

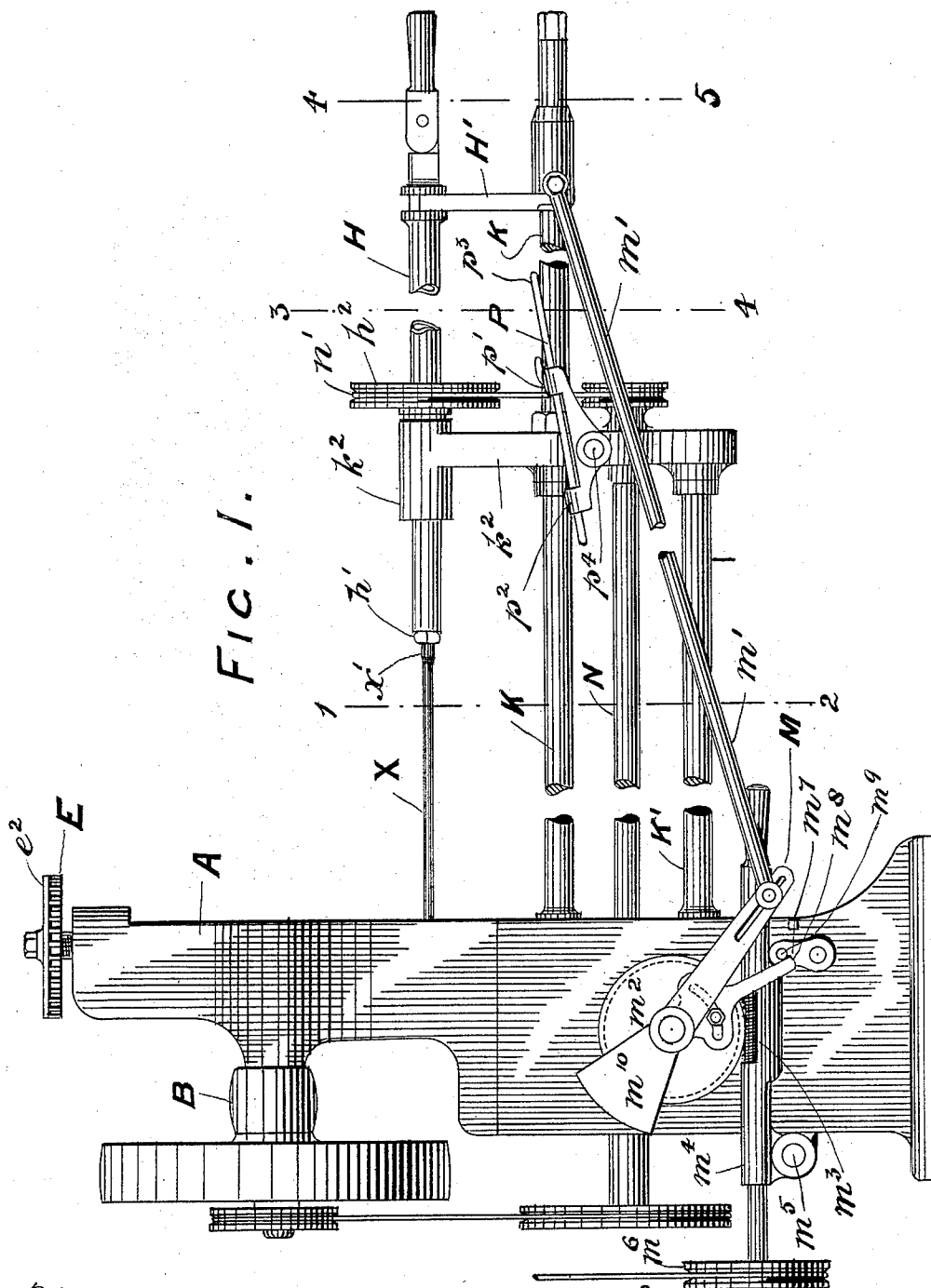
(No Model.)

3 Sheets—Sheet 1.

R. ALPE.
METALLIC SPOKE MACHINE.

No. 465,745.

Patented Dec. 22, 1891.



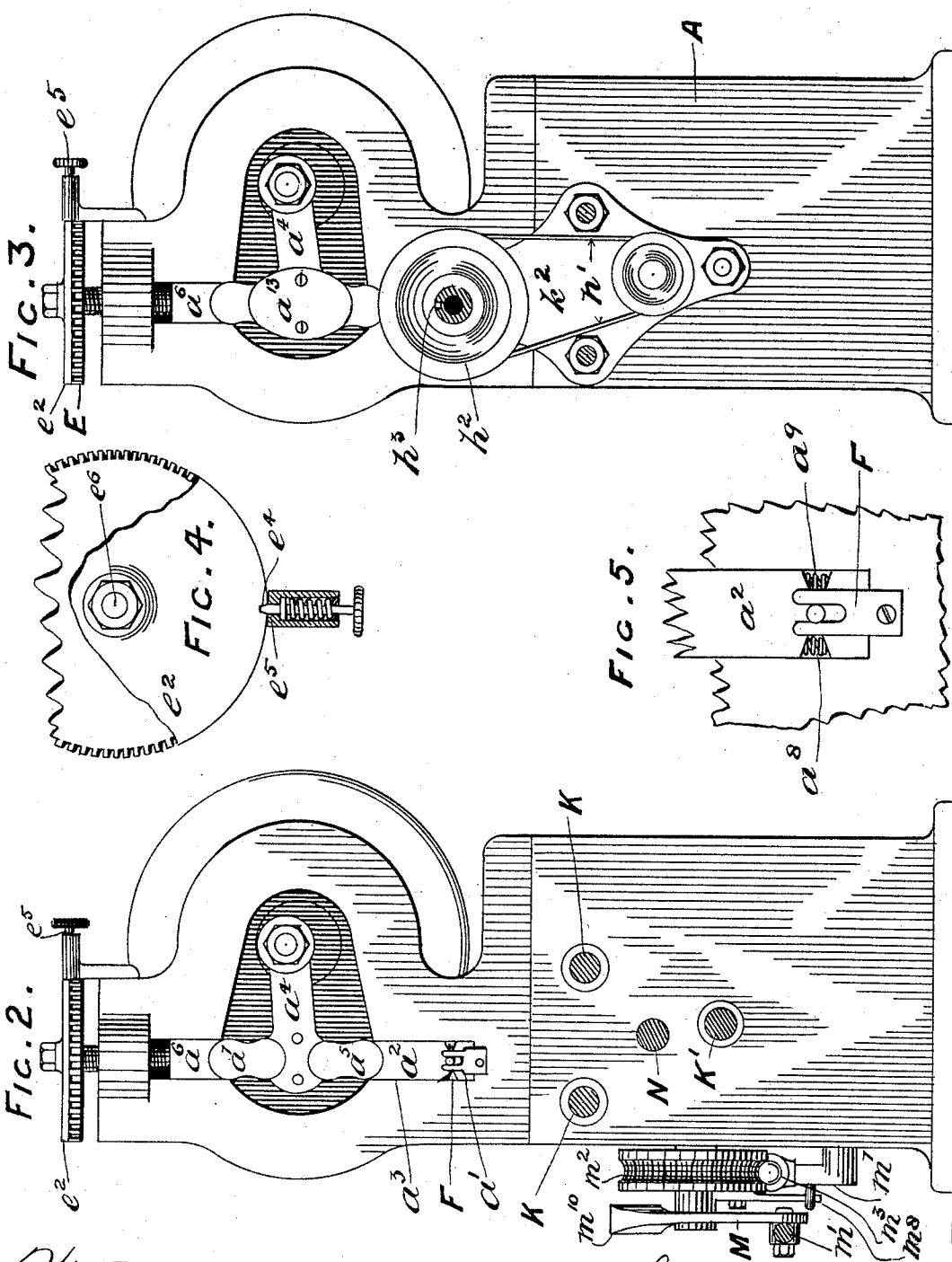
Witnesses:-
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Albert W. Brown.

Inventor:
Robert Alpe
By James E. Norris.
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Attorney

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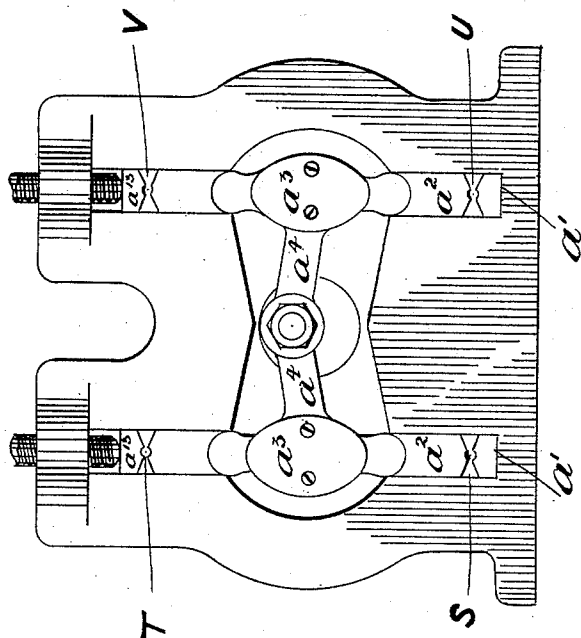
3 Sheets—Sheet 3.

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FIG. 6.



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UNITED STATES PATENT OFFICE.

ROBERT ALPE, OF BIRCHFIELDS, ENGLAND.

METALLIC-SPOKE MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,745, dated December 22, 1891.

Application filed March 12, 1891. Serial No. 384,699. (No model.) Patented in England September 26, 1890, No. 15,232.

To all whom it may concern:

Be it known that I, ROBERT ALPE, engineer, of 128 Fentham Road, Birchfields, in the county of Warwick, England, a subject of the Queen of Great Britain, have invented certain new and useful Improvements in Metallic-Spoke Machines, (for which I have obtained Letters Patent in Great Britain, No. 15,232, dated September 26, 1890,) of which the following is a specification.

My invention has for its object improvements in machinery for the manufacture of metal spokes and other such articles, and has particular reference to those spokes used in cycles and other such wheels, by which I am enabled to form the ends of such spokes of enlarged diameter in section, thus giving additional security at their joints and considerably strengthening their connection to the hub and rim, and this I effect without waste of material and with very little increase in cost or weight over the ordinary spoke, while the spoke itself is considerably strengthened in the course of manufacture.

In order that my invention may be clearly understood and more easily carried into practice, I have appended hereunto three sheets of drawings, upon which I have fully illustrated the nature and working of my machine, together with several modifications of the mode of operating the feed arrangement.

Figure 1 is a side elevation of my machine. Fig. 2 is a sectional elevation of the machine from the front on line 1 2. Fig. 3 is a similar elevation to Fig. 2, but taken on line 3 4. Fig. 4 is an enlarged plan of the disk E. Fig. 5 is an enlarged elevation of the guide-plate F. Fig. 6 shows the application by which my machine may be made to operate upon two, three, or four spokes simultaneously.

In carrying my invention into effect the pair of dies or anvil a' and hammer a^2 are mounted in the main body of the machine A, the anvil a' being stationary and the hammer a^2 moving in the slide a^3 and being operated by any suitable eccentric motion, but preferably by the arm a^4 , which is eccentrically mounted upon the driving-shaft B and is made to operate upon the upper die or hammer a^2 by means of the link a^5 , and also to the adjustable slide-piece a^6 by the link a^7 , so that at every revolution of the shaft B the

arm a^4 is operated backward and forward between the bottom anvil a' and the top piece a^6 , thereby causing the top die a^2 to give two blows to each revolution of the shaft B. The connecting-pieces are kept in position by the plate a^{13} , which is secured to the end of the arm a^4 .

The dies a' and a^2 are provided with grooves circular in section, and in the groove of the bottom die or anvil a' the wire x travels, during which it is reduced in diameter by the operation of the top die or hammer a^2 .

For the even distribution of the pressure upon the wire x , when being reduced it is necessary that the wire x should be simultaneously and regularly revolved and carried backward and forward in an automatic manner, to effect which the one end x' of the wire x is mounted in the clutch h' , Fig. 1, which is mounted in the rod H, this rod being in turn mounted in the carriage H', which carriage slides upon one end of the rods K and is operated backward and forward by the connecting-rod m' from the lever M, which is operated by the thread-wheel m^2 from the endless screw m^3 . The endless screw m^3 is operated by the pulley m^6 and is mounted in the bearings m^4 , which are pivoted at m^5 , the endless screw m^3 being kept up in gear with the thread-wheel m^2 by the trigger m^1 . Attached to the thread-wheel is the lever m^8 , which is adjustable so that as the thread-wheel revolves the lever m^8 comes in contact with the pin m^9 on the trigger m^1 , and thereby presses it over, thus allowing the endless screw to fall clear and become disengaged from the thread-wheel m^2 , which action is adjusted by means of the lever m^3 to take place when the wire has completed its return journey, when it is removed by the attendant, a fresh wire inserted, and the endless screw m^3 raised into gear again by the handle m^9 , which is provided for the purpose. The weight m^{10} is provided upon the lever M, so that it remains balanced in a stationary position when the endless screw is disengaged.

From the supplemental shaft N, by means of the catgut or other suitable band n' , the pulley h^2 is mounted to revolve in the bearing-support k^2 , which is supported by the rods K and K', the pulley h^2 being provided with the key h^3 , which engages with the keyway

provided along the full length of the rod H, so that the rod H is revolved as it is carried backward and forward for the purpose of obtaining an even pressure all round the wire.

The set-pin e' for adjusting the top die a^2 with regard to the bottom die a^3 is provided with the disk E for operating the same, and this disk E is divided out by the slots e^2 to give an adjustment of thousandths, and as the attendant has to release the dies each time upon the withdrawal of those wires which are furnished with an enlargement at each end, a loose disk e^2 is provided, having one slot e^4 , which slot is arranged over the particular division in the lower plate, which gives the proper adjustment, the two dies being then secured together by the nut e^6 , and the spring bolt or catch e^5 is, provided to engage with the slot, so that after the wire has been withdrawn the attendant has only to turn the disk until the bolt e^5 enters the slot e^4 , which registers the adjustment which is desired.

To form a gage by which the attendant may be able always to place the wire before starting the machine in the same position, the rod P is provided and slides in the bearing p' and p^2 , so that the end p^3 may be extended to the position at which the carriage H' has to be placed when starting the machine. The rod-sockets are pivoted to the support at p^4 , so that it may be turned up out of the way when the carriage is traveling. The top die is raised after each blow, and when the wire is being withdrawn by means of suitable coiled or other springs a^8 and a^9 , Fig. 5, placed between them for the purpose. To guide the wire straight and keep it in the groove between the anvil and hammer, the guide-glate F is provided.

Dies for operation upon the wire may be

also provided above the toggle-arm a^4 , as well as below at S and T, as shown in Fig. 6, by which means a considerable saving of power is effected and a similar set of dies may be arranged and operated upon the reverse side of the machine, as shown at U and V, the whole being worked from the same eccentric motion, by which means four wires could be worked simultaneously, and requiring only the same arrangement for working the feed-carriage, as shown, to the single machine, as all four wires would in that case be carried by four revolving clutches and rods working in one main carriage and support in a similar manner to that shown in the case of the single revolving clutch in Fig. 1.

What I claim then is—

1. In a metallic-spoke machine, the combination, with an anvil a' and a reciprocating hammer a^2 , of a carriage H', a rotary shaft supported by the carriage and having a spoke-wire-engaging clutch, a thread-wheel m^2 , an endless screw m^3 engaging the thread-wheel, a trigger m^7 supporting the screw, and a lever m^8 , attached to the thread-wheel and acting on the trigger to disengage the endless screw from the thread-wheel, substantially as described.

2. In a metallic-spoke machine, the combination, with an anvil a' , a reciprocating hammer a^2 , and means for reciprocating the hammer, of the slotted disk E, the loose disk e^2 , having the slot e^4 and the spring-bolt e^5 , substantially as described.

In testimony that I claim the foregoing as my own I affix my name in the presence of two witnesses.

ROBERT ALPE.

Witnesses:

LEWIS WM. GOOLD,
GEORGE PRICE.