(No Model.) 2 Sheets—Sheet 1.

J. BRISLIN & A. VINNAC.

FEEDING MECHANISM FOR ROLLING MILLS.

No. 345,953. Patented July 20, 1886.

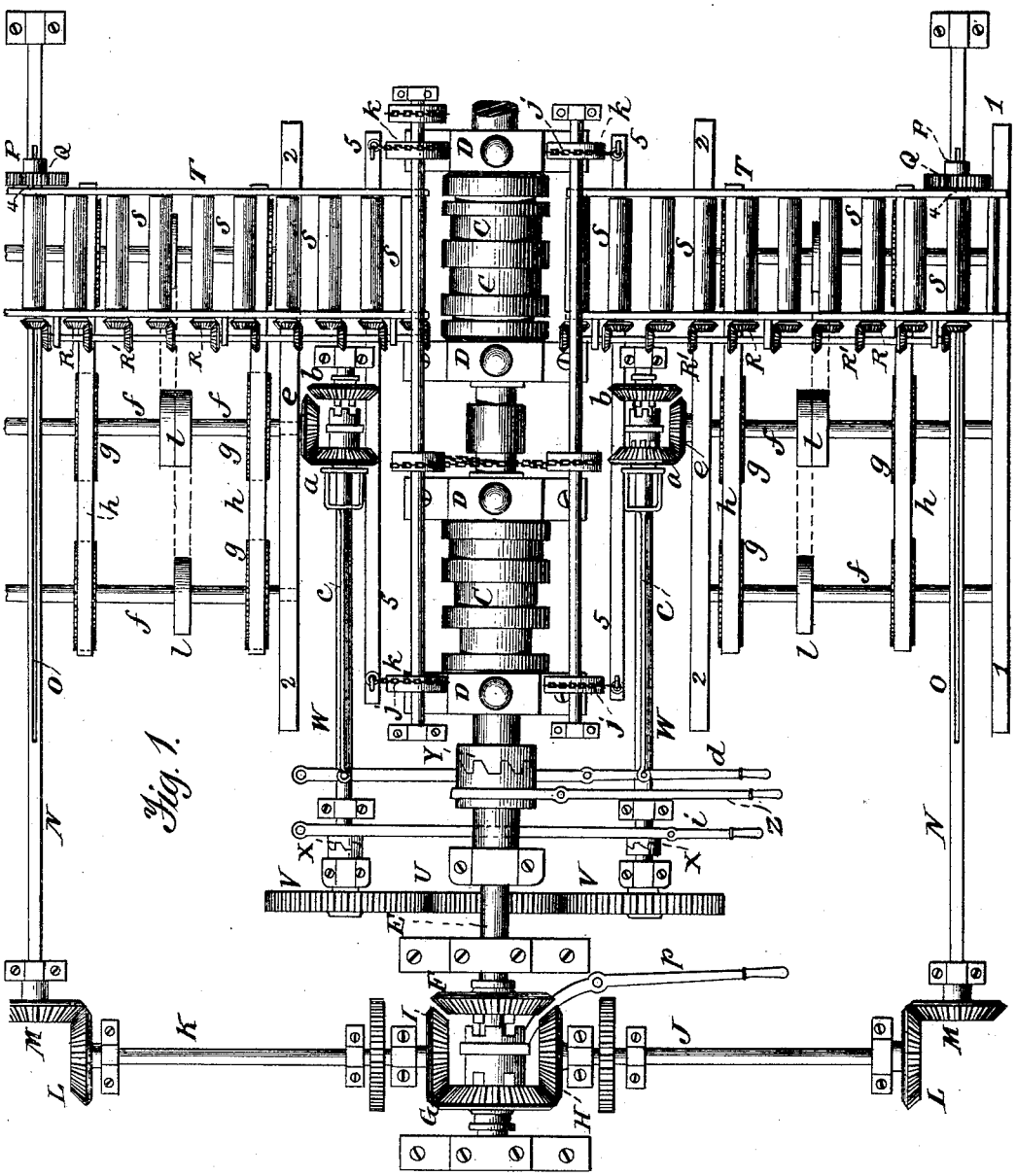

Fig. 1.

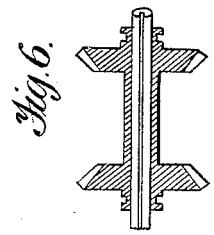

Fig. 6.

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(No Model.) 2 Sheets—Sheet 2.

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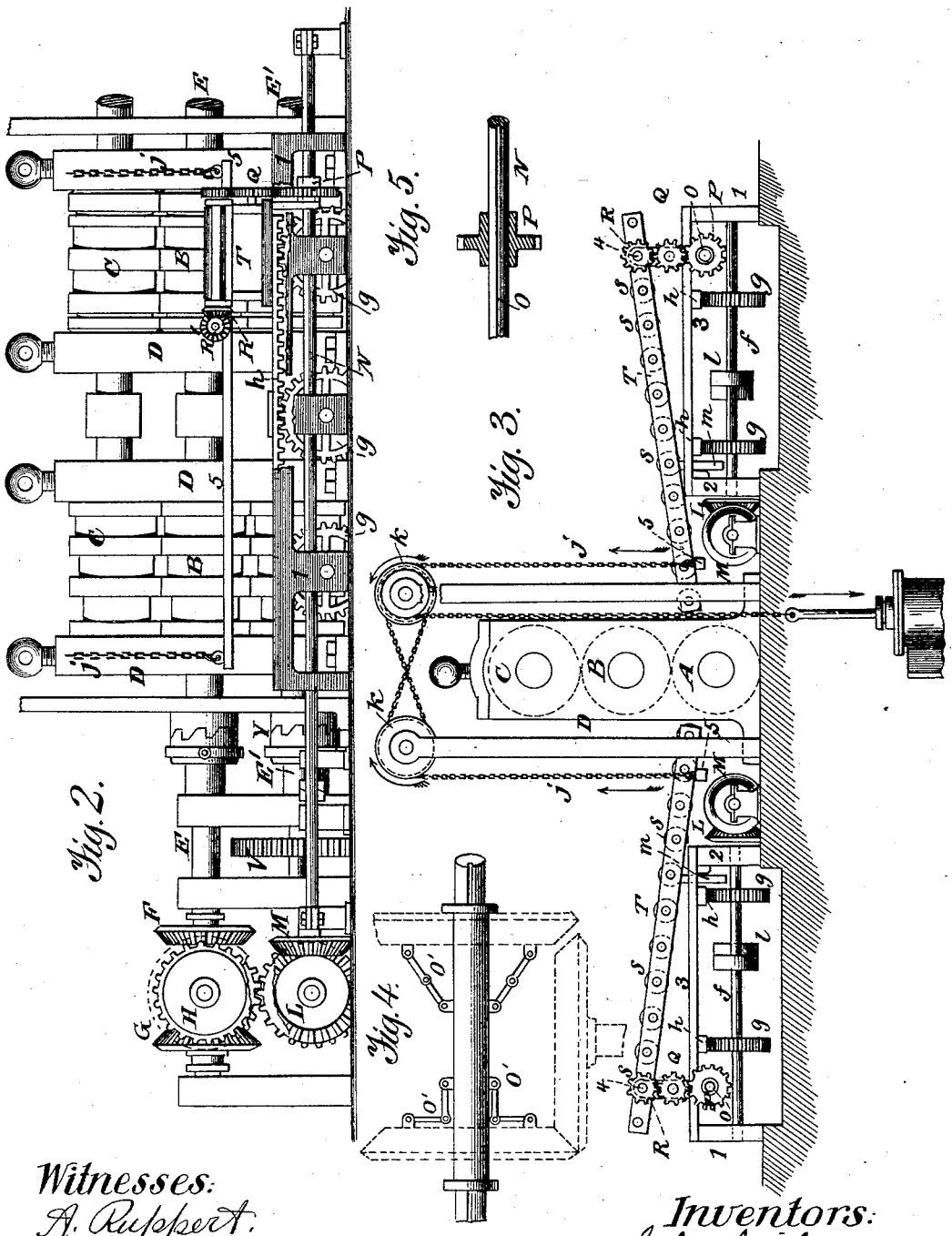

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN BRISLIN, OF MILLVALE, AND ANTOINE VINNAC, OF PITTSBURG, PA.

FEEDING MECHANISM FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 345,953, dated July 20, 1886.

Application filed September 14, 1885. Serial No. 177,121. (No model.)

To all whom it may concern:

Be it known that we, JOHN BRISLIN, of Millvale, and ANTOINE VINNAC, of Pittsburg, both in the county of Allegheny and State of Pennsylvania, have invented a new and useful Rolling-Mill; and we do hereby declare the following to be a full, clear, and exact description thereof.

In the process of rolling iron it is necessary to elevate the iron so that it will pass through between the upper and middle rolls when a "three-high" mill is used, and in case of a "two-high" mill it is necessary to pass the iron over the top of the upper roll in the process of rolling; and in moving the iron from one groove to the other, and from one set of rolls to another set, it is necessary to move the iron bodily sidewise.

In heavy rolling the labor attendant upon elevating the heated iron and moving it laterally for the several passes required in the process of rolling is very laborious, and the difficulty attendant upon said manipulation causes a loss of time, and at the same time a loss of heat, thereby causing the iron to be more difficult to roll, and the stiffening of the iron by the cooling process due to said loss of time often results in the breaking of the mechanism connected therewith.

Mechanical contrivances have been constructed and used for the purpose of vertical lift of the heated iron in the operation of rolling it.

Our invention has for its object not only the vertical lifting of the heated iron, but also the lateral movement of it in the process of rolling; and our invention consists in a lifting mechanism and laterally-moving mechanism combined with rolls of a rolling-mill for the vertical lifting and lateral movements of the heated iron in the operation of rolling it.

To enable others skilled in the art with which our invention is most nearly connected to make and use it, we will proceed to describe its construction and operation.

In the accompanying drawings, which form part of our specification, Figure 1 is a top view or plan of our improvement in rolling-mills. Fig. 2 is a front elevation of the same. Fig. 3 is an end elevation of the same. Figs. 4, 5, 6 are detail views.

In the accompanying drawings, A B C are rolls mounted in housings D D, and provided with the usual coupling and adjusting mechanism. To the couplings of one of the rolls is attached a shaft, E, on which are mounted bevel-wheels F and G, which wheels are susceptible of movement upon said shaft for the purpose of bringing them in gear with wheels H I, mounted on shafts J K, for the purpose of imparting to shafts J K a reversed motion.

On the outer ends of shafts J and K are bevel-wheels L, which mesh into bevel-wheels M, mounted on shafts N, provided with grooves O, in which grooves moves a feather or key arranged in the bore of wheels P, which are susceptible of movement on the shafts N. The wheels P mesh into wheels Q, which mesh into wheels R on the ends of rollers S on the outer ends of the lifts T, each of the rollers S being furnished with a wheel, R, meshing with wheels R′, so that the revolving of the wheels P revolves the rollers of the lifts.

On the shaft E′ is mounted a wheel, U, which meshes into wheels V V on shafts W W, which are provided with couplings or clutches X X. The shafts W W have also mounted upon them wheels *a b*, which are arranged to be shifted through the medium of rods *c* and lever *d*, for the purpose of bringing the wheels *a b* at will into gear with the bevel-wheels *e* on the shafts *f*, on which are mounted wheels *g*, which mesh into racks *h h*, attached to the lifts and side-moving mechanism.

The shafts W W are provided with clutches X, which are operated through the medium of the lever *i*, which are used for the purpose of coupling the shafts W W with the wheels V V. By this arrangement of the clutches X Y and levers *d z i* the driving mechanism of the various parts may be readily unshipped, thereby bringing it into operation or at rest at will.

The lift and side-moving mechanism is elevated or depressed through the medium of a chain, *j*, which passes over pulleys *k*; or it may be elevated through the medium of a steam-cylinder and piston arranged under said lifts at a convenient point, which arrangement will be readily understood by the skillful mechanic without further description.

On the shafts *f* may be arranged pulleys *l*, for the purpose of operating the lifting and side-moving mechanism T.

The arrangement of the wheels F G on the

shaft E and the wheels *a b* on the shafts W is represented in detail, Fig. 6, and can be readily comprehended by the skillful machinist.

In the construction of the machine it will readily be comprehended that the lift and side-moving mechanism T is arranged on each side of the rolls, and they work simultaneously with each other both in vertical and side movements. The frame-work of the lifts should be provided with guides, as indicated at *m* in Fig. 3.

If it should be desirable to have the wheels F G and *a b* separated from each other in their movements on their shafts, lock-levers, as indicated at *o* in Fig. 4, may be employed, which arrangement of lock-levers is well understood by the skillful machinist; but preference is given to that arrangement and construction indicated in Fig. 6.

1 2 refer to parallel bars, a pair of which are arranged at each side of the rolls.

One of the bars 3 of the roll-carriage, forming part of the laterally-shifting mechanism, rests upon the guides presented by the bars 1 2. The pinion R, above the pinion Q, is also keyed upon its shaft so as to move laterally thereon, the said shaft being designated by the figure 4, and bearing at its ends in short standards, (shown in dotted lines, Fig. 3,) which are attached to the ends of the guide-bar 1. The racks *h* are secured at one end to the under side of the bar 3, and are extended horizontally and supported upon the gear-wheels *g*.

For the sake of clearness, the extended lateral portion of the shaft 4 has been omitted from Fig. 1; but the operation of parts in immediate relation therewith is such that as the carriage and roller-frame T move laterally under the power imparted to the racks the keyed wheels P, Q, and R also move therewith, but are continuously driven by the power received from the shaft N.

The chains *j* are connected at their extremities to a horizontal bar, 5, said connection being made outside of the limit of the lateral movement of the carriage T. Inasmuch as the inner end of said carriage only rests upon said bar 5, the carriage can move freely and laterally relative thereto. When power is imparted to the chains *j j*, the bars 5 5 will be elevated and correspondingly elevate the inner end of each carriage T, the shaft 4 constituting a pivotal bearing for each carriage.

The operation of the machine hereinbefore described is as follows: The iron to be rolled is placed upon the lifts T, and the rollers S will carry it forward on one of the lifts to the rolls, and from the rolls on the other lift, and the operator by the movements of levers *p i z d* ships into gear the wheels F G and *a b* and the couplings *x x* and *y*, which will bring the other portion of the mechanism into motion, thereby moving the lifts T laterally, which may be moved to the right or left, at the will of the operator, through the medium of the lever *d*, whereby the wheels *a b* are brought into gear with the wheels *e*, the wheel *a* causing the mechanism that operates the lifts T to move in one direction sidewise and the wheel *b* to move them in a different direction. If the operator desires to elevate the lifts, it may be accomplished through the medium of a chain, *j*, or steam-cylinders and pistons, as hereinbefore mentioned, it being readily understood that the lifts T should be elevated or depressed in harmony with the ordinary manipulation of the iron in the process of rolling, and with a corresponding lateral motion.

Having thus described our improvement, what we claim as of our invention is—

1. The combination, in a rolling-mill, of rolls, a carriage, a roller-frame therefor for feeding to the rolls and pivoted at its outer end, means for laterally shifting said carriage and roller-frame, and devices for inclining said roller-frame on its pivot, so as to vary the feed of the latter to the rolls, substantially as set forth.

2. The combination, in a rolling-mill, of carriages arranged at each side and provided with roller-frames pivoted at their outer ends, means for laterally shifting said carriages, and devices for simultaneously inclining said roller-frames, substantially as set forth.

3. The combination, in a rolling-mill, of rolls, a pivoted carriage, a bar, 5, pulleys *k k*, chains connected to said bar and passing over said pulleys, and means for operating said chains to elevate the bar 5, substantially as set forth.

In testimony whereof we have hereunto set our hands this 10th day of June, A. D. 1884.

JOHN BRISLIN.
ANTOINE VINNAC.

Witnesses:
A. C. JOHNSTON,
C. S. JOHNSTON.