(No Model.)

E. FIRTH & A. & I. TOMPKINS.

MANUFACTURE OF AXLE SKEINS.

No. 381,355. Patented Apr. 17, 1888.

Fig. 1

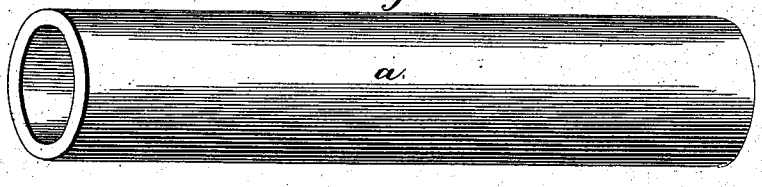


Fig. 2

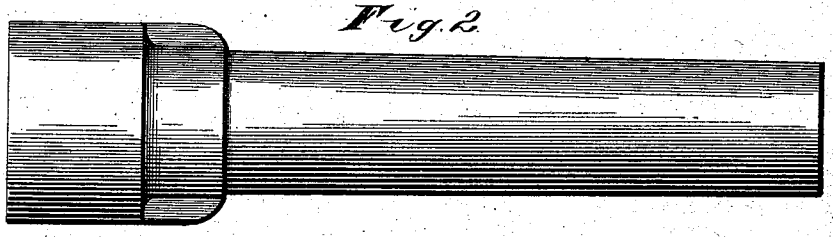
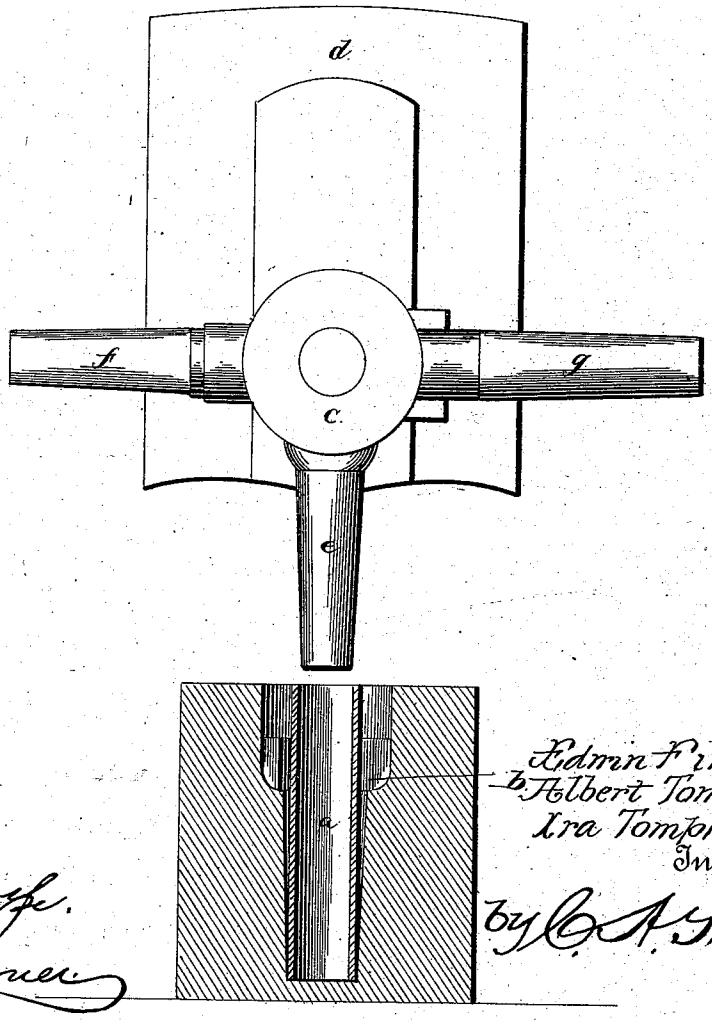


Fig 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDWIN FIRTH, ALBERT TOMPKINS, AND IRA TOMPKINS, OF TROY, NEW YORK.

MANUFACTURE OF AXLE-SKEINS.

SPECIFICATION forming part of Letters Patent No. 381,355, dated April 17, 1888.

Application filed August 17, 1887. Serial No. 247,195. (No model.)

To all whom it may concern:

Be it known that we, EDWIN FIRTH, ALBERT TOMPKINS, and IRA TOMPKINS, citizens of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in Vehicle Axle-Boxes and in Processes for Manufacturing the Same, of which the following is a specification.

Our invention relates to an improvement in vehicle axle-boxes and in processes for manufacturing the same; and it consists, first, in an axle-box made of a single piece of cold-drawn seamless steel tubing; secondly, in the method of making the axle-box, consisting in placing a suitable length of cold-drawn seamless steel tubing in a tapered die of suitable size, and then compressing or dropping into the said seamless tubing a tapered spindle or former of suitable size and shape, which presses into the said tubing and forms the same in the die, and thereby adapts it to the contour of the latter, thus constructing an axle-box without seams or welding and of a single integral piece, as will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a tubular blank for forming an axle-box. Fig. 2 is an elevation of the axle-box when completed. Fig. 3 is an elevation, partly in section, illustrating the die and the hammer carrying the punches or formers for shaping the blank in the die, and thereby forming the axle-box.

Our method of making the axle-box is as follows: We first take a piece of cold-drawn seamless steel tubing of suitable length and size, which forms a blank, *a*, such as shown in Fig. 1, and place the same in a die, *b*, of suitable size and tapered, as shown. A revolving hub, *c*, is journaled to a vertically-movable hammer, *d*, which is arranged over the die, and to the said revolving hub is attached a series of radiating punches or formers, *e*, *f*, and *g*. The punch *e* approximates somewhat roughly the shape of the interior of the box to be formed. The punch *f* more nearly approaches the shape of the interior of the box, and the punch *g* is of exactly the size and shape of the spindle on which the axle-box is to turn when applied to the vehicle. The hammer *d*, after the hub has been turned so as to arrange the primary former or punch *e* over the die, is depressed, and thereby causes the said punch or former to enter the die and form the blank, and thereby impart the required taper to the blank. The hammer is then raised to withdraw the primary punch or former *e*, the hub is turned so as to cause the secondary punch or former *f* to range with the die, and the hammer is then depressed so as to force the said punch *f* into the die and thereby cause the blank to approach somewhat more closely its final shape. The hammer is then again raised, the hub rotating to cause the finishing punch or former *g* to align with the die, and the hammer is then depressed so as to force the said punch or former and impart the desired final configuration to the box.

An axle-box thus constructed is exceedingly strong and durable, inasmuch as it is made of a single integral piece of seamless steel tubing, requires no welding, and may be manufactured at a slight cost.

It will be understood, of course, that any desired form of axle-box may be thus manufactured. In Fig. 2 we illustrate the form of axle-box which is now most commonly in use; but we also propose to manufacture the form of axle-box shown and described in the application of Edwin Firth for a patent for an improvement in vehicle-axles, filed this day.

Having thus described our invention, we claim—

1. As a new article of manufacture, an axle-box made of a single piece of cold-drawn seamless steel tubing, substantially as described.

2. The combination of the die to receive the blank, the vertically-movable hammer, the rotating hub journaled to the hammer, and the series of punches or formers attached to the said hub and radiating therefrom, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

EDWIN FIRTH.
ALBERT TOMPKINS.
IRA TOMPKINS.

Witnesses:
WILLIAM KEMP,
THOMAS D. ABRAMS.