. 1.



Witnesses
S. J. Jones
A. B. Rissing

Inventor
Thomas Gare
per Richard
Attorneys

(No Model.)

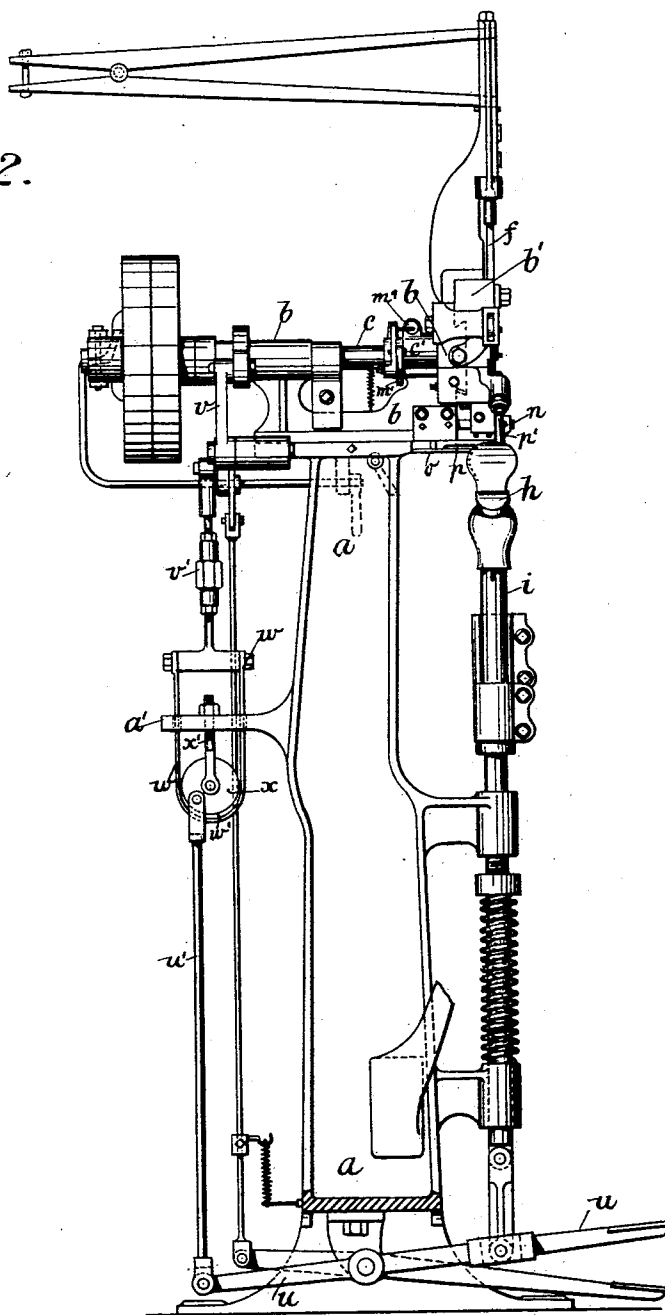
7 Sheets—Sheet 2.

T. GARE.
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Patented June 18, 1895.

Fig. 2.



Witnesses.

D. J. Jones
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(No Model.)

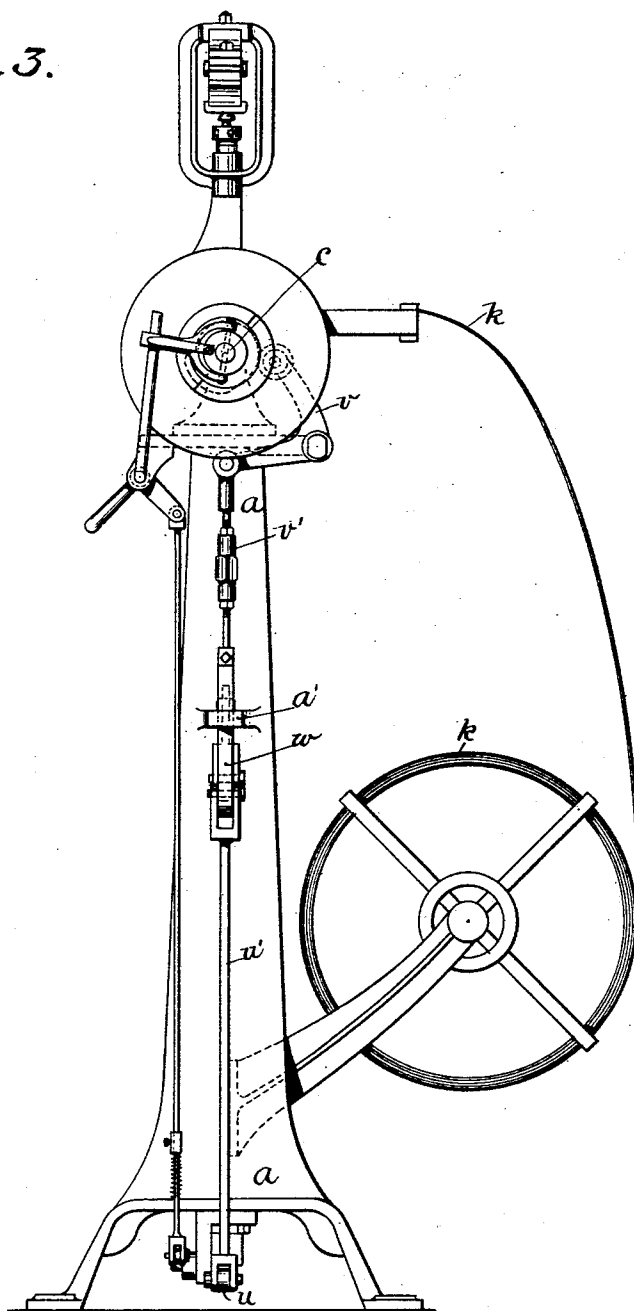
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Fig. 3.



Witnesses.

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(No Model.)

7 Sheets—Sheet 4.

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Fig. 5.

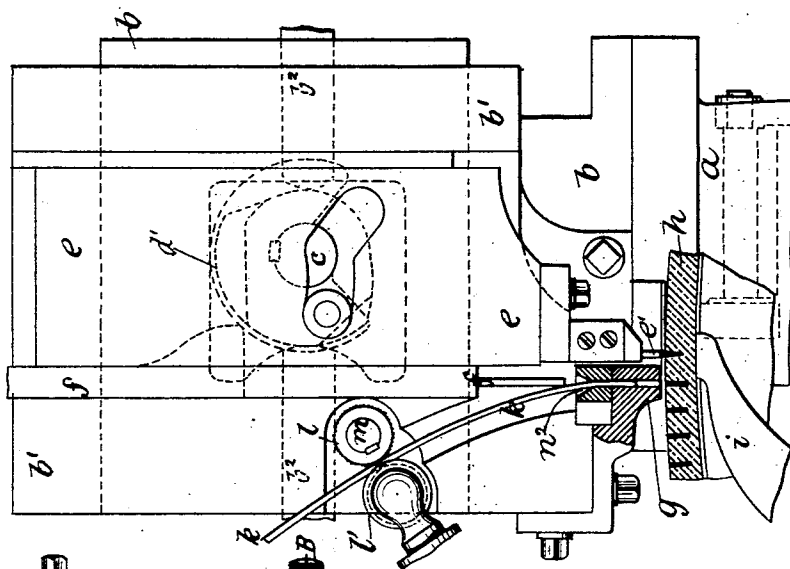
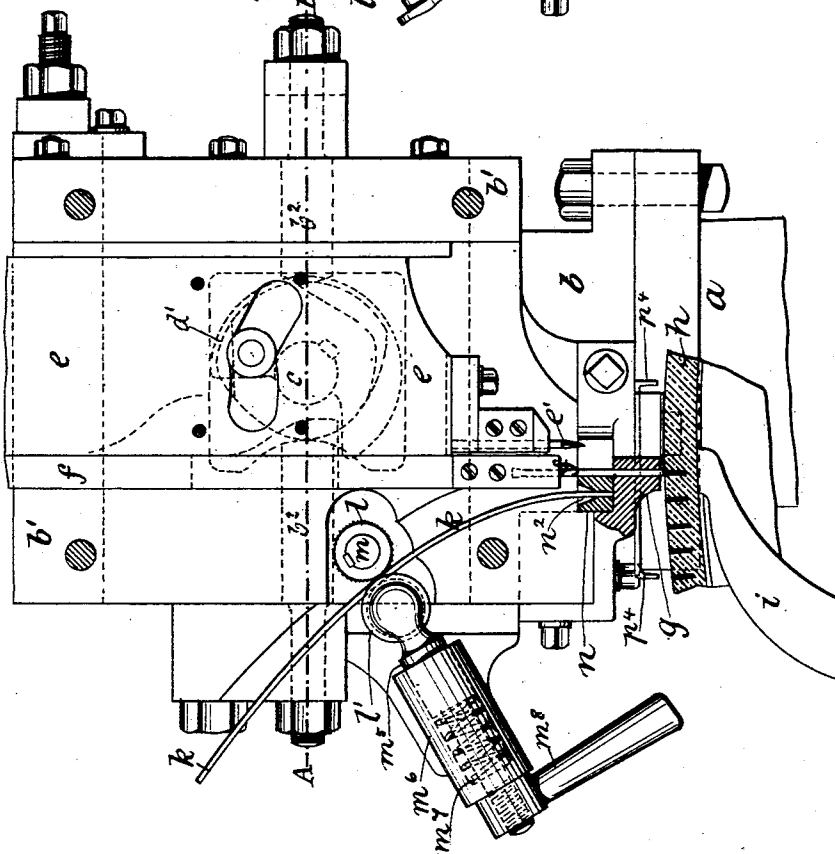


Fig. 4.



Witnesses

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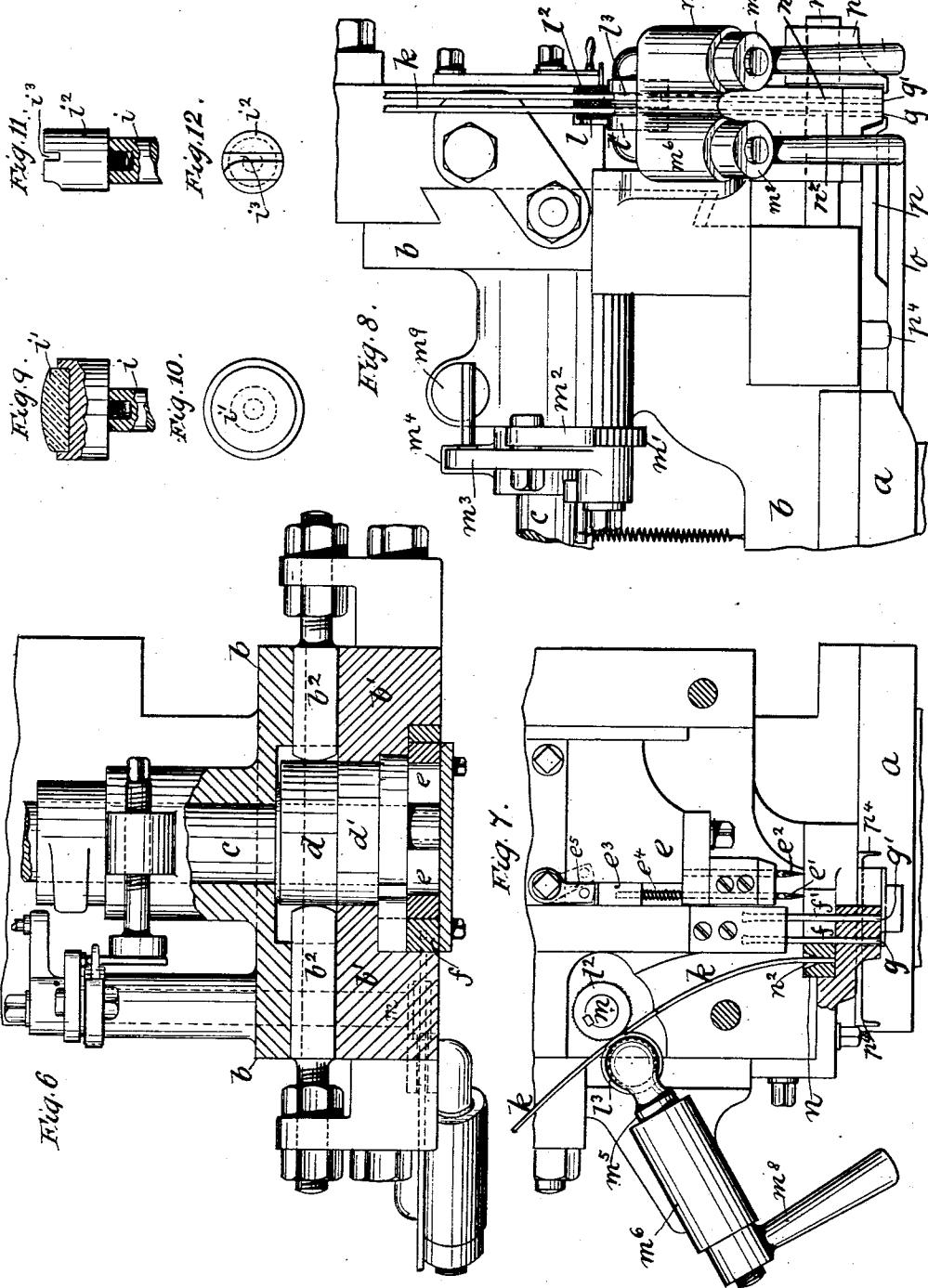
(No Model.)

7 Sheets—Sheet 5.

T. GARE.
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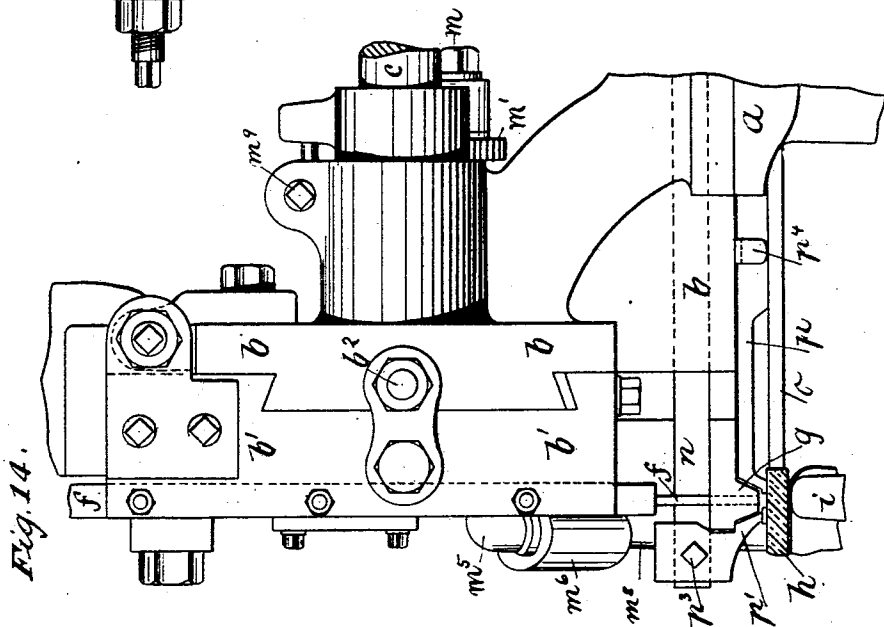
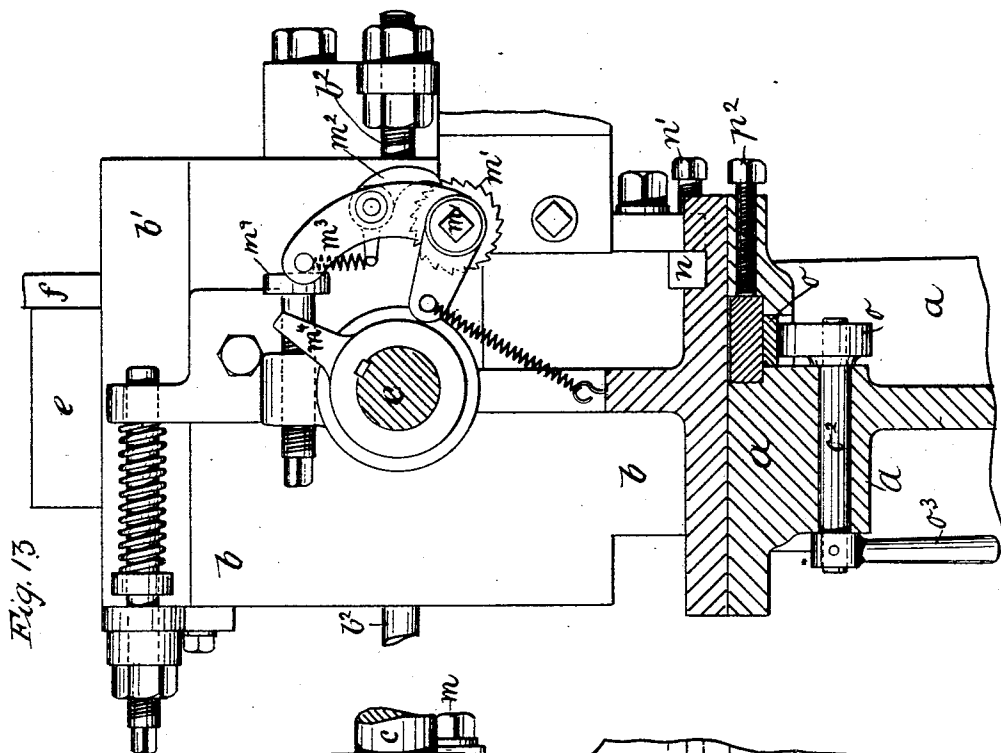
Witnesses.
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T. GARE.
SPRIGGING OR NAILING MACHINE.

No. 541,201.

Patented June 18, 1895.



Witnesses.
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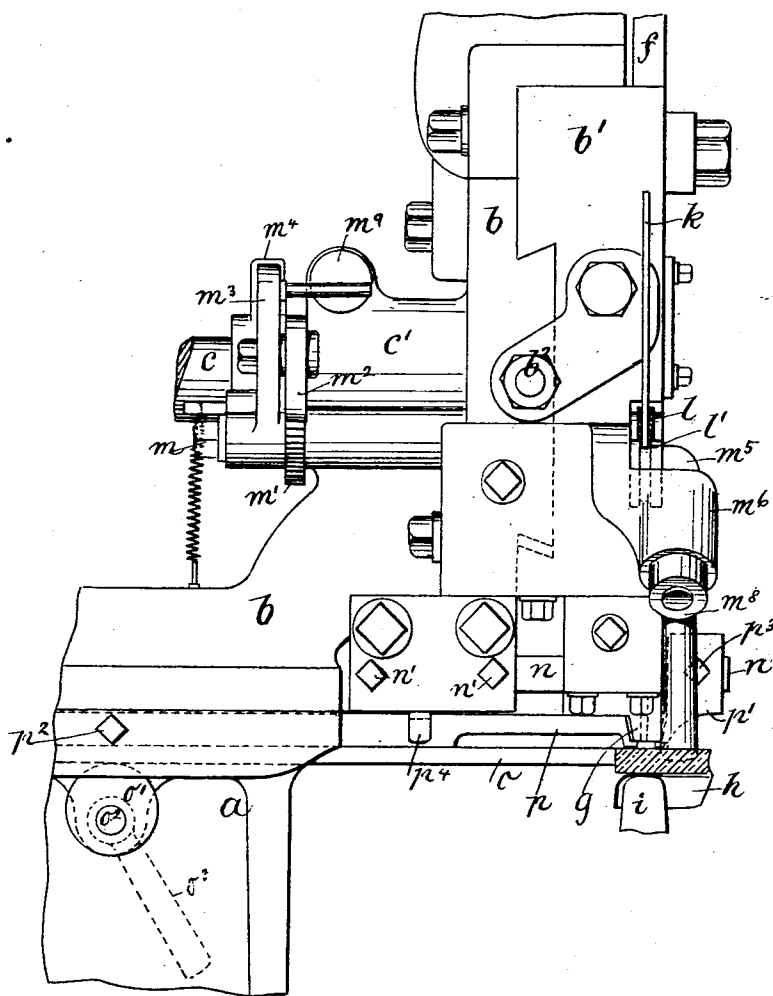
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Patented June 18, 1895.

Fig. 15.



Witnesses.

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A. S. Bussing

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Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS GARE, OF STOCKPORT, ENGLAND, ASSIGNOR TO THE GARE MACHINE COMPANY, LIMITED, OF SAME PLACE.

SPRIGGING OR NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,201, dated June 18, 1895.

Application filed April 21, 1892. Serial No. 430,103. (No model.) Patented in Belgium May 18, 1891, No. 99,719; in England September 25, 1891, No. 16,303, and November 16, 1891, No. 19,823; in France April 1, 1892, No. 220,575; in Switzerland April 23, 1892, No. 5,241; in Germany May 4, 1892, No. 69,590, and May 11, 1892, No. 74,919; in Austria-Hungary October 3, 1892, No. 22,808 and No. 47,345, and in Canada January 9, 1893, No. 41,471.

To all whom it may concern:

Be it known that I, THOMAS GARE, a subject of the Queen of Great Britain, and a resident of Stockport, in the county of Chester, Kingdom of Great Britain, have invented new and useful Improvements in Sprigging, Nailing, Riveting, and Pegging Machines, used in the manufacture or repairing of coverings for the feet and other leather work in general, of which the following is a specification.

Patents have been granted in the following foreign countries: Great Britain, No. 16,303, dated September 25, 1891, and No. 19,823, dated November 16, 1891; Canada, No. 41,471, dated January 9, 1893; France, No. 220,575, dated April 1, 1892; Belgium, No. 99,719, dated May 18, 1891; Germany, No. 69,590, dated May 4, 1892, and No. 74,919, dated May 11, 1892; Austria-Hungary, No. 22,808/47,345, dated October 3, 1892, and Switzerland, No. 5,241, dated April 23, 1892.

My invention relates to improvements in sprigging, nailing, riveting and pegging machines used in the manufacture or repairing of coverings for the feet and other leather work in general; and it includes the combination of devices hereinafter set forth.

Figure 1, Sheet I, is a front view, Fig. 2, Sheet II, a side view, and Fig. 3, Sheet III, a back view, of a single sprigging, nailing, or riveting machine complete, in which the sprig material is used in the form of wire. Figs. 4 and 5, Sheet IV, are front views, and Fig. 6, Sheet V, a sectional plan through line A B of Fig. 4, enlarged, of the head portion of the machine; Fig. 7, Sheet V, is a front view, and Fig. 8 a side view, enlarged, of the head portion of a machine for sprigging, nailing, and riveting two rows simultaneously or alternately one row and two rows; Figs. 9 and 10 are respectively a vertical section and a plan, and Fig. 11 a side view, and Fig. 12 a plan, of two different forms of horn or support tips for the aforesaid machines. Fig. 13, Sheet VI, is a back view, and Figs. 14 and 15, Sheet VII, are side views, of Figs. 4, 5, and 6.

Similar letters refer to similar parts throughout the several views.

In carrying out the various parts of my in-

vention, in respect of sprigging, nailing and riveting machines, I have in each case a suitable frame *a*, see Sheets I, II, and III, in the head *b* of which I mount a driving shaft *c* with a cam *d, d'*, at its front end, see more particularly Figs. 4, 5 and 6, having a double variable stroke adapted to move the head portion *b'* carrying the awl slide *e*, driver *f* and throat *g* so as to impart a variable intermittent lateral motion to the same, as described in my United States application, Serial No. 319,062, bearing date July 29, 1889.

The object *h* under operation, which is supported by a horn or other suitable support *i*, such as is hereinafter more fully described, is fed through the intermittent movement of the head portion *b'* and by the awl *e'*, which latter may enter the object *h* partly or wholly. The sprig or nail material *k* in this case, in wire form, is drawn from a roll *k'* by a feeding device consisting of a pair of feed rollers *l, l'*, the roller *l* being fixed on a shaft *m* mounted in the stationary head portion *b* of the machine and at its back end furnished with a ratchet wheel *m'*, see Fig. 13, operated by a pawl *m²* carried by a lever *m³*, adapted to oscillate loosely on the end of the shaft *m* through the action of a cam finger *m⁴*, fixed on the driving shaft *c*. The feed roller *l'* is carried by a stud *m⁵*, mounted in the bearing *m⁶* under the influence of a spring *m⁷*, which feed roller *l'* by means of a lever nut *m⁸* may be drawn back from or permitted to exert a pressure against the wire *k*, so as to facilitate respectively the placing of the latter between the roller *l* and *l'* and feeding thereof.

In order to alter the amount of feed of the wire *k*, *i. e.*, the length of sprig to be cut, an adjustable contact stud *m⁹* is employed on the bearing *c'*, by means of which the return movement of the pawl lever *m³* can be varied, by bringing it either nearer to or farther away from the center of rotation of the cam finger *m⁴*.

By means of the rollers *l, l'* the wire *k* is fed into a laterally stationary guide or shear piece *n* rendered adjustable in the head portion *b* in the direction of the axis of the driving shaft *c* by means of screws *n'*, see more

particularly Sheets VI and VII, which piece n is fitted against the throat g and in conjunction with the latter forms a shear. On the throat or shear piece g having been brought into communication with the passage n^2 of the guide piece n , see Fig. 5, and on the wire k having been fed the required distance into the passage n^2 , the cam part d moves the head part b' with its throat g into its former position, see Fig. 4, which causes the sprig or nail to be cut off and thereby carried over the hole previously pierced into the object h under operation and permits of its being forced into the latter by the driver f . The distance at which the sprigs, nails or rivets may be driven into the material under operation may be altered as required by means of the contact piece b^2 operated upon by the cam part d and rendered adjustable on the head portion b' .

To facilitate the sprigging, nailing or riveting of two rows simultaneously or single and double rows alternately, see Figs. 7 and 8, Sheet V, I employ two sets of feed rollers l, l' , l^2, l^3 , guide or shear piece n with two passages n^2, n^3 , two throats g, g' , two awls e' and e^2 and two drivers f, f' , the outer set of feed rollers l^2, l^3 and the outer awl e' being arranged to be rendered inoperative so as to bring the same in and out of action and thus leave blank spaces between the inner row of sprigs or nails, as may be desired, or to form one row only. For this purpose I fit into the awl slide e , a block e^3 carrying the awl e' , a spring e^4 being placed between the block e^3 and the awl slide e , which spring e^4 raises the awl e' out of use, while it can be lowered and retained in working position by means of a lever e^5 hinged to the awl slide e and brought from the position shown in dotted lines, to bear against the block e^3 , thus rendering it rigid with the awl slide e .

For the driving of sprigs, nails or rivets into the sole when attached to the upper of coverings for the feet, the face of the horn or support i is formed plain, as shown in Figs. 4 and 5, while for sprigging, through soles, it is formed with an interchangeable leather face i' , see Figs. 9 and 10, Sheet V, or with a metal face i^2 having a groove i^3 , see Figs. 11 and 12, which receives the ends of the sprigs and that of the awl e' , one end of the said groove i^3 being widened so as to facilitate the sprigging round sharp curves, such as the toe.

In order to permit of regulating the distance between one or more rows of sprigs or nails, I employ in the upper part of the frame a , a guide o , see Sheets VI and VII, which is rendered adjustable toward the side of the object h under operation and can be retained in position by means of a cam o' fixed on a shaft o^2 mounted in the frame a and operated by a handle o^3 against which guide o the object operated upon is held.

The presser foot I form in two parts p, p' , the part p being rendered removable on the

guide o in the upper portion of the frame a by means of set screws p^2 , and the part p' on the guide or shear piece n by means of a screw p^3 .

For the purpose of allowing the sprigs to project any suitable distance from the outside of the sole or heel h , so as to form a raised wearing surface, the depth of the presser foot p, p' relative to the throat g can be altered by exchanging the presser foot part p' for a higher one and altering the vertical position of the presser foot part p by means of a taper slide p^4 placed adjustably between the presser foot part p and the head portion b .

A further improvement consists in providing sprigging, nailing, riveting or pegging machines with a loose connection, see Sheets I, II and III, between the horn lever u and respective cam lever v , for the purpose of permitting the horn or support i to drop automatically according to the varying thickness of the object h under operation and thus reduce the pressure thereon during the feeding of the same. Such loose connection I form by suspending from the cam lever v , from which the horn lever u is operated, a strap w guided vertically in an arm a' formed on the frame a of the machine, the lower end of which strap w is lined with leather w' and adapted to grip and take with it, each time the horn or support i requires depressing, i. e., on feeding, a disk or segment x eccentrically attached to a rod u' jointed to the horn lever u . The disk or segment x which in diameter is slightly larger than the leather lining w' , is arranged to partially rotate on the end of a rod x' guided vertically in the arm a' , between the sides of the strap w , so as to allow the horn or support i to drop according to the varying thickness of the object h under operation. The rod v' which connects the strap w with the cam lever v is rendered adjustable in length, so as to permit of regulating the relative position of the strap w and disk or segment x and thus the time of contact and grip between the same and time of drop of horn or support i .

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination in a nailing machine of the feed roller, the means for operating the same including the ratchet m' , the pawl m^2 and the pawl lever m^3 , the driving device for engaging said pawl lever intermittently for operating the same, the said pawl lever being held in the path of the driving device, and the means for adjusting the position of the lever m^3 in the path of the operating device consisting of the adjustable stud m^4 , substantially as described.

2. In combination in a nailing machine the guide or shear piece n , having a perforation to receive the nail material, means on the upper side of said guide for feeding the said material into said perforation, a throat piece g on the lower side of the guide opposite the

feeding mechanism and bearing against the said side of the guide, the said throat piece having an opening to receive the end of the said material, the awl and the head b' carrying the same, the said throat piece being carried directly by the awl carrier or head b' , substantially as described.

3. In a nailing machine the guide or shear piece having an opening n^2 and fixed to the stationary head part the feeding mechanism on the upper side of the said guide, the awl carrier or movable head part, the awl carried thereby, the perforated throat piece carried directly by the awl carrier or head part adjacent to the awl and arranged with its face against the lower side of the stationary guide or shear piece and the driver f carried by the movable head part and arranged above the perforation in the throat piece to move therewith, the stationary guide being intermediate the throat piece and driver when the feeding takes place, substantially as described.

4. In sprigging nailing and riveting machines, the combination of a double set of feed rollers $l' l'' l'''$, a guide or shear piece n having two passages $n^2 n^3$ two throats $g g'$, two awls $e' e^2$, and two drivers $f f'$, means for throwing one set of feed rollers into and out of action and the means for also throwing the outer awl e' out of work, substantially as described.

5. In combination the horn or work support, the throat g , for the nail, the driver, the two-part presser foot p and p' with a suitably shaped face, said part p' being interchangeable and horizontally adjustable and part p being adjustable vertically and horizontally relative to the throat, and the means for hold-

ing the said presser foot substantially as described.

6. The two part presser foot suitably shaped to allow of rows of nails to pass between and means for vertically adjusting and interchanging relative to the throat whereby the presser foot may be changed to vary the distance the nails will project and the amount of wearing surface presented, substantially as described.

7. In combination in a nailing machine the horn or work support the cam and the cam lever for operating the same, and the connection from said cam lever to the horn, including a disk x , the strap w , in engagement therewith, the guiding means for said parts, and the rod u' , connected to the disk x , the two parts being arranged to permit the disk x , to adjust itself within the strap w , substantially as described.

8. In combination the stationary guide or shear piece having the opening n^2 , the throat g , the awl, and the driver and the movable head b' carrying the said throat, awl and driver toward and from the stationary guide, substantially as described.

9. In combination the horn or work support, the two awls, the awl slide, the two drivers, and the means for throwing one of said awls into and out of action, consisting of the lever e^5 , and the spring e^4 , substantially as described.

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

THOMAS GARE.

Witnesses:

ALFRED BOSSHARDT,
STANLEY E. BRAMALL.