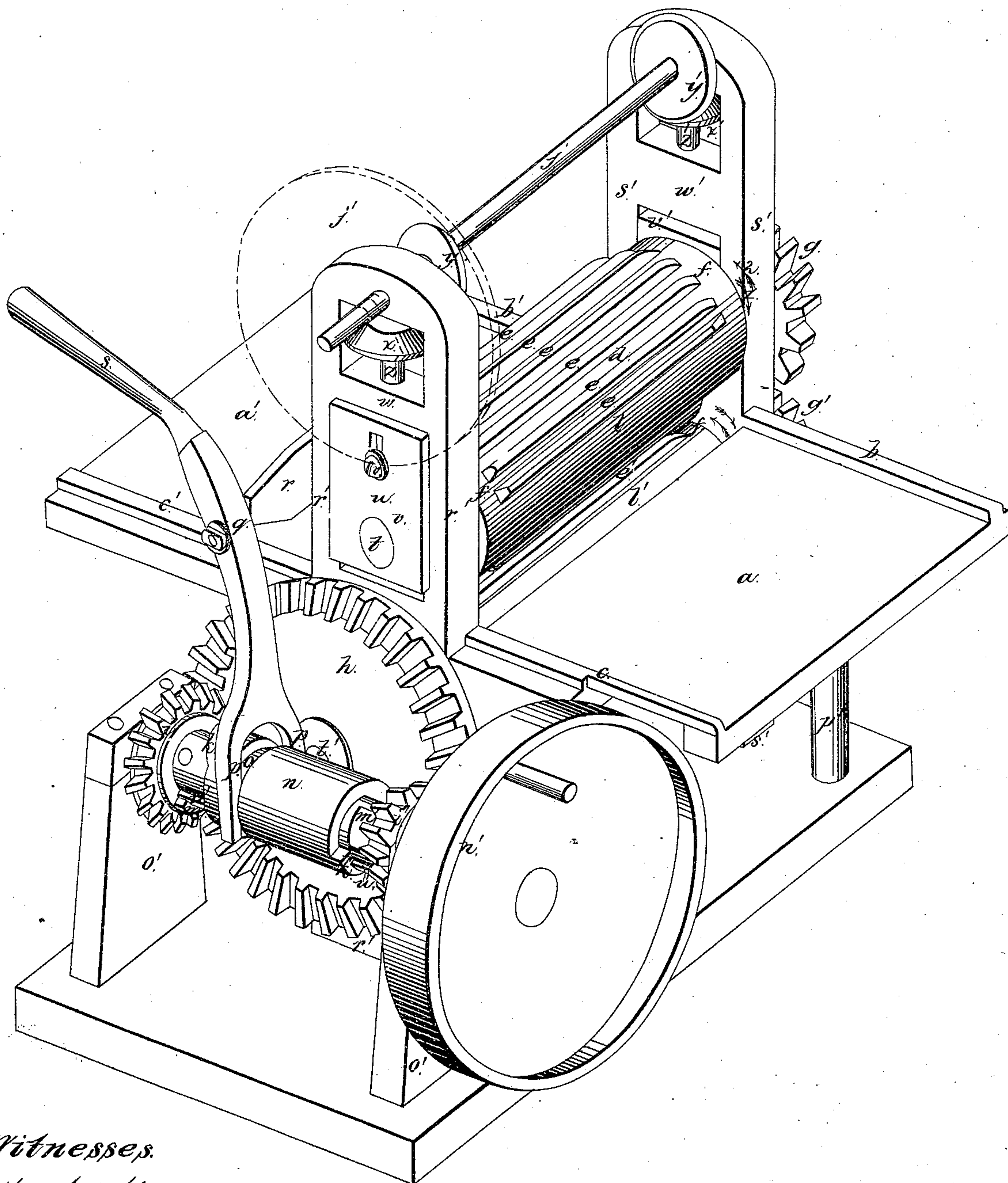


R. Montgomery

Rolling and Corrugating Iron.

N^o 23,774.

Patented Apr. 26, 1859.



Witnesses.

M. J. Montgomery
M. C. Gritman

Inventor

R. Montgomery

UNITED STATES PATENT OFFICE.

RICHARD MONTGOMERY, OF NEW YORK, N. Y.

MACHINE FOR CORRUGATING SHEET METAL.

Specification of Letters Patent No. 23,774, dated April 26, 1859.

To all whom it may concern:

Be it known that I, RICHARD MONTGOMERY, of the city of New York, in the State of New York, have invented a new and useful Improvement in Machines for Rolling and Corrugating Iron; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

To enable others skilled in the art to which my invention belongs, to make and use the same, I will proceed to describe its construction and operation.

The drawings represent a perspective view of the machine.

Two corrugating rolls H, H' are arranged in the center of the machine, one above the other; they are provided with corrugations *e, e, e, &c.*, and *e', e', e', &c.*, covering part of the circumference of each roll and leaving smooth cylindrical surfaces at *l, l'*; the ends of the rolls are also smooth as seen at *f, f'*. The shaft *t'*, of the lower roll has its bearing in the frame *r', s'*, while the shaft *t*, of the upper roll has its bearings in blocks *v, v'*, which slide vertically in slots in the upper portion of the frame *r', s'*.

The blocks are provided with shield plates *u*, of which only one is to be seen in the drawings; each of these shield plates has a slot through which extends a bolt *v''*, screwed into frame piece *w*, and *w'*, respectively. These shield plates serve to guide the block *v, v'*, in their vertical adjustments. This vertical adjustment of the upper roll H is obtained by means of bevel gearings *y, x*, and *y', x'*, and right and left screw shafts *z, z'*, which latter work through screw holes in the frame pieces *w, w'*.

A hand wheel *j'*, (represented in the drawings in red lines) is fastened on the shaft *j*, of the bevel wheels *y*, and *y'*.

It will be seen that by turning the hand-wheel of the bevel wheels *y, y'*, and the bevel gears *x, x'*, taking into them, will be turned, the screw shafts *z, z'*, one of which is a left hand screw, will turn together with the bevel gears *x, x'*, and thus the lower ends of the screw shafts will rise or descend as the case may be; and as the blocks *v, v'*, bear against the ends of the screw shafts, the blocks *v, v'*, and shaft *t*, will be allowed to rise or be depressed, so as to adjust the space between the two rolls, through which

space the plates of iron to be corrugated pass.

The rear ends of shafts *t, t'*, are provided with cog wheels *g, g'*, so as to gear the two rolls together.

The teeth of the two cog wheels *g, g'*, must be long enough to be still in gear when the upper roll is adjusted to its greatest height above the lower roll.

The front end of the shaft *t'*, has a large bevel wheel *h*, attached to it, which takes into two bevel pinions *i, i'*. These two bevel pinions turn loosely upon the driving shaft to the end of which is attached the drum *n'*.

The driving shaft has a key *u', u'*, or rectangular projection extending the whole distance between the two bevel pinions.

A sleeve *n*, fits loose upon the driving shaft and has a notch on its whole length, fitting the projection or key *u', u'*, so as to allow the sleeve to slide laterally upon the driving shaft, while it is compelled to turn with it.

The sleeve has a projection on each side, *h*, and *h'*, which can be made to engage with corresponding projections *m, m*, extending from the bevel pinions *i, i'*, respectively. This connection between the sleeve and one or the other of the two bevel pinions is made by moving the sleeve toward the one or the other of the pinions until the projection *h*, or *h'*, engages with one of the projections *m*. This lateral adjustment of the sleeve is made by means of the fork *p*, pivoted to a piece *r*, extending from frame *r'*; *s*, is a handle by which the fork may be operated. The fork fits over a circular notch in the sleeve, as shown in the drawings.

It will be seen that by engaging the sleeve with either one of the pinions, the pinion will be caused to revolve together with the sleeve and motion will thus be transmitted to the large bevel wheel *h*, and to the corrugating rolls.

If the sleeve is engaged with pinion *i*, the rolls will revolve in the direction of arrows, 1, 1, so as to take a plate of iron placed on table *a*, and deliver the corrugated plate on table *a'*, while if the sleeve is engaged with pinion *i'*, the rolls will revolve in the direction indicated by arrows 2, 2, when the plates are to be fed over table *a'*, and will be delivered on table *a*.

The tables *a, a'*, are in line with the open space between the two rolls; they are sup-

ported on legs (of which the drawings represent one at p'), and are provided with two parallel rails b , c , and b' , c' , to guide the plate and bring it square up to the rolls. 5 The circumference of each of the rolls is equal to the length of the plate when corrugated.

Each plate is to be formed with smooth ends for the purpose of riveting the plates 10 together and with smooth margins on the sides. Each plate is passed in between the rolls, when the smooth places l , l' , of the two rolls meet, so that the front edge of the plate will be caught between the rolls, when it 15 (the front edge of the plate) is in the center or halfway between the two corrugations at the ends of the smooth surfaces l , l' . By this means one half of the surfaces l , l' , will form one smooth end of the plate and the 20 other half the other smooth end, while the smooth ends of the rolls (f , f'), form the smooth side margins of the plate.

The object of the whole arrangement as above described, is to work the plate back 25 and forth between the rolls, by means of shifting the sleeve as soon as nearly the whole length of the plate has passed through between the rolls, and also to gradually corrugate the plate while at the same time it 30 is worked thinner, by giving the hand wheel a turn simultaneously with the shifting of the sleeve so as to cause the two rolls to approach each other after each passage of the plate through the rolls in one direction.

One advantage of the arrangement as described, is that one workman can control the whole operation by taking hold of the handle 35 s , with one hand and of the hand wheel j' , with the other hand, and operating them as above described, so as to work the plate back and forth between the rolls and gradually 40 to diminish the distance between the two rolls until the plate has been reduced to the desired degree of corrugation and thickness, and that too without subjecting the partially 45 corrugated metal sheet to the liability of being injured by being improperly fed to the rolls by an attendant at each time it is passed between the rolls. This is due to the 50 fact that the metal sheet is never allowed to pass quite beyond the action of the rolls

until after it is completely corrugated, thus retaining the sheet in an even and proper position at all times during the operation. Another advantage is that there is no necessity for shifting the driving belt on drum 55 n' ; the motion of the rolls can be reversed by shifting the sleeve as above set forth, and the rolls can be brought to rest by placing the sleeve halfway between the two 60 bevel pinions, when the projections on the sleeve will engage with neither of the projections m , of the pinions. Still another advantage resulting from the application of my invention, consists in the fact that on 65 my machine the plate can be worked back and forth and corrugated and rolled until finished, at one heat, as there is no time lost for the purpose of lifting the plate. This advantage is very important in a practical 70 point of view, as it increases considerably the rapidity of the operation and thus reduces the expense of the article.

By adopting my invention, iron can be rolled and corrugated at one operation and 75 at less expense than heretofore while at the same time the quality of the article will be better in consequence of the gradual operation to which it is subjected and which preserves the fibers of the iron from undue 80 strain during the whole process of working the plate.

Having described my improved machine for rolling and corrugating iron, what I claim therein as new and of my invention, 85 and for which I desire to secure Letters Patent, is:

The combination of the bevel wheel h , and bevel pinions i , i' , with the sleeve n , projections k' , k , m' , m , and fork p , with 90 the corrugated rolls H , H' , and the device for raising and lowering the corrugated roll H , constructed and arranged in the manner above described, whereby a sheet of metal once entered between the rolls can be worked 95 back and forth and gradually and evenly corrugated at one heat and by one attendant as above set forth.

R. MONTGOMERY.

Witnesses:

M. J. MONTGOMERY,
M. C. GRITZNER.