

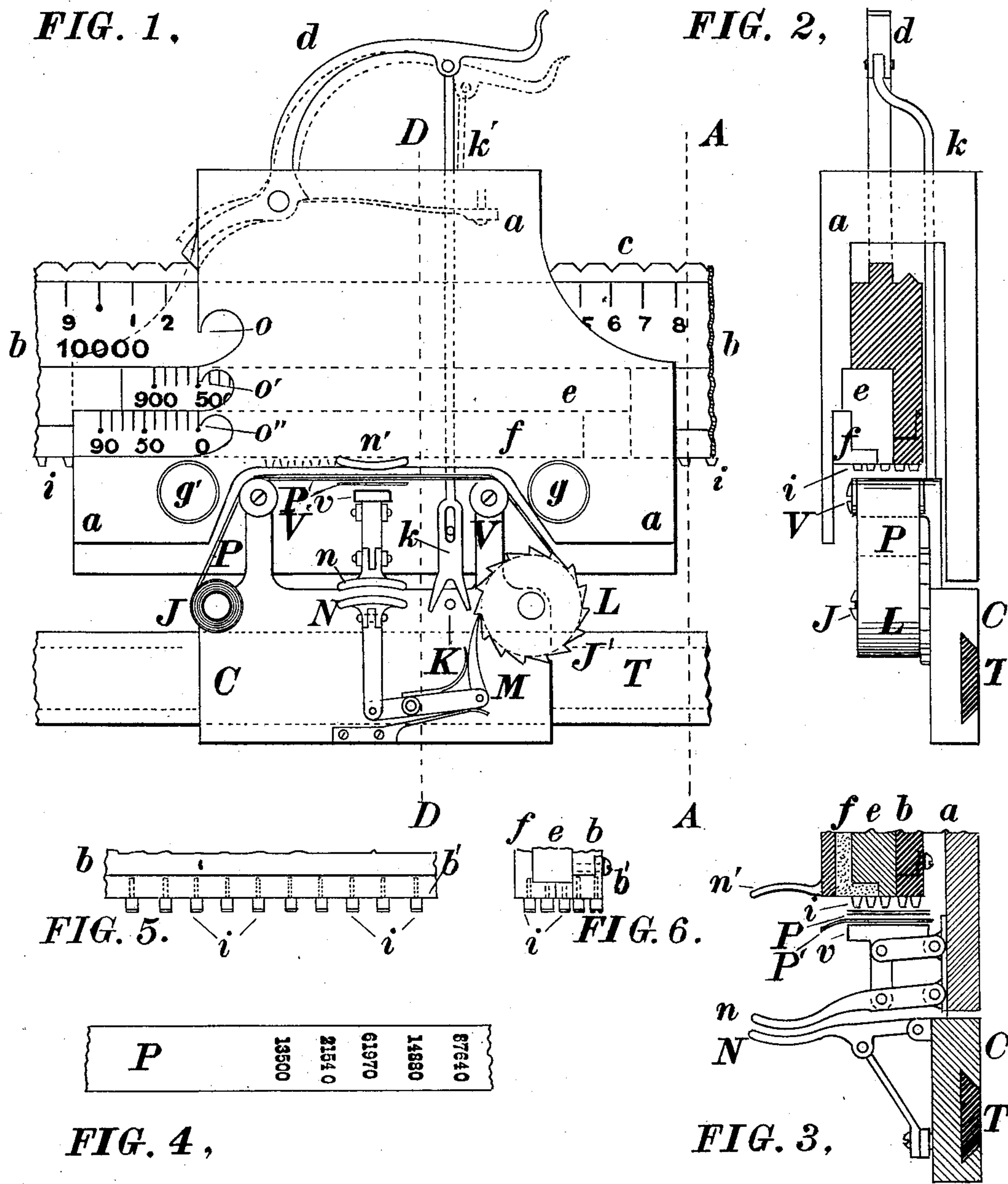
No. 613,982.

Patented Nov. 8, 1898.

H. & R. N. FAIRBANKS.
PRINTING REGISTER FOR WEIGHING MACHINES.

(Application filed Jan. 8, 1897.)

(No Model.)



WITNESSES:
Marion Fairbanks.
Dorothy Fairbanks.

INVENTORS
Henry Fairbanks
Robert Hayes Fairbanks

UNITED STATES PATENT OFFICE.

HENRY FAIRBANKS, OF ST. JOHNSBURY, VERMONT, AND ROBERT NOYES
FAIRBANKS, OF NEW YORK, N. Y.

PRINTING-REGISTER FOR WEIGHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 613,982, dated November 8, 1898.

Application filed January 8, 1897. Serial No. 618,438. (No model.)

To all whom it may concern:

Be it known that we, HENRY FAIRBANKS, of St. Johnsbury, in the county of Caledonia and State of Vermont, and ROBERT NOYES FAIRBANKS, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Printing-Registers for Weighing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to mechanism by means of which the weight of a load, ascertained by means of a poise upon a scale-beam, is correctly printed upon a ribbon of paper which, being moved by the act of printing, has the figures indicating successive loads standing in columns, ready to be added. It has often been proposed to use such a ribbon carried by the poise itself and wound upon rollers which allow of its being taken out and exchanged; but it has been found difficult to arrange for winding the paper from one roller to another without changing the distance of the center of gravity of the poise from the supporting-fulcrum and so changing its effective weight and destroying the accuracy of the scale. To obviate this difficulty, we propose to carry the two rollers for the paper ribbon upon a light carriage moving upon a track parallel with the scale-beam, these rollers being so arranged with reference to the poise that a length of this ribbon is stretched between the printing-platen and the faces of the printing-numerals without its touching either, except when the platen is raised in the act of printing. To secure that the poise and paper-carriage shall move together, holding the part of the paper where the figures should be printed accurately between the printing-platen and the row of numerals corresponding to the position of the poise, a connector is arranged between the poise and the said carriage, but so as to leave the poise absolutely free to rise without any friction in weighing the load.

In the drawings the lower-case letters are used to indicate the parts belonging to the scale-beam and poise, while the capitals refer to the track and parts supported upon it.

Figure 1 is a front view of a portion of the beam and track and of the poise and paper-ribbon carriage. Fig. 2 is an end view and partial section of the same in the line A A; and Fig. 3 is a section, partly broken away, on the line D D. Fig. 4 is a portion of the paper ribbon, showing printing. Figs. 5 and 6 give two views of a portion of the edge of the beam and the poise-slides and illustrate the method which we have devised of using separate type-numerals inserted by their shanks in the poise-slides and in the edge of the scale-beam, or, if that beam is cast-iron, in a bar of brass or other suitable metal attached to the said edge. *b* is the scale-beam, and *b'* is this bar of metal, that will hold these shanks of the steel type-numerals well. These are designated by *i i*. This method of insertion makes it possible to replace easily any numeral that may be broken. It also has the advantage of convenience and cheapness in adapting the spacing of the numerals to the length of the weight-indicating notches of different scales.

The poise *a* is held upon the notched beam *b* by the lever or latch *d*, normally held in the position shown in full lines in Fig. 1 by the spring 1. Said poise carries the poise-slides *e* and *f*, the heavier adapted to weigh and print in the line of figures the hundreds, and the other the tens in their proper decimal relation to the figures denoting thousands, which are carried upon the beam itself, these slides being moved parallel to the beam by rack and pinion turned by the milled handles *g g'*. The platen *v*, hinged to the back of the poise and moved by the thumb-piece *n*, is placed so far below the figures to be printed that it will not strike the paper ribbon stretched between when the beam rises through its weighing-arc. This paper ribbon *P* passes from the roller *J* to the roller *J'* over the guide-rolls *V V'*, the whole being mounted upon the paper-carriage *C*, upon the track *T*, which track is parallel with the beam. This carriage is moved with and held to its place abreast of the poise by the connector *k k'*, which is hinged at *k''* to the handle *d* of the poise and is depressed by that handle whenever the poise is unlatched and moved. The forked

end k cannot rise high enough to get over the stud K, standing out from the back of the paper-carriage, but owing to its shape draws away from it when the latch engages the beam, so that the beam carrying the poise is absolutely free to rise in weighing. The lower part k of said connector is also preferably provided with a longitudinal slot embracing a pin on the poise. This pin and slot are not necessary, but afford practically a second point of connection of the connector-rod with the poise and impart greater rigidity to the device in its movement. The platen, being carried by the poise, must bring pressure in the right place to print the proper figures at any position of this poise, and any slight displacement of the paper ribbon does no harm so long as the records of successive weighings do not overlap each other. As an alternative construction it would be equally effective, in keeping the poise and paper-carriage together, to arrange a short horizontal connector-link at the level of the fulcrum-pivot of the scale-beam, hinged at one end upon a pin in the poise and at the other upon a similar pin upon the paper-carriage, which could be carried up to that level behind the poise to receive it, as is described in patent to H. Fairbanks, No. 107,240, of September 13, 1870. This connector, being level with the fulcrum, has no tendency either to raise or depress the scale-beam and can introduce no error in weighing.

When the beam is in its lowest position, the thumb-piece n is close above another (designated by N) hinged upon the paper-carriage, which is naturally grasped with n and when moved draws back the pawl M, which on being freed returns with a spring, engaging the ratchet L and bringing the paper ribbon into position to receive the next impression. In printing, the thumb naturally rests upon the fixed thumb-piece n' , so holding down the beam and poise, and the fingers grasping n and N move them together, bringing the proper part of the paper ribbon forcibly against the faces of the type $i i$, and then the release allows the spring to move the pawl, ratchet, and the paper ribbon. A carbon ribbon may be wound with the white ribbon, if desired, and a colored impression made, or the sharp-faced type may indent the figures. Figs. 1 and 3 show a carbon ribbon between the white ribbon and the face of the type, and also another wound under the white ribbon and in position to make its impression upon the card or cloth ticket P' in the same way as in manifold writing. For this a cloth ticket starched stiff is preferably used, and for what we have called the "paper ribbon" a starched tape may be used. Thus the Abattoir scale is arranged to print successive weights on the paper or cloth strip and singly on the starched tickets attached to each piece weighed, the two impressions being made at once upon the paper strip P and the ticket P'. As the drawings show, the front of the poise is entirely open to allow the paper rib-

bon or ribbons, with the rollers, to be conveniently put in place, and a ticket held upon the platen does not need to be guided.

It will be understood that our printing attachment allows the operation of weighing a load to be accomplished in precisely the usual manner, the operator giving no attention to the printing mechanism or paper-carriage, which simply follows the motion of the main poise and always holds its paper ribbon in the proper position to receive an impression, and that when the load is balanced he reads the figures at the points $o o' o''$ just as in any scale having poise-slides, and then in order to obtain a record which cannot be wrong and by which he may check his reading he presses together the thumb-pieces N $n n'$.

While we prefer the construction shown, we do not limit ourselves to it in detail.

Having set forth what we consider the best way of carrying out our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a recording-scale, the combination of the main scale-beam, and its type, a movable counterpoise thereon, a movable recording device, a movable connection between the counterpoise and the recording device, and means for operating it; substantially as described.

2. In a recording-scale the combination of a main scale-beam and its type, a main poise movable thereon, a stationary support below the main scale-beam, and in line therewith, a recording device movable on said support, connected with the counterpoise by a connection which exists during the movement of the counterpoise, but is disestablished at the end of such movement; substantially as described.

3. In a printing-scale, a scale-beam provided with printing-numerals, a poise sliding thereon and carrying a platen arranged to move toward and cover the line of numerals corresponding with the weight-indicating position of the poise, and a paper ribbon mounted independently of the scale-beam and poise upon a suitable support below the poise and beam, said paper ribbon being stretched between the said numerals and platen and in position to receive an impression when the platen is moved toward these printing-numerals; substantially as described.

4. In a printing-scale, a scale-beam having printing-numerals, a track parallel with the scale-beam, a paper-carriage arranged to move on the track, and a ribbon suitable for printing supported by said carriage, a platen carried by the poise, said ribbon supported by the carriage being stretched between the printing-numerals and the platen and so located as to be out of contact with both numerals and platen when the load is weighed; substantially as described.

5. In a printing-scale, a scale-beam provided with printing-numerals, a paper-carriage arranged to move upon a track parallel

with the scale-beam, and a connector whereby the weighing-poise upon this beam and the paper-carriage are kept in such relative position that the predetermined part of the paper ribbon shall be brought opposite the printing-numerals indicating the position of the said poise, as herein set forth.

6. In a printing-scale, a scale-beam and a slide or slides carried by the poise, having printing-numerals arranged to print figures in proper decimal relation to each other, a paper-carriage supported independently of the poise, a connector causing the paper-carriage to move accurately with the poise, but leaving it entirely free when balancing the load, and a printing-platen, moving toward the printing-numerals, substantially as herein described.

7. In a printing-scale in combination with the beam provided with printing-numerals, a movable device arranged in operative relation to the poise and adapted to carry mechanism to cooperate with the printing-numerals to register the amount of the load and a connecting device carried by the poise and having free vertical movement with respect to said poise but adapted when the poise is moved along the beam to engage said movable device which carries the cooperative printing mechanism, substantially as described.

8. In combination with the sliding poise of a printing-scale having suitable printing-numerals, a cooperating traveling printing apparatus, a device for locking the poise against sliding movement, and a device supported by the poise and fixed to move with the same as the latter slides along the beam, and having means for engaging the cooperating printing device as said poise slides along the beam, but constructed to automatically disengage said cooperating printing device as the locking device locks the poise, and the beam rises through its weighing-arc; substantially as described.

9. In a device of the character described and including a sliding poise with printing-numerals on the beam and cooperating movable printing mechanism, a connecting device between said poise and the cooperating printing mechanism, said connecting device being arranged on the poise to move bodily therewith both up and down and along the beam but having also a free sliding movement independent of said poise whereby it automatically engages and disengages the movable cooperating printing mechanism, substantially as described.

10. In a printing-scale, the scale-beam, the poise thereon, the pivoted latching-lever mounted upon the poise, a traveling carriage independent of the poise but adjacent thereto, and a connecting rod or device secured to the latching-lever and adapted as the said latching-lever rises or drops to engage or disengage the traveling carriage, substantially as described.

11. In a printing-scale, the scale-beam, the poise thereupon, the pivoted latching-lever mounted upon the poise, a track arranged adjacent the poise, a paper-carriage mounted to slide thereon and a connector hinged to said pivoted latching-lever and having a forked lower extremity with a stud on said paper-carriage with which the forked lower extremity of said connector engages, substantially as described.

12. In a printing-register for scales, in combination with the beam and a poise movable thereon, and a latch device on the poise adapted to engage the beam, a printing apparatus that includes as a component part a traveling carriage mounted independently of the poise, and devices carried by the poise engaging the carriage as the poise slides but automatically freeing it as the latch engages the beam and the poise and beam swing through the weighing-arc, substantially as described.

13. In a printing-scale the combination with the beam and printing-numerals carried thereon, a poise sliding on the beam, a platen pivotally secured to the poise and a handle *n* for moving the platen, a paper-carriage mounted independently of the scale-beam, a pivoted handle *N* for operating the paper ribbon, these two being arranged to be always grasped together in the act of printing, while perfectly free to separate with the motion of the scale-beam in weighing; substantially as described.

14. In combination with the poise and the paper-carriage, a stationary thumb or finger piece upon the poise, a platen with devices for moving the same, a paper ribbon with a handle for advancing the same, said handle for operating the paper ribbon being so arranged in relation to the devices for operating the platen that the two are moved simultaneously, substantially as described.

15. In a printing-scale, a scale-beam, a track independent thereof, a poise upon the scale-beam, a paper-carriage upon the track, the connection between the poise and paper-carriage, the printing-platen upon the poise, the handle *n* for operating the same, the handle *N* upon the paper-carriage below the handle *n*, the pawl *M* operated by the handle *N*, the ratchet *L* engaged by the pawl, and the paper-rollers *J*, *J'*, one of which, *J'*, is mounted on the shaft with the ratchet *L*; substantially as described.

16. In combination with a scale-beam having printing-numerals thereon, a poise sliding on said beam, a platen having a link connection with the poise whereby it is kept in a horizontal position, a thumb-piece on the scale-beam and a finger-piece for operating the platen whereby when the thumb and finger pieces are grasped the platen moves upwardly toward the beam and a device arranged between the platen and the type on the beam upon which the weight impression is taken.

17. In combination with a scale-beam provided with printing-numerals, a poise sliding

thereon, a platen having a pivotal connection with said poise, a thumb-piece on the beam, a track independent of the beam, a carriage on said track, devices carried by said carriage
5 and extending between the platen and the numerals on the beam for receiving weight impressions and a finger-piece on said carriage for advancing said impression-receiving devices, said finger-piece being arranged directly below the finger-piece which moves the
10 platen whereby the movement of the finger-piece which advances the impression-receiv-

ing device, also advances the platen; substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 23d day of December, A. D. 1896.

HENRY FAIRBANKS.

ROBERT NOYES FAIRBANKS.

Witnesses:

ALBERT L. FARWELL,
C. H. HORTON.