L. Fay,

Seaming Sheet-Metal.

No. 17,874. Patented July 28, 1857.

Fig. 2.

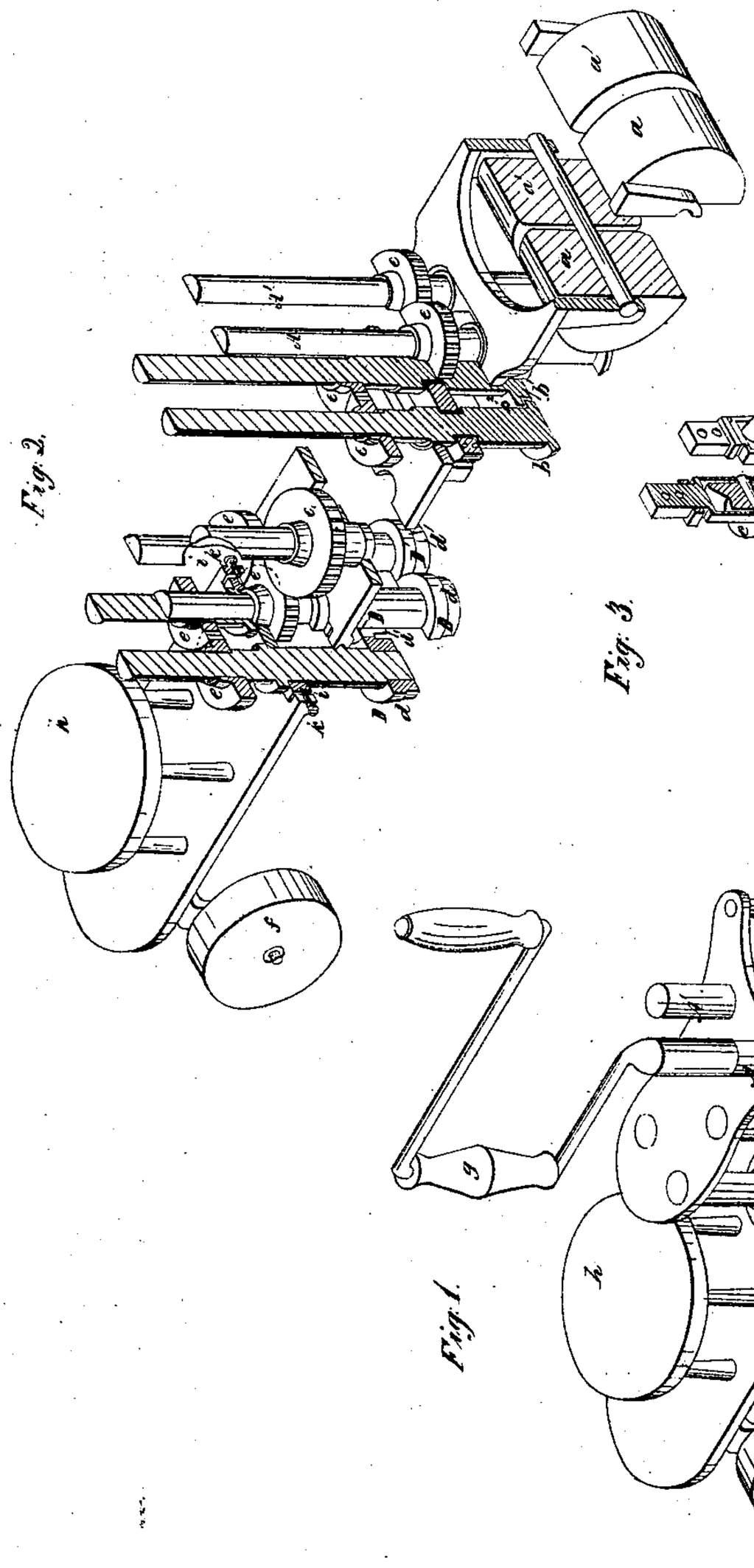

Fig. 3.

Figs 4. 5. 6. 7. 8. 9. 10.

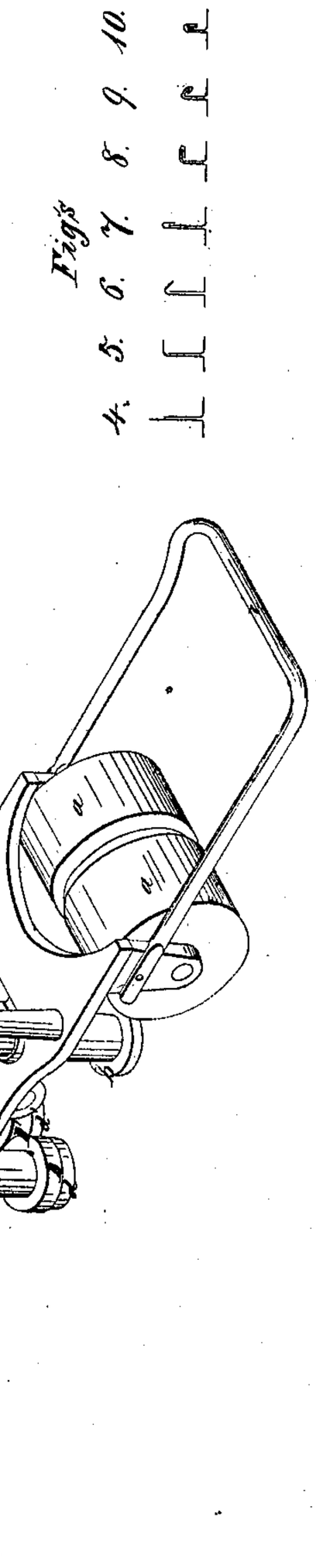

Fig. 1.

UNITED STATES PATENT OFFICE.

LUCIAN FAY, OF CINCINNATI, OHIO.

IMPROVED MACHINE FOR SEAMING SHEET-METAL ROOFS.

Specification forming part of Letters Patent No. **17,874**, dated July 28, 1857.

To all whom it may concern:

Be it known that I, LUCIAN FAY, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Machine for Seaming Sheet-Metal Roofs; and I hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention consists in a combination of rollers operating automatically, and thus adapted to the use of an unskilled class of mechanics, the labor being also performed with great rapidity.

In the accompanying drawings, Figure 1 represents a perspective view of the machine as adapted for "single seaming;" and Fig. 2 a perspective view of the same as adapted for "double seaming," the machine being in this illustration separated transversely at each set of rollers to show the shapes of their working-faces. Fig. 3 is a detached view of the "folding" roller on a larger scale. Figs. 4, 5, 6, 7, 8, 9, and 10 are transverse sections of the joint, exhibiting the successive stages of the operation of single and double seaming.

a a' are two exactly-similar rollers playing loosely upon a single horizontal shaft, so as to permit a sufficient interval between their adjacent ends to conveniently admit between them the upturned edges of the standing joint about to be seamed.

b b' are a pair of upsetting or "burring" rollers attached to the bottoms of vertical shafts A A'. These rollers consist of two short broad conic frustra, one frustrum, *b*, being inverted, and the other, *b'*, having a flange, b^2, which projects over the upper or salient edge of *b*. These rollers act together to turn over or upset the first fold or "burr" at right angles to its former position.

c is a roller which revolves in a vertical plane, and is so grooved (substantially as represented) around its periphery as to fold the burr down toward the seam.

D *d* D' *d'* are a pair of cylindrical rollers revolving in a horizontal plane. The upper portions, D D', of these rollers are of slightly greater diameter than the lower portions, *d d'*, so that the upper parts of their peripheries are nearly or quite in contact, while a space intervenes below.

g is a crank rotating the rollers *b b'* D *d* D' *d'* simultaneously by means of suitable gearing, *e*.

f is one of a pair of wheels supporting the rear end of the machine.

h is the seat, and *i* the foot-rest, of the operator. The rollers D *d* D' *d'* have an adjustable pressure toward the working-line by means of set-screws *k k'* and india-rubber or other springs *l l*. It is necessary to apply the adjustment and elastic bearing equally to each roller of a pair, because both must always stand and press with exactly equal force and bearing toward the central or working line of the machine. All the rollers in the machine may, if desired, be provided with an adjustable elastic bearing.

The operation is as follows: The sheets being laid on the roof in the customary manner—that is to say, cross-seamed together in strips which extend in parallel tiers from ridge to eave, and having their turned-up or standing edges contiguous to each other, one edge being higher than the other by the breadth of a fold—the machine is taken to the ridge of the roof, and being presented toward the eave with the "pioneer" rollers *a a'* confining between them the standing-joint, the machine is allowed to travel down the roof until the standing-joint engages between the burring-rollers *b b'*. The crank *g* being then rotated, the action of the rollers *b b'* propels the machine forward, and at the same time turns the higher edge of the joint over to a right angle, as shown in Fig. 5. The folding-roller *c*, next passing over the joint, bends it into the position shown in Fig. 6, which prepares it for the action of the seaming-rollers, between the upper or close portion of which, D D', it next passes, completing the single seam. (See Fig. 7.)

The machine is propelled by means of the burring and seaming rollers *b b'* D D', which confine the standing-joint under pressure, and are simultaneously rotated by means of gearing, as before explained. These rollers are also instrumental in guiding the machine; but the latter action is chiefly performed by the pioneer rollers *a a'*, which also serve to draw the two flanges closely together preparatory to seaming, straighten kinky and uneven places, and adapt the sheets snugly to the sheathing-boards.

The operation of double seaming, Figs. 8, 9, and 10, is performed in a precisely similar manner, the rollers *b*, *b'*, and *c* having been previously lowered by means of shifting keys or any other familiar or approved method, thus bringing their working-line on a level with the lower portions, *d d'*, of the seaming-rollers, by the action of which the double seam is completed, as at Fig. 10.

The machine may be adapted for single and double seaming at one operation by providing a suit of double-seaming rollers in the rear of the others; but for roofs of the usual dimensions I prefer to perform the two operations separately.

The apparatus is adapted for seaming either to the right or to the left by simply transposing the rollers.

I have used a machine of this kind constantly for several months, and by its means am enabled to seam each day from seventy-five to a hundred squares, (of one hundred square feet each,) which is from seven to ten times as much as a skilled workman can do without its aid. It can easily be carried about the roof in one hand, and can be operated without fatigue by a boy.

An ordinary laborer earning five dollars per week can, after short practice with the machine I have constructed, do as much work as six or eight skilled workmen can do by hand, and of very much better quality and finish.

I claim as new and of my invention herein—

The use of the burring, folding, and seaming rollers *b b' c* D *d* D' *d'*, constructed with or without adjustable elastic bearings, arranged substantially as described, in connection with the movable platform or carriage, and operating in the manner specified.

In testimony of which invention I hereunto set my hand.

LUCIAN FAY.

Attest:

GEO. H. KNIGHT,

JAS. H. GRIDLEY.