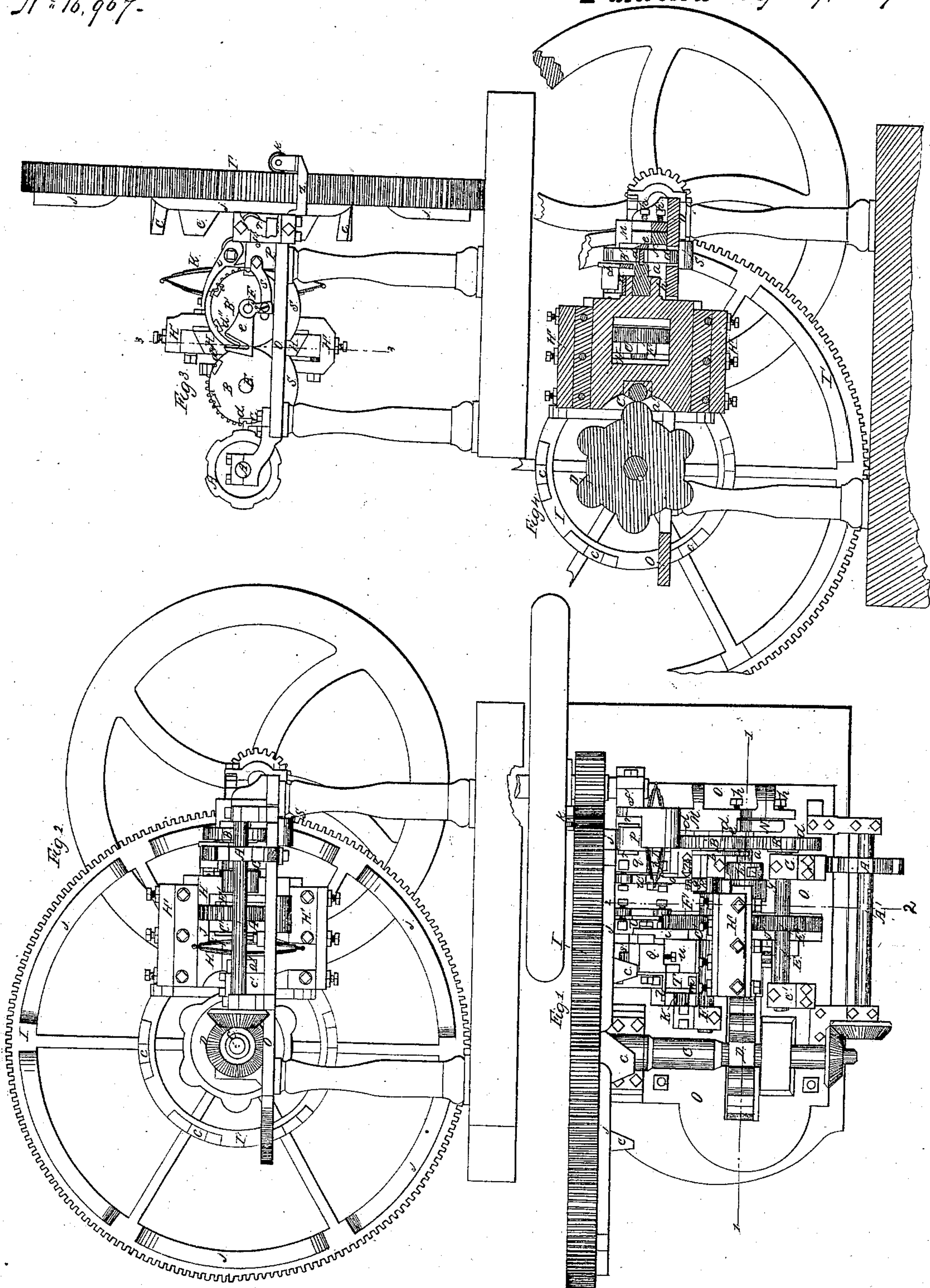


R. H. Cole,
Making Rivets,

N^o 16,967-

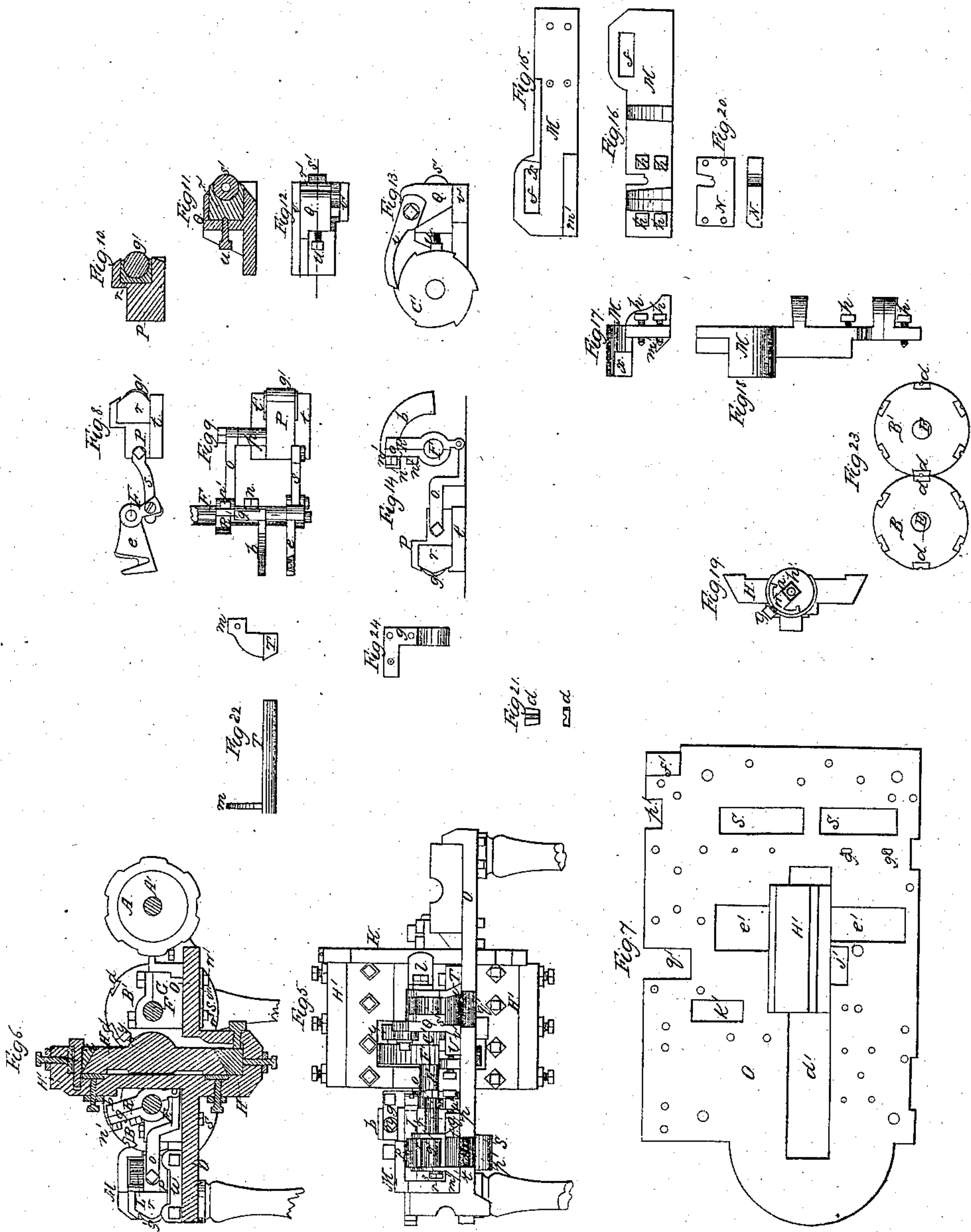
Patented Apr. 7, 1857.



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UNITED STATES PATENT OFFICE.

R. H. COLE, OF ST. LOUIS, MISSOURI.

MACHINE FOR MAKING RIVETS.

Specification of Letters Patent No. 16,967, dated April 7, 1857.

To all whom it may concern:

Be it known that I, RICHARD H. COLE, of the city of St. Louis, State of Missouri, have invented an Improved Machine for Making Rivets; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, Figure 1, being a top view of said machine; Fig. 2, a side elevation thereof; Fig. 3, an end view with some of the parts removed; Fig. 4, a vertical section in the line 1 1 of Fig. 1 and of 3 3, Fig. 3; Fig. 5, an elevation of the rear side of the machine after the main cam wheel I has been detached therefrom; Fig. 6, a transverse section in the line 2 2 of Fig. 1; Fig. 7, a plan of the bed-plate of the machine; and the remaining figures represent in detail the principal parts of the machine more clearly than they could be shown in the other figures.

Similar letters indicate corresponding parts in each drawing.

The most essential feature of novelty in my improved rivet-making machine, is successively forming die-boxes of a double series of sections d, d , secured to parallel peripheries of two intermittingly moving wheels B, B', whose bearings are so arranged and combined with other mechanism that the instant a pair of the said sections are brought face to face, they will be forced into close contact with each other, and be there held while a rivet is being formed in the die-box thus produced, and then be delivered to allow of the next movement of said wheels, which will bring the succeeding pair of said sections opposite each other. The shafts E, F, of the said wheels B, B', are connected with each other by means of equal-sized toothed-wheels E', F', whose teeth are so proportioned and matched with each other that each movement of said wheels will bring a pair of the die-box sections d, d (on the wheels B, B',) exactly opposite and facing each other, as shown in Fig. 22; and at the moment that a pair of said die-box sections are brought opposite each other; automatically acting mechanism forces the said section on the wheel B, firmly against the section on the wheel B', and securely holds the same in said position while other mechanical movements cut off and head a rivet within said die-box; and

then the said pressure is instantly relieved to permit the next simultaneous movement to be imparted to the said rollers B, B', for discharging the finished rivet and bringing the succeeding pair of die-box sections into connection with each other.

The aforesaid intermittent movements are imparted to the rollers B, B', by means of the ratchet wheel C', on the shaft F, and the actuating pawl i , which is combined with the sliding carriage Q, (see Fig. 13,) and is operated by means of the spring K, and by a series of laterally projecting cams, c, c , from the ring I', which is combined with the arms of the large cam-wheel I, on the shaft C.

The ways of the bearings v, v' , of the pawl-carriage Q, are on each side of the notch q' , of the bed-plate O, Fig. 5; and the said carriage is adjusted to the proper position and guided in its movements by means of the laterally adjustable bearing blocks U, T. The anti-friction roller s' , of the carriage Q, forks in a box r' , which is received into a socket in said carriage, and in which its position may be regulated by the set screw u , shown in Fig. 11. The spring K, passes through the slot k' , in the bed-plate, and is combined with an arm m , rising from the block T, and with the arm l , which projects from the side of the pawl-carriage Q, in such a manner that the said spring forces said carriage to its extreme outward position the instant that it is relieved from the action of either of the cams c, c .

The bearing journals of the outer ends of the shafts E, F, are formed immediately within the wheels B, B'. The under portion of the bearing box G, of the shaft E, is secured to the bed-plate O, by means of the screws w', w^1 , Fig. 6, which pass from beneath, first through the sliding plate v'' , and then upward through the slots g, g , in said bed-plate into screw apertures in the said portion of this journal-box; thereby securing said journal-box in such a manner that it can slide longitudinally the length of the said slots g, g . The roller B, is pressed forward at the proper moment against the periphery of the roll B', and there held for the proper length of time, by the series of cams on the periphery of the cam-wheel A, on the shaft A', acting against a hardened projection from the outer end of the journal-

box G. The journal-boxes of the shaft A', are secured to the front edge of the bed-plate O, and the said shaft is geared to the main shaft C, by means of bevel-wheels, as shown in the drawings.

A reciprocating lever composed of the parts R, *g*, Fig. 14, is combined with and plays loosely upon the shaft F, (of the wheel B',) immediately within its outer journal box; to the portion *g*, of the said lever, which projects over said journal-box, the laterally projecting arm of the curved reciprocating gage-plate *b*, is securely fastened, which plate works a short distance from the inner surfaces of the wheels B, B', in such a manner that it can be thrown opposite the inner end of the die-box formed by the matching sections *d*, *d*, combined with said wheels, and be adjusted to different distances therefrom. The short arm of the lever R, Fig. 14, which descends below the shaft F, is jointed to the laterally projecting arm *p*, of the sliding carriage P, by means of the connecting rod *o*. The front end of the shaft F, which projects a short distance through the wheel B', serves as a fulcrum pivot for the reciprocating cutting plate *e*, whose inner surface is in close contact with the front faces of the peripheries of the wheels B, B'. The lever *s'* which descends from the eye of the cutting plate *e*, is jointed to the sliding carriage P, by means of the connecting rod *s*, Fig. 3.

Within the box M, which is bolted to the front end of the bed-plate, a notched adjustable bearing block N, is placed, immediately in front of the cutting plate *e*, and is made to bear against the said cutting-plate with the requisite degree of force by means of the set screws *h*, *h*, Fig. 4, which pass through screw apertures in the front side of the box M, into concavities in the said bearing-block. The spring L, which passes through the slot *f*, Fig. 15, in the front side of the box M, is combined with a shoulder descending from the top of said box, and with carriage P, in such a manner that the said spring will throw said carriage into its extreme outer position the instant that the carriage is relieved from the action of either of the cams *j*, *j*, on the inner face of the rim of the cam-wheel I. The ways of the bearings *t*, *t'*, of the sliding-carriage P, are on each side of the notch P', in the rear edge of the bed-plate, and they are guided by means of the bearing surface *m'*, Fig. 5, and the adjustable bearing block *q*, substantially as shown in the drawings.

Within vertical offsets H', H', from the top and bottom surfaces of the bed-plate, or within other suitable bearings, the gate H, which carries the header *a*, is confined within adjustable friction surfaces, substantially as represented in Fig. 6. The recessed header *a*, may be combined with the project-

ing head *h'*, of the gate H, by means of the clamp *w*, and set-screw Y, as shown in Fig. 6, or by other suitable means.

The spring J, which works within the slot *j'*, of the bed-plate, is so combined with said bed-plate and with an offset from the front side of the gate H, that it will throw back the gate to its extreme rearward position the instant that it is relieved from the action of the radiating cams of the cam-wheel D, on the main-shaft C.

The box *a'*, containing a roller for the actuating cams on the cam-wheel D, to strike against, is inserted into a socket in the rear end of the gate H, as shown in Fig. 4.

A portion of the lower peripheries of the wheels B, B', run in the water boxes S, S, for the purpose of cooling them.

The operation of my improved rivet-making machine I will now describe. The machine having been put in motion and the ends of a suitable number of rods having been placed in the furnace, the heated end of a rod is laid into the recess in one of the die-box sections, designated by *d''*, Fig. 3, on the wheels B, B', and is pressed forward until its end bears against the gage-plate *b*; and then the action of one of the cams *c*, as before described, imparts such an amount of motion to the said wheels B, B', as will carry down and match the said die-box sections, and just before the said sections come opposite each other, one of the cams on the wheel A, strikes against the journal-box G, and thereby forces inward the wheel B, and brings the inner die-box section on this wheel into close contact with the corresponding section on the opposite wheel; and the next instant one of the cams *j*, Fig. 1, carries forward the carriage P, and by so doing, simultaneously throws upward the curved gage-plate *b*, and the cutting-plate *e*; the elevation of the gage plate *b*, gives free play to the header *a*, and the elevation of the cutting-plate *e*, cuts off the portion of the heated rod embraced within the die-box; the long actuating surface of the said cams *j*, holds the lower portion of the cutting-plate over the mouth of the die-box—see Fig. 4—where it is supported by the block N, while the header *a*, is driven forward, forms the head on the rivet and recedes again; and then the retrograde movement of the carriage P, throws downward the gage-plate *b*, and cutting-plate *e*, and simultaneously with said movement, the wheels B, B', are again moved forward to discharge the finished rivet and to carry the end of another heated rod into the machine to be operated upon, and so on.

What I claim as my invention and desire to secure by Letters Patent, is—

1. Forming a successive series of die-boxes of a double series of sections *d*, *d*, 130

which are combined with the parallel peripheries of two equal-sized intermittingly rotating wheels B, B', when the arrangement of the bearings of one or both of said
5 wheels is such as to allow of a sufficient amount of lateral play thereof to enable a pair of said sections to be firmly pressed against each other at the termination of each intermittingly rotary movement of said
10 wheels, substantially as herein set forth.

2. I also claim combining the curved gage-plate *b*, and the cutting-plate *e*, with each

other and also with the cam-wheels B, B', substantially in the manner and for the purpose herein set forth.

3. I also claim the combination of the cam-wheels B, B', with the gage-plate *b*, the cutting-plate *e*, and the header *a*, substantially in the manner and for the purpose herein set forth.

R. H. COLE.

Witnesses:

A. R. CORBIN,

S. H. SHAKESPEARE.

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