(No Model.)

7 Sheets—Sheet 1.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.

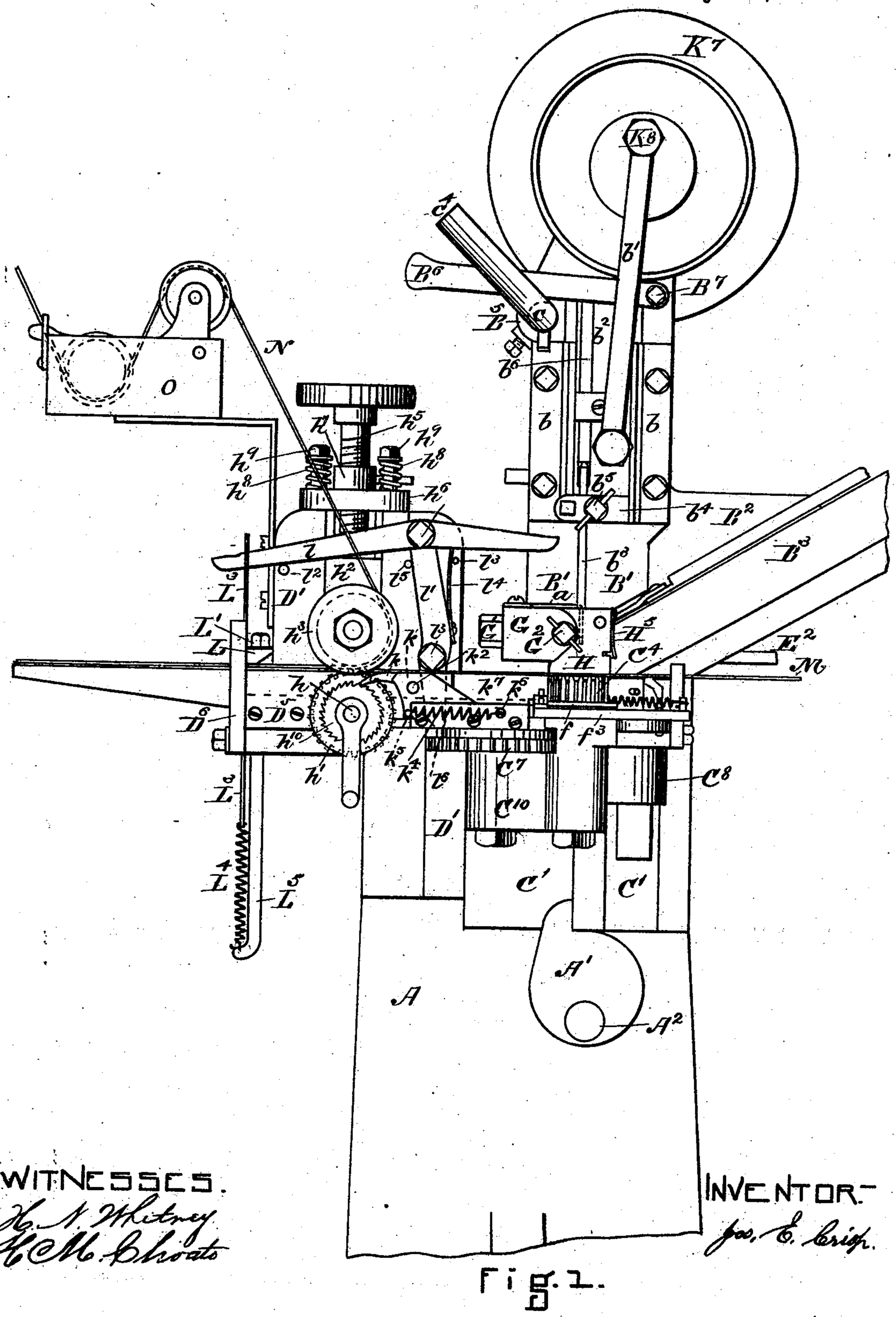


Fig. 2.

WITNESSES.
H. A. Whitney
H. M. Shoate

INVENTOR.
Jas. E. Crisp.

(No Model.)

7 Sheets—Sheet 2.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.

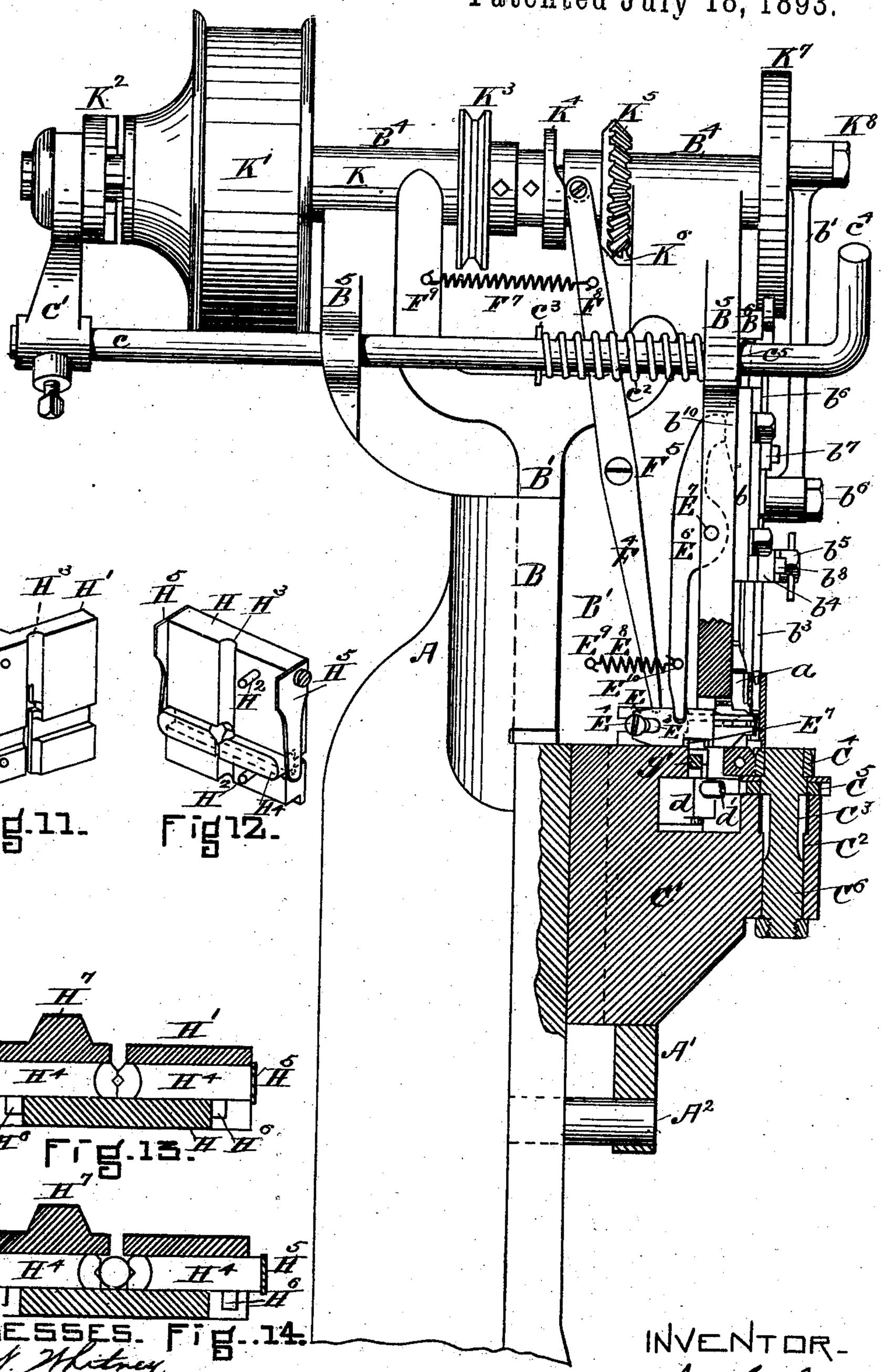


Fig. 2.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 14.

WITNESSES.

H. A. Whitney.

H. M. Chisdle

INVENTOR.

Jos. E. Crisp

(No Model.)

7 Sheets—Sheet 3.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.

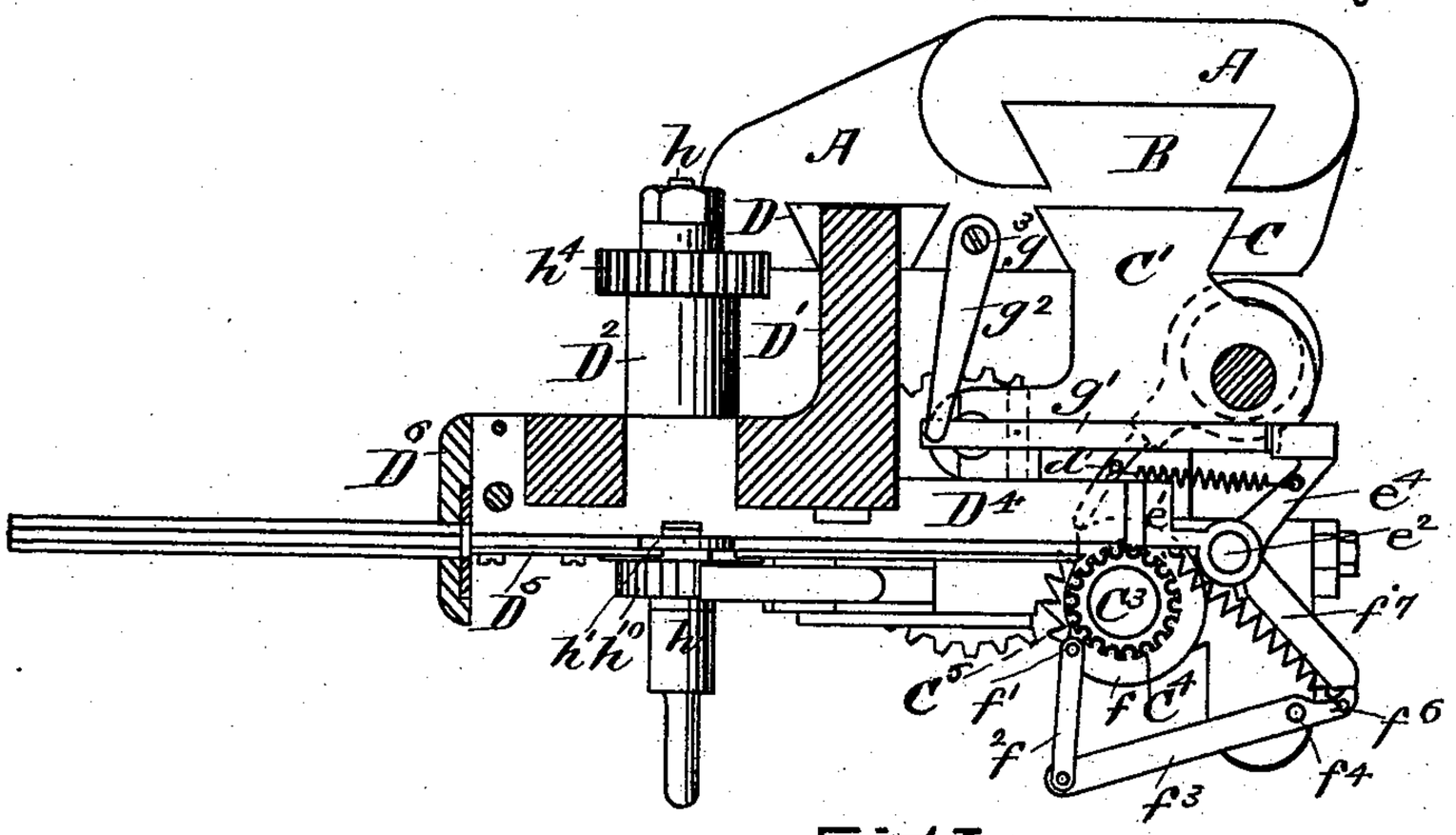


Fig. 5.

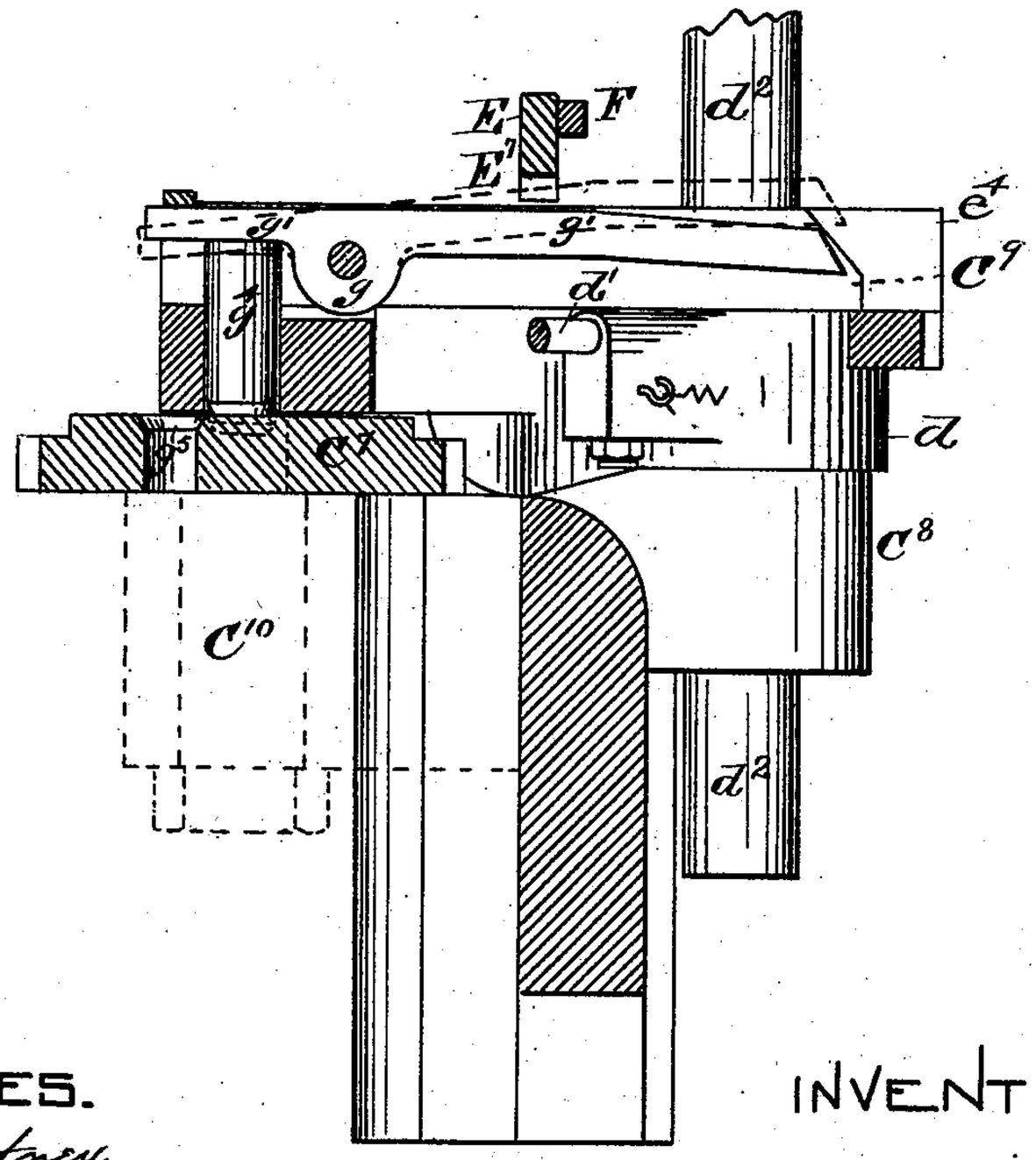


Fig. 4

WITNESSES.

H. N. Whitney

H. M. Choate

INVENTOR.

Jos. E. Crisp

(No Model.)

7 Sheets—Sheet 4.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.

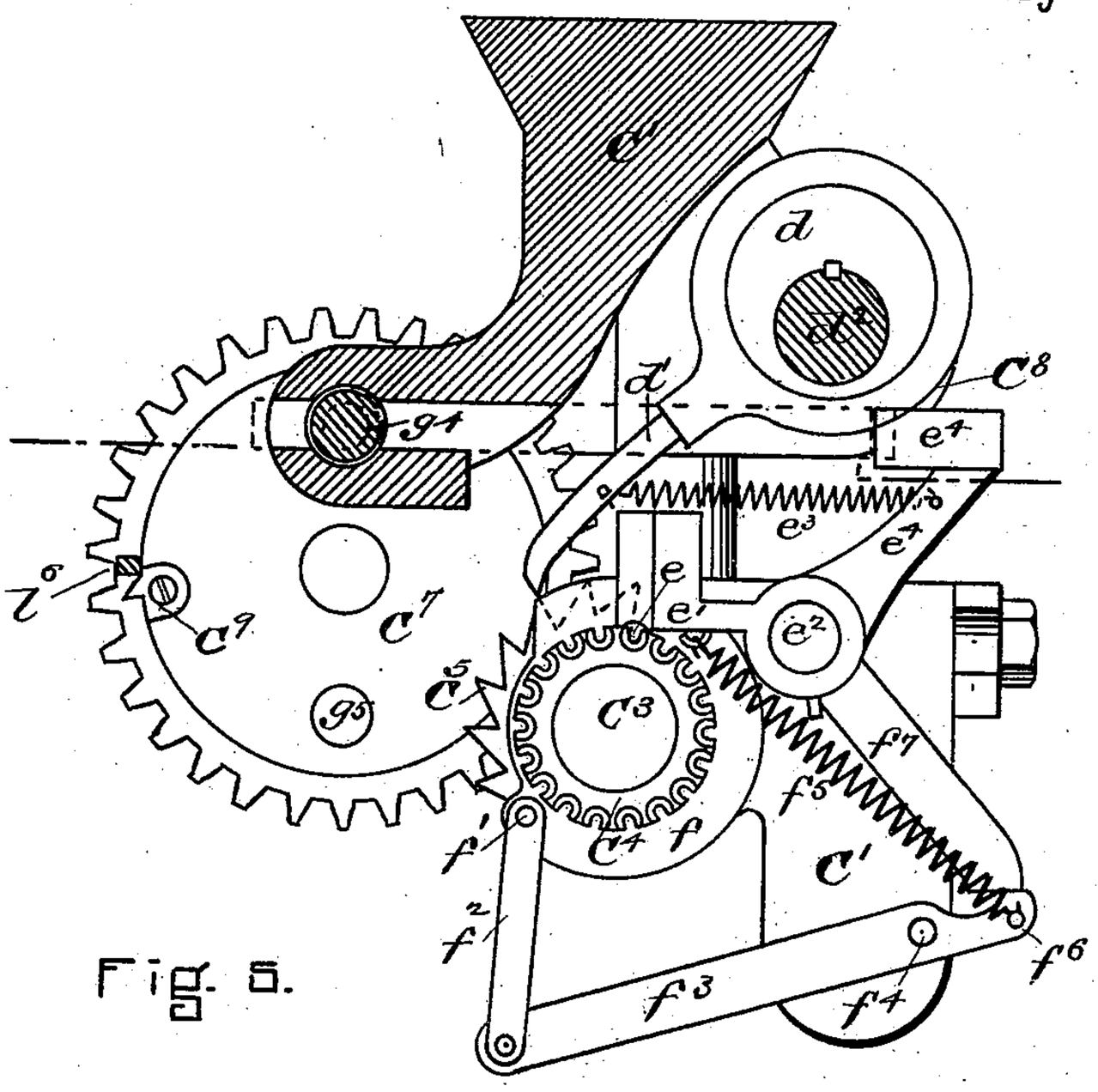


Fig. 5.

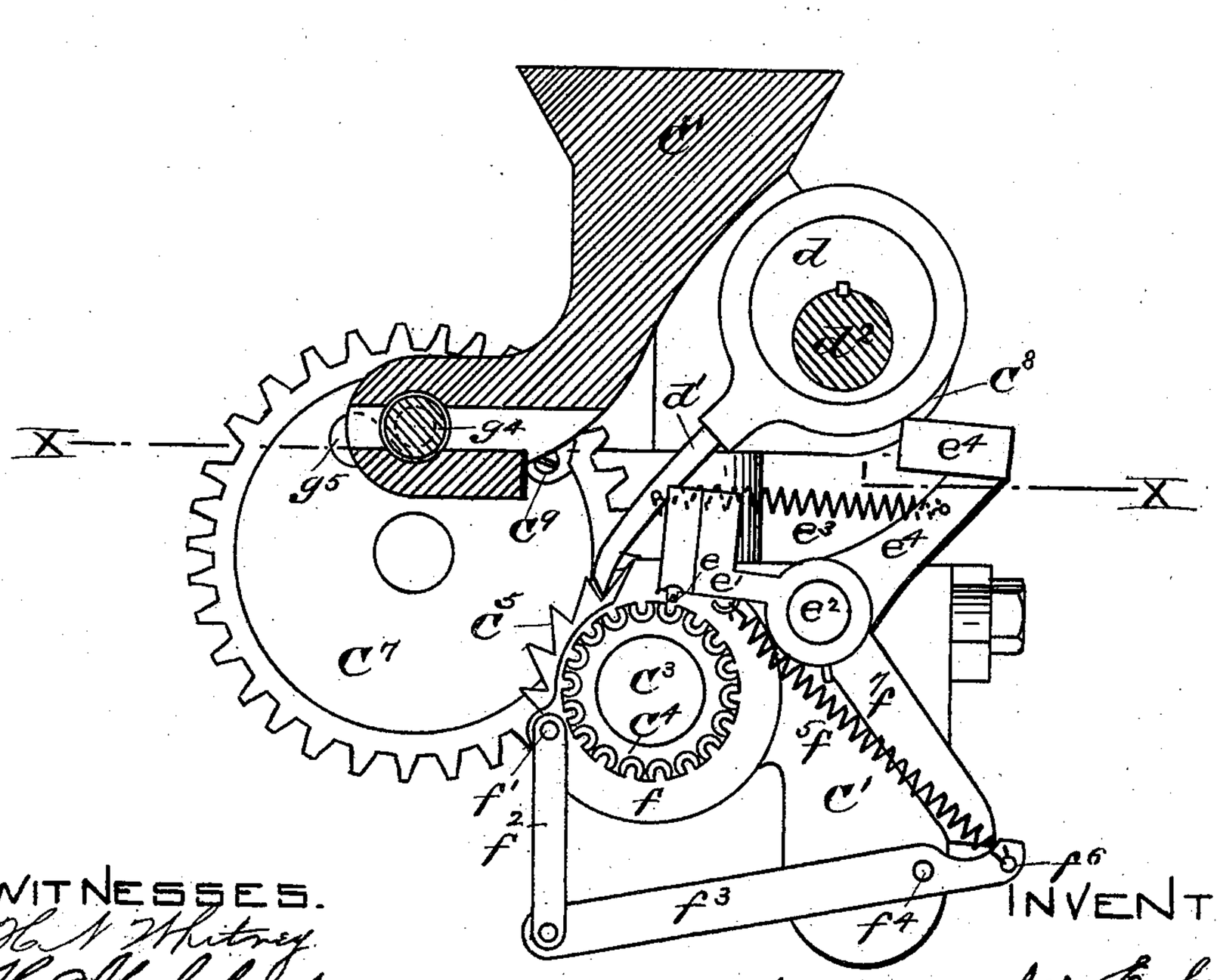


Fig. 6.

WITNESSES.
H. A. Whitney.
H. C. Hoadley.

INVENTOR
Jas. E. Crisp.

(No Model.)

7 Sheets—Sheet 5.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.

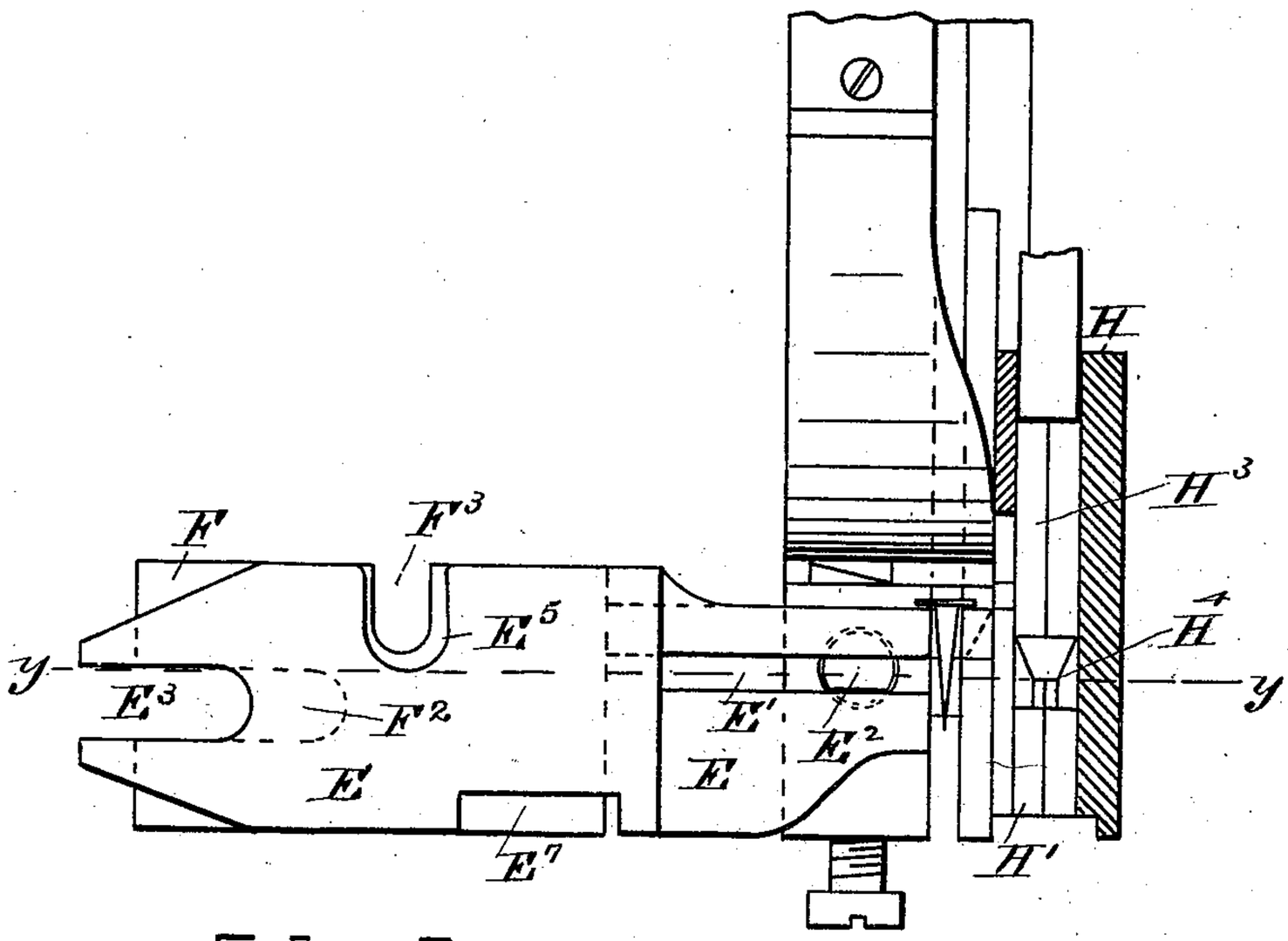
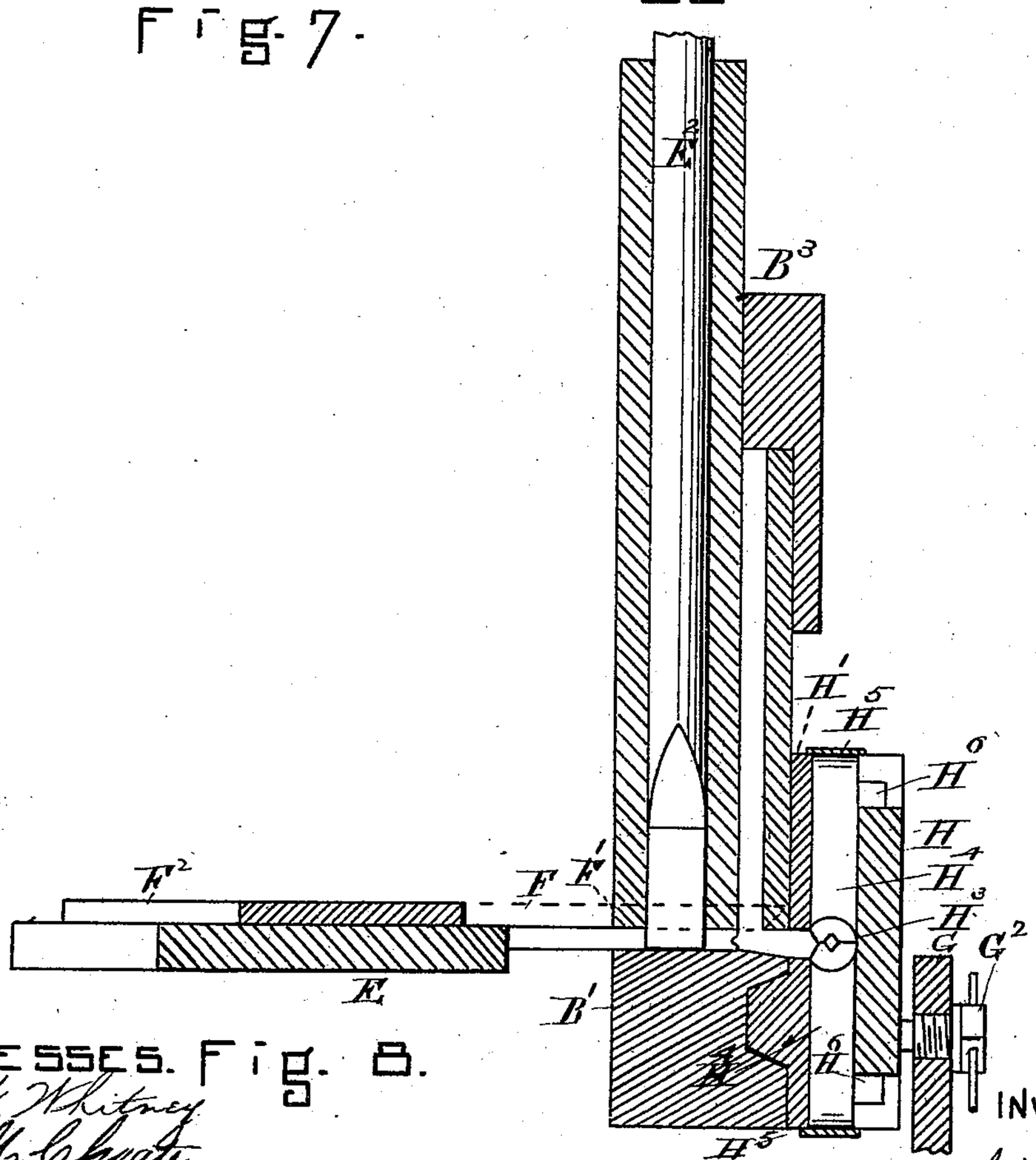


Fig. 7.



WITNESSES.

H. N. Whitney

H. M. Chvate

Fig. 8.

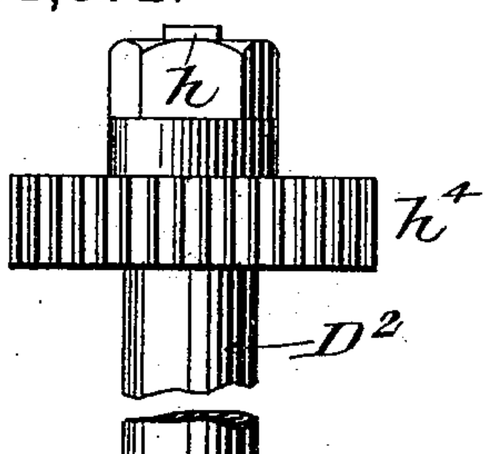
(No Model.)

7 Sheets—Sheet 6.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.



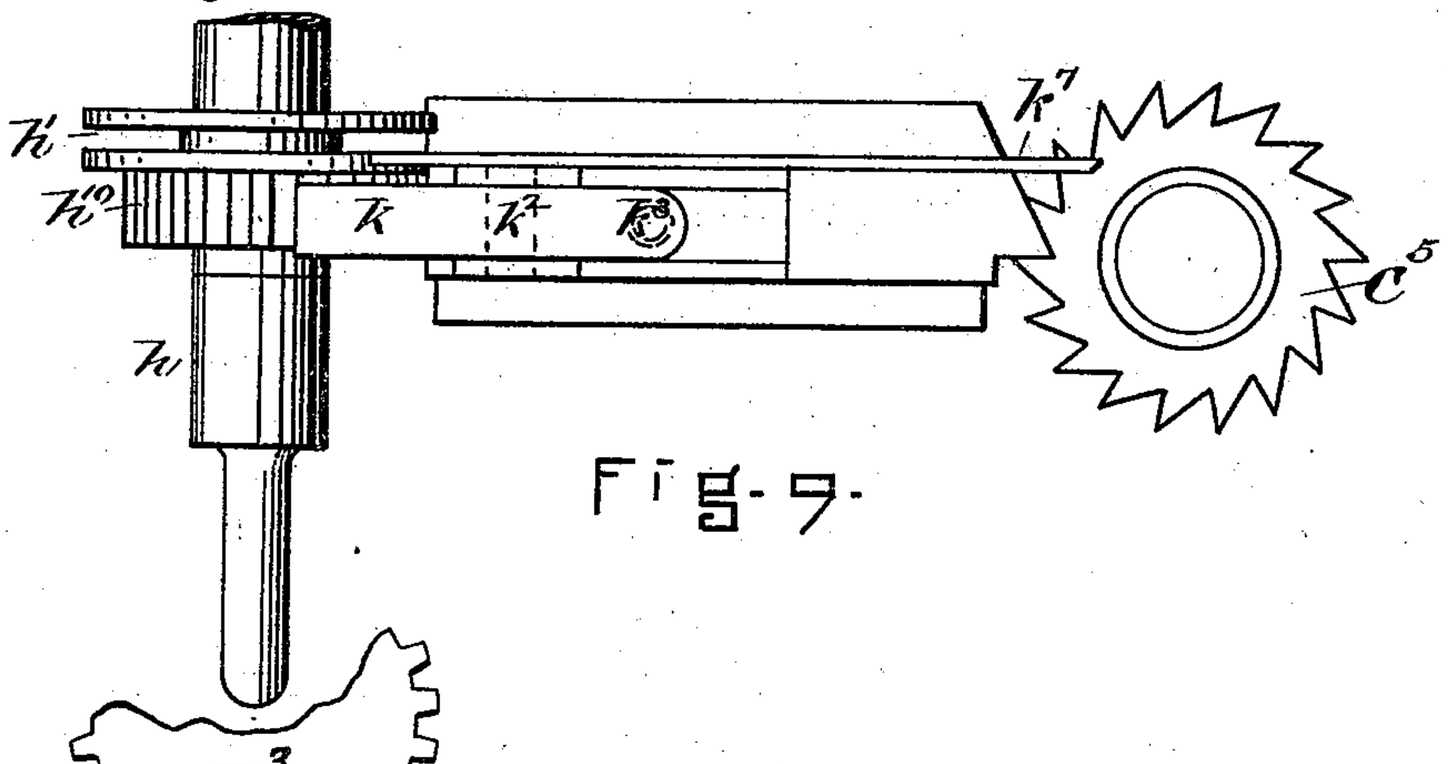


Fig. 9.

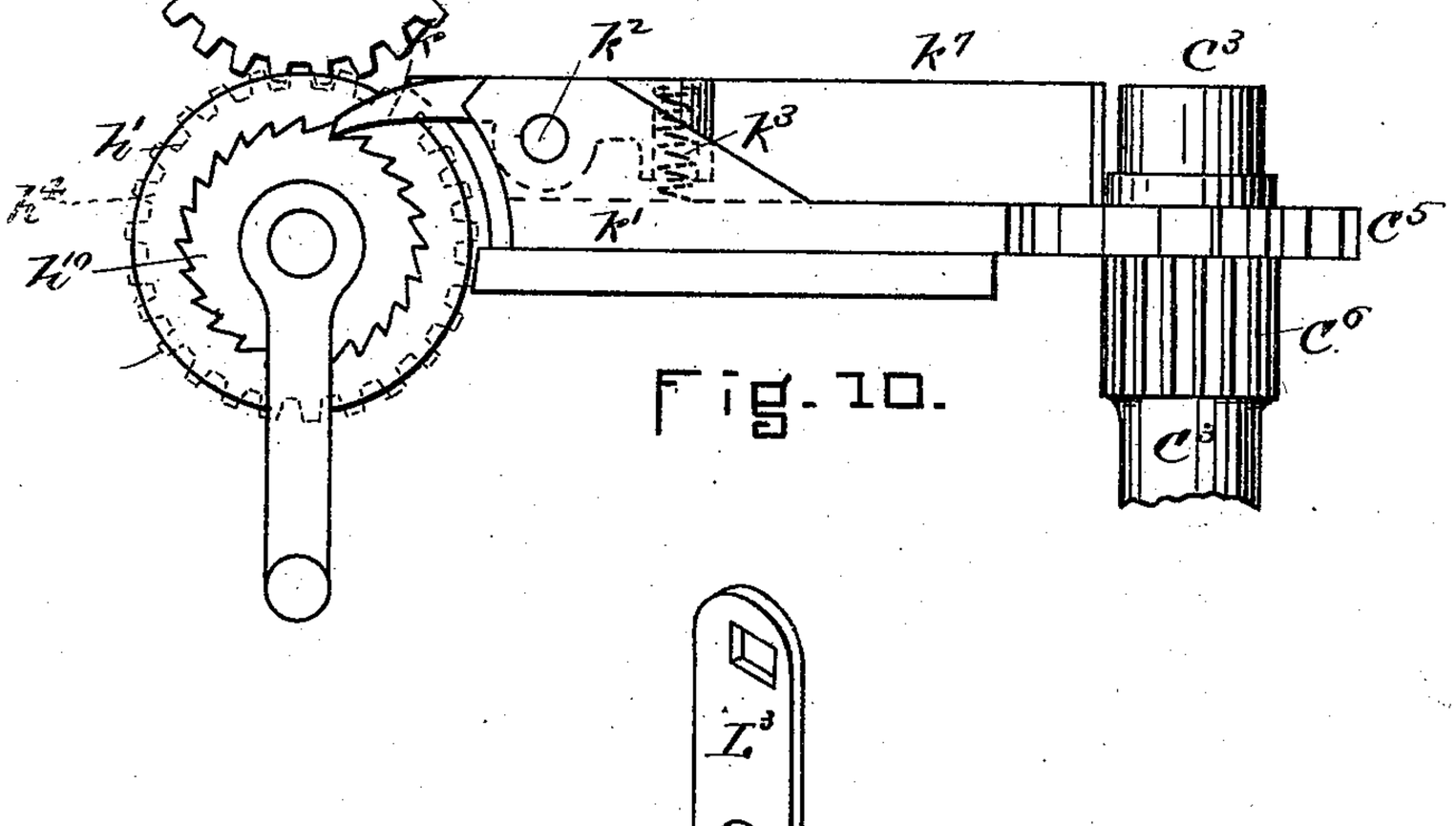


Fig. 10.

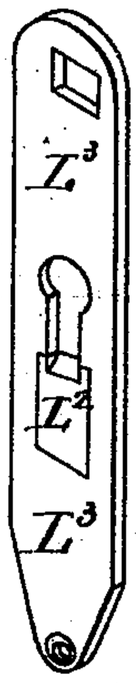


Fig. 15.

WITNESSES.

H. N. Whitney.

H. M. Shoate

INVENTOR.

Jos. E. Crisp

(No Model.)

7 Sheets—Sheet 7.

J. E. CRISP.

TACK SETTING MACHINE.

No. 501,872. Patented July 18, 1893.

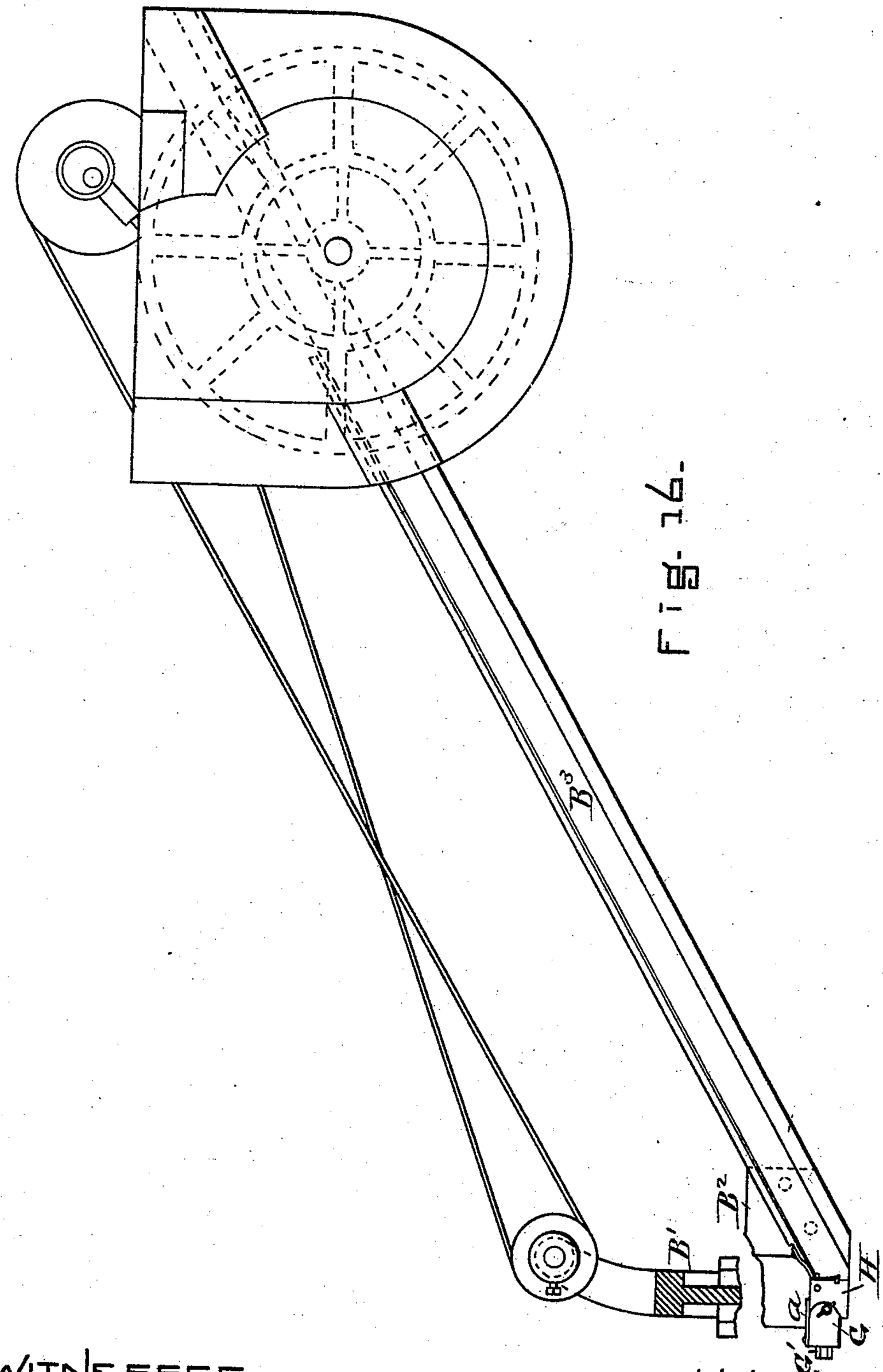


Fig. 16.

WITNESSES.
H. A. Whitney.
H. M. Choate

INVENTOR.
Jos. E. Crisp

UNITED STATES PATENT OFFICE.

JOSEPH E. CRISP, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE COPELAND RAPID LASTER MANUFACTURING COMPANY, OF MAINE.

TACK-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 501,872, dated July 18, 1893.

Application filed July 31, 1891. Serial No. 401,287. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. CRISP, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Machines for Setting Lasting-Tacks in Paper Receiving-Strips, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a front elevation of parts of the machine, showing a portion of the inclined chute from which the tacks are taken by the tack feeding devices, the tack setting mechanism, the tack strip feeding mechanism, the cutting devices which separate the continuous strip into desirable lengths, and parts of the paper strips which form the base and cover of the finished tack strip. Fig. 2, is a side elevation, showing the tack-setting and feeding mechanism, and a central section of the tack receiving wheel. Fig. 3, is a plan of the tack receiving mechanism and showing the under part of the strip feeding mechanism. Fig. 4, is an enlarged vertical section taken on the line *x x* Fig. 6, showing the devices used to cause the strip to move a space, for cutting purposes, when there has been no tack driven into the receiving strip. Figs. 5 and 6, are enlarged plans of the tack-receiving mechanism showing the two positions of the shield governing the operation of the strip feeding devices by the presence of tacks in the tack receiving wheel. Fig. 7, shows enlarged and detached portions of Fig. 2, showing the relations to each other of the tack separator and pusher. Fig. 8, is a section of Fig. 7, on line, *y*, *y*. Figs. 9, and 10, show enlarged a plan and elevation of the device used to transmit motion from the tack-receiving to the strip-feeding mechanism. Figs. 11, and 12, are perspective views of the throat of the machine through which the tacks are driven into the receiving strip. Figs. 13, and 14, are enlarged sections of Figs. 11, and 12, together, and show the two positions of the tack receiving nippers. Fig. 15, is an elevation of the strip cutting-knife. Fig. 16, shows a portion of the head B′, with the chute or roadway attached thereto carrying the hopper at its upper free end.

The object of this invention is to produce a quick running automatic machine, which will set lasting-tacks at predetermined distances apart in continuous strips of receiving paper; and gum a covering strip to the receiving strip over the heads of the tacks therein set, and finally cut the continuous strip into convenient lengths for use in the usual tack driving implements.

It relates to means for accelerating the flow of the tacks down the inclined chute or roadway through which they pass to the feeding devices.

It also relates to means, whereby the tack-setting machine will automatically stop in the shortest period of time possible; when there is an accumulation of tacks in the throat through which the tacks pass through into the receiving strip.

It furthermore relates to mechanism which insures the correct position and regularity of the tacks in the receiving strip; also to other improvements which will be described in connection with their co-operating parts.

The post A, part of which is shown in Figs. 1, 2, and 3, of the drawings, carries the various parts of the machine at a convenient height for the operator, and this post is provided with dovetails, B, C, D, at the top, into which are fitted heads carrying the operating parts of the machine; to this post are also attached the stands which carry the coils of paper forming when united, the finished tack-strip.

The head, B′, Figs. 1, and 2, is fixed in the dovetail B, and carries the tack driving and feeding mechanism. To this head at B^2, is attached the lower end of the inclined chute or roadway B^3, in which chute the tacks are arranged. The chute B^3, differs from those ordinarily used by being made quite long (three feet or more as desired) and has secured to its upper free end a tack hopper provided with an elevator wheel which elevates the tacks and delivers them into the path of the chute. This chute is so constructed that while it is strong enough to carry the hopper

and its parts loaded with tacks, it will vibrate when the machine is in motion and cause the tacks to flow down to the separating and feeding mechanism at its lower end with much less jar or hammering than the roadways now in use require.

Operating across the extreme lower end of the chute or roadway is the pusher E, Figs. 2, 7, and 8. This pusher is made a little thicker than the largest part of the shanks of the tacks it operates upon, and is fitted to reciprocate from the rear side of the path in the chute B^3, (as shown by Figs. 7, and 8,) to a point where it will push a tack shank centrally into the tack-holding-nippers forming part of the throat. The top edge of the working end of the pusher E, is positioned so that one side of the tack heads will rest thereon and a slot E′, is cut so that the pusher can pass over the nippers H^4, H^4, sufficiently to center the tack shanks in said nippers by pushing upon them above and below the nippers, this slot E′, extending back from the end to allow the flattened end of the pin E^2, to pass through and support the front end of the pusher; and a slot E^3, is cut in the rear end of the pusher for the supporting screw E^4, a slot E^5, being formed in the thick part of the pusher for the reciprocating lever E^6, and a portion of the lower part being cut away at E^7. The working face of the pusher is concaved to keep the tack shank steady as it is being pushed from the line of the chute to the center of the throat.

The pusher is operated by the lever, E^6, pivoted at, E^7, to the head, B′, and this lever is given a positive forward motion by the incline, b^{10}, attached to the slide, b^2, carrying the tack driver b^3, the incline b^{10}, being set upon the slide so that the pusher will be at its extreme forward position when the slide is at its highest point. The return or backward motion of the pusher is caused by the spring E^8, attached to the head B′, at E^9, and to the lever E^6, at E^{10}.

Moving close to the side of the pusher E, is the tack separator F, which separates single tacks from the line moving down the chute B^3, and delivers and holds them before the working face of the pusher E. The working end of this separator F, moves in the groove F′, formed across the lower end of the chute B^3, a little below the tack heads; and it is made a little thinner than the average tack shanks, with its working point beveled nearly to a point ending at the top on the opposite side from the pusher; so that as it moves forward it will pass between the first and second tack shanks and crowd the first one of them before the path of the pusher. The rear end of this separator is slotted at F^2, to reciprocate over the supporting screw E^4, and a slot F^3, is made for the end of its reciprocating lever F^4. The lever F^4, is pivoted to the web of the head B′, at F^5, and is given positive backward motion by the cam K^4, fixed upon the driving shaft K. The spring F^7, which is attached to the lever at F^8, and the head B′, at F^9, draws the separator forward so that it will carry the tacks before the pusher E′. The spring F^7, is strong enough to draw the separator F, so long as fairly formed tack-shanks are presented to its working point, but should a crooked or flatted tack-shank move down the chute B^3, the point of the separator will not slide past it, but rest thereon, and the separator thus serves as a lock to stop the flow of tacks until the tack at fault is removed by the operator, thus preventing injury to the machine or a fault in the finished tack-strip.

To the lower part of the head B′, the clamp G, is secured by the bolt G′, and the clamping screw G^2, holds the throat through which the tacks are driven into the receiving strip, Figs. 1, 2, 7 and 8. The throat is composed of the parts H, and H′, which are held in proper relation to each other by the steady pins H^2, and form the driveway H^3, and guides for the spring nippers, H^4, to slide in. On the back part of the throat is formed a guiding rib H^7, which fitting into a corresponding recess formed in the lower part of the front of the head B^3, assures the correct lineal position of the driveway in the throat with the driver. The part H′, is also slotted as shown to permit the tacks and pusher to pass into the driveway H^3, as has been described.

The nippers H, Figs. 12, 13, 14, are square in section and positioned with reference to the pusher E, so that they will receive and hold the tack-shanks by the straight part thereof a little above the receiving strip and perfectly aligned when the tack driver strikes their heads. The nippers H^4, have their inner ends countersunk on the top to a slightly larger circle than that of the driveway, and the remaining part through is formed to a square hole less in size than the smallest tack shank they are to operate upon, best seen in Figs. 7 and 8. The sides of these nippers are inclined so that the tack shanks will spring them open and pass to the center of the driveway by the action of the pusher in its forward movement. The springs H^5, Fig. 12, press these nippers toward the center of the driveway, and stop pins H^6, Figs. 13 and 14, assure the correct position of the nippers in the throat when there is no tack shank held between them. To cause the tack shanks to move forward in contact with the face of the pusher E, a spring presser foot *a*, is secured to the clamp G, Figs. 1, and 7, which presses the tack heads upon the top edge of the pusher until their shanks contact with the inclines of the nippers.

On the upper part of the head B′, Fig. 2, are formed bearings B^4, B^4, for the driving shaft of the machine K. Loose on this shaft runs the driving pulley K′, which pulley can be connected to the shaft K, by the clutch K^2, when it is desired to set the machine in motion. This main shaft has fixed to it, the pulley K^3, for driving the elevator wheel of the tack hopper; the cam K^4, for giving the sepa-

rator F, positive backward or return motion; the bevel gear K^5, which intermeshes with the bevel gear K^6, and at the front end the crank disk K^7, whose crank pin K^8, operates the sliding head b^2, by means of the connecting rod b', which is connected to it at b^6.

Bolted to the front of the head B', are the gibs b, b, between which the connecting rod b', reciprocates the sliding head b^2. To this sliding head is clamped the tack driver b^3, by the clamp b^4, and clamping screw b^5, Figs. 1, and 2.

The clutch K^2, is operated by the clutch rod c, which slides in bearings formed upon the head B', at B^5, B^5. On the rear end of this clutch rod is secured the yoke c', and between the bearings is the spring c^2, operating against the cross-pin c^3, to separate the parts of the clutch. The front end of the clutch rod c, is bent into a handle c^4, and back of this handle is the cross-pin c^5, which limits the action of the spring c^2. The upper end of the cross-pin c^5, is formed into a catch to engage with the latch B^6, and hold the parts of the clutch together, against the action of the spring c^2, when it is desired that the machine should operate. The swinging latch B^6, is hung on the head B', at B^7, so that as its lower side clears the catch, of the pin c^5, the upper side will contact with the circumference of the crank disk K^7, and serve as a brake to retard its revolution.

In the dovetail C, is the head C', carrying the tack receiving devices. This head is fitted to slide in the dovetail and is held up by resting on the highest part of the cam A', Figs. 1, and 2, which cam revolves on the stud A^2, and is revolved by the operator when it is desired to raise or lower the head C', to clear or examine the mechanism carried by said head.

On the head C', Figs. 1, 2, and 3, there is formed a bearing C^2, for the shaft C^3, to revolve in; and fixed to the top end of this shaft is the tack receiving wheel C^4, the ratchet C^5, part of the shaft being cut into a pinion C^6, to drive the gear C^7. The tack receiving wheel C^4 is a little wider than the longest tack the machine is designed to operate upon, and in its circumference are cut grooves that will just receive the largest part of the tack shanks. These grooves are spaced the same distances apart that it is desired to set the tacks in the receiving strip, and the wheel C^4, is revolved one of these spaces by the ratchet C^5, each time a tack is driven from the throat into one of the spaces. The ratchet C^5, has as many teeth as there are spaces in the receiving wheel, and it is driven by the pawl d', operated by the eccentric d, Figs. 5 and 6; and said eccentric is revolved by being keyed to the vertical shaft d^2, so that its key can slide in a spline formed thereon. This vertical shaft is mounted in bearings on the heads B', and C', those upon C', C^8, and C^9, carrying between their faces the eccentric d, so that it will slide upon the shaft d^2, as the head C', is lowered or raised, the bevel gears K^5, and K^6, revolving the shaft d^2, in unison with the driving shaft K, Figs. 2, 5, and 6.

In order to secure perfect spacing and alignment of the tacks in the receiving strip, a tongue e, is fitted to fill the grooves of the receiving wheel, and is attached to the swinging arm e', so that it can be swung and be held by a yielding pressure into the groove of said wheel under the throat, ready to receive a tack shank. The top of this tongue and all of the grooves are countersunk, to center the tack points if required. The swinging arm e', is pivoted at e^2, and the spring e^3, which is extended between the arm e^4, attached to the same hub and the pawl d', serves to operate both of them. This spring is sufficiently strong to draw the tongue into the groove and cause the receiving wheel to register correctly. When the tack shank is forced into the groove the tongue forces said shank to stand vertically in the receiving strip, even should the point of said tack have started into said strip near the edge of the countersink. This it does by causing the tack shank to work its way toward the correct position as it passes through the receiving strip, the strip being held at that time under the throat by the feeding wheel.

From the preceding description of the tack feeding mechanism it will be seen that from various causes the delivery of tacks into the throat may be prevented, and that unless the mechanism revolving the receiving wheel and moving the feeding mechanism was automatically stopped the machine would continue to feed and cut off imperfect or blank strips, thus causing a waste of material. To prevent such waste a shield is positioned over the tooth of the ratchet wheel C^5, which the pawl d', will engage with, and is only removed to allow of such engagement by the presence of a tack shank in the groove of the receiving wheel which is under the throat for its reception. This shield is arranged and operated as follows, Figs. 1, 5, and 6: The shield f, consists of a thin piece of metal formed as shown, and it is mounted upon a bearing between the receiving wheel C^4, and the ratchet C^5, Fig. 1, so that it can be swung from the position Fig. 5, to that of Fig. 6, and the width of the point of the pawl d', is made the same as that of the ratchet and shield combined. Attached to the shield f, at f', is the connection f^2, which is operated by the lever f^3, fulcrumed to the head C', at f^4, and to the shorter end of this lever the spring f^5, is connected at f^6, to draw the parts to the position Fig. 5, and cause the point of the pawl d', to ride over the point of the ratchet tooth without engaging therewith, when the tongue is resting on the bottom of one of the grooves. The arm f^7, is attached to the hub carrying the swinging arm e', and as the tack shanks are forced into the groove, the outer end of the arm f^7, swings to the position Fig. 6, and in so doing moves the lever f^3, connec-

tion f^2, and shield f, disclosing the ratchet tooth which the pawl d', must engage with in order to move the receiving wheel one space; and when so moved, the spring f^5, draws the parts back to position Fig. 5, where they remain until another tack shank is forced between the tongue and bottom of a groove. The tacks are set in the continuous receiving strip so that their heads will nearly meet, and as said heads are somewhat irregular, they might come in the path of the shear which automatically cuts said strip into convenient lengths.

In order to provide sufficient room for the operation of the cutting shear without chance of injury thereto, and without doubling, for one revolution of the machine, the length of the feed, a tack is left out of the receiving strip at the desired intervals, and the strip is caused to feed as if said tack shank had been forced into the receiving wheel. This result is attained in the following manner:— Pivoted to the head C', at g, is the lever g', Figs. 2, 3, and 4. This lever g', when inactive rests as is shown by the full lines in Fig. 4, and has its longer end beveled so that it lies under a corresponding incline formed upon the outer end of the arm e^4, when the tongue e, is resting in the bottom of a groove. A spring g^2, is fixed at g^3, to the post A, and this spring is strong enough to depress the shorter end of the lever g', and move the tongue e, out of a groove as a tack would do, by the contact of the inclines. To allow the lever g', to operate at the desired times, a round pin g^4, is fitted so that it will slide free in a hole formed for its reception in the head C', Figs. 4, 5, 6, and there is positioned under this pin, to hold it up against the pressure of the spring g^2, the gear C^7. The gear C^7, has its bearing on the head C', at C^{10}, and it intermeshes with the pinion C^6, and is revolved one turn by four turns of the pinion. The lower end of the pin g^4, rests upon the face of the gear C^7, and is beveled to fit a countersink g^5, formed in said face, and as the gear is revolved the pin g^4, drops at the proper time into the countersink and the spring g^2, raises the long end of the lever g', which operates the shield as desired. At the same time the part of the lever g', under the pusher E, moves up into the cutaway part thereof E^7, and prevents the spring E^8, from drawing the pusher sufficiently back to have another tack moved into its path of action until the receiving wheel has moved one space, and the pin g^4, is raised from the countersink g^5, when the tacks are delivered as before. When the head C', is dropped down for any purpose the spring g^2, is of course separated from all contact with the lever g', and the gear C^7, and the receiving wheel C, can be readily revolved by hand if desired and without moving the tack receiving strip.

The tack receiving wheel has been described as having its receiving grooves cut the distance apart which it is desired the tacks should be set in the receiving strip; but the quick and irregular strains, caused by the intermittent movements of the receiving wheel upon the receiving strip as the wheel unwinds it from the reels upon which the strip is wound for use in these machines, would cause a variation in the pitch of the tacks as they are set into the strip, which would interfere with the strips feeding in the tack driving machines in which they are used for lasting purposes. To remedy this the pressure rolls which are used to unite the covering strip to the receiving strip, are positioned near the receiving wheel and are positively driven by the following mechanism: The head D', is fixed in the dovetail D, of the post A, and in a bearing D^2, formed on said head, Figs. 1 and 3, revolves the short shaft h, carrying the grooved roll h', Figs. 10, and 11. The face of this roll is made the width of the tack strip, and the groove is wide and deep enough to pass the largest tack shank the machine is designed to operate upon. Mounted upon a similar shaft, which revolves in the adjustable bearing h^2, is the flanged pressure roll h^3, Fig. 1, whose flanges just pass over the sides of the grooved roll. To the rear ends of the shafts carrying these rolls are fixed gears h^4, which cause the rolls to revolve in unison. The covering strip being wetted upon its under surface to moisten the adhesive gum of course expands in length somewhat before it is pressed upon the dry tack receiving strip, and were the diameters of the two pressure rolls the same, when the combined strip was dry, it would curl up more than is desirable. To remedy the defect the diameter of the face of the upper roll h^3 is made about one one-hundredth of an inch larger than the diameter of the face of the lower pressure roll h' and these rolls by their differential action upon the two strips insure that the covering strip is laid smooth upon the receiving strip when they are united between the rolls and there pressed together. The differential diameters of these rolls are so proportioned that the strip is correctly fed as the rolls revolve, their grip being such that it cannot slip, while the nearness of the roll to the receiving wheel, fixes the receiving strip at that point, sufficiently to secure the desired result. A presser foot working close to the strip receiving end of the throat would do equivalent service. The adjustable bearing h^2, is raised and lowered by the screw h^5, which is cut right and left, and tapped into the slide of the bearing and the spring governed nut h^6; thereby giving the bearing quick movements. This screw h^5, is held in any desired position by the lock-nut h^7. The springs h^8, hold down the nut h^6, and the tension of these springs is set by the screws h^9, to whatever pressure it is desired that the rolls h', h^3, should give. This arrangement allows the operator to separate the pressure rolls, and always bring them back to the same pressure, without especial care, and also allows laps in the strips to pass

between the rolls without injury to the finished strip. When the feeding and pressure rolls are in operation they are driven by the ratchet h^{10}, fixed to the shaft h, outside of the grooved roll h', which ratchet is operated by the pawl k, which is pivoted to the slide k', at k^2, and pressed into the teeth of the ratchet by the spring k^3, Figs. 1, 3, 9, and 10. This slide k', is fitted to slide in a guide way in the head D′, Fig. 1, and it is reciprocated between the wheel C^4, and the grooved roll h', so as to cause its pawl to move the ratchet h^{10}, tooth by tooth as follows:—The rear end of this slide is beveled to fit a space between two teeth of the ratchet C^5, and the slide is drawn back into this space by the spring k^4, fixed to the slide at k^5, and to the head D′, at k^6, as shown by Figs. 9 and 10; and whenever the ratchet C^5, is moved one tooth by the pawl d', the beveled end of the slide is forced forward by the inclined side of the ratchet tooth it is resting against, and thus gives the requisite positive motion to the ratchet h^{10}. When the ratchet C^5, has moved the full tooth, the spring k^4, draws the slide back into the next space, where if required, it would act as a retainer pawl to assure the location of the ratchet C^5. It will be seen that the slide with its pawl forms a device by which intermittent rotary motion can be transmitted from one shaft to another regardless of the angles of rotation of said shafts, and may be the subject of another application for patent. There is fixed to the slide k', a thin piece of sheet metal k^7, that serves in combination with a part D^2, of the head D′, as a guide path to lead the tack shanks in the receiving strip from the receiving wheel to the grooved pressure wheel. Beyond said wheel there is fixed to the head D′, a guide way D^5, leading to the cutting off shears, which are timed to operate when the vacant space left in the strip is at rest between them. The stationary part of these shears L, is fixed to the head D′, by the screw L′, and this part is raised to allow the tack strip to pass under it, and also has its receiving side beveled as shown by Fig. 1. The movable part of these shears L^2, is carried in the slide L^3, which is fitted to slide in the ways D^6, secured to the head D′. This slide is operated upward by the lever l, fulcrumed to the swinging lever l', and it is drawn down so that the lever l, may rest upon the stop pin l^2, (when the tack points clear of the shear L^2,) by the spring L^4, attached to it and to the rod L^5. The swinging lever l', is fulcrumed to the head D′, at l^8, and is pressed back by the spring l^4, so that it rests against the stop pin l^5. This lever has a downward projection l^6, which by contact with the incline c^9, fixed to the gear C^7, Fig. 5, swings its upper end toward the sliding head b^2, at the proper time and holds the end of the lever l, under the square stud b^8, which is fixed to the sliding head b^2, and causes the downward motion of said head to operate the slide L^3, and thus cuts off a tack strip of the desired length for use. The driving shaft K, and the parts fixed to it, are made as light as possible, to reduce their momentum and cause them to stop quickly when disconnected from the driving pulley by the raising of the latch B^6, and applying it as a brake to the crank-disk, at a motion of the operator. The machine is fitted to automatically stop should the throat clog from any cause, in the following manner: The tack driver b^3, is clamped just tight enough to the sliding head b^2, to cause it to drive the tack shanks into the receiving wheel; and then there is placed above said driver the sliding rod b^6, which is loosely held to the sliding head by the clamp b^7, Fig. 1, centrally over the driver. This sliding rod rests upon the top end of the driver, and its top end just touches the latch B^6, when the driver is at its highest point, and correctly held. If from any cause the throat clog during the descent of the sliding head b^2 the driver b^3 will rise therein moving up also the sliding rod b^6, and upon the ascent of the sliding head b^2 the upper end of the sliding rod b^6 will contact with and raise the latch B^6 clear of the catch on the pin c^5, after which the continued rising of the sliding head b^2 (if any) will cause the sliding rod b^6 to press the opposite side of the latch B^6 against the circumference of the crank-disk K^7 and stop its revolution. The catch on the pin c^5, is made very short, and the location of the sliding rod b^6, with reference to this pin is such that it requires but a slight movement of the driver in its clamp to release the catch and apply the brake as desired. The tack receiving strip M, is of the ordinary kind and is unwound from the reel and fed along by the action of the pressure and feeding rolls as has been described. The covering strip N, is gummed on one side as usual, and is also unwound by the pressure and feeding rolls, which rolls also unite it to the receiving strip on each side of the tack heads, the face of the upper pressure roll being slightly grooved therefor, and the strip is correctly led by the flanges thereon. The gum of the covering strip N, is wet by passing said strip through the water held in the receptacle o, instead of wetting the gummed side only, the change being advisable on account of the increased velocity of feeding the strips. To prevent this rapid movement from breaking said strip after being wet by the strain of unwinding it from the reel, there is interposed between the receptacle o, and the reel, an elastically mounted roll, (not shown in the drawings) which roll relieves the covering strip from undue strain.

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

1. In combination with a tack strip setting machine an inclined chute or roadway, mounted elastically on and secured to said machine at the lower end only, and which has secured to and supports at its upper free end, a tack hopper, and mechanism whereby tacks are ar-

ranged in said chute, the length of said chute between the tack setting and the tack arranging mechanism being such as to cause the action of the machine in motion, to vibrate the chute, whereby the flow of tacks from the hopper to the setting mechanism is accelerated, by said vibrations substantially as described.

2. In a tack setting machine, in combination with a tack chute, a tack separator, and a tack pusher, each substantially the thickness of the tack shanks, which reciprocate, next and parallel to each other, at right angles to and across the lower end of said tack chute; a spring to cause the separator to move a tack from the chute to before the pusher, and a suitable cam and connecting mechanism to move the separator back at the proper time, a suitable cam and connecting mechanism to cause the pusher to move the tack into the nippers of the throat and a spring to return the pusher at the proper time, all operating substantially as shown and described.

3. In a tack setting machine, in combination with the throat thereof comprising two slotted plates secured together, of horizontally operating spring-nippers, to take a tack from the pusher, and hold it vertical for the action of the driver, and tack feeding, driving and receiving mechanism all substantially as shown and described.

4. In a tack setting machine a tack receiving wheel provided with grooves for the reception of tack shanks as described, in combination with a tongue fitting said grooves, and a spring for drawing and holding said tongue into said grooves until forced therefrom by the introduction of a tack shank, whereby said tack shank is forced to stand vertical, and tack feeding and driving mechanism all substantially as described.

5. In a tack setting machine, in combination with its receiving wheel and a tongue held in the receiving groove thereof, a shield and suitable connecting mechanism to said tongue whereby the presence of a tack shank in the receiving wheel operates said shield and discloses the tooth of the ratchet wheel operating the receiving wheel to the action of an operating pawl, which pawl thereby presents a vacant space of the receiving wheel for the reception of the next tack delivered from the throat, and tack feeding and driving mechanism all substantially as shown and described.

6. In a tack setting machine mechanism for moving the tack receiving strip one space, combined with detent mechanism substantially as described for stopping the pusher which delivers the tack which is to be placed in said space, without varying the speed of the tack driving or tack strip feeding mechanism, substantially as described and for the purposes set forth.

7. In a tack setting machine, combined pressure and feeding rolls of different diameters, in combination with gearing having the same pitch diameters, whereby their revolutions are made synchronal, and a suitable ratchet, slide, and spring for operating the lower roll at the correct interval, all arranged and operating substantially as shown and described.

8. In a tack setting machine, the combination with a stud mounted on the clamp b^4 moving with the tack driving slide, a pivoted horizontal lever on the swinging lever l' for operating a shear slide, and mechanism for moving the end of the lever under the stud at the proper time, to separate a desired portion from the finished tack strip, substantially as shown and described.

9. In a tack setting machine the slide carrying the driver, (the rod loosely mounted therein) and the driver, in combination with a latch located as described, and a crank disk, said latch operating as a brake upon the circumference of the crank disk, substantially as shown and described.

JOS. E. CRISP.

Witnesses:
H. N. WHITNEY,
H. M. CHOATE.