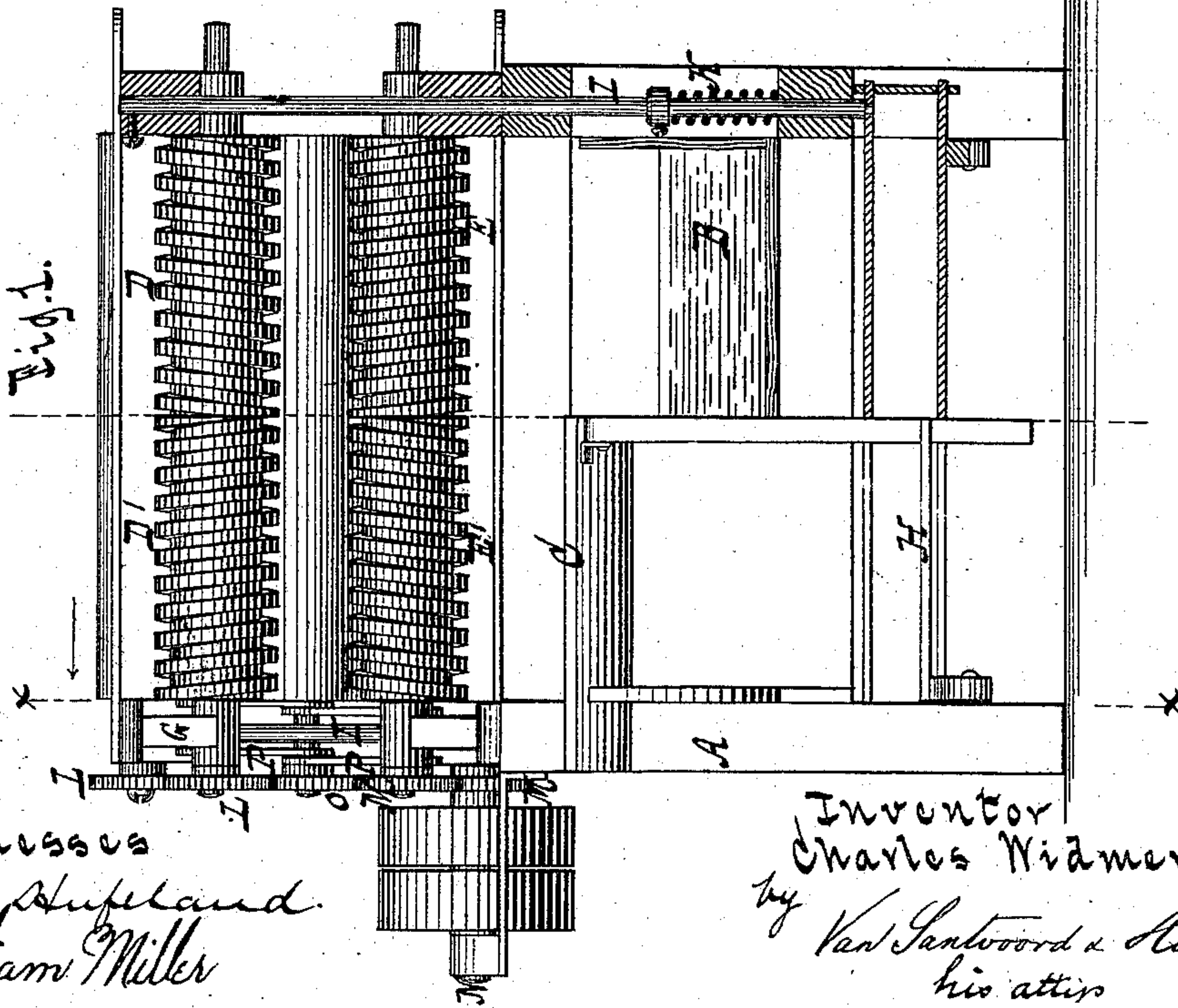
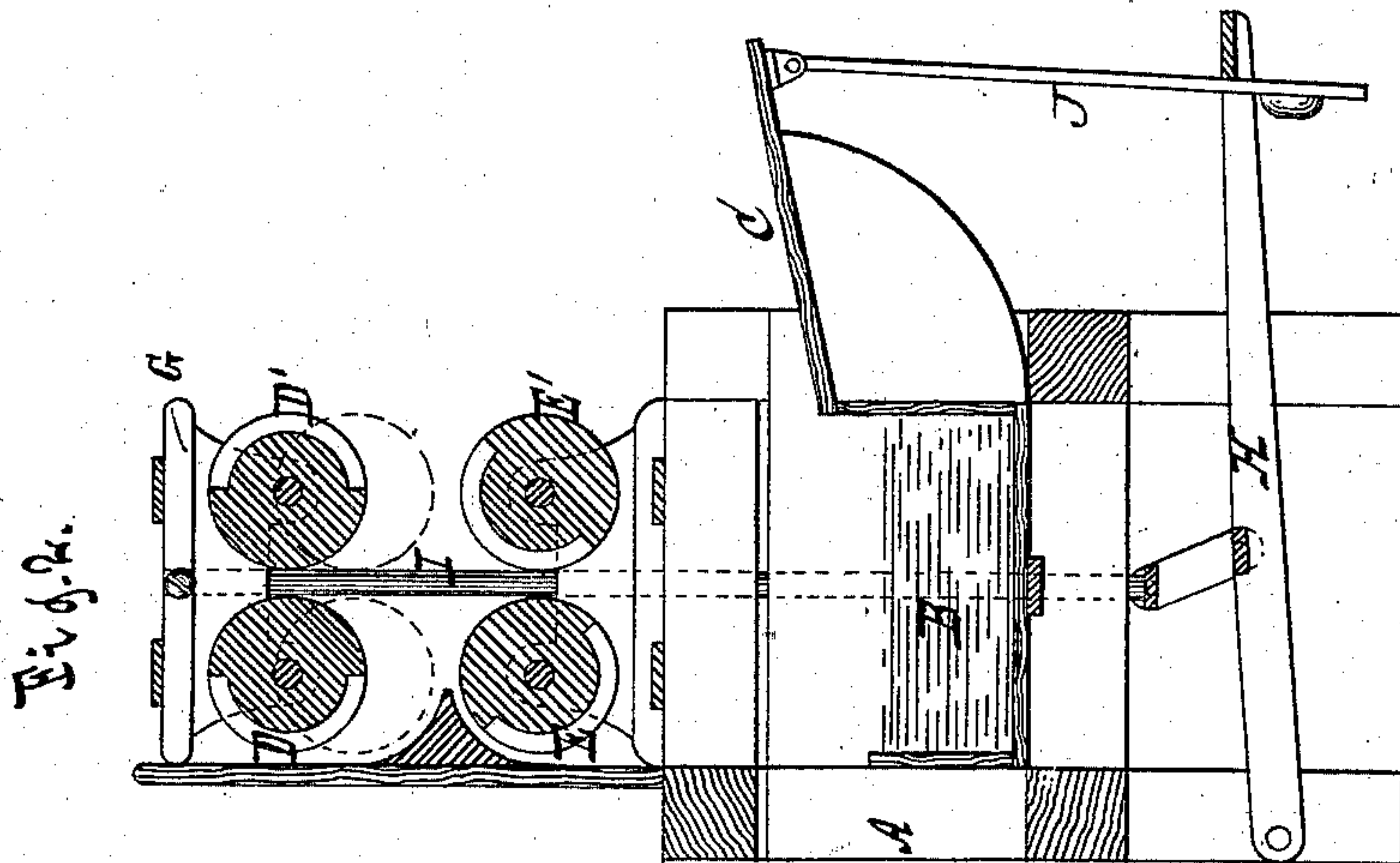
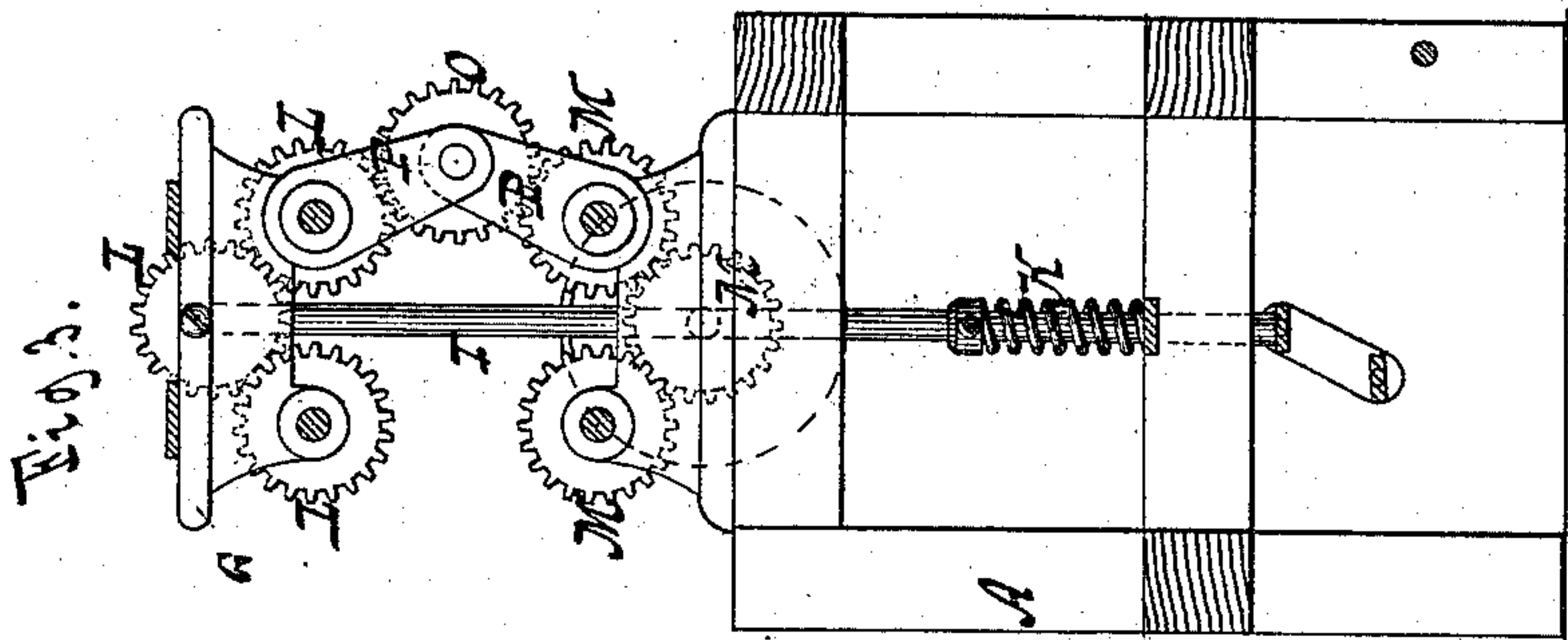


C. WIDMER.
Hat-Felting Machine.

No. 221,884.

Patented Nov. 18, 1879.



Witnesses
Oto Supelaud.
William Miller

Inventor
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by Van Santvoord & Lauff
his attys

UNITED STATES PATENT OFFICE.

CHARLES WIDMER, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN HAT-FELTING MACHINES.

Specification forming part of Letters Patent No. **221,884**, dated November 18, 1879; application filed September 11, 1879.

To all whom it may concern:

Be it known that I, CHARLES WIDMER, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and useful Improvement in Hat-Felting Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 shows my machine partly in side view and partly in section. Fig. 2 is a vertical cross-section thereof. Fig. 3 is a like section in the line *x x*, Fig. 1.

Similar letters indicate corresponding parts.

My invention relates to machines for felting hat-bodies; and it consists in the combination, with lower spiral-threaded rolls, of a vertically-moving frame carrying the upper spiral-threaded rolls, and attached to vertical rods arranged to slide in the frame-work of the machine, said vertically-moving frame being automatically elevated by suitable mechanism, and depressed by a device which can be held and retained for holding the said vertically-moving frame in such depressed position until it is required to automatically elevate the same.

With the parts enumerated are combined an upper and lower set of cog-wheels, one to each set of rollers, and an intermediate cog-wheel, which meshes with one of the wheels of each set, thereby connecting the two sets of rollers, and is mounted in toggle-arms hung on the shafts of the meshing wheels, so that the connection between the two sets of rollers is preserved in any position of the movable frame.

In the drawings, the letter A designates the machine-frame, in the lower part of which is a tank, B, to receive hot water for wetting the hats, a board, C, being also attached to the edge of this tank to receive the hats as they are taken from the tank, and allow the same to be rolled up. The letters D D' designate the upper set of rollers; E E', the lower set of rollers; and G, the vertically-movable frame, carrying the upper rollers, the lower rollers being mounted on a suitable part of the machine-frame. The rollers D D' E E' have spiral threads running in reverse directions, and in this example the threads of the rollers D E'—namely, an upper and lower roller diagonally opposite to each other—run in one

direction, while the threads of the corresponding rollers E D' run in an opposite direction.

By this arrangement the two rollers of each set obtain reverse threads; but, if desired, the rollers of one set may be threaded in one direction, and those of the other set in an opposite direction. All the rollers D D' E E' revolve in one and the same direction.

To allow the hat to be introduced to the machine the movable frame G is elevated, as shown. The hat is then placed on the lower rollers, E E', the frame G lowered, and the rollers set in motion. In this manner the hat is compressed between the two sets of rollers, and as the rollers revolve their threads act upon the hat with a tendency to move the same lengthwise of the rollers; but since the threads are opposed to each other the rollers are caused to counteract one another. By this means the hat is worked in a proper manner to full and harden the stuff, as in felting.

For the purpose of lowering the movable frame G, I make use of a treadle, H, and connecting-rods I, sliding in the machine-frame, a stop, J, being combined with the treadle for holding the same down when depressed, thereby retaining the frame G in a lower position, while for elevating the frame I use springs K, which are coiled on the slide-rods I, and act upon these rods with a tendency to force the same upward.

The letters L M designate two sets of cog-wheels, whereby the rollers of each set, D D' or E E', are geared together, one of such wheels being mounted on a driving-shaft, N, carrying a fast and loose pulley; and O is a cog-wheel intermediate of the two sets of wheels. This intermediate wheel O meshes with one of the wheels of each set L or M, and is mounted in toggle-arms P, which are hung on the shafts of the meshing wheels, as clearly shown in Fig. 3. The intermediate wheel O thus forms a connection between the two sets of rollers, and as the frame G rises and falls the toggle-arms P allow this wheel to travel upon the wheels meshing therewith, so that the wheel O remains in gear and preserves the connection between the two sets of rollers in any position of the movable frame.

Heretofore a machine for felting hat-bodies has been constructed with a lower series of

ribbed rollers and an upper series of similar rollers, which latter are arranged in a frame pivoted at one end, said frame being connected by means of a pulley and rope with a treadle, by which means, when the latter is depressed, the frame is elevated at one end for the insertion of the hat-bodies.

It will be observed that in my machine the frame carrying the upper rollers is automatically elevated as soon as the treadle is released; hence the normal position of the upper rollers is always elevated, and the function of the treadle is to depress the same.

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

1. In a hat-felting machine, the combination, with the lower spiral-threaded rolls, of a vertically-moving frame carrying the upper spiral-threaded rolls and mounted on vertical slide-rods, mechanism for automatically elevating the vertically-moving frame, and mechanism for depressing the same and retaining it in such position, substantially as described.

2. The combination, with the lower spiral-threaded rolls, of a vertically-moving frame carrying the upper spiral-threaded rolls and

attached to vertical rods adapted to slide in the frame of the machine, springs arranged on the slide-rods for automatically elevating the vertically-moving frame, and a treadle connected with the latter for depressing the same and holding it in such position, substantially as described.

3. The combination, with the lower and upper spiral-threaded rolls, each provided at one end with gear-wheels, of two levers hung on the shafts of the upper and lower threaded rolls, respectively, and an intermediate pinion journaled in the ends of the levers and serving to connect the two sets of rolls, the toggle-levers serving to permit the intermediate pinion to travel upon the gear-wheels of the rolls as the upper series are raised and lowered, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 8th day of September, 1879.

CHAS. WIDMER. [L. S.]

Witnesses:

W. HAUFF,

CHAS. WAHLERS.