

(No Model.)

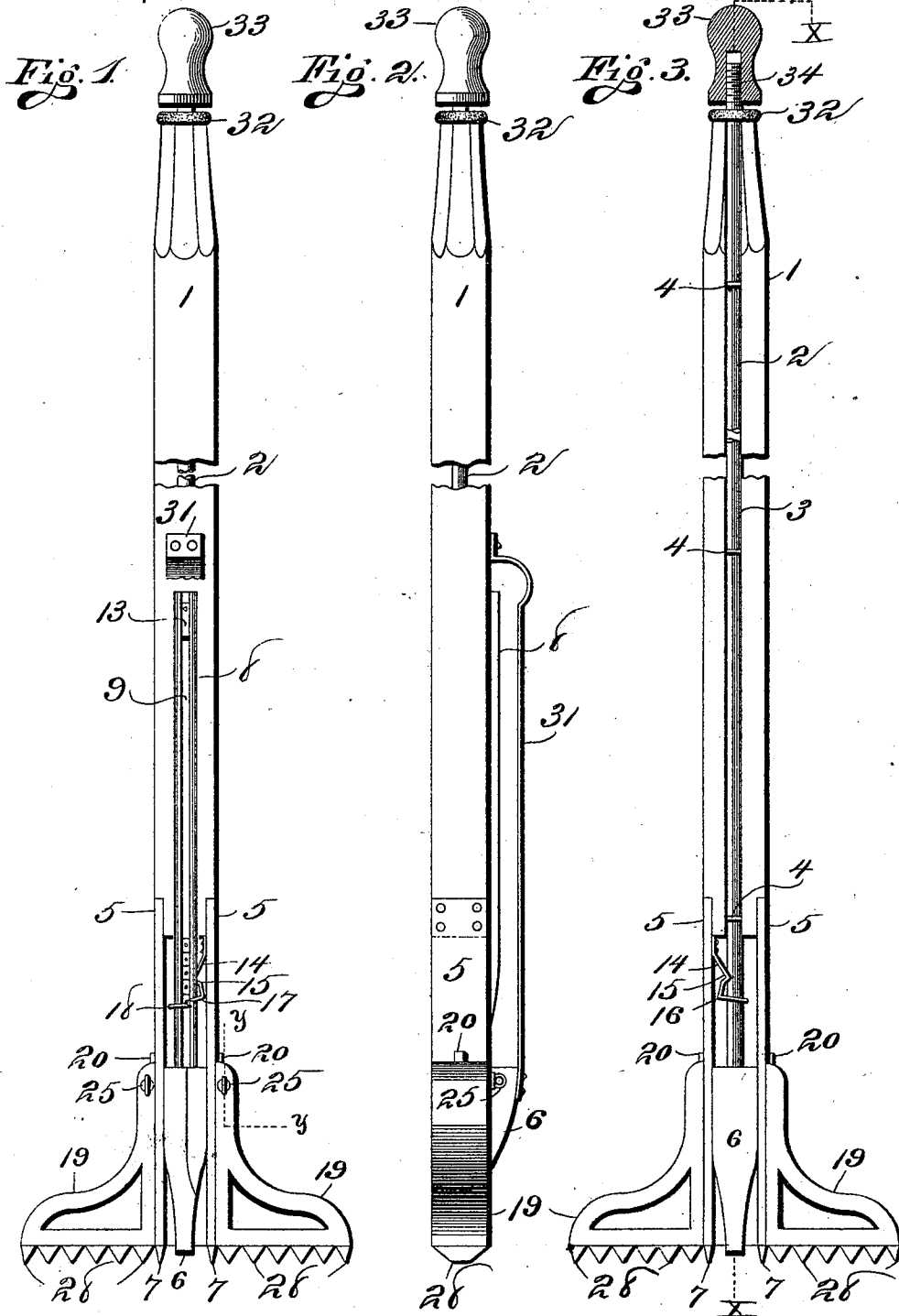
2 Sheets—Sheet 1.

A. J. SMITH.

COMBINED TACK DRIVER AND CARPET STRETCHER.

No. 516,455.

Patented Mar. 13, 1894.



Witnesses;

W. J. Banker,
M. P. Smith.

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Inventor:

Andrew J. Smith

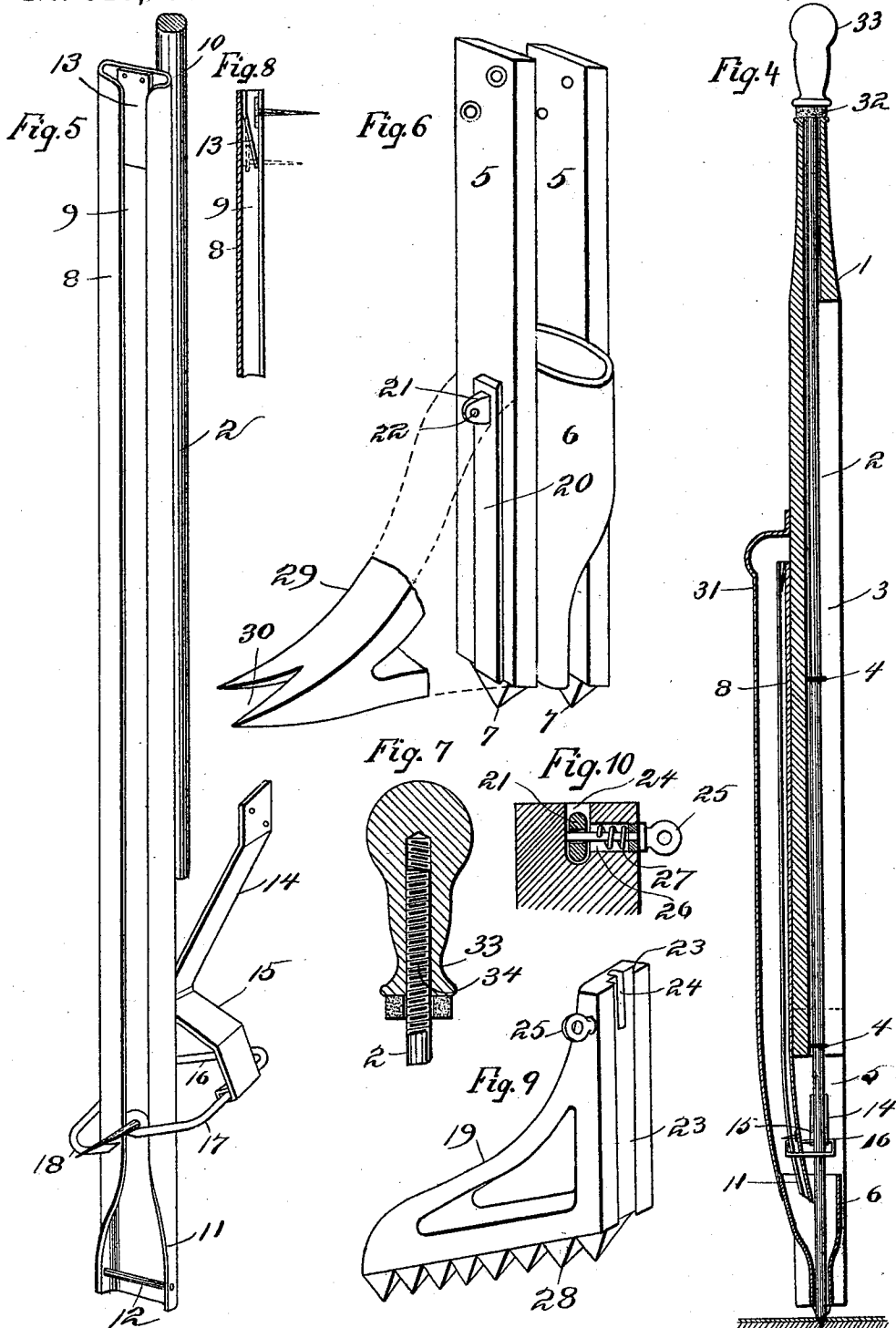
77 Higdon Higdon Longan Attorneys

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COMBINED TACK DRIVER AND CARPET STRETCHER.

No. 516,455.

Patented Mar. 13, 1894.



Witnesses:

Jas. Froehlich,
W. J. Sankey.

Inventor:

Andrew J. Smith
By Higdon & Higdon & Sorgan. Attys.

UNITED STATES PATENT OFFICE.

ANDREW J. SMITH, OF DENVER, COLORADO, ASSIGNOR OF THREE-FOURTHS
TO V. P. MOONEY, ADA PALMER, AND A. SWIGGETT, OF EL DORADO,
KANSAS.

COMBINED TACK-DRIVER AND CARPET-STRETCHER.

SPECIFICATION forming part of Letters Patent No. 516,455, dated March 13, 1894

Application filed November 20, 1893. Serial No. 491,397. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. SMITH, of the city of Denver, Arapahoe county, State of Colorado, have invented certain new and useful Improvements in a Combined Tack-Driver and Carpet-Stretcher, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved instrument for stretching and tacking carpets without the operator assuming the usual stooping posture, and it consists in the novel construction, combination and arrangement hereinafter set forth and designated in the claims.

In the drawings, Figure 1 is a front elevation of my improved instrument, with parts broken away. Fig. 2 is a side elevation of same. Fig. 3 is a rear elevation, with parts in section. Fig. 4 is a sectional side elevation on line *xx* of Fig. 3. Fig. 5 is a detail view in perspective of a tack-chute and contiguous parts. Fig. 6 is a detail view in perspective of parts located at the lower end of the instrument, and showing a modified construction. Fig. 7 is a detail section of the upper end of the instrument, enlarged. Fig. 8 is a detail sectional view of the upper end of the tack-chute. Fig. 9 is a detail view in perspective of a removable stretching-foot. Fig. 10 is a detail vertical section on line *yy* of Fig. 1.

1 indicates the main staff of the instrument, which is fitted with devices described later on at its upper and lower ends, and is of such length as to permit the operator to stretch and tack a carpet while he stands in an upright position. This main staff is provided with suitable guiding devices for the longitudinally extending driver 2 which is of such length as to extend, when in a normal position, beyond each end of said staff.

The devices for securing and guiding the driver, are preferably arranged as follows:—The main staff 1 is provided with a groove 3 which extends longitudinally thereof from end to end, and is of such depth that the driver 2 is located about in the center of said staff, when viewed in cross-section. The groove 3 is open on one side, so that the driver

may be inserted therein and removed therefrom, when necessary.

4 indicates ordinary staples, or other fastenings, which are placed across the open side of the groove 3 in staff 1, exterior of the driver 2, and retain said driver in position in said groove.

5 indicates two vertical frame bars, the upper ends of which are provided with suitable fastenings and secured opposite each other on opposite sides of the staff 1, at the lower end of said staff, so that said bars will extend downward and be separated a suitable distance to permit operation of devices hereinafter described.

6 indicates a tack guiding and driving chamber, which is substantially in the form of an inverted truncated cone having an opening in its upper and lower ends and provided with flaring walls, or with walls which converge downwardly to the exit-opening in its lower end. This chamber is located between the lower portions of the frame-bars 5, and the lower ends of said bars are preferably pointed, or provided with teeth 7, which extend a short distance beyond the lower end of said chamber.

If desired, the bars 5 and the chamber 6 may be cast integral of metal, in the relative positions here shown; but, in any event, the bars 5 and chamber 6 should be connected, in order to insure strength of these parts, and prevent undue flexibility of said bars during operation, and also hold their lower ends at a relative distance apart.

8 indicates a tack-chute, which is of such form in cross-section as to hold the tacks normally at a right angle to the length of the staff 1. It is preferably hollow T shaped in cross-section provided with a longitudinal slot 9 in its outer side, and is secured upon the front side of the staff 1.

The chute 8 is of such length as to hold a considerable number of tacks therein, its upper end is open and made flaring at 10 for convenience in placing the tacks therein, and its lower end is provided with an open front side 11, and is located within the chamber 6 at some distance below the upper end thereof,

closely adjacent the path of the driver 2. The closed side of the chute 8 is next adjacent the driver.

Extending across the chute 8 near to its lower end, is a short transverse rod 12, or other equivalent obstruction, which will operate to turn the tacks point-downward as they gravitate from said chute during operation.

13 indicates an automatic stop, located in the upper portion of the tack-chute, the purpose of which is to prevent the series of tacks carried by said chute from being discharged therefrom, when the instrument is inadvertently inverted or turned upsidedown, by inexperienced operators. This automatic stop preferably consists of a flat spring fixed at one end and having its free end projecting within the chute 8 in a direction in which the tacks are inserted, so that after a tack has been inserted past its free end, said end will automatically resume its normal position and obstruct the tacks and prevent their inadvertent exit from the upper end of said chute. (See Fig. 8.)

The tacks in the tack-chute are fed to the driving-chamber 6, one at each upstroke of the driver 2, by means of a cutting off device now to be described.

14 indicates a yielding arm having an inclined portion 15 and carrying at its lower end a vibrating frame 16, provided with two pointed arms 17 and 18, which project from opposite directions, one in a plane a little above the other, so that when the driver is reciprocated said points will be alternately reciprocated adjacent and across the slot 9 in the tack-chute. The upper end of the yielding arm is fixed to one of the frame-bars 5, so that its lower end will be free to swing in the rear of the said tack-chute, and so that its inclined portion 15 will normally rest in the path of the driver.

19 indicates removable stretching feet, which are detachably secured to opposite sides of the instrument adjacent the lower end thereof, so as to project laterally in opposite directions. As the construction of the foot on one side of the instrument is identical with that on the opposite side, I will confine my description to one of them.

Projecting from the outer surface of the frame-bar 5 is a longitudinal rib 20, which is of dove-tail shape in cross section, and projecting from the outer surface of said rib is an ear 21 provided with a perforation 22. The vertical edge of the stretching-foot 19 is provided with a longitudinal dovetail groove 23, corresponding in outline to the outline of the rib 20 on the frame-bar 5, so that said groove in the edge of said foot will engage said rib and secure said foot in place upon said frame-bar. To prevent longitudinal movement of the foot, I provide said foot with an opening 24, which is engaged by the perforated ear 21 on the rib 20, and a suitable pin, or it may be

a spring-bolt 25 is mounted in an opening 26 in said foot, and is adapted to be inserted in and withdrawn from the perforation 22 in said ear 21. If a spring-bolt is used a coil-spring 27 is located on said bolt 25 with one end fixed to said bolt and the other bearing against some stationary portion of the foot, so as to normally urge the bolt to the limit of its inward movement, and retain it in such position. The lower edge of the detachable stretching-foot extends laterally at a right angle to the vertical edge thereof, and is provided with suitable teeth or serrations 28.

In Fig. 6 I have shown a modified form of foot, the construction of which is identical with that thus described with the exception that the teeth may be omitted from its lower edge and its outer terminal 29 is tapered or thinned so as to present a thin edge, and is provided with a bifurcation 30, and presents a tack extracting claw, which may be inserted beneath the head of the tack.

31 indicates a guard for the tacks when located in the chute 8. This guard may be in the form of a simple strip of metal or wood, having its upper end secured to the staff 1 at a point adjacent the upper end of the tack-chute 8, extending downward parallel with said chute, so as to cover the projecting points of the series of tacks carried by said chute without being engaged by them in their downward movement and having its lower end fixed to the upper end of the driving chamber 6, or to some fixed portion of the instrument.

The upper end of the staff 1 is provided with a rubber or other form of cushion 32, which in the present instance is made in the form of a washer, having a central perforation through which the driver 2 passes.

The upper end of the driver has a movable handle or knob 33 mounted upon it, in such a manner as to limit the movement of said driver, and permit said limit to be changed at pleasure, according to the depth to which it is desired to drive the tacks. This is preferably accomplished by providing the upper end of the driver with a screw-thread 34, and by mounting said handle 33 on said screw-thread end, so that by turning said handle it may be adjusted in position. The rubber cushion 32 is located upon the upper terminal of the staff 1, between said terminal and the lower end of the handle 33.

The operation is as follows: In stretching a carpet, the improved instrument is to be used in a manner similar to that in which well-known carpet stretchers are used, that is—the teeth or serrations 28, upon the lower edge of the feet 19 also the teeth 7 of the bars 5 are to be made to engage the carpet while the operator inclines the staff 1 and exerts pressure upon the upper portion of the staff in the direction in which it is desired to stretch the carpet. But the construction is such, as before stated, that the operator stands upon

his feet during the operation, no kneeling or stooping being necessary, in either the stretching or tacking operation. After the carpet has been stretched at one point, it may be immediately secured and tacked without removing the instrument therefrom, and while a carpet is thereby held stretched, by simply elevating the instrument to or near to a vertical position, and reciprocating the driver 2 by means of handle 33, in the manner presently described. Oftentimes, it is necessary to stretch a carpet at a point closely adjacent the corner of the room and tack it to place at a point closely adjacent to the wall of the room. In order to accomplish this I remove one of the detachable teeth 19, by moving the bolt 25 outward out of engagement with the perforation 22 in the ear 21 of one side of the instrument and sliding said foot out of position and out of engagement with the rib 20, by moving the foot downward, which may be readily accomplished as the upper ends of the openings 24 are open. After one of the feet 19 has been thus removed, the exit-opening of the driving-chamber 6 may be much more closely adjacent the side of a room or wall thereof, than it would with said foot in position on the instrument. In other cases one or both of the feet may be removed and the modified form of foot shown in Fig. 6, may be placed in position in the manner above described and used to extract tacks or nails, by inserting the thin edge of the outer terminal 29 beneath the end of the tack, so that the claw embraces said tack, and then elevating said terminal by using the instrument as a bell-crank-lever, the operation of which is well known and need not be described.

In driving tacks, the instrument is first prepared by locating a series of tacks in the tack-chute 8 with their heads adjacent the staff 1 and their points projecting at a right angle to said staff through the slot 9 in said chute. The operation of inserting a tack in this manner in the upper end of said chute depresses and releases the free end of the stop-spring 13 alternately, as the tacks are caused to engage said stop successively. The normal position of the driver 2 and the handle 33 is that shown in Figs. 1, 2, 3, and 4, which is with the said handle in contact with the rubber cushion 32, and with the lower terminal of said driver about flush with the lower end of the driving chamber 6. Normally the line of tacks in the tack-chute is prevented from gravitating downward, by the lower pointed arm 18, which normally rests in the path of the tacks in said chute, and is only withdrawn out of said path when the lower terminal of the driver 2 is elevated above and out of contact with the inclined portion 15 of the yielding arm 14, preparatory to making a downward stroke. As soon as such elevation of the driver takes place, the inclined portion 15 of said yielding arm is released and moves inward to a position, in the path of said

driver. This movement of the yielding arm moves the lower pointed arm 18 toward the left-hand in Figs. 1 and 5 and permits one tack to be released and to immediately gravitate downward, but before more than one tack can so gravitate past the upper pointed arm, that arm is moved across the path of the line of tacks and prevents downward movement thereof until the lower terminal of the driver is brought down again into engagement with said inclined portion 15 of the yielding arm 14, when the tack next adjacent the said upper pointed arm will be released by said arm, but will immediately be intercepted in its downward movements, as will also the entire line of tacks in the chute, by the lower pointed arm 18, which latter has now resumed its advanced position—that is, its normal position when the driver is in its normal or lowered position.

In order to drive a series of tacks it will only be necessary to repeat the above described operation which may be done very rapidly owing to the simple and relatively compact arrangement of the parts. As soon as a tack is released by the lower pointed arm 18, it immediately gravitates downward, retaining the position with its head adjacent the inner wall of the tack-chute and its point projecting substantially at a right angle to the length of the staff 1, until the head end comes in contact with the obstruction 12 lying in the path of its downward movement, when the downward movement of said head end will be momentarily arrested by said obstruction, while its pointed end continues its downward movement. This acts to turn the point of each tack downward, as shown, and then its downward movement is continued point downward until its point comes in contact with the carpet, or other article into which the tack is to be driven the tack being guided as it nears the limit of its path, by the flaring walls of the guiding and driving chamber 6. This places the tack in the lower portion of said chamber, in a substantially vertical position, point downward, and with its head in the lower end of the driver 2, so that it may be readily struck by said driver and driven through the exit opening in the lower end of said chamber, into the carpet.

The depth to which it is desired to drive tacks, may be regulated according to the thickness of the carpet, &c., by adjusting the handle 33 upon the upper end of the driver. This may be accomplished by turning the handle upon the driver in one direction to shorten the downward stroke, and by turning the handle in an opposite direction to release the downward stroke of said driver, as may be readily observed.

It will be seen that I have provided a combination instrument for stretching and tacking carpets, and for extracting tacks, in which instrument a series of tacks is presented points downward automatically in succession,

ready to be driven by the reciprocation of the driver.

No other driving tool is necessary than what is here shown. The instrument is complete
5 in itself for all the above named purposes.

What I claim is—

1. In a carpet stretcher and tacker, the combination, with a staff carrying a stretching device at one end, and a reciprocating driver,
10 of a tack-chute provided at its lower end with a cross-pin or rod for turning the tacks point downward, and means for successively releasing the tacks; substantially as and for the purpose set forth.

2. A carpet stretcher and tacker having a
15 main staff 1, a groove 3 running longitudinally therein, a driver 2 reciprocating in said groove 3, a longitudinal tack-chute 8, secured to said staff 1, said tack-chute being of
20 a hollow T shape in cross-section, a guard 31 for said tack-chute 8 an automatic stop 13 in the upper end of said tack-chute 8, the lower end of said tack-chute having an open front 11, and a transverse rod 12 therein, to turn
25 the tacks points downward, substantially as set forth.

3. A carpet-stretcher and tacker having detachable feet, a staff 1, longitudinal ribs 20,
30 of dove-tail shape in cross-section and ears 21, projecting from the outer surface of said ribs, perforations 22 therein, said stretching feet 19 having longitudinal dove-tail grooves 23, corresponding in outline with the ribs 20, an opening 24 in each of said stretching feet 19,

the perforated ears 21 engaging in said open- 35 ings 24, and spring-bolts 25 mounted in openings 26, and operative to secure said stretching-feet 19, to the frame-bars 5, substantially as set forth.

4. In a carpet stretcher and tacker, the combination with a staff, of a stretching device comprising two sections mounted at opposite sides of the staff and removable independent of each other, substantially as and for the purpose set forth. 40

5. In a carpet-stretcher and tacker, the combination with a staff carrying plates provided with longitudinal, dove-tail ribs, of a stretching device provided with a groove corresponding to and adapted to receive one of said ribs, 45 and means for locking said device against displacement; substantially as and for the purpose set forth. 50

6. A carpet-stretcher and tacker having a longitudinal tack-chute 8 of a hollow T shape 55 in cross-section, a guard 31 for said tack-chute 8, an automatic stop 13 in the upper end of said tack-chute 8, the lower end of said tack-chute having an open front 11, and a transverse rod 12 therein, to turn the tacks point- 60 downward, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW J. SMITH.

Witnesses:

WM. T. ROGERS,
W. J. SANKEY.