

(No Model.)

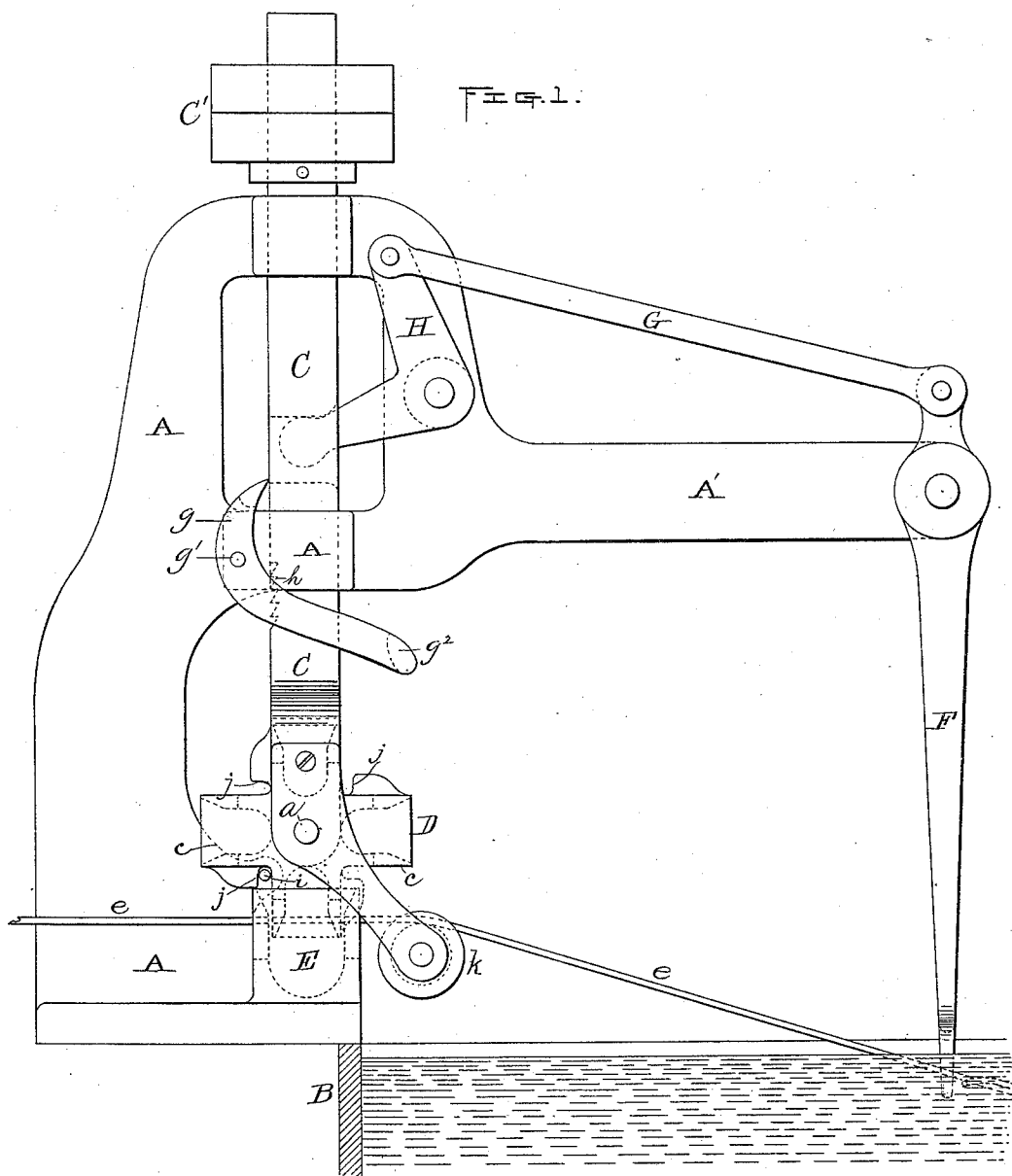
3 Sheets—Sheet 1.

H. SMITH.

AUTOMATIC WIPING DEVICE FOR WIRE GALVANIZING.

No. 405,377.

Patented June 18, 1889.



Witnesses;

Walter B. Nourse,
Lucius W. Biggs.

Inventor;

Herbert Smith
By A. A. Barker Atty.

(No Model.)

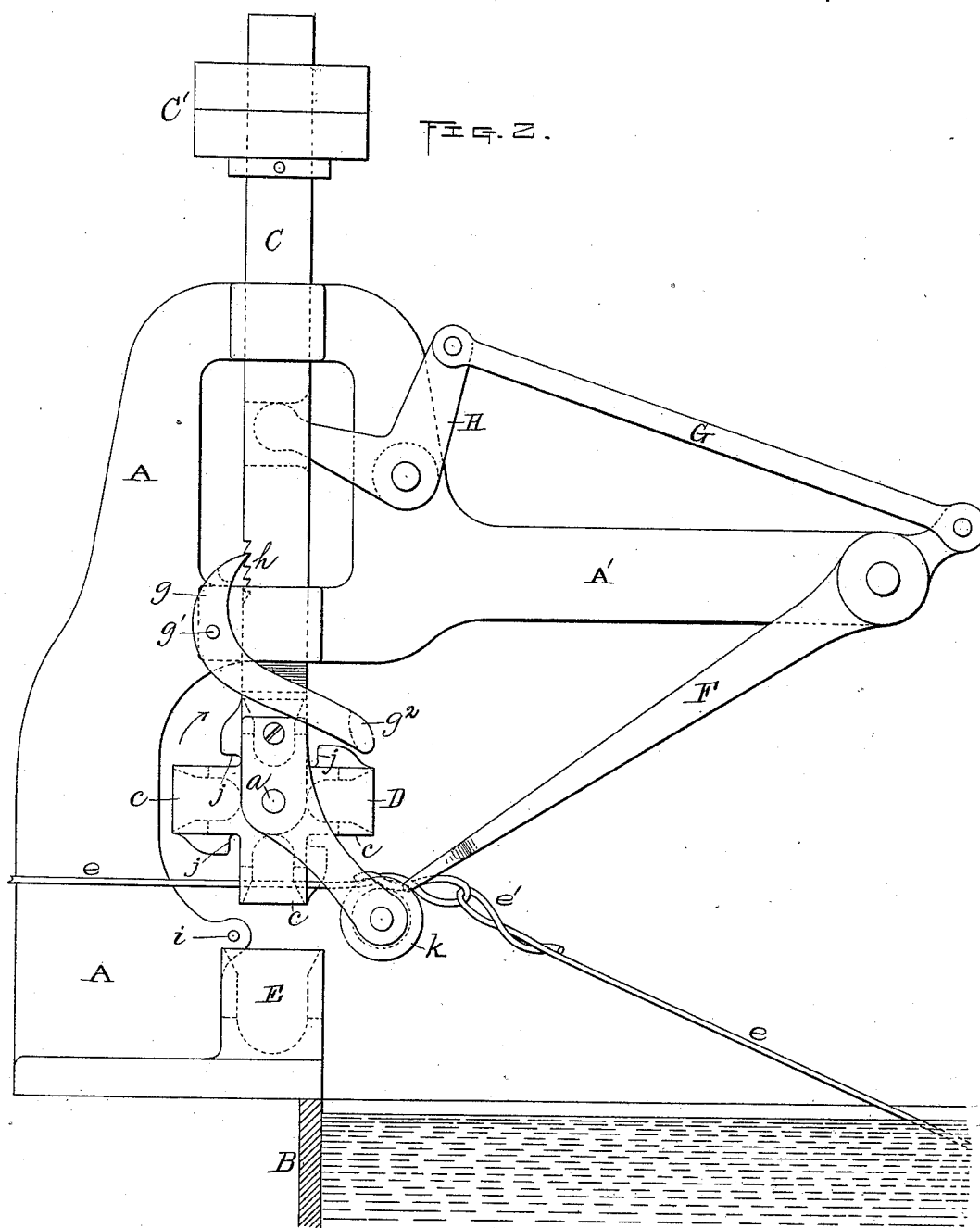
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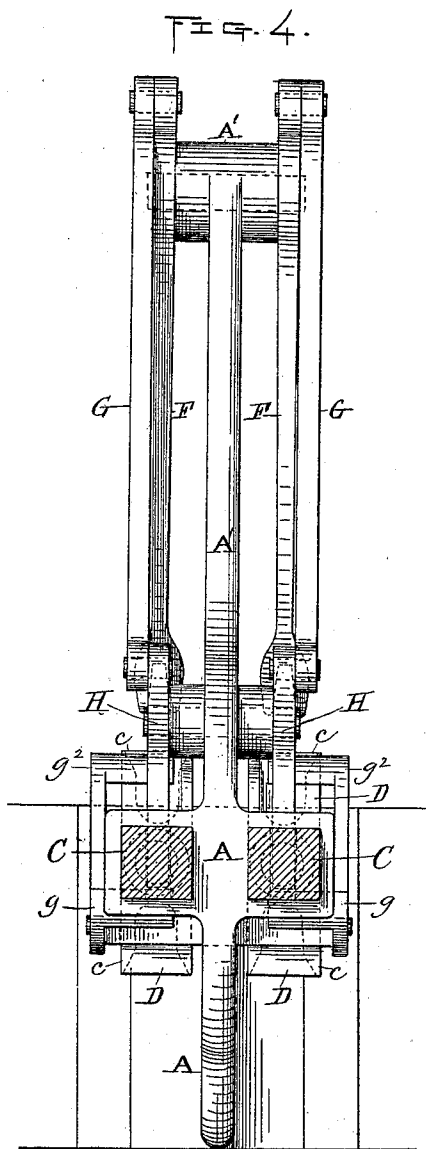
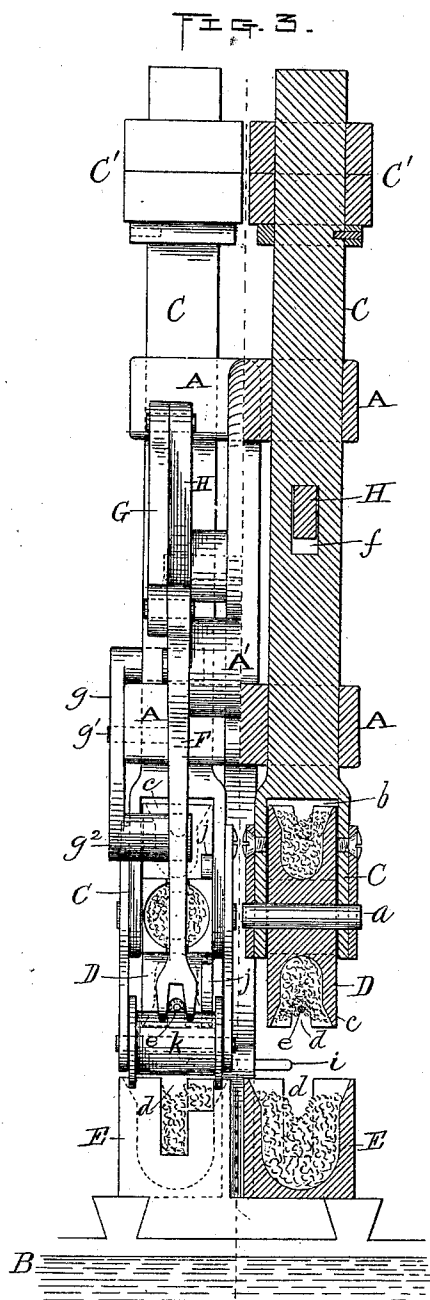
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UNITED STATES PATENT OFFICE.

HERBERT SMITH, OF WORCESTER, MASSACHUSETTS.

AUTOMATIC WIPING DEVICE FOR WIRE-GALVANIZING.

SPECIFICATION forming part of Letters Patent No. 405,377, dated June 18, 1889.

Application filed January 7, 1889. Serial No. 295,648. (No model.)

To all whom it may concern:

Be it known that I, HERBERT SMITH, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Automatic Wiping Devices for Wire-Galvanizing and Similar Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a side view of my said improved wiping device with the various operating parts thereof in their normal positions, with the plain smooth part of the wire passing through to be wiped thereby, part of a galvanizing tank and bath being also shown in connection therewith. Fig. 2 is a similar view to Fig. 1, with the operating parts in the positions which they occupy when a splice in the wire comes in contact with the device and automatically operates the same, so as to allow said splice to pass through, as hereinafter more fully specified. Fig. 3 represents a double wiping device with one half shown in elevation looking in the direction indicated by the arrow in Fig. 2, and the other half a central vertical transverse section, the operating parts being shown in the same positions as in Fig. 2; and Fig. 4 is a horizontal section through the upper part of the double device, showing the parts underneath in plan view.

The object of my invention is to provide a wiping device for galvanizing, tinning, and similar apparatus, whereby the wire may be properly wiped, as well as the splices in said wire allowed to pass through without stopping or retarding said wiping operation; and it consists in constructing and arranging the various parts of the device in such manner as to be automatically operated when the splice comes in contact therewith to allow said splice to pass through, as previously stated.

Although my invention is more especially designed to be used for wiping wire in the galvanizing process, I do not limit myself thereto, as it is equally applicable at other stages in its manufacture requiring said wiping operation.

Heretofore it has generally been necessary in the wiping operation to adjust the wipers by hand in order that the splice in the wire may pass through between said wipers, said operation often requiring the stoppage of the whole apparatus and causing considerable loss of time, also necessitating an unnecessary number of attendants upon said apparatus.

By the use of my invention the wire is at no time interrupted in its progress, the same passing forward continuously and requiring but little or no attention after once being put in operation. Consequently one operative may properly tend with ease from eight to ten apparatus at the same time.

To enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe it more in detail.

In the drawings, the parts marked A represent the frame for supporting the operating parts of the wiping device or machine, and B represents part of a galvanizing-tank, with one end of which is combined said wiping device.

In frame A are fitted to slide vertically the shafts C C, preferably made square in cross-section, so that they may not turn in their bearings. Said shafts are also preferably provided with suitable weights C' C' at their upper ends to produce a constant downward pressure, and to the lower end of each are pivoted at *a*, in a longitudinal slot *b*, the star-wheels D D, which in this instance are provided with four arms *c*, having longitudinal sockets at their outer ends to receive the asbestos or other wiping material used to wipe the wire. When the wheels are in their normal positions, one of the arms *c* points downward vertically and fits into a correspondingly-shaped stationary receptacle or box E containing similar wiping material, said receptacles being arranged directly under the centers of the shafts. The wire passes through between the wiping materials contained in the socketed arms *c* and receptacles E, both being provided with vertical longitudinal slots *d*, as shown in Fig. 3, to permit of said passage of the wire.

While the plain smooth portion of the wire *e* is passing through in the wiping operation

the parts all remain in their normal positions, as aforesaid; but when a splice, as *e'* in Fig. 2, comes along and strikes the lower end of one of the swinging levers *F*, the various parts are thereby automatically elevated, so as to permit said splice to pass through, and then allowed to drop back again into their original positions in the following manner: Said lever *F* is pivoted near its upper end to an arm *A'*, extending out from frame *A*, and above said fulcrum is in turn pivoted to the lever one end of a rod or link *G*, whose opposite end is pivoted to a lifting-lever *H*, pivoted in turn to frame *A*. The end of said lifting-lever *H* opposite from its connection with the rod or link *G* engages with the vertical shaft in such manner as to elevate said shaft when said end of the lever is forced upward. In this instance the end of the lever is fitted in a longitudinal slot *f* formed in the shaft to accomplish said connection; but I do not limit myself thereto or to the special construction of the various other parts of the device. The shaft-elevating mechanism being thus constructed, it is obvious that when a splice in the wire comes in contact with the lower end of one of the levers *F* said lever is forced forward from the position shown in Fig. 1 to that shown in Fig. 2, thereby tilting the lifting-lever *H*, so as to elevate the shaft, as aforesaid. It is held in said elevated position by means of a pawl *g*, pivoted at *g'* to the frame and engaging at its upper end with one of a series of notches *h* formed in the shaft. As the splice continues to move forward it comes in contact with the lower arm of one of the wheels *D* and turns said wheel a partial revolution, thereby allowing the splice to pass through, said operation of rotating the wheel at the same time causing one of its other arms—the top one in this instance—to strike and force out the lower end *g''* of the pawl *g*, so as to disengage its upper end from its notch in the shaft, and consequently allowing said shaft to descend and the various parts of the lifting mechanism to assume their original normal positions, as shown in Fig. 1, the operation being facilitated by the weight previously alluded to on the upper end of the shaft.

In practice the parts are so constructed, arranged, and timed as to cause the release of the shaft just after the splice has passed through, or after said splice has moved forward a sufficient distance so as not to become caught and retarded by the descending shaft and its wheel, and immediately following said release of the shaft the rotation of the wheel is stopped by the next arm (following the one that the splice came in contact with) striking against a suitable stationary stop, as *i*, which also serves to guide said next arm of the wheel into the stationary wiper *E* underneath. In this instance said stop *i* consists of a horizontal transverse pin secured in a projection formed on frame *A*.

Each wheel *D* is held against both forward

and back rotary motion just as its arm enters the bottom stationary receptacle, as well as when lifted therefrom, and also to securely hold the same in position after having been lowered therein, by means of a square shoulder *j*, formed upon or secured to each arm, between which and the arm the pin fits, as is shown in Fig. 1. Although said holding-shoulders are preferably employed in practice, they are not absolutely essential, as the lower receptacle may hold the wheel from turning, and I therefore reserve the right to use the same or not, as desired.

The wire is properly guided to the wipers by passing over a suitable guide-roll *k*, supported by suitable hangers formed upon or fastened to the shaft at each side of wheel *D*. Said guide-roll also serves to lift the wire with the other parts, so that the splice in passing forward will come in contact with and turn the wheel, as and for the purpose previously described.

If preferred, a rod or other equivalent of roll *k* for effecting the same result may be employed in lieu of said roll.

As the weights *C'* on shafts *C* are not an essential feature, they may be used or not, as desired, and any suitable equivalent of the pawl *g* and notches *h* may be combined with the mechanism set in motion by contact with the splice in such manner as to effect a like result, the essential feature of my invention being the combination of certain elements rather than any special construction for effecting the desired result.

It will at once be apparent from the foregoing description that the device is simple in construction, as well as strong and durable, and said construction is such as to be both positive in operation and effective in use. By its application in practice a large saving in labor and material is effected, and the production is largely increased over similar apparatuses not provided with an automatic wiping device.

Having now fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. An automatic wiping device for wire-galvanizing and similar apparatus, comprising, in combination, the following elements: a stationary box or receptacle for containing the wiping material, a rotatable star-wheel having socketed arms adapted also to contain the wiping material and to be combined with said stationary wiper at certain stages in the wiping operation, a suitable slide-shaft for supporting said rotatable star-wheel, means for automatically stopping the rotatable wheel and guiding the ends of its arms, one at a time, into engagement with the stationary wiper, means for lifting the wire to keep it in line with the rotatable wheel at one side of its pivot, mechanism for automatically moving the slide-shaft to disengage its rotatable wheel from the stationary wiper by contact of the wire-splice therewith in the for-

ward movement of said splice, means for holding the slide-shaft in its adjusted position for a certain time and then disengaging it by contact with the mechanism set in motion by the wire-splice, and suitable supports for the various parts, substantially as set forth.

2. In a wiping device for wire-galvanizing and similar apparatus, the combination of a stationary wiper with a rotatable star-wheel having socketed arms adapted to hold suitable wiping material, and whose arms are adapted to engage with the stationary wiper, one at a time, also having suitable supports and means for operating the same toward and from the stationary wiper, substantially as set forth.

3. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the vertical slide-shaft and its appendages with a swinging lever and mechanism operatively connected therewith adapted to elevate the slide-shaft automatically when operated by the oncoming wire-splice striking and moving forward the lower end of said swinging lever, substantially as set forth.

4. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the vertical slide-shaft and its appendages with a latch device for holding the same in an elevated position for a certain time, and adapted to be automatically disengaged therefrom to allow the parts to descend by engagement with mechanism operatively connected with and set in motion by the oncoming wire-splice when the latter arrives in contact therewith, substantially as set forth.

5. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the slide-shaft and its appendages with lifting mechanism set in motion by contact with the oncoming wire-splice, adapted to elevate the slide-shaft automatically, and a suitable latch device for holding said shaft and its appendages in an elevated position, adapted to be automatically disengaged therefrom to allow said parts to descend by engagement with the mechanism set in motion by said wire-splice, substantially as set forth.

6. The combination of the stationary wiper E and the vertically-operated slide-shaft C with the rotatable star-wheel D, having arms *c*, provided with sockets at their outer ends to hold the wiping material, and with holding-shoulders *j*, the stationary stop *i*, and frame A, substantially as set forth.

7. The combination of the stationary wiper

E and the vertically-operated shaft C with the rotatable star-wheel D, having arms *c*, provided with sockets at their outer ends to hold the wiping material, the stationary stop *i*, and frame A, substantially as set forth.

8. The combination of the slide-shaft C, having the guide-roll *k*, mounted on its lower end in front of and at one side of the axis of the star-wheel D, with said star-wheel fitted to turn longitudinally in the bottom of said slide-shaft, substantially as set forth.

9. The combination of the slide-shaft C, provided with notches *h*, also having the guide-roll *k*, or its equivalent, mounted on its lower end, and the star-wheel D, fitted to turn on said lower end and adapted to be operated by the wire-splice in its passage forward, with the pivoted pawl *g* and frame A, substantially as set forth.

10. The combination of the slide-shaft C, having the notches *h*, with the pawl *g*, pivoted to frame A, adapted to engage at its upper end with said notches and to be automatically disengaged therefrom by connection with the mechanism actuated by the wire-splice in its passage forward, substantially as set forth.

11. The combination of the rotatable star-wheel D, having the holding-shoulders *j*, with the stationary stop *i* and stationary wiper E, substantially as set forth.

12. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the shaft C, fitted to slide in frame A, with the lifting-lever H, connecting rod or link G, swinging lever F, and frame A, said lever F being adapted to engage at its lower end with the wire-splice as the latter moves forward, substantially as set forth, and for the purpose specified.

13. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the swinging lever F, adapted to engage with the wire-splice as the latter moves forward, the connecting rod or link G, and lifting-lever H, with shaft C, fitted to slide in frame A and provided with notches *h*, pawl *g*, pivoted to frame A and adapted to engage at its upper end with said notches, and said frame A, substantially as and for the purpose set forth.

HERBERT SMITH.

Witnesses:

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