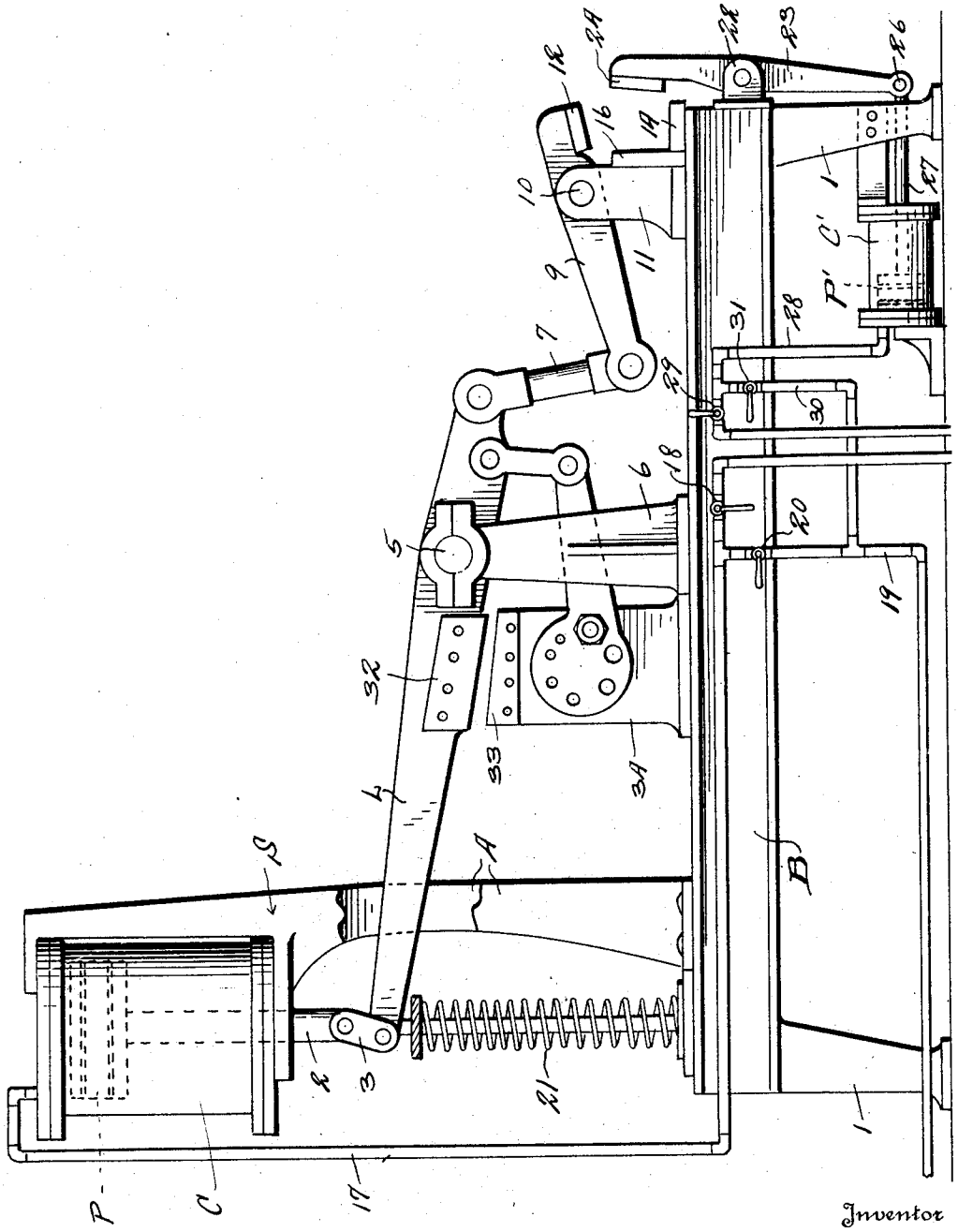
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WORK HOLDING MACHINE

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WORK-HOLDING MACHINE

Application filed February 18, 1928. Serial No. 255,424.

This invention relates to a work holding machine and has relation more particularly to a machine of this kind especially designed and adapted for use in railroad shops for banding locomotive springs although I do not wish to be understood as limiting myself to such particular use.

It is an object of the invention to provide a device of this kind comprising a swinging arm or lever adapted to be operated upon application of suitable pressure together with holding or clamping means coacting with said lever.

Another object of the invention is to provide a device of this kind wherein is employed a pair of pressure operated holding or clamping elements designed and arranged to coact to hold a spring body or the like in position and to bend a holding band thereabout, and also adapted to be employed to hold articles to facilitate welding or similar operations.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved work holding machine whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein is illustrated a view in side elevation with a portion broken away of a holding device constructed in accordance with an embodiment of my invention.

As disclosed in the accompanying drawing, B denotes a base member herein set forth as an I-beam of requisite dimensions and which has supporting legs 1 associated with the opposite end portions thereof. These legs 1 in practice are preferably fastened to cross ties buried in the ground although any other suitable foundation may be employed. Mounted upon one end portion of the base member B and extending upwardly therefrom is a standard or column S, the upper portion of which having fixedly secured thereto a cylinder C. Working in the cylinder C is a conventional piston P (indicated by broken lines) and working with said piston P and extending through the lower head of the cylinder C is a piston rod 2. The lower or exterior end portion of the rod 2 is operatively connected through the medium of the leg 3 with an end portion of the power lever or beam L. The lever or beam L is disposed between the legs 4 of the standard or column S whereby said standard or column serves as a guide for the vertical movement of the beam or lever L.

The beam or lever L at a predetermined point inwardly of its outer or opposite end is pivotally mounted upon, as at 5, an upstanding standard or column 6 for swinging movement in a vertical direction. The beam or lever L is disposed in a direction lengthwise of the base member B and the outer extremity, or the end portion thereof in advance of the standard or column 6 is pivotally connected with an end portion or a pitman 7. This pitman 7 is disposed downwardly with respect to the lever or beam L and its opposite or lower end portion is pivotally connected with the inner extremity of a rock arm 9. This rock arm 9 at a desired point intermediate its ends is supported, as at 10, for vertical swinging movement by the upstanding bearing block 11 suitably secured to the adjacent end portion of the base member B.

Carried by and underlying the outer or forward end portion of the rock arm 9 is a jaw plate or die 12 which, in its operation, coacts with a jaw plate or die 14 mounted upon the base member B directly below the jaw plate or die 12. Inwardly of the jaw plate or die 14 and snugly arranged between said jaw plate or die 14 and the bearing block 11 is an upstanding clamping plate or die member 16 for a purpose to be hereinafter more particularly referred to.

Delivering within the cylinder C inwardly of or above the piston P is a pipe line 17 leading from a suitable source of air under pres-

sure and interposed in said line is a controlling valve 18. Branching from the line 17 at a point inwardly of the valve 18 is an exhaust pipe line 19 in which is interposed a controlling valve 20.

When it is desired to hold work, such as a locomotive spring, the same is positioned between the jaw plates or die members 12 and 14 and upon opening the valve 18 the pressure entering the cylinder C will force the piston P and the rod 2 downwardly resulting in a lifting of the inner end portion of the rock arm 9 and downward movement of the clamping jaw plate or die member 12 toward the second clamping jaw plate 14.

As the piston P and the rod 2 therefor move downwardly, the adjacent or inner end portion of the lever or beam L comes into contact with and places under compression the upstanding spring member 21 mounted upon the adjacent end portion of the base member so that upon closing of the valve 18 and opening of the valve 20 in the exhaust line 19, said piston P will be moved upwardly into its release or normal position and the jaw plate 12 moved upwardly or away from the plate or die member 14 or the work interposed therebetween.

The forward or front end of the base member B has extending outwardly therefrom a bracket 22 with which is pivotally engaged an intermediate portion of a vertically disposed lever 23, the upper end portion of which carrying a jaw plate or die member 24 opposed to the plate or die member 16 and working directly above the plate or member 14. The lower end portion of the lever 23 is operatively engaged, as at 26, with the outer end portion of a rod 27 moving with the piston P′ working in the cylinder C′. As herein disclosed, the cylinder C′ is arranged below the base member B and delivering within the cylinder C′ inwardly of the piston P′ is a pipe line 28 also leading from a suitable source of compressed air supply. This pipe line 28 has interposed therein a valve 29 and branching from the line 28 inwardly of the valve 29 is an exhaust line 30 leading to the exhaust line 19 hereinbefore referred to. This exhaust line has interposed therein the valve 31.

Upon opening the valve 29 the pressure within the cylinder C′ imposed upon the piston P′ will rock the lever 23 in a direction to move the jaw plate or die member 24 inwardly or toward the plate or member 16. This action is of particular advantage when it is desired to weld two or more overlying pieces of material as it assures pressure on all four sides with effective assembly and such action is also of advantage in banding a locomotive spring.

In banding springs it is to be understood that at the same time as the spring leaves are being properly assembled the band will be bent to properly surround said spring assembly and thus materially reducing the time and labor required in connection with work of this kind. It is to be understood, of course, that the band will be properly positioned with respect to the jaw plates or die members before the springs are applied.

I find it of advantage to provide the beam or lever L inwardly of its pivotal mounting with a shear blade 32 coacting with a shear blade 33 carried by an upstanding block or upright 34 suitably mounted upon the base member B.

From the foregoing description it is thought to be obvious that a work holding machine constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

The machine as herein disclosed can also be readily employed with facility for the bending of metal by simply placing a suitable die block upon the jaw plate or die 14.

I claim:—

1. In a machine of the character described, a lever member mounted intermediate its ends for rocking movement, a second lever pivotally mounted intermediate its ends for rocking movement and having one end arranged adjacent and in a lower plane than one end of the first mentioned lever, a link connection between the adjacent ends of the levers, a fluid pressure operated element connected with the other end of the first mentioned lever to oscillate the same, a jaw plate upon the other end of the second mentioned lever, and a fixed jaw plate arranged beneath the lever jaw plate to coact therewith for holding a body.

2. In a machine of the character described, a pair of arms each pivotally mounted intermediate its ends and arranged in right angular relation to the other with the end of one arm adjacent an end of the other arm, jaw plates carried by the arms at their adjacent ends, a pair of fixed jaw plates each arranged to have its working face substantially parallel with the working face of an arm carried jaw plate, and means for oscillating each of said arms from its other end to cause the jaw plate carrying ends of the arms to swing in intersecting paths each toward a fixed jaw plate, to clamp a member substantially as described.

3. In a machine of the character described, a pair of arms each pivotally mounted intermediate its ends and arranged in right angu-

lar relation to the other with the end of one arm adjacent an end of the other arm, jaw plates carried by the arms at their adjacent ends, a pair of fixed jaw plates each arranged to have its working face substantially parallel with the working face of an arm carried jaw plate, means for oscillating each of said arms from its other end to cause the jaw plate carrying ends of the arms to swing in intersecting paths each toward a fixed jaw plate, to clamp a member, and means for controlling the actuating means for the arms independently one of the other.

In testimony whereof I hereunto affix my signature.

EDWIN W. LAYCOCK.