(No Model.) 3 Sheets—Sheet 1.

C. HANIKA.

MACHINE FOR MAKING IRON FENCES.

No. 423,426. Patented Mar. 18, 1890.

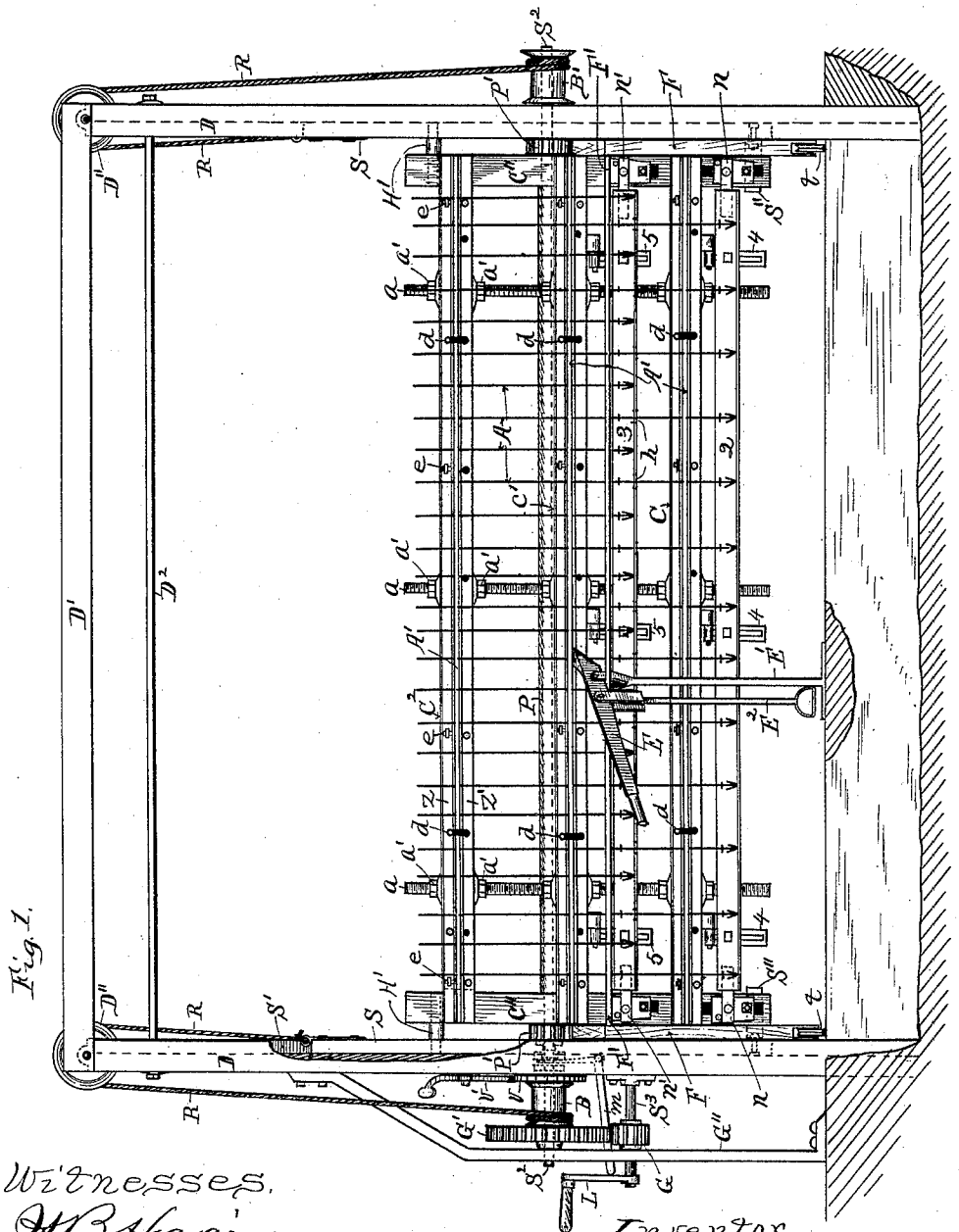

Fig. 1.

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(No Model.) 3 Sheets--Sheet 2.

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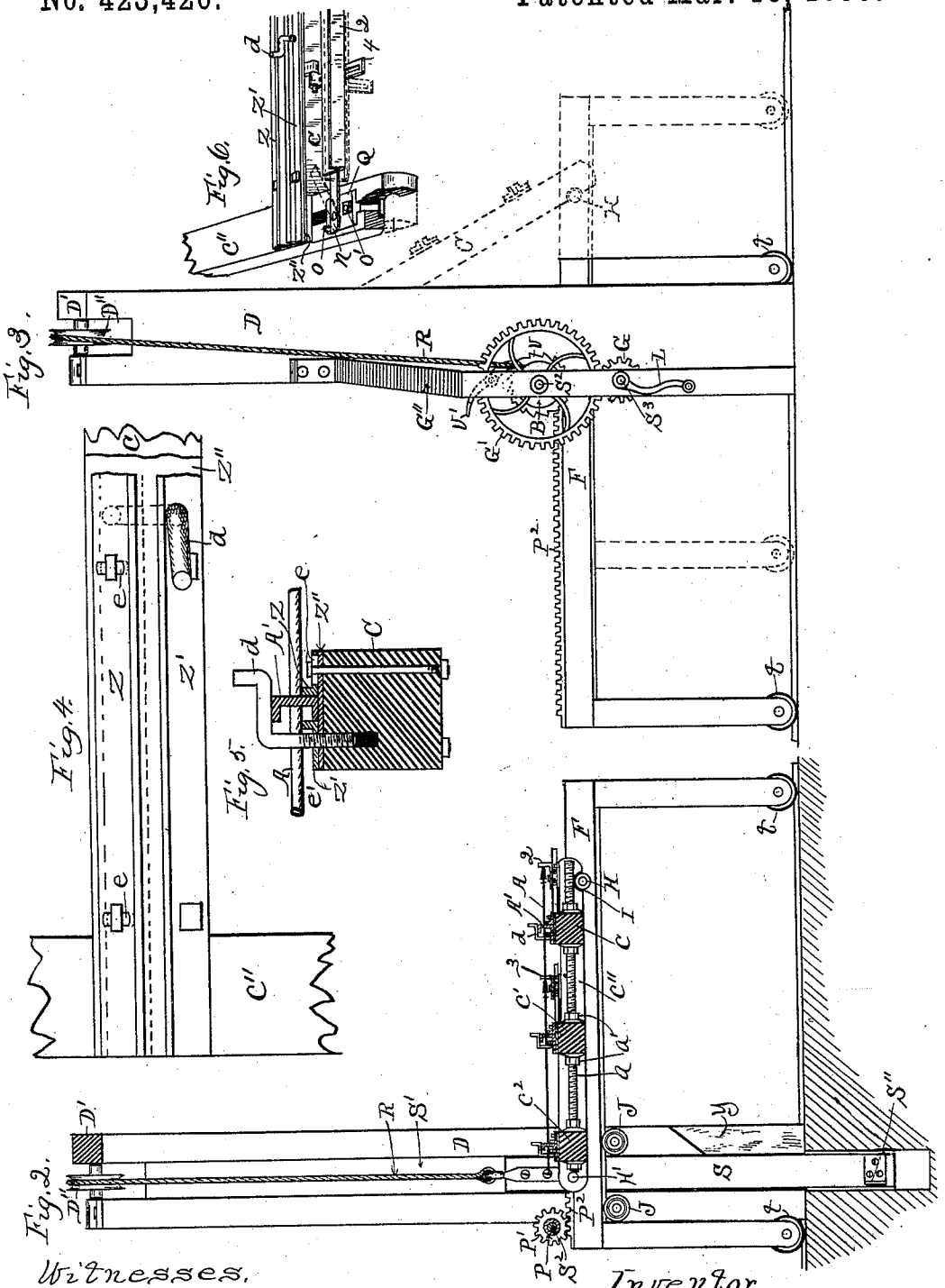

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(No Model.) 3 Sheets—Sheet 3.

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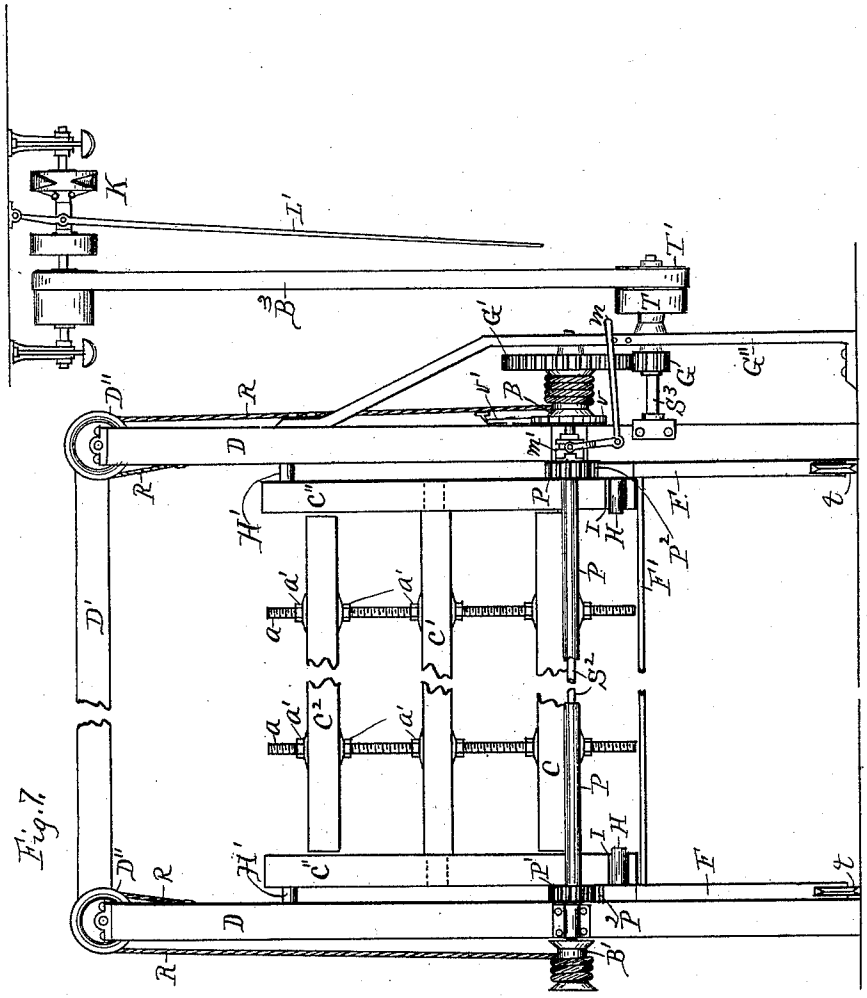

Fig. 7.

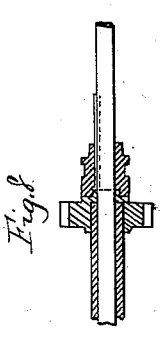

Fig. 8.

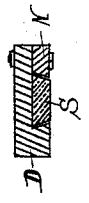

Fig. 9.

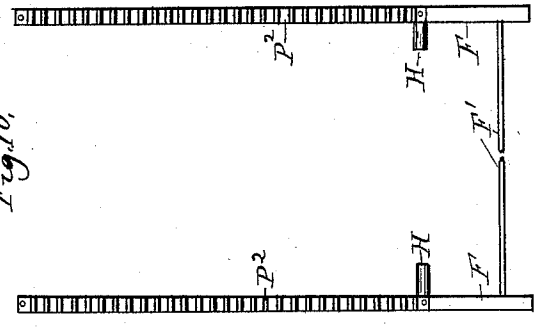

Fig. 10.

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UNITED STATES PATENT OFFICE.

CHRISTIAN HANIKA, OF WICHITA, KANSAS.

MACHINE FOR MAKING IRON FENCES.

SPECIFICATION forming part of Letters Patent No. 423,426, dated March 18, 1890.

Application filed December 16, 1889. Serial No. 333,904. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN HANIKA, a citizen of the United States of America, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Swaging-Machines for Iron Fences, of which the following is a specification, reference being had therein to the accompanying drawings, and the letters and figures of reference thereon, forming a part of this specification, in which—

Figure 1 is a front elevation of my invention; Fig. 2, a cross-sectional elevation of the same, showing the swaging-frame lowered to a horizontal position; Fig. 3, an end elevation of the same with the swaging-frame in a vertical position within the frame, also showing by dotted lines the swaging-frame in the act of being raised from a horizontal to a vertical position. Fig. 4 is a detail plan view of a portion of the swaging-frame of the machine. Fig. 5 is a cross-sectional view of the same, represented as holding a fence-rail and a picket. Fig. 6 is a detail perspective view of a portion of said swaging-frame. Fig. 7 is a rear elevation of the machine, condensed by breaking away portions of its center parts. Fig. 8 is a longitudinal sectional view of the clutch mechanism of the machine. Fig. 9 is a cross-sectional view of one of the machine-columns and the slide therein, and Fig. 10 is a top plan view of the traveling benches of the machine.

This invention relates to certain improvements in that class of machines wherein a form or frame is provided to receive and hold the rails of a fence-panel while the pickets are being placed in the picket-holes therein, and while the said rails are being swaged against the pickets to permanently secure them in place, so the panels may be used in a fence; and it consists in the particular construction and arrangement of the several parts, which I employ in the construction of the same.

Referring to the drawings, D D are upright columns securely set and are each provided with guideway S′ in their inner faces, (see Figs. 1, 2, and 9,) into which are arranged the sliding beams S—a beam in each guideway—and the columns are secured together at their upper portion by means of the cross-beam D′ and rod D^2.

S^2 is a shaft arranged in a horizontal position in bearings at the rear side of columns D D and in the frame G″, and is provided at one end, within frame G″, with the spur gear-wheel G′, the windlass-drum B, and the ratchet-wheel v, and at its opposite end with the windlass drum B′.

v' is a gravity-pawl pivotally secured to the column D above the said ratchet-wheel for the purpose of holding said wheel and the shaft from backward turning when not so desired.

R R are ropes secured at one end to the sliding beams S, arranged, respectively, over the pulleys D″ D″ at the top of columns D D, and to and adapted to wind about the drums B B′ at their opposite end.

S^3 is a short shaft boxed to one column D and frame G″ below shaft S^2 and is provided on its outer end with a hand-crank L, as shown in Fig. 1, or with a tight and loose belt pulley, as shown at T and T′, Fig. 7, for turning it, and with the pinion G within frame G″ which meshes with gear G′ for the purpose of operating said gear and its shaft and windlass mechanism, and otherwise operating the machine, as will presently be explained.

P is a hollow shaft sleeved on shaft S^2 between columns D D and is provided at each end adjacent, the said columns, with a spur gear-wheel P′, one of which is provided with a clutch-face adapted to engage and register with the sliding clutch m', which is feathered on shaft S^2 at the side of a column D, (see Figs. 7 and 8,) which, when engaged with said clutch, will cause the said hollow shaft and its gears to rotate with shaft S^2, and when not engaged shaft S^2 will rotate independent therefrom, and m is a lever fulcrumed to column D below clutch m' and is provided on its upturned end with a fork arranged in the annular groove of the clutch for sliding the clutch on its spline. The opposite end of the lever is arranged extending at the side of frame G″, where it may be grasped to operate it, and thereby operate the clutch mechanism, and is arranged to catch on pins set in frame G″ to hold it at either adjustment, as shown.

The swaging-frame consists of three hori-

zontal beams c, c', and c^2 and the two end cross-beams c'' c''. The center horizontal beam c' is rigidly fixed to the end cross-beams, and the beams c and c^2 are held on their respective side by means of the screw-shafts a a a and the lock-nuts a' thereon by arranging said screw-shafts through holes in the beams and turning the nuts against the beams, and by reason of the said shafts being screw-threaded throughout their length the said outer beams may be adjusted either to or from the center beam, as they are independent otherwise from the end beams.

Secured to the face of each horizontal beam is a metal plate, as shown in Figs. 4 and 5 at Z'', and upon the face of said plates are arranged a pair of angle-bars Z Z'—a pair for each beam—one of which Z' is fixed to the beam by means of bolts or screws, and its fellow Z is provided with transverse slots e, (see Figs. 4 and 5,) through which bolts are arranged to secure it to the beam, and by means of said slots it is adapted to be adjusted either to or from bar Z'. The purpose of said angle-bars is to provide the beams with a channel between them the length of the frame, and to adapt the channels thus provided to be formed of different width by adjusting one of the angle-bars to accommodate fence-rails of different thickness.

d represents cranked keepers screw-threaded and turned into screw-threaded holes in the angle-bars Z', the plates Z'', and their respective beams c, c', and c^2—a pair for each beam—one near each end thereof, or at other places, if so desired, and are for the purpose of turning to lie across the channels between bars Z Z' to hold the fence-rails A' therein, (see Figs. 4 and 5,) and by means of their screw-threaded portion they are adapted to be turned more or less into their seat to adjust them to hold rails of different width.

2 and 3 are picket-gages, made of light angle-iron, adjustably secured to the slotted straps 4 and 5, respectively, which straps are hinged to their respective beams c and c', as shown in Fig. 1, and adapted to turn to bring the gages below or in the rear of the swaging-frame face level, so that pickets A may be placed in the holes of the rails A' as they are held in their respective channels, and after the pickets are placed be brought up so the pickets may engage them to bring the pickets in proper line with each other, the inner gage being for the shorter pickets, and provided at proper intervals with notches, as shown at h, Fig. 1, to permit the larger pickets to pass.

N and N' are pivoted keepers adjustably secured to the cross-beams c'' c'' for respectively holding the gages up during the swaging operation, and may be turned to one side, and thereby release the gages, (see full and dotted lines in Fig. 6,) and are respectively secured to a plate, as shown at Q, Fig. 6, which plates are arranged adjustable in slots of beams c'', to adjust the said keepers when the gages are adjusted, and held by means of a bolt, (shown at o',) and the keepers are prevented from turning but one way by means of pins, as shown at o in said figure. The swaging-frame thus described is pivotally connected with the sliding beams S, at or near one side, being the upper side when in a vertical position and the rear side when in a horizontal position, by means of the studs H', thus adapting it to be raised and lowered with the sliding beams by the use of the windlass mechanism, and when in a vertical position the lower side of the frame is prevented from swinging rearward by means of the brackets S'', which are secured to the lower end of the sliding beams S, (see Figs. 1 and 2,) and prevented from swinging forward by means of the blocks y, which are secured to and project from the columns D D, as shown in Fig. 2. The sliding beams S are made with beveled sides, and their guideways with corresponding sides, as shown in Fig. 9, which form prevents them getting from their guideway, and one side portion, as shown at N in said figure, is made removable to permit the placing of said beams.

F and F are traveling benches arranged transversely between the ends of the swaging-frame and columns D D, and are provided with the wheels t at their base, which travel upon tracks on the floor, where the machine is arranged, with a track secured to the under side of their horizontal beam, which is arranged to travel in grooved wheels J J, which are secured to the columns D D, (see Fig. 2,) and with toothed racks P^2 on their upper face, which mesh with the gears P' of the hollow shaft P, and when the clutch m' is in gear the action of the windlass will, when raising the swaging-frame, also rotate gears P', and thereby cause said benches to travel along their tracks. The said benches are for the purpose of supporting the swaging-frame when it is in a horizontal position, and the movement of the benches assists in lowering the frame to a horizontal position and raising it to a vertical position, and for that purpose each bench is provided with an extending-pin H at its inner side near the rear side, and the frame is provided with notches I across the end of cross-beams c'' opposite from studs H', which connect the frame with the sliding beams S', (see Figs. 2 and 7,) and when the swaging-frame is raised to the position shown in Fig. 7 said notches will register with the pins H of the benches, when by operating the windlass mechanism with the clutch m' in gear the upper side of the swaging-frame is lowered, and by the traveling movement of the benches the lower side of the frame is carried sidewise with the benches by means of said pins H (see dotted lines in Fig. 3) until the studs H' rest upon said benches, when the frame will be in a horizontal position, as shown in Fig. 2. When in such position, the fence-rails A' and pickets A are placed and clamped in position

ready for the swaging operation, and by a reverse movement of the windlass mechanism the frame is in like manner carried to a vertical position, when the benches F will be run back to the rear of the frame out of the way for the swaging-operation, and when the frame is thus raised the clutch m' is moved out of gear, when by operating the windlass mechanism the frame only will move, and that in a vertical manner for the purpose of bringing each fence-rail A′ in its respective order in range with the swaging-anvil, where the frame is held by means of the pawl-and-ratchet mechanism described through the medium of the windlass.

F′ is a bar secured to and connecting the benches F F, and when the benches are run back and the frame is in a vertical position will be near the front of the frame, as shown in Fig. 1, and is for the purpose of carrying the anvil E when not in service and for shifting the anvil along upon from picket to picket. The anvil E is in form as a lever forked at its heavy swaging end, adapting it to stride a picket under the fence-rail, and is provided with the pivoted standard E at the inner side of bar F′ and the depending stirrup E^2 a distance outside from said bar. The outer end of the anvil will when not in use hang down, and thus rest upon bar F′, and thereby support standard E′ off the floor, when it may slide along on the bar F′. When in use, the outer end is raised, which will bring standard E′ to rest upon the floor, and the forked end is then placed astride a picket A under rail A′. The operator then places one foot in stirrup E^2, and thus holds the anvil while he swages the fence-rail to secure the pickets.

A pit is provided between columns D D for the purpose of permitting the frame to lower sufficiently to bring the top rail in line with the anvil. In such instance the swaging is done by hand; but other means may be employed, such as a steam or hydraulic apparatus mounted on a carriage in front of the swaging-frame, which would perform the said swaging more rapidly and with greater ease to the operator.

In Fig. 7 a counter-shaft and pulleys and clutch mechanism K are shown—such as are in common use with engine-lathes driven by means of a straight and a cross belt—and leading therefrom is a belt B^2, which is arranged about the machine-pulley T′, and may be and is adapted to be shifted to the tight pulley T to operate the machine from some motive power, the lever L′ being for the purpose of throwing the counter-clutch mechanism to change the direction of motion to the machine.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is as follows:

1. The combination, with the swaging-frame consisting of the fixed central beam c', the cross end beams c'' c'', the adjustable beams c and c^2, and the screw-shafts a and nuts a', of the plates Z″ and angle-bars Z′, fixed to said horizontal beams, of the adjustable fellow angle-bars Z, the hinged gages 2 and 3, the gage-keepers N and N′, and the screw-threaded adjustable cranked keepers d, substantially as and for the purpose set forth.

2. The combination, with the swaging-frame described, of the longitudinal plates Z″, the fixed angle-bars Z′, secured thereon, the adjustable angle-bars Z, and the cranked adjustable keepers d, substantially as and for the purpose set forth.

3. The combination, with the columns D D, provided with guideways, of the sliding beams S S in said ways, the swaging-frame provided with adjustable rail-holders and picket-gages and pivotally secured at one side to said sliding beams, the traveling benches F F, provided with the toothed racks P^2, the shaft S^3, the hollow shaft P, provided with the gears P′, and the clutch and windlass mechanisms, substantially as and for the purpose set forth.

4. The combination, with the swaging-frame provided with adjustable rail-holders and picket-gages, of the sliding beams S, provided with the brackets S″ and carrying the swaging-frame, and the windlass mechanism consisting of the shaft S^2, the drums B B′, the pawl and ratchet wheel v v', the ropes R R, the pulleys D″ D″, the gears G G′, the shaft S^3, and the means described for operating said windlass mechanism, substantially as and for the purpose set forth.

5. The combination, with the swaging-frame, of the anvil E, supported by means of standard E′, the stirrup E^2 thereof, and the supporting and guiding rod F′, substantially as and for the purpose set forth.

6. The combination, with the swaging-frame described, of the anvil E, forked at its swaging end to stride a picket, the pivoted standard E′, and the stirrup E^2 thereof, substantially as and for the purpose set forth.

7. In the machine described, the combination, with the columns D D, of the shaft S^2, the hollow shaft P, sleeved thereon and provided with the gears P′, the clutch mechanism m m', for connecting and disconnecting said shafts, and the geared windlass mechanism, substantially as and for the purpose specified.

8. The combination, in the swaging-machine described, with the windlass mechanism thereof and the sliding beams S, of the traveling benches F, provided with the pins H and toothed racks P^2, the hollow shaft P, the gears P′ thereof, the clutch mechanism m m', and the swaging-frame, wherein by the joint action of said sliding beams and traveling benches the swaging-frame is lowered to a horizontal position on the benches or raised to a vertical position, substantially as specified.

9. The combination, with the windlass and geared mechanism, substantially as set forth,

of the sliding beams S, the traveling benches F, and the swaging-frame, wherein the said frame is adapted to be raised from a horizontal to a vertical position or lowered from a vertical position to a horizontal position, in the manner and for the purpose specified.

10. The combination, with the windlass mechanism described, provided with the gears G′ and G, and the shaft S^3, of the pulleys T and T′, the belt B^2, and counter R, substantially as and for the purpose set forth.

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