(No Model.)

2 Sheets—Sheet 1.

# W. G. SPIEGEL.

## TYPE WRITING MACHINE.

No. 410,941. Patented Sept. 10, 1889.

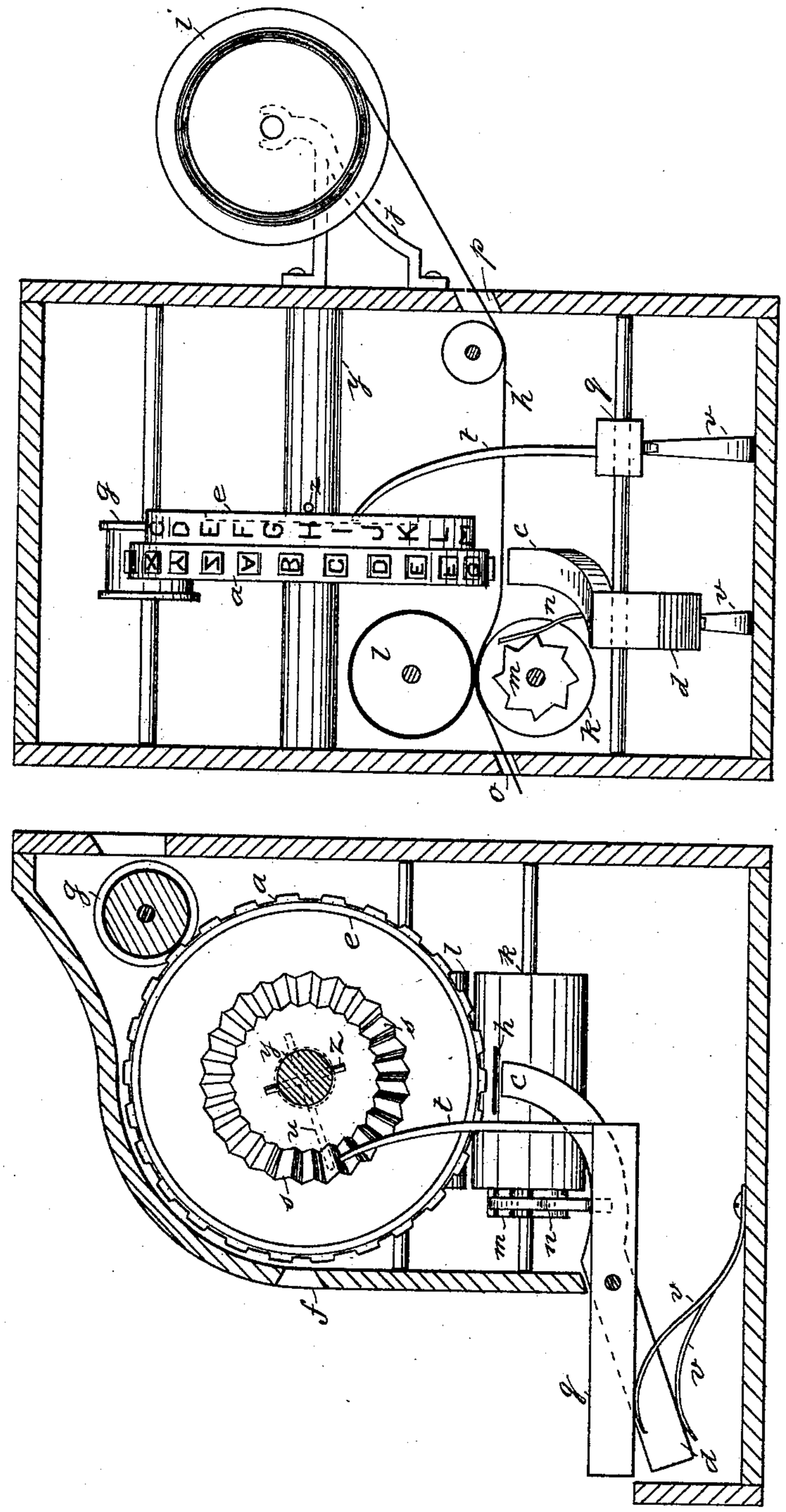

FIG. 2.



FIG. 1.

WITNESSES

Wm. A. Lowe.

F. J. Morgan

INVENTOR

Wm G Spiegel.

By A. D. Thayer.

atty.

(No Model.) 2 Sheets—Sheet 2.

# W. G. SPIEGEL.

## TYPE WRITING MACHINE.

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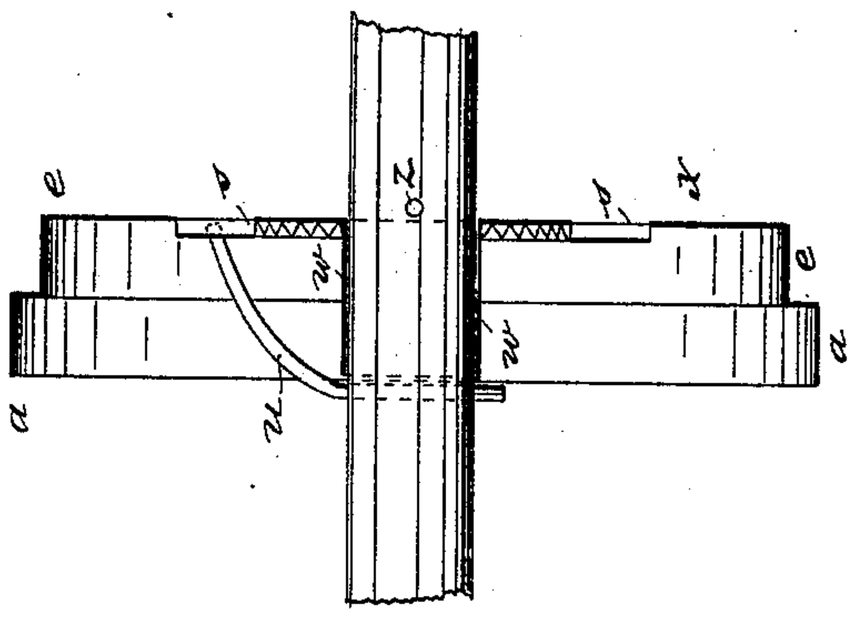


FIG. 4.

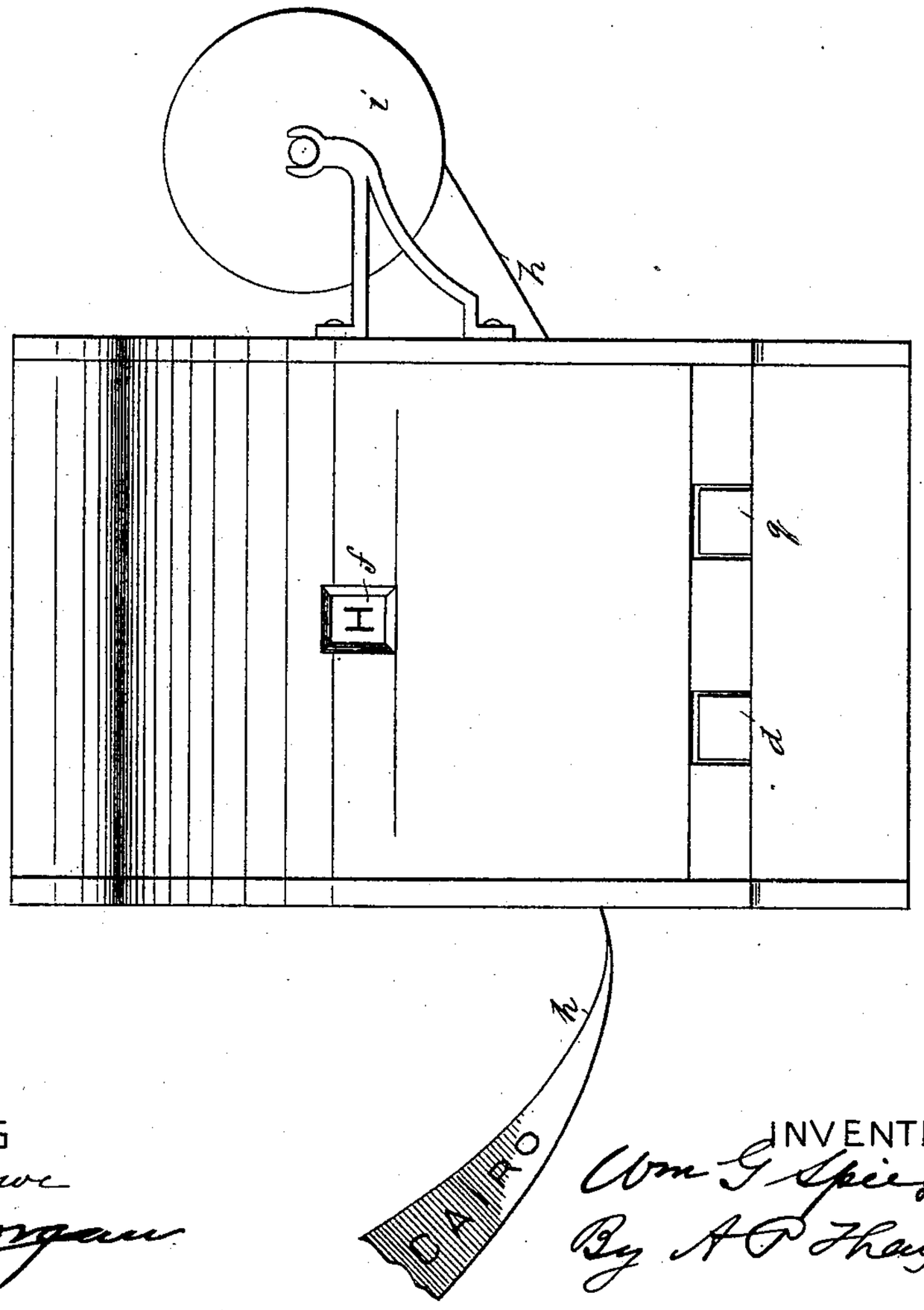


FIG. 3.

WITNESSES

Wm. A. Lowe

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# UNITED STATES PATENT OFFICE.

WILLIAM G. SPIEGEL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO GEORGE H. CLARKSON, OF PHILADELPHIA, PENNSYLVANIA.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,941, dated September 10, 1889.

Application filed November 3, 1888. Serial No. 289,870. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. SPIEGEL, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing apparatus in which a type-carrying wheel and key mechanism for operating it are employed for bringing the type to the printing-point, and has for its object to provide a very simple and cheap toy type-writer apparatus for the amusement and instruction of children, as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical sectional elevation of my improved type-writer. Fig. 2 is a front elevation with the front part of the case removed. Fig. 3 is a front elevation of the case. Fig. 4 is a detail of the apparatus on an enlarged scale.

I mount a type or letter wheel *a* on a shaft *y*, said type-wheel having the printing-type arranged circumferentially on its face, as clearly seen in Fig. 1, with suitable key mechanism for rotating the wheel to bring the respective types to the printing-point and to lock and hold them over the hammer *c* of the impression-key *d*, while making the impression, by depressing the other end of said impression-key, and on the same shaft with the type-wheel I arrange an indicator or letter wheel *e*, lettered on its face to correspond with the letters on the type-wheel, but in such order that they register with the sight-opening *f* in the front of the case as the letters of the type-wheel register with the hammer of the impression-key. For inking the type I arrange the ink-roller *g* in front of the face of the type-wheel, so that as the type pass the face of it they come in contact with its surface and receive the ink from it; but I may of course employ carbon paper between the impression-hammer and the type-wheel in the usual manner of using such paper.

The printing is to be done in a continuous line on a paper strip *h*, that is made to feed from a paper-roll *i*, mounted in brackets *j* on the exterior of the right-hand side of the case, through the case, and between the hammer and the type-wheel, the paper being fed by the intermittingly-rotating feed-rolls *k* and *l*, one of which has a ratchet in which a push-pawl *n* on the hammer end of the impression-key is made to act by the swing of the key when it is actuated for making the impression, so as to shift the rolls and feed the paper just prior to making the impression. The teeth of the ratchet are so shaped that the pawl escapes from a tooth just before the hammer takes effect in making the impression and overruns the tooth in the rest of the movement to allow the paper to cease moving before the impression is made. The other feed-roll, which runs on the printed side of the paper, is provided with a surface of blotting-paper to absorb any surplus ink that may sometimes occur when the ink-roll has been freshly charged. These feed-rolls also deliver the printed slip out through the left-hand side of the case, which has an opening *o* for the purpose, and said case also has an opening *p* on the other side for reception of the strip from the roll.

The shifting of the type-wheel and locking it while making the impressions are accomplished by a circle of ratchet-teeth *s*, stamped in the disk of the indicator-wheel *e*, making a two-sided or duplex ratchet-rim *s*, a spring-pawl *t*, rigidly attached to the inner end of the key *q* to shift the wheel when the front end of the key is depressed, and a spring holding-pawl *u*, so arranged as to act on the reverse side of the ratchet-teeth to lock the wheel in position for printing and to resist the back thrust of pawl *t* in its return movement, said pawls opposing each other on the disk, so that the lateral thrust of one is counteracted by that of the other. Both of the keys have a spring *v* for returning them to the normal position.

In this case I have represented the indicator-wheel and the type-wheel as made in one structure of stamped sheet metal, comprising the hub *w*, disk *x*, and the two-part flange or rim, which I call the "indicator-wheel" *e*, and the type-wheel *a*, the hub being drawn out of the center of the disk in the stamping process and fitted loosely on the wood shaft *y*,

which I prefer to make stationary, and confined thereon so as to turn freely between the pin *z* at the outside of the disk and the shank of the stop-pawl *u* at the other end of the hub, both of which are driven through the shaft to form simple and cheap means of confining the wheels and enabling the stop-pawl to be utilized for the purpose of a stop-pin also; but the wheels may of course be constructed separately without departing from the spirit of my invention.

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

1. The combination of the stationary shaft, the wheel fitted to turn loosely on the shaft, duplex ratchet in the disk of the wheel, and the opposing impelling and holding pawls acting on respective sides of the ratchet, substantially as described.

2. The combination of the stationary shaft, the wheel fitted to turn loosely on the shaft, duplex ratchet in the disk of the wheel, the impelling spring-pawl rigidly attached to a key, the spring holding-pawl inserted in the shaft with relation to the wheel-hub for a controlling-pin thereto and acting on the duplex ratchet opposite to the impelling-pawl, and the controlling-pin in the shaft on the opposite side of the wheel, substantially as described.

3. The type-wheel and indicator-wheel made in one structure of stamped sheet metal, comprising the hub *w*, disk *x*, and the wheel-rims *a* and *e*, and having the duplex ratchet in the disk, substantially as described.

4. A letter-wheel provided with an integral hub, ratchet, and letter-rim, the whole being stamped up out of a single piece of sheet metal, as set forth.

5. The combination, with a suitable casing having a sight-opening, of a stationary shaft provided with a type-wheel *a* and indicator-wheel *e*, having a ratchet *s*, a key-lever *q*, and a spring-pawl *t*, for operating said ratchet and letter-wheel, the paper-feed rollers *l k*, the latter having a ratchet *m*, and a printing-key *d*, provided with hammer *c* and pawl *n*, whereby said key *d* will simultaneously operate the feed-rollers *l k* and press the paper against the letter-wheel *a*, substantially as and for the purpose set forth.

6. A letter-wheel provided with an integral hub and ratchet, the whole being stamped up out of a single piece of sheet metal, as set forth.

7. A letter-wheel provided with an integral hub, ratchet, and type and indicator rims, the whole being stamped up out of a single piece of sheet metal, as set forth.

Signed at New York city, in the county and State of New York, this 26th day of October, A. D. 1888.

WILLIAM G. SPIEGEL.

Witnesses:
W. J. MORGAN,
WILFRED B. EARLL.