2 Sheets, Sheet 1.

J. Dodge,

Making File-Blanks.

No. 54,310. Patented May 1, 1866.

Fig 1.

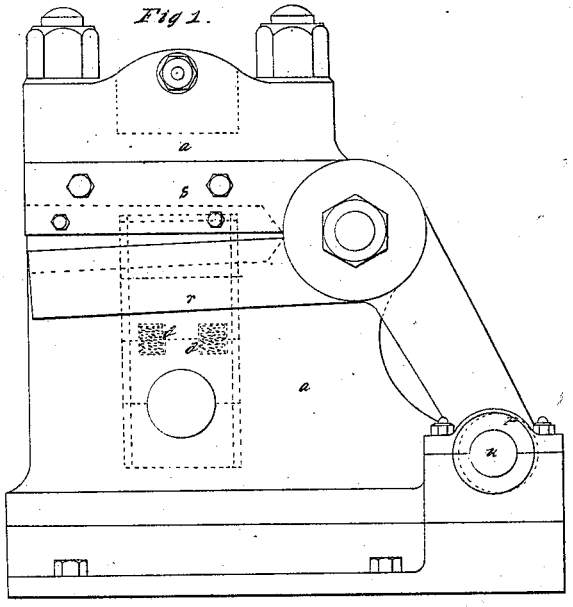
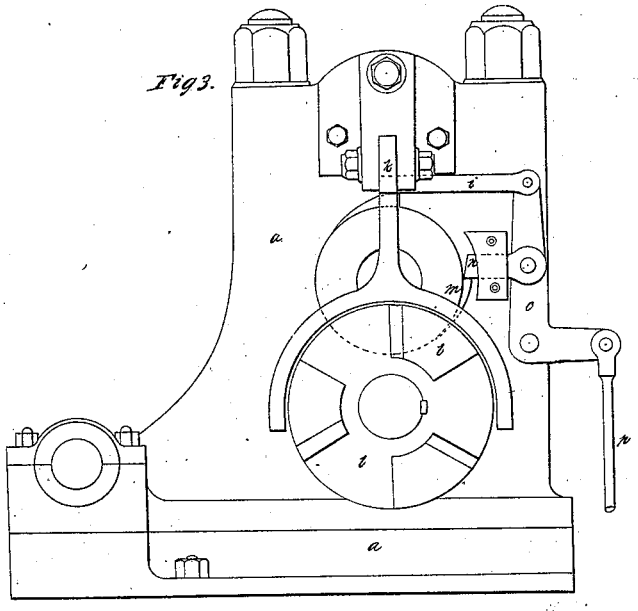


Fig 3.



Witnesses.
Jos L Coombs
Wm Bailey

Inventor.
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2 Sheets, Sheet 2.

J. Dodge,

Making File-Blanks.

No. 54,310. Patented May 1, 1866.

Fig 2.

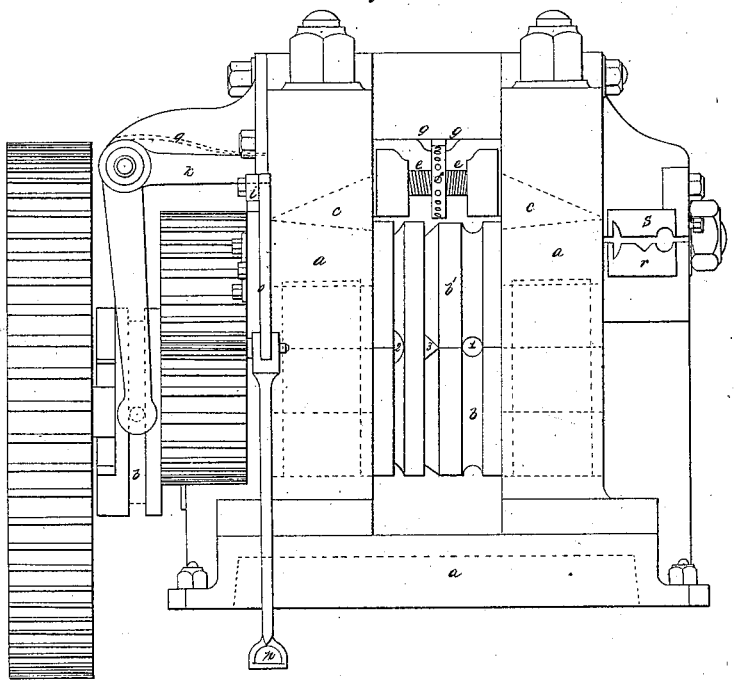
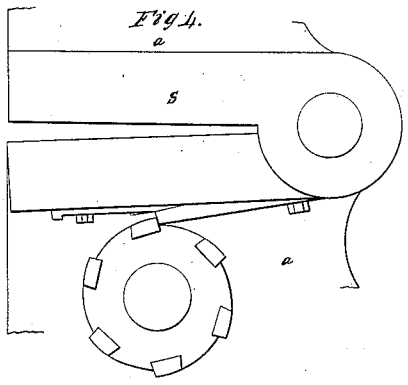


Fig 4.



Witnesses.
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his atty

UNITED STATES PATENT OFFICE.

JAMES DODGE, OF WATERFORD, NEW YORK.

IMPROVED MACHINE FOR ROLLING, SHAPING, AND FORGING FILE-BLANKS, FLIERS, AND OTHER METALLIC ARTICLES OF SMALL DIMENSIONS.

Specification forming part of Letters Patent No. **54,310**, dated May 1, 1866.

To all whom it may concern:

Be it known that I, JAMES DODGE, of Waterford, in the county of Saratoga and State of New York, but now temporarily residing at Manchester, in the county of Lancaster, Great Britain, have invented certain new and useful Improvements in Apparatus for Rolling, Shaping, and Forging File-Blanks, Fliers, and other Metallic Articles of Small Dimensions; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

The invention relates to machinery for rolling irregular forms, for which Letters Patent of the United States were issued to me on the 25th day of July, 1865, being a novel construction of self-acting mechanism for rolling and forging small articles of metal, so arranged that the various operations may be effected in one machine.

The improvements consist in the combination and use of a pair of rollers with dies or matrices, when required, (for rolling the metal,) and a pair of jaws or levers for forging. The lower roller is furnished with tappets or lifters which act upon the movable lever or jaw of the pair of jaws for forging or pressing the metal, the whole being operated by gearing. The power is communicated to the rolls by means of a clutch-box having steel-faced clutches and worked by levers actuated by a treadle. The upper roller is furnished with a swell or cam, which, at a certain part of the revolution, lifts a bolt that raises the clutch-box lever and throws the clutch out of gear, and simultaneously a projection on the same roller comes into contact with a short arm or stop, and effects the instantaneous stoppage of the rollers. This takes place at every entire revolution of the rollers, so that the attendant has sufficient time to adjust the metal and to place it properly under the rollers or jaws. The operator places his foot on the treadle and withdraws the short arm and bolt. The latter releases a spring which forces the clutch-box into gear and starts the machine.

The second part of my invention relates to a novel method of regulating the distance between the rollers; and it consists in the use of two wedges which are inserted in the pedestals above the bearings of the top roller, and are moved nearer to or farther from each other by a right-and-left-handed screw, which is provided with a collar that is held by snugs in a central block. By turning this screw the wedges are moved and increase or decrease the distance between the rolls. The steps of the top roller are held up so as to bear against the wedges by means of springs inserted between the steps of the rollers.

In order that the invention may be better understood and explained in detail, I have hereunto attached sheets of drawings made upon a scale of about three inches to the foot, similar letters of reference being marked upon corresponding parts on all figures.

Figure 1 represents an elevation viewed from the left-hand side of the rolling-machine, showing the peculiar arrangement and construction of the apparatus in connection with the clutch-box for starting and stopping such machine. Fig. 2 represents a front elevation of the apparatus, showing more particularly the position of the rollers, with dies or matrices formed therein for rolling the metal, and the pair of jaws or levers, also supplied with dies or matrices for forging. Fig. 3 represents an elevation viewed from the right-hand side of the machine, illustrating more clearly the jaws or levers for forging, and also the arrangement of mechanism for actuating the same; and Fig. 4 represents an arrangement of tappets for actuating the under jaw in place of the eccentrics.

In Figs. 1, 2, 3, and 4, *a a* is the framing of the machine supporting the rollers *b* and *b'*. The top roller, *b'*, is capable of being raised from or lowered nearer to the bottom roller, *b*, (according to the thickness of metal required to be operated upon,) by the wedges *c c* and springs *d d*, which, being inserted between the bearings of the two rollers, have a tendency to raise the top roller, *b'*, the distance between such rollers being regulated by the counter action of the wedges *c c*, which are moved nearer to or farther from each other by a right-and-left-handed screw, *e*, which is provided with a collar, *f*, which is held by the snugs *g g* in a central block, so that by turning the screws *e* the wedges are moved and increase or decrease the distance between the rollers. The top

roller, b', is furnished with a swell or cam, h, which, at a certain part of the revolution, lifts the bolt i, which raises the lever k in connection therewith and actuates the clutch-box l, which is furnished with steel clutches, thereby throwing such steel clutches out of gear. Simultaneously the projection m on the roller b' comes into contact with the short arm or stop n secured on the bell-crank lever o, and thus effects the instantaneous stoppage of the rollers b and b', which stoppage is effected at every entire revolution of the rollers, thereby giving the attendant sufficient time to adjust the metal to be operated upon under the rollers or jaws; and it will be evident that by adding lifts or cams the rollers may be stopped more frequently than once every revolution.

When ready to start the operator places his foot on the treadle p, which immediately withdraws the short arm or stop n and the bolt i. The latter releases the spring 9, which forces (through the medium of the lever k) the clutch-box l into gear and starts the machine. The movement or action of the under lever or jaw employed for forging blanks, in conjunction with the fixed top jaws, s, is obtained by means of the eccentric t secured on the pinion or driving-shaft u. (Seen in Fig. 1.) The rollers b and b' and the pair of jaws r and s are provided with dies or matrices to suit the different form and shape of the file-blanks or other metallic articles required.

The grooves 1, 2, and 3 in the rollers and the recesses in the jaws exhibit the form of matrices employed for rolling and forging round, half-round, and angular file-blanks, and are shown as examples. The movement of this lower jaw may also be effected by means of a cam or tappets, if preferred, as seen in Fig. 4.

Having now described the nature of the said invention, together with the method of carrying the same into practical effect, I wish it to be distinctly understood that I claim—

1. The novel combination, in one machine, of one or more pairs of jaws or levers containing dies and matrices, with rollers for rolling and forging file-blanks of any desired form, fliers, and other metallic articles, constructed and arranged for operation substantially as described.

2. Governing the rotation of the rollers and movement of the jaws, so as to stop and start such rotation and movement at any desired time or position, by means of the apparatus described or by other mechanical equivalents.

3. The combination and use of the wedges and springs, constructed and arranged as described, for regulating the distance of the rollers.

4. The general construction, arrangement, and combination of the apparatus for rolling, shaping, and forging file-blanks, fliers, and other metallic articles of small dimensions, as hereinbefore described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

JAMES DODGE.

Witnesses:
EDWARD CLAY,
JAMES DAVENPORT.